Glacier Mass Balance and Regime: Data of Measurements and Analysis

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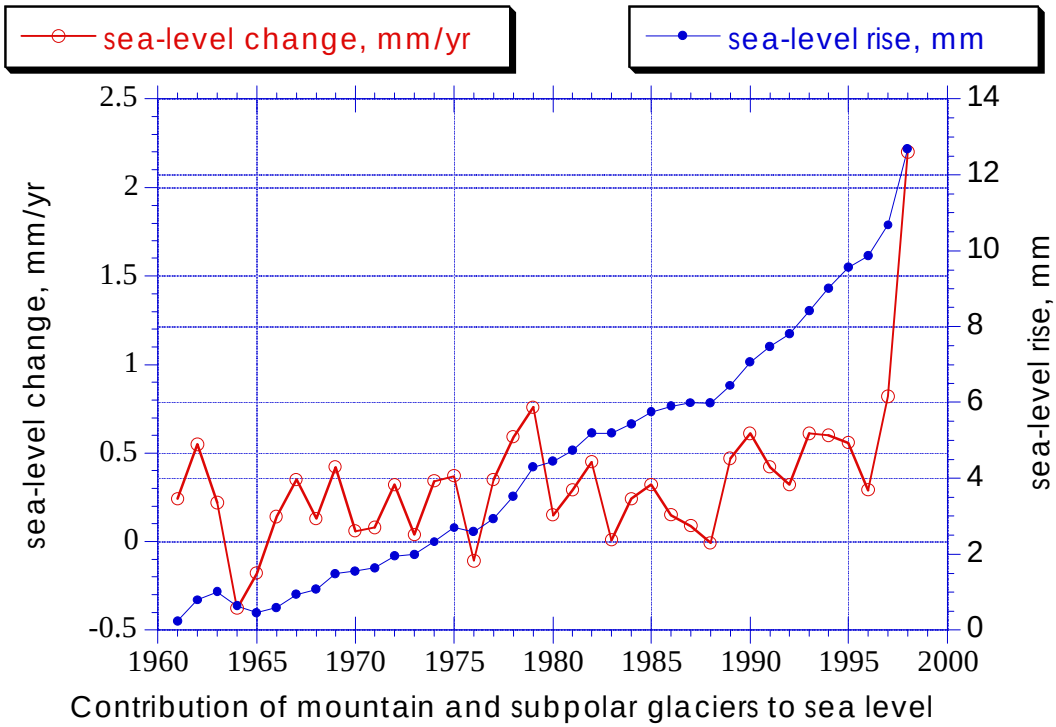
Editors: Mark Meier (INSTAAR), Richard Armstrong (NSIDC)



Occasional Paper No. 55

2002

Institute of Arctic and Alpine Research, University of Colorado

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Occasional Paper 55

INSTAAR/OP-55
ISSN 0069-6145

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ABSTRACT

This is the most complete data set of parameters of glacier regime have ever been compiled and published before. Data presented in appendixes include annual mass balances and related variables of mountain and subpolar glaciers outside the two major ice sheets. All available sources of information, such as publications, archived data, personal communications have been collected and include time-series of about 280 glaciers. Only observational data have been used over the period since the beginning of measurements started in 1945/46 and until 1998. Data have been digitized, quality checked, all errors found were eliminated. These all enhanced our knowledge on the modern glacier states, particularly:

1. The rate of annual melt-water production (ablation) by glaciers has been increasing, and comprised of about 1.7 m/yr in water equivalent for the period.
2. The annual accumulation (winter balance) rate has also been increasing with the average value of about 1.5 m/yr in water equivalent.
3. Annual volume change has been 90 km^3/yr adding about 15-20% (0.25±0.11 mm/yr) to sea-level rise over the period.
4. The equilibrium-line altitude has risen by 200 m (square root error is about 100 m).
5. Accumulation area ratio decreased from about 60 % in 1968 to 50% in 1998 (square root error is about 5%).
6. The mass balance sensitivity with respect to air temperature has changed at the end of 1980's and reached – 700 mm per degree °C.

The existing trend in glacier volume change shows that wastage of glaciers will accelerate in continental regions, North America South America, Central Asia. Subpolar glaciers, outside the two major ice sheets, will contribute more to sea-level rise.

PREFACE

The study of glacier fluctuations is relevant to an understanding of climate and climate change over temporal scales from years to centuries, and at spatial scales from regions to the global domain. It is internationally recognized that mountain and subpolar glaciers are substantional contributors to water cycle. The IPCC-1995 and IPCC-2000 have shown that glaciers contribute up to 20% to sea level rise over the previous century. Still glaciological data are not been widely used in hydrology and for climate monitoring. One important obstacle is that observational data are not generally accessible to the scientific community in a form convenient for modeling and analysis. The raw data come from many sources and publications, available to very few people.

With the publication of this Occasional Paper, which is also supported by the data in electronic form, the time series of main parameters of glacier regime is available for use in the climate and hydrological communities and other scientific disciplines. The data have undergone quality control, and have been cleared of many errors. The data are presented in comparable terms and dimensions. This Occasional Paper is not only a data collection, but a global analysis of the regime of mountain and subpolar glaciers in connections with present-day climate, water balance, other environmental changes. These data should be used as the input to models in hydrology, geomorphology, climatology and paleoclimatology. We consider this publication as one of INSTAAR's contribution to United Nations Year of Mountains, to be celebrated during 2002.

Professor James P. M. Syvitski
Director, INSTAAR

ACKNOWLEDGEMENTS

This study was supported by a State Department Grant to M. Dyurgerov in 1993-94; and NSF Grants OPP-9530782, OPP-9634289 to M. Meier, M. Dyurgerov, R. Armstrong and J. Dwyer in 1996-2000. The final stage of this work has been supported by NSF Grant BCS-0099236. We are very thankful to many of our colleagues all over the world for sending additional data, in particular to: L. Andreassen, H. Björnsson, L. Braun, T. Chinn, G.Cogley, H. Conway, A. Fountain, M. Funk, J.-O. Hagen, S. Hastenrath, P. Jansson, V. Konovalov, R. Koerner, R. Krimmel, M. Kuhn, V. Kuzmichenok, A. Marcus, R. Martines Costa, M. Miller, Yu. Narozhniy, G. ∅strem, M. Pelto, F. Pertziger, V. Popovnin, L. A. Rasmussen, O. Reinwarth, O. Sigurdsson, V. Uvarov, and Zichu Xie. I thank Carissa Carter for assistance in preparation of the final version for publication.

Introduction

This work presents data of glacier mass-balance from records that have been collected over the history of mass-balance measurement activity. Until now these data have been spread through many publications and this may explain why glaciological data have not been used as fully as they could be, in many fields of geosciences. Mass balance data have not been appropriately organized, i.e. digitized, quality checked, made accessible electronically, and compiled as continuous series of variables. It has taken many years to gather, organize, and present mass balance and related data in this publication. It is hoped that this publication will speed up the process of incorporating glaciological data in programs for which such information is useful. The goal of this publication is less ambitious than that of the WGMS (World Glacier Monitoring Service), which aims to create and make accessible in the complete database of all characteristics of glaciers, including glacier inventory, mass balance and fluctuations (Hoelzle and Trindler, 1998), but goes beyond the WGMS mass-balance publications.

This paper is oriented to several categories of users, including professional glaciologists, climatologists, hydrologists and other specialists interested in high-mountain and polar environments. Other potential users are those interested in the state of modern glaciers, their change in a global scale or in any particular region during times of climate warming. By placing all data on mass balance and related components in one handy source, our colleagues in glaciology, in particular those involved in data collection, will have an opportunity to check previously published data, and improve data for the next publications.

Glacier mass-balance data have gained an increased attention in detecting global climate change and explaining rising sea level (Meier, 1984; Oerlemans and Fortuin, 1992; Kuhn, 1993; Dyurgerov and Meier, 1997a; Gregory and Oerlemans, 1998). Glacier mass balance change is important to regional water supplies and power generation (Bezinge, 1979; Fountain and Tangborn, 1985; Bakalov et al., 1990). The importance of monitoring glaciers and their relation to climate is recognized by the Global Change Program (*Our Changing Planet*, 1996), the Intergovernmental Panel on Climate Change (IPCC, 1996, 2001), and by the international program of glacier monitoring [IAHS (ICSI)-UNEP-UNESCO, 1977].

Small glaciers (all glaciers other than the two major ice sheets, Greenland and Antarctica), have a total area of at least 680×10^3 km^2 (Meier and Bahr, 1996). Although they make up only 4% of the total land ice area, they may have contributed to as much as 30% of sea-level change in the 20th century due

to rapid ice volume reduction connected with global warming (Meier, 1984). It is important that changes in glacier mass balance be estimated accurately to compare with other components of the water balance of the Earth, such as changes in the amount of water stored in the ground and changes in mass of the Greenland and Antarctica ice sheets (Warrick and Oerlemans, 1990; Meier, 1993; Paterson, 1993; Warrick et al., 1996).

The critical link between glaciers and climate is the glacier mass balance (Meier, 1965). The idea and the goal to measure mass balances of mountain and subpolar glaciers in different regions for a global assessment was formulated more than 100 years ago by Forel (1894), the first President of the Commission on Glaciers. Early mass-balance measurements were carried out on Rhône Glacier in the Swiss Alps during 1874-1908 (Mercanton, 1916), but a systematic approach to the study of glacier mass balance began only in the 1940s (Ahlmann, 1948). Since the end of World War II, direct measurements of mass balance, or volume change of glaciers (considered to be the same), have been started using more or less standard methods and equipment, by trained specialists in many countries in the world. Mass-balance measurements were carried out on only a few glaciers during the International Geophysical Year (IGY), 1957-59, and they reached a statistically appropriate number only in the 1960s (Fig. 1). The longest continuous time series of mass-balance data are from Storglaciären, Sweden, with data collected since 1945/46 (Holmlund et al., 1996).

Mass balances of more than 280 glaciers have been measured at one time or another since 1946. All of these data are included in this paper, but in the short analysis given in Chapter 3 the 1961-1998 period of time is emphasized. For individual glaciers the length of mass-balance measurements varies from 1 to 50 yr with an average duration of 10 yr.

Mass-balance records have been published since 1967 by the World Glacier Monitoring Service (WGMS) in seven volumes of *Fluctuations of Glaciers* (1967, 1973, 1977, 1985, 1988, 1993, 1998, referred to here as FoG). Since 1991, WGMS has also been publishing basic records every 2 years for many of the measured glaciers including detailed results for 10 selected glaciers in *Glacier Mass Balance Bulletin* (referred to here as GMB, 1991, 1993, 1994, 1996, 1999, and http://www.geo.unizh.ch/wgms/).

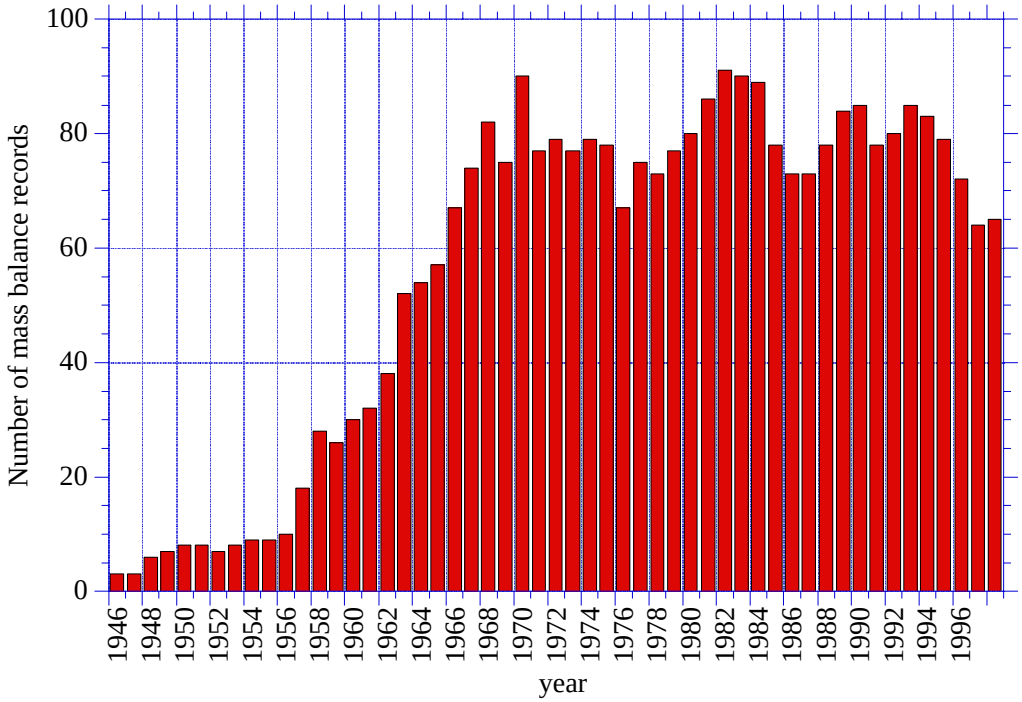

Fig. I.1. Histogram showing the numbers of glaciers with mass balance records, annually since the beginning of continuous mass-balance observations.

These WGMS publications are the main sources of data used in this paper. Every effort has been also made to include data from other sources of information around the globe. The quantity and quality of data are far better for the Northern Hemisphere, specifically, Europe, Canada and U.S.A., and the Former Soviet Union (FSU), than for the rest of the world. About 70% of measurements have been carried out in Scandinavia, the Alps, the mountains of the U.S.A., Canada, and the FSU, and the other 30% are sparsely distributed over all mountain and subpolar regions (Fig. 2). For many regions data on glacier regime are almost completely lacking (e.g., Karakorum, Tibetan Plateau, Northern Himalayas, Hindukush and Hindurage, Sayany, S.E. Siberia, Koryak Range and other ranges in N-E. Siberia, Aleutian Islands, Novaya Zemlya, De Long Islands, Jan Mayen Island, individual ice caps around Antarctic and Greenland ice sheets, several regions in the Andes and several other areas). The histogram (Fig. 1) reflects the current decrease in number of mass balance measurements in the world, even though some new programs have been organized in South America and Iceland. A serious problem is that several long-term mass balance programs were canceled in the FSU (Caucasus, Polar Ural, Pamir, Tien Shan, Djungariya, Severnaya Zemlya), for economical reasons. In the Alps (Limmern and Plattalva

Glaciers), East Africa (Lewis Glacier), and a few others in USA (Blue Glacier) and Canada (Sentinel), long-term programs have also been cancelled. These cancellations have affected global glacier monitoring and related programs, as well.

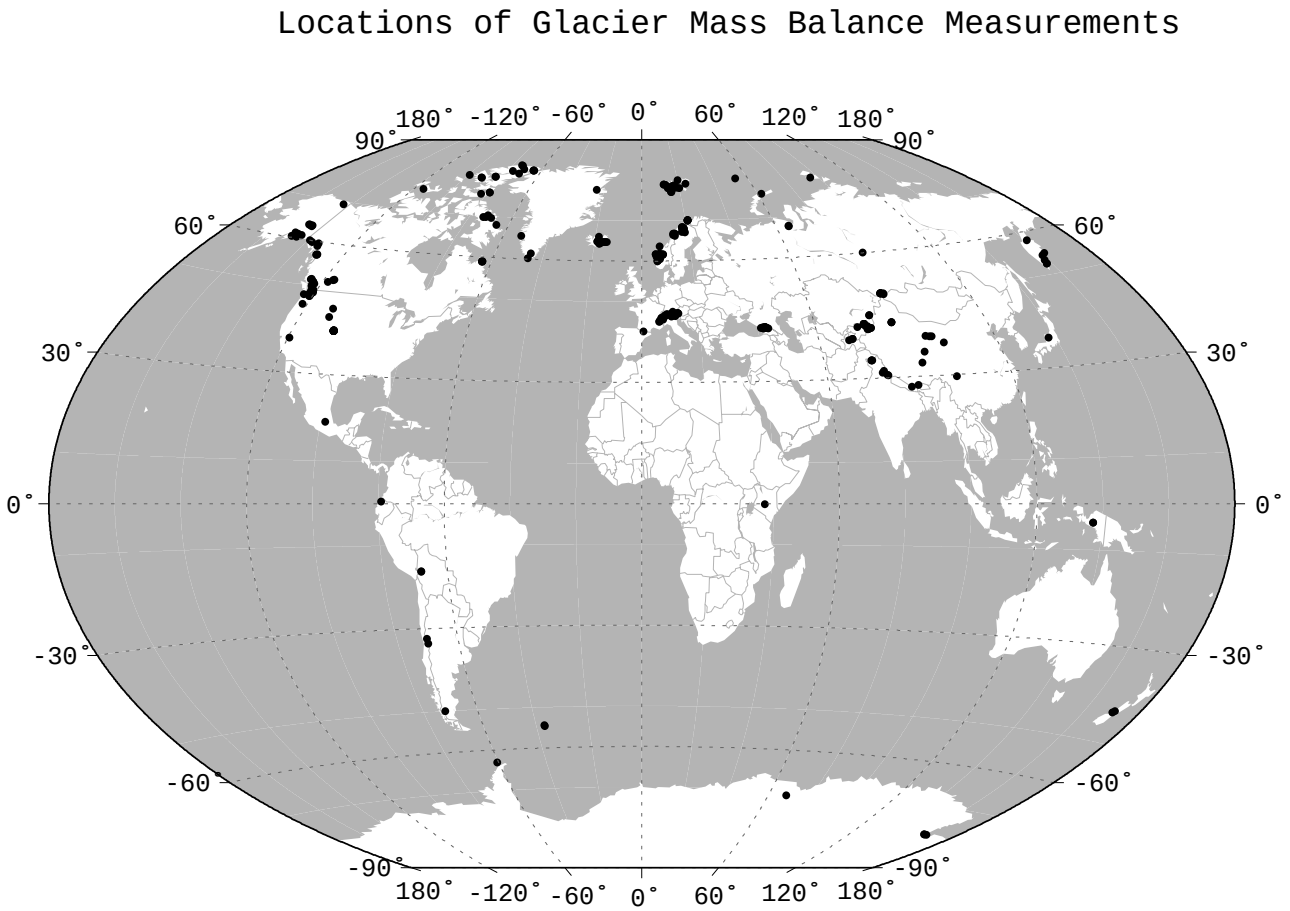

Fig. I.2. Map showing locations of glaciers with mass-balance records.

Preference has been given to data obtained by standard glaciological method(s), (see e.g. Meier, 1962; Mayo et al., 1972; ∅strem and Brugman, 1991). Indirect measurements and estimations, such as those derived by mapping, hydrological methods, or calculated by different models are generally avoided. Some exceptions have been made, e.g. data of mass balance of Grosse Aletsch Glacier measured by a hydrological method is included, as has been done in FoG publications.

Four Appendices contain data:

Appendix 1 includes the general characteristics of glaciers, wherever mass balance measurements have been carried out. Here all references to sources of information are given, including personal communications with colleagues. Similar information was published earlier (Dyurgerov and Meier, 1997a), but many new data have been incorporated since that time.

Appendix 2 presents glacier area, mass balance, and seasonal components by elevation ranges.

Appendix 3 contains the most complete information on all variables related to glacier mass balance of glaciers, given annually since the beginning of measurements.

Appendix 4 presents a collection of the longest mass balance records for convenience of users.

It is important to note that collections of glacier mass balance records have been published and/or used for near-global analysis in previous decades by Collins (1984), Wood (1980), Ommanney (in ∅strem and Brugman, 1991), Cogley et al., (1995), and Braithwaite and Müller, (1980). These previous collections and data analysis contributed to this work.

Chapter 1. Area of Subpolar and Mountain Glaciers

Several different estimates of glacier area exist. This latest one includes the synthesis of results of most recent inventories and updates. The term “small” was introduced by Meier (1984) and since that time the term has been widely used to describe all forms and sizes of glaciers outside the two large ice sheets, Greenland and Antarctica.

Glacier area is presented here by mountain ranges or subpolar islands, or archipelagoes (Table 1.1). Information from the *World Glacier Inventory* (IAHS/ICSI 1989; WGMS website, http://www.geo.unizh.ch/wgms/), a compilation made by Dolgushin and Osipova (1989), and many additional sources of information, such as new discoveries of glaciers in mountain ranges in Eastern Siberia (Sedov, 1997a, 1997b), results of updated inventories in New Zealand (Chinn, 1991), Kamchatka (Muravyev, 1999), Tien Shan (Kuzmichenok, 1995), and new estimates of glacier area in tropics and equatorial zones (Kaser, 1999) are incorporated.

The largest aggregate area belongs to ice caps and mountain glaciers in Arctic archipelagoes (314×10^3 km^2). The area of "small" glaciers and ice caps around Greenland ice sheet, which has been estimated at about 70×10^3 km^2 (Weidick and Morris, 1998), is also included. In the compilation published by Dolgushin (2000), this aggregate area is given as 76.2×10^3 km^2, but the sources of this information are not specified

Glacier area has been the object of continuous updating for two main reasons: first is new findings and producing of new maps, or updating previous surveys (e.g. updated *Inventory of New Zealand Glaciers*, Chinn, 1999, personal communication). Second is the change of glacier area due to response to climate change (e.g., glaciers in tropics, Kaser, 1999). The summarized effect of these two processes may be illustrated by comparison of two most recent calculations. The first one is presented in this report; the second was published in 2000 (Dolgushin, 2000). Even in the compilation of 2000 the information was for the period 1950-1980. Due to this Dolgushin’s data reflects the level of knowledge for several previous decades. A comparison of these two calculations shows a difference in aggregate areas of about 40×10^3 km^2 (638.6×10^3 km^2 in Dolgushin and 680×10^3 km^2 in our calculation). The main discrepancies in these two calculations are due to the area of individual ice caps around Antarctic and sub-Antarctic islands, which is given in Dolgushin’s publication as 25×10^3 km^2, but in our compilation is 77×10^3 km^2. Our calculation includes 7×10^3 km^2 of sub-Antarctic ice masses (IAHS/ICSI, 1989) and

70×10^3 km^2 of ice caps around the Antarctic ice sheet (Weidick and Morris, 1998). These ice caps and mountain glaciers are situated close to but separate from main ice sheet of Antarctic. The boundaries between them are not easy to determine. In many cases these ice caps are joined to ice shelves or major ice sheets by fast ice or by other ice shelves, e.g. Spartan Glacier in Alexandra Island, or Berkner Island which is surrounded by the Ronne-Filchner ice shelves. The aggregate area of these local ice caps around Antarctica may comprise from 70×10^3 km^2 to perhaps 5% of the entire area of the Antarctic Ice Sheet, or about 700×10^3 km^2. Obviously these individual glaciers belong to a population of small glaciers, not the major ice sheet.

A special study is required to calculate more accurately the area and mass-balance state of these ice caps around the two ice sheets. Even the very low temperature ice caps and mountain glaciers in Antarctica may have had mass-balances different from the steady-state. Four years of mass-balance measurements in the middle 1970s on Spartan Glacier on Alexander Ice Cap show an average net mass-balance value different from steady-state (–103 mm yr^{-1}). Mass-balance measurements on Dry Valley glaciers show a regime close to steady-state (see Appendix 1 and 3) but these glaciers are situated in much more colder and drier climate conditions than those closer to the ocean.

It is also important to note that the area of "small" glaciers around the two ice sheets has to be considered as they may produce an additional contribution to sea-level change due to global warming. Thus it is difficult to calculate the glacier contribution to the global water-cycle and to sea level change; these polar glaciers are, most likely, the largest source of error.

There are other regional uncertainties, for example, the North and South Patagonian Ice Fields. Different results have been published:

Source	North Ice Field	South Ice Field	Sum
(IAHS/ICSI, 1989)	4,500	14,000	18,500
(Aniya, 1988, 1992)	4,200	13,000	17,200

There are also several other regions in South America where glacier area is not yet defined quantitatively (IAHS/ICSI, 1989, see also Table 1.1 of this paper). Meier and Bahr (1996) give a figure of 680×10^3 km^2 for the total area of "small" glaciers, which is used here. This, however, is probably a minimum estimate because: 1) Meier and Bahr used scaling from the existing World Glacier Inventory

data which in many areas did not include the smallest glaciers, and 2) area of Antarctic glaciers actively involved in the hydrological cycle is probably larger than 70×10^3 km^2.

The new inventory of Nepal and Bhutan glaciers have been completed in 2001 and given the new and more precise results of 5,323.89 km^2 (Mool, et al., 2001), and 1,316.71 km^2 (Mool et al., 2001), respectively, compare to about 6,000 km^2 and 1,500 km^2 for the first and the second regions published in (IAHS/ICSI, 1989).

Table 1.1. Surface area of glaciers outside the major ice sheets

Region	Area, km^2 *10^3	Source
E.Hemisphere		
Europe		
Alps	2908,8	WGI, 1988, p. C81
Pyrenees	11.5	WGI, 1988, p. C82
Scandinavia	2941,7	WGI, 1988, p. C80
Iceland	11,26	WGI, 1988, p. C79
W. Caucasus, Black and Azov sea basins	646.3	WGI, 1988, p. C90
Khibiny Mts.	0.1	WGI, 1988, p. C83
Total in Europe	**17,800**	
Northern Asia and Siberia		
Chukotka Plateau and Pekul'ney	17.07	Sedov, 1997
Taigonos Peninsula, Far East	2	Sedov, 1997
Severniy Ural	28.7	Dolgushin and Osipova, 1989
Byrranga Mts.	30.5	WGI, 1988, p. C84
Putorana Plateau	2.54	Dolgushin and Osipova, 1989
Orulgan Range	18.38	[Sedov, MGI, 1997]
Kharaulakh Range	3	Dolgushin and Osipova, 1989
Cherskogo Range	155.3	Dolgushin and Osipova, 1989
Koryak Range	291.7	Dolgushin and Osipova, 1989
Suntar-Khayata Range	201.6	Dolgushin and Osipova, 1989
Kodar Range	18.8	Dolgushin and Osipova, 1989
Sayany	34.1	Dolgushin and Osipova, 1989
Altay (Russian & Mongolian parts)	1,75	Dolgushin, 2000
Kamchatka	905	Muravyev, 1999
Kuznetskiy Alatau	6.8	Dolgushin and Osipova, 1989
Khrebet Saur	16.6	WGI, 1988, p. C87
Baykal and Barguzin Ranges	6.2	Dolgushin and Osipova, 1989
Total in Siberia	**3,500**	
Central Asia		
Tien Shan	15,417	Kuzmichenok, 1993
Pamir	12,260	Dyurgerov and Meier, 1997a
Qilian Shan	1,97	Dyurgerov and Meier, 1997a
Kunlun Shan	12,26	Dyurgerov and Meier, 1997a
Karakoram	16,6	Dyurgerov and Meier, 1997a
Qiantang Plateau	3,36	Dyurgerov and Meier, 1997a
Tanggulla	2,21	Dyurgerov and Meier, 1997a
Gandishi	1,62	Dyurgerov and Meier, 1997a

Nianqingtangla	7,54	Dyurgerov and Meier, 1997a
Hengduan	1,62	Dyurgerov and Meier, 1997a
Himalaya	33,05	Dyurgerov and Meier, 1997a
Gindukush	3,2	Dyurgerov and Meier, 1997a
Hinduradsh	2,7	Dyurgerov and Meier, 1997a
Total in Central Asia	**114,800**	
Middle East (Near East)		
East Caucasus(Caspian Sea basin)	781.7	Dolgushin and Osipova, 1989
Maliy Caucasus	3.8	Dolgushin and Osipova, 1989
Turkey	24	WGI, 1988, p. C91
Iran	20	WGI, 1988, p. C91
Total in Middle East	**830**	
Total in Asia	**119,300**	
East Arctic Islands		
Victoria	10.7	Dolgushin and Osipova, 1989
Franz Josef Land	13,735	Dolgushin and Osipova, 1989
Novaya Zemlya	23,645	Dolgushin and Osipova, 1989
Severnaya Zemlya	18,325.50	Dolgushin and Osipova, 1989
Ushakova Island	325.4	Dolgushin and Osipova, 1989
De Longa Island	80.6	Dolgushin and Osipova, 1989
Wrangel Island	**3.5**	Dolgushin and Osipova, 1989
Total in East Arctic Islands	**56,100**	
West Arctic Islands		
Svalbard	36,611.70	WGI, 1988, p. C79
Jan Mayen	116	WGI, 1988, p. C80
Total W.Arctic Islands	**36,700**	
Canadian Arctic Archipelago		
Ellesmere	80,0	WGI, 1988, p. C74
Ellesmere Ice-Shelf	500	WGI, 1988, p. C74
Axel Heiberg	11,7	WGI, 1988, p. C74
Devon	16,2	WGI, 1988, p. C74
Bylot	5,0	WGI, 1988, p. C74
Baffin	37,0	WGI, 1988, p. C74
Coburg	225	WGI, 1988, p. C74
Meighen	85	WGI, 1988, p. C74
Melville	160	WGI, 1988, p. C74
North Kent	152	WGI, 1988, p. C74
others	736	WGI, 1988, p. C74
Total Canadian Arctic Archipelago	**151,800**	
Greenland: small glaciers	**70,0**	Weidick and Morris, 1998
Total in Arctic Islands	**315,000**	
Alaska		
Brooks Range	722.4	WGI, 1988, p. C72
Seward Penins. and Kilbuk Mtns.	233	WGI, 1988, p. C72
Aleutian Islands	960	WGI, 1988, p. C72
Alaska Peninsula	1,25	WGI, 1988, p. C72
Alaska Range	13,9	WGI, 1988, p. C72

Talkeetna Mtns.	800	WGI, 1988, p. C72
Wrangel Mtns.	8,3	WGI, 1988, p. C72
Kenai Mtns.	4,6	WGI, 1988, p. C72
Chugach Mtns.	21,6	WGI, 1988, p. C72
St. Elias Mtns.	11,8	WGI, 1988, p. C72
Coast Mtns.	10,5	WGI, 1988, p. C72
Total in Alaska	**74,600**	
Mainland USA, Mexico, Canada (US+ Mx+CD), without Alaska		
Pacific	37,500	WGI, 1988, p. C74
Nelson	320	WGI, 1988, p. C74
Great Slave	620	WGI, 1988, p. C74
Arctic Ocean	84	WGI, 1988, p. C74
Labrador, Torngat Mtns.	24	WGI, 1988, p. C74
Yukon Territory	10,500	WGI, 1988, p. C74
Sierra Nevada	50.6	WGI, 1988, p. C70
Front Range	2.1	WGI, 1988, p. C70
Mnt. Rainier & Mtn. Adams	63.6	WGI, 1988, p. C71
Olympic Mtns.	46	WGI, 1988, p. C71
North Cascade Range	266.3	WGI, 1988, p. C71
Rocky Mtns.	74.3	WGI, 1988, p. C73
Pacific Coast Volcanos	57	WGI, 1988, p. C73
Scattered Peaks	0.6	WGI, 1988, p. C73
Mexico, and include:		
Citlaltepetl (Mexico)	9.5	WGI, 1988, p. C70
Iztaccihuatl (Mexico)	1.2	WGI, 1988, p. C70
Popocatepetl volcano (Mexico)	0.559	Hugo Delgado Granadas, 1997
Total in US+CD and Mexico	**49,600**	
Total in N. Hemisphere	**577,000**	
S.Hemisphere		
Africa		
Mount Kenya	0.7	Hastenrath, 1996
Kilimanjaro	3.3	Hastenrath and Greischar, 1997
Ruwenzori	1.7	Kaser, 1999
Total in Africa	**6**	
New Guinea, Irian Jaya	**3**	Kaser, 1999
New Zealand	**1,160**	Chinn
South America		
Tierra del Fuego	2,7	WGI, 1988, p. C64
South Patagonian Icefield	13,0	Naruse and Aniya, 1992
North Patagonian Icefield	4,2	Aniya, 1988
Argentina	no inform.	WGI, 1988, p. C65
Rio Negro, part (Argentina)	55.8	WGI, 1988, p. C65
Argentina: Province of Neuquen	156.4	WGI, 1988, p. C65
Argentina: Province of Mendoza and southern part of Province of San Juan	1,173.10	WGI, 1988, p. C66
Argentina	no inform.	WGI, 1988, p. C66
Chile	no inform.	WGI, 1988, p. C66
Chile: Provinces of Santiago and Higgins	743	WGI, 1988, p. C67

Chile	no inform.	WGI, 1988, p. C67
Bolivia: Cordillera Oriental	556	WGI, 1988, p. C67
Peru: Southern Cordilleras	649	WGI, 1988, p. C68
Peru: Northern Cordilleras	1,131	WGI, 1988, p. C68
Equador	110.8	WGI, 1988, p. C68
Columbia: Sierra Nevada de Santa Marta	19.1	WGI, 1988, p. C69
Columbia: other regions	91.9	WGI, 1988, p. C69
Venezuella: Sierra Nevada de Merida	2.7	WGI, 1988, p. C69
S.America	**25,000**	
Subantarcic Islands	**7,0**	WGI, 1988
Antarctica: small glaciers	**70,0**	Weidick and Morris, 1998
Total in S. Hemisphere	**103,000**	
Global	**680,000**	

P.S. Because in some regions data on glacier area are not available (see "no information") and aggregate area of Antarctica local glaciers may be much larger we consider the area total area of small glaciers are underestimated

Chapter 2. Data on Glacier Regime

The term “regime” as used here includes not only mass balance but other parameters as well, such as winter and summer balances, net accumulation and net ablation, annual accumulation and ablation, mass turnover, equilibrium-line altitude (ELA), and accumulation-area ratio (AAR). All of these components of glacier regime will be defined in this chapter.

Point (individual stakes, or snow pits) data are not considered here but rather data already averaged over the glacier (Appendixes 1, 3, and 4) or over certain areas, e.g., ablation, accumulation, or altitudinal ranges (Appendix 2).

2.1. DATA ON GLACIER CHARACTERISTICS AND VARIABLES OF GLACIER REGIME

The terminology and indexes used in FoG publications are followed here, as they are internationally accepted. All available data on the main characteristics of glaciers and variables of their regime are combined in Appendix 1. Every glacier with a mass-balance record, no matter how long it is, is characterized by: glacier name, country, region, PSFG number (five digits identifying glacier with alphabetic prefix denoting country), code (three digits giving primary classification, form and frontal characteristic respectively), latitude and longitude (in degrees and minutes), maximum, median, and minimum elevations (meters), area (the latest information on total area of glacier, in km^2), length (the latest information on glacier length, in km), aspect (for some glaciers it is given separately for accumulation area - denominator, and for ablation area - numerator). These characteristics are taken from FoG volumes or from other publications given in rows of “Reference”.

Data related to glacier regime (defined here as variables) are the results of measurements on many glaciers in different geographical regions in the world (Appendix 3). These are given by years and include: (1) glacier area (s); (2) components of mass gain, which are presented by different variables for different glaciers, depending on the system used for measurements: winter mass balance (b_w), or annual snow accumulation, (c_t) or net accumulation (a_c), all in mm of water equivalent; (3) components of mass loss, which are also presented by different variables for different glaciers: summer mass balance, (b_s), annual ablation (a_t), net ablation, (a_a); (4) annual glacier mass balance, b_a, or net mass balance b_n; (5) equilibrium-line altitude (ELA); and (6) accumulation-area ratio (AAR). These all result from direct

measurements carried out in the field, annually, by the glaciological method (with only a few exceptions explained in Chapter 3). Definitions of these terms are given in Mayo et al (1972).

2.1.2. Definition of seasonal mass-balance components.

Several components of glacier mass balance are in use in glaciological measurements and data presentation (FoG, v. 1-7). The original data of mass-balance components, mass gain and loss, have been preserved in Appendix 3 as they were published in FoG volumes and other sources of information used here. One of the important tasks in the future is to use a common method to get comparable results and to recalculate all previously measured data in one single format for all glaciers (say b_w and b_s). To accomplish this task, comparable measurements by several methods simultaneously are needed. Such comparable measurements have been made on a very restricted number of glaciers (Dyurgerov and Meier, 1999). The differences between seasonal mass balance components are substantial and are shown in Figures 2.1, 2.2, 2.3. The seasonal mass balance components are the specific winter mass balance (b_w) and the specific summer mass balance *(b_s)*. We have also considered annual snow-ice accumulation (c_t) and annual ablation *(a_t)*. c_t is the true estimation of annual amount of precipitation as snow/ice (b_w minus winter ablation plus summer accumulation) deposited on the upper surface of a glacier; a_t is the true estimation of yearly water production and glacier runoff (excluding melt water refreezing and ice evaporation). However, $b_w + b_s = c_t + a_t = b_n$, which is the annual or net mass balance (b_s and a_t are considered here as negative values). The difference between c_t and b_w, and between a_t and b_s may be substantial in some geographical locations (Figs. 2.1, 2.2). It tends to be greater in regions with continental climate conditions, where snow accumulation and ablation may occur simultaneously (e.g., Shumskiy Glacier, Figs. 2.1, 2.2). In extremely continental climate conditions with very low total precipitation and/or monsoon climates, as in the mountain ranges of Central Asia, more than 75% of the precipitation may occur on a glacier in summer, mostly as snow (Ageta and Higuchi, 1984). This makes the difference between b_w and c_t large compared to maritime climate conditions (Zichu Xie, et al., 1999).

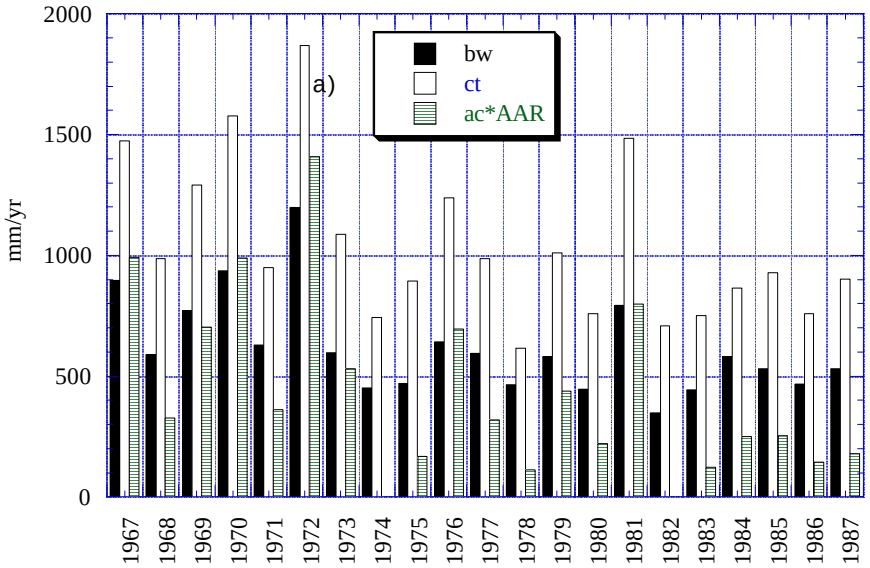

Fig. 2.1a

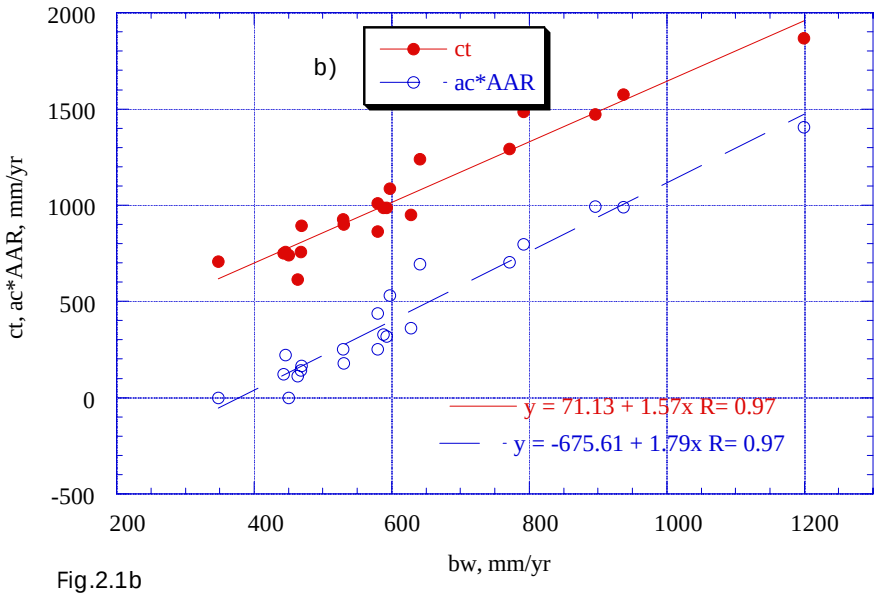

Fig.2.1b

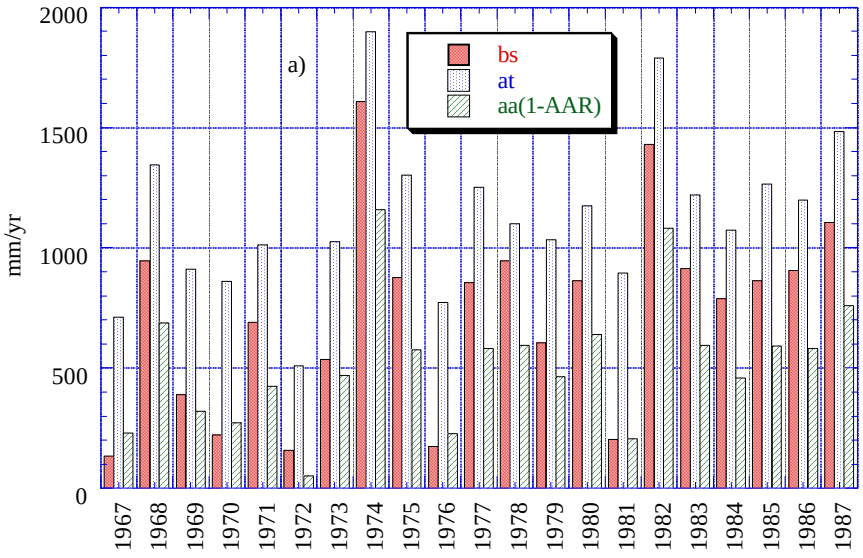

Fig.2.2a

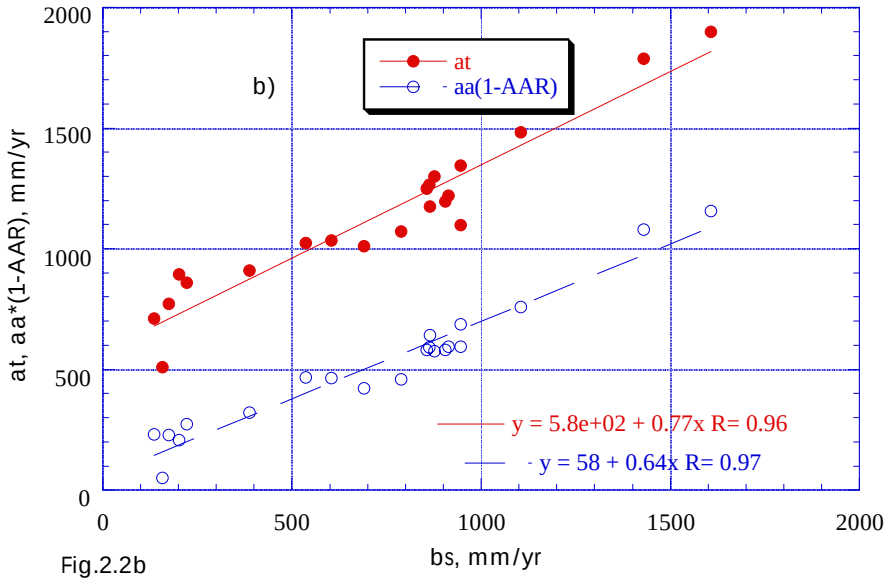

Fig.2.2b

Fig. 2.1. Shumskiy Glacier (Djungariya Mtn.) mass-balance components: (a) winter balance (b_W), annual accumulation (c_t) and net accumulation recalculated as averages for the entire glacier area (a_a *AAR); (b) linear regression between b_w and the two other components.

Fig. 2.2. Shumskiy Glacier mass-balance components: (a) summer balance (b_S), annual ablation (a_t) and net ablation recalculated for entire glacier area a_a(1-AAR); (b) linear correlation between b_S and the two other components.

The traditional alpine system of glacier mass balance measurements and data presentation is still in use on the majority of glaciers in the Alps and in the Himalayas, particularly in India and Pakistan (see FoG, tables "C"). This system uses "net accumulation" (a_c) and "net ablation" (a_a), which are not seasonal components but net mass balances averaged over the accumulation and ablation areas, respectively. The differences between them and b_w and b_s are large, as is shown for Shumskiy Glacier (Figs. 2.1, 2.2) and for Storglaciären (Fig. 2.3). These a_c and a_a components permit calculation of the net mass balance, but they cannot be used easily for climate analysis. The real advantage of using two or more pairs of components is the fact that a correlation between them may allow one to reconstruct information of climatic significance (Figs. 2.1b, 2.2b), such as winter balance (or winter precipitation), summer balance (or summer temperature and precipitation), or annual quantities of these variables. Unfortunately such comparison cannot be performed worldwide as simultaneous measurements of these variables are limited to a few glaciers.

2.1.3. Definition of annual, and/or net mass balance.

It is important to note that the published mass-balance values often include only mass lost by processes on the glacier surface or in the uppermost annual layer of snow/ice deposited during the hydrological year. For only a very restricted number of glaciers, has the mass change over the entire vertical column of firn (where melt water had infiltrated and was trapped) been measured and included in calculation of glacier mass balance as internal accumulation (e.g. Djankuat, glaciers in Altai, Tien Shan). Other components of mass gain and mass loss (iceberg calving and other processes of mechanical ablation) are not included here due to the complexity in measuring these

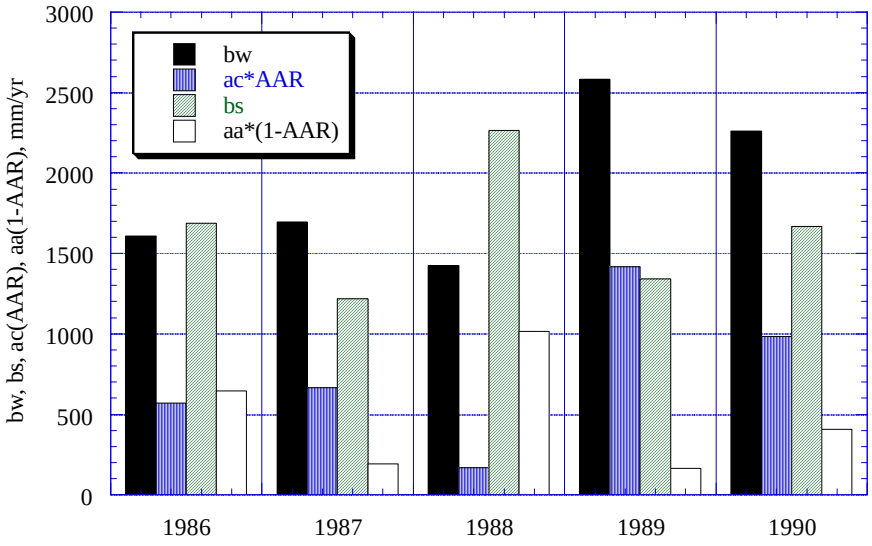

Fig. 2.3

Fig.2.3. Storglaciären (Sweden), seasonal mass balance components: winter (b_w), summer (b_S), net accumulation (a_C) and net ablation (a_a); a_C and a_a recalculated as averages for the entire area of the glacier. The coefficients of regression between b_w and a_C*(AAR), and b_S vs a_a*(1-AAR) are both 0.96.

components. Thus, strictly speaking, mass balance measured by the glaciological method is not necessarily equal to volume change, but may be nearly identical to it for many glaciers, where these components are relatively small. Annual (b_a) and net (b_n) balances (Mayo et al., 1972) may differ from year to year, although the difference is not likely to be substantial for longer-term averages.

2.1.4. Definition of equilibrium-line altitude (ELA).

By definition, the line separating the ablation area of a glacier from the accumulation area is the equilibrium line (Meier, 1962). Thus the equilibrium-line altitude (ELA) marks the area on the glacier where accumulation is balanced by ablation. ELA is usually defined by direct measurements in the field, at the end of a hydrological year (at the end of a summer). It is clear that ELA is a product of climate, or the weather conditions, of this particular year, and changes annually in close

agreement with the annual or net mass balance. One should not confuse this annual ELA with an ELA averaged over a long period of time and related to the adjustment of glacier size and geometry. Annual (end of the hydrological year) ELAs, measured directly in the field or derived from curves of mass balance versus altitude (GMB, 1-5), are reported here.

2.1.5. Definition of accumulation-area ratio (AAR).

The accumulation-area ratio is, by definition (Meier and Post, 1962), the ratio between the accumulation area and the area of an entire glacier. Accumulation area is defined at the end of hydrological year and is separated by the equilibrium line from the ablation area. In Russian publications the ratio between accumulation and ablation areas (the "glacier coefficient") is used, which can be easy recalculated to the equivalent AAR. There is little information available or reported on how the AAR data are determined for most glaciers. In most cases, the data of AAR given in Appendix 3 are determined from the area vs altitude function (hypsographic curve) separated at the ELA determined at the end of hydrologic year.

2.2. THE GLACIOLOGICAL METHOD.

The glaciological method is not described in detail here, neither the terminology used nor the problems resulting from its application. All of these are given in several publications pertinent to this subject (e.g.,Thorarinsson, 1940; Ahlmann, 1948; Meier, 1962; Meier et al., 1971; Mayo et al., 1972; Østrem and Stanley, 1969; Trabant and Mayo, 1975; Østrem and Brugman, 1991; Kotlyakov et al., 1992; FoG volumes 1-7; Rabus and Echelmeyer, 1998; and Trabant and Marsh, 1999). There are many problems with data acquisition, processing, estimation of quality, dissemination of results and other questions which were discussed thoroughly by the glaciological community and still need to be addressed (see "Questionnaire", Panel Report prepared by M. Meier for the International Commission on Snow and Ice, unpublished, 1996). However, a short general explanation of the method and main errors should be helpful for better understanding, especially for readers who are not involved in the measurements of glacier mass balance but use the results.

The variables given in Appendices 3 and 4 characterize quantitatively the processes of mass gain and loss. These processes develop on a glacier surface and usually involve the uppermost layer of ice (ice is the general term used to include snow and firn) deposited over one hydrological year, which in the Northern Hemisphere is considered from 1 October to 30 September (1 March and 30 April in the Southern Hemisphere), with two seasons: winter (1 October - 31 May in the north, 1 March - 30

November in the south), and summer (1 June – 30 September in the north, 1 December – 30 April 30 in the south).

The glaciological method (so-called “stakes and pits” method) is based on the method developed in hydrology, particularly in snow-hydrology, to measure snow-water balance in a basin. The method was applied, possibly the first time, to study the regime of Rhone Glacier at the end of 19th century (Mercanton, 1916). In the 20th century, the method was developed in more detail and applied to study the regime of several glaciers around the Atlantic coast in Northern Europe (Thorarinsson, 1940; Ahlmann, 1948). Continuous and uninterrupted measurements started in 1945 on Storglaciären, in Kebnekaise, Sweden Lapland (Schytt, 1962; Holmlund et al., 1996) and spread in consequent years by researchers working in mountain areas in Europe, North America, the Arctic and Asia.

Reports of direct measurement by the “stakes and pits” method have often implied that they determine the change in mass of ice in a column from the surface to the bottom of glacier; in reality, these measurements usually pertain only the uppermost recent annual layer. The basic equation of this glaciological method for a point is,

$$db/dt = \rho dh/dt + \int d\rho/dt \, dz , \qquad (1)$$

where ρ is the density of the ice layer of thickness h, changing over period of time t (Hubley, 1954).The first term on the right side is the change in ice mass over a period of time with constant density and the second member is the change in density over period of time over a column of thickness z.

For practical application equation (1) can be rewritten as:

$$b_i = \rho_0 \Delta h + (\rho_2 h_2 - \rho_1 h_1). \qquad (2)$$

Here b_i is the mass balance at a site, ρ_0 is the density of ice (usually considered to be 0.90 g cm^{-3}, but may vary from 0.82 to 0.92 (Shumskiy, 1959), and Δh is the change, relative to the top of a stake, of the surface level of ice. The first term in the right side of equation (2) can usually be applied to determine the ablation and balance of solid ice. The second right hand term of (2) is applied for porous material (snow and firn) with changing density over time (e.g., between two consecutive surveys). Thus, equation (2) can be used to calculate mass balance at any point (site) on a glacier where measurements are carried out. The general recommendation is to carry out measurements at sites on a glacier twice a year to determine annual (or net) mass balance (∅strem and Brugman, 1991). The first survey is usually taken at the beginning of a mass balance year (or the end of the previous year) in order to mark the summer surface.

To determine the winter balance, or maximum snow accumulation, the next visit is done at the end of the accumulation season (end of a winter). The surface of the previous summer serves as the reference level for this survey. At this time the density of snow deposited during winter must be measured. It is also important to measure density below the previous summer surface (as deep as it shows any change compared to the previous survey) to determine internal accumulation (IA). Comparisons of the two data surveys give the mass gain below the previous summer surface. This mass gain (internal accumulation) which also should include the volume of superimposed ice refrozen at the surface of "old ice," usually below the firn and/or snow line. Note: some authors, e.g., Bazhev (1973), include as internal accumulation the ice or water refrozen or stored inside the current year of accumulation. The process of melt-water refreezing into porous snow and firn has been studied thoroughly in Greenland (Ambach, 1985, Pfeffer et al., 1990); Franz Josef Land, Caucasus, Pamirs (Bazhev, 1973); Alaska (Trabant and Mayo, 1985). Direct measurements of this mass balance component have been made on several glaciers in different climate conditions, e.g. Blue in Olympic Mountains (LaChapelle, 1965); McCall in Brooks Range, Alaska (Trabant and Mayo, 1985; Rabus and Echelmeyer, 1998); Franz Josef Land; glaciers on Mount Elbrus, Caucasus, Medvezhiy in Pamir (Bazhev, 1997); Maliy Aktru in Altai (Narozhniy, 1991); Marukh (Krenke et al., 1988); Djankuat, Caucasus (Golubev et al, 1978); Abramov (Suslov et al, 1980); and a few others. The internal accumulation constitutes up to 5-7% of annual accumulation for isothermal glaciers in maritime climate conditions and may be as large as 60 to 70% for cold arctic glaciers (Bazhev, 1997; Rabus and Echelmeyer, 1998). A detailed study on Djankuat Glacier has shown that for isothermal glaciers in maritime climate conditions the amount of IA can be considered quasi-constant from year to year (small amount and small interannual change of IA, compared to the large error of IA measurement) and, due to this, the constant value is recommended to be added to the annual accumulation (Golubev et al., 1978). This is the easiest way to introduce IA to mass balance compilations. However, some experimental work or an appropriate calculation of IA should be done for every glacier at least once.

Another component of glacier mass balance, which is not measured by standard glaciological method, is mechanical ablation, in which iceberg calving is the main component. This especially true for glaciers in coastal Alaska, southern South America, and the sub-Arctic, sub-Antarctic islands. Many other glaciers end in lakes (lacustrine calving) or discharge ice by breakoffs onto land; these are generally smaller components of the overall mass balance. Such "mechanical ablation" needs to be considered in order to obtain a more accurate representation of the climate/mass balance relationship and

to estimate the effect of calving on sea-level rise. The calving of floating glaciers, of course, has no effect on sea level, but most small glaciers have grounded termini.

Glazovskiy (1995) has estimated the rate of calving for glaciers in the Russian Arctic. Brown et al (1982) compiled calving rates for the Alaskan coast. In 1999-2000 mass balance and ice motion measurements were carried out on Mendenhall Glacier (Juneau Ice Field, Alaska). Comparisons of several topographic maps (first is in 1948) and surface profiles determined in 1995, 1999 and 2000 by airborne GPS-guided, laser-ranging elevation profiling system (described in Echelmeyer et al., 1996) have helped to calculate iceberg calving into the lake, which was 6.2% of surface melting value long-term period (1948-2000), and 5.7% in 1999-2000 (Motyka et al., 2001).Unpublished estimates of total calving for Patagonia and Tierra del Fuego have been communicated by P. Holmlund, and for Svalbard by J.-O. Hagen. Meier (unpublished) has made crude estimates of calving discharge for the Canadian Arctic and for small glaciers around Greenland and Antarctica by estimating the width of calving fronts and individual calving rates based on analogous climatic regions. Cogley (unpublished) has compiled a list of known or potential calving glaciers, both tidewater and lacustrine, from World Glacier Monitoring Service sources. A number of other measurements of individual glacier calving, of all types, have been made. IPCC-1995 (Warrick et al, 1996) combined the estimates of Glazovskiy, Brown, Holmlund, Hagen, and Meier, to suggest that iceberg discharge into the sea from small glaciers at the present time totals between 52 and 80 km^3yr^{-1}, but this is an untested and uncertain result.

Internal accumulation and iceberg calving are components, which may partially compensate each other due to their different signs. But this cannot be recommended as a solution to the problem because of the need to determine the components for any particular glacier as well as on regional and global scales. In only a very few cases do the mass-balance data presented in Appendix 3 include internal accumulation and iceberg calving; these cases are noted.

2.2.1. Mass balance of an entire glacier.

To determine an average value of variables of glacier regime many sites have to be installed over the glacier surface in order to cover all possible ranges of changing parameters: elevation (the most important parameter), aspect, different forms of relief. From the results of measurements on many sites the mass balance of entire glacier is calculated:

$$b_n = (1/S)\ [\Sigma(b_{n1}s_1 + b_{n2}s_2 + \ldots + b_{nj}s_j)] \qquad (3),$$

where b_n (also b_a) are mass balances for the entire glacier, b_{n1},b_{n2}, b_{nj} are balances averaged for several sites inside the certain range of elevation (j) with the area s_j; S is the surface area of the entire glacier. Elevation is the main parameter affecting change in climate and mass balance in mountains **(**Barry, 1992). That is one of the reasons for dividing a glacier area into elevation ranges (usually 100 m, but on some glaciers division has been made by 20, 50, 200 m, see Appendix 2) to make calculation of averages more accurate, considering that the variables are homogeneous and isotropic (these are crucial requirements for determining random errors) inside a certain elevation range. This requires a large number of measurements (20-30 poles and at least one pit can be recommended) at any elevation increment (e.g., 100 m), which is nearly impossible in practice. Different opinions exist on how to organize measurements in the most effective way. This problem has been one of the main topics of a number of workshops, including ones in 1994 in Innsbruck (Measurement and Reconstruction of Glacier Mass Balance, 1995, 1996) and in 1998 in Tarfala Station (Methods of Mass Balance Measurements and Modeling, 1999). No consensus appears to have been reached.

2.2.2. Errors

A certain relative error, say 10%, gives different absolute values for different climate conditions - dozens of centimeters for extreme maritime and millimeters for extreme continental glaciers. This relative error budget requirement can hardly be reached for all glaciers.

The first published compilations of worldwide results in the first volume of FoG (1967) stated that, “Detailed studies of the error problem in mass balance determination would be of the greatest value.” Still, it has not become the rule to publish the range of error with the final result of measurement of variables in glacier regime. This shortcoming was pointed out specifically by many respondents to an international questionnaire (see “Questionnaire”, Panel Report prepared by M. Meier for the International Commission on Snow and Ice, unpublished, 1996). The main sources of errors are not properly understood. Furthermore, a glacier is not a laboratory with precise equipment and favorable conditions to run experiments. Harsh climate and many difficulties create problems and cause additional sources of errors.

Five classes of errors are recognized in theory: errors of an object (e.g., the change in surface level); data collector errors (e.g., persons making measurements may have individual errors and differing amounts of experience); instrumental errors; errors of the method applied (e.g., frequency and duration of measurements); rounding; and external errors (e.g., irregularities and roughness at the glacier surface or bad weather conditions at the time of measurement, etc.) (Kemnits, 1961, Dyurgerov, 1972,

Golubev and Dyurgerov, 1976). Here errors recognized by value as well, including: a) gross (egregious) errors, usually large and obvious, which need to be identified and the observation eliminated, e.g., incorrect methodology, mistake in transcription etc.; b) errors or uncertainties that can be treated statistically: random errors (e.g. measurement error), or systematic errors (e.g. bias in methodology). Application of this theory to measurements of glacier regime shows the primary importance of systematic errors, for every class. The main sources of gross errors are in connection with field work in bad weather and difficult environmental conditions, such as low temperature and atmospheric pressure, wind, snow fall, snow avalanches and so on (external errors). Additional error may be derived during the installment of equipment, measuring snow in pits, and probing deep and dense snow frequently (∅strem and Haakensen, 1999; Jansson, 1999). Only experienced field workers and data collectors may recognize such errors, take the necessary precautions, and make corrections immediately after the survey is done. Any change of field personal may introduce new errors. This is very subjective matter and it is difficult to apply reasonable criteria to reduce such errors. Measurement values exceeding 3 standard deviation from a mean or expected value have been rejected in an earlier work (Golubev and Dyurgerov, 1976).

∅strem and Brugman (1991) conclude that any practical method of measurement in the field must include intuitive as well as statistical methodologies. The intuitive skill is obtained only by much experience with the glaciers being measured.

The sources and magnitude of errors may be affected by climate conditions, surface topography, glacier size, and inaccessibility of glacier area for measurements (avalanches, crevasses). A combination of these factors provides a reasonable answer as to why there is no appropriate consensus scheme to estimate the entire range of errors in glacier mass balance studies.

2.2.3. Estimate of accuracy and variability in glacier mass balance

To determine accuracy in mass balance components, the following is commonly applied:

$$\sigma_F = [(\partial F/\partial x)^2\sigma_x^{\,2} + (\partial F/\partial y)^2\sigma_y^{\,2} + \ldots, (\partial F/\partial u)^2\sigma_u^{\,2})]^{1/2} . \qquad (4)$$

σ_F is the square-root error of function F and is assumed to be a measure of random error of uncorrelated variables x, y,…u. Application this to equations (1, 2) gives an estimate of the error of mass balance and seasonal components data at any single site i:

$$\sigma b_i = [(\rho_i^{\,2}\sigma_{.h}^{\,2} + \Delta h_i^{\,2}\sigma_\rho^{\,2})]^{1/2} , \qquad (5)$$

or in relative values,

$$\sigma b_i/b_i = [(\sigma_{\cdot h}/\Delta h_i)^2 + (\sigma_\rho{}^2/\rho_i)^2]^{1/2} \qquad (6)$$

where b_i, ρ_i, $\cdot h_i$ are absolute values of variables and σb_i is the error of "stakes and pits" method.

However, equations 5, 6 include apparent variability, which may include true variability and random error; both are difficult to separate.

From the above it is clear that to estimate the complete error one has to deal with the raw data (results of measurements on sites). As it has been pointed out above, we do not deal with such data and did not use the above given general equation to estimate errors for any particular glacier.

For the entire glacier of area S (or part of it in elevation range s_j) an application of equation (4) gives an error of mass balance for the entire glacier:

$\sigma b_S = [s_1{}^2\sigma b_1{}^2 + \sigma s_1{}^2 b_1{}^2 + s_2{}^2\sigma b_2{}^2 + \sigma s_2{}^2 b_2{}^2 + \ldots \sigma s_j{}^2 b_j{}^2 + s_j{}^2\sigma b_j{}^2]^{1/2}$, (7) where σb_j and σs_j are errors of determining specific mass balance and surface area. Both errors should include the five main classes of errors commonly recognized in the theory (Kemnits, 1961) and applied in glaciology (Dyurgerov, 1972), which, of course, is a complicated task. These errors can partly be reduced by increasing the number of measurements which decreases the random component, but the systematic part can only be reduced by improving the method itself.

It is evident that the standard deviation includes only part of the error. Here, due to incomplete knowledge, we can use only the simplest estimate of the accuracy by applying the square root error $\sigma/n^{1/2}$. These errors are calculated for all variables by columns (temporal square-root errors for individual glaciers) and by rows, which are spatial square-root errors for every particular year (see Appendix 3)**.**

Two drawbacks with the application of this formula must be emphasized:

1) σ is the standard deviation including the measure of spatial or temporal variability, along with the error of the method;
2) n is the number of assumed uncorrelated measurements (stakes and pits in particular case). It is serious simplification, because the results of neighboring stakes are highly correlated (Cogley, 1999)

Number of measurements required. No agreement exists on the matter of how many sites (stakes and pits) are necessary, because two different issues are important.

(1) It is important to get the average value(s) of seasonal components and annual mass balance to be as accurate as possible. The "risk of obtaining non-representative data becomes larger with

decreasing number of measurements" (Jansson, 1999, p. 636). Thus one must be careful about accepting recommendations to substantially decrease the number of stations because of correlations which exist between data at different sites.

(2) It is important to keep the effort within reason. It has been shown most recently that very few stakes are required to estimate mass balance components (results highly correlated), and these several stakes should be placed along the elevation range of a glacier (Cogley, 1999; Fountain and Vechia, 1999). WGMS proposed as the strategy for future mass balance monitoring only 2-3 stakes along the main stream of a glacier (Haeberli, 1995; Hoelzle and Trindler, 1998), which has never been experimentally verified.

In connection with both of these requirements, two examples taken from published data may be helpful to illustrate the problem:

(1) Mass balance of Vernagtferner. The mass balance has been calculated for three ice streams emerging from the wide accumulation area. Mass balances calculated separately for these three parts show very large differences for the 1964-96 period, such as: Brochkogel –7 m, Schwarzwand – 5 m, Taschachjoch – 11 m (data are taken from the Fig. 3 of Reinwarth and Escher-Vetter, 1999). This may be typical for glaciers having several tributaries and local climate conditions. In such cases the number of stakes must be determined for tributaries, separately.

Mass balance measurements by stakes on Variegated Glacier. This surging glacier shows enormously high difference in mass balances between neighboring stakes and changes from year-to-year (FoG, v. 5, see also Appendix, 2). The local topography is very complex, which makes spatial variability in snow depth distribution very high, affecting snow and ice melting during a summer. This means that results are poorly correlated and many stakes are needed to get accurate estimates of mass balance over the area.

To calculate the effective number of stakes (or pits), a study of the spatial distribution of the variable is required to determine the statistical structure (isotropy and homogeneity) of a field, which can be described by autocorrelation functions, (Gandin, 1963). This, possibly, is the most correct approach, but it is labor extensive and time consuming.

The accuracy of mass balance of entire glacier. It follows from the above that careful studies are crucial for estimation of the real accuracy of seasonal components and annual mass balance of a glacier. We assume that these were used to get reasonably correct estimates of accuracy for several individual glaciers, e.g.: Storglaciären, ± 100 mm/yr (Jansson, 1999); Hintereisferner, ± 100 mm/ yr

(Kuhn et al, 1999); South Cascade, ± 100 mm/yr (FoG, 1967); Blue, ± 18% in accumulation zone and ± 10% in ablation zone (FoG, 1967, p. 37); Gulkana, ± 200 mm/yr; Wolverine, ± 340 mm/yr; Sherman, ± 250 mm/yr; Maclure, ± 200 mm/yr; Grasshopper, ± 200 mm/yr (1964-70 period, FoG, 1973); Deception Island - G1, ± 130 mm/yr (1969-71 period, FoG, 1973); McCall Glacier, ± 80 mm/yr (Rabus, Echelmeyer, 1998); White, ± 200-250 mm/yr (±40-50, mm over about 30 years, Cogley et al., 1995); Kozelskiy, ±130 mm/yr (Vinogradov and Muraviev, 1992)

From these examples the practical conclusion is: "The accuracy of the mass balance data is in the most cases closer to the decimeter range" (p. 21, FoG, 1998).

2.3. LARGER ERRORS

The random small errors are, most likely, not the main sources of inaccurate determination of variables of glacier regime. Gross (egregious) and systematic errors are more important for data of many glaciers. It is also important to separate errors in glacier mass balance for a single glacier and mass balance calculation for large aggregations/numbers of glaciers.

Gross errors common for individual glaciers. Main sources include: (1) overestimate of summer balance or ablation because melt water did not run off but was trapped by internal refreezing. This causes a calculated mass balance which is more negative; (2) underestimate of total ablation due to loss of ice mass mechanically, e.g., calving of ice along glacier boundaries, iceberg calving to lakes (e.g., Gries, Austdalsbreen, Svartisheibreen and others) or to the ocean (many tidewater glaciers in Gulf of Alaska, or Patagonia Ice Fields, Svalbard, others).

Working with data for all glaciers we found that a large error may be the determination of glacier area. In Table 2.1 one can find examples of large uncertainties in such data. In many cases it is difficult to calculate precisely the surface area of a glacier; e.g., boundaries between glaciers are not clearly defined, or old maps are used over long periods of time in order to calculate mass balance and its components.

Globally averaged glacier mass balance. A close relationship exists between glacier mass balances calculated for glaciers with time series of 20-years and longer, and those with time series of 30 years and longer (Fig. 2.4).

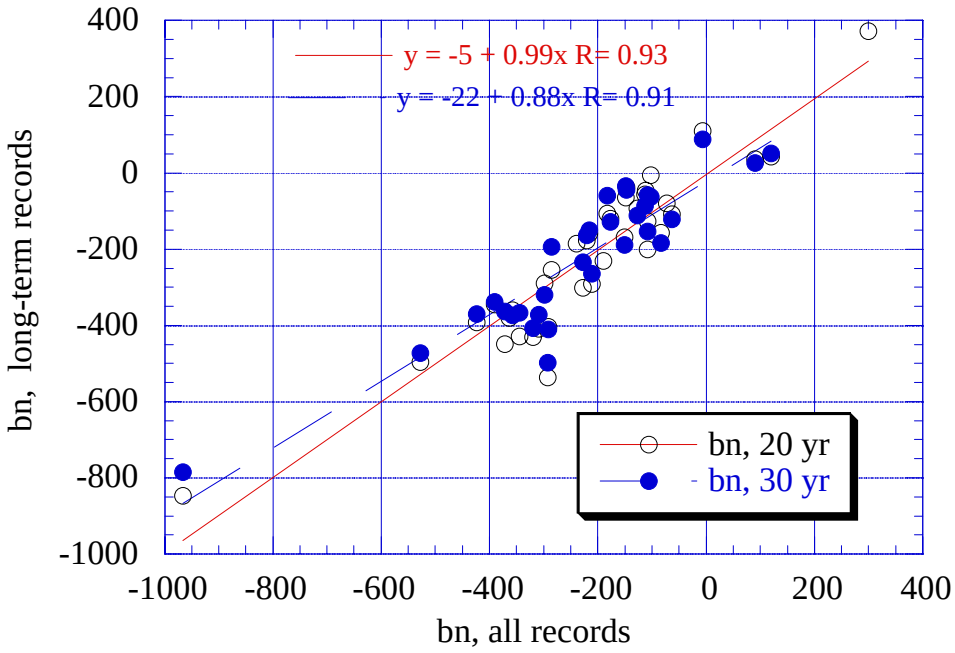

Fig. 2.4. Correlation between all mass-balance records and records 20-years and longer (1), 30-years and longer (2).

To get accurate knowledge of the glacier contribution to the global water cycle (including sea-level change) it is crucial to calculate characteristics of glacier regimes at large scales, such as river basins or mountain ranges. The surface area and average values of variables must be known to accomplish this task. These are known poorly, and they are main sources of systematic errors for the global assessment. The main problems here are:

1. Glacier inventory data exist for only for about 10-20% of all glaciers in the world (Bahr and Meier, 1996). The most recent inventory compilations list 71,558 glaciers (http://www.geo.unizh.ch/wgms);

2. Glacier area is subject to constant change in time;

3. Area of individual glaciers around Antarctic Ice Sheet has not been determined yet; e.g., Shumskiy (1969) estimated that these ice caps around West Antarctic ice sheet have a total area of about 164×10^3 km^2. Weidick and Morris (1998) proposed that the aggregate area of all local glaciers around Antarctica may occupy of about 5% of Antarctic Ice Sheet or about 700×10^3 km^2. In our most recent global mass-balance assessment we conservatively used an area of 70×10^3 km^2 to calculate the mass balance of these glaciers (Dyurgerov and Meier, 1997a);

4. It is difficult to compare the very short mass-balance time-series on glaciers in many regions (Russian Arctic Islands, individual glaciers around Greenland Ice Sheet, Sub-Antarctic, Himalayas, New Zealand, Iceland, South America), with the relatively long-time series in Europe, North America, Canadian Archipelago, and mountain chains in the southern part of FSU (Caucasus, Tien Shan, Pamir, Altai). This unequal spatial and temporal coverage makes global assessment very complicated; in addition, the global estimation may be biased toward maritime climate conditions, as more than 60% of long-term mass balance records are from Alps, Scandinavia, and northwestern Northern America;

5. The lack of data on mass balance of very large glaciers (Alaska, Central Asia, Patagonia Ice Fields), which may have different mass balances compared to the small and medium-size glaciers that are commonly used for mass balance study;

6. Very small glaciers, those less than 1 km^2 in area, are poorly inventoried and their regime may be different from that of larger glaciers (Kuhn, 1995). The extreme turnover value (about 20 m/yr in water equivalent) and huge interannual variability is demonstrated by the snow-patch Hamagury Yuki (Japanese Alps) and the Abramov snow patch (situated in the vicinity of Abramov Glacier, Pamir). We do not know, even roughly, the area of these “snow patches - nearly glaciers” (translated from Pertziger, 1981). These may be a small fraction of the global coverage, but in some regions they are important water sources.

2.4. ERRORS IN DATA TRANSMISSION AND PUBLICATION

There are likely to be errors in Appendices 1-4, either inadvertently propagated from errors in the original sources, or introduced in transcription and conversion. The data presented in Appendix 2 have also been extracted from many sources, digitized, quality checked (see explanation below), and used to calculate, or recalculate, variables for entire glaciers (Appendix 3). In many cases differences

were found between published and recalculated values of glacier area, seasonal components, and annual mass balances. The results of these comparisons are given in Table 2.1.

Data on mass-balance variables versus altitude are basic for calculation of variables for an entire glacier, and it is unfortunate that it has not become the rule to publish all such results of measurements along with results averaged over entire glacier area.

Results presented in Appendices 2 and 3 were basically obtained using the glaciological method. Still, there are many modifications of the method in use, at least eleven, according to Østrem and Brugman (1991). It is difficult (if not impossible) to reconstruct what modification were used to get values for any particular glacier and year. The original definitions of variables have generally been preserved in Appendices 2 and 3; these indicate the system used in field work and data presentation. In these appendices, b_n, b_w, b_s, means the annual, winter and summer balances in either the stratigraphic, fixed-date, or combined systems (Mayo et al, 1972). In several cases the annual values of snow accumulation, ablation, mass balance (c_t, a_t, b_a) are given. Data obtained by the "alpine system" are given as a_c (net accumulation), a_a (net ablation), and b_n (net balance). Obviously, substantial differences exist between seasonal variables as shown above, but b_a is nearly equal to b_n, by the definition of the method.

2.5. HOW PRECISE CAN MASS-BALANCE DATA BE?

The usual approach to the estimation of data quality is to compare data obtained by one method with one or more independent measurements. One common approach is to verify data obtained by the glaciological method by comparing them with the results of repeated geodetic/topographic surveys. This has been done for several glaciers in the world. The comparisons shown in Table 2.2 suggest that, in general, the two methods only give comparable results for a few cases (glaciers and periods). Discrepancies between the two methods may have different signs (plus and minus) for different glaciers and for different periods. For some glaciers the discrepancy is large (Blue, Storbreen), but for others it is very small (Careser, Djankuat). There are several reasons discussed in detail by Golubev et al., 1978; Andreassen, 1999; Conway et al, 1999; Krimmel, 1999; Østrem and Haakensen, 1999; and others. One important conclusion from these comparisons and discussions is that the topographic method may serve as a control for many cases. Obviously two methods are needed to get sufficient data control.

The case of Alfotbreen is of special interest. The calculated mass balance for this glacier applies to about 25% of the entire Alfotbreen ice cap area (Østrem and Haakensen, 1999). The accumulation

area of this ice cap is shared by several ice streams (Hansebreen, and other) which flow down from Alfotbreen ice field. This is a case where the ice divide between different ice streams migrates in response to changes of snow accumulation, especially in extreme years. Due to the change in time of ice divide position, part of ice flow may change direction from one basin to the other; stealing one part from the other. This was established, possibly for the first time, for Blue Glacier (Waddington and Marriott, 1986): " Using an average divide position for all balance years is also not correct. Extremes of net balance, occurring in years when the divide was far from its average position, would introduce errors into the budget calculations" (p. 176). Popovnin (1996) has also established ice divide migration for two glaciers in Caucasus (Djankuat and Lekzyr) having a common accumulation area along the main mountain divide. The other remarkable example is for two glaciers in the South Patagonian Ice Field, O'Higgins and Pio XI, which share an ice divide. The first lost surface area of 50 km^2 and the second gained 60 km^2 over the same period of time (Warren and Aniya, 1999). This reveals that mass balance measured by the glaciological method can only be compared with the mapping method with great caution, keeping in mind the possible change in an ice divide. This and several other sources of error have recently been analyzed and partly estimated for Blue Glacier (Conway et al., 1999).

The topographic (mapping) method is also not free from errors. Haakensen (1986) has shown that three main sources of errors are common for mass change determined from this method, namely uncertainty in map compilation, height determination, paper shrinkage and drafting. He determined these errors for Hellstugubreen and Grasubreen as 2.3 m in water equivalent over the 1968-80 and 1968-84 periods, correspondingly.

2.6. SEARCHING, DIGITIZING AND CHECKING DATA QUALITY.

It is worth repeating that data in Appendixes 2 and 3 are not just simple transcriptions. All possible effort has been made to track down original sources of data, rather than rely on secondary sources, but in the majority of cases data compiled by WGMS have been cited, mostly from volumes of FoG, and in less extent from GMB. Many other sources of information have also been used. References to these sources are given in Appendix 1. Several additional sources of information have been generously provided by G. Cogley.

Working with data included several steps: digitizing, control recalculation, and verification. Mass-balance component data for about 80 glaciers were recalculated using results of measured values versus elevation, and surface area by elevation ranges (Appendix 2).

2.6.1 Checking data quality

1. The first step. This includes the visual identification of gross errors. There are several examples of such gross errors (see Table 2.1. and Appendix 2). In all cases an independent source of information was sought to get true data. In other cases the mass balance was recalculated if possible.

2. The second step. This involved choosing the more correct source from the number of publications for several glaciers. Usually the latest publications were considered as most accurate. In such cases several references on sources are given in Appendix 1. For glaciers with no given information as to what source is better, the authors were contacted directly. Remarkable examples of how data appeared to be changing in time due to improvements in maps, recalculations of previous results, etc.) are given in Table 2.3 (Gries and Silvretta Glaciers).

3. The third step. This includes recalculation of mass balance and seasonal components. The data of area and variables distributed by altitudinal ranges for about 80 glaciers have been recalculated. These data are also presented in Appendix 2 (bold face).

We have found that area versus altitude distributions have been calculated precisely enough or with small errors in many cases. In some cases errors in area have been found to be substantial (see Table 2.1). The most common problems with the surface area are:

(1) Area values have been considered constant from year to year, and then presented as a stepwise change at the time of a resurvey. In reality these changes go smoothly, with small change from year to year. We made interpolations, where it was possible, between data taken between the times of geodetic surveys.

(2) Old topographic maps had been used for the entire period of observation (area had not been adjusted to change in volume). Mass-balance data were recalculated if area had been given as constant over the period of measurements but cumulative mass balance (volume change) showed large negative numbers (Sarennes, Abramov, and others, see Table 2.3. and Appendix 2).

The comparisons made in Table 2.1 (also in 2.3) may serve as examples of errors common when data are transmitted, recalculated, and prepared for publication. All these steps may cause errors, and the data presented in Appendixes 1-4 may not be free of this kind of error.

Over the whole period of working with the data colleagues have been contacted, sending them data and receiving in return improved results or additional information. This has been done for glaciers in Alps (M. Kuhn, M. Aellen, O. Reinwarth, M. Funk), Pyrenees (R. Martines Costa), Scandinavia and

Svalbard (G. Østrem, L. Andreassen, P. Jansson, J-O. Hagen), Iceland (H. Björnsson and O. Sigurdsson), Alaska (D. Trabant), S. Cascade (R. Krimmel), N. Cascade glaciers (M. Pelto), Blue Glacier (H. Conway and L. A. Rasmussen), Juneau Ice Cap and Lemon Creek Glacier (M. Miller and M. Pelto), Africa (S. Hastenrath), Central Asia (V. Konovalov, F. Pertziger, G. Kamnyanskiy, Zichu Xie, V. Uvarov, V. Kuzmichenok), Altaiy (Y. Narozhniy), Caucasus (V. Popovnin), Canadian Arctic Archipelago (G. Cogley, R. Koerner), New Zealand (T. Chinn), and Antarctica (A. Fountain).

These improvements caused many substantial changes to the originally published data of variables of glacier regime. It must be noted specifically that we have certainly failed to eliminate all errors, and we cannot guarantee that we have not introduced additional errors.

Table 2.1. Comparison of published and calculated variables

α – difference between published and recalculated annual and seasonal mass balances, averaged over period o time; **β –** maximum difference between published and recalculated; **σ –** standard deviation calculated between published and recalculated; **δ –** averaged over period of observations difference between published and calcul glacier surface area (in km^2); **ε –** maximum difference between published and recalculated data of surface glac area (in km^2); **--** means absence, or too few data to calculate differences; 0 – means no difference between published and calculated data have been found.

Glacier	α	β	σ	δ	ε
Abraham	500	552	-	-	0.243
Hidden	3	-	-	-	-
Minaret	27	31	-	-	0.050
Superguksoak	3	-	-	-	
Andrei	4	11	5.9	-	-
Bench	0	4	2.9		
Bridge	37	505	130.0	-	-
Helm	1	48	8.9	0	0.000

Place	13	912	105.0	0.0025	0.020
Sentinel	3	177	27.7	0	0.000
Sykora	5	32	11.0	-	-
Tidemann	226	1366	463.0	0.027	0.027
Woolsey	7	150	45.0	0	0.000
Peyto	9	474	52.0	0.002	0.010
Ram River	3	58	14.0	-	-
S.Cascade	4	193	51.0	-	-
Austre Broeggerbreen	210	661	194.0	-	-
Svartisheibreen	0	9	4.8	0.02	-
Austre Okstinbreen	1	8	3.1	0	-
Trollbergdalsbreen	1	18	6.6	0.0018	0.010
Storglombreen	0	5	-	-	-
Hoegtuvbreen	2	8	3.0	0	0.000
Langfjordjokelen	51	243	82.6	-	1.490
Storsteinfjellbreen	2	21	5.5	0.006	0.020
Cainhavarre	3	9	2.3	-	-
Alfotbreen	3	198	47.5	0.0074	0.081
Hardangerjokulen	16	26	9.0	0.05	0.350
A. Memurubre	0	5	2.8	0.0073	0.010
V. Memurubre	1	9	4.2	0.0005	0.010
Storbreen	2	8	3.3	-	-
Nigardsbreen	1	10	0.3	0.002	0.020
Tunsbergdalsbreen	0	7	3.2	0.002	-
Vesledalsbreen	3	6	-	-	-
Jostefonn	1	5	-	-	-
Austdalsbreen	330	360	-	-	-
Bondusbreen	0	125	52.5	0.001	0.002
Harbardsbreen	3	4	-	-	0.040

Rabots	2	30	7.0	0.035	0.064
Storglaciaren	4	112	24.4	0.012	0.080
Riukojietna	3	7	3.9	-	-
Marmaglaciaren	5	47	20.2	-	-
Rhone	1	5	3.6	-	-
Limmern	4	46	15.0	0	0.054
Plattalva	0	1	-	-	-
Gries	6	108	40.0	0.013	0.046
Silvretta	28	162	45.0	-	-
Nord. Schneeferner	1	-	-	-	-
Hintereis	2	23	6.3	0.0117	0.146
Kesselwand	3	28	8.7	0	-
Vernagt	12	279	55.9	0.024	0.036
Sonnblick	0	12	3.8	0.0044	0.010
Ochsentaler	2	19	8.5	-	-
Langtaler	2	29	11.9	0	-
Wurtenkees	24	205	50.0	0.0009	0.002
Jamtal	3	4	-	-	-
Vermunt	1	6	3.4	-	-
Careser	1	46	6.9	0.0002	0.001
Marmolada	128	380	-	-	0.256
Lewis	11	49	22.4	0	0.000
Marukh	80	256	94.0	-	-
Djankuat	36	329	106.0	-	-
Garabashi	0	5	2.5	-	-
No 131	0	2	-	-	-
Leviy Aktru	18	68	23.0	-	-
Maliy Aktru	21	200	73.0	0	0.000

Praviy Aktru	27	51	18.0	-	-
No 125/Vodop.	3	5	1.6	-	-
Muravlev	20	43	14.0	0	0.000
GL#1,E.Branch	19	75	-	-	-
GL#1,W.Branch	28	99	33.7	-	-
Kozelskiy	1	33	11.0	-	-
Meren	-	2	-	-	0.010
Carstenz	-	21	-	-	0.010

Table 2.2. Comparisons of annual mass balances measured by topographic method and determined by glaciological method

Glacier	Period	Topographic, m/yr	Glaciologic, m/yr	Difference, m/yr	Reference
Storbreen	1940-97	-0.18	-0.29	0.11	Andreassen, 1999
Storbreen	1940-51	-0.4	-0.6	0.2	Andreassen, 1999
Storbreen	1951-68	-0.1	-0.3	0.2	Andreassen, 1999
Storbreen	1968-84	-0.5	-0.4	-0.1	Andreassen, 1999
Storbreen	1984-97	0.2	-0.1	0.3	Andreassen, 1999
Alfotbreen*	1969-88	-0.31	0.18	-0.13	Østrem and Haakensen, 1999
Hellstugubreen	1968-80	-0.54	-0.45	-0.09	Haakensen, 1986
Grasubreen	1968-84	-0.51	-0.41	-0.1	Haakensen, 1986
S. Cascade	1970-97	0.81	0.56	0.25	Krimmel, 1999
Blue	1957-95			0.37	Conway et al., 1999
Djankuat	1968-74	-0.32	-0.35	-0.03	Golubev et al., 1978
Careser	1967-90	-0.54	-0.55	-0.01	Giada and Zanon, 1996
Gries	1961-79	-0.09	-0.06	0.03	FoG, 1998
Gries	1979-86	-0.3	-0.25	0.06	FoG, 1998
Gries	1986-91	-1.02	-1.08	0.06	FoG, 1998

The examples show that uncertainties between two methods may have signs plus or minus for different glaciers and for different periods (Storbreen, e.g). Another words, measurements made by glaciological method give more positive, or more negative balance than by topographic. For some glaciers uncertainty is very large (Blue, Storbreen) for others are very small (Careser, Djankuat). There are many possible explanations discussed in Golubev et al., (1978), Andreassen (1999), Conway et al., (1999), Krimmel (1999), Østrem and Haakensen (1999), and others. The conclusion from these comparisons and discussions is that topographic method may serve as the controlling for some glaciers, but may not for others. Obviously two methods have to be used to get independent data control.

Table 2.3. Comparisons of mass balance and surface area calculations for two glaciers

Glacier	Gries	Gries	Gries	Gries	Gries	Gries	Gries	Gries
	Zurcher Geogr. Schriften, 1991	NIMBUS, 1994 v. 8	FOG v.VI 1993 Table CCC	GMB, v. 1 v1, 2, 3	FoG, v.3 tables D (v.3) or tables C FOG,V.4-6	Reference specified	FoG, v.3 tables E (v.3) or tables CCC FOG, V.4-6	Reference specified
Years	bn	bn	bn	bn	bn		bn	
1960								
1961								
1962	-847	-850	-890		-1068	FOG,V.2,T.9.2.16.		
1963	195	200	30		31	FOG,V.2,T.9.2.16.		
1964	-985	-990	-660		-862	FOG,V.2,T.9.2.16.		
1965	693	690	510		925	FOG,V.2,T.9.2.16.		
1966	-62	20	-280		-279	FOG,V.2,T.9.2.16.		
1967	325	400	20		260	FOG,V.2,T.9.2.16.		
1968	567	620	410		332	FOG,V.2,T.9.2.16.		
1969	466	490	470		269	FOG,V.2,T.9.2.16.		
1970	-538	-500	-540		-519	FOG,V.2,T.9.2.16.		
1971	-1064	-1040	-970		-1070	FOG, V.3, T.D	-1070	FOG, V.3, T.E
1972	445	460	380		450	FOG, V.3, T.D	450	FOG, V.3, T.E
1973	-1120	-1060	-1050		-1120	FOG, V.3, T.D	-1120	FOG, V.3, T.E
1974	-156	-150	-30		-160	FOG, V.3, T.D	-160	FOG, V.3, T.E
1975	280	290	280		280	FOG, V.3, T.D	270	FOG, V.3, T.E
1976	-1056	-1020	-990		-1056	FOG, V.4	-1056	FOG, V.4, T.CCC
1977	1274	1280	1290		1263	FOG, V.4	1263	FOG, V.4, T.CCC
1978	959	970	970		950	FOG, V.4	950	FOG, V.4, T.CCC
1979	-885	-860	-880		-874	FOG, V.4	-874	FOG, V.4, T.CCC
1980	719	720	660		719	FOG, V.4	719	FOG, V.4, T.CCC
1981	-232	-230	-350		-232	FOG, V.5	-232	FOG, V.5, T.CCC
1982	-879	-880	-910		-879	FOG, V.5	-879	FOG, V.5, T.CCC
1983	-550	-550	-580		-550	FOG, V.5	-550	FOG, V.5, T.CCC
1984	-3	0	-70		-3	FOG, V.5	-3	FOG, V.5, T.CCC
1985	-335	-340	-1210		-335	FOG, V.5	-666	FOG, V.5, T.CCC
1986	-712	-760	-690		-690	FOG, V.6	-690	FOG, V.6, T.CCC
1987	-884	-630	-940		-940	FOG, V.6	-940	FOG, V.6, T.CCC
1988	-1100	-840	-1100	-950	-1100	FOG, V.6	-1100	FOG, V.6, T.CCC
1989	-1040	-1030	-1040	-1020	-1040	FOG, V.6	-1040	FOG, V.6, T.CCC
1990	-1890	-1740	-1890	-1890	-1890	FOG, V.6	-1890	FOG, V.6, T.CCC
1991								
1992								
1993								
1994								
1995								
1996								
1997								
1998								
Average	**-290**	**-253**	**-347**		**-317**			

Glacier	Silvretta	Silvretta	Silvretta	Silvretta	Silvretta	Silvretta
	FoG Volume VI, Table CCC p. 243-247	Jiyang Chen Zurich, 1991	FoG v. III- VI, Tables D & C and v. 7, Tab.CCC GMB, v.5, 6	Recalc. by M.D. in 2000	FoG Volumes, III- VI, Tables D & C	FoG Volume VI, Table CCC and v. VII
Years	bn	bn	bn	bn	Area s, km^2	Area s, km^2
1960	280	483	480	544	3.22	3.15
1961	590	-99	330	387	3.22	3.15
1962	-350	-815	-560	-488	3.22	3.15
1963	-870	-1022	-990	-919	3.22	3.15
1964	-1260	-1495	-1410	-1312	3.22	3.15
1965	1340	1191	1340	1388	3.22	3.15
1966	1310	1213	1210	1284	3.22	3.15
1967	440	351	350	411	3.22	3.15
1968	650	636	640	704	3.22	3.15
1969	10	-259	-260	-181	3.22	3.15
1970	210	129	130	186	3.22	3.15
1971	-470	-917	-920	-833	3.22	3.15
1972	-160	-265	-270	-199	3.22	3.15
1973	-1130	-1213	-1210	-1212	3.15	3.15
1974	730	744	740	745	3.15	3.15
1975	730	791	790	792	3.15	3.15
1976	-350	-510	-510	-509	3.15	3.15
1977	600	620	620	620	3.15	3.15
1978	1010	937	940	926	3.15	3.15
1979	-50	-56	-60	-59	3.15	3.15
1980	1090	1114	1110	1030	3.15	3.15
1981	350	348	350	512	3.15	3.15
1982	-290	-211	-210	-211	3.15	3.15
1983	-530	-547	-550	-547	3.15	3.15
1984	360	281	280	280	3.15	3.15
1985			510	509		3.15
1986			-290	-290		3.15
1987			-370	-369		3.15
1988			-600	-604		3.15
1989			-250	-251		3.15
1990			-570	-576		3.15
1991			-1180	-1178		3.15
1992			-830	-826		3.15
1993			-230	-229		3.15
1994			-670	-668		3.15
1995			200	204		3.15
1996			-70	-70		3.15
1997			540	540		3.15
1998			-1530	-1530		3.15
Average	**170**	**57**	**-76**	**-51**	**3.186**	**3.150**

Chapter 3. Results and Analysis

In this chapter some results derived from data presented in the Appendices are summarized and short, preliminary explanations with possible application are given.

3.1. RESULTS

3.1.1. Number of Records and Surface Area of Glaciers.

The number of glaciers with mass-balance records reached 30 at the beginning of the 1960s and increased up to 70 by the end of the 1960s, exceeding 90 in some years (Fig. 1). Total surface area of glaciers covered by measurements has been the subject of large fluctuations from year to year for the period of consideration (Fig. 3.1, 3.2).

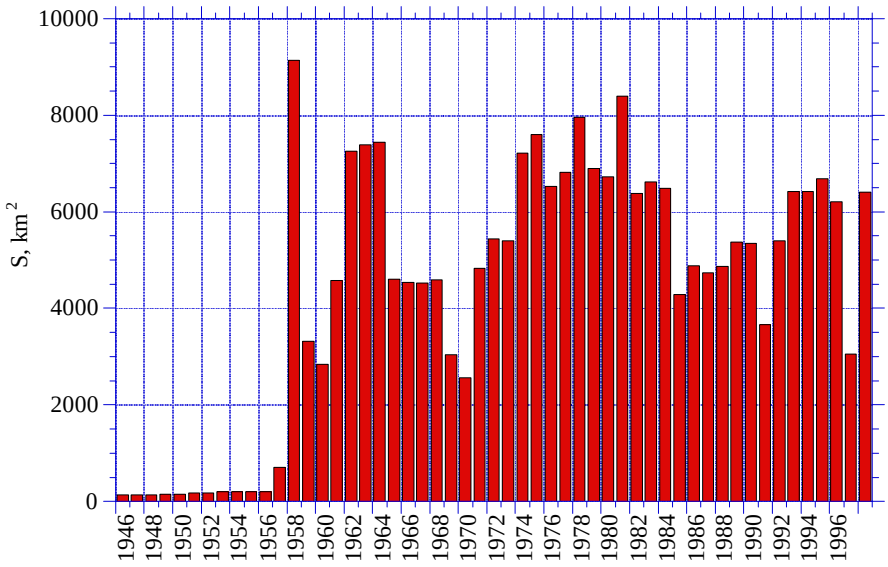

Fig. 3.1. Aggregate surface area of mountain and subpolar glaciers where mass balance measurements were carried out.

One of the reasons for large fluctuations has been the occasional contribution of large glaciers with short-term (one or a few years) of mass balance records, such as East and South Ice, Svalbard (area

7895 km^2, in 1958), Barnes Ice Cap (area 3090 km^2, in 1962-64), Vavilova Ice Cap (area 1817 km^2 1974-81, 1986-88), Columbia Glacier (area 1090 km^2, 1978) and others.

The aggregate area of small glaciers covered by mass-balance measurements reached about 3000 km^2 at the end of 1950s and averaged 5725 km^2 for the 1961-1998 period, which is about 0.8-0.9% of the area of all small glaciers on Earth estimated by Meier and Bahr (1996). Because the fraction of measured glaciers is very small and possibly biased to the direction of relatively small maritime glaciers, it is difficult to extrapolate the glacier regime data to the global scale.

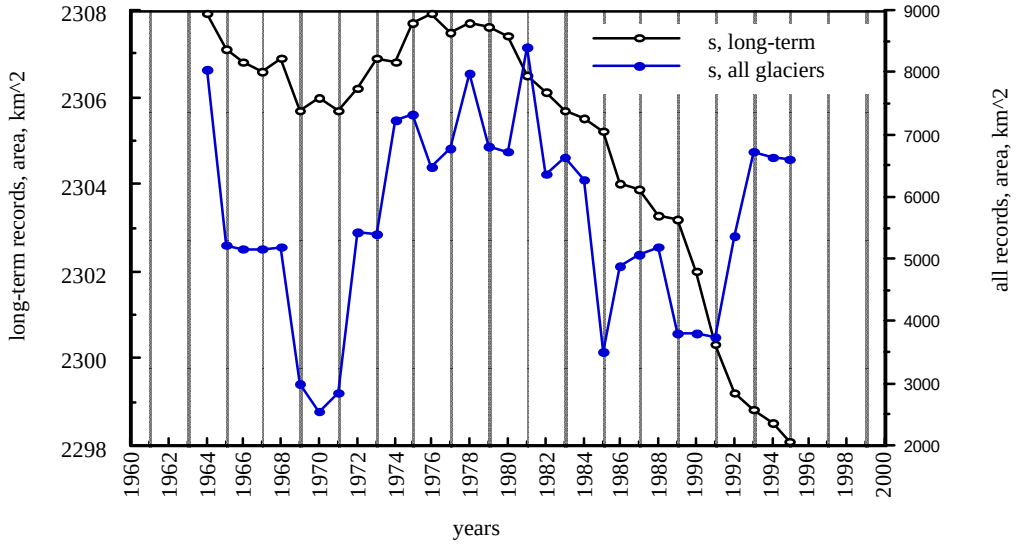

Fig.3.2. Area of glaciers where mass-balance measurements were carried out showing all records including those with large annual variability, and calculated for the 44 glaciers having long-term mass-balance records.

There are two main reasons for the change in apparent glacier area over the last 50 years. The first is due to new glacier inventories having been published. The second is the change in glacier area

due to glacier wastage as a response to climate. To estimate the area change due to climate more correctly, 44 glaciers with mass-balance records of 32 years (1964-95) have been selected from the database. The aggregate area of these glaciers decreased from 2308 to 2298, or 0.4% (Fig. 3.2). In some areas, specifically in Central Asia the retreat is much faster and reached up to 1% per year (Makarevich and Liu, 1995; also Uvarov, private communications, 1999).

3.1.2. Glacier Mass Balance.

Spatial averages of mass-balance values show large interannual fluctuations, especially in the period 1946-1960 when measurements were carried out on less than 30 glaciers annually (Fig. 3.3a). Standard square root error values are very large also (Fig.3.3b). This was the reason why only the period starting in 1961 was taken into consideration in the previous global analysis by Dyurgerov and Meier (1997a,b).

Annual mass balances calculated for all glaciers, for the series of records longer than 20 years, and for those with series longer than 30 years, show the same tendencies to increased negative values starting in the middle of 1970's, with an accelerating annual rate at the end of 1980's (Fig. 3.3a,b,c). Braithwaite (2001), however , does not find evidence of this trend in his analysis of similar data set.

Extreme values calculated for relatively long time series (20 years and longer) show increases of maximums and minimums (Fig. 3.3d), and, due to this, increases of standard deviation values/square root error, especially since the 1980s (Fig. 3.3b and 3.3c). This is possibly connected with data uncertainty but more likely may be due to climatic fluctuations.

Cumulative values of mass balances (Fig. 3.3e) show that glaciers listed in Appendix 3 lost about 15-16 m of ice (in water equivalent) over the second half of the previous century. These values are likely overestimated because only a few glaciers, mostly from maritime regions (Alps, Scandinavia, NW USA), were used to calculate averages over the 1946-1960 period.

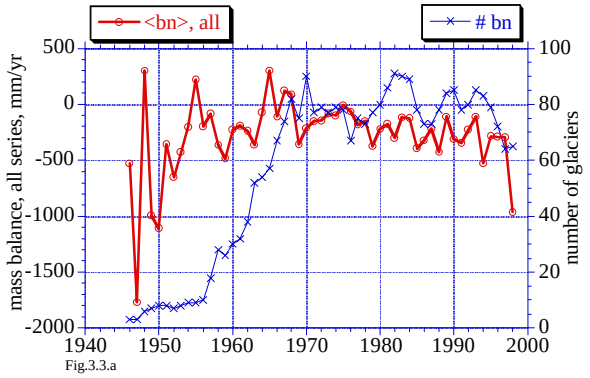

Fig.3.3.a

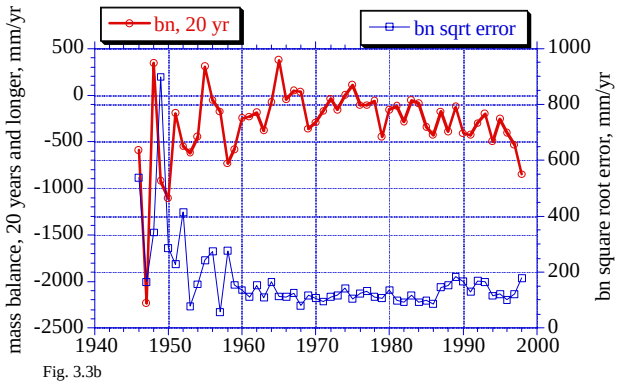

Fig. 3.3b

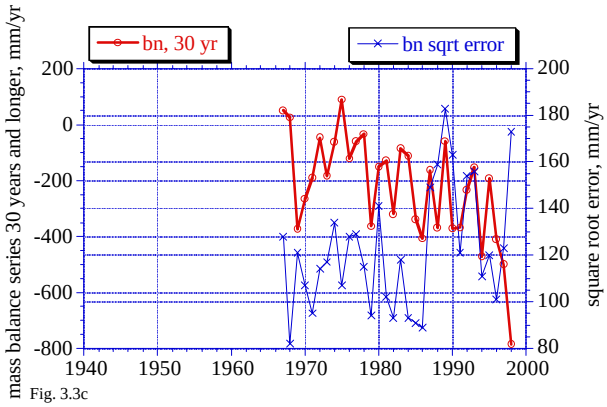

Fig. 3.3c

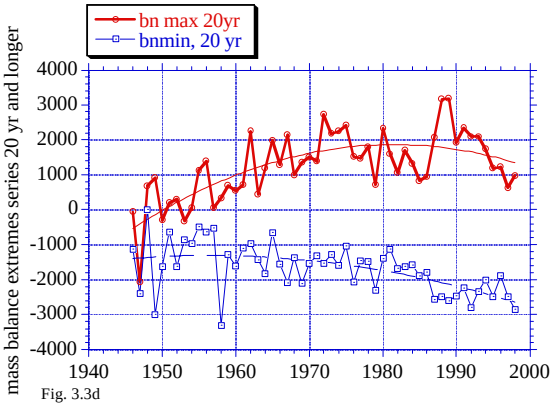

Fig. 3.3d

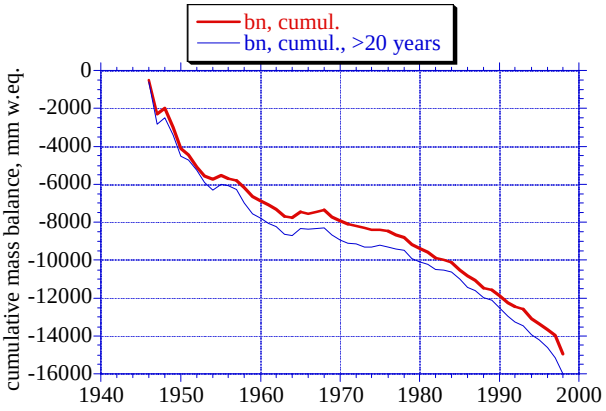

Fig. 3.3e

Fig. 3.3. (a) Arithmetic mean of glacier mass-balance measurements, calculated annually since the beginning of measurements, together with the number of these glaciers. Mean mass balances calculated for all glaciers are also presented in Appendices 1 and 3. (b) Glacier mass-balance calculated for glaciers with mass-balance records 20 years and longer, and square-root error. (c) Glacier mass balances calculated for glaciers with mass-balance records 30 years and longer, and square-root error. (d) Extreme mass-balance values for glaciers with mass-balance records 20 years and longer. (e) Cumulative mass-balance sums given for all measurements, and for those with records 20 years and longer.

3.1.3. Specific components.

Seasonal Mass-Balance Components

Winter and summer mass balances show strong interannual fluctuations (Fig. 3.4a and 3.4b), and also significant trends, including an **increase of b_w from the 1960s, and b_s since the middle of the 1970s**. The increase in standard deviation values for b_w and b_s is explained, partly, by the introduction into the sample data of snow patch Hamagury Yuki (Japanese Alps) to calculate average values. The b_w and b_s of this snow patch are absolute extremes that have never been measured elsewhere on Earth (Appendix 3). Our sample also demonstrates another remarkable feature. **Maximum values of b_w and b_s have started increasing since the 1960s** (Fig. 3.4c and 3.4d). It is caused, most likely, by introduction to the global sample of the results of mass balance of very small glaciers over the world, carried out in Alps, North Cascade Range, Front Range (USA), Hamagury Yuki (Japan). The mass balance of very small glaciers, particularly of snow patches, fluctuates from year-to-year much more than that of large glaciers (Glazyrin et al, 1993, Kuhn, 1995). Figures 3.4e and 3.4f show that the magnitude of values of one small snow patch affect averages of b_w and b_s of the entire sample of 60-80 glaciers. Annual mass balance and seasonal components weighted by area give more realistic estimates of large-scale glacier regime.

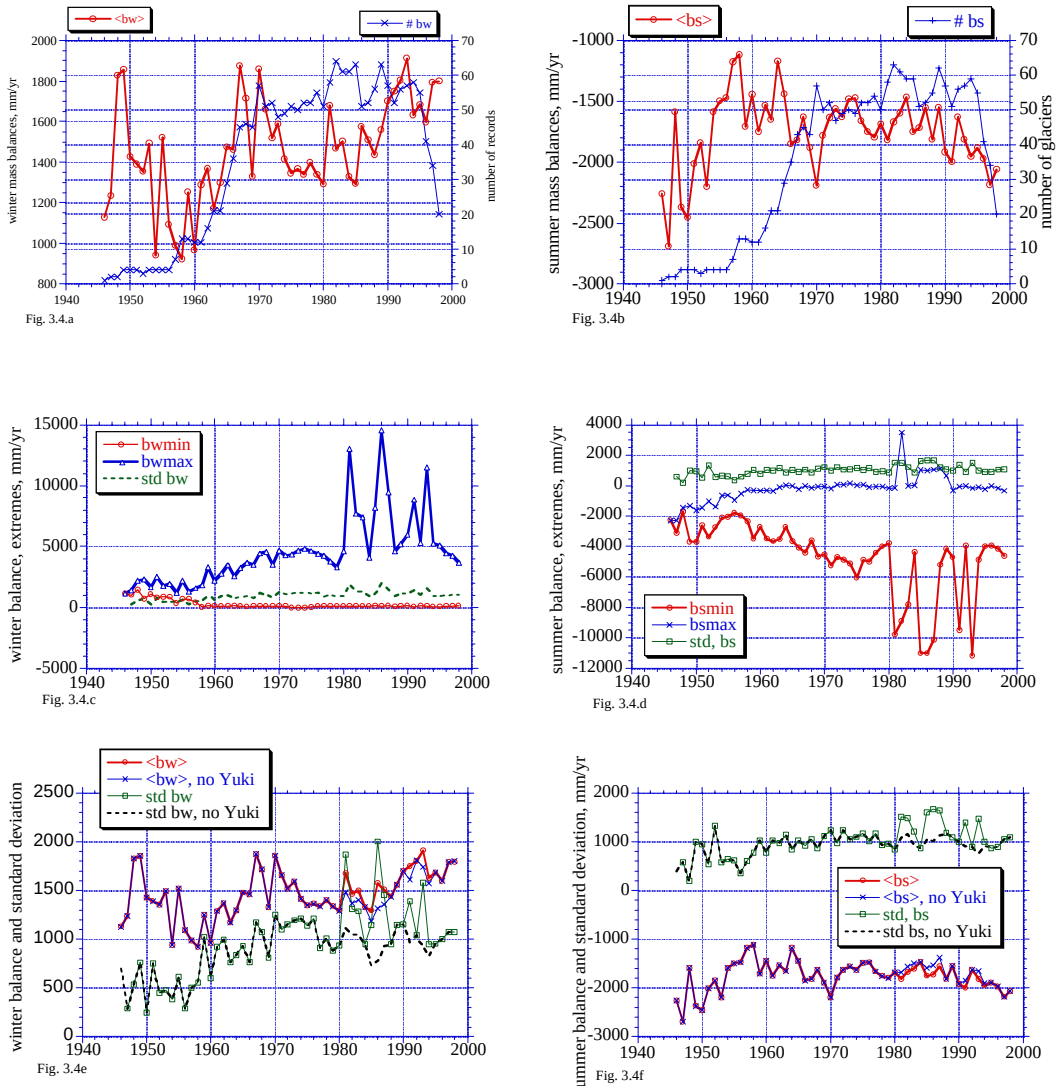

Fig. 3.4. (a) Winter mass balance and number of measurements (glaciers). (b) Summer mass balance and number of measurements (glaciers). (c) Extremes (minimum, maximum) and standard-deviation values of winter mass balance. (d) Extremes (minimum, maximum) and standard-deviation values of summer mass balance. (e) Winter mass balances and standard-deviation values calculated for all glaciers (number of glaciers annually is given in Fig. 1) with one small snow patch Hamagury Yuki and without. (f) Summer mass balances and standard-deviation values calculated for all glaciers (number of glaciers annually is given in Fig. 1) with one small snow patch Hamagury Yuki and without (a more detailed explanation is given in the text).

Equilibrium-Line Altitude (ELA).

All ELA series show great variability from year to year with differences of several hundreds of meters between maximum and minimum ELA values corresponding to balance years with highly negative or positive mass balance respectively. The small number of observations is an obvious restriction to the analysis of long-term changes in ELA. As seen in Fig. 3.5a, the number of observations have now reached acceptable statistics.

There are more then 20 measurements in 1962. Since that year interannual fluctuation of ELA decreases and appears to be increasingly reliable for use in global analysis. Since 1960's the standard deviation and square root values show relative stability in time; square root error is stabilizing at the level of 150-170 meters with the relative error of around 6-7%. The increase in ELA from 1960 to 1998 is about 200 meters and corresponds to the increase of negative values of mass balance, or, in another words, with the wastage of glaciers**. It is striking to note that the secular variations of glacier ELAs was only of the order of tens of meters per century when calculated in the 1980s using data for 8 Alpine glaciers (Braithwaite and Müller, 1980).** The temporal increase in standard deviation of ELA is large. This implies that standard deviation increase due to climate variability.

Accumulation-Area Ratio.

Only in the middle of 1960s did the number of measurements reach the statistically acceptable level to determine average and standard deviation values of AAR. Mean values in Fig.3.6a are given for all glaciers and also for the long-term series. These demonstrate a steady decrease of AAR from about 60 to 50% over this relatively short period of time. Standard deviation fluctuates much from year to year (Fig. 3.6b), but square-root error shows stability at the level of 6 to 4% (about 10% relative to the mean AAR value).

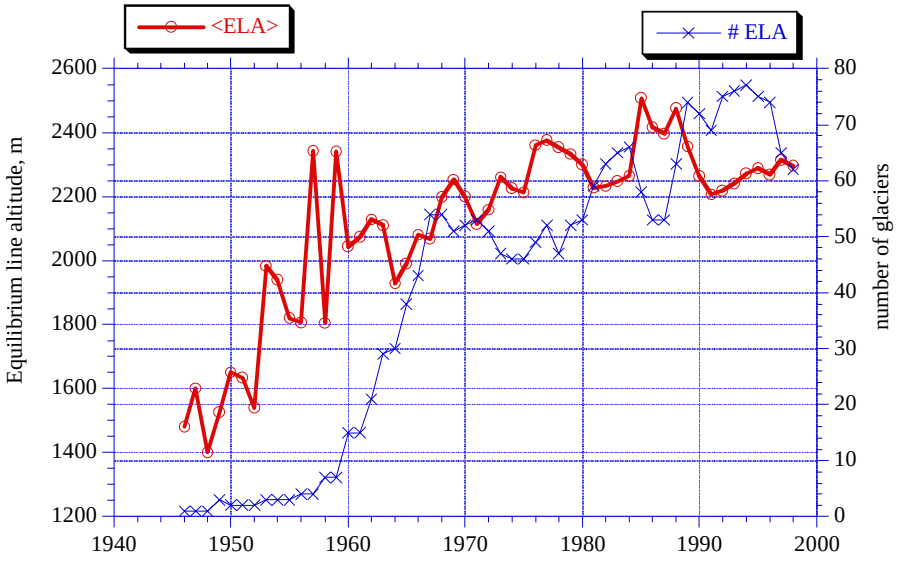

Fig.3.5a

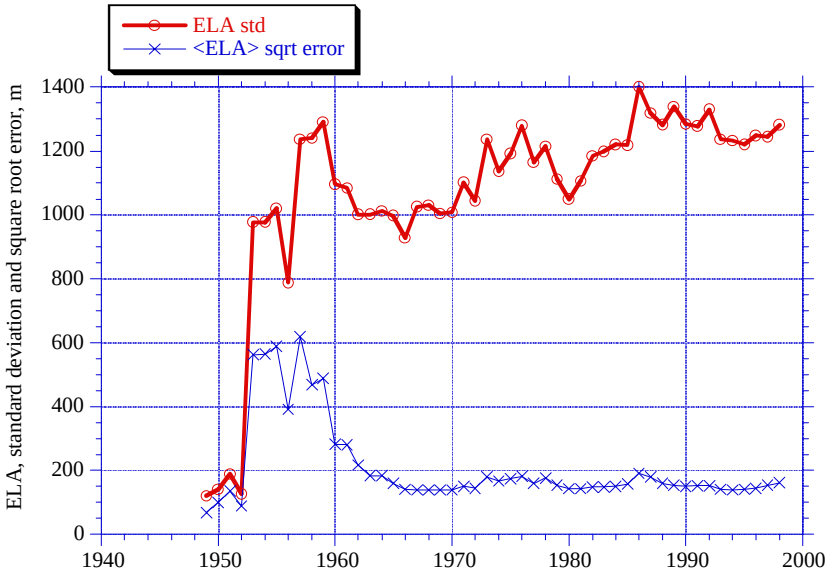

Fig. 3.5b

Fig. 3.5. (a) Equilibrium-line altitude calculated as annual arithmetic means for all measurements together with number of observations. (b) Standard deviations, and square-root errors.

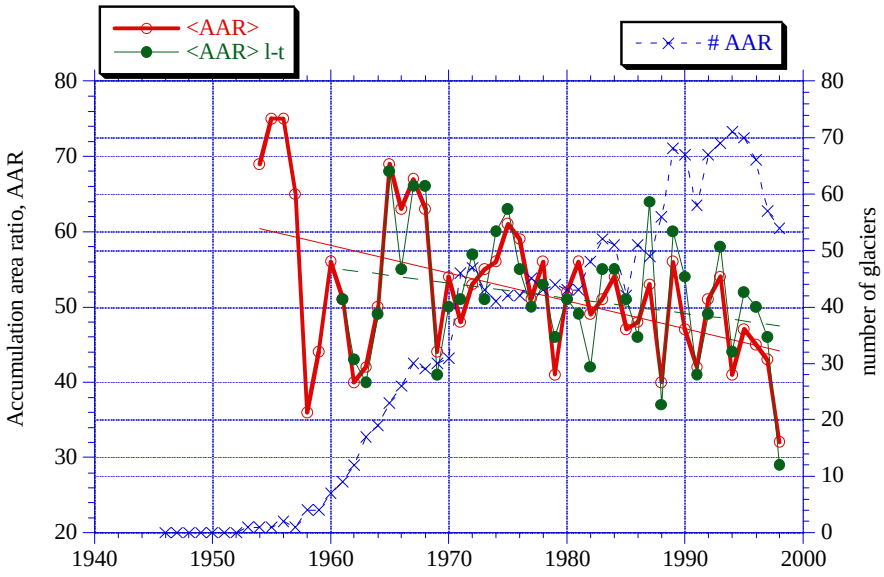

Fig. 3.6a

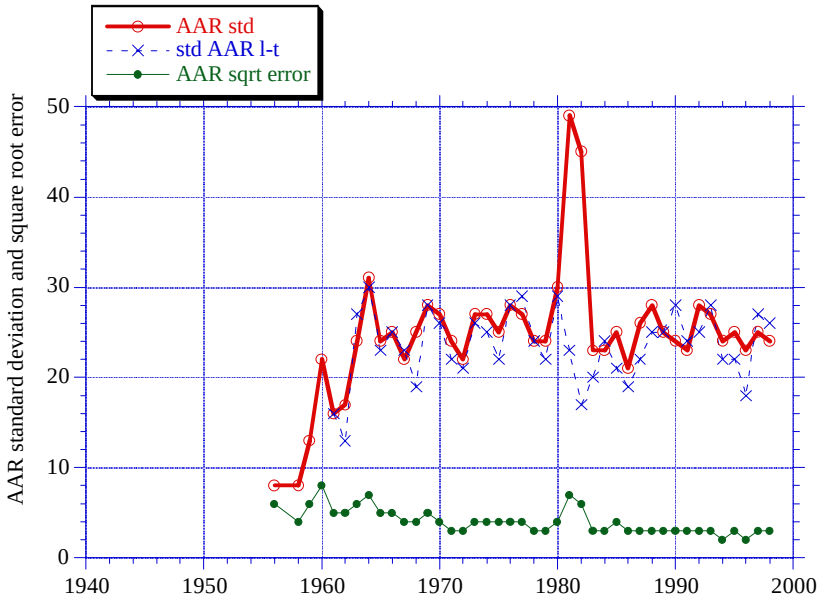

Fig. 3.6b

Fig. 3.6. (a) Accumulation-area ratio for all measurements and for long-term (l-t) records. (b) Standard deviation and square-root errors for all glaciers, and standard deviation for long-term measurements (square-root errors are the same as for all measurements).

Mass-Balance Change with Elevation.

The main application of these data is to calculate mass balance for entire glaciers. These data were used to verify mass balance for about 80 glaciers (see Appendix 2 and Table 2.2).

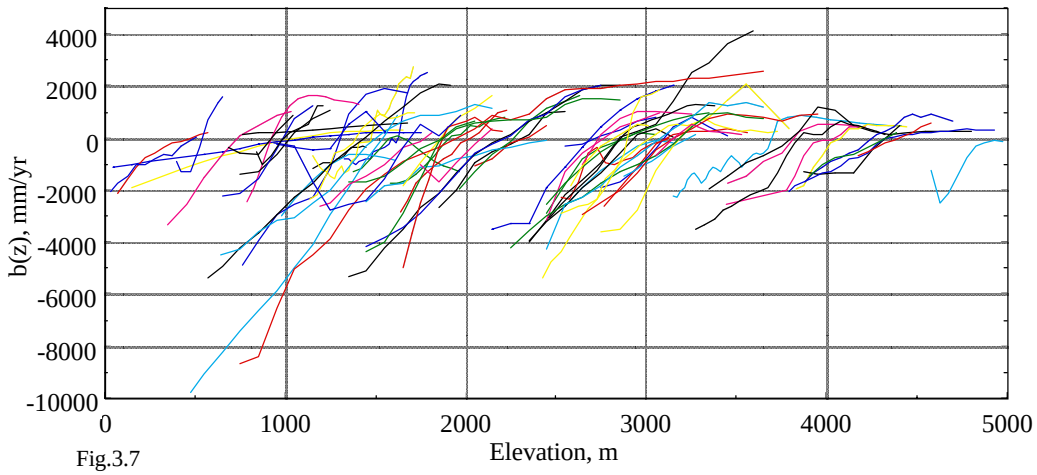

Fig.3.7

Fig. 3.7. Mass balance versus altitude. Data from FoG volumes (1967, 1973, 1977, 1985, 1988, 1993, 1998) and INSTAAR data base. Curves of mass-balance change for 81 glaciers versus altitude relate to different time periods. Glaciers are:

Rhône, Plattalva, Wurtenkees, Jamtalferner, Vermuntgletscher, Silvretta, Ochsentalerferner, Kesselwandferner, Sentinel, Bridge, Sykora, Tiedemann, Yuri, Andrei, Alexander, Peyto, Ram River, Grigor'yev, Marmolada, Careser, Langtalerferner, Hintereisferner, Vernagtferner, Gries, Riukojietna, Marmaglaciaren, Storglaciaren, Au. Broggebreen, Harbardsbreen, Jostefonn, Columbia, Superguksoak, Minaret, Hidden, Abraham, S. Cascade, Bench, Shumskiy, Tuyuksu, Aalfotbreen, Engabreen, Hardangerjokulen, Grasubreen, Hellstugubreen, Nigardsbreen, Langfjordjokelen, A. Okstinbreen, A. Memurubre, V. Memurubre, Bondhusbreen, Svartisheibreen, Vesledalsbreen, Tunsbergdalsbreen, Djankuat, Garabashi, Kozelskiy, L. Aktru, M. Aktru, Lewis (Kenya), Gl. No.1, E. Branch, Gl. No.1, W. Branch, Suyok Zapadniy, Abramov, White, Devon Ice Cap, Place, Laika GL., Zavisha, Woolsey, McCall, Helm, Davidov, Golubina, Sary-Tor (No 356), No. 131, Pr. Aktru, No 125, Marukhskiy, Igan, Obruchev.

Mass balance distribution versus altitude (DVA) data when presented as graphs have very irregular shapes (Fig. 3.7). These data obviously pertain to glaciers from different elevations, geographical, climatic conditions, and local properties, such as aspect and slope. Nevertheless, there are common trends in these curves (Fig. 3.7). The curves take more regular forms when data are averaged over longer periods of time (Fig. 3.8). Although the largest range in elevation for individual glaciers is

more than 5 km (Alaska/Canada), no one glacier in our sample spanned more than 2 km (1.89 km is the largest in the particular sample Devon Ice Cap). This reflects the fact that relatively small and medium size glaciers have been measured. The shape of the averaged mass balance curves in Fig. 3.8 are more regular then those presented in Fig. 3.7, distinguished mostly by different mass balance gradients.

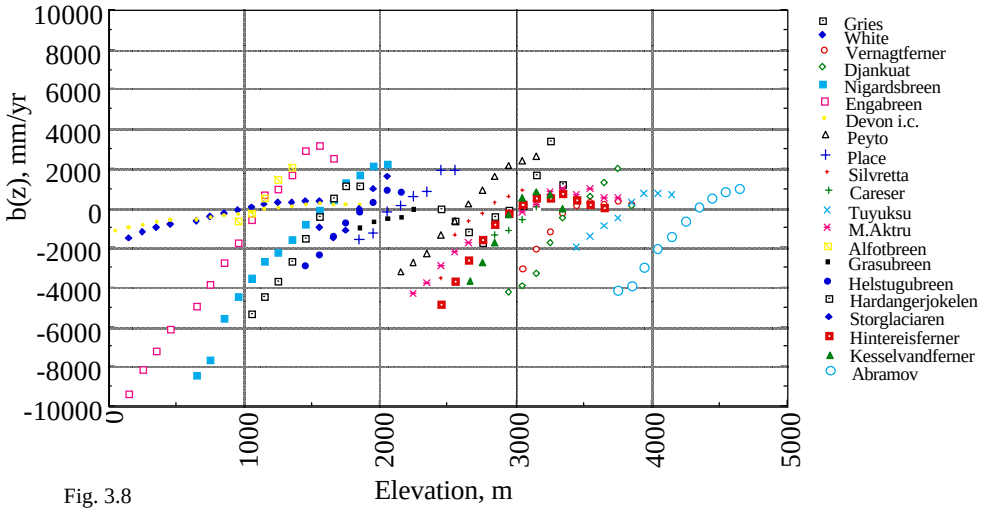

Fig. 3.8

Fig. 3.8. Vertical gradients of mass balance of 21 glaciers, averaged over 15-year periods (1971-75, 1986-95).

To understand and interpret mass-balance pattern vs altitude on a scale larger than one glacier, or any particular mountain range, data from 21 individual glaciers have been averaged and adjusted to the same elevation. The lowest boundary of each glacier terminus has been adjusted to the altitude of sea level. This means that at the lowest level all 21 glaciers are represented, but the number of glaciers decreases with altitude, since glaciers differ in size. At the upper range (1.7-1.8 km) there is only one large glacier (Devon Ice Cap). In the range below, 1.6-1.7 km, there are only two glaciers (Devon Ice Cap, and White Glacier), and so on (Fig. 3.9).

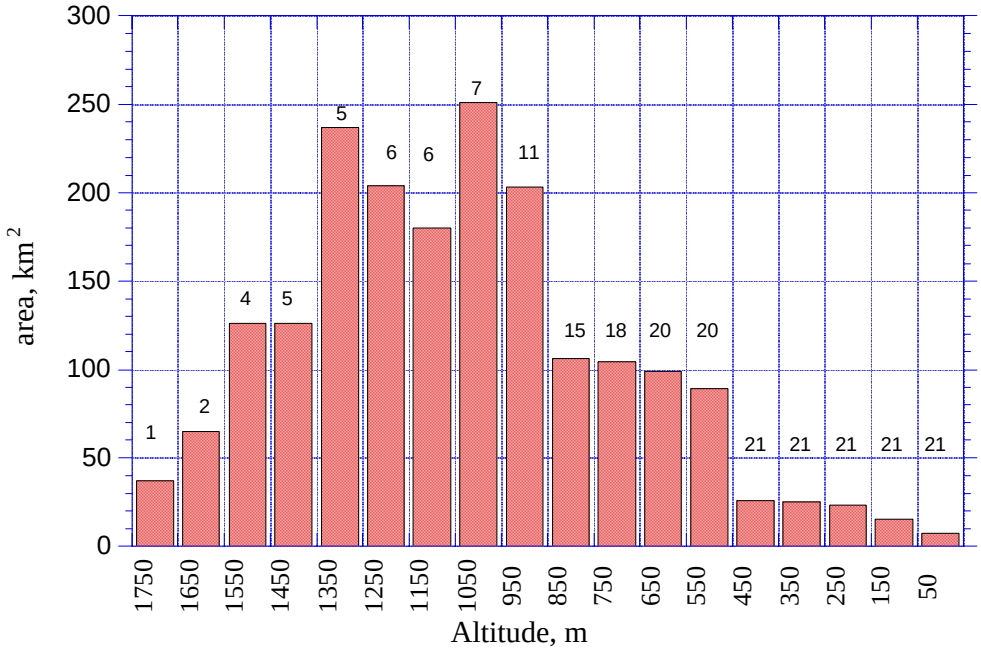

Fig. 3.9. Distribution of aggregate area given for 21 glaciers listed in Fig.3.8 versus altitude (columns). Values above columns are numbers of glaciers in that particular altitude range.

The mass balance vs altitude data were area weighted. This has been done by multiplying each glacier DVA by the surface area of a 100-m elevation range of that individual glacier. Then all of these were summed over all glaciers in that range and divided by the sum of the entire surface area of that range. For particular years and periods one common profile of b_n (z) has been constructed. Comparisons of these curves for two anomalous years (Fig. 3.10): the coldest one (1972) and the warmest (1990) show a difference. The shift between these two curves is clearly visible, and it is not a parallel shift (constant DVA), but shows a rotation from the cold year to the warm one; a simultaneous increase in the rate of ablation below a certain level and an increase in accumulation above this level. The axis of this rotation is about 300 meters above the ELA.

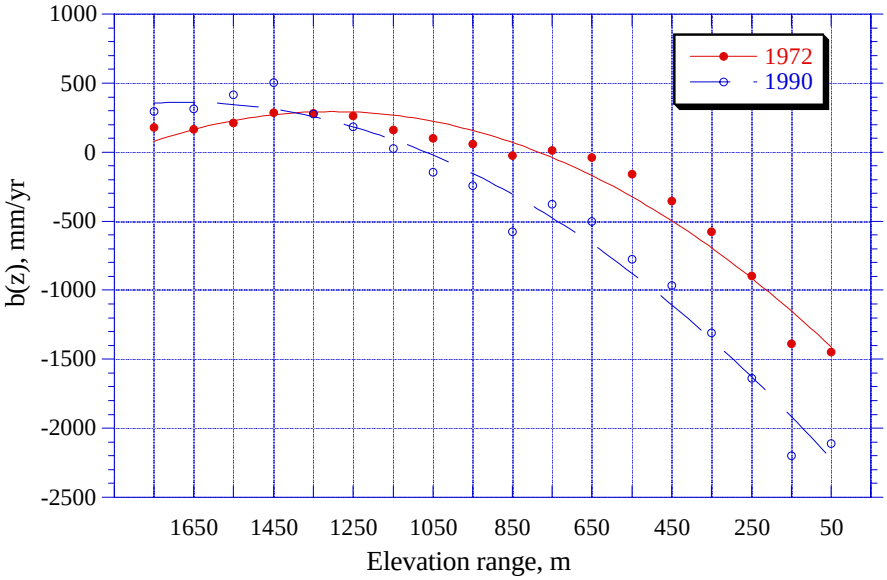

Fig. 3.10. Specific mass balance versus altitude, averaged for the 21 glaciers (same as in Fig. 3.8) for two years: 1972, the coldest, and 1990, one of the warmest years during the period of consideration.

Another result is shown in Fig. 3.11, which presents 10 annual curves (1971-75 and 1986-90) of DVA. These curves can be described as balance-time-altitude relationships.

When the raw data are plotted there is no distinct pattern from one year to the next. There appears to be a decrease for some years, followed by a shift, followed by further decreases, etc. When the data are fitted to a quadratic polynomial there is a slight rotation evident, as seen in Fig.3.11. In either the case of the raw data or fitted curves there is not enough trend to use the curves for prediction. Possibly a much stronger climatic signal is needed to establish quantitative differences between annual curves of mass balance DVA.

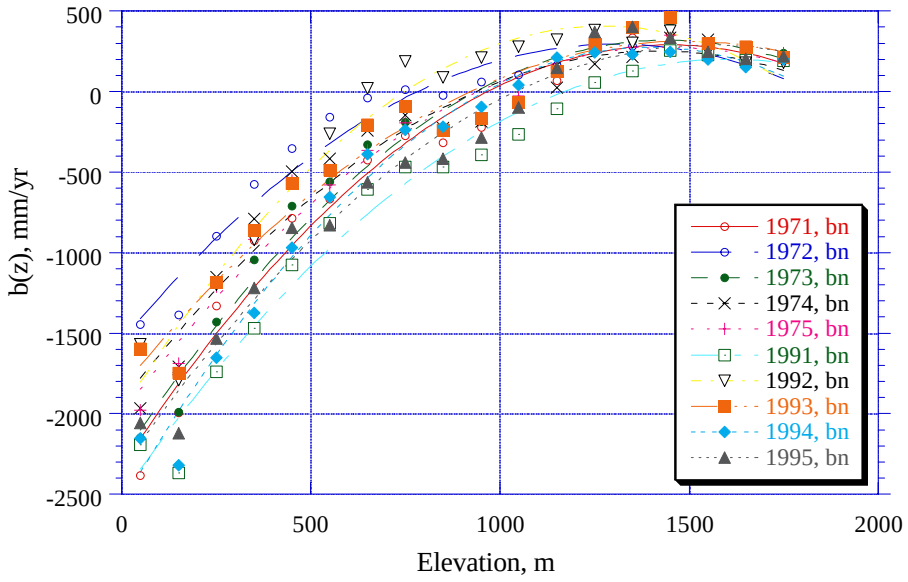

Fig. 3.11. Specific mass balance vs altitude averaged for 21 glaciers for relatively cold (1971-75) and warm (1991-1995) years.

3.2. SELECTED APPLICATIONS OF THE RESULTS.

The series of calculated glacier variables may have several applications. Calculations made in the following chapter are illustrative and preliminary, as the most appropriate approach for the extrapolation of data from individual glaciers to larger scales, regional and global, has not yet been determined. Results presented here may serve as some examples of glacier mass-balance applications, but for other purposes the results may have to be reevaluated.

3.2.1. Study of sea-level change.

Ice melt is an important component of sea-level change (ΔSL). If current rates of sea-level rise were to last for decades or hundreds of years the socioeconomic effect and environmental consequences would be dramatic (Warrick et al, 1995, Trenberth, 1999). The exceptional accuracy of the Topex/Poseidon data (Menard et al., 2000) has permitted the confirmation of sea-level rise which has

been determined by tide gages at 1.8±O.1 mm/yr. ΔSL is caused partly by negative glacier mass balances (e.g., Meier, 1984; IPCC-96; Dyurgerov and Meier, 1997a). The globally-averaged mass balance can be converted into units of sea-level change (361 km^3 of water increases sea-level by one mm). There are many problems in converting mass balances of individual glaciers to ΔSL (see, e.g. IPCC-96). The continuous time series of updated results created here is one of the necessary steps to make such calculations more accurately**.**

For the 1961-1998 years sea level has risen about 13 mm due to the negative mass balances of small glaciers (Fig. 3.12). This is about 20% of the observed ΔSL. The data in Fig. 3.12 show also that the annual rate of glacier wastage has increased since 1988. Because the values are small and the errors in balance are comparable to the calculated total value, these results demand extreme caution when interpreting the glacier contribution to sea-level rise.

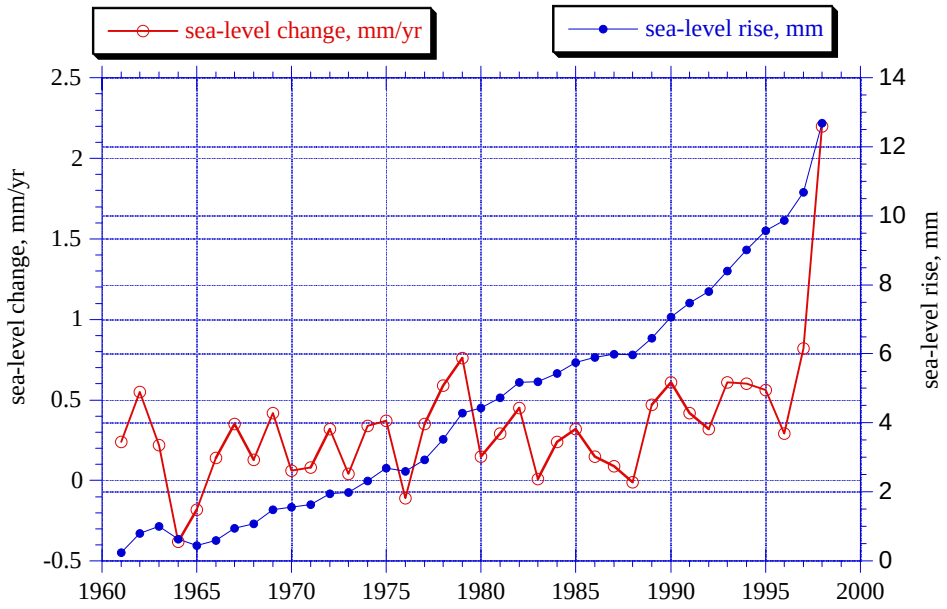

Fig. 3.12. Global glacier mass balance calculated as an arithmetic mean for all measurements since 1961 and expressed in sea-level change equivalent.

Glacier mass-balance calculations may underestimate the actual volume loss because the measurements by standard glaciological methods do not include iceberg calving, which is a substantial mass loss for tidewater glaciers and many subpolar ice caps. The mass balance of Alaska glaciers may be also much more negative than has been derived from direct measurements carried out on mostly medium-size glaciers. Tangborn (1997) calculated that the annual mass balances of some of the largest glaciers in maritime Alaska have been extremely negative compared to the benchmark glaciers, Gulkana and Wolverine. Other data support to this suggestion: Lingle et al. (1999) reported that the annual mass balance of the huge (5200 km^2) Seward-Malaspina Glacier system was –0.97±0.20 m/yr averaged between the early to mid-1970s and 1995. However, more moderate estimates of glacier volume change in Alaska exist. Using a laser altimeter to determine glacier surface elevation from a small aircraft, Echelmeyer (1997) with colleagues have determined more moderate changes. They calculated that Bear Lake (Kenai Mountains) and Gulkana (central Alaska Range) Glaciers have changed average thickness by – 12 and –11 m, respectively, during 1950 – 1994, but Worthington Glacier (central Chugach Mountains) gained + 7 m, with uncertainty in the average thickness change of ±5 m.

An important component which is not treated properly at the global scale is melt-water refreezing (internal accumulation). We consider that refreezing of melt-water is only partly included in mass balance values, and, due to this, negative mass balances at the global scale might be overestimated. Therefore a more comprehensive study of glacier mass balance components and how they are properly aggregated is required to get a more accurate estimate of glacier contribution to sea-level change.

3.2.2. Meltwater production.

Runoff from glacier meltwater production is important for several dry regions and for some coastal areas (Gulf of Alaska, Arctic Ocean, North Atlantic, and the Southern Ocean,). One can, of course, calculate glacier ablation by regression models but it is important to use data from direct measurements for verification of modeled results. In order to get annual sums of melt-water production, two corrections to the data of b_s are suggested:

The first correction is the calculation of area-weighted values, defined here as $\langle b_s \rangle$. This correction includes two steps: (1) calculation of total melt-water production by individual glaciers (B_s - measured specific summer balance multiplied by the area of individual glacier, *s*, and summation these for all time series), and (2) calculation of area-weighted values of $\langle b_s \rangle$ in six large regions: Alaska, Asia, Arctic (include Canadian Archipelago), Europe, N. America (without Alaska), S. Hemisphere

(see Dyurgerov and Meier, 1997a). For this calculation we used only glaciers with the same length of study, the optimal period of 1966 -1997.

The second correction includes the amount of snow precipitated and melted away in a summer (this is usually not considered by standard mass balance measurements). Quantitatively this is supposed to roughly equal the difference between annual accumulation and winter balance. The preliminary estimate of this amount, taken from direct measurements carried out simultaneously on several glaciers in maritime and in continental climates, gives additionally an average of about 350 mm/yr (25% from annual amount) to $\langle b_s \rangle$ over 1961-98 period, and is especially important in monsoon-affected regions. The corrections made are summed up to get an annual average melt-water production by glaciers giving a total value of 1730 mm/yr. Time series of meltwater runoff show large yearly fluctuations with substantial increase since 1993 (Fig. 3.13).

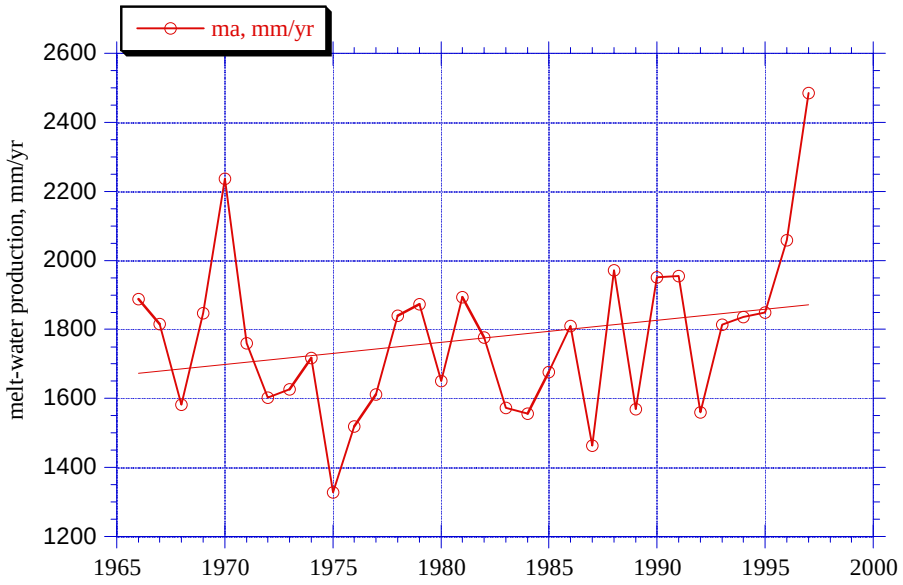

Fig. 3.13. Annual melt-water production by mountain and subpolar glaciers (see explanation in the text).

3.2.3. Regional and global precipitation at high altitudes.

There is a serious lack of meteorological data from high mountain regions, such as annual sums of precipitation (p_a), especially at the uppermost elevations. Data derived from glacier mass-balance measurements, in addition to data from ice cores, may help resolve several questions related to climate in mountain regions.

Area-weighted values of p_a could not be calculated directly from the data presented in Appendix 2 and 3, because the sample (glaciers) used for b_w calculation are not entirely the same as for b_a and b_s. One can, however, evaluate p_a from the water balance equation. The simplified version of this states,

$$<p_a> = <m_a> – <b_a> + (<e_a> - <c_a>),$$

where $<m_a>$ is the runoff and ($<e_a>$ - $<c_a>$) is the balance of evaporation and condensation (these variables approximately compensate each other in glacier climates on a global scale), $<b_a>$ is the globally averaged mass balance of approximately –150 mm/yr (Dyurgerov and Meier, 1997a). Substituting of corresponding values (1730 mm/yr for = $<m_a>$ and - 150 mm/yr for $<b_a>$) in the water-balance equation gives 1580 mm/yr, which may be considered as the area-weighted global annual precipitation $<p_a>$, centered at the mean glacier altitude. The average precipitation on the land (p_L) compiled from 6 different sources by Gleick (1993) ranges from 660 to 800 mm/yr. Thus, glaciers receive about 2 times the precipitation of an average land surface.

3.2.4. Regional and global monitoring.

There are several different schemes of regional and global monitoring, including those of USGS in U.S.A. (Fountain et al, 1997), NVE in Norway, Tarfala Station in Sweden (Holmlund and Jansson, 1999), Koerner's method (1986), and several others (see proceedings of the Innsbruck, 1994 and Tarfala, 1998 workshops). There is also a strategy for 21st century of global glacier monitoring proposed by WGMS (Haeberli, 1995). Change in volume of glaciers in Alaska using laser altimetry is an important addition to global glacier monitoring (Echelmeyer et al., 1996).

For these and other programs, data presented in this paper may be a valuable source. Several practical recommendations for global monitoring were proposed recently (Dyurgerov and Bahr, 1998, Bahr and Dyurgerov, 1998). The data presented here are more complete and recently updated, and should serve to develop more extensive glacier monitoring. One suggestion to improve future programs appears to be especially appropriate: Monitoring of glacier mass-balance gradient for at least one large glacier, occupying a range in altitude as large as possible, may give the unique information on change in glacier regime and sensitivity to climate. Any substantial change in DVA may serve as the warning of

change in glacier dynamics and size. The common practice of measuring only small glaciers may not give a thorough understanding of the fluctuations of glaciers as related to climate change.

3.2.5. Application to climate studies.

Spatially distributed parameters of glacier regime over vast regions are important for the study of climate in mountain and subpolar regions; these supplement meteorological information, which is very limited in these areas. Many glacier-climate studies focus on the relations between local or regional climate and mass balance (e.g. Hoinkes, 1968; Kuhn, 1980; Meier, et al., 1980; Walters and Meier, 1989; McCabe and Fountain, 1995; and Hodge et al., 1998). These studies are useful for understanding detailed physical interactions between climate and glaciers on a regional scale. The processes linking atmospheric circulation, meteorological parameters (e.g. air temperature and precipitation), and mass balance are very complex. These data, which are from virtually all glaciers that have ever been measured for mass balance, suggest that the annual b_n data co-vary over the Northern Hemisphere, but in different ways: strongly, weakly, positively or negatively (Dyurgerov and Meier, 1999). Even distant b_n of glaciers may correlate more strongly than those of neighboring glaciers. Thus it has been proposed that the teleconnections exist between distribution of atmospheric circulation patterns and glacier regime in the larger scale. The idea of teleconnections has a physical background. Global atmospheric circulation can be described by negative and positive anomalies of atmospheric pressure. These atmospheric pressure anomalies extend across several hundreds to thousands of kilometers, display a long-wave pattern, and correlate with surface weather phenomena. McCabe has performed glacio-climatological analysis on the relation of pressure anomalies to glacier winter balances (McCabe et al., 2000).

It is worth mentioning that glacier mass balance or volume change (not area) responds to change in climate without any delay. Autocorrelation analysis of time series of b_n suggests that with the confidence level of 0.95 there is no lag between volume changes in consecutive years.

Glacier mass balance, and especially its seasonal components, can be considered as the critical tool for the monitoring of climate from glaciological data.

3.2.6. Application to study of paleo-environments.

Glaciers affect and are affected by Earth relief, and thus represent an important source of information for the reconstruction of geomorphology and geology, climate, water resources, and other environmental features. Any study of environmental processes, or inherited forms on the Earth's surface, may use the results of experiments and knowledge of modern processes.

Mass balance data presented in Appendices 3 and 4 are valuable sources of information for the study of spatially-distributed characteristics, or spatial-temporal correlations between parameters. For instance, the spatial correlations of annual mass balances (including ELA values) are extremely weak, so there little synchrony between distant glaciers (Dyurgerov and Bahr, 1998). However, teleconnections exist between winter balances of distant glaciers showing that glaciers may respond simultaneously to changes in large-scale atmospheric circulation (McCabe et al., 1999). These facts should be considered when making reconstructions of glacier volume change and ELA depression for previous epochs.

Currently glacier wastage in some regions is accompanied by glacier growth in other areas. Has this occurred similarly in previous epochs? How long will it continue and what result can one expect? Possibly the weak spatial correlation between variables of glacier regime is typical only for the recent decades. In periods of stronger change in climate, as has been established for accumulation in Central Greenland between the Younger Dryas and Preboreal (Alley et al., 1993), the synchronicity in glacial processes might increase. Answers to these questions are important for building a bridge between past and future climate and glacier behavior, and experimental data collected over previous decades are valuable for this purpose.

3.2.7. Application of mass-balance variation with elevation.

A serious lack of meteorological data from high mountain regions exists. This makes it very difficult to correlate climate data with mass-balance observations (Ohmura et al., 1992). One can utilize an inverse approach and use the distribution of mass balance versus elevation (DVA) to provide insight into the climate characteristics in these regions. We propose that changes in DVA by rotation may be a common mechanism to respond to climate change (Fig. 3.10). Because the uppermost elevation ranges are represented by only two subpolar cold glaciers (Devon Ice Cap and White) in this data set, the shift by rotation is possibly more typical for cold subpolar glaciers, and also for high-altitude, cold glaciers in Central Asia.

The shift in DVA by rotation is easiest to recognize for large glaciers, which span a large elevation range, say more than 2 km. Summer air temperature near the fronts of glaciers in the Arctic and in the Central Asia mountains is about 1-5 °C and the lapse rate is usually - 0.006 °C/m. Evidently at an altitude of 1-1.5 km above the glacier termini all precipitation appears as snow (Atlas of Snow and Ice Resources, 1997). Thus snow may accumulate all year around in nourishment areas in the Arctic and Central Asian glaciers. This is also true for the largest glaciers in Alaska, Alps, Caucasus and some regions in Southern Hemisphere.

Mass balance DVA is one of the main input functions for models of glacier dynamics (Fastook and Chapman, 1989; Oerlemans, 1998). The change in mass balance DVA might have played a key role in the ice dynamics of advance and retreat at Younger Dryas/Preboreal time, as shown by numerical modeling applied to part of Labrador Ice Sheet by Pfeffer et al., (1997).

Conclusions and Recommendation

This paper presents the most complete existing compilation of data on characteristics and variables of glacier regime. Its main purpose is to combine all data into one database for the convenience of users and for facilitating regional and global analysis. This will also help to introduce glaciological data for many global programs, such as the U.S. Global Change Research Program, Climate Variability and Predictability program (CLIVAR), and future studies of the Intergovernmental Panel on Climate Change (IPCC). Some of the conclusions reached by this compilation and study include:

1. The total area of small glaciers on Earth needs to be reevaluated. The best published estimate of the total area is $680*10^3$ km^2. This appears to be a minimum value. The main uncertainty which still exists is the area of individual glaciers around Antarctic ice sheet; this has not been quantitatively estimated and it has often been treated as part of the major ice sheet, which is incorrect. A very moderate estimate for the Antarctic small glaciers of about $70*10^3$ km^2 (taken as the same as around the Greenland ice sheet) is used here, but this is a lower limit. More probably this area is much larger and perhaps even comparable with the total area of all other small glaciers on Earth. It is another matter whether these cold glaciers are producing meltwater or not. It is important to know whether these glaciers have been in a steady-state condition, and whether these glaciers have changed in regime due to global warming and started to produce meltwater contributing to sea-level rise. Appropriate studies of the regime of these glaciers have not been started and should be considered in glaciological programs.

The numbers and aggregate areas of very small glaciers, many of which are considered as snow patches, are not known. These glaciers/snow patches may also be substantial contributors to the water cycle at local, regional and even global scales (Bahr and Meier, 2000).

2. The large mountain and piedmont glaciers are insufficiently studied. Of the more than 280 glaciers with mass balance records, most of the measurements have been carried out on small to medium-size glaciers. The largest mountain, piedmont, tide-water, and subpolar glaciers have never had long-term mass-balance studies (except for the mass balance of the eastern part of the Devon Ice Cap which has been measured since the 1960s). This makes regionally-averaged (Alaska, Arctic, Central Asia) and global calculations uncertain. As shown in Chapter 3, the largest glaciers occupy the highest elevation ranges. These glaciers show the relation with climate in a whole range of changing parameters,

such as air temperature and precipitation, reflecting changes in larger spatial and temporal scales, far better than small glaciers.

3. Mass balance measurements of maritime and continental glaciers are not balanced for representativety. Data presented are somewhat biased in the direction of maritime glaciers, because about 70% of all measurements were carried out on glaciers in maritime climate conditions, specifically in Scandinavia and Svalbard, Alps, N.W. USA and Canada, Caucasus and Iceland. Special study is required to estimate climatic representativiness of mass balance results in order to extrapolate measurements data to global scale.

4. Glacier regime changes with time due to shifts in climate.. One general conclusion can be noted: substantial increase in maximums of seasonal components, ELA, as well as spatial and temporal variability, appear globally, and most likely are climatic in nature. This may have been caused by anthropogenic impacts, but this cannot be proved. Relatively long-time series (20 years and longer) show an increase of maximums and minimums of mass balance components (Fig. 3.2d), and, due to this, an increase of variability, especially since the 1980s (Fig. 3.2b and 3.2.c). This is unlikely to be connected with data uncertainty but is probably due climatic variability. The substantial increases of maximums of seasonal mass balance components (b_w and b_s) have been established, which may also have a global climatic nature, which needs to be studied. The temporal increase in the standard deviation of ELA is remarkable and, possibly, may have the same climatic nature as mentioned above, due to increases in maximums of seasonal mass-balance components.

5. Global analysis can be based on time series of individual glaciers, area-weighted by larger regions. Compilation of continuous and accurate time series of variables of glacier regime is one of the aims of this work. This has been a step towards global analysis of glacier volume change and all related processes. One can easily propose the next step, which is to extrapolate these series to larger, say global, scales, and also make future projections. We hope that the work presented here will help this task.

***6. Cancellation of long-term programs is one of the main problems*.** Several important programs with long-term mass-balance measurements have been cancelled due to financial and social reasons in FSU (Djungaria, Pamirs, Polar Ural), in the Alps and N. America (USA and Canada), and in East Africa. No more mass balance programs exist on small glaciers in the Antarctic. These are serious problems. At the same time several programs were started in Iceland and South America.

7. New results are presented

7.1. Globally-averaged mass balance (arithmetic mean) has been: –212 mm in water equivalent for the period 1961-1998, –93 mm for 1961-76, and –294 mm for 1977-98, showing the increasingly negative values during the strong and widely recognized period of global warming as reported in many publications. Long-term mass balances compiled for glaciers with 20 years and longer records have shown similar values: –215±125 mm for 1961-98, –100±119 mm for 1961-76, and –304±129 mm for 1977-98. Seasonal mass balance components for the 1961-98 period of time were: 1531±169 mm in water equivalent for b_w, and –1729±171 mm for b_s. During the recent 1977-98 period the values of b_w were about 7% higher, and about 9% higher for b_s, compared to the 1961-76 period of time. Serious uncertainties in global estimates of glacier mass balance exist, which were discussed in recent publications (Cogley and Adams,1998; Oerlemans, 1999), and has resulted in an increase in the range of uncertainty in the estimated glacier contribution to sea-level rise as published in the IPCC-2001 (Huybrechts, et al., 2001). A better approach to make spatial extrapolation and provide weighting by area is needed.

7.2. The equilibrium-line altitude has risen by about 200 m. This demonstrates an unexpected sensitivity of globally-averaged ELA to small changes of air temperature.

7.3. The vertical mass-balance gradient has increased over the period of study showing an increase in the rate of ablation below ELA and an increase in snow accumulation above the ELA.

8. A recommendation. It is evident that small glaciers play an important role in the global water cycle. To increase our understanding of this interaction, several practical steps may help to improve existing programs in glaciology: (1) start long-term mass balance programs on individual glaciers in the close vicinity of the Antarctic and Greenland ice sheets, and (2) start a mass-balance program on one large Alaskan glacier and on a large one in Central Asia. These programs would require international support and international teams of scientists.

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APPENDICES

Explanation to Appendix 1

Appendix 1 includes general information on mountain and subpolar glaciers with mass balance records and also reference on sources of information (published and private communications with colleagues).
Glaciers are given (numbered) and also by countries and geographical regions accordingto their disposition in the volumes of *"Fluctuations of Glaciers" (FoG)*

- Glacier names are taken from WGMS publications (FoG and GMB) or, in several cases, from other sources, mostly locally accepted names (sometimes not official, such as Viatau, Koiavgan, Visyachiy, all are small glaciers in Djankuat basin)
- PSFG NR – means Permanent Service Of Glacier Fluctuations Number; these are 5 digits (in most cases) identifying glacier with alphabetic prefix denoting country (according to WGMS rules, see FoG volumes).
- Code - three digits giving primary classification, form, and frontal characteristics, respectively, according to these given in WGMS publications, e.g. FoG, v. 7, 1998, p. 106-108.
- Lat. and Longit. are taken from WGMS publications (FoG volumes), or from other sources if available.
- Elev., max, med, min, denote maximum, medium and minimum absolute elevation in m above sea level, defined from topographical maps and published in FoG volumes or other referred sources.
- Length is the length of glacier along the flow line (horizontal projection) from maximum to minimum elevation in kilometers, and reflects the latest published determination, if such available.
- Area, km^2 – total area of glacier in square kilometers reflects the latest published determination, if such available.
  Aspect, orientation of accumulation/ablation area where available
- Aspect is the exposition of main ice stream in accumulation/ablation areas
- Blank cells mean no data were found.

The references are given by numbers in the last column and also listed at the end. These numbers and the name of authors, or other informed specialists (with the year of most recent contact) and years of data publication are also listed at the end of the Table. These are all agreed with the complete references, which are in the main list of References.

Explanation to Appendix 2

Here all characteristics of glacier regime (b_w, b_s, b_a, or b_n, also AC, AA, A_t, C_t (where available) are given versus altitude, or altitudinal intervals (see Chapter 2) annually. Only observational data are given in Appendix 2. Area by altitudinal increments is given in km^2, other characteristics in mm of water equivalent.

In most cases wherever data permits, control recalculation has been done (bold faces numbers). Blank cells mean no data were found.

Traditional techniques have been applied to get data in the field (Ostrem and Brugman, 1991). The main source of these data is volumes of "Fluctuations of Glaciers" (further on reported as FoG, 1967, 1973, 1977, 1985, 1988, 1993, 1998). Other data, published in many different sources and/or received through direct communication with colleagues are added (the same sources as given to Appendix 1).

Explanation to Appendix 3

- Blank cells – no data
- Glacier area is given annually in case of area change in time
- Characteristics by rows: glacier names are taken from WGMS publications or, in several cases, from other sources, mostly locally accepted names (sometimes not official, such as Viatau, Koiavgan, Visyachiy, all are small glaciers in the Djankuat basin)
- Geographical area presents mountain range, or island, or ice cap with several glaciers
- Country (or territory) where a glacier is located (e.g. glaciers in S. Georgia, or in Antarctica)
- Geographical coordinates are taken from WGMS publications, or from other sources
- PSFG NR – these are 5 digits (in most cases) identifying glacier with alphabetic prefix denoting country (according to WGMS rules).
- Code - is three digits giving primary classification, form, and frontal characteristics, respectively, according to these given in WGMS publications, e.g. FoG, v. 7, 1998, p. 106-108.
- Latitude and Longitude in degrees and minutes.
- Elevation Max, Med, Min (in m) are maximum, median and minimum elevation in meters of absolute altitude and taken from most recent sources, if any available.
- Length, km is the length of glacier along the flow line (horizontal projection) from maximum to minimum elevation in kilometers, and reflects the latest published determination, if such available.
- Area, km^2 – total area of glacier in square kilometers reflects the latest published determination, if such available.
- Aspect, exposition of accumulation/ablation area.
- Data for 1999 are preliminary; extracted from WGMS website (data for North America benchmark glaciers are taken from USGS website).

Appendix 1 General information on glaciers with mass balance records

No	*Region*	*Country*	Glacier	PSFG	Code	Lat	Long	Elev. max	Elev. med	Elev. min	Length km	Area km2	Aspect	<bn> mm/yr	Years	References
1	Axel H.I	Canada	White	CD0 2340	515	79°27'N	90°40'W	1780	1160	80	15.4	38.5	SE/SE	-125	38	[8, 68, 69, 86]
2	Axel H.I	Canada	Baby	CD00205	650	79°26'N	90°58'W	1170	1020	710	1.4	0.613	SW/SW	-119	22	[8, 68]
3	Devon Isl.	Canada	Devon i.c.	CD 00431	303	75°25'N	83°15'W	1890	1200	0	50	1695.1	NW/NW	-45	35	[2, 3, 4, 5, 6, 10, 69, 70]
4	Melville Isl.	Canada	South I.C.	CD 01961	303	75°25' N	115°01'W	715	600	490	15	66		-155	33	[4, 5, 6, 10, 70]
5	Coburg Isl.	Canada	Laika GL.	CD00720	431	75°53'N	79°10'W	520	360	20	3.8	4.27	NE/NE	-513	2	[3, 9, 68]
6	Coburg Isl.	Canada	Laika GL.+ I.C.	CD00 721	230	75°53'N	79°10'W	520	370	20	3.8	9.82	NE	-624	1	[3, 68]
7	Baffin Isl.	Canada	Barnes S. D-1	CD00210		69°47'N	72°25'W	951		365		266.6		-76	10	[10, 68]
8	Baffin Isl.	Canada	Barnes S.D-2			70°15'N	72°00'W	951		365		675		-724	1	[10, 68]
9	Baffin Isl.	Canada	Barnes I.C. N.	CD00210	300	69°45'N	73°40'W	970		420		500		-204	3	[10, 68]
10	Baffin Isl.	Canada	Boas			67°58' N	65°27W	1350		750		1.4		307	2	[11]
11	Baffin Isl.	Canada	Decade	CD00415	408	69°38' N	69°49'W	1470	1100	400	6.1	8.65	NW/NW	-232	5	[3]
12	Baffin Isl.	Canada	Meighen	CD01335	303	79°57' N	99°08'W	1267	600	70	56	85		-131	36	[4, 5, 6, 10, 70]
13	Ellesmere Isl.	Canada	Drambuie			80°52'N	71°44'W	2000		300		297.3		-387	19	[10, 70]
14	Ellesmere Isl.	Canada	Gilman			82°06'N	70°37'W	1850		410		480		-97	5	[10, 13]
15	Ellesmere Isl.	Canada	Nirukittuq			79°55' N	83°30'W	1100		800		0.4		-530	1	[14]
16	Ellesmere Isl.	Canada	Per Ardua	CD01635	408	81°31' N	76°27'W	1710	1150	310	5.4	4.26	SW/SW	-320	1	[10, 13]
17	Ellesmere Isl.	Canada	Quviagivaa			79°55' N	83°34'W	1250		550		4.7		-532	1	[14]
18	Ellesmere Isl.	Canada	Un-named i.c.	CD05050	300	81°57'N	64°12'W	650	420	200		7.6		125	4	[3, 64]
19	Ellesmere Isl.	Canada	St. Patrick NE			81°57'N	64°50'W					7.6		37	7	[12]
20	Ellesmere Isl.	Canada	St. Patrick SW			81°56'N	64°53'W					3		165	1	[12]
21	Ellesmere Isl.	Canada	Ward H.I. R.	CD02318	804	83°07'N	74°10'W	30	10	0	10	32	N/N	13	9	[3, 5]
22	Ellesmere Isl.	Canada	Ward H.I.Sh.	CD02320	804	83°05'N	73°30'W	10	10	0	89	2000	N/N	-46	23	[2, 3, 4]
23	St. Elias Mnt.	Canada	Tats	CD02007	519	59°41'N	137°46'W	1980	1450	670	16.1	27.89	NW/SE	-178	1	[6]
24	Labrador	Canada	Abraham	CD00110	648	58°56'N	63°32'W	1150	900	690	1.2	0.73	NW/NW	-190	3	[5]
25	Labrador	Canada	Hidden	CD00875	648	58°56'N	63°33'W	1090	920	790	1.5	0.85	NW/NW	-419	3	[5]
26	Labrador	Canada	Minaret	CD01350	648	58°53'N	63°41'W	1505	1250	1020	1.9	0.91	NE/NE	35	3	[5]
27	Labrador	Canada	Superguksoak	CD01983	649	58°57'N	63°47'W	1080	820	660	2	1.4	N/N	-153	3	[5]
28	Coast Mts. N.	Canada	Alexander	CD00133	538	57°06'N	130°49'W	1820	1670	1190	5.3	5.83	NE/NE	-716	8	[4, 5, 6]
29	Coast Mts. N.	Canada	Andrei	CD00148	428	56°56'N	130°59'W	2190	1280	610	22.5	92.14		-456	9	[4, 5, 6]
30	Coast Mts. N.	Canada	Yuri	CD02530	638	56°58'N	130°41'W	2010	1645	1390	3	3.6	NW/NW	-629	9	[4, 5, 6]
31	Coast Mtns. S	Canada	Bench	CD00234	648	51°26'N	124°55'W	2740	2000	1480	8	10.51	SW/NW	-660	8	[5, 6]
32	Coast Mtns. S	Canada	Bridge	CD00275	414	50°49'N	123°34'W	2900	2100	1400	18.2	88.1	SE/E	-460	5	[5]
33	Coast Mts., S.	Canada	Helm	CD00855	626	49°58'N	123°00'W	2150	1900	1770	2.5	0.92	NW/NW	-1199	21	[4, 5, 6, 69, 75, 86]
34	Coast Mts. S.	Canada	Place	CD01660	538	50°26'N	122°36'W	2610	2089	1860	4.2	3.45	NE/NE	-867	33	[2, 3, 4, 5, 6, 69, 75, 86]
35	Coast Mts. S	Canada	Sentinel	CD01915	530	49°54'N	122°59'W	2105	1850	1660	1.9	0.94	N/NW	245	24	[3, 4, 5, 6]
36	Coast Mts. S.	Canada	Sykora	CD01995	418	50°52'N	123°35'W	2750	2050	1520	9.2	25.35	E/E	-136	10	[3, 4, 5]
37	Coast Mts., S.	Canada	Tiedemann	CD02040	529	51°20'N	125°03'W	3800	1950	700	24	62.69	SE/SE	-1027	7	[5, 6]
38	Coast Mts. S	Canada	Woolsey	CDN2380	628	51°07'N	118°03'W	2670	2240	1920	2.9	3.92	NE/NE	-139	10	[2, 3]
39	Coast Mts. S.	Canada	Zavisha	CD02605	636	50°48'N	123°25'W	2500	2200	2010	3.1	6.5		-139	10	[4, 5]
40	Rockies N.	Canada	Peyto	CD01640	538	51°40'N	116°32'W	3185	2635	2125	5.3	11.75	NE/NE	-532	30	[2, 3, 4, 5, 6, 69, 75, 86]
41	Rockies N.	Canada	Ram River	CDN1815	648	51°51'N	116°11'W	3020	2750	2560	2.1	1.8	NE/N	-408	10	[2, 3]
42	Rockies S.	USA	Grasshoper			45°13' N	109°88'W	3350		3145		0.41		670	2	[17, 71]
43	Rockies S.	USA	Dinwoody			43°11'N	109°35'W	4023		3414		3.4		860	1	[24]
44	Rockies S.	USA	Arapaho	US07000	648	40°03'N	105°38'W	4070		3690		0.28		263	4	[3]
45	Rockies S.	USA	Henderson	US07001	648	40°03'N	105°38'W					0.1		250	1	[3]
46	Rockies S.	USA	Arikaree	US07002	648	40°03'N	105°39'W	3870		3790		0.06		228	5	[3]
47	Rockies S.	USA	Navajo	US07003	648	40°03'N	105°39'W	4020		3810	0.2	0.02		-300	1	[3]
48	Rockies S.	USA	Isabelle	US07004	648	40°04'N	105°39'W	3910		3660	0.6	0.12		210	2	[3]
49	Rockies S.	USA	St.Vrain No 1	US07005	648	40°09'N	105°38'W	3620		3430	0.4	0.07		50	1	[3]
50	Rockies S.	USA	St.Vrain No 2	US07006	648	42°09'N	105°38'W	3600		3490	0.2	0.04		100	1	[3]
51	Rockies S.	USA	St.Vrain No 3	US07007	648	42°09'N	105°39'W	3650		3410		0.04		-100	1	[3]
52	Rockies S.	USA	St.Vrain No 4	US07008	648	42°10'N	105°39'W	3590		3490	0.2	0.02		150	1	[3]
53	Rockies S.	USA	St.Vrain No 5	US07009	648	40°10'N	105°40'W	3740		3600	0.4	0.04		200	1	[3]
54	Rockies S.	USA	St.Vrain No 6	US07010	648	40°10'N	105°40'W	3770		3610	0.4	0.07		650	1	[3]
55	Rockies S.	USA	Andrews	US07011	648	40°17'N	105°41'W	3660		3410	0.4	0.14		200	1	[3]
56	Rockies S.	USA	Fair	US07012	648	40°04'N	105°39'W	3770		3460		0.15		400	1	[3]
57	Sierra Nevada	USA	Maclure	US04000	64	37°75'N	119°28'W	3598		3460	0.4	0.2		383	3	[15]
58	Olympic	USA	Blue	US02126	528	47°49'N	123°41'W	2320	2377	1280	4.2	4.2	NE/NW	313	27	[16, 72]
59	N.Cascade	USA	Eliot			45° 38' N	121°68'W	1920				1.8		-860	5	[2]
60	N.Cascades	USA	Columbia	US02057	648	47°58'N	121°21'W	1750		1450	0.7	0.9	SSE	-437	15	[6, 19, 20]
61	N.Cascades	USA	Daniels	US02052	636	47°33'N	121°10'W	2230	2200	1970	0.8	0.4	E	-307	15	[6, 19, 20]
62	N.Cascades	USA	Foss	US02053	638	47°33'N	121°12'W	2100		1840		0.4	SE	-279	15	[6, 19, 20]

63	N.Cascades	USA	Ice Worm	US02054	648	47°50'N	121°10'W	2100	2030	1900	0.55	0.1	SE	-490	15	[6, 19, 20]
64	N.Cascades	USA	Lower Curtis	US02055	648	48°48'N	121°37'W	1850	1625	1460	0.8	0.8	S	-384	15	[6, 19, 20]
65	N.Cascades	USA	Lynch	US02056	654	48°39'N	121°11'W	2200	2140	1950	1.1	0.7	N/N	-189	15	[6, 19, 20]
66	N.Cascades	USA	Rainbow	US02003	638	48°48'N	121°46'W	2040	1760	1310	2.4	1.6	ENE	-243	15	[6, 19, 20]
67	N.Cascades	USA	Watson	US02051	636	48°39'N	121°34'W	1790	1620	1475	0.7	0.2	N/N	-10	3	[6]
68	N.Cascades	USA	Yawning	US02050	658	48°27'N	121°02'W	2100	1950	1880	0.7	0.3	N	-383	15	[6, 19, 20]
69	N.Cascades	USA	Noisy	US02078	648	48°40'N	121°32'W	1890	1791	1683	0.53	1.14	N/N	-475	4	[69]
70	N.Cascades	USA	N.Klawatti	US02076	55	48°34'N	121°07'W	2399		1729	2.77	1.46	SE/SE	-781	4	[69]
71	N.Cascades	USA	Sandalee	US02079	645	48°25'N	120°48'W	2280	2154	1965	0.79	0.2	N/N	595	2	[69]
72	N.Cascades	USA	Silver	US02077	648	48°59'N	121°15'W	2698	2309	2088	0.48	1.08	N/NE/SE	271	4	[69]
73	N.Cascades	USA	S. Cascade	US02013	538	48°22'N	121°03'W	2140	1920	1630	3.1	2.03	N/N	-588	42	[18, 69, 73, 75, 86]
74	Cascade Range	USA	Vesper			48°00'N	121°50W	1710		1110		0.2		-800	2	[25]
75	Alaska Range	USA	Eklutna	US00391	538	61°15'N	148°58'W	1769	1373	732	12.9	31.6	N/N	-33	3	[6]
76	Alaska Range	USA	Fork East	US00207	518	63°26'N	146°47'W	3500		880	17	46	W/SW	-55	2	[5]
77	Alska Range	USA	Fork West	US00205		63°31'N	147°23'W	3591		845	41	311	SW/S	-43	3	[5]
78	Alaska Range	USA	Gulkana	US00200	529	63°14'N	145°28'W	2460	1840	1165	8.5	19.3	S/SW	-347	32	[2, 3, 4, 5, 6, 69, 74, 75, 75a, 86]
79	Alaska Range	USA	West Gulkana	US00195	538	63°16'N	145°30'W	2100		1325	4.2	2.23	S/SE	-350	2	[68, 76]
80	Alaska Range	USA	Maclaren	US00208	518	60°21'N	146°32'W	3000		930	17	68	S/S	273	3	[5]
81	Alaska Range	USA	Susitna	US00206	519	63°31'N	146°57'W	3600		815	36	323	W/SW	-40	3	[5]
82	Chugach Mnt.	USA	Columbia	US00627	514	61°00'N	147°06'W	3353	800	0	61	1100	SE/S	360	1	[4, 77]
83	Brooks Range	USA	McCall	US00001	528	69°17'N	143°50'W	2700	2010	1350	7.6	7.23	NW/N	-386	7	[3, 78, 79, 80]
84	St. Elias Mnt.	USA	Variegated	US01302	529	60°00'N	139°18'W	2492	1000	53	20	28	W/W	-500	2	[3]
85	Coast Mts. N.	USA	Lemon Creek		424	59°36N	134°36W	1512		470		11.728		-221	5	[7, 81, 82]
86	Coast Mts. N.	USA	Mendenhall		438	59°N	134°W	1600		20	21.5	120		-233	3	[112]
87	Kenai Mount.	USA	Wolverine	US00411	538	60°22'N	148°54'W	1700	1310	400	8	17.62	S/S	-362	32	[2, 3, 4, 5, 6, 21, 22, 23, 75, 75a, 86]
88	Kenai Mount.	USA	Sherman	US 00636	528	60°55N	145°13'W	1590		110	13	54.1	W	-50	4	[2, 10]
89	Popocatepetl	Mexico	Ventorillo			19°01' N	98°38'W	5380		4760	0.785	0.453	NW	-2871	1	[86]
90	Central Andes	Chile	Enchaurren Norte			33°35' S	70°08'W							-235	20	[86]
91	Real Bolivia	Bolivia	Chacaltaya	RB05180	648	16°21' S	68°07'W	5395	5320	5125	0.59	0.082	S/S	-994	6	[23, 75, 86]
92	Real Bolivia	Bolivia	Zongo	RB05150	538	16°15'S	68°10'W	6000	5450	4890	3	2.1	S/E	-538	6	[23, 26, 74, 75, 86]
93	Real Bolivia	Equador	Antizana	EC00001	478	0° 29' S	79°09'W	5760	5200	4800	2	0.353	NW/NW	-1034	3	[74, 75, 86]
94	S.Patagonia	Argentina	De Los Tres					1830		1198		0.976		360	2	[75, 83, 86]
95	Central Andes	Argentina	Piloto East		653	32° 27' S	70°09'W	4740		4185	2.5	0.504	SE/S	-350	18	[108]
96	Greenland	Denmark	Narssaq Brae	G 00005	620	60°15'N	45°55'W	1300	1110	900	1.6	1.43	W/W	-93	3	[5]
97	Greenland	Denmark	Qapiarfiup Sermia	G 00009	366	65°36'N	52°08'W	1040		517		20.85		160	5	[5]
98	Greenland	Denmark	Valhaltinde	G 00001	640	61° 26'N	45°21'W	1630	1420	1080	2.2	1.9	NW/N	-166	5	[5]
99	NE Greenland	Denmark	Storstroemmen	G00018	104	77° 30' N	24°00'W					32100	SE	-38	2	[112]
100	N.Iceland	Iceland	Baegisarjokull	IS0304	530	65°59'N	18°38'W	1300	1120	920	1.4	1.7	N/N	250	1	[27]
101	Vatnajokull	Iceland	Bruarjokull	IS02400	433	64°40'N	16°10'W	1900	1255	550	45	1695	N/N	238	4	[27, 69, 86]
102	Hofsjok.SW	Iceland	Blagnipujokull	IS0510C	433	64°43'N	19°03'W	1750	1205	750	13	51.3	SW/SW	-606	9	[28, 69, 86]
103	Vatnajokull	Iceland	Dyngjujokull	IS02600	423	64°40'N	17°00'W	2000	1475	700		1040	N/N	548	5	[29, 86]
104	Vatnajokull	Iceland	Eyjabakkajokull	IS02300	423	64°39'N	15°35'W	1520	1095	680	18	109	N/NE	-155	6	[27, 69, 86]
105	Vatnajokull	Iceland	Koeldukvislarjokull	IS02700	433	64°35'N	17°40'W	2000	1410	850	25	313	NW/NW	0	3	[29, 69, 86]
106	Hofsjok.N.	Iceland	Satujokull	IS 00530	433	64°55'N	18°50'W	1800		860	20	90.6	SW/S	-283	10	[28, 69, 85]
107	Vatnajokull	Iceland	Sidujokull	IS0015B	432	64°11'N	17°53'W	1700	1050	650	40	380	SW/S	500	1	[29]
108	Thjorsarjokull	Iceland	Hofsjok.E.	IS0510B	433	64°48'N	18°35'W	1800	1185	620	19	248.8	E/E	-50	9	[28, 69, 86]
109	E.Iceland	Iceland	Thrandarjokull	IS01940	300	64°42'N	14°53'W	1240	1080	820		19.4		-177	6	[27, 69]
110	Vatnajokull	Iceland	Grimsvotn			64°25'N	17°20'W	1760		1380	15	160	S	2480	3	[29, 111]
111	Vatnajokull	Iceland	Tungnaarjokull	IS02214	433	64°19'N	18°04'W	1660	1210	690	40	308	SW/W	-146	5	[29, 69, 86]
112	Svalbard	Norway	Au. Broggbr.	N 15504	529	78° 53'N	11°50'E	600	260	60	6	6.1	NW/N	-433	31	[2, 3, 4, 5, 6, 34, 35, 69, 74, 75, 86]
113	Svalbard	Norway	Bertil			78° 40' N	17°20'E	600		240		4.8		-697	11	[36]
114	Svalbard	Norway	Longyerbreen			78° 20' N	16°00'E	1030				3.3		-547	6	[36]
115	Svalbard	Norway	West Ice			80°00' N	20°05'E	600		0		2683		14	1	[36]
116	Svalbard	Norway	Voering			78°00 N	14°00'E	560		100		2.68		-618	19	[36]
117	Svalbard	Norway	Nordensheld			78° 05'N	17°00'E	1200		30		199.5		330	2	[36]
118	Svalbard	Norway	Fritjof			78°00' N	20°00'E					67		-246	5	[36]
119	Svalbard	Norway	Greenfjord			78°00'N	14°05'E	600		5		17.8		-382	6	[36]
120	Svalbard	Norway	Bogerbreen			78°25' N	16°10'E	945		320		4.2		-432	12	[36]
121	Svalbard	Norway	Daud			78°10' N	18°50'E	560		100		4.7		-318	6	[36]
122	Svalbard	Norway	East and South Ice			79°05'N	24°0'E	750		0		7895		240	1	[36]
123	Svalbard	Norway	Finsterwalder			77°50' N	15°50'E					33.8		-506	18	[36]
124	Svalbard	Norway	Werenskiold	N 12501	528	77°05'N	15°24'E	810	400	27	7	28	SW/W	-505	2	[4]
125	Svalbard	Norway	Kongsvegen	N15510	424	78°48'N	12°59'E	1050	500	0	27	189	NW/NW	95	11	[21, 22, 23, 69, 75, 86]
126	Svalbard	Norway	Md. Lovenbreen	N 15506	529	78°53'N	12°04'E	650	330	50	4.8	5.8	NE/N	-346	30	[2, 3, 4, 4, 6, 22, 23, 34, 35,69, 74, 75, 86]

127	Svalbard	Norway	Hansbreen	N 12419	424	77°05'N	15°40'E	600	350	0	15.8	56.76	S/S	-357	7	[21, 22, 23, 69, 74, 75, 86]
128	Svalbard	Norway	Waldemar											-380	3	[84, 85]
129	Svartisen	Norway	Engabreen	N 67011	438	66°39'N	13°51'E	1594	1220	40	11.5	38.02	N/NW	801	28	[3, 4, 5, 6, 69, 87, 88, 89]
130	Svartisen	Norway	Svartishiebreen	N65509		66° 43' N	13°46' E	1420	1040	770	4	5.48	SE/SE	549	7	[88, 89]
131	Svartisen	Norway	Austre Okstinbreen	N64902	438	66° 14' N	14°22' E	1750	1340	730	7.25	14.01	N/NE	111	8	[6, 69, 75, 87]
132	Svartisen	Norway	Trollbergdalsbreen	N 68507	538	66°43'N	14°27'E	1300	1050	900	2.1	1.82	SE/SE	-397	11	[3, 23, 69]
133	Svartisen	Norway	Storglombreen	N 89013	-	66°40'N	14°00'E	1580	no data	520	10.5	59.16	NE/NE	-713	4	[6]
134	Svartisen	Norway	Tretten-Null-to-breen	N 67315	538	66°43'N	14°01'E	1260		580	3.4	4.92	E/E	-1090	2	[6]
135	Svartisen	Norway	Hogtuvbreen	N 65507	528	66°27'N	13°39'E	1160	940	588	2.7	2.6	E/E	41	7	[3, 4]
136	Finnmark	Norway	Langfjordjokelen	N 85008	438	70°00'N	21°00'E	1050	850	280	4	3.66	SE/E	-105	7	[21, 22, 23, 69, 89]
137	Finnmark	Norway	Svartfjelljokelen	-	-	70°00'N	21°00'E					2.7		-100	1	[89]
138	Skjomen	Norway	Storstainfjellbreen	N073811	528	68°13'N	17°55'E	1850	1380	930	5.3	5.913	E/SE	307	10	[2,3]
139	Skjomen	Norway	Cainhavarre	N73934	238	68°06'N	18°00'E	1540	1410	1210	1.4	0.71	NE/N	-165	4	[2]
140	Skjomen	Norway	Blaisen	N 74211	648	68°20'N	17°51'E	1240	1040	860	2.3	2.18	NE/NE	-104	6	[2]
141	Aalfotbr. ice cap	Norway	Alfotbreen	N 36204	436	61°45'N	5°39'E	1380	1230	890	2.9	4.358	NE/NE	369	35	[1, 2, 3, 4, 5, 6, 69, 88, 89]
142	Aalfotbr. ice cap	Norway	Hansebreen	N 36206	322	61°45'N	5°41'E	1320	1160	925	2.5	2.91	NE/N	-33	13	[6, 69, 75, 89]
143	Norway	Norway	Hardangerjokulen	N 22303	438	60°32'N	7°22'E	1850	1740	1050	8.1	18.52	W/W	164	35	[2, 3, 4, 5, 6, 69, 75, 89]
144	Hardangerjok	Norway	Omnsbreen			61°00' N	6°00'E	1570		1460		1.52		-924	10	[1, 2]
145	Jotunheimen	Norway	Austre Memurubre	N00533	627	61°33'N	8°26'E	2280	1940	1630	4	8.71	SE/SE	-585	5	[2, 3]
146	Jotunheimen	Norway	Vestre Memurubre	N 00531	638	61°32'N	8°30'E	2200	1880	1570	4	9.01	SE/E	-352	5	[2, 3]
147	Jotunheimen	Norway	Storbreen	N 00541	526	61°34'N	8°08'E	1970	1440	1380	2.9	5.26	NE/NE	-224	49	[2, 3, 4, 5, 6, 69, 88, 89]
148	Jotunheimen	Norway	Hellstugubreen	N 00511	518	61°34'N	8°26'E	2130	1900	1470	3.4	2.97	N/N	-279	36	[2, 6, 69, 88, 89]
149	Jotunheimen	Norway	Tverrabreen			70°00N	21°00'E	2200		1415		5.9		-235	2	[1]
150	Jotunheimen	Norway	Blabreen			70°00'N	21°00'E	2150		1550		3.6		-30	2	[2]
151	Jotunheimen	Norway	Grasubreen	N 00547	676	61°39'N	8°36'E	2300	2060	1850	2.3	2.2	NE/E	-297	35	[2, 3, 4, 5, 6, 69, 75, 88, 89]
152	Jostedalsbreen	Norway	Nigardsreen	N 31014	438	61°43'N	7°08'E	1950	1618	355	9.6	47.82	SE/SE	463	36	[2, 3, 4, 5, 6, 69, 75, 88, 89]
153	Jostedalsbreen	Norway	Tunsbergdasbreen	N 31007	428	61°36'N	7°03'E	1930	1530	540	18.5	50.11	SE/SE	-246	7	[2, 3]
154	Jostedalsbreen	Norway	Vesledalsbreen	N 37333	438	61°50'N	7°16'E	1730	1450	1130	3	4.2	N/NW	-376	6	[2, 3]
155	Jostedalsbreen	Norway	Harbardsbreen			61°40'N	7°35'E	1970		1250		25	E/E	-542	2	[88, 89]
156	Jostedalsbreen	Norway	Jostefonn			61°25'N	6°35'E	1620		950		3.81	SE	-1113	3	[75, 75a, 89]
157	Jostedalsbreen	Norway	Store Suphellebreen	N 33015	438	61°31'N	6°48'E	1730		720	7	11.81	S/S	292	11	[2, 3, 5, 37,]
158	Jostedalsbreen	Norway	Austdalsbreen	N 37323	424	61°48'N	7°21'E	1630	1480	1160	5.7	11.87	SE/SE	438	10	[6, 69, 88, 89]
159	Midtre F.	Norway	Folgefonna	N 21024	303	60°09'N	6°29'E	1570	1460	1190	2.2	8.7	NW/NW	-125	2	[2, 3, 89]
160	Folg. West,East	Norway	Folgefonna			60°09'N	6°29'E	1580		1100		19.52		-39	6	[2, 3, 89]
161	Folgefonna	Norway	Bondhusbreen	N 20408	438	60°02'N	6°20'E	1635	1450	450	6	10.672	NW/NW	-62	5	[4, 5, 89]
162	Folgefonna	Norway	Blabr,Ruklebr			70°00'N	21°00'E	1610		1065		4.5		-230	6	[89, 90]
163	Folgefonna	Norway	Blomsterskardsbreen	N 19303	438	59°59'N	6°17'E	1640		820	10	45.72	SW/SW	635	8	[3]
164	Jostedalsbreen	Norway	Spoerttegbreen	N31027	303	63°36'N	7°27'E	1770	1575	1260	6.8	27.94		730	3	[6, 69]
165	Folgefonna	Norway	Grabreen	N 33014		61°08'N	6°40'E	1660	1510	1030	5	9.55		134	8	[3]
166	Kebnekaise	Sweden	Marmaglaciaren	S00799	521	68°05'N	18°41'E	1740		1340	3.5	3.93	NE/E	-101	8	[69, 91, 92, 93]
167	N. Sweden	Sweden	Parteglaciaren	S00763		67°10'N	17°40'E	1860		1080	5.4	9.913	E/E	-970	1	[93]
168	N. Sweden	Sweden	Riukojietna	S00790	303	68°05'N	18°05'E	1456		1130	3	4.648	E/E	-57	12	[6, 69, 92, 93, 75a]
169	N. Sweden	Sweden	Tarfalaglaciaren	S00791	670	67°56'N	18°39'E	1710		1390	1	0.86	E/E	453	7	[6, 69]
170	Kebnekaise	Sweden	Karsojietna	S00798	538	68°21'N	18°19'E	1515	1100	940	1.7	1.23	NE/E	189	7	[5, 6, 69]
171	Kebnekaise	Sweden	Storglaciaren	S00778	528	67°54'N	18°34'E	1828		1125	3.7	3.24	E/E	-241	52	[1, 2, 3, 4, 5, 6, 69, 39, 92, 93, 75a]
172	N. Sweden	Sweden	Rabots	S00785	528	67°54'N	18°33'E	1700		1071	4.1	3.9	NW/W	-164	16	[5, 6, 69, 75a]
173	N. Sweden	Sweden	Sydostra			67°54'N	18°35'E	1800		1400	0.5			-465	3	[68]
174	Fr. Alps	France	Argentiere	F 00002	519	45°55'N	6°57' E	3600	2600	1600	10	19	NW/NW	116	5	[4], Vincent, 2001, in press
175	Fr. Alps	France	Mer de Glace	F 00003	519	45°53'N	6°56'E	4000	3000	1600	12	28	N/S	-24	8	[3], Vincent, 2001, in press
176	Fr. Alps	France	de Marinet			45°00' N	6°00'E	3000		2782		0.2		-860	1	[94]
177	Fr. Alps	France	Sarennes	F 00029	640	45°07'N	6°10'E	3190	3000	2830	1.5	0.83	S/S	-624	49	[1, 2, 3, 4, 5, 6, 69, 75, 75a]
178	Fr. Alps	France	St. Sorlin	F 00015	529	45°10'N	6°10'E	3400	2900	2700	2.5	3	N/E	-255	41	[1, 2, 3, 4, 69, 75, 75a] Vincent, in press
179	Alps	Switzerland	Rhone	CH 00001	514	46°37'N	8°24'E	3620	2940	2125	10.2	17.38	S/S	110	4	[5]
180	Alps	Switzerland	Limmern	CH 00078	627	46°49'N	8°59'E	3421	2760	2260	2.9	2.621	NE/NE	-122	42	[1, 2, 3, 4, 5, 21, 22, 23, 63]
181	Alps	Switzerland	Plattalva	CH 00114	656	46°50'N	8°59'E	2980	2740	2550	1.1	0.808	E/E	-119	42	[1, 2, 3, 4, 5, 21, 22, 23, 63]
182	Alps	Switzerland	Gries	CH 00003	534	46°26'N	8°20'E	3373	2920	2389	6.2	6.149	NE/NE	-267	36	[60, 69, 75, 75a]
183	Alps	Switzerland	Silvretta	CH 00090	626	46°51'N	10°05'E	3160	2780	2439	3.5	3.15	NW/W	-12	38	[6, 69, 75, 75a]
184	Alps	Switzerland	Gr. Aletch	CH 00005	519	46°30'N	8°02'E	4160	3140	1556	24.7	126.99	SE/S	-60	50	[1, 2, 3, 4, 5, 6, 69]
185	Bav. Alps	Germany	N.Schneef.	D 00001	648	47°25'N	10°59'E	2820	2688	2556	0.9	0.368	E/E	232	6	[1, 2]
186	Otztaler Alps	Austria	Hintereisferner	A 00209	528	46°48'N	10°46'E	3710	3050	2426	7.13	8.725	E/NE	-437	46	[1, 2, 3, 4, 5, 6, 69, 30, 95, 96]
187	Otztaler Alps	Austria	Kesselwandferner	A 00226	638	46°50'N	10°48'E	3490	3180	2720	4.2	4.291	SE/E	-46	41	[1, 2, 3, 4, 5, 6, 69, 30, 95, 96]
188	Otztaler Alps	Austria	Vernagtferner	A 00211	626	46°53'N	10°49'E	3627	3187	2748	3.3	9.088	S/SE	-202	33	[2, 3, 4, 5, 6, 31, 66, 69, 75, 75a]
189	Sonnblickgebit	Austria	Filleck K.	A A601	606	47°08'N	12°36'E	2920	2860	2780	0.4	0.16	SE/SE	252	17	[2, 3, 4, 5]
190	Sonnblickgebit	Austria	Sonnblick K.	A 00601	606	47°08'N	12°36'E	3050	2780	2500	1.5	1.5	NE/E	-202	40	[1, 2, 3, 4, 5, 6, 69, 96]

191	Sonnblickgebit	Austria	O.Wurtenkees	A 00804	628	47°02'N	13°00'E	3120	2680	2380	3	1.093	SW/S	-811	15	[32, 69, 75, 75a, 96, 97, 98]
192	Austrian Alps	Austria	Jamtalferner	A 00106	528	46°42'N	10°10'E	3160	2810	2408	2.8	3.846	N/N	-699	10	[30, 6, 69, 75, 75a, 96]
193	Austrian Alps	Austria	Vermunt	A 00104	628	46°51'N	10°08'E	3130	2790	2430	2.8	2.25	NW/NW	-982	8	[30, 69, 75, 75a, 96]
194	Austrian Alps	Austria	Ochsentaler	A 00103	528	46°51'N	10°06'E	3160	2910	2290	2.8	2.56	N/N	-512	8	[30, 69, 75, 75a, 96]
195	Austrian Alps	Austria	Langtaler	A 00223	538	46°48'N	11°01'E	3420	2910	2450	5.1	3.52	N/NW	-192	8	[2, 3, 30]
196	Ortles-Cevedale	Italy	Careser	I00701	638	46°27'N	10°42'E	3350	3092	2857	2.2	3.857	S/S	-678	31	[2, 3, 4, 5, 6, 69, 75, 75a]
197	Gran Paradiso	Italy	Ciardoney	I00081	640	45°31' N	7°26'E	3170	3000	2900	1.9	0.76	N/N	-678	6	[69, 99]
198	Alps	Italy	Sforzellina	I00516	648	46°20'N	10°30'E	3120	2925	2760	0.7	0.39	NW/NW	-814	9	[6, 69]
199	Alps	Italy	Marmolada	I 00941	606	46°26'N	11°52'E	3340	2825	2475	1.5	2.6	N/N	521	2	[2]
200	Alps	Italy	Fontana B.	I00713	640	46°29'N	10°46'E	3355	3197	2880	1.1	0.66	E/E	-565	11	[33, 69, 75, 75a]
201	Pyrenea	Spain	Maladeta	E 09020	648	42°39'N	0°38'E	3180	3025	2790	1.1	0.5	NE/NE	11	6	[6, 69, 75, 75a, 100]
202	E.Africa	Kenya	Lewis	KN00008	533	0°09'S	37°18'E	4962	4750	4611	0.95	0.2047	SW/SW	-890	18	[4, 6, 59, 69, 75]
203	N-C. Caucasus	Russia	Djankuat	SU 3010	528	43°12'N	42°46'E	3798	3280	2700	4.2	3.1	N/NW	-36	30	[2, 3, 4, 5, 6, 69, 75, 75a, 104]
204	N-C. Caucasus	Russia	Garabashi	SU03031	OO8	43°18'N	42°28'E	5000	3880	3316	5.8	4.47	SE/S	38	14	[5, 6, 69, 75]
205	N-C. Caucasus	Russia	Kayarta		622	43°00'N	43°00'E							50	14	[61]
206	W.Cucasus	Russia	Marukh	SU03001	539	43°05'N	41°10'E	3160	2785	2490	4	3.33	NE/NE	-321	16	[2, 3, 4, 5, 50]
207	N-C. Caucasus	Russia	Koiavgan		648	43°12'N	42°46'E	3600		3300	0.6	0.36	NW	-511	7	[49]
208	N-C. Caucasus	Russia	Visyachiy		640	43°12'N	42°46'E	3700		3200	1	0.45	NW	124	7	[49]
209	N-C. Caucasus	Russia	Viatau		648	43°12'N	42°46'E	3600		3300	0.8	0.21	NW	167	7	[49]
210	N-C. Caucasus	Russia	Yunom	SU03011	538	43°00'N	42°00'E	4342		3100	2.8	3.34	NW/W	630	1	[5]
211	N-C. Caucasus	Russia	Kelbashi			43°00' N	42°00'E	3980		3340		1.5		394	5	[48]
212	N-C. Caucasus	Russia	Bezengi	SU03006	529	43°10'N	43°00'E	5050	-	2080	17.6	36.2	NE/NE	-403	15	[48]
213	N-C. Caucasus	Russia	Tseya	SU03007	529	42°55'N	43°40'E	4460	-	2200	8.6	9.7	NE/NE	92	11	[48]
214	N-C. Caucasus	Russia	Khakel	SU03003	5	43°10'N	41°40'E	3240		2270	3.9	2.7		-45	6	[48]
215	S. Caucasus	Georgia	Tbilisa	SU03012	528	43°18'N	42°28'E	4300		2950	2.96	3.75	SE/SE	-228	13	[5]
216	Altaiy	Russia	Leviy Aktru	SU07102	536	50°05'N	87°44'E	4043	3250	2559	5.9	6.24	SE/SE	-45	21	[5, 6, 62, 69, 75, 75a, 101]
217	Altaiy	Russia	Maliy Aktru	SU07100	538	50°05'N	87°45'E	3714	3200	2229	4.22	2.73	E/N	1	36	[3, 4, 5, 6, 53, 62, 69, 75, 75a, 101]
218	Altaiy	Russia	Praviy Aktru	SU07101	536	50°05'N	87°44'E	3750	3000	2500	5.3	4.8	NE/NE	137	11	[6, 53, 62,101]
219	Altaiy	Russia	No 125	SU07105	303	50°06'N	87°42'E	3550	3100	3025	1.4	0.93	N/N	-36	21	[6, 53, 62, 69, 75, 75a, 101]
220	Altaiy	Russia	Stager			50°07'N	87°41'E					0.24	N/N	760	1	[53, 101]
221	Altaiy	Russia	Maliy Berel'			50°00'N	88°44'E					abl area 3.45			6	[2]
222	Altaiy	Russia	Bolshoy Berel'			49°49'N	88°44'E					abl.area 4.12			6	[2]
223	E.Siberea	Russia	Suntar Hayata	N 31	538	60°00'N	90°00'E	2728		2023		3.2		-136	13	[52]
224	Kamtshatka	Russia	Grechishkin	SU 8001	538	58°00'N	160°38'E	1770	1550	790	8.1	14.2	W/W	-140	1	[4]
225	Kamtshatka	Russia	Koryto	SU08003	538	54°41'N	161°38'E	1200	810	320	6.95	7.55	NW/NW	740	5	[102]
226	Kamtshatka	Russia	Kozelskiy	SU08005	539	53°14'N	158°49'E	2050	1590	880	4.6	1.8	S/S	-190	25	[51, 102]
227	Kamtshatka	Russia	Kropotkina	SU08003	649	54°20'N	160°01'E	1300	1180	1025		0.6	N/N	1600	1	[5]
228	Kamtshatka	Russia	Mutnovs.SW	SU08011	660	52°23'N	158°07'E	1800	1710	1500	1.5	1.09	NE/NE	210	5	[4]
229	Kamtshatka	Russia	Mutnovs.NE	SU08011	660	52°25'N	158°10'E	1950	1700	1460	1.7	1.38	NW/NW	176	5	[4]
230	Ural	Russia	IGAN	SU02001	648	67°40'N	65°80'E	1180	950	820	1.4	0.88	E/E	-187	24	[47]
231	Ural	Russia	Obrucheva	SU02002	648	67°43'N	65°70'E	650	520	400	0.9	0.3	E/E	-134	24	[47]
232	North Land	Russia	Vavilova C.	SU01001	3	79°22'N	95°39'E	728	500	40	55	1817		23	12	[4, 44, 103]
233	Nowaya Zeml.	Russia	Shokalskiy			76°00'N	62°05'E	860		0		515		-77	3	[45]
234	FJL	Russia	Sedov			80°00'N	53°00'E	360		0		5.5		-510	1	[46]
235	Pamir	Kirghizstan	Abramov	SU04101	528	39°40'N	71°30'E	4960	4200	3620	9.4	22.503	N/N	-479	30	[42, 67, 75, 75a]
236	Pamir	Kirghizstan	Abramov snow patsch	sn.patch		39°40'N	71°30'E			3620		0.12	N	71	12	[42]
237	Pamir	Kirghizstan	No.314	SU04102	536	39°21'N	70°08'E	4340	3980	3660	2.2	1.46	NW/NW	-453	3	[5]
238	Dzhungariya	Kazakhstan	Shumskiy	SU06002	536	45°05'N	80°14'E	4464	3660	3126	3.51	2.81	N/N	-146	25	[2, 6, 69, 105]
239	Dzhungariya	Kazakhstan	Muravlev	SU06001	736	45°06'N	80°14'E	4040	3710	3160	2.05	1.4	NW/NW	-	13	[69]
240	Tien-Shan	Kazakhstan	Ts. Tuyuksu	SU05075	536	43°00'N	77°06'E	4219	3770	3414	3.1	2.66	N/N	-401	41	[40, 41, 43, 69, 75, 75a, 105]
241	Tien-Shan	Kazakhstan	Igly Tuyuksu	SU05076	536	43°00'N	77°06'E	4220		3450	2.2	1.72	NW/NW	-321	34	[41, 43, 105]
242	Tien-Shan	Kazakhstan	Molodezhniy	SU05090	736	43°00'N	77°06'E	4150		3450	1.7	1.43	NE/NE	-434	34	[41, 43, 105]
243	Tien-Shan	Kazakhstan	Mametova	SU05091	736	43°00'N	77°06'E	4190		3610	0.6	0.35	W/W	-289	34	[41, 43, 105]
244	Tien-Shan	Kazakhstan	Korzhenevsky		519	42°37'N	77°24'E	5020		3300	11.5	37.5		63	3	[2]
245	Tien-Shan	Kazakhstan	Teu-S.			43°00'N	77°00'E					1.88		630	2	[2, 65]
246	Tien-Shan	Kazakhstan	Teu-N.			43°00'N	77°00'E					1.9		670	2	[2, 65]
247	Tien-Shan	Kazakhstan	Shokalskiy	SU05078	536	43°00'N	77°18'E	4540		3560	4.7	10.8	N/N	580	2	[2]
248	Tien-Shan	Kirghizstan	No.131	SU05081	538	41°51'N	77°46'E	4433	4151	3864	1.28	0.51	NE/NE	-422	5	[43]
249	Tien-Shan	Kirghizstan	Kayandy		529	42°00'N	79°00'E	5520		3400	29	84.1		-233	2	[43]
250	Tien-Shan	Kirghizstan	S.Inylchek		529	42°00'N	79°00'E	6870		2800	60.5	567.2		32	2	[43]
251	Tien-Shan	Kirghizstan	Kara-Batkak	SU05080	538	42°06'N	78°18'E	4829	3886	3293	3.55	4.19	N/N	-438	41	[43]
252	Tien Shan	Kirgizstan	Grigor'yev		633	42°30'N	78°00'E	4609		4150		9.35		-256	2	[43]
253	Tien-Shan	Kirghizstan	Golubina	SU05060	538	42°27'N	74°30'E	4437	3970	3250	5.1	6.21	NW/NW	-312	26	[43]
254	Tien-Shan	Kirghizstan	Davidov	SU05109	526	41°50'N	78°12'E	4980	4280	3780	6.13	11.43	NW/NW	-425	2	[43]

255	Tien-Shan	Kirghizstan	Suyok Zap.	SU05082	538	41°47'N	77°47'E	4496	4187	3895	2.5	1.25	N/N	-706	5	[43]
256	Tien-Shan	Kirghizstan	Sary-Tor (No356)	SU05106	538	41°50'N	78°11'E	4800	4252	3860	4.48	3.61	NE/NE	-125	6	[43]
257	E.Tien Shan	China	Urumqihe S.#1	CN0010	622	43°05'N	86°49'E	4486	4040	3736	2.2	1.84	NE/NE	-151	39	[106, 43, 69, 75, 75a, 106, 110]
258	E.Tien Shan	China	Gl. #1, E.Br.	CN0010	622	43°05'N	86°49'E	4224		3736	2.2	1.163	NE/NE	-236	8	[69]
259	E.Tien Shan	China	Gl. #1, W.Br.	CN0010	622	43°05'N	86°49'E	4476		3795	1.95	0.677	NE/NE	-173	8	[69]
260	Qilanshan	China	Qiyi	CN00003	520	39°14'N	97°54'E	5145	4720	4310	3.8	3.04	NW/NW	192	5	[4, 5, 108]
261	Qilanshan	China	Shuiguanhe No 4	CN00001	640	37°33'N	101°45'E	5024	4620	4200	2.2	1.36		99	3	[4]
262	Qilanshan	China	Yanglonghe No 5	CN00002	538	39°14'N	98°34'E	5262	4840	4420	2.5	1.62	NE/NE	85	3	[4]
263	Gongga Mtn.	China	Hailogou	CN0004	518	29°35'N	101°56'E	7514		2980	13.1	25.71	SE	-231.00	5	[108, 109]
264	Qilanshan	China	Laohuguo	CN 0004	518	39°26'N	96°33'E	5481	4880	4260	10.1	21.91	N/NW	331	1	[4, 108]
265	Tibet	China	Xiao Dongkzmadi	CN00038	538	33°10'N	92°08'E	5926		5380	2.8	1.767	S/SW	97	10	[69, 107]
266	Kunlun	China	Meikuang		628	35°40'N	94°11'E	5520		4805	1.8	1.1		130	9	[107]
267	Himalaya	India	Changmekhangpu	IN02522	530	27°57'N	88°41'E	5520	5300	4840	5.6	4.43	S/S	-242	6	[6]
268	Himalaya	India	Dunagiri	IN00191	537	30°33'N	79°54'E	5150	4560	4240	5.5	2.56	N/N	-1097	5	[6]
269	Himalaya	India	Shaune Garang	IN00084	527	31°17'N	78°20'E	5360	4600	4400	5.5	4.97	W/N	-226	9	[6]
270	Himachal Prad.	India	Gor Garang			31°37'N	78°49'E			4760		2		-375	8	[54]
271	Himalaya	India	Tipra Bank	IN00004		30°44'N	79°41'E	5730	4400	3720	6	7	N/NW	-243	3	[6]
272	Himalaya	India	Neh Nar			34°16'N	75°52'E	4925		3920		1.7		-362	5	[54]
273	Himalaya	India	Kolahoi			34°20'N	75°47'E	5000		3690		11.9		-265	1	[55]
274	Himalaya	India	Shishram			34°20'N	75°43'E	4900		3740		9.9		-287	1	[55]
275	Himalaya	Nepal	AX010	NP00005	636	27°42'N	86°34'E	5360	5220	4952	1.7	0.568	E/SE	-492	2	[75]
276	N.Japan Alps	Japan	Hamaguri-yuki	J000001	730	36°35'N	137°37'E	2720	-	2690	0.07	0.003	NE/NE	224	10	[5, 6, 69, 111]
277	Irian Java	Indonesia	Carstenz	RI00004	538	4°06'S	137°10'E	4800	4600	4380	1.8	0.89	W/NW	-81	1	[3]
278	Irian Java	Indonesia	Meren	RI00003	536	4°05'S	137°10'E	4860	4610	4260	2.1	1.95	SW/W	-512	1	[3]
279	S.Island	New Zeland	Ivory	NZ9011	644	43°08'S	170°55'E	1730	1510	1390	1.35	0.93	S/S	-2383	6	[3]
280	S.Island	New Zeland	Tasman	NZ7111	524	43°31'S	170°19'E	2830		730	28.5	98.34		-770	1	[3]
281	S.Georgia	Gr.Britan	Hodges			54°27'S	36°53'W	1730		1390		0.3		-150	1	[57]
282	S.Georgia	Gr.Britan	Hamberg			54°40'S	36°50'W	2000		0		11.4		-254	1	[57]
283	Alexan. Is.	Antarctica	Spartan			71°03'S	68°20'E	450		40		6.3		-103	4	[58]
284	Dry Valley	Antarctica	Alberich	AN0002		77°35'S	161°37'E	1800		1400		1.36		10	4	[3]
285	Dry Valley	Antarctica	Heimdall	AN00 03	538	77°35'S	162°52'E	1800	1500	1200	6	7.96	W/NW	-15	4	[3]
286	Dry Valley	Antarctica	Jeremy Sykes	AN0001		77°36'S	161°33'E	2040		1170		9.92		8	4	[3]
287	Desep. Isl.	Sub Ant.	G1			63°0'S	60°35'W	400		100		0.418		-290	3	[3]

References to Appendix 1

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Appendix 2 Mass balance versus altitude

White															
Altitude	**Area**	**1960, bn**	**1961, bn**	**1962, bn**	**1963, bn**	**1964, bn**	**1965, bn**	**1966, bn**	**1967, bn**	**1968, bn**	**1969, bn**	**1970, bn**	**1971, bn**	**1972, bn**	**1973, bn**
1650	0.4	480	208	407	407	606	200	349	342	178	419	245	352	287	348
1550	1.6	480	208	407	407	606	200	349	342	178	419	245	352	287	348
1450	4	470	245	267	402	604	200	349	343	178	420	246	352	287	350
1350	6.1	252	300	-68	269	531	216	334	360	140	434	274	320	270	391
1250	5.7	-29	298	-367	107	452	218	282	357	33	412	271	225	256	418
1150	5.1	-287	246	-662	-26	402	194	193	319	-129	341	219	77	248	404
1050	3.7	-526	153	-929	-140	368	143	74	249	-335	225	124	-114	237	352
950	2.6	-750	26	-1181	-249	341	64	-71	152	-574	73	-5	-336	215	266
850	2	-961	-127	-1420	-362	310	-43	-239	29	-835	-112	-160	-578	171	149
750	1.3	-1164	-298	-1651	-494	266	-179	-424	-116	-1105	-321	-334	-831	98	5
650	1.4	-1362	-480	-1876	-654	197	-345	-621	-282	-1375	-551	-520	-1082	-14	-162
550	0.9	-1559	-665	-2100	-855	95	-542	-826	-463	-1631	-793	-709	-1321	-173	-350
450	0.7	-1758	-846	-2325	-1110	-52	-771	-1035	-659	-1864	-1042	-894	-1538	-389	-555
350	1	-1964	-1013	-2556	-1428	-253	-1032	-1243	-866	-2061	-1292	-1067	-1720	-670	-772
250	1.2	-2179	-1161	-2796	-1823	-520	-1326	-1445	-1081	-2211	-1538	-1220	-1858	-1025	-1000
150	0.8	-2408	-1247	-3047	-2307	-837	-1593	-1615	-1265	-2298	-1749	-1336	-1937	-1463	-1152
1700-100	*38.5*	*-404*	*23*	*-781*	*-154*	*350*	*-9*	*-22*	*121*	*-406*	*74*	*-4*	*-184*	*115*	*190*
White cont.															
Altitude	**Area**	**1974, bn**	**1975, bn**	**1976, bn**	**1977, bn**	**1978, bn**	**1979, bn**	**1983, bn**	**1984, bn**	**1985, bn**	**1986, bn**	**1987, bn**	**1988, bn**	**1989, bn**	**1990, bn**
1650	0.4	225	588	291	78	209	196	160	338	341	125	47	427	393	134
1550	1.6	225	588	291	78	209	196	160	349	324	212	38	357	309	112
1450	4	226	588	292	81	210	197	193	354	286	355	2	227	150	44
1350	6.1	223	586	339	201	285	226	315	326	253	386	-62	163	63	-41
1250	5.7	195	554	364	238	310	213	344	265	219	319	-156	149	32	-143
1150	5.1	137	485	339	121	229	136	279	174	177	167	-282	171	42	-263
1050	3.7	54	383	270	-119	64	9	136	56	123	-56	-441	210	76	-398
950	2.6	-54	250	164	-448	-164	-156	-67	-89	49	-336	-635	253	118	-549
850	2	-182	89	27	-833	-435	-349	-314	-258	-51	-659	-867	282	152	-716
750	1.3	-328	-96	-135	-1242	-729	-556	-588	-449	-182	-1011	-1138	283	163	-897
650	1.4	-489	-304	-315	-1642	-1025	-766	-872	-660	-350	-1380	-1449	239	134	-1092
550	0.9	-664	-532	-506	-2000	-1302	-966	-1150	-889	-563	-1750	-1804	135	49	-1300
450	0.7	-848	-776	-702	-2283	-1539	-1144	-1404	-1134	-825	-2108	-2203	-47	-107	-1522
350	1	-1040	-1034	-896	-2458	-1716	-1289	-1619	-1393	-1144	-2440	-2649	-320	-351	-1756
250	1.2	-1236	-1304	-1082	-2493	-1813	-1387	-1777	-1664	-1524	-2734	-3143	-701	-698	-2001
150	0.8	-1399	-1538	-1246	-2365	-1821	-1428	-1861	-1945	-1972	-2974	-3688	-1203	-1165	-2259
1700-100	*38.5*	*-46*	*247*	*112*	*-372*	*-134*	*-109*	*-83*	*-55*	*-12*	*-259*	*-617*	*128*	*28*	*-448*
White cont.															
Altitude	**Area**	**1991, bn**	**1992, bn**	**1993, bn**	**1994, bn**	**1995, bn**	**1996, bn**	**1997, bn**							
1650	0.4	333	281	373	433	268	230	415							
1550	1.6	294	218	296	349	277	230	415							
1450	4	206	77	118	166	263	207	403							
1350	6.1	130	-40	-39	27	194	155	348							
1250	5.7	59	-139	-181	-82	76	121	258							
1150	5.1	-13	-224	-314	-170	-85	99	137							
1050	3.7	-91	-301	-443	-250	-283	82	-9							
950	2.6	-183	-375	-574	-332	-511	63	-175							
850	2	-293	-451	-714	-428	-763	36	-356							
750	1.3	-429	-536	-866	-549	-1034	-5	-546							
650	1.4	-596	-634	-1037	-705	-1315	-69	-740							
550	0.9	-800	-751	-1234	-909	-1603	-160	-933							
450	0.7	-1048	-891	-1460	-1171	-1889	-287	-1121							
350	1	-1346	-1061	-1722	-1502	-2169	-455	-1297							
250	1.2	-1700	-1266	-2026	-1915	-2435	-671	-1456							
150	0.8	-2115	-1511	-2377	-2419	-2682	-935	-1591							
1700-100	*38.5*	*-179*	*-289*	*-446*	*-301*	*-372*	*38*	*-56*							

Devon I.C.															
Altitude	**Area**	**1961, bn**	**1962, bn**	**1963, bn**	**1964, bn**	**1965, bn**	**1966, bn**	**1967, bn**	**1968+69, bn**	**1970, bn**	**1971, bn**	**1972, bn**	**1973, bn**	**1974, bn**	**1975, bn**
1750	37.5	201	142	270	246	155	176	222	406	200	230	180	240	190	237
1650	65	177	110	243	237	127	180	182	278	170	210	160	230	185	189
1550	122.6	152	79	224	215	115	190	158	213	190	210	170	230	255	202
1450	115	127	8	206	199	115	180	152	-29	210	220	220	260	210	277
1350	217.5	77	-108	186	183	116	150	152	-106	200	230	255	160	127	186
1250	180	-69	-177	160	165	116	50	150	-364	160	140	234	60	43	114
1150	160	-164	-246	127	145	113	-93	97	-479	150	-20	172	-40	-41	42
1050	235	-259	-315	80	124	102	-193	-25	-526	145	-110	110	-140	-125	-67
950	192.5	-353	-464	16	102	76	-293	-183	-423	100	-230	47	-250	-208	-194
850	95	-448	-700	-9	77	50	-393	-247	-415	-150	-350	-15	-350	-292	-322
750	82.5	-542	-866	-167	56	20	-493	-311	-600	-357	-480	-77	-450	-376	-450
650	75	-637	-1000	-327	24	-69	-593	-375	-785	-443	-600	-139	-550	-460	-577
550	70	-732	-1116	-485	-64	-188	-693	-439	-972	-527	-722	-201	-650	-543	-705
450	10	-826	-1217	-644	-140	-307	-793	-503	-1157	-613	-610	-264	-750	-627	-832
350	12.5	-921	-1314	-803	-224	-426	-893	-567	-1343	-697	-500	-326	-760	-678	-960
250	12.5	-1015	-1402	-962	-304	-545	-993	-631	-1529	-782	-700	-388	-930	-865	-1088
150	7.5	-1110	-1481	-1121	-384	-664	-1093	-695	-1714	-867	-900	-451	-1190	-1052	-1215
50	5	-1205	-1559	-1281	-464	-783	-1238	-759	-1900	-953	-1050	-531	-1440	-1239	-1343
1800-0	*1695*	*-196*	*-349*	*43*	*125*	*64*	*-135*	*-27*	*-354*	*39*	*-74*	*102*	*-95*	*-81*	*-69*
recalc.	**1695.1**	**-196**	**-349**	**43**	**125**	**64**	**-135**	**-27**	**-354**	**39**	**-74**	**102**	**-95**	**-81**	**-69**

Devon I.C. cont.															D
Altitude	**Area**	**1976, bn**	**1977, bn**	**1978, bn**	**1979, bn**	**1980, bn**	**1981, bn**	**1982, bn**	**1983, bn**	**1984, bn**	**1985, bn**	**Area**	**1986, bn**	**1987, bn**	**1988, bn**
1750	37.5	151	209	163	150	180	192	180	220	246	250	37.5	331	241	216
1650	65	161	184	164	150	170	192	140	227	238	230	65	281	278	175
1550	122.6	171	159	165	200	180	192	150	227	231	220	122.6	341	288	213
1450	115	181	134	165	210	215	192	150	227	223	300	115	335	288	205
1350	217.5	191	-12	166	185	200	110	47	227	216	95	217.5	335	288	130
1250	180	201	-25	167	135	170	-50	3	227	208	17	180	202	255	34
1150	160	211	-39	38	50	100	-127	-41	227	7	-61	160	112	113	-122
1050	235	221	-53	10	215	0	-204	-85	227	-84	-82	235	233	81	-277
950	192.5	239	-67	-18	150	-130	-281	-129	164	-175	-214	192.5	210	27	-433
850	95	180	-222	-46	-275	-350	-425	-170	5	-286	-346	96	200	61	-588
750	82.5	118	-364	-74	-352	-550	-534	-320	-153	-357	-478	82.5	99	-541	-744
650	75	56	-506	-193	-428	-700	-577	-470	-312	-449	-610	75	-60	-724	-899
550	70	-6	-648	-377	-505	-820	-620	-630	-470	-540	-742	70	-220	-764	-1061
450	10	-69	-790	-471	-581	-910	-664	-780	-629	-631	-874	10	-411	-804	-1136
350	12.5	-131	-932	-561	-658	-930	-707	-930	-787	-772	-1006	12.5	-538	-844	-1203
250	12.5	-193	-1074	-660	-734	-950	-750	-1090	-946	-812	-1137	12.5	-634	-884	-1271
150	7.5	-286	-1216	-734	-811	-970	-793	-1240	-1105	-904	-1269	7	-730	-934	-1339
50	5	-317	-1358	-839	-887	-990	-837	-1390	-1263	-993	-1401	5	-926	-964	-1406
1800-0	**1695**	*171*	*-99*	*27*	*35*	*-61*	*-146*	*-95*	*105*	*-33*	*-108*	*1668*	*184*	*35*	*-226*
recalc.	**1695**	**171**	**-99**	**27**	**35**	**-61**	**-146**	**-95**	**105**	**-33**	**-108**	**1696**	**184**	**35**	**-226**

Devon I.C.														
Altitude	**Area**	**1989, bn**	**1990, bn**	**Area,**	**1991, bn**	**1992, bn**	**1993, bn**	**1994, bn**	**1995, bn**					
1750	37.5	303	298	37.5	190	180	210	200	220					
1650	65	256	287	6	190	160	260	140	190					
1550	122.6	272	273	122.6	190	150	190	140	170					
1450	115	252	233	115	170	150	250	150	170					
1350	217.5	175	129	217.5	50	140	250	170	290					
1250	180	135	25	180	-60	170	110	170	190					
1150	160	9	-79	160	-180	190	10	180	10					
1050	235	-116	-183	235	-290	230	-100	40	-160					
950	192.5	-241	-288	192.5	-410	170	-200	-100	-340					
850	96	-422	-615	96	-520	20	-310	-250	-510					
750	82.5	-558	-706	82.5	-640	-90	-420	-390	-690					
650	75	-640	-796	75	-750	-190	-520	-530	-860					
550	70	-721	-886	70	-870	-300	-630	-670	-1040					
450	10	-802	-976	10	-980	-400	-730	-820	-1220					
350	12.5	-884	-1066	12.5	-1100	-500	-820	-960	-1250					
250	12.5	-965	-1156	12.5	-1210	-610	-860	-1100	-1290					
150	7	-1046	-1246	7	-1310	-710	-900	-1240	-1340					
50	5	-1128	-1337	5	-1450	-870	-940	-1380	-1380					
1800-0	*1695.6*	*-88*	*-165*	*1636.6*	*-244*	*94*	*-62*	*-32*	*-147*					
recalc.	**1696**	**-88**	**-165**	**1636.6**	**-244**	**94**	**-62**	**-32**	**-147**					
Devon I.C. cont.														
Altitude	**Area,**	**1996, bn**	**1996, bw**	**1996, bs**	**1997, bn**	**1997, bw**	**1997, bs**	**1998, bn**	**1998, bs**					
1750	38	209	209	0	270	235	35	204	14					
1650	65	207	181	26	267	235	32	189	14					
1550	123	207	186	21	263	210	53	174	14					
1450	115	207	186	21	260	170	90	159	14					
1350	218	180	116	64	257	217	40	83	-107					
1250	180	-121	148	-269	89	108	-18	-58	-232					
1150	160	-164	95	-259	32	113	-81	-199	-357					
1050	235	-207	131	-338	-25	165	-190	-341	-482					
950	193	-250	103	-353	-81	75	-156	-482	-607					
850	95	169	40	129	-138	70	-208	-623	-732					
750	83	-189	64	-253	-194	70	-264	-764	-857					
650	75	-527	51	-578	-685	30	-715	-905	-983					
550	70	-527	59	-586	-710	30	-740	-1046	-1108					
450	10	-527	51	-578	-735	40	-775	-1188	-1233					
350	13	-527	89	-616	-760	40	-800	-1329	-1358					
250	13	-527	121	-648	-784	90	-870	-1470	-1483					
150	8	-527	175	-702	-809	100	-909	-1611	-1611					
50	5	-527	175	-702	-834	100	-934	-1750	-1752					
1800-0	*1699*	*-80*	*120*	*-201*	*-13*	134	-147	-276	-417					
Laika Gl.										**Laika I.C.**				
Altitude	**Area**	**1974, bn**	**1974, bw**	**1974, bs**	**Area**	**1975, bn**	**1975, bw**	**1975, bs**		**Altitude**	**Area**	**1975, bn**	**1975, bw**	**1975, bs**
510	0.18	310	490	-180	0.2	320	690	-370		510	0.52	30	530	-500
475	0.59	160	510	-350	0.61	200	640	-440		475	1.26	-70	530	-600
425	0.74	50	490	-440	0.73	50	630	-580		425	1.84	-320	450	-770
375	0.68	-190	370	-560	0.72	-410	410	-820		375	2.42	-660	350	-1010
325	0.48	-380	410	-790	0.45	-400	530	-930		325	1.29	-620	490	-1110
275	0.24	-470	520	-990	0.28	-560	490	-1050		275	0.65	-800	450	-1250
225	0.17	-680	400	-1080	0.19	-960	420	-1380		225	0.39	-990	480	-1470
175	0.22	-1150	200	-1350	0.24	-1370	190	-1560		175	0.49	-1010	450	-1460
125	0.23	-1330	220	-1550	0.19	-1590	180	-1770		125	0.3	-1440	260	-1700
75	0.49	-1410	180	-1590	0.44	-1740	180	-1920		75	0.45	-1750	180	-1930
35	0.23	-1360	290	-1650	0.23	-2050	240	-2290		35	0.23	-2050	240	-2290
520-20	*4.24*	*-450*	*390*	*-840*	*4.28*	*-570*	*460*	*-1030*		**520-20**	*9.82*	*-630*	*420*	*-1050*
recalc.	**4.25**	**-451**	**386**	**-837**	**4.28**	**-575**	**456**	**-1031**		**recalc.**	**9.84**	**-624**	**424**	**-1048**

Alexander													
Altitude	**Area**	**1981, bn**	**1981, bw**	**1981, bs**	**1982,bn**	**1982, bw**	**1982, bs**	**1983, bn**	**1983, bw**	**1983, bs**	**1984,bn**	**1984,bw**	**1984, bs**
1810	0.435	500	2250	-1750	-500	1750	-2250	-180	1750	-1930	1000	1750	-750
1750	1.528	500	2250	-1750	-650	1600	-2250	-770	1460	-2230	500	1750	-1250
1650	1.571	300	2160	-1850	-840	1690	-2530	-1320	1270	-2590	400	1750	-1350
1550	0.858	-300	1910	-2210	-1860	1390	-3250	-1700	1250	-3020	-140	1750	-1610
1450	0.86	-1260	1750	-3010	-1700	1250	-2950	-2130	1110	-3240	-720	1530	-2250
1350	0.388	-1920	1570	-3480	-1910	1030	-2940	-2290	900	-3190	-1010	1540	-2550
1250	0.182	-2150	1250	-3480	-2880	750	-3640	-3000	750	-3750	-2000	1250	-3250
1195	0.012	-2500	1250	-3750	-3000	750	-3750	-3000	750	-3750	-2000	1250	-3250
1820-1190	*5.834*	*-180*	*2020*	*-2200*	*-1180*	*1490*	*-2670*	*-1400*	*1280*	*-2680*	*100*	*1690*	*-1590*
recalc.	**5.834**	**-181**	**2024**	**-2203**	**-1181**	**1487**	**-2668**	**-1397**	**1287**	**-2684**	**94**	**1687**	**-1593**
Abraham													
Altitude	**Area**	**1982, bn**	**1983, bn**	**1984, bn**									
>1100	0.27	1250	1750	750									
1050	0.154	1010	1068	230									
950	0.244	-176	-162	-943									
850	0.194	-1015	-1358	-2363									
750	0.108	-1352	-2209	-2773									
<700	0.001	-1750	-2250	-2750									
1100-700	*0.728*	*-273*	*-456*	*-1284*									
recalc.	**0.971**	**109**	**96**	**-775**									
Hidden													
Altitude	**Area**	**1982, bn**	**1983, bn**	**1984, bn**									
>1200	0.046	1250	1250	750									
1150	0.089	851	1143	334									
1050	0.222	252	606	-313									
950	0.193	-424	-380	-1113									
850	0.297	-1019	-1328	-1568									
<800	0.006	-1250	-1250	-1750									
1200-800	*0.853*	*-238*	*-213*	*-816*									
recalc.	**0.853**	**-229**	**-213**	**-816**									
Superguksoak													
Altitude	**Area**	**1982, bn**	**1983, bn**	**1984, bn**									
>1000	0.133	1013	1054	506									
950	0.48	476	509	-171									
850	0.501	-597	-34	-1177									
750	0.24	-605	-263	-913									
<700	0.041	-201	-262	-530									
1000-700	*1.395*	*-56*	*211*	*-606*									
recalc.	**1.395**	**-64**	**210**	**-606**									

Appendix 2 Mass balance versus altitude

Andrei													
Altitude	**Area**	**1981, bn**	**1981, bw**	**1981, bs**	**1982,bn**	**1982, bw**	**1982, bs**	**1983, bn**	**1983, bw**	**1983, bs**	**1984,bn**	**1984,bw**	**1984, bs**
2150	0.115	2000	3250	-1250	500	2250	-1750	500	2250	-1750	1500	2250	-750
2050	2.118	2000	3250	-1250	280	2250	-1970	1520	2250	-730	1500	2250	-750
1950	3.8	1390	2750	-1360	200	2250	-2050	1430	2150	-720	1000	1750	-750
1850	8.912	1000	2750	-1750	360	2250	-1880	1100	1820	-730	1000	1750	-750
1750	11.109	1000	2750	-1750	320	2150	-1830	1040	2010	-970	1000	1750	-750
1650	8.355	970	2750	-1780	130	1990	-1860	380	1780	-1400	1000	1750	-750
1550	16.254	910	2680	-1770	-310	1700	-2010	-420	1600	-2020	840	1730	-890
1450	8.695	630	2420	-1790	-1070	1390	-2470	-1140	1390	-2540	300	1560	-1250
1350	14.718	-230	2230	-2460	-1750	1350	-3100	-2200	800	-3010	-290	1610	-1900
1250	5.688	-1560	2020	-3580	-2620	1240	-3870	-2500	1040	-3540	-1410	1430	-2840
1150	3.824	-2310	1680	-3990	-3220	1010	-4430	-2610	750	-3360	-1930	1240	-3180
1050	3.282	-3110	1380	-4480	-3650	790	-4440	-3320	650	-3970	-2090	1020	-3100
950	2.46	-3290	1250	-4540	-3400	750	-4150	-3700	470	-4170	-2150	1030	-3190
850	1.541	-3980	980	-4970	-3600	750	-4350	-4370	270	-4640	-2450	800	-3250
750	0.888	-4500	750	-5250	-4490	540	-5050	-4950	250	-5200	-3070	440	-3500
645	0.388	-4500	750	-5250	-5000	250	-5250	-5000	250	-5250	-3500	250	-3750
2190-610	*92.147*	*70*	*2400*	*-2330*	*-970*	*1640*	*-2610*	*-790*	*1410*	*-2200*	*140*	*1600*	*-1460*
recalc.	**92.147**	**75**	**2400**	**-2325**	**-984**	**1637**	**-2621**	**-797**	**1403**	**-2200**	**132**	**1597**	**-1465**
Bench													
Altitude	**Area**	**1981, bn**	**1981, bw**	**1981, bs**	**1982,bn**	**1982, bw**	**1982, bs**	**1983, bn**	**1983, bw**	**1983, bs**	**1984,bn**	**1984,bw**	**1984, bs**
2850	0.015	1460	2730	-1270	1000	2270	-1270	1530	2730	-1270	2460	2730	-270
2750	0.006	1660	2830	-1170	1000	2330	-1330	1500	2660	-1160	2500	2830	-330
2650	0.046	1520	2760	-1240	1000	2260	-1260	1500	2740	-1240	2500	2760	-260
2550	0.592	1270	2750	-1480	710	2250	-1540	1500	2750	-1250	2500	2750	-250
2450	0.866	440	2380	-1940	130	1880	-1750	1500	2750	-1250	2000	2750	-750
2350	0.902	500	2450	-1950	200	1950	-1750	1150	2400	-1250	2000	2750	-750
2250	0.919	690	2580	-1890	510	2090	-1580	590	2190	-1600	2000	2750	-750
2150	0.573	1070	2750	-1680	690	2250	-1560	690	2350	-1660	500	1750	-1250
2050	0.764	1150	2750	-1600	500	2250	-1750	440	2420	-1980	500	1750	-1280
1950	0.6	1040	2520	-1480	310	2200	-1890	340	2560	-2220	440	1750	-1310
1850	1.016	400	2090	-1690	-420	1860	-2280	80	2280	-2200	0	1750	-1750
1750	2.138	-1550	1470	-3020	-1910	1550	-3460	-1520	1660	-3180	-1350	1290	-2640
1650	1.111	-3230	790	-4020	-3340	990	-4330	-2800	1010	-3810	-2910	800	-3710
1550	0.88	-4530	380	-4910	-3910	840	-4750	-4310	340	-4650	-3960	520	-4480
1450	0.081	-5000	250	-5250	-3850	900	-4750	-4740	0	-4740	-4500	250	-4750
2900-1400	*10.509*	*-610*	*1920*	*-2530*	*-930*	*1730*	*-2660*	*-540*	*1940*	*-2480*	*-190*	*1760*	*-1950*
recalc.	**10.509**	**-614**	**1917**	**-2531**	**-929**	**1735**	**-2664**	**-538**	**1940**	**-2478**	**-194**	**1760**	**-1954**
Bench cont.													
Altitude	**Area**	**1985, bn**	**1985, bw**	**1985, bs**									
2850	0.015	1000	2270	-1270									
2750	0.006	1000	2330	-1330									
2650	0.046	980	2240	-1260									
2550	0.592	680	1930	-1250									
2450	0.866	50	1800	-1750									
2350	0.902	-360	1580	-1940									
2250	0.919	-170	1770	-1950									
2150	0.573	200	2040	-1840									
2050	0.764	290	2100	-1810									
1950	0.6	-180	1850	-2030									
1850	1.016	-790	1880	-2670									
1750	2.138	-1490	1420	-2910									
1650	1.111	-2130	700	-2830									
1550	0.88	-3200	200	-3400									
1450	0.081	-3750	0	-3750									
2900-1400	*10.509*	*-880*	*1490*	*-2370*									
recalc.	**10.509**	**-878**	**1493**	**-2371**									

Bridge																
Altitude	**Area**	**1981, bn**	**1981, bw**	**1981, bs**	**1982,bn**	**1982, bw**	**1982, bs**	**1983, bn**	**1983, bw**	**1983, bs**	**1984,bn**	**1984,bw**	**1984, bs**	**1985, bn**	**1985, bw**	**1985, bs**
2850	0.195	2500	3250	-750	2000	2750	-750	2500	2750	-250	2000	2250	-250	1000	2250	-1250
2750	2.962	2500	3250	-750	2000	2750	-750	2500	2750	-250	2000	2250	-250	1000	2250	-1250
2650	4.399	2420	3170	-750	2000	2750	-750	2500	2750	-250	2000	2250	-250	500	2250	-1750
2550	9.904	1000	2800	-750	2050	2250	-1250	2150	2420	-270	1920	2170	-250	-20	2230	-2250
2450	12.087	1230	2200	-970	780	1790	-1010	1990	2380	-390	1290	2040	-750	-510	2010	-2520
2350	7.211	870	2410	-1540	420	2180	-1760	1540	2290	-750	1330	2080	-750	-850	1900	-2750
2250	7.011	310	2280	-1960	-30	2220	-2240	870	2150	-1280	840	2090	-1250	-1180	1830	-3010
2150	8.377	-220	1980	-2260	-170	2220	-2390	460	2190	-1730	590	1870	-1270	-1700	1580	-3280
2050	7.57	-570	1970	-2540	-720	2090	-2810	70	2150	-2080	360	1820	-1460	-2180	1560	-3740
1950	5.439	-1510	1810	-3320	-1580	1960	-3540	-750	1740	-2490	-280	1610	-1890	-2700	1450	-4150
1850	7.544	-2350	1490	-3840	-2500	1610	-4110	-1360	1590	-2960	-1030	1310	-2330	-3410	1140	-4550
1750	4.879	-3020	1270	-4300	-2650	1450	-4100	-1780	1360	-3140	-1820	1150	-2970	-4150	910	-5060
1650	3.374	-4210	880	-5100	-2540	1180	-3720	-3370	1040	-4410	-2490	1050	-2354	-4970	870	-5840
1550	4.241	-4840	750	-5590	-3240	920	-4120	-4500	710	-5160	-3070	920	-3990	-5430	780	-6210
1450	2.705	-5380	370	-5750	-4370	380	-4750	-4900	310	-5250	-4500	370	-4870	-6180	380	-6560
<1400	0.203	-5500	250	-5750	-4500	250	-4750	-5000	250	-5250	-5000	250	-5250	-6500	250	-6750
2900-1400	*88.101*	*-400*	*2020*	*-2420*	*-510*	*1920*	*-2430*	*200*	*1990*	*-1790*	*-230*	*1760*	*-1530*	*-1870*	*1630*	*-3500*
recalc.	**88.101**	**-404**	**2019**	**-2423**	**-509**	**1921**	**-2430**	**206**	**1989**	**-1783**	**228**	**1759**	**-1484**	**-1869**	**1625**	**-3494**
Helm																
Altitude	**Area**	**1982,bn**	**1982, bw**	**1982, bs**	**Area**	**1983, bn**	**1983, bw**	**1983, bs**	**Area**	**1984,bn**	**1984,bw**	**1984, bs**	**Altitude**	**Area**	**1985, bn**	**1985, bw**
2150	0.112	0	2750	-2750	0.115	1000	2250	-1250	0.115	500	2250	-1750	2150	0.115	-500	2250
2050	0.631	-60	2690	-2750	0.561	500	2250	-1750	0.561	250	2000	-1750	2050	0.561	-970	1960
1950	0.997	-380	2360	-2750	0.868	10	2250	-2240	0.868	-310	1750	-2060	1950	0.815	-1690	1640
1850	1.015	-510	2240	-2750	0.866	-1010	1910	-2920	0.866	-810	1620	-2430	1850	0.755	-2530	1470
1750	0.076	-500	2250	-2750	0.025	-1520	2240	-3760	0.025	-1000	1760	-2760				
2200-1700	*2.831*	*-340*	*2410*	*-2750*	*2.435*	*-210*	*2130*	*-2340*	*2.435*	*-320*	*1790*	*-2110*		*2.246*	*-1730*	*1690*
recalc.	**2.831**	**-347**	**2403**	**-2750**	**2.435**	**-209**	**2129**	**-2338**	**2.435**	**-328**	**1785**	**-2113**		**2.246**	**-1732**	**1694**
Helm cont.																
Altitude	**Area**	**1985, bs**	**Altitude**	**Area**	**1986, bn**	**1986, bw**	**1986, bs**	**Area**	**1987, bn**	**1987, bw**	**1987, bs**	**Area**	**1988, bn**	**1988, bw**	**1988, bs**	
2150	0.115	-2750	>2150	0.115	0	2748	-2748	0.115	1000	2748	-1748	0.115	869	2616	-1747	
2050	0.561	-2930	2050	0.561	-508	2455	-2963	0.561	196	2446	-2250	0.561	-109	2140	-2249	
1950	0.815	-3330	1950	0.74	-1515	2074	-3589	0.712	-774	2025	-2799	0.605	-889	1994	-2882	
1850	0.755	-4000	<1900	0.732	-1992	1900	-3892	0.564	-2151	1817	-3968	0.175	-1799	1712	-3511	
2200-1800	*2.246*	*-3420*		*2.148*	*-1333*	*2150*	*-3484*	*1.952*	*-789*	*2128*	*-2917*	*1.456*	*-559*	*2065*	*-2624*	
recalc.	**2.246**	**-3426**		**2.148**	**-1333**	**2150**	**-3484**	**1.952**	**-789**	**2128**	**-2917**	**1.456**	**-559**	**2065**	**-2624**	
Helm cont.																
Altitude	**Area**	**1989, bn**	**1989, bw**	**1989, bs**												
>2150	0.115	40	2250	-2290												
2050	0.561	-1130	1920	-3050												
1950	0.605	-2210	1350	-3450												
<1900	0.13	-2490	1250	-3740												
2200-1800	*1.411*	*-1630*	*1641*	*-3223*												
recalc.	**1.411**	**-1623**	**1641**	**-3223**												

Appendix 2 Mass balance versus altitude

Place																Place cont.
Altitude	Area	1965, bn	1965, bw	1965, bs	Area	1966, bn	1966, bw	1966, bs	Area	1967, bn	1967, bw	1967, bs	1968, bn	1968, bw	1968, bs	Altitude
2550	0.23	790	2170	-1380	0.05	1760	2500	-740	0.04	1500	3250	-1750	2000	3250	-1250	2550
2450	0.29	180	1600	-1420	0.2	1430	2500	-1070	0.2	1080	2830	-1750	1900	3150	-1250	2450
2350	0.26	220	1930	-1710	0.47	940	2310	-1370	0.467	-280	1930	-2210	1080	2880	-1800	2350
2250	0.18	110	2170	-2060	0.29	150	2020	-1870	0.296	-640	1760	-2400	1060	2880	-1820	2250
2150	0.79	-170	1690	-1860	0.64	280	2190	-1910	0.637	-1140	2160	-3300	230	2430	-2200	2150
2050	1.24	-680	1450	-2130	1.34	90	2120	-2030	1.345	-1310	2300	-3610	-70	2290	-2360	2050
1950	0.75	-1760	1320	-3080	0.76	-450	1590	-2040	0.762	-2140	1780	-3920	-1700	1730	-3430	1950
1850	0.24	-252	1320	-3840	0.21	-1730	1250	-2980	0.21	-3000	1750	-4760	-2630	1250	-3880	1850
2600-1800	*3.98*	*-650*	*1580*	*-2230*	*3.96*	*110*	*2020*	*-1910*	*3.967*	*-1210*	*2100*	*-3310*	*-130*	*2320*	*-2450*	**2600-1800**
recalc.	**3.98**	**-514**	**1582**	**-2233**	**3.96**	**115**	**2023**	**-1908**	**3.957**	**-1212**	**2100**	**-3312**	**-131**	**2316**	**-2447**	**recalc.**
Place cont.																
Altitude	**Area**	**1969, bn**	**1969, bw**	**1969, bs**	**1970, bn**	**1970, bw**	**1970, bs**	**Area**	**1971, bn**	**1971, bw**	**1971, bs**	**Area**	**1972, bn**	**1972, bw**	**1972, bs**	**Sentinel**
2550	0.04	2000	3250	-1250	1000	2250	-1250	0.04	2000	3250	-1250	0.04	1500	2750	-1250	**Altitude**
2450	0.2	2000	3250	-1250	1000	2250	-1250	0.2	2000	3250	-1250	0.2	1500	2750	-1250	2150
2350	0.467	890	2640	-1750	-230	1730	-1960	0.47	850	2430	-1580	0.47	350	2050	-1700	2050
2250	0.296	590	2380	-1850	-570	1540	-2110	0.3	350	2330	-1980	0.3	270	1990	-1720	1950
2150	0.637	340	2320	-1980	-1130	1590	-2720	0.64	-210	2230	-2440	0.64	20	1970	-1950	1850
2050	1.345	-927	1890	-2160	-1790	1360	-3150	1.35	-530	1930	-2460	1.35	-360	1670	-2030	1750
1950	0.762	-1660	1410	-3070	-2680	1080	-3760	0.76	-1610	1440	-3050	0.76	-1550	1260	-2810	1650
1850	0.21	-2360	1360	-3720	-3660	1020	-4680	0.21	-1240	1750	-2990	0.15	-2000	1250	-3250	1550
2600-1800	*3.967*	*-210*	*2050*	*-2260*	*-1510*	*1430*	*-2940*	*3.96*	*-350*	*2040*	*-2390*	*3.89*	*-340*	*1760*	*-2100*	**2200-1500**
recalc.	**3.957**	**-216**	**2046**	**-2262**	**-1510**	**1436**	**-2946**	**3.97**	**-340**	**2044**	**-2384**	**3.91**	**-344**	**1760**	**-2104**	**recalc.**
Place cont.																**Sentinel cont.**
Altitude	**Area**	**1973, bn**	**1973, bw**	**1973, bs**	**1974, bn**	**1974, bw**	**1974, bs**	**Area**	**1981, bn**	**1981, bw**	**1981, bs**	**Area**	**1982,bn**	**1982, bw**	**1982, bs**	**Altitude**
2550	0.04	1500	2250	-750	2500	3750	-1250	0.04	500	2250	-1750	0.04	500	2250	-1750	2150
2450	0.2	1500	2250	-750	2500	3750	-1250	0.2	500	2250	-1750	0.2	500	2250	-1750	2050
2350	0.47	550	1950	-1400	1540	3290	-1750	0.467	170	2010	-1840	0.467	230	2150	-1930	1950
2250	0.3	360	2140	-1780	1430	3270	-1840	0.296	-380	1700	-2090	0.296	-240	2010	-2250	1850
2150	0.64	-160	1870	-2030	930	2920	-1990	0.637	-550	1660	-2220	0.637	10	2130	-2120	1750
2050	1.35	-380	1670	-2050	370	2610	-2240	1.325	-1260	1470	-2730	1.325	-640	2050	-2690	1650
1950	0.76	-1260	1640	-2900	-650	2200	-2850	0.738	-2680	1060	-3750	0.711	-2610	1720	-4320	1550
1850	0.15	-2170	1360	-3530	-1000	2250	-3250	0.057	-3420	820	-4250	0.036	-4000	1250	-5250	**2200-1500**
2600-1800	*3.89*	*-300*	*1790*	*-2090*	*560*	*2770*	*-2210*	*3.76*	*-1090*	*1550*	*-2640*	*3.712*	*-750*	*2010*	*-2760*	**recalc.**
recalc.	**3.91**	**-300**	**1790**	**-2090**	**564**	**2770**	**-2206**	**3.76**	**-1097**	**1547**	**-2643**	**3.712**	**-754**	**2009**	**-2763**	**Sentinel cont.**
Place cont.																**Altitude**
Altitude	**Area**	**1983, bn**	**1983, bw**	**1983, bs**	**Area**	**1984, bn**	**1984, bw**	**1984, bs**	**1985, bn**	**1985, bw**	**1985, bs**	**Area**	**1986, bn**	**1986, bw**	**1986, bs**	2075
2550	0.04	1500	2750	-1250	0.04	1000	2250	-1250	-500	1750	-2250	0.04	0	1750	-1750	1950
2450	0.2	1500	2750	-1250	0.2	1000	2250	-1250	-500	1750	-2250	0.2	0	1750	-1750	1850
2350	0.467	230	1890	-1660	0.467	410	1940	-1530	-1570	1180	-2750	0.467	-502	1749	-2251	1750
2250	0.296	-150	1660	-1810	0.296	180	2010	-1840	-1610	1170	-2780	0.296	-990	1686	-2676	1650
2150	0.637	-200	1820	-2020	0.637	20	1900	-1880	-1680	1220	-2900	0.637	-915	1708	-2623	1565
2050	1.325	-520	1720	-2240	1.325	-460	1610	-2070	-1820	1250	-3070	1.325	-1373	1725	-3098	**2150-1530**
1950	0.711	-1660	1310	-2970	0.695	-1540	1320	-2860	-2850	1080	-3930	0.698	-2550	1436	-3986	**recalc.**
1850	0.036	-2000	1250	-3250	0.037	-2000	1240	-3240	-4000	760	-4760	0.04	-3850	1250	-5100	**Sentinel cont.**
2600-1800	*3.712*	*-440*	*1740*	*-2180*	*3.697*	*-340*	1720	-2060	-1880	1220	-3110	*3.703*	*-1313*	*1664*	*-2977*	**Altitude**
recalc.	**3.712**	**-443**	**1737**	**-2181**	**3.697**	**-341**	**1717**	**-2058**	**-1877**	**1225**	**-3102**	**3.703**	**-1313**	**1664**	**-2977**	2150
Place cont.																2050
Altitude	**Area**	**1987, bn**	**1987, bw**	**1987, bs**	**Area**	**1988, bn**	**1988, bw**	**1988, bs**	**Area**	**1989, bn**	**1989, bw**	**1989, bs**				1950
2550	0.04	1000	2750	-1750	0.04	564	2308	-1744	0.04	1500	1750	-250				1850
2450	0.2	1000	2750	-1750	0.2	833	2586	-1753	0.2	1180	1740	-560				1750
2350	0.467	302	2750	-1750	0.467	-233	1737	-1970	0.467	190	1570	-1380				1650
2250	0.296	-456	2231	-1929	0.296	-790	1559	-2349	0.296	0	1630	-1640				**2200-1500**
2150	0.637	-477	2202	-2662	0.637	-535	1748	-2282	0.637	-810	1730	-2540				**recalc.**
2050	1.325	-1077	2068	-2545	1.325	-1305	1370	-2675	1.325	-1400	1420	-2830				
1950	0.674	-2379	1806	-2876	0.663	-1860	1196	-3056	0.653	-2480	1080	-3560				
1850	0.029	-3200	1488	-3867	0.019	-2500	786	-3286	0.01	-4400	750	-5150				
2600-1800	*3.668*	*-865*	*1935*	*-2800*	*3.647*	*-961*	*1541*	*-2501*	*3.628*	*-1006*	*1469*	*-2480*				
recalc.	**3.668**	**-867**	**1935**	**-2800**	**3.647**	**-961**	**1541**	**-2501**	**3.628**	**-1010**	**1469**	**-2480**				

															Sentin. cont.
Area	**1994, bn**	**1994, bw**	**1994, bs**	**1995, bn**	**1995, bw**	**1995, bs**									**Altitude**
0.026	79	1639	-1560	-569	1447	-2016									2150
0.104	55	1635	-1580	-580	1446	-2026									2050
0.528	-816	1451	-2267	-1450	1313	-2763									1950
0.279	-1288	1800	-3088	-2540	1399	-3939									1850
0.439	-1900	1914	-3814	-2669	1296	-3992									1750
1.131	-2417	1685	-4102	-2429	1116	-3545									1650
0.777	-2695	1392	-4087	-3180	893	-4073									**2200-1500**
0.166	-2946	1297	-4243	-3771	875	-4646									**recalc.**
3.450	*-2010*	*1601*	*-3611*	*-2486*	*1143*	*-3629*									**Sentin. cont.**
3.450	**-2010**	**1601**	**-3611**	**-2486**	**1143**	**-3629**									**Altitude**
															2150
															2050
Area	**1966, bn**	**1966, bw**	**1966, bs**	**1967, bn**	**1967,bw**	**1967, bs**	**1968, bn**	**1968, bw**	**1968, bs**	**1969, bn**	**1969, bw**	**1969, bs**			1950
0.023	1150	3400	-2250	2220	4480	-2260	1290	3550	-2260	1480	4220	-2740			1850
0.346	1300	3620	-2320	1400	4400	-3000	650	3540	-2890	860	3700	-2840			1750
0.49	1150	3680	-2530	600	4540	-3940	720	3430	-2710	770	3850	-3080			1650
0.515	340	3320	-2980	-230	4420	-4650	940	3710	-2770	700	3740	-3040			**2200-1500**
0.3	-650	3010	-3660	-1340	3800	-5140	460	3470	-3010	720	3240	-3960			**recalc.**
0.219	-2410	2450	-4860	-1970	3530	-5500	-1150	2970	-4120	-1640	2800	-4440			
0.092	-2200	2440	-4640	-2790	3210	-6000	-2520	2140	-4660	-2830	2230	-5060			**S. Cascade**
1.985	*150*	*3280*	*-3310*	*-180*	*4210*	*-4390*	*380*	*3420*	*-3040*	*120*	*3520*	*-3400*			**Altitude**
1.985	**146**	**3278**	**-3133**	**-191**	**4199**	**-4390**	**376**	**3419**	**-3043**	**118**	**3516**	**-3399**			2200
															2100
Area	**1970, bn**	**1970, bw**	**1970, bs**	**Area**	**1971, bn**	**1971, bw**	**1971, bs**	**Altitude**	**Area**	**1972, bn**	**1972, bw**	**1972, bs**			2000
0.023	0	3620	-3260	0.37	1490	4200	-2710	2075	0.37	1310	3530	-2220			1900
0.346	-290	2940	-3230	0.49	1090	4160	-3070	1950	0.49	810	3050	-2240			1800
0.49	-320	2780	-3100	0.52	930	3780	-2850	1850	0.52	330	2890	-2570			1700
0.515	-1460	2560	-4020	0.3	-720	3590	-4310	1750	0.3	-730	2610	-3340			**2285-1625**
0.298	-2340	2470	-4810	0.18	-990	3250	-4240	1650	0.19	-1660	2180	-3840			**recalc.**
0.186	-3000	2140	-5140	0.05	-1870	3040	-4910	1565	0.03	-2850	1890	-4740			**S. Casc. cont.**
0.069	-3530	1890	-5420												**Altitude**
1.927	*-1300*	*2620*	*-3920*	*1.9*	*570*	*3860*	*-3290*	**2150-1530**	*1.89*	*240*	*2930*	*-2690*			2200
1.927	**-1297**	**2618**	**-3916**	**1.91**	**566**	**3860**	**-3294**		**1.9**	**204**	**2933**	**-2729**			2150
															2100
Area	**1973, bn**	**1973, bw**	**1973, bs**	**1974, bn**	**1974, bw**	**1974, bs**	**Area**	**Altitude**	**1981, bn**	**1981, bw**	**1981, bs**	**1982,bn**	**1982, bw**	1982, bs	2050
0.37	2230	3980	-1750	3930	6060	-2130	0.023	2150	1480	3740	-2260	1480	4740	-3260	2000
0.49	1230	3410	-2180	2690	4850	-2160	0.346	2050	1360	3540	-2170	1420	4670	-3250	1950
0.52	490	3100	-2610	1520	4400	-2880	0.49	1950	890	3090	-2210	1510	4560	-3050	1900
0.3	20	3450	-3430	980	4270	-3290	0.515	1850	-180	2630	-2810	640	3750	-3100	1850
0.16	-1350	2830	-4180	280	4180	-3900	0.298	1750	-1240	2290	-3530	-260	3260	-3520	1800
0.01	-2070	2140	-4210	0	3710	-3710	0.097	1650	-1860	1750	-3610	130	3020	-2890	1750
1.84	*780*	*3380*	*-2600*	*2110*	*4810*	*-2700*	*1.769*	**2200-1600**	*170*	*2850*	*-2680*	*860*	*4040*	*-3180*	1700
1.85	**785**	**3386**	**-2602**	**2109**	**4807**	**-2698**	**1.769**		**168**	**2844**	**-2677**	**868**	**4045**	**-3177**	1650
															2285-1625
Area	**1983, bn**	**1983, bw**	**1983, bs**	**Area**	**1984, bn**	**1984, bw**	**1984, bs**	**Area**	**1985, bn**	**1985, bw**	**1985, bs**				**recalc.**
0.023	2570	4780	-2220	0.023	2000	3740	-1740	0.023	1000	3260	-2260				
0.346	1820	4070	-2250	0.346	1640	3490	-1850	0.346	1000	2580	-2260				
0.49	1730	4260	-2530	0.49	1390	3520	-2140	0.49	-340	2420	-2760				
0.515	970	3900	-2930	0.515	710	3240	-2530	0.515	-1220	2310	-3530				
0.298	400	3560	-3160	0.298	-260	2890	-3150	0.277	-2060	2090	-4150				
0.097	-320	3310	-3620	0.098	-680	2760	-3430	0.071	-2980	2080	-5060				
1.769	*1200*	*3950*	*-2750*	*1.77*	*850*	*3290*	*-2440*	*1.722*	*-840*	*2360*	*-3280*				
1.769	**1201**	**3955**	**-2754**	**1.77**	**854**	**3287**	**-2433**	**1.722**	**-838**	**2363**	**-3202**				

															S. Casc. cont.	
Area	**1986, bn**	**1986, bw**	**1986, bs**	**Area**	**1987, bn**	**1987, bw**	**1987, bs**	**Area**	**1988, bn**	**1988, bw**	**1988, bs**				**Altitude**	**Area**
0.033	1000	3739	-2739	0.033	2478	3739	-1261	0.033	1557	2308	-751				2250	0.02
0.342	203	3035	-2832	0.342	1321	3046	-1723	0.342	1430	2758	-1328				2200	0.07
0.48	267	3116	-2849	0.48	961	3120	-2159	0.479	1152	3049	-1898				2150	0.21
0.515	-319	2922	-3241	0.515	-299	2831	-3130	0.514	231	2746	-2514				2100	0.34
0.291	-1524	2823	-4347	0.291	-1671	2531	-4202	0.287	-1111	2474	-3585				2050	0.26
0.103	-2710	2565	-5275	0.092	-2000	2759	-4759	0.084	-3034	2216	-5250				2000	0.36
1.764	*-372*	*2975*	*-3347*	*1.753*	*98*	*2916*	*-2818*	*1.739*	*367*	*2753*	*-2387*				1950	0.33
1.764	**-372**	**2975**	**-3347**	**1.753**	**98**	**2916**	**-2818**	**1.739**	**366**	**2753**	**-2387**				1900	0.45
															1850	0.18
Area	**1989, bn**	**1989, bw**	**1989, bs**												1800	0.14
0.033	550	2250	-1700												1750	0.17
0.345	580	2390	-1810												1700	0.05
0.479	-300	2330	-2630												1650	0.01
0.515	-1400	2050	-3450												**2285-1625**	*2.59*
0.287	-2300	1770	-4060												**recalc.**	**2.59**
0.084	-2750	1750	-4500													
1.743	*-882*	*2137*	*-3018*												**Sykora**	
1.743	**-880**	**2137**	**-3018**												**Altitude**	**Area**
															2750	0.452
															2650	1.339
Area	**1965, bn**	**1965, bw**	**Area**	**1966, bn**	**1966, bw**	**Area**	**1967, bn**	**1967, bw**	**Area**	**1968, bn**	**1968, bw**				2550	2.01
0.23	600	3700	0.23	-100	2600	0.23	600	3400	0.23	300	2100				2450	3.185
0.66	1300	4200	0.66	-400	3100	0.66	600	3700	0.66	700	3200				2350	2.938
0.65	800	3900	0.65	-400	2500	0.65	500	3600	0.65	700	3300				2250	3.865
0.74	-200	3700	0.74	-1100	2600	0.73	-500	3500	0.73	200	3400				2150	4.497
0.43	-2500	2100	0.42	-2700	1900	0.42	-3300	2500	0.42	-1800	2400				2050	2.887
0.12	-4500	1500	0.12	-4400	800	0.11	-4800	1800	0.11	-4800	1400				1950	1.579
2.83	*-100*	*3500*	*2.82*	*-950*	*2500*	*2.80*	*-700*	*3300*	*2.80*	*0*	*3000*				1850	1.227
2.83	**-87**	**3526**	**2.82**	**-1072**	**2513**	**2.80**	**-507**	**3345**	**2.80**	**-54**	**2994**				1750	0.749
															1650	0.389
Area	**1969, bn**	**1969, bw**	**Area**	**1970, bn**	**1970, bw**	**1971, bn**	**1971, bw**	**1972, bn**	**1972, bw**	**1973, bn**	**1973, bw**	**Area**	**1974, bn**	**1974, bw**	1550	0.219
0.02	250	2000	0.04	-250	2130	500	3250	630	1380	130	1750	0.04	1500	2250	1450	0.015
0.1	200	2700	0.07	-360	2210	360	3210	1140	2000	110	1860	0.07	1290	2500	**2800-1400**	*25.351*
0.33	450	3350	0.31	-420	2520	1180	3820	1840	4260	40	2320	0.31	1900	3240	**recalc.**	**25.351**
0.33	610	3500	0.32	-20	2670	1310	4130	2310	5280	-120	2500	0.32	2250	3970		
0.22	320	3500	0.23	-410	2690	1200	3980	2150	4930	-10	2500	0.23	2150	3980	**Zavisha**	
0.37	150	3470	0.35	-500	2490	1040	3500	2390	4730	-180	2500	0.35	2140	4100	**Altitude**	**Area**
0.4	10	3520	0.4	-720	2900	1270	3800	1950	4900	-300	2470	0.4	1820	4100	2450	0.552
0.41	-900	3400	0.41	-1400	2530	1010	3500	1370	4500	-1150	2210	0.41	650	3910	2350	1.7
0.19	-2320	3030	0.2	-2550	2000	-350	3200	300	3350	-2520	1850	0.21	-360	3210	2250	2.498
0.21	-3170	2400	0.2	-3100	1920	-800	2950	-150	3350	-4150	1500	0.21	-1400	3260	2150	1.442
0.15	-5030	1570	0.17	-4320	1290	-2590	2000	-970	2500	-4150	1440	0.16	-3060	2630	2050	0.3
0.04	-7500	750	0.02	-5000	500	-5000	1500	-250	2500	-5500	1000	0.02	-5500	1500	**2500-2000**	*6.492*
2.77	*-700*	*3200*	*2.72*	*-1200*	*2400*	*600*		*1430*		*-1040*	*2210*	*2.73*	*1020*	*3650*	**recalc.**	**6.492**
2.77	**-731**	**3167**	**2.72**	**-1201**	**2418**	**596**	**3513**	**1451**	**4270**	**-1037**	**2205**	**2.73**	**999**	**3642**		

															Tidemann	
1975, bn	**1975, bw**	**1976, bn**	**1976, bw**	**1977, bn**	**1977, bw**	**1978, bn**	**1978, bw**	**1979, bn**	**1979, bw**	**1980, bn**	**1980, bw**				**Altitude**	**Area**
380	2500	500	2500	-250	750	250	1250	-130	1250	-130	750				3400-3900	0.527
500	3070	790	2790	-500	930	430	1710	-430	1290	-110	1360				3350	0.285
890	2980	1420	3120	-400	1770	1190	2660	-630	2260	-120	2020				3250	1.063
1030	3280	2026	3910	-410	1990	1260	2860	-570	2260	-120	2060				3150	0.896
630	3150	1890	3710	-420	1690	710	2390	-390	2250	-40	1610				3050	1.365
510	3330	1960	3840	-690	1870	420	2620	-530	2930	-400	1880				2950	1.111
450	3350	1920	3900	-650	1660	500	2910	-830	2500	-480	2090				2850	1.647
130	3300	1240	4110	-1290	1500	-1020	2650	-1670	2390	-1470	2100				2750	2.008
-1170	2740	-260	3440	-2330	1440	-2780	2220	-3390	1530	-1970	1500				2650	1.846
-2400	2500	-1500	2830	-3430	1210	-2860	2000	-4250	1570	-2750	1390				2550	1.902
-3500	2060	-3400	2000	-4260	850	-3530	1740	-5180	1030	-3880	1380				2450	1.923
-4500	2500	-6500	1500	-5500	700	-3600	1500	-4300	1100	-6500	1000				2350	1.952
				-5500	500	-6500	1500	-6500	1500	-5500	0				2250	2.576
-50	*3060*	*950*	*3530*	*-1300*	*1570*	*-380*	*2490*	*-1560*		*-1020*	*1830*				2150	3.231
-69	**3059**	**881**	**3530**	**-1301**	**1574**	**-383**	**2494**	**-1561**	**2177**	**-1093**	**1820**				2050	3.391
															1950	4.159
															1850	4.502
1981, bn	**1981, bw**	**1981, bs**	**1982,bn**	**1982, bw**	**1982, bs**	**1983, bn**	**1983, bw**	**1983, bs**	**1984, bn**	**1984, bw**	**1984, bs**	**1985, bn**	**1985, bw**	**1985, bs**	1750	3.771
2500	3250	-750	2000	2750	-750	2500	2750	-250	2000	2250	-250	1000	2250	-1250	1650	3.014
2420	3170	-750	2000	2750	-750	2500	2750	-250	2000	2250	-250	500	2250	-1750	1550	4.294
2050	2800	-750	1000	2250	-1250	2500	2750	-250	2000	2250	-250	230	2250	-2020	1450	3.333
1230	2200	-970	780	1790	-1010	1620	2250	-620	1500	2250	-750	-500	1750	-2250	1350	2.425
870	2410	-1540	420	2180	-1760	1410	2250	-840	1490	2250	-760	-650	1750	-2400	1250	2.235
310	2280	-1960	-30	2220	-2240	780	2250	-1460	680	1930	-1250	-1210	1520	-2730	1150	2.72
-220	1980	-2200	-170	2220	-2390	500	2250	-1750	620	1870	-1250	-1800	1310	-3110	1050	2.935
-570	1970	-2540	-720	2090	-2810	250	2170	-1930	310	1670	-1370	-2070	1240	-3310	950	1.483
-1510	1810	-3320	-1580	1960	-3540	-1060	1710	-2760	-240	1580	-1810	-2670	1190	-3860	850	1.378
-2350	1490	-3840	-2500	1610	-4110	-1910	1610	-3520	-780	1450	-2240	-3110	1160	-4270	750	0.695
-3020	1270	-4300	-2650	1450	-4100	-3040	1410	-4450	-1630	1370	-3000	-3980	1930	-4910	**3900-700**	*62.694*
-4210	880	-5100	-2540	1190	-3720	-3450	1280	-4720	-2270	980	-3250	-4790	460	-5250	**recalc.**	**62.667**
-4840	750	-5590	-3200	920	-4120	-3500	1250	-4740	-2500	750	-3250	-4990	260	-5250		
-5380	330	-5730	-4330	400	-4730	-3530	1200	-4730	-2530	730	-3270	-5000	270	-5270	**Woolsey**	
130	*2170*	*-2040*	*-120*	*2090*	*-2210*	*650*	*2200*	*-1560*	*750*	*1930*	*-1180*	*-1370*	*1530*	*-2900*	Altitude	Area
128	**2169**	**-2041**	**-115**	**2090**	**-2204**	**647**	**2202**	**-1555**	**750**	**1928**	**-1178**	**-1340**	**1562**	**-2902**	2635	0.019
															2550	0.208
															2450	0.555
1981, bn	**1981, bw**	**1981, bs**	**1982,bn**	**1982, bw**	**1982, bs**	**1983, bn**	**1983, bw**	**1983, bs**	**1984, bn**	**1984, bw**	**1984, bs**	**1985, bn**	**1985, bw**	**1985, bs**	2350	0.676
1000	2750	-1750	500	2250	-1750	710	1960	-1250	1000	1750	-750	-790	1750	-2540	2250	0.63
120	2360	-2240	-20	1980	-2000	650	1900	-1250	670	1540	-870	-1290	1380	-2670	2150	0.606
-240	2050	-2290	-510	1930	-2440	450	2030	-1560	400	1640	-1240	-1060	1510	-2570	2050	0.671
-770	1970	-2740	-1330	1900	-3230	-100	1750	-1850	-350	1400	-1750	-1500	1250	-2750	1960	0.5
-1240	1750	-2990	-1500	2000	-3500	-500	1750	-2250	-500	1250	-1750	-1500	1250	-2750	**2670-1920**	*3.865*
-200	*2160*	*-2360*	*-520*	*1970*	*-2490*	*370*	*1920*	*-1550*	*310*	*1550*	*-1240*	*-1210*	*1430*	*-2640*	**recalc.**	**3.865**
-204	**2159**	**-2363**	**-524**	**-1967**	**-2491**	**358**	**1915**	**-1549**	**314**	**1552**	**-1238**	**-1215**	**1427**	**-2642**	**Woolsey cont.**	
															Altitude	**Area**
															2635	0.05
															2550	0.26
															2450	0.62
															2350	0.68
															2250	0.64
															2150	0.55
															2050	0.67
															1960	0.45
															1920-2670	*3.92*
															recalc.	**3.92**

															Peyto	
1981, bn	**1982,bn**	**1982, bw**	**1982, bs**	**1983, bn**	**1983, bw**	**1983, bs**	**1984, bn**	**1984, bw**	**1984, bs**	**1985, bn**	**1985, bw**	**1985, bs**			**Altitude**	**Area**
2000	2500	3750	-1250	2500	2750	-250	3100	3100	0	2750	2750	0			3150	0.028
2000	1500	2750	-1250	2500	2750	-250	2750	2750	0	2750	2750	0			3050	0.181
2000	1410	2750	-1340	2500	2750	-250	2750	2750	0	2750	2750	0			2950	0.8
2000	1000	2750	-1750	2500	2750	-250	2750	2750	0	2750	2750	0			2850	1.837
2000	1000	2750	-1750	2500	2750	-250	2750	2750	0	2750	2750	0			2750	2.347
2000	1000	2750	-1750	2500	2750	-250	2500	2750	-250	2500	2750	-250			2650	2.687
2000	1000	2750	-1750	2000	2750	-750	2500	2750	-250	2500	2750	-250			2550	2.884
2000	1000	2750	-1750	2000	2750	-750	2500	2750	-250	2000	2750	-750			2450	1.293
2000	1000	2750	-1750	2000	2750	-750	2500	2750	-250	2000	2750	-750			2350	0.944
2000	1000	2750	-1750	1990	2750	-760	2500	2750	-250	1730	2750	-1020			2250	0.75
1330	1000	2750	-1750	1940	2710	-770	2500	2750	-250	920	2250	-1330			2150	0.079
-950	970	2750	-1780	1920	2710	-790	2000	2750	-750	650	2250	-1600			2050	0.006
-790	590	2750	-2160	1400	2640	-1240	2000	2750	-750	420	2250	-1830			**3150-2050**	*13.836*
1000	-140	2370	-2510	1270	2640	-1370	1880	2750	-870	280	2250	-1970			**recalc.**	**13.836**
70	-620	2330	-2950	830	2600	-1780	1540	2530	-990	60	2250	-2310			**Peyto cont.**	
290	-1070	2280	-3350	280	2260	-1980	1000	2310	-1310	-590	1910	-2500			**Altitude**	**Area**
70	-1470	2280	-3750	-120	2260	-1380	850	2310	-1460	-1030	1860	-2890			3150	0.02
-580	-1810	2140	-3950	-320	2220	-2540	690	2310	-1690	-1230	1870	-3100			3050	0.17
-860	-1990	2040	-4030	-370	2120	-2490	330	2360	-2030	-1510	1780	-3290			2950	0.86
-1820	-2130	2000	-4130	-870	2070	-2940	-150	2090	-2240	-2050	1750	-3800			2850	1.77
-2580	-2240	1990	-4230	-1770	2020	-3790	-500	1970	-2470	-2770	1750	-4520			2750	2.33
-3420	-2790	1700	-4490	-2570	1670	-4240	-1470	1650	-3120	-3720	1380	-5100			2650	2.62
-4360	-3500	1250	-4750	-3560	920	-4480	-2920	1100	-4020	-4960	1060	-6020			2550	2.8
-5370	-3620	1150	-4770	-4350	570	-4920	-3640	680	-4320	-5560	750	-6310			2450	1.25
-5990	-4350	750	-5100	-5030	250	-5280	-3940	330	-4270	-5900	500	-6400			2350	0.86
-6980	-5380	550	-5850	-7340	0	-7340	-5230	250	-5480	-7600	430	-8030			2250	0.65
-8250	-6760	350	-7110	-9410	0	-9410	-6940	70	-7010	-10510	90	-10600			2150	0.07
-8250	-7000	250	-7250	-9750	0	-9750	-7540	0	-7540	-10750	0	-10750			**3150-2050**	*13.40*
-1160	*-1330*	*2090*	*-3420*	*-590*	*2040*	*-2630*	*-1160*	*1870*	*-3030*	*-1370*	*1860*	*-3230*			**recalc.**	**13.40**
-1116	**-1324**	**2099**	**-3422**	**-517**	**2039**	**-2555**	**210**	**2095**	**-1889**	**-1372**	**1855**	**-3227**			**Peyto cont.**	
															Altitude	**Area**
															3150	0.02
1966, bn	1966, bw	1966, bs	1967, bn	1967,bw	1967, bs	1968, bn	1968, bw	1968, bs	1969, bn	1969, bw	1969, bs	1970, bn	1970, bw	1970, bs	3050	0.17
1840	3100	-1260	2000	3740	-1740	2050	3780	-1740	700	2600	-1900	-600	2500	-3100	2950	0.86
1990	3240	-1250	1760	3760	-2000	1720	3470	-1750	600	2600	-2000	-600	2500	-3100	2850	1.77
1500	3250	-1750	1490	3960	-2470	1720	2470	-1750	400	2600	-2200	-900	2400	-3300	2750	2.33
750	2950	-2200	1560	3830	-2270	1480	3230	-1750	-100	2700	-2800	-1250	2250	-3400	2650	2.62
120	2720	-2600	290	3290	-3000	-220	2880	-3100	-670	2500	-3170	-1750	1850	-3600	2550	2.8
-750	2400	-3150	-300	2970	-3270	-140	2610	-2750	-1210	2250	-3460	-2200	1600	-3800	2450	1.25
-1610	2090	-3700	-1450	2540	-3990	-930	2370	-3300	-1730	1800	-3530	-2500	1500	-4000	2350	0.86
-1980	1970	-3950	-1550	2250	-3770	-1720	2120	-3840	-2200	1740	-3940	-3700	1300	-5000	2250	0.65
-210	*2560*	*-2770*	*120*	*3130*	*-3010*	*170*	*2840*	*-2670*	*-810*	*2300*	*-3100*	*-1900*	*1870*	*-3770*	2150	0.07
-171	**2610**	**-2781**	**143**	**3193**	**-3050**	**23**	**2689**	**-2666**	**-808**	**2296**	**-3104**	**-1908**	**1866**	**-3774**	**3150-2050**	**13.40**
															recalc.	**13.40**
1971, bn	**1971, bw**	**1971, bs**	**1972, bn**	**1972, bw**	**1972, bs**	**1973, bw**	**1974, bn**	**1974, bw**	**1974, bs**						**Peyto cont.**	
1870	3990	-2120	2310	3610	-1300	3070	2710	4020	-1300						**Altitude**	**Area**
1580	3780	-2200	2000	3380	-1370	2890	2490	3940	-1450						3150	0.02
1160	3510	-2350	1510	3170	-1650	2670	2020	3670	-1660						3050	0.17
630	3220	-2590	900	2970	-2070	2430	1360	3270	-1910						2950	0.86
160	2900	-2750	360	2730	-2360	2180	850	3000	-2150						2850	1.77
-320	2620	-2930	-190	2560	-2750	1960	280	2650	-2380						2750	2.33
-900	2280	-3180	-870	2310	-3180	1680	-430	2230	-2660						2650	2.62
-1540	1950	-3480	-1620	2280	-3900	1450	-1370	1590	-2960						2550	2.59
70	*2870*	*-2800*	*250*	*2750*	*-2490*	*2160*	*700*	*2890*	*-2190*						2450	1.4
73	**2870**	**-2797**	**258**	**2748**	**-2490**	**2159**	**700**	**2886**	**-2186**						2350	0.5
															2250	0.95
															2150	0.14
															3150-2050	*13.35*
															recalc.	**13.35**

															Peyto cont.	
1966, bn	**1966, bw**	**1966, bs**	**1967, bn**	**1967,bw**	**1967, bs**	**1968, bn**	**1968, bw**	**1968, bs**	**1969, bn**	**1969, bw**	**1969, bs**	**1970, bn**	**1970, bw**	**1970, bs**	**Altitude**	**Area**
1700	2200	-500	1200	2500	-1300	890	1750	-860	1350	1950	-600	250	1500	-1250	3150	0.01
1550	2190	-500	1100	2500	-1400	900	1750	-850	1200	1900	-700	250	1500	-1250	3050	0.14
1350	2050	-700	900	2400	-1500	900	1750	-850	950	1750	-800	250	1500	-1250	2950	0.62
1100	1900	-800	650	2250	-1700	890	1750	-850	700	1600	-900	130	1390	-1250	2850	1.84
850	1750	-900	200	2050	-1850	680	1670	-980	300	1450	-1100	-450	1250	-1700	2750	2.16
360	1570	-1210	-510	1690	-2200	220	1490	-1270	-300	1250	-1550	-1250	1000	-2250	2650	2.52
-680	1210	-1890	-1100	1470	-2570	-510	1280	-1790	-1060	1220	-2280	-1650	950	-2600	2550	2.6
-1380	1000	-2380	-2140	1320	-3460	-1270	1160	-2430	-2060	940	-3000	-2670	850	-3520	2450	1.4
-2030	750	-2780	-3290	890	-4180	-2460	680	-3140	-2670	690	-3360	-3360	650	-4010	2350	0.5
-2640	710	-3350	-3760	750	-4510	-2520	770	-3290	-3090	750	-3840	-3670	600	-4270	2250	0.95
-2960	440	-3400	-3860	650	-4510	-2690	650	-3340	-3490	300	-3760	-4000	400	-4400	2150	0.14
-2500	750	-3250	-3500	670	-4170	-2500	750	-3250	-3520	250	-3670	-4750	250	-5000	**3150-2050**	*12.88*
-110	*1440*	*-1550*	*-800*	*1690*	*-2490*	*-200*	*1400*	*-1600*	*-650*	*1250*	*-1900*	*-1400*	*1050*	*-2450*	**recalc.**	**12.88**
-107	**1444**	**-1550**	**-804**	**1686**	**-2491**	**-201**	**1400**	**-1601**	**-617**	**1263**	**-1880**	**-1329**	**1057**	**-2386**	**Peyto cont.**	
															Altitude	**Area**
1971, bn	**1971, bw**	**1971, bs**	**1972, bn**	**1972, bw**	**1972, bs**	**1973, bn**	**1973, bw**	**1973, bs**	**1974, bn**	**1974, bw**	**1974, bs**	**1976, bn**	**1976, bw**	**1976, bs**	3150	0.01
1830	1830	0	2370	2370	0	3390	3390	0	2890	2890	0	2960	2960	0	3050	0.13
1730	1730	0	2190	2210	-20	2940	2940	0	2540	2540	0	2610	2610	0	2950	0.6
1760	1760	0	1700	2160	-460	2880	2680	0	2300	2360	-60	2420	2420	0	2850	1.7
1080	1610	-530	1090	2000	-910	2380	2380	0	1810	2130	-320	2200	2200	0	2750	2.13
360	1450	-1090	440	1820	-1380	1600	2040	-440	1050	1870	-820	1620	1930	-310	2650	2.22
-320	1360	-1680	-170	1720	-1890	780	1800	-1020	370	1690	-1320	860	1720	-860	2550	2.22
-1020	1180	-2200	-810	1530	-2340	-390	1420	-1810	-410	1390	-1800	10	1430	-1420	2450	1.45
-1640	1030	-2670	-1380	1380	-2760	-1240	1160	-2400	-1040	1190	-2230	-690	1210	-1900	2350	0.31
-2520	850	-3370	-2170	1180	-3350	-2520	770	-3290	-1960	880	-2840	-1730	860	-2590	2250	0.87
-2980	750	-3730	-2580	1090	-3670	-3080	610	-3690	-2400	760	-3160	-2220	720	-2940	2150	0.11
-3640	850	-4490	-3110	1180	-4290	-3330	590	-3920	-2950	780	-3730	-2820	660	-3480	**3150-2050**	*11.74*
-410	*1310*	*-1720*	*-250*	*1670*	*-1920*	*430*	*1720*	*-1290*	*240*	*1620*	*-1390*	*640*	*1660*	*-1020*	**recalc.**	**11.75**
-411	**1306**	**-1717**	**-251**	**1670**	**-1921**	**434**	**1722**	**-1289**	**238**	**1624**	**-1386**	**638**	**1661**	**-1023**		
															Ram River	
1977, bn	**1977, bw**	**1977, bs**	**1978, bn**	**1978, bw**	**1978, bs**	**1979, bn**	**1979, bw**	**1979, bs**	**1980, bn**	**1980, bw**	**1980, bs**	**1981, bn**	**1981, bw**	**1981, bs**	**Altitude**	**Area**
1460	1460	0	2120	2120	0	2130	2130	0	1580	1580	0	1830	1830	0	3010	0.004
1320	1320	0	1670	1850	-180	1890	1890	0	1380	1380	0	1590	1590	0	2950	0.113
1230	1230	0	940	1670	-730	1410	1730	-320	1270	1270	0	1320	1380	-60	2850	0.469
1130	1130	0	320	1500	-1180	730	1590	-860	1070	1120	-50	660	1270	-610	2750	0.751
910	1010	-100	-320	1310	-1630	0	1420	-1420	370	960	-590	-150	1170	-1320	2650	0.419
210	900	-690	-1020	1140	-2160	-730	1280	-2010	-390	820	-1210	-1090	1030	-2120	2580	0.094
-750	790	-1540	-1650	940	-2590	-1470	1090	-2560	-1200	650	-1850	-2000	980	-2980	**3000-2560**	*1.850*
-1530	690	-2220	-2190	780	-2970	-2080	960	-3040	-1920	500	-2420	-2280	740	-3020	**recalc.**	**1.850**
-2710	560	-3270	-2980	540	-3590	-2990	740	-3730	-2940	290	-3230	-6050	1190	-7240	**Ram River cont.**	
-3230	480	-3710	-3390	440	-3830	-3430	660	-4090	-3450	200	-3650	-2800	430	-3230	**Altitude**	**Area**
-3740	380	-4120	-4310	300	-4610	-4250	590	-4840	-4080	140	-4220	-2770	210	-2980	3010	0.0001
-210	*890*	*-1100*	*-1050*	*1110*	*-2160*	*-810*	*1250*	*-2060*	*-1050*	*790*	*-1370*	*-1130*	*1030*	*-2160*	2950	0.11
-203	**889**	**-1093**	**-1060**	**1109**	**-2169**	**-810**	**1245**	**-2056**	**-576**	**788**	**-1364**	**-1127**	**1032**	**-2158**	2850	0.46
															2750	0.73
1982,bn	**1982, bw**	**1982, bs**	**1983, bn**	**1983, bw**	**1983, bs**	**1984, bn**	**1984, bw**	**1984, bs**	**1985, bn**	**1985, bw**	**1985, bs**	**1986, bn**	**1986, bw**	**1986, bs**	2650	0.41
2170	2170	0	1730	1730	0	2480	2480	0	2500	2500	0	1810	1810	0	2580	0.09
1920	1920	0	1490	1490	0	2120	2120	0	1760	1760	0	1700	1700	0	**3000-2560**	*1.800*
1720	1780	-60	1290	1290	0	1690	1790	-100	1170	1760	-590	1590	1590	0	**recalc.**	**1.800**
1160	1620	-460	1160	1160	0	1020	1600	-580	380	1670	-1290	1200	1480	-280		
370	1430	-1060	710	1020	-310	290	1420	-1130	-40	1250	-1290	470	1370	-900		
-500	1270	-1770	-80	870	-950	-560	1200	-1760	-650	1250	-1900	-260	1250	-1510		
-1370	1160	-2530	-1090	800	-1890	-1350	1100	-2450	-1390	930	-2320	-1000	1130	-2140		
-1720	830	-2550	-1590	560	-2150	-1670	790	-2460	-1890	750	-2640	-1790	860	-2650		
-4990	1200	-6190	-5340	790	-5830	-4730	1150	-5880	-2540	560	-3100	-2280	690	-2960		
-2340	410	-2750	-2360	260	-2620	-2220	380	-2600	-3190	250	-3440	-3360	820	-4180		
-2300	250	-2550	-2000	80	-2080	-2260	100	-2360	-3780	290	-4070	-3100	800	-3890		
-560	*1240*	*-1810*	*-390*	*870*	*-1260*	*-580*	*1210*	*-1790*	*-810*	*1130*	*-1940*	*-470*	*1200*	*-1670*		
-565	**1245**	**-1810**	**-389**	**870**	**-1259**	**-580**	**1209**	**-1789**	**-812**	**1125**	**-1938**	**-472**	**1200**	**-1672**		

Appendix 2 Mass balance versus altitude

1987, bn	1987, bw	1987, bs	1988, bn	1988, bw	1988, bs	1989, bn	1989, bw	1989, bs	1990, bn	1990, bw	1990, bs	
1380	1380	0	1620	1620	0	1890	0	1770	1770	1770	0	
1270	1270	0	1480	1480	0	1750	0	1650	1650	1650	0	
1170	1170	0	1360	1360	0	1620	0	1540	1540	1540	0	
1060	1060	0	1060	1220	-160	1470	-230	1290	1290	1420	-130	
920	950	-30	270	1090	-820	1330	-850	470	470	1300	-830	
100	840	-740	-560	950	-1520	1180	-1490	-430	-430	1180	-1610	
-1050	730	-1780	-1420	810	-2240	1040	-2140	-1350	-1350	1060	-2410	
-2440	680	-3130	-3100	510	-3610	720	-3040	-2300	-2300	870	-3170	
-3970	480	-4480	-4380	330	-4710	570	-3850	-3390	-3390	810	-4200	
-4630	390	-5020	-4310	390	-4700	600	-4070	-4190	-4190	680	-4870	
-3930	440	-4370	-4240	450	-4690	650	-4080	-3970	-3970	710	-4690	
-620	*820*	*-1440*	*-990*	*890*	*-1880*	*1130*	*-1720*	*-740*	*-740*	*1140*	*-1880*	
-621	**820**	**-1441**	**-992**	**891**	**-1883**	**1124**	**-1723**	**-734**	**-734**	**1143**	**-1877**	

1993, bn	1993, bw	1993, bs	1994, bn	1994, bw	1994, bs	1995, bn	1995, bw	1995, bs				
1107	1107	0	1492	1492	0	1842	1842	0				
1030	1030	0	1386	1386	0	1701	1701	0				
606	953	-347	1281	1281	0	1560	1560	0				
46	875	-829	964	1175	-211	1298	1418	-121				
-514	798	-1311	-43	1070	-1112	592	1277	-685				
-1185	739	-1924	-1435	944	-2379	-201	1117	-1318				
-1566	662	-2228	-1755	894	-2649	-626	1045	-1671				
-2165	549	-2714	-2793	790	-3583	-1321	909	-2230				
-2507	449	-2956	-4190	610	-4800	-2404	647	-3051				
-3597	371	-3968	-4935	462	-5397	-3540	434	-3974				
-3816	392	-4208	-6297	500	-6797	-3176	548	-3724				
-1215	*705*	*-1920*	*-1295*	*940*	*-2235*	*-300*	*1105*	*-1405*				
-1198	**708**	**-1906**	**-1268**	**946**	**-2214**	**-280**	**1112**	**-1391**				

1966, bn	1966, bw	1966, bs	1967, bn	1967,bw	1967, bs	1968, bn	1968, bw	1968, bs	1969, bn	1969, bw	1969, bs	1970, bn
1000	1250	-250	-750	1000	-1750	610	1050	-440	500	1250	-750	-500
1230	1360	-130	-460	1112	-1580	610	1050	-440	500	1250	-750	-500
580	1280	-700	-470	1080	-1530	560	1000	-440	270	1020	-750	-750
-80	970	-1050	-820	960	-1780	420	920	-500	-80	790	-870	-1000
-730	720	-1450	-2050	750	-2800	-110	780	-890	-1110	600	-1710	-2090
-1770	680	-2450	-3260	230	-3490	-710	700	-1420	-1960	250	-2210	-2850
-60	*1000*	*-1060*	*-1150*	*930*	*-2080*	*290*	*910*	*-620*	*-290*	*800*	*-1090*	*-1240*
-63	**1002**	**-1065**	**-1107**	**915**	**-2022**	**290**	**906**	**-616**	**-283**	**807**	**-1090**	**-1246**

1971, bn	1971, bw	1971, bs	1972, bn	1972, bw	1972, bs	1973, bn	1973, bw	1973, bs	1974, bn	1974, bw	1974, bs	
100	950	-850	1200	1410	-210	1010	1010	0	1170	1380	-210	
100	950	-850	1200	1410	-210	1010	1010	0	1170	1380	-210	
-460	860	-1320	470	1220	-750	520	900	-380	560	1230	-670	
-870	810	-1680	-100	1080	-1180	-20	820	-840	100	1110	-1010	
-1630	650	-2280	-530	860	-1790	-720	690	-1410	-630	960	-1590	
-2110	550	-2660	-1460	720	-2180	-1180	620	-1800	-1070	870	-1940	
-940	*780*	*-1720*	*-130*	*1070*	*-1200*	*-40*	*810*	*-850*	*60*	*1110*	*-1050*	
-941	**782**	**-1723**	**-132**	**1068**	**-1200**	**-36**	**812**	**-849**	**58**	**1111**	**-1053**	

Appendix 2 Mass balance versus altitude

Columbia			Variegated		Variegated cont.		Variegated cont.		Variegated cont.		Variegated cont.	
Altitude	Area	1978, bn	Altitude	1976, bn	Altitude	1976, bn	Altitude	1977, bn	Altitude	1978, bn	Altitude	1979, bn
3250	7.0						1827	4900				
3150	3.0						1812	4600	1816	2200	1814	-2600
3050	4.0						1776	5700	1778	3300	1778	3200
2950	8.0						1771	4900	1766	2500	1761	2200
2850	9.0						1759	4300	1742	400	1754	2900
2750	9.0						1751	4900	1705	1400	1710	1600
2650	16.0	5500					1739	3800	1597	2700	1616	2500
2550	11.0	5088					1705	3300	1594	2100	1591	2400
2450	19.0	4711					1609	5600	1553	1300	1552	2300
2350	13.0	4364					1539	4100	1545	2000	1506	1300
2250	23.0	4041					1490	4000	1479	2600	1492	2400
2150	21.0	3737					1454	3600	1410	1500	1431	2100
2050	33.0	3448					1424	3700	1294	900	1382	2000
1950	50.0	3169					1395	3100	1238	1300	1351	-200
1850	33.0	2893					1367	3500	1187	-600	1340	1500
1750	36.0	2617					1345	3400	1155	1300	1281	900
1650	26.0	2335	1326	3000			1320	3200	1136	-600	1237	1000
1550	37.0	2041	1103	1800			1285	3000	1097	-600	1190	-200
1450	42.0	1732	1038	2600	1038	-1300	1229	2500	1085	-800	1143	-400
1350	40.0	1401	791	-300	1101	-400	1206	2200	1047	-200	1054	300
1250	55.0	1044	777	-800	808	-2000	1182	1800	1012	-800	1015	-100
1150	57.0	656	777	-1300	724	-2700	1162	1900	953	-1000	949	-700
1050	60.0	231	776	-800	620	-3100	1138	1900	921	-1600	927	-1800
950	70.0	-235	775	-700	597	-3100	1097	1700	716	-2300	818	-2500
850	49.0	-748	730	-1400	553	-3300	1046	1400	632	-2600	757	-3800
750	69.0	-1313	690	-1500	552	-4200	1014	1600	542	-3400	711	-2800
650	83.0	-1934	647	-1700	509	-4100	721	-1800	496	-4000	649	-2300
550	78.0	-2617	604	-2000	458	-3900	593	-2600	444	4800	626	-2300
450	21.0	-3368	559	-1700	392	-4100	548	-3100			579	-2800
350	26.0	-4190	559	-2300	361	-4400	503	-3800			535	-4000
250	36.0	-5089	557	-2100	329	-4500	452	-3600			489	-5000
150	24.0	-6071	555	-2300	295	-4500	357	-4100			436	-5200
50	7.0	-7140	555	-2700	240	-5200	324	-4600			373	-6000
3300-0	**1075.0**	**480**	515	-1300			290	-4200			345	-6300
			465	-3000							311	-4700
			407	-2600							277	-5500
			405	-2800							222	-5800
			397	-3600								
			395	-1600								
			392	-2700								
			363	-3500								
			333	-3300								
			300	-3600								
			246	-3800								

De los Tres																
Altitude	**Area**	**1996, bn**	**1996, bw**	**1996, bs**	**1996, bn**	**1997, bw**	**1997, bs**									
1765	0.75	890	2350	-1460	2400	2990	-590									
1650	0.1	730	2340	-1610	2160	2810	-650									
1550	0.278	720	2510	-1790	1170	2140	-970									
1450	0.269	210	2270	-2060	510	1920	-1410									
1350	0.176	-1200	2170	-3370	-760	1400	-2160									
1249	0.078	-1810	2070	-3880	-1020	1740	-2780									
1830-1198	*0.976*	*70*	*2320*	*-2250*	*650*	*2040*	*-1390*									
recalc.	**0.976**	**45**	**2318**	**-2273**	**661**	**2047**	**-1389**									
Austre Broeg.																
Altitude	**Area**	**1990, bn**	**1990, bw**	**1990, bs**	**1991, bn**	**1991, bw**	**1991, bs**	**1993, bn**	**1993, bw**	**1993, bs**	**1994, bn**	**1994, bw**	**1994, bs**	**1995, bn**	**1995, bw**	**1995,bs**
575	0.12	250	950	-700	600	1000	-400	-400	570	-970	200	1000	-800	280	810	-530
525	0.25	100	850	-750	550	1000	-450	-600	500	-1100	150	1000	-850	260	810	-550
475	0.46	50	850	-800	350	850	-500	-740	420	-1160	110	950	-840	100	680	-580
425	0.56	-150	750	-900	150	750	-600	-700	500	-1200	80	850	-770	-80	560	-640
375	0.79	-350	650	-1000	250	900	-650	-740	650	-1390	60	950	-890	-140	590	-730
325	1.02	-500	650	-1150	200	900	-700	-700	620	-1320	-40	900	-940	-520	470	-990
275	0.92	-650	600	-1250	0	800	-800	-900	570	-1470	-100	750	-850	-840	380	-1220
225	0.95	-750	650	-1400	-100	800	-900	-1250	520	-1770	-330	650	-980	-980	410	-1390
175	0.71	-1100	550	-1650	-430	720	-1150	-1750	520	-2270	-630	550	-1180	-1400	390	-1790
125	0.31	-1400	500	-1900	-900	600	-1500	-2200	400	-2600	-1100	450	-1550	-1950	310	-2260
75	0.03	-1550	450	-2000	-1000	480	-1500	-2900	300	-3200	-1650	400	-2050	-2740	240	-2980
600-50	*6.120*	*-600*			*130*	*920*	*-790*	*-1030*	*540*	*-1570*	*-160*	*790*	*-950*	*-780*	*560*	*-1340*
recalc.	**6.120**	**-550**	**661**	**-1210**	**24**	**820**	**-796**	**-1022**	**545**	**-1567**	**-176**	**784**	**-961**	**-641**	**489**	**-1130**
Langfjord																
Altitude	**Area**	**1991, bn**	**1991, bw**	**1991, bs**	**1992, bn**	**1992, bw**	**1992, bs**	**1993, bn**	**1993, bw**	**1993, bs**						
1032	0.549	1200	2500	-1300	1350	3200	-1850	1250	3150	-1900						
950	0.805	1030	2500	-1470	1600	3250	-1650	1100	3100	-2000						
850	0.606	500	2500	-2000	2000	3300	-1300	600	2650	-2050						
750	0.559	550	2600	-2050	600	2800	-2200	200	2350	-2150						
650	0.394	-300	2200	-2500	-450	2150	-2600	-350	2100	-2450						
550	0.348	-900	1900	-2800	-1650	1650	-3300	-1150	1900	-3050						
450	0.254	-2150	1600	-3750	-2780	1200	-3980	-1950	1750	-3700						
350	0.136	-3050	1200	-4250	-3680	900	-4580	-2550	1650	-4200						
1065-300	*4.800*	*80*	*2310*	*-2230*	*280*	*2760*	*-2480*	*80*	*2470*	*-2390*						
recalc.	**3.651**	**193**	**2315**	**-2121**	**443**	**2681**	**-2237**	**183**	**2548**	**-2365**						
Langfjord cont.																
Altitude	**Area**	**1996, bn**	**1996, bw**	**1996, bs**	**1997, bn**	**1997, bw**	**1997, bs**									
1032	0.55	1350	2800	-1450	250	2850	-2600									
950	0.81	1150	2700	-1550	200	2900	-2700									
850	0.61	600	2300	-1700	200	3100	-2900									
750	0.56	200	2100	-1900	-600	2800	-3400									
650	0.39	-300	1900	-2200	-1450	2450	-3900									
550	0.35	-1700	1700	-3400	-2250	2050	-4300									
450	0.25	-3100	1600	-4700	-3000	1700	-4700									
350	0.14	-4300	1400	-5700	-3500	1600	-5100									
1065-300	*3.65*	*20*	*2250*	*-2230*	*-690*	*2650*	*-3340*									
recalc.	**3.66**	**16**	**2245**	**-2228**	**-685**	**2642**	**-3328**									

Engabreen																
Altitude	**Area**	**1970, bn**	**Altitude**	**Area**	**1971, bn**	**1971, bw**	**1971, bs**	**1972, bn**	**1972, bw**	**1972, bs**	**1973, bn**	**1973, bw**	**1973, bs**	**1974, bn**	**1974, bw**	**1974, bs**
1572	0.124	460	1550	0.12	2520	4130	-1610	970	3870	-2900	3870	5250	-1380	1870	3750	-1880
1475	0.276	610	1450	2.514	3270	4500	-1230	1330	4040	-2720	4680	5850	-1170	2500	4110	-1610
1425	2.232	700	1350	9.35	2970	4450	-1480	1250	3940	-2680	4600	5700	-1100	2350	4080	-1730
1375	5.036	280	1250	8.55	1450	3450	-2000	580	3540	-2950	3080	4530	-1450	1270	3550	-2280
1325	4.312	240	1150	7.6	840	3100	-2260	10	3100	-3090	2330	3910	-1580	760	3340	-2580
1275	3.088	-170	1050	4.66	-190	2390	-2580	670	2760	-3430	1800	3630	-1830	170	3150	-2980
1225	5.252	-610	950	2.46	-1330	1470	-2800	-1650	2300	-3960	860	3170	-2310	-700	2700	-3400
1175	5.178	-1130	850	0.946	-2500	750	-3250	-2830	1820	-4660	-10	2570	-2570	-2530	1810	-4340
1125	2.63	-1480	750	0.5	-3550	250	-3800	-4280	1220	-5500	-910	2130	-3040	-3480	1250	-4730
1075	2.792	-1870	650	0.37	-4070	250	-4320	-5780	730	-6500	-1950	1550	-3500	-4840	980	-5820
1025	1.992	-2120	550	0.27	-4740	110	-4850	-7260	260	-7520	-3540	960	-4500	-5900	750	-6650
950	2.46	-2340	450	0.21	-5830	70	-5900	-8500	0	-8500	-4820	380	-5200	-7690	250	-7940
850	1.128	-3010	350	0.17	-7020	40	-7060	-9500	0	-9500	-5990	120	-6110	-9160	250	-9410
750	0.552	-3810	250	0.22	-8780	0	-8780	-10500	0	-10500	-6720	0	-6720	-10250	250	-10500
650	0.442	-4320	140	0.09	-9500	0	-9500	-11500	0	-11500	-7490	0	-7490	-12350	200	-12550
260	1.167	-5770	1594-80	*38.030*	*1020*	*3210*	*-2190*	*-70*	*3220*	*-3290*	*2720*	*4370*	*-1650*	*790*	*3390*	*-2600*
1594-80	**38.661**	*-990*														
Engabreen cont.																
Altitude	**Area**	**1975, bn**	**1975, bw**	**1975, bs**	**Area**	**1976, bn**	**1976, bw**	**1976, bs**	**1977, bn**	**1977, bw**	**1977, bs**	**1978, bn**	**1978, bw**	**1978, bs**		
1550	0.12	3370	4400	-1030	0.12	2680	3680	-1000	2200	2530	-330	1980	3630	-1650		
1450	2.514	3940	4470	-530	2.51	4300	5100	-800	2400	2750	-350	1930	3410	-1480		
1350	9.35	3320	4100	-780	9.35	4520	5270	-750	2030	2400	-370	1560	3240	-1680		
1250	8.55	1930	3210	-1280	8.55	2560	3760	-1200	1270	2240	-970	-150	2720	-2870		
1150	7.6	770	2780	-2010	7.6	1930	3380	-1450	780	1940	-1160	-1280	2210	-3490		
1050	4.66	960	2670	-1710	4.66	1510	3310	-1800	360	1860	-1500	-1820	2000	-3820		
950	2.46	-110	2430	-2540	2.46	630	2830	-2200	-540	1680	-2220	-2680	1570	-4250		
850	0.946	-1050	1860	-2910	0.94	-600	2200	-2800	-1250	1460	-2710	-3440	1210	-4650		
750	0.5	-1710	1830	-3540	0.5	-1450	1800	-3250	-2480	1250	-3730	-4000	800	-4800		
650	0.37	-2790	1290	-4030	0.37	-2450	1300	-3750	-3600	750	-4350	-4800	450	-5250		
550	0.27	-3430	740	-4170	0.27	-3350	1150	-4500	-4360	640	-5000	-5350	400	-5750		
450	0.21	-3880	500	-4380	0.21	-4300	800	-5100	-5090	410	-5500	-5950	300	-6250		
350	0.17	-4450	490	-4940	0.17	-5150	500	-5650	-5650	350	-6000	-6350	250	-6600		
250	0.22	-4560	400	-4960	0.22	-5950	300	-6250	-6400	200	-6600	-6670	190	-6860		
140	0.09	-5960	360	-6320	0.09	-6400	300	-6700	-6840	60	-6900	-6880	160	-7020		
1594-80	*38.03*	*1600*	*3180*	*-1570*	*38.02*	*2410*	*3860*	*-1450*	*-880*	*2080*	*-1200*	*-510*	*2480*	*-2990*		
recalc.	**38.04**	**1602**	**3175**	**-1572**	**38.02**	**2413**	**3863**	**-1449**	**879**	**2077**	**-1198**	**-507**	**2485**	**2993**		
Engabreen cont.																
Altitude	**Area**	**1979, bn**	**1979, bw**	**1979, bs**	**1980, bn**	**1980, bw**	**1980, bs**	**Altitude**	**Area**	**1986, bn**	**1986, bw**	**1986, bs**	**1987, bn**	**1987, bw**	**1987, bs**	
1550	0.12	300	3000	-2700	1080	3500	-2420	1550	0.12	1270	2670	-1400	1400	2400	-1000	
1450	2.514	2010	4460	-2450	1220	3510	-2290	1450	2.51	2170	3670	-1500	2060	3110	-1050	
1350	9.35	1970	4360	-2390	710	3310	-2600	1350	9.35	1940	3730	-1790	2130	3280	-1150	
1250	8.55	1200	4080	-2880	-110	2780	-2890	1250	8.55	780	2950	-2170	1460	2860	-1400	
1150	7.6	260	3530	-3270	-590	2510	-3100	1150	7.6	50	2540	-2490	850	2410	-1560	
1050	4.66	-670	2900	-3570	-1050	2260	-3310	1050	4.66	-720	2050	-2770	290	2090	-1800	
950	2.46	-1680	2570	-4250	-1680	2060	-3740	950	2.46	-1860	1250	-3110	-530	1670	-2200	
850	0.946	-2700	2050	-4750	-2670	1650	-4320	850	0.94	-2910	830	-3740	-1350	1250	-2600	
750	0.5	-3740	1750	-5490	-3760	1380	-5140	750	0.5	-3770	560	-4330	-1960	1090	-3050	
650	0.37	-4750	1500	-6250	-5080	1140	-6220	650	0.37	-4810	300	-5110	-2850	800	-3650	
550	0.27	-5590	1160	-6750	-6630	890	-7520	550	0.27	-5800	0	-5800	-3620	630	-4250	
450	0.21	-6500	750	-7250	-7900	670	-8570	450	0.21	-6650	0	-6650	-4710	290	-5000	
350	0.17	-7590	490	-8080	-9510	370	-9880	350	0.17	-7450	0	-7450	-5700	150	-5850	
250	0.22	-8660	300	-8960	-10320	130	-10450	250	0.22	-8290	0	-8290	-6750	0	-6750	
140	0.09	-9720	150	-9870	-11560	0	-11560	120	0.09	-9160	0	-9160	-8100	0	-8100	
1594-80	*38.030*	*420*	*3640*	*-3220*	*-500*	*2680*	*-3180*	*1594-40*	*38.02*	*250*	*2700*	*-2450*	*940*	*2570*	*-1630*	
recalc.	**38.020**	**404**	**3626**	**-3222**	**-507**	**2676**	**-3183**		**38.020**	**252**	**2702**	**-2450**	**941**	**2568**	**-1627**	

Engabr. cont.													
Altitude	**Area**	**1988, bn**	**1988, bw**	**1988, bs**	**1989, bn**	**1989, bw**	**1989, bs**	**1990, bn**	**1990, bw**	**1990, bs**	**1991, bn**	**1991, bw**	**1991, bs**
1550	0.12	-230	1970	-2200	5540	6380	-840	2680	3860	-1180	3000	3600	-600
1450	2.51	100	2650	-2550	5990	6750	-760	2630	4030	-1400	2550	3500	-950
1350	9.35	-360	2720	-3080	5390	6330	-940	2430	4080	-1650	2050	3350	-1300
1250	8.55	-1160	2470	-3630	4120	5270	-1150	1960	3920	-1960	1370	3120	-1750
1150	7.6	-1980	2160	-4140	2510	3870	-1360	1180	3600	-2420	550	2800	-2250
1050	4.66	-2770	1970	-4740	1570	3130	-1560	1600	3220	-3060	-300	2450	-2750
950	2.46	-3740	1670	-5410	640	2620	-1980	-1780	2580	-4360	-1130	2070	-3200
850	0.94	-4590	1430	-6020	-520	2030	-2550	-4110	1430	-5540	-1900	1750	-3650
750	0.5	-5380	1280	-6660	-1890	1540	-3430	-6150	650	-6800	-2900	1250	-4150
650	0.37	-6410	990	-7400	-3280	1120	-4400	-7520	300	-7800	-4000	750	-4750
550	0.27	-7250	760	8010	-4620	730	-5350	-8450	180	-8720	-5100	200	-5300
450	0.21	-8460	450	-8910	-5690	370	-6060	-9570	-20	-9550	-6050	0	-6050
350	0.17	-9350	240	-9590	-6490	160	-6650	-10470	-10	-10370	-7400	0	-7400
250	0.22	-10060	50	-10110	-7150	50	-7200	-11550	-25	-11300	-8650	0	-8650
140	0.09	-10820	0	10820	-7900	0	-7900	-13150	-40	-12750	-10250	0	-10250
1594-80	*38.02*	*-1790*	*2260*	*-4050*	*3180*	*4620*	*-1450*	*850*	*3490*	*-2640*	*690*	*2830*	*-2140*
recalc.	**38.02**	**-1791**	**2258**	**-4049**	**3178**	**4624**	**-1446**	**849**	**3492**	**-2643**	**689**	**2830**	**-2140**
Engabr. cont.													
Altitude	**Area**	**1992, bn**	**1992, bw**	**1992, bs**	**1993, bn**	**1993, bw**	**1993, bs**	**1994, bn**	**1994, bw**	**1994, bs**	**1995,bn**	**1995, bw**	**1995, bs**
1550	0.12	4750	5350	-600	2550	3700	-1150	1600	2300	-800	3500	4400	-900
1450	2.51	4630	5520	-890	2620	3900	-1280	1600	2500	-900	3400	4400	-1100
1350	9.35	3850	5150	-1300	2360	3730	-1370	1400	2500	-1100	3100	4300	-1300
1250	8.55	2930	4360	-1430	1670	3280	-1610	900	2200	-1400	2200	3700	-1500
1150	7.6	2030	3780	-1750	820	2780	-1960	300	1800	-1600	1500	3400	-1800
1050	4.66	1450	3300	-1850	590	2890	-2300	-100	1700	-1800	1200	3200	-2000
950	2.46	600	2740	-2140	-430	2450	-2880	-600	1500	-2100	200	2600	-2400
850	0.94	-270	2350	-2620	-1700	1950	-3650	-1200	1200	-2400	-1000	1700	-2800
750	0.5	-1500	1750	-3250	-2970	1450	-4420	-1800	900	-2700	-1900	1300	-3200
650	0.37	-2880	1130	-4010	-4250	950	-5200	-2600	500	-3000	-2800	1000	-3800
550	0.27	-4250	580	-4830	-5580	420	-6000	-3400	0	-3400	-3700	700	-4400
450	0.21	-5600	-250	-5350	-6700	-50	-6650	-4400	-500	-3900	-4600	400	-5000
350	0.17	-6800	-760	-6040	-7700	-500	-7200	-5400	-1100	-4300	-5400	100	-5500
250	0.22	-7550	-1220	-6330	-8650	-950	-7700	-6500	-1800	-4800	-6200	-200	-6000
140	0.09	-8400	-1700	-6700	-9800	-1500	-8300	-7700	-2500	-5200	-7000	-500	-6500
1594-80	*38.02*	*2340*	*4050*	*-1710*	*1040*	*3060*	*-2020*	*420*	*1950*	*-1530*	*1740*	*3500*	*-1760*
recalc.	**38.02**	**2339**	**4046**	**-1707**	**1039**	**3060**	**-2022**	**417**	**1969**	**-1553**	**-1734**	**3508**	**-1775**
Svartisheibr.													
Altitude	**Area**	**1991, bn**	**1991, bw**	**1991, bs**	**1992, bn**	**1992, bw**	**1992, bs**	**1993, bn**	**1993, bw**	**1993, bs**	**1994, bn**	**1994, bw**	**1994, bs**
1410	0.01	1250	2350	-1100	1250	3500	-2250	1700	3400	-1700	1000	1900	-900
1375	0.14	1300	2450	-1150	1350	3600	-2250	1700	3450	-1750	1000	1950	-950
1325	0.25	1350	2550	-1200	1500	3750	-2250	1700	3500	-1800	1000	2000	-1000
1275	0.37	1450	2700	-1250	1700	3950	-2250	1750	3600	-1850	1000	2050	-1050
1225	0.33	1550	2900	-1350	1900	4150	-2250	1850	3750	-1900	950	2050	-1100
1175	0.36	1650	3100	-1450	2100	4350	-2250	1900	3850	-1950	850	2000	-1150
1125	0.34	1700	3250	-1550	2300	4550	-2250	1800	3800	-2000	700	1900	-1200
1075	0.35	1550	3250	-1700	2350	4600	-2250	1700	3750	-2050	550	1900	-1350
1025	1.07	1150	3050	-1900	2050	4450	-2400	1450	3650	-2200	450	1950	-1500
975	0.63	450	2700	-2250	1600	4150	-2550	1150	3550	-2400	0	1950	-1950
925	0.54	-550	2350	-2900	950	3800	-2850	250	3450	-3200	-700	1800	-2500
875	0.31	-1800	2050	-3850	-400	2900	-3300	-500	3300	-3800	-1400	1500	-2900
825	0.35	-3250	1650	-4900	-1350	2400	-3750	-1050	3000	-4050	-2000	1250	-3250
785	0.43	-4350	1250	-5600	-1600	2550	-4150	-1600	2700	-4300	-2200	1300	-3500
1420-770	*5.50*	*170*	*2610*	*-2440*	*1210*	*3890*	*-2680*	*910*	*3500*	*-2590*	*-20*	*1830*	*-1850*
recalc.	**5.48**	**173**	**2610**	**-2437**	**1209**	**3886**	**-2677**	**918**	**3502**	**-2584**	**-29**	**1826**	**-1855**

A.Okstinbreen															
Altitude	**Area**	**1990, bn**	**1990, bw**	**1990, bs**	**1991, bn**	**1991, bw**	**1991, bs**	**1992, bn**	**1992, bw**	**1992, bs**	**1993, bn**	**1993, bw**	**1993, bs**	**1994, bw**	**1994, bs**
1675	0.21	2300	4000	-1700	600	1500	-900	3250	3500	-250	1600	2200	-600	1800	-300
1550	1.91	2400	4100	-1700	800	1900	-1100	3250	3700	-450	1950	2800	-850	1900	-400
1450	4.14	1900	3700	-1800	1050	2350	-1300	2950	3750	-800	1850	3000	-1150	1800	-600
1350	2.56	900	3000	-2100	500	2200	-1700	1950	3200	-1250	950	2400	-1450	1600	-1100
1250	2.56	-1400	2000	-3400	-1800	1200	-3000	-400	1750	-2150	-1250	1250	-2500	950	-2300
1150	0.64	-2000	1900	-3900	-3050	700	-3750	-1550	1450	-3000	-2800	750	-3550	800	-3250
1050	0.61	-2100	2200	-4300	-3450	1000	-4450	-1750	1700	-3450	-3000	1050	-4050	1050	-3450
950	0.59	-2800	2100	-4900	-3750	1300	-5050	-2000	2000	-4000	-3000	1550	-4550	1100	-3950
850	0.61	-4100	1700	-5800	-4350	1100	-5450	-3000	1700	-4700	-3500	1400	-5050	750	-5050
765	0.18	-5100	1400	-6500	-5600	700	-6300	-4300	1200	-5500	-3500	1900	-5400	720	-6300
1750-730	*14.01*	*290*	*2990*	*-2700*	*-510*	*1790*	*-2300*	*1230*	*2880*	*-1650*	*190*	*2200*	*-2010*	*1450*	*-1620*
recalc.	**14.01**	**287**	**2989**	**-2702**	**-518**	**1784**	**-2302**	**1230**	**2883**	**-1654**	**193**	**2199**	**-2006**	**1454**	**-1623**
A.Okstinbr. cont.															
Altitude	**Area**	**1995,bn**	**1995, bw**	**1995, bs**	**1996, bn**	**1996, bw**	**1996, bs**								
1675	0.21	2020	2250	-230	970	1600	-630								
1550	1.91	2250	2700	-450	1100	1900	-800								
1450	4.14	2050	2850	-800	1020	2050	-1030								
1350	2.56	1250	2550	-1300	400	1800	-1400								
1250	2.56	-700	1500	-2200	-1400	1100	-2500								
1150	0.64	-2000	1400	-3400	-2150	1100	-3250								
1050	0.61	-2550	1600	-4150	-2650	1150	-3800								
950	0.59	-3100	1550	-4650	-3200	1100	-4300								
850	0.61	-4250	1250	-5500	-3950	1050	-5000								
765	0.18	-5250	950	-6200	-4950	800	-5750								
1750-730	*14.01*	*460*	*2250*	*-1790*	*-300*	*1620*	*-1920*								
recalc.	**14.01**	**458**	**2250**	**-1792**	**-301**	**1621**	**-1922**								
Trollbergdalsbr.															
Altitude	**Area**	**1970, bn**	**1970, bw**	**1970, bs**	**Altitude**	**Area**	**1971, bn**	**1971, bw**	**1971, bs**	**Area**	**1972, bn**	**1972, bw**	**1972, bs**		
1355	0.003	-1660	2000	-3660											
1325	0.05	-1620	2120	-3740	1335	0.05	0	2110	-2110	0.04	-210	2540	-2750		
1275	0.045	-1580	2130	-3710	1275	0.05	-100	2270	-2370	0.05	-290	2470	-2760		
1225	0.19	-1570	2120	-3690	1225	0.19	-80	2290	-2370	0.19	-240	2520	-2760		
1175	0.191	-1780	1900	-3680	1175	0.15	210	2500	-2370	0.17	40	2800	-2760		
1125	0.137	-1490	2130	-3620	1125	0.14	300	2670	-2370	0.13	-480	2770	-3250		
1075	0.556	-2140	1840	-3980	1075	0.56	-270	2110	-2370	0.56	-1060	2380	-3440		
1025	0.607	-2950	1500	-4450	1025	0.61	-770	1790	-2560	0.62	-1940	2210	-4150		
975	0.202	-3710	1430	-5140	975	0.2	-400	2220	-2620	0.2	-2130	2520	-4650		
925	0.074	-4440	1300	-5740	925	0.07	-370	2510	-2880	0.06	-2510	2920	-5430		
1370-900	*2.055*	*-2470*	*1740*	*-4210*	*1370-900*	*2.020*	*-330*	*2130*	*-2460*	*2.02*	*-1240*	*2440*	*-3670*		
recalc.	**2.055**	**-2461**			**recalc.**	**2.020**	**-337**	**2127**	**-2463**	**2.02**	**-1236**	**2437**	**-3673**		
Trollberg. cont.															
Altitude	**Area**	**1973, bn**	**1973, bw**	**1973, bs**	**1974, bn**	**1974, bw**	**1974, bs**	**1975, bn**	**Area**	**1990, bn**	**1990, bw**	**1990, bs**	**1991, bn**	**1991, bw**	**1991, bs**
1275	0.01	1620	3750	-2130	750	3130	-2380	1000	0.005	1730	4200	-2470	1350	2800	-1450
1225	0.08	1520	3650	-2130	760	3140	-2380	860	0.08	1400	4050	-2650	1150	2650	-1500
1175	0.17	1530	3680	-2150	760	3230	-2470	730	0.173	1070	3870	-2800	1000	2600	-1600
1125	0.13	1480	3710	-2230	560	3190	-2630	530	0.128	600	3550	-2950	1150	3050	-1900
1075	0.56	820	3120	-2300	-210	2520	-2730	-260	0.556	20	3150	-3130	100	2300	-2200
1025	0.62	320	2860	-2540	-970	2270	-3240	-670	0.615	-650	2650	-3300	-450	2050	-2500
975	0.2	510	3280	-2770	-1140	2370	-3510	-890	0.199	-880	2570	-3450	-700	2250	-2950
925	0.06	540	3670	-3130	-1010	2620	-3630	-900	0.063	-450	3150	-3650	-950	2650	-3600
1370-900	*1.83*	*750*	*3190*	*-2430*	*-400*	*2570*	*-2970*	*-280*	*1.819*	*-120*	*3050*	*-3170*	*0*	*2320*	*-2330*
recalc.	**1.83**	**755**	**3188**	**-2433**	**-403**	**2566**	**-2969**	**-285**	**1.819**	**-117**	**3057**	**-3174**	**-1**	**2320**	**-2321**

Trollberg. cont.														
Altitude	**Area**	**1992, bn**	**1992, bw**	**1992, bs**	**1993, bn**	**1993, bw**	**1993, bs**	**Area**	**1994, bn**	**1994, bw**	**1994, bs**			
1275	0.01	2000	3100	-1100	1100	2400	-1300	0.001	350	1800	-1450			
1225	0.08	1800	3000	-1200	1050	2400	-1350	0.03	200	1750	-1550			
1175	0.17	1500	2950	-1450	1000	2400	-1400	0.14	-50	1650	-1700			
1125	0.13	1100	2800	-1700	950	2850	-1900	0.11	-450	1500	-1950			
1075	0.56	600	2600	-2000	500	2850	-2350	0.24	-600	1650	-2250			
1025	0.62	150	2400	-2250	-300	2250	-2550	0.68	-1250	1450	-2700			
975	0.2	300	2750	-2450	-300	2350	-2650	0.31	-1800	1350	-3150			
925	0.06	800	3300	-2500	-50	2900	-2950	0.08	-2000	1450	-3450			
1370-900	*1.83*	*600*	*2650*	*-2050*	*210*	*2520*	*-2310*	*1.580*	*-1100*	*1490*	*-2590*			
recalc.	**1.83**	**599**	**2639**	**-2040**	**228**	**2530**	**-2302**	**1.591**	**-1108**	**1489**	**-2597**			
Srorglombreen														
Altitude	**Area**	**1988, bn**	**1988, bw**	**1988, bs**										
1540	0.15	-30	1970	-2000										
1450	0.57	90	2260	-2170										
1350	3.37	20	2620	-2600										
1250	13.32	-820	2470	-3290										
1150	24	-1230	2260	-3490										
1050	9.08	-2170	1830	-4000										
950	5.21	-3820	1100	-4920										
850	1.89	-5180	730	-5910										
750	0.9	-6070	600	-6670										
650	0.43	-6860	530	-7390										
560	0.24	-7620	420	-8040										
1580-520	*59.16*	*-1690*	*2060*	*-3750*										
recalc.	**59.16**	**-1690**	**2065**	**-3754**										
Hoegtuvbreen														
Altitude	**Area**	**1971, bn**	**1971, bw**	**1971, bs**	**1972, bn**	**1972, bw**	**1972, bs**	**1973, bn**	**1973, bw**	**1973, bs**	**Area**	**1974, bn**	**1974, bw**	**1974, bs**
1155	0.1	780	3660	-2880	110	3480	-3370	2500	4610	-2120	0.08	1100	3980	-2880
1125	0.22	670	3550	-2880	430	3800	-3370	1880	4260	-2370	0.21	1040	4170	-3130
1075	0.21	560	3690	-3120	510	4140	-3630	2110	4550	-2440	0.22	960	4220	-3260
1025	0.24	530	3820	-3280	260	4140	-3880	1600	4100	-2500	0.25	860	4010	-3150
975	0.31	220	3600	-3370	70	4030	-3960	1910	4330	-2420	0.32	670	3840	-3170
925	0.31	-320	3240	-3560	-830	3410	-4240	1490	4050	-2560	0.32	180	3550	-3370
875	0.32	-950	2780	-3740	-1520	3090	-4610	1100	3800	-2700	0.32	-150	3510	-3660
825	0.17	-1000	2880	-3870	-1520	3280	-4800	1520	4270	-2750	0.18	-400	3480	-3880
775	0.16	-1500	2750	-4250	-1660	3210	-4870	840	3840	-3000	0.16	-940	3190	-4130
725	0.16	-2380	2400	-4780	-1880	2990	-4870	150	3610	-3460	0.16	-1600	2780	-4380
675	0.22	-3160	1960	-5130	-2980	2020	-5000	-1010	2880	-3890	0.22	-2480	2250	-4730
620	0.17	-3380	1870	-5250	-3340	1780	-5120	-1610	2450	-4060	0.16	-2940	2210	-5150
1160-588	*2.59*	*-742*	*3055*	*-3796*	*-963*	*3335*	*-4299*	*1088*	*3907*	*-2819*	*2.60*	*-207*	*3478*	*-3685*
Hoegtuvbreen cont.														
Altitude	**Area**	**1975, bn**	**1975, bw**	**1975, bs**	**Area**	**1976, bn**	**1976, bw**	**1976, bs**	**1977, bn**	**1977, bw**	**1977, bs**			
1155	0.08	2310	3710	-1400	0.08	2050	3950	-1900	600	2400	-1800			
1125	0.21	2060	3460	-1400	0.214	2190	4190	-2000	300	2290	-1990			
1075	0.22	1550	3140	-1590	0.22	2130	4280	-2150	300	2400	-2100			
1025	0.25	1600	3350	-1750	0.252	1910	4210	-2300	300	2340	-2040			
975	0.32	1420	3240	-1820	0.318	1780	4230	-2450	430	2430	-2010			
925	0.32	1100	3330	-2230	0.321	1010	3610	-2600	100	2350	-2250			
875	0.32	790	3060	-2270	0.316	420	3170	-2750	-120	2350	-2470			
825	0.18	360	2910	-2550	0.177	740	3640	-2900	-640	2260	-2900			
775	0.16	100	2850	-2750	0.161	440	3540	-3100	-1320	2130	-3450			
725	0.16	-350	2450	-2800	0.162	-60	3340	-3400	-1960	1880	-3840			
675	0.22	-1120	2170	-3290	0.217	-810	2940	-3750	-2510	1740	-4250			
620	0.16	-1990	1980	-3970	0.16	-1630	2470	-4100	-3450	1330	-4780			
1160-588	*2.60*	*722*	*3000*	*-2278*	*2.598*	*909*	*3660*	*-2751*	*-523*	*2197*	*-2720*			

Storsteinfjellbreen															
Altitude	**Area**	**1965, bn**	**1965, bw**	**1965, bs**	**1966, bn**	**1966, bw**	**1966, bs**	**1967, bn**	**1967,bw**	**1967, bs**	**1968, bn**	**1968, bw**	**1968, bs**		
1825	0.022	1640	1770	-130	450	1680	-1230	1000	1870	-870	1450	1860	-410		
1775	0.041	1520	1760	-240	440	1680	-1240	1000	1870	-870	1440	1880	-440		
1725	0.134	1430	1830	-400	360	1600	-1240	950	1820	-870	1370	1870	-500		
1675	0.173	1480	2050	-570	330	1570	-1240	910	1780	-870	1340	1860	-520		
1625	0.174	1890	2520	-630	280	1520	-1240	550	1670	-1120	1250	1820	-570		
1575	0.207	1780	2620	-840	160	1400	-1240	620	1740	-1120	1120	1740	-620		
1525	0.357	1010	2030	-1020	80	1330	-1250	130	1500	-1370	880	1550	-670		
1475	0.484	970	2100	-1130	-60	1240	-1300	140	1510	-1370	820	1550	-730		
1425	0.898	590	1720	-1130	-250	1170	-1420	-200	1420	-1620	600	1410	-810		
1375	1.032	590	1720	-1130	-530	1080	-1610	-210	1410	-1620	540	1460	-920		
1325	0.675	560	1720	-1160	-810	990	-1800	-260	1430	-1690	370	1440	-1070		
1275	0.743	40	1420	-1380	-1260	870	-2130	-940	1150	-2090	60	1300	-1240		
1225	0.379	-290	1320	-1610	-1820	790	-2610	-1170	1080	-2250	-200	1200	-1400		
1175	0.3	-510	1240	-1750	-2350	740	-3090	-1320	1010	-2330	-150	1290	-1440		
1125	0.215	-920	1110	-2030	-2620	630	-3250	-1730	1020	-2750	-240	1230	-1470		
1075	0.12	-1220	1030	-2250	-3000	590	-3590	-1960	1120	-3080	-130	1380	-1510		
1025	0.08	-1750	1000	-2750	-3500	460	-3960	-2440	1040	-3480	-380	1200	-1580		
975	0.061	-2140	1110	-3250	-3690	560	-4250	-2820	930	-3750	-620	1020	-1640		
935	0.025	-2000	1250	-3250	-3570	680	-4250	-2840	880	-3720	-680	1040	-1720		
1850-920	*6.120*	*440*	*1690*	*-1250*	*-830*	*1050*	*-1880*	*-400*	*1370*	*-1770*	*450*	*1440*	*-990*		
recalc.	**6.120**	**440**	**1696**	**-1257**	**-809**	**1065**	**-1874**	**-403**	**1367**	**-1770**	**455**	**1444**	**-989**		
Storsteinfjellbreen															
Altitude	**Area**	**1991, bn**	**1991, bw**	**1991, bs**	**1992, bn**	**1992, bw**	**1992, bs**	**1993, bn**	**1993, bw**	**1993, bs**					
1825	0.022	2180	2430	-250	2700	2900	-200	2500	2850	-350					
1775	0.041	2020	2330	-310	2730	2980	-250	2450	2900	-450					
1725	0.134	1870	2260	-390	2710	3010	-300	2550	3100	-550					
1675	0.173	1710	2190	-480	2610	2960	-350	2200	2850	-650					
1625	0.173	1590	2170	-580	2500	2900	-400	2050	2750	-700					
1575	0.208	1460	2180	-720	2290	2790	-500	1900	2700	-800					
1525	0.357	1250	2130	-880	1880	2480	-600	1600	2500	-900					
1475	0.484	880	1930	-1050	1600	2300	-700	1350	2400	-1050					
1425	0.898	260	1530	-1270	1110	2010	-900	900	2100	-1200					
1375	1.032	-110	1470	-1580	1170	2220	-1050	1000	2300	-1300					
1325	0.674	-310	1530	-1840	1130	2180	-1050	1050	2200	-1150					
1275	0.743	-780	1280	-2060	790	1990	-1200	900	2000	-1100					
1225	0.379	-1070	1180	-2250	220	1670	-1450	350	1700	-1350					
1175	0.3	-1300	1140	-2440	-340	1310	-1650	-150	1550	-1700					
1125	0.215	-1510	1140	-2650	-650	1100	-1750	-500	1500	-2000					
1075	0.12	-1750	1120	-2870	-1010	790	-1800	-550	1650	-2200					
1025	0.08	-1990	1020	-3010	-1320	580	-1900	-950	1400	-2350					
985	0.064	-2140	960	-3100	-1360	590	-1950	-1050	1450	-2500					
1850-920	*0.025*	*-2180*	*970*	*-3150*	*-1500*	*500*	*-2000*	*-1250*	*1400*	*-2650*					
recalc.	**6.123**	**-40**	**1560**	**-1600**	**1040**	**2070**	**-1030**	**950**	**2170**	**-1220**					

Storsteinfjellbreen							
Altitude	**Area**	**1994, bn**	**1994, bw**	**1994, bs**	**1995, bn**	**1995, bw**	**1995, bs**
1825	0.02	600	1000	-400	1850	2150	-300
1775	0.05	600	1050	-450	1850	2200	-350
1725	0.15	650	1150	-500	1850	2250	-400
1675	0.18	700	1300	-600	1800	2250	-450
1625	0.18	800	1550	-750	1800	2400	-600
1575	0.26	650	1550	-900	1750	2450	-700
1525	0.4	500	1450	-950	1450	2300	-850
1475	0.52	300	1300	-1000	1050	2000	-950
1425	0.85	100	1150	-1050	800	1850	-1050
1375	1.01	0	1150	-1150	750	1850	-1100
1325	0.66	-200	1200	-1400	500	1750	-1250
1275	0.66	-750	1000	-1750	-100	1600	-1700
1225	0.42	-1350	850	-2200	-800	1250	-2050
1175	0.24	-1600	800	-2400	-950	1200	-2150
1125	0.2	-1900	700	-2600	-1050	1200	-2250
1075	0.09	-2200	550	-2750	-1400	900	-2300
1025	0.02	-2450	450	-2900	-1650	700	-2350
985	0.01	-2700	350	-3050	-1800	600	-2400
1850-920	*5.9*	*-200*	*1140*	*-1350*	*570*	*1810*	*-1240*
recalc.	**5.92**	**-205**	**1142**	**-1347**	**572**	**1813**	**-1241**

Cainhavarre														
Altitude	**Area**	**1965, bn**	**1965, bw**	**1965, bs**	**1966, bn**	**1966, bw**	**1966, bs**	**1967, bn**	**1967,bw**	**1967, bs**	**1968, bn**	**1968, bw**	**1968, bs**	
1570	0.087	650	1390	-740	-450	1170	-1620	490	1620	-1130	600	1350	-750	
1475	0.143	330	1330	-1000	-620	1140	-1760	140	1620	-1480	440	1310	-870	
1425	0.135	40	1350	-1310	-1050	1070	-2120	-200	1690	-1870	300	1250	-950	
1375	0.125	130	1510	-1380	-1150	1080	-2230	-610	1470	-2080	180	1260	-1080	
1325	0.088	210	1590	-1380	-1250	1120	-2380	-360	1720	-2080	90	1340	-1250	
1275	0.074	-60	1320	-1380	-1220	1160	-2380	-420	1660	-2080	-50	1360	-1410	
1230	0.031	-60	1320	-1380	-1200	1160	-2360	-380	1680	-2060	-220	1390	-1610	
1540-1210	*0.683*	*210*	*1410*	*-1200*	*-950*	*1120*	*-2070*	*-160*	*1630*	*-1790*	*260*	*1310*	*-1050*	
recalc.	**0.683**	**201**	**1407**	**-1205**	**-954**	**1120**	**-2074**	**-165**	**1626**	**-1791**	**257**	**1307**	**-1050**	
Blaisen														
Altitude	**Area**	**1965, bn**	**1965, bw**	**1965, bs**	**Area**	**1966, bn**	**1966, bw**	**1966, bs**	**1967, bn**	**1967,bw**	**1967, bs**	**1968, bn**	**1968, bw**	**1968, bs**
1175	0.04	1370	2750	-1380	0.04	-600	1530	-2120	0	1880	-1880	1000	1880	-880
1125	0.24	1250	2630	-1380	0.237	-690	1430	-2120	-90	1710	-2000	970	1860	-890
1075	0.66	830	2210	-1380	0.661	-910	1270	-2180	-710	1500	-2210	520	1740	-1220
1025	0.65	420	1820	-1400	0.653	-1350	1080	-2430	-1140	1310	-2450	160	1580	-1430
975	0.42	30	1600	-1570	0.421	-1760	860	-2620	-1300	1150	-2450	-200	1410	-1610
925	0.15	-70	1730	-1800	0.152	-2160	750	-2910	-1690	1140	-2830	-400	1410	-1810
875	0.02	-130	2000	-2130	0.02	-2550	700	-3250	-2100	1150	-3250	-250	1650	-1900
1200-850	*2.18*	*540*	*2000*	*-1460*	*2.184*	*-1270*	*1120*	*-2390*	*-970*	*1380*	*-2350*	*260*	*1620*	*-1360*

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Alfotbreen														
Altitude	**Area**	**1965, bn**	**1965, bw**	**1965, bs**	**1966, bn**	**1966, bw**	**1966, bs**	**1967, bn**	**1967,bw**	**1967, bs**	**1968, bn**	**1968, bw**	**1968, bs**	
1375	0.26	1350	3750	-2370	-570	2680	-3250	1970	4340	-2370	1640	4760	-3120	
1325	1.02	1200	3750	-2560	-540	2710	-3250	1920	4540	-2620	1780	4960	-3180	
1275	0.84	900	3750	-2840	-970	2710	-3680	1800	4480	-2680	1380	4760	-3380	
1225	0.64	630	3690	-3070	-1380	2610	-3990	1460	4390	-2930	1130	4580	-3450	
1175	0.51	140	3490	-3350	-1830	2420	-4250	1150	4390	-3240	1020	4650	-3630	
1125	0.5	-80	3500	-3580	-2280	2230	-4510	810	4470	-3660	720	4600	-3880	
1075	0.4	-300	3490	-3770	-2600	2170	-4770	420	4440	-4020	10	4140	-4100	
1025	0.31	-650	3400	-4030	-3220	1950	-5170	40	4310	-4270	-630	3660	-4290	
975	0.16	-810	3530	-4320	-3940	1910	-5850	170	4620	-4450	-1070	3430	-4500	
925	0.009	-780	3750	-4530	-4170	2080	-6250	-110	4640	-4750	-1170	3450	-4620	
875	0.02	-1100	3750	-4650	-4600	2150	-6750	-120	4750	-4870	-1280	3350	-4630	
1400-850	*4.750*	*470*	*3640*	*-3160*	*-1610*	*2470*	*-4080*	*1280*	*4460*	*-3180*	*950*	*4550*	*-3600*	
recalc.	**4.669**	**494**	**3633**	**-3140**	**-1557**	**2484**	**-4041**	**1310**	**4454**	**-3144**	**990**	**4570**	**-3580**	
Alfotbreen cont.														
Altitude	**Area**	**1969, bn**	**1969, bw**	**1969, bs**	**1970, bn**	**1970, bw**	**1970, bs**	**Altitude**	**Area**	**1971, bn**	**1971, bw**	**1971, bs**		
1375	0.274	-1020	2830	-3850	-200	2680	-2880	1365	0.25	2350	4260	-1910		
1325	1.014	-1280	2800	-4080	-360	2640	-3000	1325	1.03	2040	4530	-2490		
1275	0.808	-1400	2850	-4250	-700	2670	-3870	1275	0.8	1700	4560	-2860		
1225	0.754	-2080	2670	-4750	-1330	2630	-3960	1225	0.76	1090	4340	-3250		
1175	0.672	-2710	2540	-5250	-1710	2500	-4210	1175	0.65	340	4140	-3800		
1125	0.544	-3090	2510	-5600	-1970	2480	-4450	1125	0.55	-80	4170	-4250		
1075	0.356	-3340	2510	-5850	-2290	2440	-4730	1075	0.36	-660	3850	-4510		
1025	0.224	-3800	2320	-6120	-2530	2400	-4930	1025	0.22	-1000	3590	-4590		
975	0.128	-3780	2340	-6120	-2060	2880	-4940	975	0.12	-730	4000	-4730		
925	0.046	-3540	2590	-6130	-1750	3130	-4880	900	0.05	-620	4130	-4750		
875	0.04	-3500	2630	-6130	-1380	3500	-4880	**1400-850**	*4.79*	*930*	*4290*	*-3350*		
1400-850	**4.824**	*-2170*	*2660*	*-4830*	*-1230*	*2600*	*-3830*	**recalc.**	**4.79**	**935**	**4285**	**-3450**		
recalc.	**4.86**	**-2104**	**2555**	**-4659**	**-1278**	**2492**	**-3769**							
Alfotbreen cont.														
Altitude	**Area**	**1972, bn**	**1972, bw**	**1972, bs**	**1973, bn**	**1973, bw**	**1973, bs**	**1974, bn**	**1974, bw**	**1974, bs**	**1975, bn**	**1975, bw**	**1975, bs**	
1360	0.25	1260	4140	-2880	3250	4880	-1630	1750	3630	-1880	1900	5070	-3170	
1325	1.02	1170	4320	-3140	3140	4960	-1820	1910	3790	-1880	2170	5230	-3060	
1275	0.81	860	4280	-3420	2550	4780	-2230	1590	3740	-2150	1700	4960	-3260	
1225	0.77	390	3940	-3550	2230	4710	-2480	1160	3590	-2430	1240	4660	-3420	
1175	0.65	-290	3570	-3860	1770	4540	-2770	600	3460	-2860	790	4380	-3590	
1125	0.55	-840	3320	-4160	1440	4480	-3040	280	3420	-3140	510	4030	-3520	
1075	0.36	-1300	3140	-4440	1250	4390	-3140	110	3450	-3340	220	3820	-3600	
1025	0.22	-2040	2820	-4860	920	4240	-3320	-420	3060	-3480	-80	4020	-4100	
975	0.13	-2310	2700	-5010	500	4140	-3640	-710	3050	-3760	-280	4380	-4660	
900	0.05	-1980	3150	-5130	740	4400	-3660	-650	3230	-3880	-450	4230	-4680	
1370-850	**4.79**	*110*	*3820*	*-3700*	*2180*	*4670*	*-2490*	*1030*	*3570*	*-2540*	*1210*	*4640*	*-3430*	
recalc.	**4.81**	**115**	**3815**	**-3700**	**2182**	**4670**	**-2488**	**1026**	**3570**	**-2544**	**1210**	**4639**	**-3429**	
Alfotbreen cont.														
Altitude	**Area**	**1976, bn**	**1976, bw**	**1976, bs**	**1977, bn**	**1977, bw**	**1977, bs**	**Area**	**1978, bn**	**1978, bw**	**1978, bs**	**1979, bn**	**1979, bw**	**1979, bs**
1365	0.245	2360	4420	-2060	40	2290	-2250	0.274	80	2710	-2630	590	3330	-2740
1325	1.029	1840	4230	-2390	200	2550	-2350	1.015	460	2950	-2480	680	3560	-2880
1275	0.801	1860	4410	-2550	-40	2440	-2480	0.811	-260	2550	-2820	330	3450	-3120
1225	0.761	1720	4480	-2760	-500	2250	-2750	0.765	-610	2420	-3030	-280	3150	-3430
1175	0.649	1550	4560	-3010	-950	2190	-3140	0.649	-720	2410	-3130	-590	3050	-3640
1125	0.553	1190	4480	-3290	-1180	2390	-3570	0.553	-950	2390	-3340	-670	3220	-3890
1075	0.356	770	4360	-3590	-1420	2230	-3650	0.356	-1440	2300	-3740	-830	3180	-4010
1025	0.216	130	4090	-3960	-1780	1920	-3700	0.216	-1810	2260	-4070	-1180	2880	-4060
975	0.125	280	4360	-4080	-2060	1740	-3800	0.125	-2140	2240	-4380	-1260	2940	-4200
925	0.047	430	4660	-4230	-970	2770	-3740	0.047	-2020	2620	-4630	-1000	3400	-4400
885	0.004	670	4540	-3870	-750	3000	-3750	0.004	-2000	2750	-4750	-1000	3500	-4600
1380-870	**4.786**	*1530*	*4400*	*-2870*	*-560*	*2330*	*-2890*	**4.815**	*-510*	*2560*	*-3070*	*-130*	*3280*	*-3410*
recalc.	**4.786**	**1524**	**4394**	**-2870**	**-560**	**2330**	**-2890**	**4.815**	**-509**	**2547**	**-3056**	**-130**	**3280**	**-3410**

Alfotbr. cont.																
Altitude	**Area**	**1980, bn**	**1980, bw**	**1980, bs**	**1986, bn**	**1986, bw**	**1986, bs**	**1987, bn**	**1987, bw**	**1987, bs**	**1988, bn**	**1988, bw**	**1988, bs**			
1365	0.274	490	2590	-2100	200	2260	-2060	3350	4920	-1570	-1450	2810	-4260			
1325	1.015	260	2560	-2300	480	2400	-1920	3360	5010	-1650	-1760	2770	-4530			
1275	0.811	50	2550	-2500	210	2520	-2310	2790	4590	-1800	-1980	2840	-4820			
1225	0.765	-390	2410	-2800	-340	2350	-2690	2070	4140	-2070	-2480	2710	-5190			
1175	0.649	-930	2470	-3400	-850	2200	-3050	1510	3910	-2400	-2790	2690	-5480			
1125	0.553	-1720	2380	-4100	-1250	2120	-3370	1040	3820	-2780	-3090	2670	-5760			
1075	0.356	-2060	2440	-4500	-1480	2190	-3670	600	3710	-3110	-3480	2580	-6060			
1025	0.216	-2400	2500	-4900	-1660	2410	-4070	0	3330	-3330	-3790	2540	-6330			
975	0.125	-2110	2690	-4800	-1770	2640	-4410	50	3550	-3500	-3860	2660	-6520			
925	0.047	-1200	3500	-4700	-1760	2980	-4740	30	3620	-3590	-3740	2910	-6650			
885	0.004				-1650	3250	-4900	120	3750	-3630	-3600	3150	-6750			
1380-850	*4.815*	*-610*	*2530*	*-3140*	*-410*	*2340*	*-2760*	*2070*	*4290*	*-2220*	*-2480*	*2720*	*-5200*			
recalc.	**4.815**	**-610**	**2530**	**-3140**	**-413**	**2343**	**-2755**	**2070**	**4290**	**-2220**	**-2480**	**2720**	**-5200**			
Alfotbr. cont.																
Altitude	**Area**	**1989, bn**	**1989, bw**	**1989, bs**	**1990, bn**	**1990, bw**	**1990, bs**	**1991, bn**	**1991, bw**	**1991, bs**	**1992, bn**	**1992, bw**	**1992, bs**	**1993, bn**	**1993, bw**	**1993, bs**
1360	0.274	3070	5130	-2060	2030	5550	-3520	1400	4400	-3000	3400	5800	-2400	2600	4680	-2080
1325	1.015	3300	5380	-2080	2230	5800	-3570	1250	4300	-3050	3440	6170	-2640	2450	4650	-2200
1275	0.811	3130	5330	-2200	2280	6060	-3780	1030	4150	-3120	3230	4910	-2830	2300	4780	-2480
1225	0.765	2640	5260	-2620	2100	6160	-4060	830	4000	-3170	2880	5850	-2970	1920	4700	-2780
1175	0.649	2100	5200	-3100	1840	6130	-4290	650	3950	-3300	2100	5340	-3240	1710	4750	-3040
1125	0.553	1430	5090	-3660	1460	6100	-4640	450	3900	-3450	1160	4940	-3780	1720	4820	-3100
1075	0.356	670	4950	-4280	1000	6020	-5020	250	3950	-3700	380	4360	-3980	1720	4940	-3220
1025	0.216	-140	4860	-5000	410	5910	-5500	30	4000	-3970	-570	3830	-4400	1730	5180	-3450
975	0.125	-900	4760	-5660	-260	5760	-6020	-220	4000	-4220	-1180	3600	-4780	1960	5660	-3700
925	0.047	-1320	4680	-6000	-880	5620	-6500	-920	3650	-4570	-1480	3840	-5320	2460	6400	-3940
885	0.04	-1440	4660	-6100	-1300	5600	-6900	-1520	3350	-4870	-1400	4150	-5550	2600	6650	-4050
1370-850	***4.815***	*2270*	*5200*	*-2930*	*1790*	*5980*	*-4190*	*790*	*4090*	*-3300*	*2290*	*5480*	*-3190*	*2070*	*4810*	*-2740*
recalc.	**4.851**	**2242**	**5198**	**-2956**	**1772**	**5981**	**-4209**	**775**	**4080**	**-3305**	**2092**	**5294**	**-3202**	**2100**	**4818**	**-2718**
Alfotbr. cont.																
Altitude	**Area**	**1994, bn**	**1994, bw**	**1994, bs**	**1995, bn**	**1995, bw**	**1995, bs**	**Area**	**1996, bn**	**1996, bw**	**1996, bs**	**Area**	**1997, bn**	**1997, bw**	**1997, bs**	
1360	0.274	1120	3620	-2500	2130	5170	-3040	0.274	-930	2020	-2950	0.27	670	4470	-3800	
1325	1.015	1260	3800	-2540	2490	5660	-3170	1.015	-890	2090	-2980	0.993	730	4480	-3750	
1275	0.811	1160	3780	-2620	1970	5350	-3380	0.811	-1200	1950	-3150	0.769	560	4460	-3900	
1225	0.765	900	3620	-2720	1490	5190	-3700	0.765	-1580	1840	-3420	0.701	180	4230	-4050	
1175	0.649	510	3530	-3020	850	5050	-4200	0.649	-2050	1750	-3800	0.583	-170	4030	-4200	
1125	0.553	280	3600	-3320	20	4700	-4680	0.553	-2690	1690	-4380	0.472	-760	3840	-4600	
1075	0.356	160	3760	-3600	-470	4480	-5950	0.356	-3480	1550	-5030	0.286	-1180	3670	-4850	
1025	0.216	150	3950	-3800	-960	4240	-5200	0.216	-4060	1340	-5400	0.178	-1150	3900	-5050	
975	0.125	60	4060	-4000	-1330	4050	-5380	0.125	-4250	1400	-5650	0.087	-1190	4060	-5250	
925	0.047	0	4150	-4150	-1560	4020	-5580	0.047	-4500	1320	-5820	0.019	-1200	4200	-5400	
885	0.04	-80	4180	-4260	-1570	4130	-5700	0.04	-4500	1450	-5950					
1370-850	**4.815**	*790*	*3710*	*-2920*	*1200*	*5100*	*-3900*	*4.815*	*-1880*	*1830*	*-3710*	*4.360*	*80*	*4220*	*-4140*	
recalc.	**4.851**							**4.851**				**4.358**				

Hansebreen																
Altitude	**Area**	**1991, bn**	**1991, bw**	**1991, bs**	**1992, bn**	**1992, bw**	**1992, bs**	**1993, bn**	**1993, bw**	**1993, bs**	**1994, bn**	**1994, bw**	**1994, bs**	**1995, bn**	**1995, bw**	**1995, bs**
1310	0.122	2100	3950	-1850	3000	5750	-2750	2120	4450	-2330	1960	4040	-2080	2750	5800	-3050
1275	0.504	1900	3900	-2000	2830	5720	-2890	1830	4360	-2530	1720	3820	-2100	2080	5380	-3300
1225	0.55	1350	3800	-2450	2530	5680	-3150	1680	4480	-2800	1350	3550	-2200	1280	4800	-3520
1175	0.541	1250	3650	-2400	1230	4600	-3370	1090	4140	-3050	760	3200	-2440	570	4320	-3750
1125	0.722	700	3200	-2500	-40	3560	-3600	580	3880	-3300	120	3080	-2960	-290	3760	-4050
1075	0.427	250	3050	-2800	-560	3100	-3660	310	3950	-3640	-720	3240	-3960	-830	3450	-4280
1025	0.259	-250	2850	-3100	-750	3200	-3950	640	4480	-3840	-1240	3380	-4620	-540	4080	-4620
975	0.158	-700	3000	-3700	-780	3580	-4360	940	4920	-3980	-1500	3480	-4980	-450	4600	-5050
937	0.04	-700	3250	-3950	-670	3900	-4570	920	4960	-4040	-1600	3520	-5120	-600	4800	-5400
1320-925	*3.323*	*1012*	*3548*	*-2536*	*974*	*4406*	*-3432*	*1082*	*4234*	*-3151*	*426*	*3393*	*-2967*	*481*	*4381*	*-3901*
Hansebr. cont.																
Altitude	**Area**	**1996, bn**	**1996, bw**	**1996, bs**	**Area**	**1997, bn**	**1997, bw**	**1997, bs**								
1310	0.122	-1170	1750	-2920	0.112	780	4480	-3700								
1275	0.504	-910	2010	-2920	0.427	740	4390	-3650								
1225	0.55	-890	2110	-3000	0.451	760	4540	-3780								
1175	0.541	-1310	1940	-3250	0.491	260	4160	-3900								
1125	0.722	-2340	1460	-3800	0.626	-730	3190	-3920								
1075	0.427	-3480	1320	-4800	0.429	-790	3260	-4050								
1025	0.259	-3830	1420	-5250	0.221	-1360	2840	-4200								
975	0.158	-3790	1750	-5540	0.125	-1470	3080	-4550								
937	0.04	-3750	1850	-5600	0.024	-1000	3900	-4900								
1320-925	*3.323*	*-2021*	*1737*	*-3758*	*2.906*	*-148*	*3774*	*-3922*								

Hardangerjokulen													
Altitude	**Area**	**1965, bn**	**1966, bn**	**Area**	**1967, bn**	**Area**	**1968, bn**	**Area**	**1969, bn**	**Area**	**1970, bn**		
1875	0.064	1260	-50	0.075	1710	0.08	950	0.07	-1140	0.074	-60		
1825	3.638	1340	240	3.638	1950	3.742	1400	3.375	-980	3.358	70		
1775	3.862	1320	100	3.862	2030	3.87	1350	3.868	-1110	3.763	0		
1725	3.968	1030	-170	3.94	1750	3.91	1220	3.91	-1440	4.033	-180		
1675	2.102	530	-550	2.102	1300	2.082	570	2.084	-1920	2.219	-530		
1625	0.952	60	-920	0.952	840	0.931	-330	0.936	-2520	0.971	-810		
1575	0.66	-450	-1320	0.66	320	0.64	-370	0.64	-2900	0.624	-1000		
1525	0.557	-910	-1770	0.557	-200	0.545	-850	0.542	-3270	0.569	-1390		
1475	0.321	-1460	-2300	0.321	-650	0.321	-1800	0.319	-3820	0.371	-1850		
1425	0.191	-1980	-2830	0.191	-1270	0.191	-2620	0.196	-4330	0.176	-2330		
1375	0.114	-2330	-3350	0.11	-1720	0.11	-2940	0.112	-4840	0.109	-2850		
1325	0.08	-2650	-3970	0.082	-2380	0.082	-3320	0.084	-5520	0.078	-3370		
1275	0.272	-2930	-4470	0.27	-2970	0.27	-3550	0.27	-5700	0.265	-3860		
1225	0.325	-3470	-5050	0.325	-3550	0.325	-4190	0.315	-6250	0.308	-4350		
1175	0.324	-3800	-5720	0.324	-4100	0.324	-4700	0.321	-6830	0.312	-4860		
1125	0.112	-4310	-6300	0.11	-4670	0.105	-5300	0.115	-7320	0.109	-5370		
1075	0.056	-4820	-6950	0.03	-5150	0.025	-5730	0.022	-7860	0.059	-5850		
1025	0.048	-5430	-7500										
1865-1020	*17.646*	*511*	*-649*	*17.549*	*1185*	*17.553*	*528*	*17.179*	*-1926*	*17.398*	*-595*		
Hardanger. cont.													
Altitude	**Area**	**1971, bn**	**1971, bw**	**1971, bs**	**1972, bn**	**1972, bw**	**1972, bs**	**1973, bn**	**1973, bw**	**1973, bs**			
1875	0.07	900	1750	-850	200	1400	-1200	880	2000	-1120			
1825	3.49	1410	2160	-750	480	1760	-1280	1420	2600	-1180			
1775	3.88	1520	2270	-750	600	1930	-1330	1620	2950	-1330			
1725	4.23	1290	2140	-850	450	1950	-1500	1440	2930	-1490			
1675	2.22	760	1860	-1100	180	1900	-1720	1020	2750	-1730			
1625	0.99	240	1640	-1400	-160	1820	-1980	600	2520	-1920			
1575	0.62	-20	1730	-1750	-650	1820	-2470	110	2280	-2170			
1525	0.55	-620	1530	-2150	-1250	1580	-2830	-300	2150	-2450			
1475	0.33	-1230	1320	-2550	-1850	1650	-3500	-880	1900	-2780			
1425	0.18	-1590	1360	-2950	-2450	1300	-3750	-1470	1670	-3140			
1375	0.11	-2410	880	-3300	-2980	1300	-4280	-1980	1540	-3520			
1325	0.08	-2940	760	-3700	-3340	1250	-4590	-2450	1470	-3920			
1275	0.27	-3370	730	-4100	-3750	1020	-4770	-3130	1440	-4570			
1225	0.31	-3750	750	-4500	-4200	780	-4980	-3720	1300	-5020			
1175	0.31	-4260	740	-5000	-4700	580	-5280	-4190	1260	-5450			
1125	0.11	-4710	740	-5450	-5210	500	-5710	-4680	1220	-5900			
1075	0.06	-5160	740	-5900	-5630	600	-6220	-5150	1200	-6350			
1865-1020	*17.810*	*702*	*1960*	*-1250*	*-71*	*1780*	*-1860*	*846*	*2620*	*-1790*			
Hardanger. cont.													
Altitude	**Area**	**1986, bn**	**1986, bw**	**1986, bs**	**1987, bn**	**1987, bw**	**1987, bs**	**1988, bn**	**1988, bw**	**1988, bs**	**1989, bn**	**1989, bw**	**1989, bs**
1875	0.07	100	1140	-1040	950	1700	-750	-1220	1430	-2650	2150	3250	-1100
1825	3.375	440	1500	-1060	1460	2210	-750	-900	1750	-2650	2650	3750	-1100
1775	3.866	600	1700	-1100	1600	2400	-800	-750	1950	-2700	2680	3800	-1120
1725	3.91	500	1700	-1200	1270	2220	-950	-950	1850	-2800	2600	3750	-1150
1675	2.084	90	1490	-1400	1030	2130	-1100	-1400	1500	-2900	2300	3500	-1200
1625	0.936	-450	1250	-1700	550	1800	-1250	-1750	1400	-3150	2000	3250	-1250
1575	0.64	-890	1110	-2000	290	1740	-1450	-2290	1160	-3450	1450	2800	-1350
1525	0.542	-1350	1000	-2350	-50	1600	-1650	-2550	1000	-3550	1150	2750	-1600
1475	0.319	-1790	910	-2700	-310	1540	-1850	-3190	910	-4100	500	2400	-1900
1425	0.196	-2230	870	-3100	-720	1430	-2150	-3730	820	-4550	100	2300	-2200
1375	0.112	-2700	800	-3500	-1070	1330	-2400	-4290	710	-5000	-350	2250	-2600
1325	0.084	-3090	710	-3800	-1440	1260	-2700	-4690	710	-5400	-700	2250	-2950
1275	0.27	-3610	740	-4350	-1800	1100	-2900	-5230	670	-5900	-1050	2200	-3250
1225	0.315	-4040	760	-4800	-2240	1010	-3250	-5750	600	-6350	-1480	2170	-3650
1175	0.321	-4560	690	-5250	-2530	1020	-3550	-6660	590	-7250	-1850	2150	-4000
1125	0.115	-5050	700	-5750	-2840	1010	-3850	-7230	520	-7750	-2250	2150	-4400
1075	0.022	-5340	910	-6250	-3290	910	-4200	-7800	450	-8250	-2630	2120	-4750
1865-1020	*17.040*	*-102*	*1470*	*-1570*	*936*	*2080*	*-1140*	*-1521*	*1610*	*-3130*	*2111*	*3480*	*-1370*

Hardanger. cont.												
Altitude	**Area**	**1990, bn**	**1990, bw**	**1990, bs**	**1991, bn**	**1991, bw**	**1991, bs**	**Altitude**	**Area**	**1992, bn**	**1992, bw**	**1992, bs**
1875	0.07	2000	3250	-1250	100	1150	-1050	1855	0.07	1950	2900	-950
1825	3.375	2550	3750	-1200	500	1550	-1050	1825	3.375	2650	3650	-1000
1775	3.866	2700	4000	-1300	650	1800	-1150	1775	3.866	2750	4000	-1250
1725	3.91	2450	3900	-1450	500	1750	-1250	1725	3.91	2450	3900	-1450
1675	2.084	2050	3650	-1600	150	1600	-1450	1675	2.084	1950	3650	-1700
1625	0.936	1600	3400	-1800	-300	1400	-1700	1625	0.936	1250	3200	-1950
1575	0.64	1150	3200	-2050	-750	1200	-1950	1575	0.64	600	2800	-2200
1525	0.542	650	3000	-2350	-1300	1000	-2300	1525	0.542	0	2550	-2550
1475	0.319	250	2900	-2650	-1850	850	-2700	1475	0.319	-550	2300	-2850
1425	0.196	-250	2750	-3000	-2450	700	-3150	1425	0.196	-1050	2150	-3200
1375	0.112	-650	2700	-3350	-2950	650	-3600	1375	0.112	-1600	2000	-3600
1325	0.084	-1100	2600	-3700	-3500	550	-4050	1325	0.084	-2050	1900	-3950
1275	0.27	-1550	2550	-4100	-4000	500	-4500	1275	0.27	-2500	1800	-4300
1225	0.315	-2000	2500	-4500	-4600	450	-5050	1225	0.315	-3000	1750	-4750
1175	0.321	-2850	2450	-5300	-5100	450	-5550	1175	0.321	-3550	1650	-5200
1125	0.115	-3350	2400	-5750	-5700	400	-6100	1125	0.115	-4000	1600	-5600
1075	0.022	-3600	2400	-6000	-6300	400	-6700	1075	0.022	-4500	1550	-6050
1865-1020	**17.040**	*1925*	*3650*	*-1720*	*-90*	*1520*	*-1610*	**1865-1020**	**17.155**	*1790*	*3510*	*-1720*
Hardanger. cont.									**17.177**			
Altitude	**Area**	**1993, bn**	**1993, bw**	**1993, bs**	**1994, bn**	**1994, bw**	**1994, bs**	**1995, bn**	**1995, bw**	**1995, bs**		
1855	0.07	1750	2250	-500	300	1500	-1200	800	2500	-1700		
1825	3.375	2280	2800	-520	700	1900	-1200	1000	2700	-1700		
1775	3.866	2600	3200	-600	800	2100	-1300	900	2700	-1800		
1725	3.91	2450	3150	-700	700	2000	-1300	800	2600	-1900		
1675	2.084	2150	2950	-800	400	1800	-1400	600	2500	-2000		
1625	0.936	1750	2700	-950	200	1600	-1400	300	2300	-2100		
1575	0.64	1200	2450	-1250	-300	1300	-1600	0	2200	-2200		
1525	0.542	700	2150	-1450	-600	1300	-1900	-500	2000	-2500		
1475	0.319	200	1900	-1700	-1200	1100	-2300	-1100	1900	-2900		
1425	0.196	-200	1750	-1950	-1800	1000	-2800	-1700	1700	-3400		
1375	0.112	-550	1650	-2200	-2400	1000	-3400	-2200	1600	-3800		
1325	0.084	-900	1550	-2450	-2900	1000	-3900	-2800	1500	-4300		
1275	0.27	-1300	1450	-2750	-3600	900	-4500	-3500	1300	-4800		
1225	0.315	-1600	1400	-3000	-4200	900	-5100	-4100	1200	-5300		
1175	0.321	-1950	1350	-3300	-4700	800	-5600	-4700	1100	-5800		
1125	0.115	-2250	1350	-3600	-5300	800	-6100	-5400	900	-6300		
1075	0.022	-2550	1350	-3900	-5900	800	-6700	-6100	700	-6800		
1865-1020	**17.155**	*1910*	*2820*	*-910*	*160*	*1790*	*-1630*	*300*	*2440*	*-2140*		
	17.177											
Hardanger. cont.												
Altitude	**Area**	**1996, bn**	**1996, bw**	**1996, bs**	**1997, bn**	**1997, bw**	**1997, bs**					
1875	0.09	-350	950	-1300	-550	2100	-2650					
1825	3.93	-120	1250	-1370	250	3000	-2750					
1775	4.03	-350	1240	-1590	330	3300	-2970					
1725	3.46	-710	1100	-1810	200	3300	-3100					
1675	1.94	-1100	940	-2040	-200	3100	-3300					
1625	0.75	-1530	800	-2330	-650	2850	-3500					
1575	0.59	-2020	660	-2680	-1250	2550	-3800					
1525	0.57	-2550	500	-3050	-1950	2250	-4200					
1475	0.29	-2990	400	-3390	-2650	2000	-4650					
1425	0.19	-3440	320	-3760	-3350	1750	-5100					
1375	0.1	-3980	220	-4200	-3850	1650	-5500					
1325	0.1	-4470	150	-4620	-4450	1550	-6000					
1275	0.27	-4900	100	-5000	-4950	1450	-6400					
1225	0.36	-5220	80	-5300	-5450	1400	-6850					
1175	0.28	-5570	50	-5620	-5950	1350	-7300					
1125	0.11	-5890	40	-5930	-6450	1300	-7750					
1075	0.05	-6220	30	-6250	-6950	1250	-8200					
1865-1020	*17.11*	*-1110*	*990*	*-2100*	*-470*	*2940*	*-3410*					

A.Memurubre															
Altitude	**Area**	**1968, bn**	**1968, bw**	**1968, bs**	**1969, bn**	**1969, bw**	**1969, bs**	**1969, bs**	**Altitude**	**Area, km^2**	**1970, bn**	**1970, bw**	**1970, bs**		
2225	0.034	1100	2220	-1120	270	1150	-880	270	2260	0.005	770	1400	-630		
2175	0.224	1320	2450	-1130	250	1240	-990	250	2225	0.036	480	1100	-630		
2125	0.605	980	2110	-1130	-60	1120	-1180	-60	2175	0.208	520	1210	-690		
2075	0.864	610	1760	-1140	-480	1050	-1530	-480	2125	0.586	380	1140	-760		
2025	1.068	450	1840	-1390	-750	1040	-1790	-750	2075	0.831	-120	900	-1020		
1975	1.289	290	1850	-1550	-1030	1050	-2080	-1030	2025	1.045	-380	830	-1210		
1925	1.412	-80	1640	-1720	-1610	910	-2520	-1610	1975	1.287	-550	810	-1360		
1875	0.859	-180	1730	-1910	-1760	990	-2750	-1760	1925	1.401	-950	710	-1660		
1825	0.789	-500	1610	-2110	-2120	950	-3070	-2120	1875	0.825	-1280	710	-1990		
1775	0.921	-630	1670	-2300	-2530	910	-3440	-2530	1825	0.773	-1480	770	-2250		
1725	0.522	-1010	1650	-2660	-2990	920	-3910	-2990	1775	0.921	-1620	740	-2360		
1675	0.241	-1590	1640	-3220	-3840	900	-4740	-3840	1725	0.522	-2290	710	-3000		
1640	0.032	-2000	1620	-3620	-4630	870	-5500	-4630	1675	0.241	-2740	690	-3430		
2250-1630	*8.858*	*10*	*1770*	*-1760*	*-1460*	*990*	*-2450*	*-1460*	1640	0.032	-3120	630	-3750		
recalc.	**8.86**	**13**	**1771**	**-1758**	**-1460**	**995**	**-2455**	**-1460**	**2250-1630**	*8.713*	*-900*	*810*	*-1710*		
									recalc.	**8.713**	**-899**	**808**	**-1707**		
A.Memurubre cont.															
Altitude	**Area**	**1971, bn**	**1971, bw**	**1971, bs**	**Area**	**1972, bn**	**1972, bw**	**1972, bs**							
2225	0.03	1470	2100	-630	0.03	1690	1940	-250							
2175	0.21	1270	1910	-640	0.21	1510	1760	-250							
2125	0.55	740	1570	-830	0.59	780	1350	-570							
2075	0.87	240	1190	-950	0.87	300	1010	-710							
2025	1.15	260	1450	-1190	1.13	120	1060	-940							
1975	1.25	120	1420	-1300	1.29	-20	1110	-1130							
1925	1.3	-350	1150	-1500	1.29	-440	870	-1310							
1875	0.85	-450	1240	-1690	0.86	-500	960	-1460							
1825	0.76	-550	1270	-1820	0.76	-750	950	-1700							
1775	0.9	-850	1280	-2130	0.9	-1380	870	-2250							
1725	0.56	-1030	1370	-2400	0.56	-1910	900	-2810							
1675	0.25	-1490	1280	-2770	0.25	-2700	780	-3480							
1640	0.03	-1860	1270	-3130	0.03	-3000	750	-3750							
2250-1630	*8.7*	*-190*	*1330*	*-1520*	*8.76*	*-390*	*1020*	*-1410*							
recalc.	**8.71**	**-189**	**1331**	**-1521**	**8.77**	**-393**	**1016**	**-1408**							
V.Memurubre															
Altitude	**Area**	**1968, bn**	**1968, bw**	**1968, bs**	**1969, bn**	**1969, bw**	**1969, bs**	**1969, bs**	**1970, bn**	**1970, bw**	**1970, bs**	**Area**	**1971, bn**	**1971, bw**	**1971, bs**
2215	0.017	1060	1880	-820	-70	1300	-1370	0.017	750	1380	-630	0.01	1180	1820	-640
2175	0.089	1010	1890	-880	-80	1300	-1380	0.085	750	1380	-630	0.08	1140	1770	-630
2125	0.148	940	1890	-950	-100	1280	-1380	0.144	750	1380	-630	0.14	680	1510	-630
2075	0.218	730	1760	-1030	-180	1240	-1420	0.212	580	1380	-800	0.21	490	1330	-840
2025	0.26	830	1930	-1100	-330	1220	-1550	0.242	390	1270	-880	0.25	710	1510	-800
1975	0.664	720	1890	-1170	-500	1130	-1630	0.656	-250	1000	-1250	0.65	670	1540	-870
1925	1.469	620	1880	-1260	-670	1080	-1750	1.469	-400	920	-1320	1.47	450	1440	-990
1875	3.185	380	1750	-1370	-900	1040	-1940	3.185	-710	770	-1480	3.24	180	1310	-1130
1825	1.324	20	1600	-1580	-1480	980	-2460	1.324	-1130	700	-1830	1.36	-130	1150	-1280
1775	0.796	-420	1420	-1840	-1850	920	-2770	0.791	-1590	740	-2330	0.79	-350	1130	-1480
1725	0.51	-690	1410	-2100	-2050	930	-2980	0.51	-2030	720	-2750	0.49	-700	1080	-1780
1675	0.262	-990	1330	-2320	-2110	1010	-3120	0.262	-2010	740	-2750	0.25	-1240	970	-2210
1625	0.086	-1070	1460	-2530	-2100	1280	-3380	0.086	-2200	1060	-3260	0.09	-1210	1230	-2440
1585	0.022	-1280	1450	-2730	-2360	1140	-3500	0.022	-2130	1140	-3270	0.02	-1210	1370	-2580
2230-1570	*9.058*	*240*	*1700*	*-1460*	*-1060*	*1050*	*-2110*	*9.005*	*-790*	*840*	*-1630*	*9.05*	*100*	*1300*	*-1190*
recalc.	**9.05**	**241**	**1705**	**-1464**	**-1060**	**1046**	**-2106**	**9.005**	**-787**	**849**	**-1635**	**9.05**	**105**	**1299**	**-1194**

V.Memur. cont.													
Altitude	**Area**	**1972, bn**	**1972, bw**	**1972, bs**									
2215	0.01	1130	1380	-250									
2175	0.09	960	1210	-250									
2125	0.14	840	1090	-250									
2075	0.24	470	1080	-610									
2025	0.28	750	1380	-630									
1975	0.72	210	1330	-1120									
1925	1.31	340	1360	-1020									
1875	3.27	-110	1180	-1290									
1825	1.31	-750	1130	-1880									
1775	0.75	-1190	1080	-2270									
1725	0.5	-1460	1080	-2540									
1675	0.26	-1720	1030	-2750									
1625	0.08	-2030	1200	-3230									
1585	0.01	-1790	1460	-3250									
2230-1570	*8.96*	*-270*	*1200*	*-1470*									
recalc.	**8.97**	**-262**	**1205**	**-1466**									
Storbreen													
Altitude	**Area**	**1990, bn**	**1990, bw**	**1990, bs**	**1991, bn**	**1991, bw**	**1991, bs**	**1992, bn**	**1992, bw**	**1992, bs**	**1993, bn**	**1993, bw**	**1993, bs**
2075	0.04	2550	2950	-400	1500	1650	-150	1350	2200	-850	2000	2200	-200
2025	0.12	2400	2900	-500	1400	1600	-200	1300	2200	-900	1950	2200	-250
1975	0.22	2250	2850	-600	1250	1550	-300	1100	2000	-900	1800	2050	-250
1925	0.33	2100	2800	-700	1050	1500	-450	1000	1900	-900	1700	2000	-300
1875	0.51	1950	2750	-800	850	1450	-600	650	1750	-1100	1500	1900	-400
1825	0.84	1700	2700	-1000	600	1400	-800	450	1650	-1200	1250	1850	-600
1775	0.79	1450	2650	-1200	270	1320	-1050	250	1600	-1350	1050	1800	-750
1725	0.65	1200	2600	-1400	-100	1250	-1350	50	1550	-1500	750	1750	-1000
1675	0.4	950	2550	-1600	-520	1180	-1700	-150	1500	-1650	500	1750	-1250
1625	0.5	650	2450	-1800	-1050	1100	-2150	-350	1500	-1850	150	1700	-1550
1575	0.36	300	2350	-2050	-1670	980	-2650	-800	1400	-2200	-300	1700	-2000
1525	0.22	-50	2250	-2300	-2270	880	-3150	-1200	1350	-2550	-850	1650	-2500
1475	0.19	-400	2150	-2550	-2820	780	-3600	-1550	1300	-2850	-1300	1650	-2950
1425	0.08	-850	2000	-2850	-3570	680	-4250	-2050	1250	-3300	-1650	1650	-3300
1375	0.01	-1350	1850	-3200	-4370	580	-4950	-2350	1250	-3600	-1950	1650	-3600
2100-1350	*5.26*	*1250*	*2600*	*-1350*	*-150*	*1260*	*-1410*	*80*	*1610*	*-1530*	*750*	*1810*	-1060
recalc.	**5.26**	**1249**	**2594**	**-1345**	**-145**	**1263**	**-1408**	**86**	**1612**	**-1526**	**758**	**1812**	**-1055**
Storbreen cont.													
Altitude	**Area**	**1994, bn**	**1994, bw**	**1994, bs**	**1995, bn**	**1995, bw**	**1995, bs**	**1996, bn**	**1996, bw**	**1996, bs**	**1997, bn**	**1997, bw**	**1997, bs**
2075	0.04	770	2000	-1230	1570	2320	-750	980	1500	-520	1350	2630	-1280
2025	0.12	670	1900	-1230	1360	2280	-920	770	1420	-650	1230	2580	-1350
1975	0.22	550	1800	-1250	1170	2250	-1080	560	1340	-780	1020	2480	-1460
1925	0.33	500	1800	-1300	910	2200	-1290	300	1200	-900	590	2270	-1680
1875	0.51	350	1700	-1350	610	2110	-1500	-150	1020	-1170	10	2030	-2020
1825	0.84	100	1500	-1400	160	1840	-1680	-650	800	-1450	-700	1750	-2450
1775	0.79	-100	1500	-1600	-270	1600	-1870	-920	780	-1700	-1170	1630	-2800
1725	0.65	-250	1500	-1750	-380	1660	-2040	-1320	640	-1960	-1650	1490	-3140
1675	0.4	-400	1500	-1900	-220	1920	-2140	-1460	740	-2200	-1440	1910	-3350
1625	0.5	-700	1400	-2100	-520	1730	-2250	-1650	800	-2450	-1780	1680	-3460
1575	0.36	-1050	1300	-2350	-920	1530	-2450	-2050	650	-2700	-1990	1530	-3520
1525	0.22	-1400	1300	-2700	-1360	1340	-2700	-2480	520	-3000	-2180	1400	-3580
1475	0.19	-1700	1300	-3000	-2000	1050	-3050	-2930	350	-3280	-2700	1060	-3760
1425	0.08	-2050	1250	-3300	-2450	930	-3380	-3340	280	-3620	-3070	880	-3950
1375	0.01	-2500	1250	-3750	-2840	860	-3700	-3700	200	-3900	-3350	750	-4100
2100-1350	*5.26*	*-250*	*1520*	*-1770*	*-150*	*1770*	*-1930*	*-1030*	*810*	*-1840*	*-1030*	*1750*	*-2780*
recalc.	**5.26**	**-245**	**1521**	**-1766**	**-155**	**1771**	**-1925**	**-1028**	**814**	**-1842**	**-1029**	**1752**	**-2781**

Storbreen cont.															
Altitude	**Area**	**1998, bn**	**1998, bw**	**1998, bs**											
2075	0.04	2130	2380	-250											
2025	0.15	1980	2300	-320											
1975	0.23	1800	2200	-400											
1925	0.36	1560	2060	-500											
1875	0.57	1190	1870	-680											
1825	0.92	520	1500	-980											
1775	0.75	300	1450	-1150											
1725	0.64	70	1370	-1300											
1675	0.4	-30	1520	-1550											
1625	0.49	-640	1510	-2150											
1575	0.35	-1230	1270	-2500											
1525	0.21	-1700	980	-2680											
1475	0.18	-1980	870	-2850											
1420	0.06	-2260	790	-3050											
2100-1390	*5.35*	*220*	*1550*	*-1330*											
Hellstugubreen															
Altitude	**Area**	**1965, bn**	**1966, bn**	**1967, bn**	**Area**	**1968, bn**	**1969, bn**	**1970, bn**	**Altitude**	**Area**	**1971, bn**	**1971, bw**	**1971, bs**		
									2175	0.02	1230	1610	-380		
2150	0.075	1870	1170	2250	0.078	770	-20	510	2125	0.05	1230	1610	-380		
2075	0.291	1570	1010	2200	0.261	770	-70	410	2075	0.28	810	1440	-630		
2025	0.213	1460	700	1530	0.202	650	-380	170	2025	0.19	820	1450	-630		
1975	0.392	1030	220	1460	0.386	430	-600	-240	1975	0.37	650	1320	-670		
1925	0.61	930	-90	990	0.61	320	-730	-560	1925	0.61	400	1290	-890		
1875	0.38	670	-610	720	0.377	-70	-910	-840	1875	0.36	90	1090	-1010		
1825	0.347	520	-990	300	0.35	-120	-1540	-1290	1825	0.35	-220	1020	-1240		
1775	0.144	200	-1410	-210	0.141	-410	-1830	-1530	1775	0.14	-580	910	-1490		
1725	0.141	240	-1530	-330	0.142	-350	-2010	-1710	1725	0.15	-570	1060	-1630		
1675	0.207	-130	-1920	-270	0.207	-600	-2250	-1810	1675	0.21	-960	940	-1900		
1625	0.195	-480	-2060	-590	0.192	-970	-2450	-2310	1625	0.19	-1400	820	-2230		
1575	0.198	-1000	-2400	-1070	0.195	-1300	-2810	-2470	1575	0.2	-1950	560	-2510		
1525	0.125	-1530	-2780	-1700	0.124	-1890	-3040	-2890	1525	0.12	-2250	520	-2770		
1475	0.062	-2020	-3110	-2100	0.06	-2460	-3200	-3530	1475	0.03	-2400	480	-2880		
2200-1465	*3.380*	*520*	*-670*	*550*	*3.325*	*-111*	*-1297*	*-1007*	*2200-1465*	*3.27*	*-140*	*1120*	*-1250*		
Hellstugubreen cont.															
Altitude	**Area**	**1972, bn**	**1972, bw**	**1972, bs**	**Area**	**1973, bn**	**1973, bw**	**1973, bs**	**Area**	**1974, bn**	**1974, bw**	**1974, bs**	**1975, bn**	**1975, bw**	**1975, bs**
2175	0.02	1190	1570	-380	0.02	1090	1720	-630	0.02	1570	1570	0	670	1670	-1000
2125	0.09	1200	1580	-380	0.09	1030	1680	-650	0.09	1640	1640	0	750	1740	-990
2075	0.3	860	1340	-480	0.31	460	1290	-830	0.3	1490	1560	-70	780	1810	-1030
2025	0.16	540	1180	-640	0.17	410	1410	-1000	0.16	1150	1280	-130	380	1730	-1350
1975	0.37	140	1070	-930	0.37	340	1340	-1000	0.36	930	1130	-200	110	1520	-1410
1925	0.61	-110	1010	-1120	0.61	220	1290	-1070	0.61	630	1010	-380	-110	1440	-1550
1875	0.37	-420	850	-1270	0.37	-50	1210	-1260	0.37	320	950	-630	-240	1380	-1620
1825	0.35	-560	910	-1470	0.35	-240	1230	-1470	0.35	250	930	-680	-540	1320	-1860
1775	0.15	-930	750	-1680	0.15	-670	920	-1590	0.15	-40	830	-870	-600	1250	-1850
1725	0.15	-1010	870	-1880	0.15	-510	1340	-1850	0.15	-310	810	-1120	-570	1310	-1880
1675	0.21	-1390	790	-2180	0.21	-690	1270	-1960	0.21	-370	910	-1280	-850	1170	-2020
1625	0.18	-1700	750	-2450	0.18	-1050	1110	-2160	0.18	-880	870	-1750	-1240	1010	-2250
1575	0.2	-2200	540	-2740	0.2	-1630	750	-2380	0.2	-1510	650	-2160	-1640	800	-2440
1525	0.11	-2570	300	-2870	0.11	-2300	290	-2590	0.11	-2110	320	-2430	-2320	510	-2830
1475	0.05	-2890	240	-3130	0.05	-2650	250	-2900	0.05	-2510	110	-2620	-2620	220	-2840
2200-1465	*3.32*	*-496*	*940*	*-1430*	*3.34*	*-221*	*1190*	*-1410*	*3.31*	*238*	*1000*	*-760*	*-369*	*1350*	*-1710*

Hellstugubr. cont.											
Altitude	**Area**	**1976, bn**	**1976, bw**	**1976, bs**	**1977, bn**	**1977, bw**	**1977, bs**	**1978, bn**	**1978, bw**	**1978, bs**	
2175	0.021	1040	2000	-960	290	1100	-800	620	1240	-620	
2125	0.088	1050	2000	-950	300	1090	-800	820	1450	-630	
2075	0.301	540	1640	-1100	-20	840	-860	730	1500	-770	
2025	0.159	420	1670	-1250	-110	840	-950	630	1510	-880	
1975	0.362	430	1680	-1450	-120	800	-920	300	1220	-920	
1925	0.605	-700	940	-1630	-240	730	-970	210	1230	-1020	
1875	0.368	-800	1020	-1820	-210	880	-1090	-170	1120	-1290	
1825	0.348	-870	1130	-2000	-890	590	-1480	-880	670	-1550	
1775	0.149	-1010	1190	-2180	-1250	630	-1880	-1060	820	-1880	
1725	0.146	-1020	1333	-2350	-1150	600	-1750	-1340	790	-2130	
1675	0.213	-1400	1140	-2540	-1310	600	-1900	-1610	810	-2420	
1625	0.182	-1740	980	-2720	-1610	540	-2150	-1960	830	-2790	
1575	0.196	-2550	350	-2900	-1990	540	-2530	-2570	690	-3620	
1525	0.11	-3000	60	-3060	-2570	360	-2930	-3220	460	-3690	
1475	0.045	-3220	20	-3250	-2640	470	-3110	-3310	750	-4070	
2200-1465	**3.293**	*-732*	*1160*	*-1890*	*-720*	*680*	*-1400*	*-540*	*1050*	*-1590*	
Hellstugubr. cont.											
Altitude	**Area**	**1979, bn**	**1979, bw**	**1979, bs**	**1980, bn**	**1980, bw**	**1980, bs**	**Area**	**1986, bn**	**1986, bw**	**1986, bs**
2175	0.021	1250	2200	-950	480	1430	-950	0.02	1300	1650	-350
2125	0.088	1030	1830	-800	570	1480	-910	0.084	1020	1430	-410
2075	0.301	1000	1860	-860	170	1300	-1130	0.252	720	1270	-550
2025	0.159	930	1870	-940	-120	1200	-1320	0.173	450	1160	-710
1975	0.362	630	1710	-1080	-630	940	-1570	0.351	220	1030	-810
1925	0.605	450	1570	-1120	-1110	680	-1790	0.599	-120	780	-900
1875	0.368	180	1430	-1250	-1250	870	-2120	0.351	-410	740	-1150
1825	0.348	-120	1350	-1470	-1230	720	-1950	0.326	-780	610	-1390
1775	0.149	-440	1300	-1740	-2210	540	-2750	0.141	-1130	570	-1700
1725	0.146	-470	1380	-1850	-2190	620	-2810	0.098	-1340	510	-1850
1675	0.213	-870	1200	-2070	-2060	660	-2720	0.163	-1550	490	-2040
1625	0.182	-1100	1090	-2190	-1980	600	-2580	0.13	-1790	460	-2250
1575	0.196	-1660	740	-2400	-2350	560	-2910	0.173	-2120	350	-2470
1525	0.11	-2210	430	-2640	-3090	360	-3450	0.093	-2520	260	-2780
1475	0.045	-2540	350	-2890	-3120	440	-3560	0.027	-2700	190	-2890
2200-1465	**3.293**	*-20*	*1430*	*-1450*	*-1240*	*810*	*-2050*	*2.981*	*-490*	*780*	*-1270*
Hellstugubr. cont.											
Altitude	**Area**	**1987, bn**	**1987, bw**	**1987, bs**	**1988, bn**	**1988, bw**	**1988, bs**	**1989, bn**	**1989, bw**	**1989, bs**	
2175	0.02	1900	2000	-100	1300	2200	-900	1780	1940	-160	
2125	0.084	15000	1670	-170	1070	2080	-1010	1860	2070	-210	
2075	0.252	1140	1390	-250	660	1910	-1250	2200	2450	-250	
2025	0.173	930	1270	-340	140	1650	-1510	2200	2580	-380	
1975	0.351	840	1250	-410	-280	1490	-1770	1640	2180	-540	
1925	0.599	760	1240	-480	-540	1360	-1900	990	1670	-680	
1875	0.351	630	1200	-570	-1060	1300	-2360	550	1360	-810	
1825	0.326	500	1170	-670	-1480	1240	-2720	470	1400	-930	
1775	0.141	280	1060	-780	-1960	940	-2900	170	1260	-1090	
1725	0.098	100	1020	-920	-2240	900	-3100	190	1470	-1280	
1675	0.163	-90	1040	-1130	-2450	850	-3300	150	1630	-1480	
1625	0.13	-550	850	-1400	-2600	800	-3400	-750	960	-1710	
1575	0.173	-1040	640	-1680	-2870	670	-3540	-1360	620	-1980	
1525	0.093	-1380	540	-1920	-3170	530	-3700	-1830	410	-2240	
1475	0.027	-1390	740	-2130	-3450	450	-3900	-2160	320	-2480	
2200-1465	*2.981*	*460*	*1150*	*-700*	*-1040*	*1280*	*-2320*	*720*	*1620*	*-900*	

Hellstugubr. cont.												
Altitude	**Area**	**1990, bn**	**1990, bw**	**1990, bs**	**1991, bn**	**1991, bw**	**1991, bs**	**1992, bn**	**1992, bw**	**1992, bs**		
2175	0.02	1850	1940	-90	320	1180	-860	1180	1320	-140		
2125	0.084	1770	1910	-140	320	1210	-890	1000	1200	-200		
2075	0.252	1840	2070	-230	340	1270	-930	920	1180	-260		
2025	0.173	1860	2220	-360	290	1270	-980	960	1300	-340		
1975	0.351	1440	1990	-550	100	1130	-1030	920	1380	-460		
1925	0.599	1020	1840	-820	-100	1020	-1120	620	1180	-560		
1875	0.351	720	1930	-1210	-250	990	-1240	280	1220	-940		
1825	0.326	420	2000	-1580	-490	910	-1400	-300	1030	-1330		
1775	0.141	80	1840	-1760	-790	910	-1700	-560	1060	-1620		
1725	0.098	70	1760	-1690	-1290	730	-2020	-480	1220	-1700		
1675	0.163	150	1710	-1560	-1340	740	-2080	-620	1230	-1850		
1625	0.13	-190	1550	-1740	-1560	690	-2250	-930	1100	-2030		
1575	0.173	-1270	1090	-2360	-1950	620	-2570	-1240	1020	-2260		
1525	0.093	-2440	470	-2910	-2230	560	-2790	-1760	840	-2600		
1475	0.027	-3020	300	-3320	-2300	640	-2940	-2180	640	-2820		
2200-1465	*2.981*	*650*	*1800*	*-1150*	*-450*	*980*	*-1430*	*140*	*1170*	*-1030*		
Hellstugubr. cont.												
Altitude	**Area**	**1993, bn**	**1993, bw**	**1993, bs**	**Area**	**1994, bn**	**1994, bw**	**1994, bs**	**Area**	**1995, bn**	**1995, bw**	**1995, bs**
2175	0.02	1090	1200	-110	0.020	1150	1550	-400	0.02	950	1380	-430
2125	0.084	1060	1240	-180	0.080	1150	1550	-400	0.084	1000	1540	-540
2075	0.252	950	1230	-280	0.250	1050	1500	-450	0.252	860	1510	-650
2025	0.173	600	1020	-420	0.170	1050	1500	-450	0.173	850	1630	-780
1975	0.351	800	1350	-550	0.350	950	1450	-500	0.351	880	1820	-940
1925	0.599	770	1470	-700	0.600	700	1450	-750	0.599	480	1650	-1170
1875	0.351	440	1300	-860	0.350	150	1400	-1250	0.351	-130	1430	-1560
1825	0.326	170	1150	-980	0.330	-450	1050	-1500	0.326	-580	1320	-1900
1775	0.141	-30	1130	-1160	0.140	-600	1100	-1700	0.141	-600	1420	-2020
1725	0.098	160	1480	-1320	0.100	-750	1000	-1750	0.098	-970	1150	-2120
1675	0.163	30	1530	-1500	0.160	-850	1000	-1850	0.163	-1090	1230	-2320
1625	0.13	-460	1230	-1690	0.130	-1150	900	-2050	0.13	-1520	960	-2480
1575	0.173	-1150	850	-2000	0.170	-1650	750	-2400	0.173	-1900	800	-2700
1525	0.093	-2320	530	-2850	0.090	-2300	600	-2900	0.093	-2490	560	-3050
1475	0.027	-2420	480	-2900	0.030	-2900	500	-3400	0.027	-2750	500	-3250
2200-1465	*2.981*	*300*	*1250*	*-950*	*2.970*	*70*	*1260*	*-1190*	*2.981*	*-120*	*1420*	*-1540*
Hellstugubr. cont.												
Altitude	**Area**	**1996, bn**	**1996, bw**	**1996, bs**	**1997, bn**	**1997, bw**	**1997, bs**	**Altitude**	**Area**	**1998, bn**	**1998, bw**	**1998, bs**
2175	0.02	680	1010	-330	-200	1200	-1400	2175	0.02	1050	1230	-180
2125	0.084	540	920	-380	480	1170	-1650	2125	0.08	870	1100	-230
2075	0.252	390	880	-490	-520	1320	-1840	2075	0.25	830	1120	-290
2025	0.173	280	860	-580	-300	1600	-1900	2025	0.17	1070	1450	-380
1975	0.351	130	880	-750	-550	1380	-1930	1975	0.35	770	1250	-480
1925	0.599	-160	810	-970	-1040	1180	-2220	1925	0.6	330	1030	-700
1875	0.351	-440	730	-1170	-1540	1110	-2650	1875	0.35	30	980	-950
1825	0.326	-970	550	-1520	-1870	1050	-2920	1825	0.33	-200	920	-1120
1775	0.141	-1620	420	-2040	-2440	910	-3350	1775	0.14	-640	740	-1380
1725	0.098	-1900	370	-2270	-2820	1100	-3920	1725	0.1	-630	870	-1500
1675	0.163	-2020	350	-2370	-2970	1080	-4050	1675	0.16	-700	1000	-1700
1625	0.13	-2280	270	-2550	-3330	870	-4200	1625	0.13	-1130	870	-2000
1575	0.173	-2680	220	-2900	-3680	700	-4380	1575	0.17	-1660	690	-2350
1525	0.093	-3060	140	-3200	-4530	370	-4900	1525	0.09	-2060	500	-2560
1475	0.027	-3280	120	-3400	-5030	320	-5350	1480	0.03	-2300	400	-2700
2200-1465	*2.981*	*-740*	*650*	*-1390*	*-1650*	*1120*	*-2770*	**2200-1465**	*2.970*	*-20*	*1000*	*-1020*

Nordboglac.															
Altitude	**Area**	**1980, bn**	**1980, bw**	**1980, bs**											
1450	2.3	-260	570	-830											
1350	8.59	-490	470	-960											
1250	6.74	-230	680	-910											
1150	12.11	-690	560	-1250											
1050	7.01	-1240	430	-1670											
950	9.91	-1850	300	-2150											
850	4.57	-2650	180	-2830											
750	5.32	-2930	70	-3000											
650	0.35	-3180	20	-3200											
1500-600	*56.90*	*-1240*	*420*	*-1660*											
Grasubreen															
Altitude	**Area**	**1965, bn**	**1966, bn**	**1967, bn**	**Area**	**1968, bn**	**1969, bn**	**1970, bn**	**Area**	**1971, bn**	**1971, bw**	**1971, bs**	**1972, bn**	**1972, bw**	**1972, bs**
2255	0.007	750	490	1240	0.031	680	-410	140	0.03	-30	350	-380	180	810	-630
2225	0.129	860	350	930	0.178	500	-490	60	0.18	80	460	-380	-140	690	-830
2175	0.274	810	50	870	0.309	200	-740	-130	0.31	-150	490	-640	-440	640	-1080
2125	0.362	490	-140	600	0.386	-40	-1410	-590	0.38	-570	230	-800	-640	600	-1240
2075	0.385	340	-260	840	0.417	-130	-1460	-730	0.41	-500	390	-890	-790	570	-1360
2025	0.456	300	-360	570	0.461	-170	-1430	-940	0.47	-630	450	-1080	-770	610	-1380
1975	0.478	340	-470	650	0.459	-240	-1540	-950	0.46	-630	660	-1290	-710	700	-1410
1925	0.209	170	-600	750	0.218	-390	-1980	-850	0.22	-540	810	-1350	-750	880	-1630
1875	0.086	-100	-900	710	0.068	-470	-2260	-960	0.06	-440	1030	-1410	-760	870	-1630
2260-1850	*2.386*	*410*	*-290*	*710*	*2.528*	*-80*	*-1370*	*-660*	*2.53*	*-470*	*490*	*-970*	*-640*	*660*	*-1300*
Grasubreen cont.															
Altitude	**Area**	**1973, bn**	**1973, bw**	**1973, bs**	**1974, bn**	**1974, bw**	**1974, bs**	**1975, bn**	**1975, bw**	**1975, bs**	**Altitude**	**Area**	**1976, bn**	**1976, bw**	**1976, bs**
2255	0.03	-310	820	-1130	550	550	0	-150	820	-970	2275	0.034	-880	380	-1260
2225	0.18	-470	720	-1190	570	570	0	-240	790	-1030	2225	0.179	-890	510	-1400
2175	0.31	-630	670	-1300	510	520	-10	-530	820	-1350	2175	0.305	-930	560	-1490
2125	0.38	-860	620	-1480	370	420	-50	-860	610	-1470	2125	0.384	-1170	420	-1590
2075	0.41	-920	670	-1590	320	500	-180	-500	880	-1380	2075	0.416	-1060	520	-1580
2025	0.47	-1030	710	-1740	240	550	-310	-810	970	-1780	2025	0.464	-1080	560	-1640
1975	0.46	-1030	790	-1820	280	710	-430	-1400	1060	-2460	1975	0.457	-1020	730	-1750
1925	0.22	-990	880	-1870	320	880	-560	-2100	1190	-3290	1925	0.214	-690	1130	-1820
1875	0.06	-1270	860	-2130	190	880	-690	-2630	1310	-3940	1875	0.065	-710	1110	-1820
2260-1850	*2.53*	*-890*	*720*	*-1610*	*350*	*590*	*-240*	*-950*	*910*	*-1860*		*2.518*	*-1000*	*620*	*-1620*
Grasubreen cont.															
Altitude	**Area**	**1977, bn**	**1977, bw**	**1977, bs**	**1978, bn**	**1978, bw**	**1978, bs**	**1979, bn**	**1979, bw**	**1979, bs**	**1980, bn**	**1980, bw**	**1980, bs**		
2275	0.034	-120	380	-500	880	1000	-120	0	880	-880	290	580	-290		
2225	0.179	-100	460	-560	640	770	-130	-60	780	-840	0	620	-620		
2175	0.305	-90	470	-560	210	590	-380	100	850	-750	-560	460	-1020		
2125	0.384	-390	400	-790	-90	540	-630	-80	780	-860	-1070	80	-1150		
2075	0.416	-410	440	-850	-280	600	-880	-20	890	-910	-1030	340	-1370		
2025	0.464	-560	460	-1020	-340	650	-990	20	950	-930	-1020	450	-1470		
1975	0.457	-440	630	-1070	-460	770	-1230	80	960	-880	-920	610	-1530		
1925	0.214	-520	730	-1250	-830	800	-1630	280	1120	-840	-1260	750	-2010		
1875	0.065	-580	800	-1380	-920	800	-1730	310	1230	-920	-1390	920	-2310		
2290-1850	*2.518*	*-390*	*510*	*-900*	*-220*	*670*	*-890*	*40*	*910*	*-870*	*-890*	*460*	*-1350*		
Grasubreen cont.															
Altitude	**Area**	**1986, bn**	**1986, bw**	**1986, bs**	**1987, bn**	**1987, bw**	**1987, bs**	**1988, bn**	**1988, bw**	**1988, bs**	**1989, bn**	**1989, bw**	**1989, bs**		
2270	0.037	-200	410	-610	890	810	-80	290	1140	-850	110	570	-460		
2225	0.162	-170	520	-690	770	740	-30	250	1170	-920	470	860	-390		
2175	0.256	-540	340	-880	750	780	-30	-180	1010	-1190	320	860	-540		
2125	0.335	-820	320	-1140	720	810	-90	-370	1020	-1390	240	830	-590		
2075	0.38	-900	360	-1260	780	950	-170	-460	1120	-1580	410	1080	-670		
2025	0.414	-880	430	-1310	750	1010	-260	-690	1100	-1790	450	1170	-720		
1975	0.369	-840	460	-1300	690	1080	-390	-940	1050	-1990	560	1350	-790		
1925	0.154	-880	520	-1400	490	1040	-550	-1340	1100	-2440	790	1640	-850		
1875	0.092	-900	590	-1490	480	1200	-720	-1680	1100	-2780	740	1640	-900		
2290-1850	*2.199*	*-770*	*410*	*-1180*	*720*	*940*	*-230*	*-590*	*1080*	*-1660*	*450*	*1120*	*-670*		

Grasubr. cont.													N
Altitude	**Area**	**1990, bn**	**1990, bw**	**1990, bs**	**1991, bn**	**1991, bw**	**1991, bs**	**1992, bn**	**1992, bw**	**1992, bs**	**1993, bn**	**1993, bw**	**1993, bs**
2270	0.037	1300	1430	-130	400	750	-350	530	700	-170	600	680	-80
2225	0.162	1090	1260	-170	280	730	-450	300	770	-470	730	860	-130
2175	0.256	690	1000	-310	-230	570	-800	50	610	-560	470	810	-340
2125	0.335	650	1100	-450	-510	570	-1080	-120	560	-680	90	650	-560
2075	0.38	770	1350	-580	-500	640	-1140	-230	590	-820	280	870	-590
2025	0.414	730	1440	-710	-680	670	-1350	-260	730	-990	470	1030	-560
1975	0.369	780	1600	-820	-830	700	-1530	-180	850	-1030	540	1140	-600
1925	0.154	550	1470	-920	-870	810	-1680	-70	880	-950	520	1120	-600
1875	0.092	110	1200	-1090	-920	850	-1770	300	830	-530	450	1080	-630
2290-1850	*2.199*	*730*	*1330*	*-600*	*-530*	*670*	*-1196*	*-93*	*703*	*-796*	*415*	*927*	*-512*
Grasubr. cont.													
Altitude	**Area**	**1994, bn**	**1994, bw**	**1994, bs**	**1995, bn**	**1995, bw**	**1995, bs**	**1996, bn**	**1996, bw**	**1996, bs**	**1997, bn**	**1997, bw**	**1997, bs**
2270	0.04	100	1000	-900	620	1300	-680	210	650	-440	-1110	270	-1380
2225	0.16	200	1100	-900	650	1320	-670	140	620	-480	-990	530	-1520
2175	0.26	250	1200	-950	90	1030	-940	-230	440	-670	-1300	600	-1900
2125	0.34	250	1250	-1000	-340	960	-1300	-610	370	-980	-1970	510	-2480
2075	0.38	0	1100	-1100	-90	1170	-1260	-550	530	-1080	-2000	600	-2600
2025	0.41	-150	1050	-1200	-390	1070	-1460	-560	510	-1070	-1820	700	-2520
1975	0.37	-130	1200	-1330	-220	1340	-1560	-400	650	-1050	-1610	890	-2500
1925	0.15	-250	1250	-1500	-20	1560	-1580	-580	620	-1200	-1610	1060	-2670
1875	0.09	-400	1250	-1650	-100	1550	-1650	-790	630	-1420	-1740	1160	-2900
2290-1850	*2.20*	*1*	*1157*	*-1556*	*-114*	*1186*	*-1300*	*-456*	*530*	*-976*	*-1687*	*697*	*-2383*
Grasubr. cont.													
Altitude	**Area**	**1998, bn**	**1998, bw**	**1998, bs**									
2270	0.04	580	760	-180									
2225	0.16	590	810	-220									
2175	0.26	350	730	-380									
2125	0.34	220	700	-480									
2075	0.38	40	700	-660									
2025	0.41	-170	730	-900									
1975	0.37	20	840	-820									
1925	0.15	140	1060	-920									
1875	0.09	-20	1080	-1100									
2290-1860	*2.20*	*110*	*780*	*-670*									

Nigardsbreen															
Altitude	**Area**	**1964, bn**	**Area**	**1965, bn**	**1966, bn**	**1967, bn**	**Area**	**1968, bn**	**1969, bn**	**1970, bn**	**Altitude**	**Area**	**1971, bn**	**1971, bw**	**1971, bs**
1950	0.27	3490	0.16	2370	1130	5380	0.16	2620	260	2250	1950	0.12	2750	3080	-330
1850	3.51	3270	3.76	2230	870	4250	3.76	2400	-60	1270	1850	3.78	2340	2820	-480
1750	10.4	2300	9.76	1920	330	3670	9.76	1960	-250	610	1750	9.31	1980	2610	-630
1650	12.62	1670	11.84	1680	-250	2790	12.76	1130	-520	30	1650	12.48	1540	2310	-770
1550	5.87	750	5.68	940	-980	1870	9.28	-10	-1250	-670	1550	9.34	730	1860	-1130
1450	3.19	360	3.7	510	-1720	1160	5.26	-1060	-1880	-1270	1450	5.42	270	1710	-1440
1350	1.84	-320	1.9	-400	-2730	340	2.06	-1970	-2530	-1790	1350	2.06	-230	1640	-1870
1250	0.73	-1760	0.72	-750	-3600	-440	0.72	-2690	-3150	-2650	1250	0.72	-1110	1290	-2400
1150	0.38	-2540	0.32	-1760	-3840	-1250	0.32	-3520	-4250	-3370	1150	0.32	-2380	1250	-3630
1050	0.59	-3050	0.54	-2350	-4720	-1890	0.54	-4520	-4800	-3960	1050	0.54	-2300	1240	-3540
950	0.6	-4120	0.42	-3250	-5350	-2620	0.42	-5220	-5620	-4370	950	0.42	-3050	1240	-4290
850	0.37	-5130	0.48	-4170	-5830	-3080	0.48	-5870	-6690	-5590	850	0.46	-3690	1240	-4930
750	0.44	-6120	0.4	-5150	-6950	-4000	0.4	-6830	-7670	-6370	750	0.33	-5180	760	-5940
650	0.35	-6850	0.44	-6290	-7380	-4980	0.44	-7750	-8620	-6890	650	0.42	-6240	740	-6980
550	0.24	-7620	0.28	-7400	-8280	-5600	0.28	-8450	-9690	-7960	550	0.3	-7370	730	-8100
450	0.45	-8640	0.2	-8800	-9480	-6950	0.2	-9470	-11200	-9150	450	0.2	-9750	350	-10100
350	0.34	-9630	0.26	-9820	-10120	-7980	0.19	-10250	-12850	-10100	350	0.18	-11090	350	-11440
1950-355	42.19	950	40.86	910	-920	2160	47.03	220	-1320	-559		46.40	830	2120	-1290
recalc.	**42.19**	**945**	**40.86**	**903**	**-922**	**2156**	**47.03**	**221**	**-1318**	**-560**	**recalc.**	**46.40**	**827**	**2116**	**-1289**

Nigards. cont.															
Altitude	**Area**	**1972, bn**	**1972, bw**	**1972, bs**	**Area**	**1973, bn**	**1973, bw**	**1973, bs**	**Area**	**1974, bn**	**1974, bw**	**1974, bs**			
1950	0.12	1590	2340	-750	0.12	2870	3250	-380	0.12	2380	2580	-200			
1850	3.78	1630	2490	-870	3.78	2790	3210	-420	3.59	2410	2710	-300			
1750	9.31	1110	2290	-1180	9.31	2430	3000	-570	9.71	1850	2480	-630			
1650	12.48	560	2040	-1480	12.48	2040	2840	-800	12.86	1270	2270	-1000			
1550	9.34	-200	1680	-1880	9.34	950	2080	-1130	9.38	360	1880	-1520			
1450	5.42	-790	1500	-2290	5.42	230	1730	-1500	5.48	-110	1660	-1770			
1350	2.22	-1260	1660	-2920	2.27	-490	1420	-1910	2.22	-1190	1490	-2680			
1250	0.72	-2030	1290	-3320	0.72	-1030	1380	-2410	0.56	-2150	1380	-3530			
1150	0.32	-2650	1220	-3870	0.32	-1500	1380	-2880	0.38	-2580	1370	-3950			
1050	0.54	-3780	1190	-4980	0.54	-2070	1380	-3450	0.6	-3430	1250	-4680			
950	0.42	-4400	1100	-5500	0.42	-2730	1380	-4110	0.42	-4330	1120	-5450			
850	0.46	-5630	870	-6500	0.46	-3640	1260	-4900	0.46	-4920	1040	-5960			
750	0.33	-6420	790	-7210	0.33	-4670	1130	-5800	0.33	-6120	970	-7090			
650	0.42	-7930	500	-8430	0.42	-6050	880	-6930	0.42	-9280	760	-9040			
550	0.3	-9130	370	-9500	0.3	-7940	480	-8420	0.3	-9110	450	-9560			
450	0.2	-11110	150	-11260	0.2	-10630	120	-10750	0.2	-11520	280	-11800			
350	0.18	-12370	130	-12500	0.18	-13900	0	-13900	0.18	-12370	130	-12500			
1950-355	*46.56*	*-140*	*1880*	*-2020*	*46.61*	*1110*	*2410*	*-1300*	*47.21*	*470*	*2060*	*-1590*			
recalc.	**46.56**	**-145**	**1878**	**-2023**	**46.61**	**1110**	**2407**	**-1297**	**47.21**	**472**	**2059**	**-1587**			

Nigards. cont.															
Altitude	**Area**	**1975, bn**	**1975, bw**	**1975, bs**	**Altitude**	**Area**	**1976, bn**	**1976, bw**	**1976, bs**	**1977, bn**	**1977, bw**	**1977, bs**	**1978, bn**	**1978, bw**	**1978, bs**
1950	0.31	1510	3180	-1670	1930	0.31	2900	4000	-1100	920	1670	-750	2770	3020	-250
1850	3.93	1510	3120	-1610	1850	3.93	2370	3640	-1270	920	1660	-740	2260	3080	-820
1750	9.35	1160	2920	-1760	1750	9.35	1870	3380	-1510	480	1650	-1170	1450	2700	-1250
1650	12.76	980	2790	-1810	1650	12.76	1270	3190	-1920	10	1580	-1570	680	2310	-1630
1550	9.62	160	2220	-2060	1550	9.62	-180	2600	-2780	-690	1600	-2290	-580	1820	-2400
1450	6.12	-10	2150	-2160	1450	6.12	-600	2450	-3050	-1900	1520	-3420	-1710	1590	-3300
1350	2.18	-800	2010	-2810	1350	2.18	-1220	2210	-3430	-2250	1430	-3680	-2120	1440	-3560
1250	0.88	-1650	1960	-3610	1250	0.88	-1860	2030	-3890	-3470	1150	-4620	-2670	1270	-3940
1150	0.44	-1860	1630	-3490	1150	0.44	-2480	1890	-4370	-4820	810	-5630	-3050	1200	-4250
1050	0.54	-1900	1650	-3550	1050	0.54	-3260	1710	-4970	-5100	850	-5950	-3590	1160	-4750
950	0.45	-3100	1410	-4510	950	0.45	-3910	1590	-5500	-5850	650	-6500	-4260	990	-5250
850	0.47	-4330	1260	-5590	850	0.47	-4650	1400	-6050	-6400	550	-6950	-4950	880	-5830
750	0.31	-5550	1140	-6690	750	0.31	-5620	1250	-6870	-7260	450	-7710	-5450	800	-6250
650	0.38	-8820	840	-9660	650	0.38	-6510	1210	-7720	-7720	370	-8090	-6300	710	-7010
550	0.26	-8750	630	-9380	550	0.26	-7620	770	-8460	-8560	270	-8830	-7200	630	-7830
450	0.14	-10100	530	-10630	450	0.14	-8950	550	-9500	-9080	170	-9250	-7990	510	-8500
350	0.06	-12300	630	-12930	350	0.06	-10100	400	-10500	-9500	150	-9650	-8820	430	-9250
1950-355	*48.2*	*280*	*2500*	*-2230*	*1950-355*	*48.20*	*400*	*2880*	*-2480*	*-770*	*-1520*	*-2290*	*-130*	*2120*	*-2250*
recalc.	**48.2**	**275**	**2501**	**-2226**	**1950-355**	**48.20**	**401**	**2878**	**-2477**	**-777**	**1519**	**-2296**	**-128**	**2117**	**-2245**

Nigards. cont.														
Altitude	**Area**	**1979, bn**	**1979, bw**	**1979, bs**	**1980, bn**	**1980, bw**	**1980, bs**	**Area**	**1986, bn**	**1986, bw**	**1986, bs**	**1987, bn**	**1987, bw**	**1987, bs**
1950	0.31	3070	3770	-700	290	1900	-1610	0.31	1860	2160	-300	2770	2970	-200
1850	3.93	2940	3780	-840	620	2240	-1620	3.93	1800	2190	-390	2920	3220	-300
1750	9.35	2140	3290	-1150	120	2100	-1980	9.35	1380	2020	-640	2740	3290	-550
1650	12.76	1470	2950	-1480	-340	1960	-2300	12.76	600	1780	-1180	2220	3070	-850
1550	9.62	420	2560	-2140	-1360	1620	-2980	9.62	-320	1440	-1760	1240	2490	-1250
1450	6.12	-330	2340	-2670	-2100	1510	-3610	6.12	-1030	1270	-2300	610	2310	-1700
1350	2.18	-1460	2010	-3470	-3250	1360	-4610	2.18	-2040	1100	-3140	0	2120	-2120
1250	0.88	-2120	1770	-3890	-4030	1220	-5250	0.88	-2580	970	-3550	-580	1920	-2500
1150	0.44	-2580	1630	-4210	-4930	1070	-6000	0.44	-3280	860	-4140	-1240	1760	-3000
1050	0.54	-3300	1450	-4750	-5650	1110	-6760	0.54	-4020	800	-4820	-1840	1680	-3520
950	0.45	-3930	1320	-5250	-6260	980	-7240	0.45	-4720	710	-5430	-2550	1450	-4000
850	0.47	-4600	1150	-5750	-7130	870	-8000	0.47	-5420	660	-6080	-3260	1240	-4500
750	0.31	-5260	990	-6250	-7840	770	-8610	0.31	-6350	550	-6900	-4100	1000	-5100
650	0.38	-5900	850	-6750	-8630	660	-9290	0.38	-7150	450	-7600	-4900	800	-5700
550	0.26	-6600	650	-7250	-9460	540	-10000	0.26	-8100	350	-8450	-5600	650	-6250
450	0.14	-7260	490	-7750	-10070	430	-10500	0.14	-9400	290	-9690	-6450	400	-6850
350	0.06	-7930	320	-8250	-11000	330	-11330	0.06	-10230	170	-10400	-7520	0	-7520
1950-355	*48.20*	*710*	*2750*	*-2040*	*-1220*	*1770*	*-2990*	*48.20*	*-100*	*1610*	*-1710*	*1480*	*2730*	*-1250*
recalc.	**48.20**	**712**	**2756**	**-2044**	**-1222**	**1774**	**-2996**	**48.20**	**-102**	**1612**	**-1713**	**1479**	**2732**	**-1253**
Nigards. cont.														
Area	**1988, bn**	**1988, bw**	**1988, bs**	**1989, bn**	**1989, bw**	**1989, bs**	**1990, bn**	**1990, bw**	**1990, bs**	**Altitude**	**Area**	**1991, bn**	**1991, bw**	**1991, bs**
0.38	1500	2850	-1350	5470	5500	-80	5040	5740	-700	1930	0.38	1150	2000	-850
3.92	1350	2820	-1470	5500	5600	-100	4920	5680	-760	1850	3.92	1400	2300	-900
9.39	670	2580	-1910	5060	5200	-140	3860	4830	-970	1750	9.39	1250	2300	-1050
12.88	-110	2450	-2560	4080	4330	-250	2390	3730	-1340	1650	12.88	920	2120	-1200
9.18	-1100	2160	-3260	2740	3540	-800	1130	2950	-1820	1550	9.18	250	1800	-1550
5.82	-1810	1920	-3730	1670	3050	-1380	180	2420	-2240	1450	5.82	-430	1720	-2150
2.28	-2840	1700	-4540	1060	2820	-1760	-760	1920	-2680	1350	2.28	-1100	1650	-2750
0.9	-3810	1570	-5380	520	2700	-2180	-1390	1760	-3150	1250	0.9	-1900	1550	-3450
0.45	-4760	1380	-6140	-190	2560	-2750	-2130	1500	-3630	1150	0.45	-2700	1500	-4200
0.58	-5660	1230	-6890	-1030	2420	-3450	-2760	1280	-4040	1050	0.58	-3400	1450	-4850
0.47	-6650	950	-7600	-1980	2200	-4180	-3460	1060	-4520	950	0.47	-4100	1350	-5450
0.44	-7570	800	-8370	-2870	1950	-4820	-4020	980	-5000	850	0.44	-5000	1100	-6100
0.33	-8710	700	-9410	-3820	1700	-5520	-4670	850	-5520	750	0.33	-6000	700	-6700
0.39	-9730	550	-10280	-4830	1320	-6150	-5350	790	-6140	650	0.39	-6950	400	-7350
0.24	-10580	400	-10980	-5900	950	-6850	-6150	720	-6870	550	0.24	-7800	150	-7950
0.12	-11270	330	-11600	-6750	700	-7450	-7330	520	-7850	450	0.12	-8600	100	-8700
0.05	-12050	250	-12300	-7600	500	-8100	-8700	300	-9000	360	0.05	-9450	100	-9550
47.82	*-900*	*2240*	*-3130*	*3200*	*4050*	*-850*	*1770*	*3520*	*-1750*		*47.82*	*200*	*1950*	*-1750*
47.82	**-896**	**2236**	**-3132**	**3196**	**4049**	**-853**	**1763**	**3516**	**-1754**		**47.82**	**203**	**1954**	**-1751**
Nigards. cont.														
Altitude	**Area**	**1992, bn**	**1992, bw**	**1992, bs**	**1993, bn**	**1993, bw**	**1993, bs**	**Area**	**1994, bn**	**1994, bw**	**1994, bs**	**1995, bn**	**1995, bw**	**1995, bs**
1930	0.38	3400	4050	-650	3300	3650	-350	0.38	2250	3150	-900	2450	3550	-1100
1850	3.92	3420	4140	-720	3600	3950	-350	3.92	1950	2950	-1000	2600	3700	-1100
1750	9.39	3120	4030	-910	3050	3450	-400	9.39	1400	2600	-1200	2300	3450	-1150
1650	12.88	2250	3470	-1220	2550	3200	-650	12.88	1000	2350	-1350	1750	3350	-1600
1550	9.18	1260	2730	-1470	1950	3100	-1150	9.18	650	2200	-1550	1200	3100	-1900
1450	5.82	520	2430	-1910	1150	3050	-1900	5.82	250	2100	-1850	900	3000	-2100
1350	2.28	-70	2240	-2310	300	2700	-2400	2.28	-250	2000	-2250	300	2850	-2550
1250	0.9	-650	2150	-2800	-550	2400	-2950	0.9	-1000	1800	-2800	-750	2550	-3300
1150	0.45	-1280	2050	-3330	-1550	2050	-3600	0.45	-1950	1500	-3450	-1850	2250	-4100
1050	0.58	-1950	1960	-3910	-2500	1750	-4250	0.58	-2900	1250	-4150	-2850	2000	-4850
950	0.47	-2630	1850	-4480	-3500	1550	-5050	0.47	-3800	1050	-4850	-3950	1700	-5650
850	0.44	-3370	1660	-5030	-4450	1400	-5850	0.44	-4500	1000	-5500	-5050	1500	-6550
750	0.33	-4160	1350	-5510	-5400	1300	-6700	0.33	-5250	900	-6150	-6100	1300	-7400
650	0.39	-4950	1080	-6030	-6350	1200	-7550	0.39	-6000	800	-6800	-7100	1100	-8200
550	0.24	-5700	800	-6500	-7250	1100	-8350	0.24	-6550	700	-7250	-7950	950	-8900
450	0.12	-6500	710	-7210	-8200	1000	-9200	0.12	-7500	650	-8150	-8750	850	-9600
360	0.05	-7130	570	-7700	-9100	900	-10000	0.05	-8200	550	-8750	-9550	750	-10300
1950-355	*47.82*	*1600*	*3160*	*-1560*	*1850*	*3130*	*-1280*	*47.82*	*570*	*2284*	*-1720*	*1190*	*3160*	*-1970*
recalc.	**47.82**	**1602**	**3166**	**-1564**	**1850**	**3129**	**-1279**	**47.82**	**569**	**2285**	**-1716**	**1187**	**3157**	**-1970**

	Nigardsbreen														
	Altitude	**Area**	**1996, bn**	**1996, bw**	**1996, bs**	**1997, bn**	**1997, bw**	**1997, bs**	**1998, bn**	**1998, bw**	**1998, bs**				
	1930	0.38	1200	1900	-700	1500	3000	-1500	2850	3250	-400				
	1850	3.92	1200	1950	-800	1500	3400	-1900	2650	3250	-600				
	1750	9.39	800	1750	-1000	850	3050	-2200	2050	2950	-900				
	1650	12.88	-100	1450	-1500	500	2800	-2300	1550	2700	-1150				
	1550	9.18	-700	1300	-1950	50	2500	-2450	1000	2400	-1400				
	1450	5.82	-900	1200	-2100	-150	2450	-2600	600	2250	-1650				
	1350	2.28	-1300	1050	-2350	-450	2350	-2800	0	2050	-2050				
	1250	0.9	-1700	900	-2600	-1200	2100	-3300	-900	1800	-2700				
	1150	0.45	-2200	750	-2950	-2200	1800	-4000	-2000	1550	-3550				
	1050	0.58	-2800	600	-3400	-3200	1500	-4700	-3150	1250	-4400				
	950	0.47	-3800	450	-4200	-4450	1250	-5700	-4300	900	-5200				
	850	0.44	-5000	350	-5350	-5700	1000	-6700	-5400	600	-6000				
	750	0.33	-6300	300	-6600	-6800	800	-7600	-6500	250	-6750				
	650	0.39	-7500	200	-7700	-8100	600	-8700	-7600	-100	-7500				
	550	0.24	-8500	150	-8650	-9200	500	-9700	-8700	-450	-8250				
	450	0.12	-9100	120	-9250	-10250	450	-10700	-9850	-800	-9050				
	360	0.05	-9700	100	-9800	-11200	400	-11600	-10850	-1100	-9750				
	1960-320	*47.77*	*-410*	*1400*	*-1810*	*30*	*2660*	*-2620*	*970*	*2500*	*-1530*				
	recalc.	**47.82**	**-409**	**1399**	**-1807**	**31**	**2656**	**-2625**	**970**	**2500**	**-1530**				
Tunsbergdalsbr.															
Altitude	**Area**	**1966, bn**	**1966, bw**	**1966, bs**	**1967, bn**	**1967, bw**	**1967, bs**	**1968, bn**	**1968, bw**	**1968, bs**					
1915	0.384	1550	2670	-1120	3620	3970	-350	2520	3750	-1230					
1850	2.808	1270	2670	-1400	4250	4620	-370	2370	3750	-1380					
1750	8.788	600	2360	-1760	4130	4670	-540	2180	3710	-1530					
1650	7.008	80	2080	-2000	3490	4270	-780	1510	3180	-1670					
1550	4.088	-430	1840	-2270	2860	3900	-1040	920	2800	-1880					
1450	2.908	-1070	1510	-2580	2070	3390	-1320	570	2750	-2180					
1350	1.202	-1580	1250	-2830	1130	2750	-1620	160	2740	-2580					
1250	0.992	-2090	980	-3070	540	2490	-1950	-150	2790	-2940					
1150	3.344	-2520	880	-3400	-150	2120	-2270	-1240	2270	-3510					
1050	3.824	-2900	770	-3670	-560	1930	-2490	-1870	2050	-3920					
950	3.336	-3170	670	-3840	-930	1860	-2790	-2790	1660	-4450					
850	2.451	-3630	460	-4090	-1490	1610	-3100	-3610	1370	-4980					
750	2.04	-3620	500	-4120	-2060	1280	-3340	-4190	1290	-5480					
650	0.416	-4000	370	-4370	-2490	1130	-3620	-5020	1130	-6150					
570	0.184	-4000	370	-4370	-2740	1130	-3870	-5620	1130	-6750					
1950-540	*43.773*	*-1090*	*1570*	*-2660*	*1790*	*3310*	*-1510*	*40*	*2740*	*-2700*					
recalc.	**43.773**	**-1088**	**1570**	**-2658**	**1794**	**3311**	**-1517**	**39**	**2741**	**-2703**					
Tunsberg. cont.															
Altitude	**Area**	**1969, bn**	**1969, bw**	**1969, bs**	**1970, bn**	**1970, bw**	**1970, bs**	**Area**	**1971, bn**	**1971, bw**	**1971, bs**	**Area**	**1972, bn**	**1972, bw**	**1972, bs**
1915	0.38	330	2130	-1800	1110	1970	-870	0.41	3120	3240	-120	0.41	1820	2570	-750
1850	2.81	330	2130	-1800	1430	2310	-880	2.72	3070	3410	-340	2.72	1770	2780	-1010
1750	8.79	170	2120	-1950	1030	2190	-1160	8.86	2780	3310	-530	8.86	1400	2650	-1250
1650	8.44	-190	1940	-2130	340	1800	-1460	8.01	2110	2870	-760	8.01	960	2340	-1380
1550	6.95	-690	1780	-2470	-110	1640	-1750	7.25	1430	2510	-1080	7.23	430	2180	-1750
1450	4.28	-1160	1590	-2750	-720	1530	-2250	3.69	890	2600	-1720	4.35	-290	1910	-2200
1350	1.62	-1740	1510	-3250	-1060	1440	-2490	1.54	490	2250	-1750	1.54	-620	1840	-2460
1250	1.24	-2420	1220	-3640	-1570	1400	-2980	1.23	-340	1910	-2250	1.23	-980	1770	-2750
1150	3.34	-3150	1100	-4250	-2260	1150	-3420	3.44	-900	1650	-2550	3.31	-1780	1770	-3550
1050	3.82	-3910	890	-4800	-2740	1010	-3750	3.8	-1620	1420	-3030	3.8	-2270	1630	-3900
950	3.34	-4580	670	-5250	-3490	760	-4250	3.32	-2340	1200	-3540	3.32	-3140	1380	-4520
850	2.45	-5120	630	-5750	-4070	640	-4710	2.29	-3360	1090	-4450	2.29	-4260	1040	-5300
750	2.04	-6070	430	-6500	-4160	630	-4790	2.16	-4170	890	-5060	2.16	-5300	730	-6030
650	0.42	-7120	380	-7500	-4640	630	-5250	0.44	-4980	980	-5950	0.44	-6070	630	-6700
570	0.18	-8120	380	-8500	-4610	630	-5250	0.21	-5760	860	-6610	0.21	-6870	630	-7500
1950-540	*50.11*	*-1690*	*1530*	*-3220*	*-840*	*1540*	*-2380*	*49.37*	*570*	*2360*	*-1790*	*49.88*	*-500*	*2020*	*-2520*
recalc.	**50.10**	**-1692**	**1535**	**-3227**	**-840**	**1540**	**-2380**	**49.37**	**568**	**2362**	**-1794**	**49.88**	**-500**	**2023**	**-2523**

Appendix 2 Mass balance versus altitude

Vesledalsbreen										
Altitude	**Area**	**1967, bn**	**1967, bw**	**1967, bs**						
1715	0.014	850	1710	-860						
1675	0.115	900	1780	-880						
1625	0.186	890	1670	-780						
1575	0.704	970	2040	-1070						
1525	0.521	900	2100	-1200						
1475	0.486	940	2320	-1380						
1425	0.724	580	2260	-1680						
1375	0.719	-100	2000	-2100						
1325	0.42	-690	1820	-2510						
1275	0.12	-570	2250	-2820						
1225	0.147	-1350	2150	-3500						
1175	0.05	-2770	1470	-4240						
1135	0.015	-3130	1600	-4730						
1125-1730	**4.221**	*350*	*2060*	*-1710*						
recalc	**4.221**	**354**	**2066**	**-1711**						
Harbardsbreen										
Altitude	**Area**	**1997, bn**	**1997, bw**	**1997, bs**	**1998, bn**	**1998, bw**	**1998, bs**			
1960	0.07	-1300	1200	-2500	600	1300	-700			
1925	0.21	-1150	1450	-2600	600	1400	-800			
1875	0.35	-1050	1600	-2650	550	1500	-950			
1825	0.32	-900	1750	-2650	500	1600	-1100			
1775	0.58	-650	2000	-2650	500	1700	-1200			
1725	1.12	-350	2250	-2600	500	1800	-1300			
1675	1.89	-100	2400	-2500	500	1900	-1400			
1625	1.27	100	2500	-2400	500	1950	-1450			
1575	1.16	0	2400	-2400	250	1750	-1500			
1525	1.57	-400	2100	-2500	250	1600	-1550			
1475	2.56	-750	2000	-2750	-200	1500	-1700			
1425	0.82	-1150	2150	-3300	-600	1500	-2100			
1375	0.43	-1300	2250	-3550	-1000	1500	-2500			
1325	0.42	-1450	2250	-3700	-1250	1450	-2700			
1275	0.39	-1650	2150	-3800	-1450	1400	-2850			
1970-1250	*13.20*	*-540*	*2170*	*-2720*	*60*	*1660*	*-1600*			
recalc.	**13.16**	**-541**	**2174**	**-2716**						
Jostefonn										
Altitude	**Area**	**1996, bn**	**1996, bw**	**1996, bs**	**1997, bn**	**1997, bw**	**1997, bs**	**1998, bn**	**1998, bw**	**1998, bs**
1608	0.18	-1860	1090	-2950	200	3500	-3300	1250	3050	-1800
1550	0.72	-1710	1090	-2800	200	3550	-3350	1300	3200	-1900
1450	1.07	-1300	1200	-2500	50	3500	-3450	1100	3200	-2100
1350	0.78	-1100	1400	-2500	-100	3600	-3700	750	3100	-2350
1250	0.25	-1440	1410	-2850	-600	3500	-4100	50	2800	-2750
1150	0.18	-2000	1200	-3200	-1200	3400	-4600	-850	2500	-3350
1050	0.54	-2560	990	-3550	-2100	3100	-5200	-2500	1600	-4100
980	0.09	-3050	700	-3750	-2900	2700	-5600	-3200	1400	-4600
1622-960	*3.80*	*-1630*	*1190*	*-2810*	*-420*	*3450*	*-3870*	*300*	*2840*	*-2540*
	3.81	**-1625**	**1187**	**-2812**	**-421**	**3450**	**-3871**			

Austdalsbreen														
Altitude	**Area**	**1988, bn**	**1988, bw**	**1988, bs**	**1989, bn**	**1989, bw**	**1989, bs**	**1990, bn**	**1990, bw**	**1990, bs**	**1991, bn**	**1991, bw**	**1991, bs**	
1728	0.157	740	2540	-1800	1650	2180	-530	2000	3600	-1600	900	1700	-800	
1675	0.128	800	2650	-1850	1790	2210	-420	2400	4050	-1650	950	1850	-900	
1625	0.376	290	2270	-1980	2660	3040	-380	2400	4150	-1750	1000	2000	-1000	
1575	2.488	0	2300	-2300	3010	3570	-560	2300	4100	-1800	850	2000	-1150	
1525	2.539	-400	2140	-2540	2530	3620	-1090	2000	4000	-2000	650	1900	-1250	
1475	1.922	-800	2030	-2830	2050	3450	-1400	1700	3850	-2150	400	1800	-1400	
1425	1.355	-1510	1830	-3340	1350	3090	-1740	1200	3550	-2350	50	1600	-1550	
1375	1.01	-2170	1680	-3850	800	2770	-1970	650	3200	-2550	-450	1350	-1800	
1325	0.787	-2860	1460	-4320	500	2650	-2150	100	2900	-2800	-950	1100	-2050	
1275	0.687	-3340	1240	-4580	50	2300	-2250	-400	2600	-3000	-1600	750	-2350	
1225	0.435	-4010	870	-4880	-620	1880	-2500	-900	2300	-3200	-2200	500	-2700	
1178	0.107	-4550	750	-5300	-790	1890	-2680	-1400	2050	-3450	-2650	400	-3050	
1757-1155	*11.950*	*-1280*	*1940*	*-3220*	*-1840*	*3180*	*-1340*	*1210*	*3650*	*-2440*	*0*	*1640*	*-1640*	
recalc.	**11.951**	**-1110**	**1940**	**-3050**	**1840**	**3180**	**-1340**	**1430**	**3650**	**-2220**	**140**	**1640**	**-1500**	
Austdalsbr. cont.														
Altitude	**Area**	**1992, bn**	**1992, bw**	**1992, bs**	**1993, bn**	**1993, bw**	**1993, bs**	**Area**	**1994, bn**	**1994, bw**	**1994, bs**	**1995, bn**	**1995, bw**	**1995, bs**
1728	0.157	2950	3450	-500	2550	3150	-600	0.16	900	1800	-900	1750	3000	-1250
1675	0.128	2700	3350	-650	2500	3200	-700	0.13	1100	2100	-1000	1720	3000	-1280
1625	0.376	2400	3250	-850	2300	3100	-800	0.38	1100	2150	-1050	1680	3000	-1320
1575	2.448	2050	3150	-1100	2050	2950	-900	2.45	1000	2100	-1100	1650	3000	-1350
1525	2.539	1700	3050	-1350	1750	2800	-1050	2.54	800	2000	-1200	1550	3000	-1450
1475	1.922	1200	2900	-1700	1400	2650	-1250	1.92	450	1900	-1450	1250	2850	-1600
1425	1.355	600	2750	-2150	950	2450	-1500	1.36	0	1750	-1750	650	2500	-1850
1375	1.01	0	2600	-2600	500	2300	-1800	1.01	-500	1550	-2050	150	2250	-2100
1325	0.787	-900	2300	-3200	50	2150	-2100	0.79	-1050	1350	-2400	-300	2200	-2500
1275	0.687	-2000	1800	-3800	-600	1950	-2550	0.69	-1950	1100	-3050	-1050	2150	-3200
1225	0.435	-3350	1250	-4600	-1850	1450	-3300	0.44	-3150	700	-3850	-2250	2000	-4250
1757-1200	*11.90*	*540*	*2800*	*-2260*	*1210*	*2600*	*-1390*	*11.80*	*-70*	*1880*	*1810*	*620*	*2720*	*-2100*
recalc.	**11.844**	**900**	**2800**	**-1900**	**910**	**2600**	**-1690**	**11.80**	**-70**	**1800**	**-1870**	**620**	**2720**	**-2100**
Austdalsbr. cont.														
Altitude	**Area**	**1998, bn**	**1998, bw**	**1998, bs**										
1728	0.16	990	2090	-1100										
1675	0.13	1110	2260	-1150										
1625	0.38	1220	2420	-1200										
1575	2.45	1290	2590	-1300										
1525	2.54	1100	2550	-1450										
1475	1.92	950	2550	-1600										
1425	1.36	250	2050	-1800										
1375	1.01	-450	1700	-2150										
1325	0.79	-960	1440	-2400										
1275	0.69	-1610	1240	-2850										
1225	0.44	-2760	840	-3600										
1757-1200	*11.80*	*170*	*2200*	*-2030*										

Appendix 2 Mass balance versus altitude

Bondhusbreen															
Altitude	**Area**	**1977, bn**	**1977, bw**	**1977, bs**	**1978, bn**	**1978, bw**	**1978, bs**	**Area**	**1979, bn**	**1979, bw**	**1979, bs**	**Area**	**1980, bn**	**1980, bw**	**1980, bs**
1620	2.96	160	2240	-2080	870	2870	-2000	2.82	1520	3520	-2000	2.82	1010	3010	-2000
1550	3.81	-680	1980	-2660	10	2420	-2410	4.22	950	3070	-2120	4.22	130	2530	-2400
1450	1.68	-1100	2060	-3160	-990	2070	-3060	1.81	-200	2380	-2580	1.81	-1110	1790	-2900
1350	0.69	-2070	1650	-3720	-2070	1930	-4010	0.72	-1340	2080	-3420	0.72	-2020	1580	-3600
1250	0.45	-3060	1530	-4590	-3240	1760	-5000	0.5	-2440	1440	-3880	0.5	-2930	1370	-4300
1150	0.3	-4840	900	-5740	-4390	1550	-5940	0.32	-3030	940	-3970	0.32	-4080	920	-5000
1050	0.09	-5700	800	-6500	-5570	1350	-6920	0.1	-3500	800	-4300	0.1	-5100	700	-5800
950	0.03	-6730	770	-7500	-6600	1150	-7750	0.03	-4000	670	-4670	0.03	-6100	600	-6700
850	0.04	-7250	750	-8000	-7300	950	-8250	0.04	-4500	500	-5000	0.04	-7400	500	-7900
750	0.05	-7800	700	-8500	-8000	750	-8750	0.06	-5170	330	-5500	0.06	-8600	300	-8900
650	0.03	-8350	650	-9000	-8700	550	-9250	0.03	-5850	150	-6000	0.03	-9960	100	-10060
550	0.02	-8900	600	-9500	-9600	350	-9950	0.02	-6900	100	-7000	0.02	-10800	100	-10900
475	0.01	-9500	500	-10000	-10450	300	-10750	0.002	-7900	100	-8000	0.002	-11200	100	-1130
1635-450	**10.16**	*-1000*	*1960*	*-2960*	*-510*	*2370*	*-2880*	*10.670*	*330*	*2800*	*-2470*	*10.672*	*-450*	*2330*	*-2780*
recalc.	**10.16**	**-998**	**1961**	**-2960**	**-513**	**2366**	**-2879**	**10.672**	**336**	**2681**	**-2345**	**10.672**	**-455**	**2310**	**-2765**
Grabreen															
Altitude	**Area**	**1974, bn**	**1974, bw**	**1974, bs**	**1975, bn**	**1975, bw**	**1975, bs**								
1675	0.22	1640	2520	-880	980	2950	-1970								
1625	0.78	1550	2560	-1010	1180	3180	-2000								
1575	2.25	1290	2420	-1130	660	2750	-2090								
1525	1.84	1240	2370	-1130	580	2750	-2170								
1475	1.18	840	2220	-1380	430	2710	-2280								
1425	0.7	420	2100	-1680	80	2450	-2370								
1375	0.66	-70	1830	-1890	0	2420	-2420								
1325	0.55	-840	1430	-2270	-270	2230	-2500								
1275	0.43	-740	1660	-2400	-90	2410	-2500								
1225	0.46	-1380	1420	-2800	-590	1820	-2410								
1175	0.29	-1840	1370	-3210	590	2010	-2600								
1125	0.14	-1910	1790	-3700	-480	2450	-2930								
1050	0.04	-1630	2610	-4240	-270	3100	-3370								
1700-1000	*9.55*	*600*	*2160*	*-1560*	*370*	*2630*	*-2250*								

Marmaglaciaren														
Altitude	**Area**	**1995, bn**	**1995, bw**	**1995, bs**	**Altitude**	**Area**	**1996, bn**	**1996, bw**	**1996, bs**	**Altitude**	**Area**	**1997, bn**	**1997, bw**	**1997, bs**
					1790	0.0015	2580	2710	-130	1790	0.0004	3200	4200	-1000
1770	0.0053	1670	1800	-130	1770	0.005	2650	2780	-130	1770	0.0046	3100	4100	-1000
1750	0.0213	1730	1860	-130	1750	0.018	2540	2670	-130	1750	0.0175	3000	4100	-1100
1730	0.031	1710	1840	-130	1730	0.033	2290	2610	-320	1730	0.0304	2900	4100	-1200
1710	0.0427	1670	1800	-130	1710	0.042	2180	2560	-380	1710	0.0399	2700	4000	-1300
1690	0.1123	1480	1710	-230	1690	0.1045	2040	2420	-380	1690	0.1052	2600	3900	-1300
1670	0.199	1200	1580	-380	1670	0.205	1460	2040	-580	1670	0.2046	2100	3500	-1400
1650	0.203	870	1250	-380	1650	0.201	1080	1710	-630	1650	0.2009	1100	2600	-1500
1630	0.323	490	1010	-520	1630	0.33	-80	710	-790	1630	0.3257	-300	1300	-1600
1610	0.3067	310	940	-630	1610	0.3115	-460	420	-880	1610	0.3054	-400	1200	-1600
1590	0.1947	350	1040	-690	1590	0.1955	-260	620	-880	1590	0.1908	-100	1600	-1700
1570	0.2307	110	990	-880	1570	0.23	-480	610	-1090	1570	0.2263	-300	1500	-1800
1550	0.3517	140	1020	-880	1550	0.353	-540	590	-1130	1550	0.3599	-600	1300	-1900
1530	0.3667	10	980	-970	1530	0.3655	-620	540	-1160	1530	0.3546	-600	1300	-1900
1510	0.1913	-20	1110	-1130	1510	0.1925	-690	690	-1380	1510	0.1862	-500	1500	-2000
1490	0.1993	-110	1060	-1170	1490	0.198	-720	660	-1380	1490	0.1944	-700	1400	-2100
1470	0.2563	-390	990	-1380	1470	0.252	-1040	470	-1510	1470	0.2552	-900	1300	-2200
1450	0.2143	-450	930	-1380	1450	0.2165	-1210	420	-1630	1450	0.218	-700	1500	-2200
1430	0.1617	-590	920	-1510	1430	0.1585	-1110	520	-1630	1430	0.1683	-800	1500	-2300
1410	0.153	-660	970	-1630	1410	0.152	-1240	580	-1820	1410	0.1681	-800	1600	-2400
1390	0.1457	-790	1000	-1790	1390	0.149	-1490	640	-2130	1390	0.1612	-800	1700	-2500
1370	0.148	-810	1070	-1880	1370	0.147	-1340	790	-2130	1370	0.1646	-600	1900	-2500
1350	0.093	-750	1130	-1880	1350	0.096	-1230	900	-2130	1350	0.1145	-400	2200	-2600
1330	0.053	-910	970	-1880	1330	0.0535	-1070	1060	-2130	1330	0.0417	-400	2300	-2700
1780-1320	*4.0037*	*100*	*1080*	*-980*	*1780-1320*	*4.0105*	*-390*	*820*	*-1210*	*1780-1320*	*4.0384*	*-200*	*1700*	*-1900*
recalc.	**4.0037**	**95**	**1084**	**-989**	**recalc.**	**4.0105**	**-386**	**824**	**-1210**	**recalc.**	**4.0384**	**-178**	**1747**	**-1925**
Riukojietna									**Parteglaciaren**					
Altitude	**Area**	**1996, bn**	**1996, bw**	**1996, bs**	**1997, bn**	**1997, bw**	**1997, bs**		**Altitude**	**Area**	**1997, bn**	**1997, bw**	**1997, bs**	
1450	0.516	70	1200	-1130	-730	1650	-2380		1825	0.005	1150	3250	-2100	
1430	0.676	80	1210	-1130	-640	1740	-2380		1775	0.054	370	2670	-2300	
1410	0.387	80	1380	-1300	-740	1830	-2570		1725	0.146	180	2480	-2300	
1390	0.42	70	1450	-1380	-780	1850	-2630		1675	0.42	-230	2070	-2300	
1370	0.444	110	1490	-1380	-810	1820	-2630		1625	0.707	-400	1930	-2330	
1350	0.428	20	1500	-1480	-920	1710	-2630		1575	0.931	-710	1790	-2500	
1330	0.512	-90	1540	-1630	-1260	1620	-2880		1525	1.317	-890	1610	-2500	
1310	0.391	-180	1450	-1630	-1290	1590	-2880		1475	1.096	-790	1710	-2500	
1290	0.259	-190	1440	-1630	-1420	1460	-2880		1425	1.256	-930	1680	-2600	
1270	0.189	-450	1430	-1880	-1400	1530	-2930		1375	1.348	-1100	1600	-2700	
1250	0.133	-440	1440	-1880	-1470	1660	-3130		1325	0.945	-1100	1600	-2700	
1230	0.094	-420	1460	-1880	-1460	1670	-3130		1275	0.701	-1070	1630	-2700	
1210	0.065	-680	1380	-2060	-1230	1900	-3130		1225	0.499	-1180	1700	-2880	
1190	0.06	-750	1380	-2130	-1360	1910	-3270		1175	0.307	-1170	1730	-2900	
1170	0.045	-750	1380	-2130	-1630	1750	-3380		1125	0.128	-1150	1750	-2900	
1150	0.029	-750	1380	-2130	-1630	1750	-3380		1075	0.013	-1150	1750	-2900	
1140-1460	*4.648*	*-60*	*1400*	*-1450*	*-980*	*1700*	*-2680*		**1850-1050**	*9.913*	*-870*	*1720*	*-259*	
recalc.	**4.648**	**-61**	**1395**	**-1457**	**-984**	**1703**	**-2687**							

Storglaciaren																
Altitude	**Area**	**1971, bn**	**1971, bw**	**1971, bs**	**1972, bn**	**1972, bw**	**1972, bs**	**1973, bn**	**1973, bw**	**1973, bs**	**1974, bn**	**1974, bw**	**1974, bs**	**1975, bn**	**1975, bw**	**1975, bs**
1650	0.37	1055	2099	-1044	933	2289	-1356	1977	2786	-809	965	2016	-1051	3039	3263	-224
1550	0.86	677	1750	-1073	287	2102	-1814	1184	2364	-1180	553	1773	-1220	2342	2831	-489
1450	0.45	-108	1310	-1418	-1084	1452	-2536	-182	1472	-1654	-183	1375	-1558	1225	1984	-759
1350	0.96	-965	858	-1823	-2325	653	-2977	-1143	929	-2072	-1179	799	-1978	-55	1045	-1110
1250	0.35	-1381	976	-2358	-2707	668	-3376	-1280	1048	-2328	-1689	765	-2454	-359	1109	-1468
1150	0.08	-1418	1095	-2513	-2187	1187	-3374	-381	1786	-2167	-1265	1168	-2433	433	1817	-1383
1828-1125	*3.07*	*-190*	*1340*	*-1540*	*-1040*	*1390*	*-2430*	*40*	*1670*	*-1630*	*-340*	*1310*	*-1650*	*1170*	*1980*	*-810*
recalc	**3.07**	**-195**	**1343**	**-1539**	**-1058**	**1389**	**-2447**	**30**	**1670**	**-1640**	**-350**	**1309**	**-1658**	**1152**	**1978**	**-826**
Storglaciaren cont.																
Altitude	**Area**	**1981, bn**	**1981, bw**	**1981, bs**	**1982, bn**	**1982, bw**	**1982, bs**	**1983, bn**	**1983, bw**	**1983, bs**	**1984, bn**	**1984, bw**	**1984, bs**	**1985, bn**	**1985, bw**	**1985, bs**
1710	0.002	1658	1784	-126	2328	2728	-400	2544	2544	0	3201	3575	-374	1648	2269	-621
1690	0.061	1541	1793	-252	2250	2750	-500	2294	2294	0	2267	2642	-374	1629	2365	-737
1670	0.077	1386	1762	-376	2090	2715	-625	2270	2395	-125	2349	2850	-500	1379	2268	-889
1650	0.122	1464	1839	-376	1962	2587	-625	2088	2463	-375	2331	3108	-777	1214	2100	-887
1630	0.147	1401	1901	-501	1737	2362	-625	2099	2474	-375	2148	3079	-931	1136	2143	1007
1610	0.134	1179	1804	-625	1580	2205	-625	1696	2321	-625	2073	3074	-1001	160	1602	-1142
1590	0.134	1071	1696	-625	1169	2044	-875	1593	2218	-625	1815	2840	-1026	266	1374	-1109
1570	0.12	566	1442	-875	1074	1955	-881	1510	2135	-625	1498	2621	-1123	-9	1271	-1280
1550	0.096	365	1240	-875	1105	2056	-951	1042	1925	-883	1239	2453	-1214	-204	1163	-1366
1530	0.099	106	1232	-1125	1188	2120	-932	932	1854	-923	1142	2377	-1235	23	1262	-1239
1510	0.166	141	1267	-1125	1201	2127	-926	1087	1987	-900	1341	2481	-1347	61	1270	-1219
1490	0.179	-159	1091	-1255	945	2006	-1061	1021	2004	-983	614	2030	-1416	-611	901	-1512
1470	0.089	-488	888	-1375	46	1210	-1164	333	1461	-1128	-70	1552	-1622	-932	790	-1723
1450	0.062	-417	1065	-1482	268	1491	-1224	181	1367	-1186	-425	1431	-1856	-735	964	-1699
1430	0.071	-204	1311	-1515	204	1502	-1298	412	1602	-1190	-178	1781	-1959	-872	912	-1784
1410	0.102	-473	1090	-1563	-252	1136	-1378	196	1456	-1260	-546	1503	-2049	-1125	741	-1866
1390	0.208	-818	781	-1597	-490	931	-1421	-583	875	-1458	-1123	982	-2105	-1425	490	-1915
1370	0.266	-885	871	-1757	-650	860	-1510	-859	715	-1574	-1159	868	-2027	-1531	460	-1991
1350	0.247	-1194	636	-1830	-850	670	-1520	-1207	536	-1743	-1389	765	-2154	-1817	350	-2167
1330	0.149	-1227	710	-1937	-850	764	-1620	-1461	489	-1950	-1421	833	-2254	-1903	445	-2348
1310	0.088	-1021	993	-2014	-776	895	-1671	-1151	701	-1851	-851	1404	-2254	-1790	545	-2336
1290	0.073	-1235	829	-2065	-757	900	-1657	-908	877	-1786	-1496	1090	-2586	-1939	432	-2371
1270	0.085	-1269	796	-2066	-1127	844	-1971	-1170	710	-1881	-1973	888	-2861	-2003	527	-2530
1250	0.068	-1245	908	-2153	-1044	1017	-2061	-1263	807	-2070	-1661	1182	-2844	-2060	599	-2659
1230	0.053	-994	1237	-2231	-959	1094	-2053	-1078	1061	-2139	-1090	1729	-2818	-2023	664	-2687
1210	0.04	-1184	1061	-2245	-926	1140	-2066	-920	1288	-2208	-1079	1801	-2880	-2025	745	-2770
1190	0.024	-1267	1039	-2306	-751	1232	-1983	-997	1251	-2248	-1050	1831	-2881	-1981	868	-2849
1179	0.009	-927	1318	-2245	-751	1311	-1875	-978	1033	-2011	-709	2161	-2869	-1829	1046	-2875
1150	0.01	-767	1367	-2133	-500	1375	-1875	-830	1054	-1875	-450	2419	-2869	-1758	1069	-2827
1828-1125	*3.00*	*-193*	*1163*	*-1356*	*263*	*1496*	*-1233*	*283*	*1472*	*-1190*	*120*	*1828*	*-1708*	*-723*	*985*	*-1708*

Storglac. cont.														
Altitude	**Area**	**1986, bn**	**1986, bw**	**1986, bs**	**1987, bn**	**1987, bw**	**1987, bs**	**1988, bn**	**1988, bw**	**1988, bs**	**1989, bn**	**1989, bw**	**1989, bs**	**1990, bn**
1710	0.014	2202	3077	-875	2872	3939	-1067	983	2441	-1458	5164	6043	-879	5093
1690	0.047	2419	3309	-890	1821	2735	-914	687	2317	-1630	3756	4430	-674	3281
1670	0.076	2492	3371	-880	1841	2741	-899	796	2321	-1525	3094	3614	-520	3520
1650	0.123	2536	3540	-1004	1937	2810	-874	870	2333	-1463	3612	4205	-593	2873
1630	0.146	2120	3245	-1125	1888	2764	-876	789	2276	-1487	3734	4389	-655	2799
1610	0.142	1812	2935	-1123	1662	2538	-876	530	2083	-1554	3471	4032	-560	2330
1590	0.135	1460	2588	-1128	1534	2507	-973	327	2016	-1689	2563	3438	-875	1996
1570	0.113	694	2014	-1320	996	2158	-1163	97	2006	-1906	2169	3079	-910	1933
1550	0.099	310	1774	-1464	876	1930	-1054	-201	1811	-2012	1934	2837	-903	1639
1530	0.103	574	1892	-1317	1175	2362	-1187	-287	1729	-2017	2470	3351	-881	1637
1510	0.184	831	2140	-1309	1031	2098	-1067	-111	1741	-1852	2438	3298	-860	1588
1490	0.169	38	1565	-1527	704	1767	-1063	-355	1641	-1996	1579	2705	-1126	1046
1470	0.094	-518	1113	-1632	375	1464	-1088	-855	1310	-2165	679	1798	-1119	362
1450	0.064	-427	1244	-1671	526	1580	-1055	-706	1513	-2219	1016	2252	-1236	381
1430	0.068	-322	1540	-1862	751	1832	-1080	-749	1563	-2312	1528	2956	-1428	588
1410	0.103	-667	1212	-1879	454	1548	-1094	-1134	1226	-2360	1594	3013	-1419	114
1390	0.218	-894	984	-1878	-211	1116	-1327	-1748	828	-2577	387	2007	-1620	-465
1370	0.274	-1208	773	-1981	-269	990	-1259	-1700	800	-2500	-93	1594	-1688	-776
1350	0.253	-1414	618	-2032	-593	814	-1407	-1986	648	-2634	-484	1271	-1755	-1132
1330	0.151	-1597	536	-2133	-681	902	-1583	-2072	693	-2766	-796	1233	-2029	-1079
1310	0.089	-1313	949	-2282	-268	1269	-1536	-1825	990	-2815	-98	1789	-1887	-733
1290	0.076	-1336	901	-2237	-533	1008	-1542	-2271	825	-3096	-591	1443	-2034	-1153
1270	0.086	-1582	717	-2299	-634	1000	-1635	-2457	697	-3153	-1001	1268	-2269	-1300
1250	0.069	-1588	788	-2376	-446	1136	-1582	-2236	867	-3103	-922	1219	-2141	-1168
1230	0.053	-1624	933	-2617	-383	1401	-1784	-2119	951	-3070	-372	1811	-2183	-860
1210	0.041	-1586	1065	-2651	-532	1236	-1768	-2266	866	-3132	-83	2016	-2099	-700
1190	0.022	-1527	1074	-2601	-470	1379	-1848	-2050	1014	-3064	35	1620	-1586	-455
1170	0.011	-1455	1218	-2673	-176	1635	-1811	-2073	1364	-3436	356	1902	-1545	91
1150	0.012	-1216	1458	-2675	-250	1625	-1875	-1992	1358	-3350	258	711	-452	225
1828-1125	*3.038*	*-76*	*1609*	*-1685*	*475*	*1694*	*-1219*	*-839*	*1424*	*-2236*	*1240*	*2580*	*-1340*	*593*

Storglaciaren												
Altitude	**Area**	**1990, bn**	**1990, bw**	**1990, bs**	**Area**	**1991, bn**	**1991, bw**	**1991, bs**	**Area**	**1992, bn**	**1992, bw**	**1992, bs**
1710	0.014	5093	6536	-1443	0.012	2440	2480	-40	0.02	4376	4752	-376
1690	0.047	3281	4404	-1123	0.06	2590	2740	-150	0.053	3296	3678	-382
1670	0.076	3520	4714	-1195	0.086	3500	3730	-230	0.091	3527	3917	-390
1650	0.123	2873	3850	-977	0.114	2600	2980	-380	0.12	3594	3990	-396
1630	0.146	2799	3791	-992	0.149	2550	3040	-490	0.145	3391	3794	-403
1610	0.142	2330	3277	-947	0.122	2070	2670	-600	0.135	3163	3573	-410
1590	0.135	1996	3083	-1087	0.139	1700	2420	-720	0.133	2546	3213	-667
1570	0.113	1933	3075	-1142	0.119	1140	1970	-830	0.117	2309	2984	-675
1550	0.099	1639	2746	-1107	0.086	940	1890	-950	0.1	1954	2635	-681
1530	0.103	1637	2930	-1293	0.102	860	1910	-1050	0.103	1860	2722	-862
1510	0.184	1588	2846	-1258	0.186	1120	2290	-1170	0.178	1992	2883	-891
1490	0.169	1046	2541	-1495	0.165	540	1810	-1270	0.168	1185	2311	-1126
1470	0.094	362	1832	-1470	0.093	-10	1380	-1390	0.092	557	1971	-1414
1450	0.064	381	2044	-1663	0.064	20	1520	-1500	0.064	610	2065	-1455
1430	0.068	588	2303	-1715	0.072	100	1720	-1620	0.07	978	2391	-1413
1410	0.103	114	1969	-1855	0.115	-270	1490	-1760	0.102	439	2046	-1607
1390	0.218	-465	1491	-1956	0.22	-880	1000	-1880	0.217	-219	1548	-1767
1370	0.274	-776	1244	-2019	0.267	-1090	900	-1990	0.269	-591	1245	-1836
1350	0.253	-1132	1025	-2157	0.251	-1340	760	-2100	0.151	-988	1025	-2013
1330	0.151	-1079	1100	-2179	0.149	-1450	760	-2210	0.149	-1048	1049	-2097
1310	0.089	-733	1410	-2163	0.091	-1280	1050	-2330	0.087	-789	1360	-2149
1290	0.076	-1153	1458	-2611	0.079	-1470	990	-2460	0.078	-693	1430	-2123
1270	0.086	-1300	1126	-2426	0.073	-1680	880	-2560	0.086	-1191	1056	-2247
1250	0.069	-1168	1209	-2377	0.074	-1690	990	-2680	0.069	-1188	1189	-2377
1230	0.053	-860	1445	-2306	0.053	-1590	1210	-2800	0.052	-1031	1386	-2417
1210	0.041	-700	1576	-2276	0.04	-1600	1320	-2920	0.04	-762	1675	-2437
1190	0.022	-455	1718	-2173	0.014	-1510	1500	-3010	0.021	-323	2082	-2405
1170	0.011	91	2309	-2218	0.016	-1560	1560	-3120	0.011	-65	2250	-2315
1150	0.012	225	1967	-1742	0.009	-1040	2220	-3260	0.009	-72	2250	-2322
1828-1125	*3.038*	*593*	*2259*	*-1666*	*3.01*	*170*	*1680*	*-1510*	*3.01*	*880*	*2235*	*-1356*

Storglac. cont.												
Altitude	**Area**	**1993, bn**	**1993, bw**	**1993, bs**	**Altitude**	**Area**	**1994, bn**	**1994, bw**	**1994, bs**	**1995, bn**	**1995, bw**	**1995, bs**
1710	0.029	3620	4250	-630	1710	0.029	1700	2270	-570	3430	3670	-240
1690	0.059	3100	3730	-630	1690	0.059	1400	2000	-600	3540	3770	-230
1670	0.106	3210	3840	-630	1670	0.077	1490	2170	-680	3410	3690	-280
1650	0.144	3310	3940	-630	1650	0.134	1380	2110	-730	3310	3610	-300
1630	0.152	2720	3390	-670	1630	0.152	1190	1980	-790	2960	3370	-410
1610	0.117	2510	3330	-820	1610	0.136	830	1700	-870	2380	2960	-580
1590	0.123	2350	3290	-940	1590	0.142	460	1410	-950	2040	2680	-640
1570	0.119	2120	2990	-870	1570	0.106	240	1230	-990	1740	2410	-670
1550	0.103	1770	2760	-990	1550	0.097	0	1160	-1160	1510	2280	-770
1530	0.105	2070	3070	-1000	1530	0.103	110	1260	-1150	1540	2320	-780
1510	0.223	2230	3210	-980	1510	0.225	300	1370	-1070	1740	2230	-490
1490	0.15	1130	2300	-1170	1490	0.145	-420	880	-1300	340	1660	-1320
1470	0.085	590	1940	-1350	1470	0.087	-800	750	-1550	230	1350	-1120
1450	0.061	3300	2020	1280	1450	0.064	-580	950	-1530	460	1640	-1180
1430	0.073	740	2070	-1330	1430	0.076	-400	1070	-1470	640	1910	-1270
1410	0.125	340	1790	-1450	1410	0.116	-770	850	-1620	260	1690	-1430
1390	0.237	-200	1300	-1500	1390	0.235	-1190	550	-1740	-330	1260	-1590
1370	0.28	-210	1260	-1470	1370	0.277	-1240	500	-1740	-290	1180	-1470
1350	0.25	-660	940	-1600	1350	0.245	-1350	390	-1740	-780	930	-1710
1330	0.143	-480	1120	-1600	1330	0.144	-1320	520	-1840	-1030	980	-2010
1310	0.098	-100	1500	-1600	1310	0.094	-940	810	-1750	-670	1460	-2130
1290	0.081	-430	1270	-1700	1290	0.083	-1360	680	-2040	-1090	1170	-2260
1270	0.081	-870	1010	-1880	1270	0.084	-1610	600	-2210	-1320	1020	-2340
1250	0.066	-550	1450	-2000	1250	0.064	-1460	840	-2300	-1130	1310	-2440
1230	0.055	-270	1690	-1960	1230	0.051	-1520	940	-2460	-1200	1350	-2550
1210	0.037	-110	1770	-1880	1210	0.035	-1640	1000	-2640	-1280	1310	-2590
1190	0.018	150	2030	-1880	1190	0.017	-1480	1230	-2710	-1440	1400	-2840
1170	0.01	650	2530	-1880	1170	0.007	-1250	1410	-2660	-1380	1500	-2880
1150	0.004	870	2750	-1880	1150	0.003	-1050	1580	-2630	-1250	1630	-2880
1828-1125	*3.12*	*1000*	*2250*	*-1250*		*3.1*	*-370*	*1060*	*-1430*	*700*	*1930*	*-1230*

Storglac. cont.									Rabots				R
Altitude	**Area**	**1996, bn**	**1996, bw**	**1996, bs**	**1997, bn**	**1997, bw**	**1997, bs**		**Altitude**	**Area**	**1986, bn**	**1986, bw**	**1986, bs**
1710	0.053	2710	3340	-630	640	2900	-2260		1710	0.07	1694	2250	-556
1690	0.062	2540	3180	-640	570	2840	-2270		1690	0.02	1623	2250	-627
1670	0.088	2580	3230	-650	600	2830	-2230		1670	0.032	1578	2250	-672
1650	0.129	2470	3100	-630	630	2800	-2170		1650	0.026	1553	2266	-713
1630	0.162	2230	2810	-580	800	2860	-2060		1630	0.062	1345	2127	-783
1610	0.134	1580	2180	-600	620	2710	-2090		1610	0.04	1275	2102	-827
1590	0.142	1040	1780	-740	540	2640	-2100		1590	0.06	1087	1968	-881
1570	0.101	710	1560	-850	240	2380	-2140		1570	0.083	963	1900	-937
1550	0.103	500	1460	-960	150	2350	-2200		1550	0.115	923	1916	-993
1530	0.108	510	1550	-1040	110	2420	-2310		1530	0.156	688	1729	-1049
1510	0.228	660	1780	-1120	340	2700	-2360		1510	0.209	505	1598	-1093
1490	0.149	-310	1040	-1350	-300	1970	-2270		1490	0.164	320	1464	-1144
1470	0.082	-760	820	-1580	-920	1430	-2350		1470	0.16	217	1417	-1201
1450	0.066	-560	1080	-1640	-960	1470	-2430		1450	0.15	288	1545	-1258
1430	0.079	-380	1280	-1660	-760	1720	-2480		1430	0.11	337	1655	-1318
1410	0.118	-850	1030	-1880	-710	1770	-2480		1410	0.098	222	1595	-1372
1390	0.254	-1520	640	-2160	-860	1560	-2420		1390	0.229	40	1462	-1423
1370	0.32	-1650	510	-2160	-1290	1280	-2570		1370	0.269	-149	1325	-1474
1350	0.271	-2000	360	-2360	-1720	990	-2710		1350	0.226	-419	1104	-1523
1330	0.15	-2230	330	-2560	-1920	980	-2900		1330	0.155	-597	986	-1583
1310	0.095	-2210	530	-2740	-1890	1200	-3090		1310	0.135	-509	1133	-1641
1290	0.081	-2330	520	-2850	-2190	1030	-3220		1290	0.19	-533	1162	-1694
1270	0.084	-2540	390	-2930	-2560	900	-3460		1270	0.254	-717	1025	-1742
1250	0.064	-2300	670	-2970	-2270	1180	-3450		1250	0.182	-870	929	-1799
1230	0.053	-2190	800	-2990	-2240	1040	-3280		1230	0.183	-968	884	-1852
1210	0.036	-2260	770	-3030	-2110	1150	-3260		1210	0.114	-1204	700	-1905
1190	0.017	-1960	1070	-3030	-1690	1560	-3250		1190	0.085	-1280	675	-1955
1170	0.008	-1490	1510	-3000	-1190	2030	-3220		1179	0.089	-1430	576	-2007
1150	0.003	-1320	1680	-3000	-690	2510	-3200		1150	0.061	-1546	508	-2054
1828-1125	*3.24*	*-360*	*1300*	*-1660*	*-630*	*1870*	*-2500*		1130	0.066	-1673	441	-2114
									1110	0.042	-1817	354	-2171
									1090	0.045	-1833	402	-2235
									1720-1090	*3.816*	*-188*	*1280*	*-1468*
									recalc.	**3.880**	**-158**	**1295**	**-1454**

Rabots cont.																Rabots cont.
Altitude	**Area**	**1987, bn**	**1987, bw**	**1987, bs**	**Altitude**	**Area**	**1988, bn**	**1988, bw**	**1988, bs**	**1989, bn**	**1989, bw**	**1989, bs**	**1990, bn**	**1990, bw**	**1990, bs**	**Altitude**
1920	0.006	1833	1833	0	1925	0.005	2122	2122	0	2939	3367	-429	2653	2857	-204	1930
1880	0.007	1857	1857	0	1875	0.01	1913	2126	-214	2330	2670	-340	2718	2913	-194	1910
1840	0.009	1889	1889	0	1825	0.01	1728	2126	-398	2400	2750	-350	2750	2950	-200	1890
1800	0.01	1800	1800	0	1775	0.014	1526	2126	-600	2489	2852	-364	2741	2963	-222	1870
1760	0.023	1739	1783	-43	1725	0.05	1335	2125	-790	2424	2778	-354	2752	2950	-198	1850
1720	0.039	1641	1769	-128	1675	0.065	1135	2126	-991	2571	2948	-377	2868	3129	-261	1830
1680	0.049	1510	1755	-245	1625	0.112	930	2110	-1180	2221	2654	-433	2159	2419	-260	1810
1640	0.082	1341	1671	-329	1590	0.065	663	1983	-1320	2025	2552	-527	2148	2782	-634	1790
1600	0.116	1190	1612	-422	1570	0.083	419	1819	-1400	1971	2556	-585	1969	2725	-756	1770
1560	0.184	1076	1598	-522	1550	0.099	190	1670	-1480	1823	2474	-651	1650	2500	-850	1750
1520	0.378	876	1487	-611	1530	0.162	-103	1446	-1550	1643	2391	-747	817	1777	-960	1730
1480	0.333	658	1366	-709	1510	0.211	-190	1440	-1630	1382	2172	-790	970	2044	-1074	1710
1440	0.243	486	1284	-798	1490	0.181	-435	1275	-1710	1148	1982	-834	708	1897	-1189	1690
1400	0.323	415	1316	-901	1470	0.148	-617	1173	-1790	870	1751	-881	528	1813	-1286	1670
1360	0.512	182	1172	-990	1450	0.126	-709	1161	-1870	716	1703	-987	483	1892	-1409	1650
1320	0.271	-111	970	-1081	1430	0.109	-854	1085	-1940	827	1853	-1027	394	1896	-1502	1630
1280	0.439	-262	918	-1180	1410	0.103	-1012	1009	-2020	898	2105	-1207	311	1922	-1612	1610
1240	0.366	-407	863	-1270	1390	0.216	-1085	1015	-2100	837	2016	-1179	222	1948	-1726	1590
1200	0.22	-600	768	-1368	1370	0.27	-1151	1029	-2180	812	2030	-1218	-163	1676	-1839	1570
1160	0.158	-785	677	-1462	1350	0.235	-1283	977	-2260	634	1908	-1274	-293	1640	-1933	1550
1120	0.097	-1062	495	-1557	1330	0.138	-1622	708	-2330	265	1605	-1339	-783	1247	-2030	1530
1080	0.042	-1286	357	-1643	1310	0.135	-1689	721	-2410	210	1609	-1399	-910	1170	-2080	1510
					1290	0.213	-1664	826	-2490	101	1564	-1462	-873	1399	-2272	1490
					1270	0.222	-1804	766	-2570	-61	1488	-1548	-930	1402	-2333	1470
					1250	0.196	-1900	750	-2650	-193	1359	-1552	-1065	1355	-2420	1450
					1230	0.17	-2035	686	-2720	-499	1074	-1572	-807	1319	-2126	1430
					1210	0.128	-2143	657	-2800	-733	972	-1705	-1620	1051	-2671	1410
					1190	0.09	-2356	524	-2880	-735	949	-1684	-1911	872	-2782	1390
					1170	0.09	-2455	505	-2960	-878	798	-1677	-1962	936	-2899	1370
					1150	0.065	-2550	490	-3040	-1066	590	-1655	-2221	781	-3002	1350
					1130	0.047	-2583	528	-3110	-1239	504	-1744	-2309	678	-2987	1330
					1110	0.037	-2714	477	-3191	-1283	422	-1706	-2480	654	-3134	1310
					1090	0.018	-2888	382	-3270	-713	225	-938	-562	169	-730	1290
1950-1080	*3.907*	*223*	*1164*	*-941*	1950-1080	*3.824*	*-1052*	*1075*	*-2127*	*615*	*1780*	*-1165*	*-38*	*1689*	*-1727*	1270
	3.907	**223**	**1164**	**-941**		**3.823**	**-1052**	**1075**	**-2126**	**615**	**1780**	**-1165**	**-33**	**1690**	**-1723**	1250
																1230
																1210
																1190
																1170
																1150
																1130
																1110
																1090
																1070
																1950-1060
																recalc.

Rabots cont.											
Area	**1991, bn**	**1991, bw**	**1991, bs**	**Altitude**	**Area**	**1992, bn**	**1992, bw**	**1992, bs**	**1993, bn**	**1993, bw**	**1993, bs**
0.001	1500	2250	-750	1930	0.001	1755	2510	-755	2614	3347	-733
0.004	1500	2250	-750	1910	0.004	1755	2510	-755	2611	3344	-733
0.004	1500	2250	-750	1890	0.003	1746	2505	-759	2633	3354	-721
0.005	1500	2250	-750	1870	0.004	1746	2505	-759	2634	3355	-721
0.006	1500	2250	-750	1850	0.005	1741	2505	-764	2632	3353	-721
0.006	1500	2250	-750	1830	0.004	1735	2505	-770	2632	3353	-721
0.006	1500	2250	-750	1810	0.004	1735	2505	-770	2632	3353	-721
0.007	1500	2250	-750	1790	0.004	1722	2504	-782	2633	3355	-722
0.011	1500	2250	-750	1770	0.005	1722	2504	-782	2628	3350	-722
0.019	1500	2250	-750	1750	0.013	1711	2502	-791	2530	3255	-725
0.024	1500	2250	-750	1730	0.021	1705	2501	-796	2474	3200	-726
0.024	1500	2250	-750	1710	0.021	1705	2501	-796	2475	3201	-726
0.029	1500	2250	-750	1690	0.025	1621	2428	-807	2172	2898	-726
0.027	1500	2250	-750	1670	0.024	1621	2428	-807	2172	2898	-726
0.035	1500	2250	-750	1650	0.032	1600	2413	-813	2102	2828	-726
0.048	1500	2250	-750	1630	0.045	1582	2400	-818	2038	2763	-725
0.054	1500	2250	-750	1610	0.005	1582	2400	-818	2038	2763	-725
0.062	1032	2250	-1218	1590	0.065	1441	2270	-829	2062	2786	-724
0.091	1001	2212	-1211	1570	0.083	1398	2240	-842	1982	2707	-725
0.104	905	2115	-1210	1550	0.099	1338	2190	-852	1956	2682	-726
0.168	747	1961	-1214	1530	0.162	1236	2100	-864	1895	2620	-725
0.199	503	1773	-1270	1510	0.211	1154	2030	-876	1850	2575	-725
0.174	200	1635	-1435	1490	0.181	1042	1920	-878	1317	2042	-725
0.152	154	1559	-1405	1470	0.148	904	1830	-926	952	1837	-885
0.134	146	1619	-1473	1450	0.126	729	1840	-1111	1046	2021	-975
0.116	147	1634	-1487	1430	0.109	733	1860	-1127	1019	1994	-975
0.104	244	1716	-1472	1410	0.103	682	1790	-1108	849	2074	-1225
0.195	459	1801	-1342	1390	0.216	809	1880	-1071	1010	2305	-1295
0.271	209	1661	-1452	1370	0.27	464	1780	-1316	598	2105	-1507
0.262	-143	1548	-1691	1350	0.235	192	1640	-1448	96	1727	-1631
0.145	-582	1240	-1822	1330	0.138	-18	1460	-1478	-513	1203	-1716
0.12	-815	1092	-1907	1310	0.135	-30	1460	-1490	-159	1566	-1725
0.193	-747	1291	-2038	1290	0.213	-111	1390	-1501	-137	1588	-1725
0.221	-809	1255	-2064	1270	0.223	-513	1260	-1773	-488	1386	-1874
0.194	-1064	1034	-2098	1250	0.196	-1063	1210	-2273	-916	1126	-2042
0.174	-1130	1069	-2199	1230	0.17	-1347	1100	-2447	-915	1101	-2016
0.125	-1376	954	-2330	1210	0.128	-1804	980	-2784	-854	1095	-1949
0.097	-1910	773	-2683	1190	0.09	-2358	910	-3268	-727	998	-1725
0.081	-2237	741	-2978	1170	0.09	-2600	880	-3480	-847	878	-1725
0.065	-2726	593	-3319	1150	0.065	-2711	870	-3581	-875	850	-1725
0.049	-3070	486	-3556	1130	0.047	-2712	880	-3592	-875	850	-1725
0.034	-2776	606	-3382	1110	0.037	-2734	870	-3604	-875	849	-1724
0.023	-2500	750	-3250	1090	0.018	-2732	880	-3612	-871	853	-1724
0.007	-2500	750	-3250	**1950-1060**	*3.820*	*110*	*1650*	*-1540*	*510*	*1860*	*-1350*
3.820	*-202*	*1508*	*-1710*	**recalc.**	**3.778**	**91**	**1641**	**-1550**	**487**	**1848**	**-1361**
3.870	**-200**	**1508**	**-1709**								

Rabots cont.									Rhone							
Altitude	**Area**	**1994, bn**	**1994, bw**	**1994, bs**	**1995, bn**	**1995, bw**	**1995, bs**		**Altitude**	**Area**	**1980, bn**	**1980, bw**	**1981, bn**	**1981, bw**	**1982, bn**	**1982, bw**
1930	0.001	1250	1401	-151	2125	2375	-250		3565	0.424	4760	3190	3920	3400	3750	3910
1910	0.004	1250	1401	-151	2125	2375	-250		3450	0.811	4310	3060	3320	3090	3280	3550
1890	0.004	1250	1401	-151	2125	2375	-250		3350	1.139	3550	2910	2590	2860	2500	3430
1870	0.005	1250	1401	-151	2125	2375	-250		3250	1.601	3180	2800	2300	2700	2100	3310
1850	0.006	1231	1382	-151	2125	2375	-250		3150	1.542	2030	2590	1240	2650	1060	3240
1830	0.006	1229	1380	-151	2125	2375	-250		3050	1.803	1100	2460	430	2520	50	3150
1810	0.006	1229	1380	-151	2125	2375	-250		2950	2.615	900	2390	210	2130	-280	2900
1790	0.007	1233	1384	-151	2125	2375	-250		2850	1.615	790	2210	-80	1720	-670	2540
1770	0.011	1239	1390	-151	2125	2375	-250		2750	1.378	-130	2000	-1030	1540	-1640	2320
1750	0.019	1243	1394	-151	1901	2151	-250		2650	1.902	-810	1870	-1700	1290	-2400	2140
1730	0.024	1240	1391	-151	1917	2167	-250		2550	1.063	-1430	1700	-2130	1110	-2980	1970
1710	0.024	1235	1386	-151	1936	2186	-250		2450	0.589	-2500	1510	-3040	1010	-3900	1850
1690	0.029	953	1354	-401	1944	2194	-250		2350	0.704	-3180	1380	-3930	680	-4810	1480
1670	0.027	968	1369	-401	1975	2225	-250		2290	0.194	-5160	1160	-5680	800	-6260	1400
1650	0.035	961	1362	-401	1981	2231	-250		*2280-3629*	*17.380*	*890*	*2310*	*90*	*2040*	*-380*	*2750*
1630	0.048	961	1362	-401	1963	2213	-250		**recalc.**	**17.380**	**888**	**2306**	**87**	**2042**	**-375**	**2754**
1610	0.054	920	1321	-401	1958	2208	-250									
1590	0.062	898	1299	-401	1868	2183	-315									
1570	0.09	655	1284	-629	1422	2172	-750									
1550	0.1	521	1172	-651	1298	2048	-750									
1530	0.167	451	1102	-651	1192	1942	-750									
1510	0.199	341	995	-654	1132	1882	-750									
1490	0.176	233	897	-664	874	1624	-750									
1470	0.152	80	852	-772	324	1439	-1115									
1450	0.132	106	892	-786	188	1419	-1231									
1430	0.116	43	944	-901	257	1507	-1250									
1410	0.105	50	951	-901	316	1566	-1250									
1390	0.196	97	998	-901	307	1557	-1250									
1370	0.269	79	988	-909	225	1536	-1311									
1350	0.263	-3	959	-962	-18	1388	-1406									
1330	0.145	-222	834	-1056	-550	1144	-1694									
1310	0.122	-375	747	-1122	-498	1174	-1672									
1290	0.194	-273	803	-1076	-382	1231	-1613									
1270	0.221	-396	796	-1192	-546	1142	-1688									
1250	0.199	-611	733	-1344	-941	1006	-1947									
1230	0.177	-785	757	-1542	-1091	985	-2076									
1210	0.125	-1026	673	-1699	-1311	939	-2250									
1190	0.096	-1260	589	-1849	-1367	883	-2250									
1170	0.082	-1466	499	-1965	-1634	894	-2528									
1150	0.065	-1646	455	-2101	-1941	809	-2750									
1130	0.049	-1750	401	-2151	-2033	717	-2750									
1110	0.034	-1890	401	-2291	-2081	669	-2750									
1090	0.023	-2000	401	-2401	-2125	625	-2750									
1070	0.007	-2000	401	-2401	-2125	625	-2750									
1950-1060	*3.880*	*-100*	*910*	*-1010*	*80*	*1450*	*-1370*									
recalc.	**3.876**	**-106**	**910**	**-1016**	**81**	**1450**	**-1369**									

Appendix 2 Mass balance versus altitude

Limmern+Plattalva												
Altitude	**Area**	**1970, bn**	**1971, bn**	**1972, bn**	**1973, bn**	**1974, bn**	**1975, bn**					
3350	0.06	755	217	750	250	1250	1233					
3250	0.03	353	206	735	235	735	1353					
3150	0.01	214	250	1000	250	750	1167					
3050	0.08	177	12	1096	-72	687	1204					
2950	0.28	239	-487	604	-320	498	956					
2850	0.56	219	-640	235	-558	317	938					
2750	0.96	-93	-1346	-169	-1040	162	667					
2650	0.54	-478	-1758	-587	-1170	137	419					
2550	0.25	-245	-1935	-726	-1527	-268	261					
2450	0.21	-455	-2490	-1255	-2168	-784	96					
2350	0.13	-1030	-2569	-1569	-2123	-762	-469					
2250	0.13	-919	-2045	-940	-1226	-594	-218					
2150	0.05	-938	-1750	-558	-961	-365	77					
3400-2100	*3.29*	*-158*	*-1340*	*-240*	*-1010*	*80*	*570*					
recalc.	**3.29**	**-165**	**-1340**	**-247**	**-1013**	**85**	**572**					
Limmern												
Altitude	**Area**	**1976, bn**	**Area**	**1977, bn**	**1978, bn**	**1979, bn**	**1980, bn**	**1981, bn**	**1982, bn**	**1983, bn**	**1984, bn**	**1985, bn**
3350	0.051	255	0.06	2250	856	1250	1717	1167	650	683	750	1537
3250	0.035	229	0.034	2235	1750	1265	1265	765	265	265	647	1210
3150	0.016	250	0.017	2235	1735	1235	1235	706	235	-59	235	1003
3050	0.086	-198	0.1	2060	1765	1100	1060	410	-270	-390	180	707
2950	0.24	-854	0.277	1776	1660	509	610	51	-671	-758	-292	307
2850	0.46	-741	0.427	1436	1030	98	923	354	-375	-396	-281	550
2750	0.648	-924	0.623	806	989	-35	1029	132	-204	-456	63	608
2650	0.381	-696	0.38	408	739	-242	661	-374	-782	-779	-213	187
2550	0.218	-1651	0.211	-14	597	-564	431	-545	-1422	-1569	-668	-327
2450	0.222	-2189	0.177	-542	299	-672	181	-740	-1435	-1904	-1485	-660
2350	0.116	-1897	0.101	-812	-188	-960	-267	-1624	-1812	-2495	-1416	-1113
2250	0.103	-961	0.085	-459	-59	-682	47	-1165	-1482	-1459	-1224	-609
2150	0.024	-625	0.032	-250	281	-500	-250	-781	-938	-1602	-1250	-284
3400-2100	*2.546*	*-998*	*2.524*	*788*	*856*	*-36*	*721*	*-111*	*-649*	*-803*	*-333*	*250*
recalc.	**2.600**	**-993**	**2.524**	**788**	**902**	**-36**	**721**	**-111**	**-649**	**-810**	**-335**	**250**
Plattalva												
Altitude	**Area**	**1976, bn**	**1977, bn**	**1978, bn**	**1979, bn**	**1980, bn**	**1981, bn**	**1982, bn**	**1983, bn**	**1984, bn**	**1985, bn**	
3050	0.004	265	750	1750	250	1750	750	250	250	750	1126	
2950	0.09	265	633	1733	67	1611	622	89	11	678	976	
2850	0.202	-241	614	1327	-119	1089	89	-25	-307	322	646	
2750	0.348	-1016	592	1261	-141	1003	-282	-184	-618	-75	336	
2650	0.168	-1733	399	1107	-327	625	-571	-696	-940	-155	35	
2550	0.048	-1279	229	854	-333	354	-812	-729	-812	-271	-30	
3100-2500	*0.860*	*-849*	*544*	*1276*	*-159*	*980*	*-181*	*-246*	*-549*	*74*	*400*	
recalc.	**0.860**	**-849**	**544**	**1275**	**-159**	**980**	**-181**	**-247**	**-549**	**74**	**400**	

Gries																
Altitude	**Area**	**1962, bn**	**1963, bn**	**1964, bn**	**1965, bn**	**1966, bn**	**1967, bn**	**1968, bn**	**1969, bn**	**1970, bn**	**1971, bn**	**1972, bn**	**1973, bn**	**1974, bn**	**1975, bn**	**1976, bn**
3350	0.09	780	1780	780	2240	1220	1790	1790	1780	330	2220	1330	330	1200	1200	300
3250	0.133	750	1750	730	2230	1250	1750	1700	1740	250	1350	1260	250	1100	1120	250
3150	0.533	360	1680	630	1600	1120	1300	1330	1690	270	60	1160	30	880	1100	130
3050	1.574	10	1340	290	1520	620	980	1240	1190	230	-280	1060	-180	680	940	-140
2950	1.015	-140	1010	-430	1300	420	800	1260	1020	-70	-540	740	-390	440	670	-460
2850	0.752	-420	750	-890	960	460	840	830	1160	-200	-820	580	-760	100	470	-740
2750	0.605	-910	-110	-1300	520	120	550	510	620	-250	-1220	190	-1300	-470	70	-1380
2650	1.082	-1890	-1170	-1940	-270	-740	-430	-210	-710	-1240	-2150	-290	-2290	-1320	-540	-1990
2550	0.563	-2750	-1790	-2950	-490	-1380	-1030	-720	-1600	-2210	-2530	-470	-2850	-1690	-1000	-2870
2450	0.297	-3350	-2870	-3930	-1390	-2730	-2170	-1730	-2250	-3270	-2820	-980	-3540	-2970	-1630	-4470
3400-2300	***6.690***	*-850*	*200*	*-990*	*690*	*20*	*400*	*620*	*490*	*-500*	*-1040*	*460*	*-1060*	*-150*	*290*	*-1020*
recalc.	**6.644**	**-786**	**270**	**-882**	**770**	**46**	**409**	**619**	**468**	**-506**	**-981**	**453**	**-1067**	**-185**	**266**	**-1060**
Gries cont.																
Altitude	**Area**	**1977, bn**	**1978, bn**	**Area**	**1979, bn**	**1980, bn**	**1981, bn**	**1982, bn**	**1983, bn**	**1984, bn**	**1985, bn**	**Area**	**1986, bn**	**1987, bn**	**1988, bn**	**1989, bn**
3350	0.09	2800	2300	0.01	300	1800	1300	300	800	1200	910	0.01	670	550	360	200
3250	0.133	2750	2250	0.13	250	1740	1250	250	750	1250	810	0.09	560	430	240	70
3150	0.533	2410	2250	0.547	120	1550	770	280	640	1000	700	0.43	440	310	110	-70
3050	1.574	2060	1800	1.597	-30	1490	610	100	350	780	530	1.666	280	160	-50	-220
2950	1.015	1620	1370	1.004	-650	1020	60	-370	-360	150	260	1.061	10	-110	-310	-480
2850	0.752	1250	1020	0.726	-840	580	-290	-590	-680	-20	-120	0.727	-370	-490	-700	-880
2750	0.605	700	420	0.543	-1120	370	-330	-1090	-940	-350	-600	0.573	-870	-1000	-1220	-1400
2650	1.082	250	-120	0.984	-1820	-70	-960	-1970	-1500	-820	-1200	0.85	-1490	-1620	-1860	-2060
2550	0.563	220	-430	0.608	-2230	-870	-1640	-2770	-1800	-1260	-1900	0.678	-2220	-2370	-2630	-2850
2450	0.297	-900	-1400	0.184	-2710	-1690	-444	-5290	-3290	-2110	-2700	0.164	-3060	-3230	-3520	-3770
3400-2300	***6.690***	*1280*	*970*	*6.337*	*-860*	*720*	*-230*	*-880*	*-550*	*0*	*-260*	*6.249*	*-530*	*-660*	*-880*	*-1060*
recalc.	**6.644**	**1246**	**928**	**6.333**	**-863**	**665**	**-123**	**-890**	**-557**	**-8**	**-259**	**6.249**	**-536**	**-659**	**-878**	**-1063**
Gries cont.																
Altitude	**Area**	**1990, bn**	**Area**	**1991, bn**	**1992, bn**	**1993, bn**	**1994, bn**	**1995, bn**								
3350	0.01	-390	0.01	120	450	1080	650	1250								
3250	0.09	-540	0.206	-20	320	970	530	1150								
3150	0.43	-700	0.692	-150	200	860	420	1050								
3050	1.666	-860	1.6	-310	40	690	260	870								
2950	1.061	-1120	0.994	-570	-220	420	-10	600								
2850	0.727	-1520	0.658	-960	-610	50	-390	230								
2750	0.573	-2080	0.457	-1490	-1120	-430	-890	-240								
2650	0.85	-2790	0.619	-2160	-1750	-1010	-1510	-810								
2550	0.678	-3660	0.805	-2960	-2510	-1690	-2240	-1470								
2450	0.164	-4670	0.153	-3890	-3390	-2470	-3090	-2220								
3400-2300	*6.249*	*-1740*	*6.194*	*-1100*	*-720*	*-30*	*-500*	*160*								
recalc.	**6.249**	**-1743**	**6.194**	**-1097**	**-724**	**-32**	**-494**	**158**								

Appendix 2 Mass balance versus altitude

Silvretta															
Altitude	**Area**	**1960, bn**	**1961, bn**	**1962, bn**	**1963, bn**	**1964, bn**	**1965, bn**	**1966, bn**	**1967, bn**	**1968, bn**	**1969, bn**	**1970, bn**	**1971, bn**	**1972, bn**	**1973, bn**
3075	0.242	1970	1380	300	250	130	2530	2470	1610	1870	870	1400	630	850	-330
2950	0.577	1180	1200	200	-100	-480	1700	1770	1000	1310	530	880	130	530	-460
2850	0.628	740	940	-30	-440	-830	1560	1550	780	1200	300	610	-320	130	-690
2750	0.789	340	500	-650	-980	-1660	1320	1210	370	550	-280	150	-860	-330	-1410
2650	0.498	130	-490	-1050	-1590	-1940	1050	880	-240	200	-750	-380	-1570	-710	-1820
2550	0.385	-430	-1210	-1430	-2370	-2360	690	340	-650	-510	-1430	-1270	-2670	-1290	-2340
2450	0.031	-2420	-2680	-3900	-4650	-5840	-1040	-2310	-2660	-2680	-4180	-2680	-5210	-3500	-3810
3150-2400	*3.150*	*480*	*330*	*-560*	*-990*	*-1410*	*1340*	*1210*	*350*	*640*	*-260*	*130*	*-920*	*-270*	*-1210*
recalc.	**3.150**	**544**	**387**	**-488**	**-919**	**-1312**	**1388**	**1284**	**411**	**704**	**-181**	**186**	**-833**	**-199**	**-1212**
Silvretta															
Altitude	**Area**	**1974, bn**	**1975, bn**	**1976, bn**	**1977, bn**	**1978, bn**	**1979, bn**	**1980, bn**	**1981, bn**	**1982, bn**	**1983, bn**	**1984, bn**	**1985, bn**	**1987, bn**	**1988, bn**
3075	0.242	1560	1740	380	1880	1760	860	1910	890	270	250	750	1080	620	420
2950	0.577	1370	1390	250	1410	1550	400	1550	860	300	100	810	1060	370	160
2850	0.628	1190	1230	-60	1150	1350	350	1460	740	160	-110	740	920	100	-120
2750	0.789	580	670	-410	610	760	-160	1090	410	-100	-470	310	580	-320	-560
2650	0.498	310	310	-1090	-100	470	-570	610	-160	-770	-990	-200	20	-1000	-1250
2550	0.385	-280	-250	-2020	-990	-50	-950	-340	680	-1180	-2020	-810	-630	-1930	-2210
2450	0.031	-2360	-2840	-5070	-2810	-2100	-2230	-1970	-2230	-2770	-4260	-2100	-2300	-3120	-3440
3150-2400	*3.150*	*740*	*790*	*-510*	*620*	*940*	*-60*	*1110*	*350*	*-210*	*-550*	*280*	*510*	*-370*	*-600*
recalc.	**3.150**	**745**	**792**	**-509**	**620**	**926**	**-59**	**1030**	**512**	**-211**	**-547**	**280**	**509**	**-369**	**-604**
Silvretta															
Altitude	**Area**	**1989, bn**	**1990, bn**	**1995, bn**	**1991, bn**	**1992, bn**	**1993, bn**	**1994, bn**	**1995, bn**						
3075	0.242	730	450	1120	-70	230	740	370	1120						
2950	0.577	480	180	880	-350	-40	490	100	880						
2850	0.628	210	-90	630	-650	-320	230	-180	630						
2750	0.789	-210	-530	250	-1130	-780	-180	-620	250						
2650	0.498	-870	-1220	-370	-1880	-1500	-840	-1320	-370						
2550	0.385	-1780	-2180	-1230	-2920	-2480	-1760	-2290	-1230						
2450	0.031	-2950	-3390	-2330	-4220	-3740	-2920	-3520	-2330						
3150-2400	*3.150*	*-250*	*-570*	*200*	*-1180*	*-830*	*-230*	*-670*	*200*						
recalc.	**3.150**	**-251**	**-576**	**204**	**-1178**	**-826**	**-229**	**-668**	**204**						
N.Schneef.															
Altitude	**Area**	**1967, bn**	**Area**	**1968, bn**											
>2800	0.0022	727	0.0022	300											
2775	0.0166	819	0.0166	378											
2725	0.0355	992	0.0355	741											
2675	0.1052	793	0.1091	862											
2625	0.1183	374	0.1253	575											
<2600	0.0472	193	0.0472	225											
Total	*0.325*	*576*	*0.3348*	*623*											
recalc.	**0.325**	**576**	**0.3359**	**625**											

Hintereis																
Altitude	**Area**	**1964, bn**	**Area**	**1965, bn**	**Area**	**1966, bn**	**Area**	**1967, bn**	**1968, bn**	**1969, bn**	**1970, bn**	**Altitude**	**Area**	**1971, bn**	**1972, bn**	**1973, bn**
3675	0.021	40	0.021	1480	0.021	1120	0.024	940	840	30	130					
3625	0.03	110	0.03	1500	0.03	1130	0.026	940	810	40	200	3650	0.06	110	-10	-220
3575	0.028	240	0.028	1580	0.028	1270	0.029	910	1080	200	260	3550	0.05	210	100	-130
3525	0.026	50	0.026	1670	0.026	1250	0.028	1020	980	140	200	3450	0.25	360	490	-110
3475	0.085	100	0.085	1730	0.085	1300	0.091	980	830	400	440	3350	0.72	530	730	140
3425	0.14	160	0.14	1760	0.14	1280	0.15	840	1050	420	510	3250	0.96	440	490	-20
3375	0.269	100	0.269	1780	0.269	1330	0.283	1000	1270	450	460	3150	1.52	320	500	-130
3325	0.424	330	0.424	2020	0.424	1450	0.415	1240	1420	640	620	3050	1.45	60	370	-590
3275	0.436	250	0.436	1950	0.436	1420	0.456	1140	1350	450	510	2950	1.24	-590	50	-1350
3225	0.497	40	0.497	1830	0.497	1320	0.511	1050	1320	360	360	2850	0.92	-1180	-220	-2030
3175	0.668	-10	0.668	1770	0.668	1300	0.699	1010	1210	430	360	2750	0.96	-1940	-910	-2790
3125	0.82	-80	0.82	1910	0.82	1260	0.815	930	1170	510	340	2650	0.58	-3050	-1800	-3830
3075	0.788	-180	0.788	1770	0.788	1170	0.816	790	1050	370	190	2550	0.26	-4090	-2840	-4730
3025	0.633	-590	0.633	1410	0.633	890	0.628	440	790	200	-30	2475	0.06	-5650	-4090	-5950
2975	0.638	-1010	0.638	1120	0.638	610	0.638	290	610	70	-300					
2925	0.606	-1340	0.606	790	0.606	330	0.583	20	350	-130	-650					
2875	0.526	-1830	0.526	590	0.526	140	0.501	-170	150	-540	-960					
2825	0.46	-2510	0.46	380	0.46	-100	0.426	-500	-120	-1040	-1360					
2775	0.568	-2850	0.568	150	0.568	-470	0.581	-1110	-510	-1540	-1720					
2725	0.36	-3440	0.36	-630	0.36	-1260	0.355	-1840	-1160	-2240	-2350					
2675	0.393	-3740	0.393	-1030	0.393	-1900	0.379	-2360	-1750	-2930	-2780					
2625	0.247	-4220	0.247	-1530	0.247	-2690	0.233	-2800	-2470	-3570	-3130					
2575	0.165	-4670	0.165	-2170	0.165	-3340	0.156	-3510	-3180	-4220	-3740					
2525	0.124	-5140	0.124	-2850	0.124	-3820	0.118	-4000	-3550	-4750	-4290					
2475	0.08	-5840	0.08	-3490	0.08	-4260	0.075	-4300	-4560	-5270	-4900					
2425	0.029	-6870	0.019	-3820	0.014	-4710	0.016	-5070	-5590	-6500	-4850					
3750-2400	*9.050*	*-1245*	*8.95*	*925*	*8.900*	*345*	*9.032*	*20*	*340*	*-430*	*-550*	3750-2400	*9.03*	*-594*	*-69*	*-1223*
recalc.	**9.061**	**-1243**	**9.051**	**926**	**9.046**	**328**	**9.032**	**21**	**337**	**-449**	**-573**					
Hintereis																
Altitude	**Area**	**1974, bn**	**1975, bn**	**Altitude**	**Area**	**1976, bn**	**Area**	**1977, bn**	**1978, bn**	**Altitude**	**Area**	**1979, bn**	**1980, bn**	**Area**	**1981, bn**	
3650	0.06	80	0.002	3725	0.002	120	0.002	370	120	3725	0.004	130	0	0.004	90	
3550	0.05	420	0.024	3675	0.024	110	0.024	550	120	3675	0.023	40	30	0.023	60	
3450	0.25	700	310	3625	0.031	-20	0.031	740	150	3625	0.032	70	150	0.032	-10	
3350	0.72	1040	790	3575	0.023	50	0.023	1140	380	3575	0.023	170	120	0.023	160	
3250	0.96	900	1080	3525	0.026	90	0.026	1260	420	3525	0.026	140	190	0.026	80	
3150	1.52	830	910	3475	0.085	340	0.085	1660	640	3475	0.086	370	220	0.086	310	
3050	1.45	560	920	3425	0.157	440	0.157	1660	800	3425	0.165	470	310	0.165	460	
2950	1.24	180	640	3375	0.296	500	0.296	1860	1040	3375	0.294	540	480	0.294	580	
2850	0.92	-310	210	3325	0.433	780	0.433	2210	1320	3325	0.423	720	720	0.423	870	
2750	0.96	-1080	-300	3275	0.449	590	0.449	1760	1040	3275	0.469	530	610	0.469	600	
2650	0.58	-2110	-1250	3225	0.51	560	0.51	1610	980	3225	0.524	460	470	0.524	430	
2550	0.26	-3220	-2280	3175	0.675	580	0.675	1700	1140	3175	0.711	550	680	0.711	660	
2475	0.06	-4270	-3410	3125	0.84	460	0.84	1720	1050	3125	0.871	540	730	0.871	710	
3750-2400	*9.03*	*60*	*70*	3075	0.796	380	0.796	1510	940	3075	0.809	410	600	0.809	620	
recalc.	**9.03**	**52**	**56**	3025	0.639	100	0.639	1060	780	3025	0.657	260	380	0.657	310	
				2975	0.642	-120	0.642	790	550	2975	0.629	20	140	0.629	110	
				2925	0.587	-360	0.587	530	430	2925	0.618	-240	-30	0.618	-40	
				2875	0.5	-600	0.5	280	190	2875	0.519	-540	-220	0.519	-360	
				2825	0.418	-910	0.418	-70	0	2825	0.4	-740	-460	0.399	-900	
				2775	0.602	-1240	0.602	-270	-330	2775	0.617	-1260	-830	0.617	-1350	
				2725	0.357	-1990	0.357	-910	-860	2725	0.349	-2100	-1520	0.349	-1900	
				2675	0.364	-2490	0.364	-1710	-1290	2675	0.388	-2100	-1990	0.388	-2390	
				2625	0.218	-2950	0.195	-2280	-2050	2625	0.214	-2860	-2670	0.214	-3200	
				2575	0.144	-3620	0.126	-2720	-2480	2575	0.11	-3160	-3050	0.11	-3520	
				2525	0.102	-4180	0.085	-3430	-3010	2525	0.073	-3490	-3330	0.073	-3350	
				2475	0.035	-5090	0.019	-4200	-3410	2475	0.042	-3890	-3830	0.042	-4300	
				3750-2400	*8.955*	*-314*	*8.881*	*761*	*411*	2425	0.003	-4250	-4230			
				recalc.	**8.955**	**-315**	**8.881**	**760**	**410**	3750-2400	*9.079*	*-219*	*-50*	*9.075*	*-173*	
										recalc.	**9.079**	**-219**	**-50**	**9.075**	**-162**	

Hintereis																
Altitude	**Area**	**1982, bn**	**Area**	**1983, bn**	**1984, bn**	**Area**	**1985, bn**	**Area**	**1986, bn**	**1987, bn**	**Area**	**1988, bn**	**Area**	**1989,bn**	**Area**	**1990,bn**
3725	0.004	0	0.004	0	130	0.004	0	0.004	120	120	0.004	0	0.004	0	0.004	120
3675	0.023	-30	0.023	0	190	0.023	60	0.023	50	50	0.023	-100	0.023	0	0.023	50
3625	0.032	-50	0.032	-40	190	0.032	60	0.032	50	0	0.032	-10	0.032	30	0.032	40
3575	0.023	20	0.023	50	320	0.023	20	0.023	5	30	0.023	-30	0.023	-20	0.023	20
3525	0.026	-20	0.026	-160	320	0.026	-20	0.026	-100	-60	0.026	-170	0.026	-40	0.026	-40
3475	0.086	-140	0.086	60	550	0.086	100	0.086	80	160	0.086	-140	0.086	80	0.086	60
3425	0.165	-100	0.165	100	670	0.165	120	0.165	130	270	0.165	20	0.165	20	0.165	30
3375	0.294	20	0.294	80	780	0.294	290	0.294	120	270	0.294	90	0.294	210	0.294	70
3325	0.423	310	0.423	320	1130	0.423	560	0.422	430	390	0.422	230	0.422	480	0.422	230
3275	0.469	50	0.469	180	830	0.469	380	0.469	180	260	0.469	90	0.469	230	0.469	100
3225	0.524	-70	0.524	120	690	0.524	260	0.522	130	200	0.522	70	0.522	160	0.522	30
3175	0.711	-70	0.711	200	830	0.711	310	0.711	130	220	0.711	130	0.711	130	0.711	70
3125	0.871	-210	0.871	150	840	0.871	220	0.871	170	200	0.871	-10	0.871	130	0.871	30
3075	0.809	-560	0.809	0	630	0.809	130	0.809	-10	50	0.808	-250	0.808	-10	0.808	-140
3025	0.657	-840	0.657	-180	280	0.657	80	0.657	-230	-300	0.647	-460	0.627	-290	0.632	-400
2975	0.629	-1150	0.629	-360	20	0.629	-200	0.628	-490	-650	0.627	-740	0.615	-520	0.613	-850
2925	0.618	-1610	0.618	-590	-150	0.618	-570	0.618	-670	-850	0.614	-1140	0.614	-600	0.606	-1200
2875	0.519	-2010	0.519	-960	-420	0.519	-900	0.519	-1050	-1220	0.513	-1500	0.507	-880	0.506	-1600
2825	0.399	-2540	0.399	-1300	-600	0.399	-1460	0.399	-1590	-1730	0.396	-1910	0.396	-1190	0.396	-2010
2775	0.617	-2740	0.617	-1320	-870	0.617	-1840	0.617	-2120	-1990	0.617	-2250	0.617	-1630	0.617	-2500
2725	0.349	-3340	0.349	-2460	-1420	0.349	-2600	0.349	-2830	-2650	0.349	-3090	0.348	-2550	0.348	-3330
2675	0.388	-3710	0.388	-2530	-1820	0.388	-2950	0.383	-3040	-2980	0.383	-3340	0.381	-2770	0.381	-3490
2625	0.214	-4270	0.214	-3020	-2210	0.214	-3520	0.214	-3790	-3350	0.214	-3930	0.213	-3240	0.213	-4020
2575	0.11	-4670	0.11	-3470	-2570	0.11	-4330	0.11	-4070	-4050	0.11	-4090	0.11	-4060	0.11	-4650
2525	0.073	-4900	0.073	-4070	-2910	0.073	-4500	0.073	-4260	-4380	0.072	-4960	0.072	-4670	0.072	-5350
2475	0.041	-5480	0.039	-4430	-3330	0.037	-4700	0.036	-4720	-4650	0.034	-6380	0.034	-5350	0.034	-5630
3750-2400	*9.074*	*-1240*	*9.072*	*-582*	*32*	*9.07*	*-574*	*9.06*	*-732*	*-717*	*9.032*	*-945*	*8.99*	*-637*	*8.984*	*-995*
recalc.	**9.074**	**-1237**	**9.072**	**-582**	**31**	**9.07**	**-574**	**9.06**	**-731**	**-717**	**9.032**	**-945**	**8.99**	**-637**	**8.984**	**-994**

Hintereis cont.																
Altitude	**Area**	**1991, bn**	**Area**	**1992, bn**	**Area**	**1993, bn**	**Area**	**1994, bn**	**Altitude**	**Area**	**1995, bn**					
3725	0.004	0	0.004	0	0.004	-63	0.004	63	3725	0.004	375					
3675	0.023	0	0.023	0	0.023	-22	0.023	49	3675	0.023	223					
3625	0.032	27	0.032	0	0.032	113	0.032	47	3625	0.032	227					
3575	0.023	5	0.023	-98	0.023	60	0.023	65	3575	0.023	299					
3525	0.022	-165	0.022	-63	0.022	-28	0.022	-57	3525	0.022	307					
3475	0.086	-90	0.086	-114	0.086	215	0.086	3	3475	0.086	323					
3425	0.165	-96	0.165	-53	0.165	278	0.165	42	3425	0.165	351					
3375	0.294	34	0.294	25	0.294	509	0.294	210	3375	0.294	491					
3325	0.422	224	0.422	238	0.422	770	0.42	346	3325	0.42	731					
3275	0.469	28	0.469	214	0.469	599	0.468	169	3275	0.468	555					
3225	0.512	-75	0.512	75	0.512	400	0.512	118	3225	0.512	407					
3175	0.702	-200	0.702	77	0.702	444	0.702	109	3175	0.702	464					
3125	0.865	-362	0.865	-99	0.865	380	0.861	-144	3125	0.861	302					
3075	0.804	-630	0.804	-411	0.804	152	0.801	-301	3075	0.801	-35					
3025	0.616	-840	0.616	-923	0.616	-148	0.616	-575	3025	0.616	-254					
2975	0.606	-1129	0.606	-1199	0.606	-392	0.606	-991	2975	0.606	-455					
2925	0.606	-1487	0.606	-1381	0.606	-787	0.606	-1300	2925	0.606	-618					
2875	0.504	-1836	0.503	-1725	0.502	-1211	0.502	-1562	2875	0.502	-812					
2825	0.396	-2593	0.396	-2076	0.396	-1543	0.396	-2456	2825	0.396	-1301					
2775	0.614	-3186	0.614	-2369	0.603	-1997	0.603	-2672	2775	0.603	-1597					
2725	0.348	-3759	0.348	-3440	0.317	-2886	0.317	-3842	2725	0.317	-2409					
2675	0.375	-4161	0.375	-3681	0.344	-3429	0.344	-4601	2675	0.344	-2836					
2625	0.198	-4518	0.195	-4371	0.193	-3903	0.193	-4942	2625	0.183	-3190					
2575	0.102	-5108	0.102	-5167	0.099	-4638	0.097	-5657	2575	0.097	-4013					
2525	0.065	-5627	0.065	-5912	0.044	-5466	0.042	-6381	2525	0.042	-4869					
2475	0.031	-6540	0.029	-6526	0.006	-6167	0.002	-6750			-461					
3750-2400	*8.884*	*-1325*	*8.878*	*-1120*	*8.755*	*-573*	*8.737*	*-1107*	*3750-2500*	*8.725*	*-461*					
recalc.	**8.884**	**-1325**	**8.878**	**-1120**	**8.754**	**-574**	**8.737**	**-1102**		**8.725**	**-461**					

Kesselwand														
Altitude	**Area**	**1967, bn**	**1968, bn**	**1969, bn**	**1970, bn**	**Area**	**1971, bn**	**1972, bn**	**1973, bn**	**1974, bn**	**1975, bn**	**Altitude**	**Area**	**1986, bn**
3450	0.055	676	867	408	332	0.06	60	180	-1080	240	290	3450	0.056	-133
3350	0.317	983	1143	514	561	0.32	750	810	-90	990	970	3350	0.353	50
3250	1.294	1110	1254	769	937	1.29	790	920	270	980	1050	3250	1.511	190
3150	1.248	850	906	371	494	1.25	360	500	-20	910	660	3150	1.309	-28
3050	0.625	-350	-266	-1098	-1107	0.63	-310	-40	-1100	10	-260	3050	0.63	-1118
2950	0.184	-3342	-2794	-3284	-3291	0.18	-2180	-580	-2350	-1030	-2500	2950	0.225	-2049
2850	0.153	-3874	-3415	-4551	-3143	0.15	-4380	-1790	-3500	-1610	-2580	2850	0.221	-2695
2750	0.059	-4068	-3042	-4431	-3821	0.06	-4960	-3930	-3930	-2290	-2830	2750	0.099	-4625
												2735	0.04	-6081
3490-2720	*3.935*	*299*	*452*	*-154*	*5*	*3.94*	*43*	*367*	*-418*	*552*	*339*	*3490-2720*	*4.444*	*-496*
Kesselwand. cont.														
Altitude	**Area**	**1987, bn**	**Area**	**1988, bn**	**Area**	**1989, bn**	**Area**	**1990, bn**	**Altitude**	**Area**	**1991, bn**	**Altitude**	**Area**	**1992, bn**
3450	0.056	-17	0.056	-54	0.056	-22	0.056	-75	3450	0.056	-562	3450	0.056	-62
3350	0.353	134	0.353	242	0.353	233	0.353	133	3350	0.353	-87	3350	0.353	32
Kesselwand cont.	1.511	389	1.511	379	1.511	454	1.511	306	3250	1.511	-123	3250	1.511	276
3150	1.296	215	1.296	22	1.296	169	1.296	131	3150	1.296	-519	3150	1.296	-35
3050	0.609	-754	0.609	-723	0.607	-485	0.598	-572	3050	0.598	-1484	3050	0.598	-896
2950	0.259	-1558	0.259	-1102	0.26	-1077	0.269	-1177	2950	0.269	-2366	2950	0.269	-1865
2850	0.209	-2449	0.209	-2441	0.203	-2308	0.203	-2444	2850	0.203	-3028	2850	0.203	-2472
2750	0.107	-4260	0.107	-3805	0.109	-3729	0.115	-3703	2750	0.115	-4542	2750	0.115	-4415
2735	0.041	-5794	0.041	-5252	0.039	-4912	0.031	-5240	2735	0.031	-5620	2724	0.029	-5717
3490-2720	*4.441*	*-242*	*4.441*	*-265*	*4.434*	*-150*	*4.432*	*-243*	*3490-2720*	*4.432*	*-847*	*3490-2698*	*4.43*	*-414*
Kesselwand cont.														
Altitude	**Area**	**1993, bn**	**Area**	**1994, bn**	**Altitude**	**Area**	**1995, bn**							
3450	0.056	-16	0.056	-250	3450	0.055	147							
3350	0.353	466	0.353	-24	3350	0.35	637							
3250	1.511	569	1.511	14	3250	1.511	660							
3150	1.296	279	1.296	-466	3150	1.26	424							
3050	0.598	-458	0.598	-1418	3050	0.596	-218							
2950	0.269	-1174	0.269	-2874	2950	0.258	-1268							
2850	0.198	-2566	0.203	-4271	2850	0.173	-2053							
2750	0.099	-4652	0.087	-6067	2750	0.088	-3790							
2724	0.026	-5810	0		2724	0								
3490-2698	*4.406*	*-74*	*4.373*	*-828*	*3490-2698*	*4.291*	*-110*							

Vernagt														
Altitude	**Area**	**1966, bn**	**1967, bn**	**1968, bn**	**Altitude**	**Area**	**bn**	**bn**	**1971, bn**	**1972, bn**	**Area**	**1975, bn**	**1976, AC**	**1976, AA**
3565	0.045	1814	217	452	3565	0.05	100	200	100	300	0.042	299	229	0
3450	0.408	1810	354	483	3450	0.41	210	330	140	590	0.395	423	455	-117
3350	0.805	1381	250	411	3350	0.81	110	190	50	370	0.811	321	349	-148
3250	2.083	1237	467	634	3250	2.11	170	240	40	430	2.126	354	382	-133
3150	2.599	1141	312	506	3150	2.58	-30	110	-150	380	2.557	270	341	-182
3050	2.114	864	111	349	3050	2.07	-480	-350	-720	110	2.045	80	239	-353
2950	1.067	183	-693	-373	2950	1.04	-1350	-1380	-1740	-660	1.01	-832	140	-917
2850	0.352	-1002	-1807	-1347	2850	0.33	-2430	-2550	-2620	-1570	0.291	-1539	0	-1539
2770	0.082	-2835	-2574	-2160	2770	0.06	-3660	-3550	-3490	-2650	0.024	-2250	0	-2250
3627-2720	*9.553*	*933*	*83*		*3627-2720*	*9.45*	*-310*	*-230*	*-480*	*140*	*9.301*	*76*	*336*	*-704*
recalc.	**9.555**	**933**	**83**	**301**		**9.46**	**-313**	**-225**	**-483**	**138**	**9.301**	**76**		
Vernagt. cont.														
Altitude	**1977, bn**	**1977, AC**	**1977, AA**	**Area**	**1978, bn**	**1978, AC**	**1978, AA**	**1979, bn**	**1979, AC**	**1979, AA**	**1980, bn**	**1980, AC**	**1980, AA**	
3565	259	259	0	0.054	121	121	0	277	277	0	169	193	-226	
3450	593	597	-200	0.421	541	541	0	482	507	-246	424	455	-286	
3350	461	480	-202	0.893	423	438	-235	323	367	-339	247	271	-249	
3250	528	535	-196	2.213	531	543	-282	382	417	-245	365	374	-232	
3150	520	533	-217	2.607	436	468	-280	287	391	-321	304	377	-251	
3050	317	35	-233	2.038	208	308	-354	-41	268	-615	91	255	-278	
2950	-189	132	-404	1.016	-130	133	-536	-1072	137	-1155	-551	143	-669	
2850	-741	98	-777	0.285	-789	98	-869	-1609	0	-1609	-999	101	-1072	
2770	-1554	0	-1554	0.023	-1652	0	-1652	-2170	0	-2170	-752	0	-752	
3627-2720	*352*	*465*	*-491*	*9.55*	*288*	*440*	*-542*	*44*	*376*	*-875*	*-140*	*342*	*-521*	
recalc.				**9.55**	**309**			**44**			**139**			
Vernagt cont.														
Altitude	**Area**	**1981, bn**	**1981, AC**	**1981, AA**	**Area**	**1982, bn**	**1982, AC**	**1982, AA**	**1983, bn**	**1983, AC**	**1983, AA**			
3565	0.054	217	217	0	0.044	-171	101	-239	207	205	-295			
3450	0.421	515	519	-200	0.404	88	267	-275	139	333	-239			
3350	0.893	235	256	-168	0.812	-94	131	-403	5	229	-291			
3250	2.213	323	335	-209	2.09	-223	160	-513	-106	255	-460			
3150	2.607	191	284	-386	2.61	-576	132	-752	-351	204	-491			
3050	2.038	-214	167	-648	2.054	-1209	101	-1251	-881	200	-905			
2950	1.016	-1136	100	-1230	1.005	-2434	0	-2434	-1463	0	-1463			
2850	0.285	-1795	100	-1805	0.306	-2855	0	-2855	-1931	0	-1931			
2770	0.023	-3150	0	-3150	0.025	-3110	0	-3110	-2419	0	-2419			
3627-2720	*9.550*	*-55*	*290*	*-949*	*9.350*	*-845*	*159*	*-1159*	*-537*	*246*	*-798*			
recalc.	**9.550**	**-55**			**9.350**	**-845**			**-535**					
Vernagt. cont.														
Altitude	**Area**	**1984, bn**	**1984, AC**	**1984, AA**	**1985, bn**	**1985, AC**	**1985, AA**	**1986, bn**	**Area**	**1987, bn**	**Area**	**1988, bn**	**1989, bn**	**1990, bn**
3565	0.043	170	189	-182	65	168	-200	-253	0.031	25	0.025	-24	-4	-83
3450	0.408	445	466	-205	404	451	-220	46	0.384	189	0.356	80	287	-68
3350	0.798	361	393	-206	267	333	-220	35	0.776	113	0.659	61	137	29
3250	2.097	326	355	-207	283	338	-227	-144	2.054	129	1.958	60	136	-15
3150	2.593	231	283	-242	164	278	-257	-497	2.58	16	2.534	-105	3	-258
3050	2.078	-61	180	-351	-360	165	-598	-1151	2.105	-366	2.128	-816	-455	-807
2950	1.005	-931	99	-1006	-1170	101	-1180	-2552	1.035	-1578	1.052	-1827	-1430	-1786
2850	0.296	-1427	0	-1427	-1603	0	-1603	-3200	0.314	-2162	0.314	-2242	-2420	-2545
2770	0.026	-1804	0	-1804	-1900	0	-1900	-3251	0.029	-2715	0.026	-3095	-3220	-3220
3627-2720	*9.344*	*20*	*308*	*-686*	*-112*	*302*	*-762*	*-808*	*9.308*	*-290*	*9.088*	*-497*	*-312*	*-568*
recalc.	**9.344**	**24**			**-112**			**-796**	**9.308**	**-289**	**9.052**	**-500**	**-315**	**-571**

Vernagt. cont.													
Altitude	**Area**	**1991, bn**	**1992, bn**	**1993, bn**	**1994, bn**	**1995, bn**							
3575	0.008	-295	-205	-115	13	-256							
3525	0.018	-251	-166	-34	-17	-120							
3475	0.158	-35	184	224	207	144							
3425	0.198	-119	34	136	73	73							
3375	0.247	-217	-118	0	-9	64							
3325	0.448	-168	59	118	50	108							
3275	0.944	-153	33	136	-8	112							
3225	1.014	-368	-207	-4	-276	-1							
3175	1.261	-552	-382	-127	-501	-72							
3125	1.273	-741	-743	-315	-790	-132							
3075	1.161	-1226	-1001	-690	-1397	-460							
3025	0.967	-1835	-1477	-942	-1876	-827							
2975	0.651	-2619	-2161	-1320	-2435	-1347							
2925	0.401	-3139	-2625	-1610	-2958	-1667							
2875	0.225	-3692	-3351	-2049	-3430	-1957							
2825	0.089	-4249	-3667	-2393	-4336	-2112							
2775	0.025	-4569	-3470	-2964	-4751	-2202							
3600-2748	*9.09*	*-1080*	*-858*	*-472*	*-1028*	*-400*							
recalc.	**9.088**	**-1079**	**-858**	**-472**	**-1028**	**-398**							
Sonnblick													
Altitude	**Area**	**1964, bn**	**Area**	**1965, bn**	**1966, bn**	**1967, bn**	**1968, bn**	**1969, bn**	**1970, bn**	**Area**	**1971, bn**	**1972, bn**	**1973, bn**
3025	0.01	-40	0.01	2330	700	-350	30	-430	230	0.01	-250	290	10
2950	0.29	100	0.32	2520	1150	560	710	270	590	0.32	210	590	100
2850	0.41	-620	0.48	1940	880	130	290	-190	250	0.46	-260	170	-550
2750	0.49	-900	0.52	1980	930	290	360	-70	300	0.51	-200	220	-600
2650	0.16	-2340	0.17	1290	-150	-430	-540	-1120	-630	0.16	-1470	-600	-1940
2550	0.26	-1780	0.26	1800	150	-130	-190	-760	-410	0.25	-1070	-260	-1580
3050-2500	1.62	-930	1.77	1980	730	160	230	-250	140	1.71	-390	130	-720
recalc.	**1.62**	**-928**	**1.76**	**1976**	**736**	**160**	**234**	**-246**	**144**	**1.71**	**-386**	**129**	**-721**
Sonnblick.cont.													
Altitude	**Area**	**1974, bn**	**1975, bn**	**Altitude**	**Area**	**1976, bn**	**1977, bn**	**1978, bn**	**1979, bn**	**1980, bn**			
3025	0.01	680	20	3025	0.011	-188	314	653	240	381			
2950	0.32	800	700	2975	0.123	262	405	996	568	781			
2850	0.47	590	380	2925	0.201	431	494	1144	681	1064			
2750	0.52	730	600	2875	0.226	194	233	925	428	970			
2650	0.17	-140	-580	2825	0.241	127	174	688	160	788			
2550	0.26	440	300	2775	0.269	305	534	1126	423	1167			
				2725	0.253	153	280	847	254	850			
				2675	0.11	-1039	-783	109	-407	219			
				2625	0.064	-981	-587	203	-528	176			
				2575	0.066	-277	-188	644	-292	639			
				2525	0.194	116	-341	750	-161	701			
3050-2500	*1.76*	*580*	*400*	**3050-2500**	*1.76*	*79*	*148*	*833*	*224*	*834*			
recalc.	**1.75**	**568**	**397**		**1.758**	**79**	**148**	**833**	**224**	**834**			

Wurtenkees																
Altitude	**Area**	**1983, bn**	**1983, bw**	**1983, bs**	**Area**	**1984, bn**	**1984, bw**	**1984, bs**	**Area**	**1985, bn**	**1985, bw**	**1985, bs**	**Area**	**1986, bn**	**1986, bw**	**1986,bs**
3125	0.01	-523	937	-1458	0.009	299	476	-177	0.009	-140	748	-888	0.008	-1104	946	-2050
3075	0.045	-407	1077	-1484	0.044	350	439	-89	0.044	-146	887	-1033	0.041	-978	944	-1922
3025	0.081	-490	1231	-1714	0.081	491	675	-188	0.08	-233	1182	-1415	0.079	-884	941	-1825
2975	0.109	-608	1247	-1855	0.108	535	861	-326	0.107	-721	1121	-1841	0.105	-983	926	-1909
2925	0.109	-907	1105	-2012	0.106	211	801	-590	0.104	-1485	1025	-2510	0.101	-1284	987	-2271
2875	0.159	-986	1104	-2090	0.156	182	828	-646	0.152	-1281	970	-2251	0.143	-1491	993	-2484
2825	0.11	-1185	1169	-2354	0.109	-51	930	-878	0.108	-1238	999	-2277	0.105	-1623	1028	-2651
2775	0.121	-855	1442	-2296	0.117	124	823	-699	0.114	-752	910	-1667	0.104	-1458	1175	-2633
2725	0.17	-404	1790	-2194	0.157	543	1271	-728	0.144	-468	1262	-1730	0.125	-949	1395	-2344
2675	0.207	-766	1674	-2442	0.206	122	1185	-1062	0.205	-918	1420	-2338	0.201	-1542	1449	-2991
2625	0.133	-2016	1330	-3348	0.133	-988	829	-1818	0.134	-2140	1183	-3323	0.135	-2723	1294	-4017
2575	0.069	-2843	1207	-4049	0.068	-1368	640	-2009	0.068	-2373	968	-3341	0.068	-3223	1193	-4416
2525	0.029	-2973	1281	-4260	0.029	-1473	774	-2247	0.028	-2328	1216	-3544	0.027	-3426	1274	-4700
2500-3150	*1.350*	*-1029*	*1363*	*-2392*	*1.322*	*30*	*913*	*-883*	*1.295*	*-1095*	*1123*	*-2218*	*1.24*	*-1572*	*1167*	*-2739*
recalc.	**1.352**	**-1033**	**1361**	**-2395**	**1.323**	**14**	**909**	**-887**	**1.297**	**-1111**	**1123**	**-2238**	**1.242**	**-1606**	**1164**	**-2770**
Wurtenk. cont.																
Altitude	**Area**	**1987, bn**	**1987, bw**	**1987, bs**	**Area**	**1988, bn**	**1988, bw**	**1988, bs**	**Area**	**1989, bn**	**1989, bw**	**1989, bs**	**Area**	**1990, bn**	**1990, bw**	**1990, bs**
3125	0.006	114	920	-806	0.006	-69	1300	-1350	0.006	281	1200	-921	0.006	200	1110	-910
3075	0.037	-269	1220	-1489	0.036	-314	1332	-1661	0.025	469	1322	-853	0.035	173	1109	-936
3025	0.077	-485	1467	-1952	0.076	-433	1295	-1734	0.076	489	1388	-899	0.075	-109	1108	-1217
2975	0.102	-383	1480	-1863	0.101	-357	1292	-1653	0.101	167	1304	-1137	0.1	-701	929	-1630
2925	0.098	-613	1192	-1805	0.097	-487	1308	-1780	0.096	-93	1112	-1205	0.095	-930	884	-1814
2875	0.136	-715	1121	-1836	0.132	-698	1226	-1930	0.129	-274	1048	-1322	0.125	-947	897	-1844
2825	0.103	-1153	1350	-2503	0.101	-1075	1182	-2236	0.099	-326	1004	-1330	0.098	-976	959	-1935
2775	0.093	-1061	1455	-2516	0.084	-837	1346	-2106	0.08	-213	1193	-1406	0.075	-763	1177	-1940
2725	0.11	-221	1939	-2160	0.103	-304	1674	-1985	0.099	182	1604	-1422	0.099	-238	1714	-1952
2675	0.199	-694	1803	-2497	0.197	-617	1522	-2139	0.196	163	1501	-1338	0.196	-372	1550	-1922
2625	0.135	-1490	1381	-2811	0.136	-1496	1205	-2702	0.136	-707	1147	-1854	0.137	-1398	1104	-2502
2575	0.068	-2148	1321	-3469	0.067	-2105	1208	-3280	0.067	-1342	920	-2262	0.067	-2048	787	-2835
2525	0.027	-2454	1797	-4251	0.026	-2241	1351	-3515	0.026	-1270	1017	-2287	0.025	-2002	906	-2908
2500-3150	*1.191*	*-825*	*1482*	*-2307*	*1.162*	*-785*	*1259*	*-2037*	*1.135*	*-143*	*1255*	*-1398*	*1.133*	*-760*	*1168*	*-1928*
recalc.	**1.191**	**-870**	**1474**	**-2337**	**1.162**	**-821**	**1341**	**-2153**	**1.136**	**-172**	**1242**	**-1414**	**1.133**	**-800**	**1147**	**-1947**
Wurtenk. cont.																
Altitude	**Area**	**1991, bn**	**1991, bw**	**1991, bs**	**Area**	**1992, bn**	**1992, bw**	**1992, bs**	**Area**	**1993, bn**	**1993, bw**	**1993, bs**	**Area**	**1994, bn**	**1994, bw**	**1994, bs**
3125	0.006	250	1300	-1050	0.006	-50	1200	-1250	0.006	150	1534	-1384	0.006	-110	1375	-1485
3075	0.035	49	1294	-1243	0.035	-262	1327	-1589	0.035	150	1521	-1371	0.035	-641	1325	-1966
3025	0.075	-288	1072	-1360	0.075	-663	1244	-1907	0.075	38	1439	-1401	0.075	-1022	1434	-2456
2975	0.097	-864	917	-1781	0.096	-855	1060	-1915	0.096	-99	1404	-1503	0.096	-964	1367	-2331
2925	0.093	-996	1062	-2058	0.092	-1032	1085	-2117	0.092	-200	1314	-1514	0.092	-1433	1250	-2683
2875	0.118	-1085	1220	-2305	0.115	-1365	1274	-2639	0.115	-250	1330	-1580	0.115	-1861	1246	-3107
2825	0.096	-1145	1299	-2744	0.095	-1531	1272	-2803	0.095	-403	1363	-1766	0.095	-2190	1285	-3475
2775	0.065	-1445	1169	-2614	0.059	-1714	1218	-2932	0.059	-612	1304	-1916	0.059	-2171	1269	-3440
2725	0.099	-560	1379	-1939	0.099	-883	2034	-2917	0.099	-297	1683	-1980	0.099	-971	1523	-2494
2675	0.195	-399	1446	-1845	0.194	-634	2318	-2952	0.194	-347	1917	-2264	0.194	-1130	1774	-2904
2625	0.137	-2093	1382	-3475	0.138	-2179	1751	-3930	0.138	-1143	1507	-2650	0.138	-2295	1402	-3697
2575	0.067	-2711	1260	-3971	0.067	-3183	1233	-4416	0.067	-1701	1341	-3042	0.067	-2983	1207	-4190
2525	0.025	-2461	1396	-3857	0.024	-2925	1407	-4332	0.024	-1653	1440	-3093	0.024	-2702	1603	-4305
2500-3150	*1.108*	*-894*	*1258*	*-2152*	*1.094*	*-1248*	*1550*	*-2798*	*1.094*	*-484*	*1513*	*-1997*	*1.094*	*-1617*	*1422*	*-3039*
recalc.	**1.108**	**-1074**	**1257**	**-2357**	**1.095**	**-1310**	**1550**	**-2860**	**1.095**	**-484**	**1513**	**-1997**	**1.095**	**-1617**	**1421**	**-3039**

Wurtenkees																
Altitude	**Area**	**1995, bn**	**1995, bw**	**1995, bs**												
3125	0.006	500	1800	-1300												
3075	0.035	500	1697	-1197												
3025	0.075	355	1585	-1230												
2975	0.096	159	1615	-1456												
2925	0.092	-78	1484	-1562												
2875	0.115	-354	1364	-1718												
2825	0.095	-500	1334	-1834												
2775	0.059	-553	1224	-1878												
2725	0.099	20	1853	-1832												
2675	0.194	-191	1683	-1874												
2625	0.138	-1151	1400	-2552												
2575	0.067	-2007	1163	-3171												
2525	0.024	-1976	1874	-3850												
2500-3150	*1.094*	*-414*	*1545*	*-1958*												
recalc.	**1.095**	**-403**	**1518**	**-1927**												
Jamtal F.																
Altitude	**Area**	**1989, bn**	**1990, bn**	**Altitude**	**Area**	**1991, bn**	**1991, bw**	**1991, bs**	**1992, bn**	**1992, bw**	**1992, bs**	**1993, bn**	**1993, bw**	**1993, bs**		
3050	0.21	220	120	3150	0.014	-250	700	-950	-750	1100	-1850	160	1100	-940		
2950	0.85	240	160	3050	0.298	-360	800	-1160	-370	1180	-1550	440	1100	-660		
2850	0.8	-60	-130	2950	0.845	-620	900	-1520	-500	1360	-1860	490	1270	-780		
2750	0.85	-310	-340	2850	0.79	-1000	750	-1750	-1090	1550	-2640	-60	1360	-1420		
2650	0.67	-840	-790	2750	0.772	-1590	760	-2350	-1390	1580	-2970	-390	1310	-1700		
2550	0.34	-1960	-1610	2650	0.634	-2160	730	-2890	-1580	1440	-3020	-1010	1280	-2290		
2450	0.13	-3140	-2660	2550	0.379	-2900	750	-3650	-2300	1450	-3750	-1770	1300	-3070		
3200-2400	**3.85**	*-439*	*-426*	2450	0.114	-3620	690	-4310	-3400	1450	-4850	-2700	1120	-3820		
recalc.	**3.85**	**-441**	**-430**	**3200-2400**	*3.846*	*-1440*	*780*	*-2220*	*-1230*	*1450*	*-2680*	*-370*	*1280*	*-1650*		
Jamtal F. cont.																
Altitude	**Area**	**1994, bn**	**1994, bw**	**1994, bs**	**1995, bn**	**1995, bw**	**1995, bs**									
3050	0.014	-60	1200	-1260	50	1320	-1270									
2950	0.298	-10	1200	-1210	420	1320	-900									
2850	0.845	-130	1210	-1340	390	1470	-1080									
2750	0.788	-440	1340	-1780	60	1360	-1200									
2650	0.769	-770	1310	-2080	-110	1490	-1300									
2550	0.627	-1330	1370	-2670	-550	1470	-1600									
2450	0.367	-2510	1330	-3840	-1220	1410	-2020									
2350	0.09	-3090	1300	-4390	-1910	1240	-2630									
3200-2400	*3.798*	*-830*	*1300*	*-2120*	*-146*	*1430*	*-3150*									
Vermunt																
Altitude	**Area**	**1991, bn**	**1991, bw**	**1991, bs**	**1992, bn**	**1992, bw**	**1992, bs**	**1993, bn**	**1993, bw**	**1993, bs**	**1994, bn**	**1994, bw**	**1994, bs**	**1995, bn**	**1995, bw**	**1995, bs**
3150	0.004	-250	900	-1150	-750	1000	-1750	120	950	-830	-250	1000	-1250	120	1140	-1020
3050	0.063	-390	950	-1340	-250	1000	-1250	140	950	-810	0	1000	-1000	240	1140	-900
2950	0.35	-510	770	-1280	-580	1090	-1670	0	970	-970	-690	1000	-1690	240	1140	-900
2850	0.745	-1220	790	-2010	-940	1250	-2190	-330	1110	-1440	-1090	1120	-2210	30	1330	-1300
2750	0.726	-1790	930	-2720	-1600	1210	-2810	-620	1180	-1800	-1790	1230	-3020	-370	1380	-1750
2650	0.243	-2420	1000	-3420	-2270	1100	-3370	-1420	1100	-2520	-2490	1120	-3610	-820	1310	-2130
2550	0.109	-3120	1100	-4220	-3490	1230	-4720	-2240	1000	-3240	-2580	1020	-3600	-1710	1130	-2840
3200-2500	*2.240*	*-1490*	*870*	*-2360*	*-1350*	*1190*	*-2540*	*-570*	*1100*	*-1670*	*-1450*	*1130*	*-2580*	*-240*	*1300*	*-1540*
recalc.	**2.240**	**-1491**	**875**	**-2366**	**-1346**	**1187**	**-2534**	**-570**	**1100**	**-1669**	**-1447**	**1128**	**-2575**	**-238**	**1299**	**-1537**

Ochsentaler																
Altitude	**Area**	**1991, bn**	**Area**	**1992, bn**	**1992, bw**	**1992, bs**	**Area**	**1993, bn**	**1993, bw**	**1993, bs**	**Area**	**1994, bn**	**1994, bw**	**1994, bs**	
3150	0.021	20	0.021	-480	1350	-1830	0.021	220	1400	-1180	0.021	200	1480	-1280	
3050	0.373	290	0.373	-130	1530	-1660	0.373	790	1400	-610	0.373	210	1540	-1330	
2950	1.02	120	1.02	-380	1770	-2150	1.02	520	1530	-1010	1.02	-100	1700	-1800	
2850	0.464	-510	0.464	-1170	1600	-2770	0.464	-70	1230	-1300	0.464	-1210	1490	-2700	
2750	0.217	-1380	0.217	-1880	1360	-3240	0.217	-960	1200	-2160	0.217	-1970	1330	-3300	
2650	0.262	-2350	0.262	-2270	1300	-3570	0.262	-1630	1150	-2780	0.262	-2360	1200	-3560	
2550	0.208	-3150	0.208	-3150	990	-4140	0.208	-2080	1100	-3180	0.208	-3250	1000	-4250	
2450	0.053	-3250	0.053	-3840	900	-4740	0.053	-2820	1050	-3870	0.053	-4080	920	-5000	
2350	0.025	-3590	0.024	-4460	900	-5360	0.02	-3750	1000	-4750	0.011	-5000	890	-5890	
3200-2300	*2.643*	*-705*	*2.642*	*-1120*	*1540*	*-2660*	*2.638*	*-190*	*1340*	*-1530*	*2.629*	*-980*	*1480*	*-2460*	
recalc.	**2.643**	**-695**	**2.642**	**-1119**	**1536**	**-2655**	**2.638**	**-188**	**1345**	**-1533**	**2.629**	**-979**	**1484**	**-2463**	
Ochsentaler															
Altitude	**Area**	**1995, bn**	**1995, bw**	**1995, bs**											
3150	0.021	170	1500	-1330											
3050	0.373	610	1460	-850											
2950	1.02	610	1500	-890											
2850	0.464	10	1760	-1750											
2750	0.217	-570	1680	-2250											
2650	0.262	-890	1430	-2330											
2550	0.208	-1510	1480	-2990											
2450	0.043	-2040	1120	-3160											
2350	0.006	-2750	1120	-3870											
3200-2300	*2.614*	*50*	*1540*	*-1490*											
recalc.	**2.614**	**32**	**1540**	**-1509**											
Langtaler															
Altitude	**Area**	**1963, bn**	**Area**	**1964, bn**	**Area**	**1965, bn**	**Area**	**1966, bn**	**Area**	**1967, bn**	**1968, bn**	**Area**	**1969, bn**	**Area**	**1970, bn**
>3300	0.053	977	0.053	768	0.017	2494	0.017	2300	0.0165	1339	1339	0.0176	301	0.0176	301
3275	0.122	1037	0.1215	867	0.108	2585	0.108	2419	0.1077	1398	1385	0.1114	520	0.1114	427
3225	0.144	958	0.144	628	0.127	2492	0.127	2359	0.1268	1251	1168	0.1298	491	0.1298	461
3175	0.193	573	0.193	420	0.174	2417	0.174	2234	0.1736	1077	1131	0.1786	362	0.1786	385
3125	0.165	471	0.1645	224	0.158	2147	0.158	1930	0.1577	937	1094	0.1604	300	0.1604	184
3075	0.146	294	0.146	143	0.151	1944	0.151	1749	0.1507	880	1005	0.1596	232	0.1596	130
3025	0.162	167	0.162	47	0.169	1734	0.169	1598	0.1692	729	917	0.1496	106	0.1496	98
2975	0.171	46	0.171	-80	0.1819	1478	0.1818	1391	0.1818	571	889	0.1787	95	0.1786	-15
2925	0.212	-13	0.212	-297	0.194	1241	0.194	1087	0.1944	424	840	0.2143	18	0.2143	-117
2875	0.294	-32	0.294	-753	0.307	905	0.307	621	0.307	307	595	0.3205	-133	0.3205	-191
2825	0.2565	-904	0.2565	-1467	0.2739	375	0.2739	76	0.2741	56	241	0.2459	-254	0.2459	-364
2775	0.2375	-1324	0.2375	-1936	0.23	-35	0.23	-313	0.2296	-543	-213	0.3	-792	0.3	-1144
2725	0.204	-1811	0.204	-2640	0.232	-423	0.232	-470	0.2317	-1069	-585	0.2354	-1234	0.2354	-1471
2675	0.191	-2153	0.191	-2786	0.198	-628	0.1979	-744	0.1979	-1460	-973	0.2161	-1483	0.2161	-1812
2625	0.1385	-2571	0.1386	-3037	0.148	-719	0.148	-1619	0.148	-1503	-1111	0.1675	-1657	0.1675	-2245
2575	0.12	-2831	0.12	-3438	0.1169	-1137	0.1169	-2115	0.1172	-1833	-1807	0.1213	-2081	0.1213	-2538
2525	0.083	-2882	0.083	-3524	0.0819	-1271	0.0819	-2458	0.0819	-2368	-2148	0.0908	-2636	0.0908	-2975
2500>	0.039	-3474	0.039	-3831	0.035	-1820	0.035	-2846	0.0348	-3125	-2534	0.0518	-3108	0.0518	-3606
Total	*2.9315*	*-652*	*2.93*	*-1053*	*2.9026*	*771*	*2.9024*	*478*	*2.9006*	*-63*	*190*	*3.0493*	*-515*	*3.0492*	*-706*
recalc.	**2.9315**	**-623**	**2.93**	**-1067**	**2.9026**	**771**	**2.9024**	**478**	**2.9006**	**-63**	**190**	**3.0493**	**-515**	**3.0492**	**-706**

Careser															
Altitude	**Area**	**1967, bn**	**1968, bn**	**1969, bn**	**1970, bn**	**bn, mm**	**1972, bn**	**1973, bn**	**1974, bn**	**1975, bn**	**Area**	**1976, bn**	**1977, bn**	**1978, bn**	**1979, bn**
3275	0.366	130	1120	770	910	420	890	180	940	770	0.386	200	1500	540	730
3175	0.461	100	790	630	600	60	770	-560	330	440	0.453	-70	1300	230	270
3125	1.305	-210	560	510	170	-130	700	-1060	-100	300	1.305	-170	1130	180	0
3075	1.068	-480	170	370	-250	-940	450	-1380	-470	80	1.05	-310	960	50	-260
3025	0.901	-680	-240	-90	-920	-1270	90	-1810	-850	-110	0.849	-460	760	-100	-520
2975	0.35	770	-350	-430	-1170	-1460	-290	-2150	-970	-280	0.381	-540	570	-200	-760
2925	0.211	-890	-370	-680	-1470	-1690	-610	-2320	-1110	-360	0.198	-600	450	-270	-940
2875	0.056	-1050	-390	-960	-1600	-1820	-860	-2410	-1230	-380	0.058	-640	360	-270	-1130
3350-2857	*4.718*	*-386*	*247*	*-5*	*-631*	*-650*	*400*	*-1276*	*-319*	*145*	*4.68*	*-268*	*988*	*79*	*-182*
Careser cont.															
Altitude	**Area**	**1980, bn**	**1981, bn**	**1982, bn**	**1983, bn**	**1984, bn**	**1985, bn**	**1986, bn**	**1987, bn**	**1988, bn**	**1989, bn**	**1990, bn**			
3275	0.427	390	-330	-860	-250	10	-20	-400	-900	-900	0	-690			
3175	0.47	190	-600	-1340	-540	-310	-420	-800	-1300	-730	-440	-1170			
3125	1.321	90	-740	-1470	-680	-470	-620	-1000	-1500	-890	-660	-1410			
3075	1.04	-20	-880	-1720	-830	-640	-810	-1190	-1700	-1060	-880	-1640			
3025	0.877	-120	-1010	-2020	-970	-800	-1010	-1390	-1900	-1220	-1100	-1880			
2975	0.398	-220	-1150	-2240	-1120	-960	-1210	-1580	-2100	-1390	-1310	-2120			
2925	0.228	-320	-1300	-2380	-1260	-1120	-1400	-1780	-2300	-1550	-1530	-2360			
2875	0.068	-430	-1430	-2490	-1400	-1280	-1600	-1970	-2500	-1720	-1750	-2590			
3350-2857	*4.829*	*12*	*-839*	*-1678*	*-787*	*-591*	*-758*	*-1138*	*-1645*	*-1056*	*-817*	*-1578*			
Careser cont.															
Altitude	**Area**	**1991, bn**	**1992, bn**	**1993, bn**	**1994, bn**	**1995, bn**									
3275	0.224	-850	-200	540	-600	-530									
3175	0.3	-1290	-700	110	-1180	-810									
3125	1.044	-1530	-960	-100	-1470	-950									
3075	0.965	-1740	-1210	-310	-1750	-1090									
3025	0.656	-1960	-1460	-520	-2040	-1220									
2975	0.371	-2190	-1710	-740	-2330	-1360									
2925	0.198	-2410	-1960	-950	-2620	-1500									
2875	0.099	-2630	-2210	-1160	-2910	-1640									
3350-2857	*3.857*	*-1734*	*-1199*	*-303*	*-1743*	*-1081*									
Maladeta															
Altitude	**Area**	**1992, bn**	**1992, bw**	**1992, bs**	**1993, bn**	**1993, bw**	**1993, bs**	**1994, bn**	**1994, bw**	**1994, bs**	**1995, bn**	**1995, bw**	**1995, bs**		
3150	0.0604	1774	2160	-386	2384	3471	-1087	2620	2650	-30	2620	3068	-448		
3100	0.0945	103	2550	-2447	319	1775	-1456	1040	1950	-910	500	1915	-1415		
3000	0.1837	-935	1147	-2081	-612	1793	-2405	-403	1856	-2259	-1500	1953	-3453		
2900	0.1019	-1104	1210	-2314	-1088	1565	-2653	-481	1559	-2060	-2500	1059	-3559		
2850	0.0573	-2074	960	-3034	-1958	2024	-3982	-1717	1668	-3385	-4000	1551	-5551		
3200-2800	0.4978	*-327*	*1682*	*-2009*	*-32*	*2132*	*-2164*	*351*	*1975*	*-1624*	*-643*	*1976*	*-2619*		

Lewis														
Altitude	**Area**	**1981, bn**	**Area**	**1982, bn**	**1983, bn**	**1984, bn**	**1985, bn**	**Area**	**1986, bn**	**1987, bn**	**1988, bn**	**1989, bn**	**Area**	**1990, bn**
4975	0.0037	-400	0.0028	-210	-100	-400	200	0.0009	-100	-100	-1500	1500	0.0004	-100
4925	0.0156	-400	0.014	180	-20	-300	150	0.0126	-100	-60	-1500	1550	0.0121	-70
4875	0.0592	-720	0.0568	440	-140	-500	-160	0.053	-80	70	-1660	1290	0.0497	-110
4825	0.05	-780	0.0438	160	-370	-350	-520	0.0439	-100	-20	-1940	1200	0.0484	-110
4775	0.0705	-1030	0.0628	-220	-520	-870	-1130	0.0561	-610	-510	-2200	1200	0.0457	-1080
4725	0.0442	-1710	0.043	-830	-1350	-1190	-1490	0.0449	-1420	-1640	-3120	60	0.0447	-1910
4675	0.032	-2240	0.0247	-1700	-1730	-1900	-1970	0.0238	-1600	-2170	-3000	-520	0.0212	-2410
4625	0.0184	-2500	0.0129	-2000	-2300	-2500	-2500	0.0119	-2170	-2200	-3000	-800	0.0087	-2600
4575	0.0014	-2500	0.0001	-2000	-2500	-2800	-2800		-2400					
5000-4550	*0.295*	*-1210*	*0.2609*	*-370*	*-720*	*-900*	*-950*	*0.2471*	*-680*	*-770*	*-2300*	*770*	*0.239*	*-1010*
recalc.	**0.295**	**-1216**	**0.2609**	**-320**	**-721**	**-898**	**-941**	**0.2471**	**-696**	**-721**	**-2282**	**769**	**0.2309**	**-953**
Lewis cont.														
Altitude	**Area**	**1992, bn**	**Area**	**1993, bn**	**1994, bn**	**Area**	**1995, bn**	**1996, bn**						
4975	0	-400	0	200										
4925	0.012	-400	0.0097	200	-500	0.01	560	220						
4875	0.05	-850	0.0463	300	-1200	0.046	250	80						
4825	0.048	-1150	0.0435	300	-1300	0.044	50	-340						
4775	0.046	-1230	0.0439	-490	-2090	0.044	-290	-590						
4725	0.045	-2520	0.0377	-1170	-2800	0.038	-1310	-860						
4675	0.021	-4270	0.0181	-2160	-3080	0.018	-2030	-1340						
4625	0.009	-4700	0.0055	-2600	-3400	0.006	-2350	-1460						
5000-4550	*0.231*	*-1750*	*0.2047*	*-480*	*-1900*	*0.206*	*-450*	*-490*						
recalc.	**0.231**	**-1746**	**0.2047**	**-440**	**-2287**	**0.206**	**-452**	**-486**						

Djankuat																
Altitude	**Area**	**1968, bn**	**1968, bw**	**1968, bs**	**1969, bn**	**1969, bw**	**1969, bs**	**1970, bn**	**1970, bw**	**1970, bs**	**1971, bn**	**1971, bw**	**1971, bs**	**1972, bn**	**1972, bw**	**1972, bs**
>3600	0.228	120	1060	-940	150	1550	-1400	120	1040	-920	100	1320	-1220	80	1910	-1830
3550	0.491	1970	2910	-940	1150	2550	-1400	2440	3360	-920	2440	3620	-1220	1100	2930	-1830
3450	0.373	1860	2910	-1050	490	2240	-1750	2060	3160	-1100	1770	3280	-1520	550	2730	-2180
3350	0.375	760	2250	-1470	40	2160	-2120	1260	2570	-1310	950	2870	-1920	120	2660	-2540
3250	0.435	410	2050	-1640	-260	2130	-2390	990	2550	-1560	570	3850	-2280	-250	2510	-2760
3150	0.362	60	1830	-1770	-1350	1890	-3240	630	2640	-2010	-420	2370	-2790	-1490	2060	-3550
3050	0.296	-760	1550	-2310	-2790	1470	-4260	-270	2260	-2530	-1610	1820	-3420	-2740	1550	-4290
2950	0.287	-1800	1400	-3200	-3940	1150	-5090	-2120	1560	-3680	-2920	1510	-4430	-4400	1160	-5560
2850	0.186	-2900	1300	-4200	-4380	920	-5300	-2960	1220	-4180	-3780	1160	-4940	-4460	1100	-5560
2750	0.093	-4490	1350	-5840	-5120	800	-5920	-3950	900	-4850	-4490	1180	-5670	-5200	1040	-6240
3990-2698	*3.126*	*100*	*2060*	*-1960*	*-1090*	*1890*	*-2980*	*410*	*2410*	*-2000*	*-230*	*2430*	*-2660*	*-1140*	*2170*	*-3310*
recalc.	**3.126**	**154**	**2042**	**-1887**	**-977**	**1879**	**-2855**	**486**	**2406**	**-1920**	**100**	**2626**	**-2526**	**-1032**	**2182**	**-3214**
Djankuat cont.																
Altitude	**Area**	**1973, bn**	**1973, bw**	**1973, bs**	**1974, bn**	**1974, bw**	**1974, bs**	**1975, bn**	**1975, bw**	**1975, bs**	**1976, bn**	**1976, bw**	**1976, bs**	**1977, bn**	**1977, bw**	**1977, bs**
>3600	0.228	110	1210	-1100	110	1180	-1070	330	1310	-1640	150	1050	-900	150	1210	-1060
3550	0.491	2690	3760	-1100	2170	3240	-1070	1560	3200	-1640	2840	3740	-900	2050	3100	-1050
3450	0.373	1490	2920	-1430	1790	3120	-1330	870	2930	-2060	2340	3380	-1040	1610	2880	-1270
3350	0.375	600	2300	-1700	1220	2790	-1570	180	2550	-2370	1160	2550	-1390	840	2600	-1760
3250	0.435	770	2580	-1810	1000	2610	-1610	-70	2480	-2550	690	2250	-1560	550	1950	-1400
3150	0.362	-530	1850	-2380	640	2700	-2060	-880	2160	-3040	-310	1840	-2150	-670	1860	-2530
3050	0.296	-1640	1460	-3100	-570	2010	-2580	-2040	1860	-3900	-1010	1460	-2470	-1840	1620	-3460
2950	0.287	-3200	1100	-4300	-2330	1340	-3670	-3770	1100	-4870	-2770	1130	-3830	-3020	1180	-4200
2850	0.186	-4400	920	-4960	-2760	1260	-4020	-4070	960	-5030	-3140	1020	-4160	-3550	970	-4520
2750	0.093	-4840	880	-5720	-3120	1250	-4370	-3550	950	-4500	-2640	1170	-3810	-3040	910	-3970
3990-2698	*3.126*	*-280*	*2200*	*-2480*	*240*	*2360*	*-2120*	*-910*	*2180*	*-3090*	*290*	*2220*	*-1930*	*-370*	*2140*	*-2510*
recalc.	**3.126**	**-112**	**2197**	**-2309**	**397**	**2403**	**-2006**	**-652**	**2211**	**-2864**	**327**	**2237**	**-1910**	**-129**	**2064**	**-2193**
Djankuat cont.																
Altitude	**Area**	**1978, bn**	**1978, bw**	**1978, bs**	**1979, bn**	**1979, bw**	**1979, bs**	**1980, bn**	**1980, bw**	**1980, bs**	**1981, bn**	**1981, bw**	**1981, bs**	**1982, bn**	**1982, bw**	**1982, bs**
>3600	0.228	400	1450	-1050	-90	1420	-1510	430	1540	-1110	-560	1470	-2030	940	1850	-910
3550	0.491	2650	3710	-1060	2140	3650	-1510	3220	4330	-1110	620	2690	-2070	2570	3590	-1020
3450	0.373	2030	3310	-1280	1390	3260	-1870	1930	3390	-1460	470	2570	-2100	2180	3310	-1130
3350	0.375	1250	2860	-1610	530	2810	-2280	750	2600	-1850	-250	2630	-2880	1430	2930	-1500
3250	0.435	960	2770	-1810	300	2730	-2430	1000	3170	-2170	-320	2690	-3010	740	2710	-1970
3150	0.362	290	2500	-2210	-520	2460	-2980	-180	2550	-2730	-620	2730	-3350	-300	2170	-2470
3050	0.296	-550	2250	-2800	-1640	2180	-3820	-640	2520	-3160	-1580	2600	-4180	-1060	1930	-2990
2950	0.287	-1820	1880	-3700	-2900	1750	-4650	-1690	2310	-4000	-3790	1750	-5540	-2280	1570	-3850
2850	0.186	-2440	1680	-4120	-3200	1730	-4930	-2550	1860	-4410	-4350	1520	-5870	-3170	1260	-4430
2750	0.093	-2660	1640	-4300	-3220	1570	-4790	-2610	1700	-4310	-4150	1530	-5680	-3430	1100	-4530
3990-2698	*3.126*	*440*	*2560*	*-2120*	*-310*	*2520*	*-2830*	*380*	*2780*	*-2400*	*-910*	*2390*	*-3300*	*420*	*2530*	*-2110*
recalc.	**3.126**	**561**	**2636**	**-2075**	**-167**	**2584**	**-2752**	**531**	**2857**	**-2327**	**-914**	**2385**	**-3299**	**372**	**2508**	**-2136**
Djankuat cont.																
Altitude	**Area**	**1983, bn**	**1983, bw**	**1983, bs**	**1984, bn**	**1984, bw**	**1984, bs**	**1985, bn**	**1985, bw**	**1985, bs**	**1986, bn**	**1986, bw**	**1986, bs**	**1987, bn**	**1987, bw**	**1987, bs**
>3600	0.228	-20	1240	-1260	610	1500	-890	340	1260	-920	470	1780	-1310	1930	300	-1150
3550	0.491	1020	2440	-1420	1880	2880	-1000	1460	2310	-850	1330	2620	-1290	3690	4820	-1130
3450	0.373	450	2040	-1590	1470	2580	-1110	910	2160	-1250	680	2350	-1670	2690	4410	-1710
3350	0.375	-40	1880	-1920	1180	2490	-1310	610	2140	-1530	270	2540	-2270	2440	4510	-2070
3250	0.435	-530	1790	-2320	820	2550	-1730	50	1990	-1940	-120	2570	-2690	2200	4380	-2180
3150	0.362	-1330	1450	-2780	0	2230	-2230	-680	1690	-2370	-850	2440	-3290	1340	3980	-2640
3050	0.296	-2090	1350	-3440	-820	2090	-2910	-1480	1650	-3130	-1600	2310	-3910	530	3990	-3460
2950	0.287	-3900	930	-4830	-2640	1600	-4240	-3290	1280	-4570	-3170	1590	-4760	-1380	3150	-4530
2850	0.186	-4890	740	-5630	-3210	1480	-4690	-3960	1080	-5040	-3910	1250	-5160	-2390	2480	-4870
2750	0.093	-4950	680	-5630	-2920	1680	-4600	-3660	970	-4630	-3740	1240	-4980	-2340	2330	-4670
3990-2698	*3.126*	*-970*	*1650*	*-2620*	*210*	*2270*	*-2060*	*-380*	*1820*	*-2200*	*-500*	*2240*	*-2740*	*1540*	*4000*	*-2460*
recalc.	**3.126**	**-1014**	**1637**	**-2651**	**173**	**2264**	**-2091**	**-423**	**1809**	**-2231**	**-545**	**2243**	**-2788**	**1305**	**3800**	**-2495**

Djankuat cont.															
Altitude	**Area**	**1988, bn**	**1988, bw**	**1988, bs**	**1989, bn**	**1989, bw**	**1989, bs**	**1990, bn**	**1990, bw**	**1990, bs**	**Altitude**	**Area**	**1991, b**	**1991, bw**	**1991, bs**
>3600	0.228	680	170	-1080	1020	2110	-1090	950	2020	-1070	3795	0.228	660	2310	-1650
3550	0.491	2500	3530	-1030	1970	3150	-1180	2420	3600	-1180	3550	0.491	1600	3370	-1770
3450	0.373	1690	3080	-1390	1230	2720	-1490	1670	3100	-1430	3450	0.373	890	2840	-1950
3350	0.375	1370	2970	-1600	800	2750	-1950	890	2670	-1780	3350	0.375	370	2660	-2290
3250	0.435	1170	2990	-1820	640	2780	-2140	510	2640	-2130	3250	0.435	70	2740	-2670
3150	0.362	540	2620	-2080	-100	2610	-2710	-310	2430	-2740	3150	0.362	-620	2220	-2840
3050	0.296	-360	2250	-2610	-1410	2130	-3540	-940	2450	-3390	3050	0.296	-1290	2100	-3390
2950	0.287	-2470	1650	-4120	-2900	1720	-4620	-1860	2120	-3980	2950	0.287	-2870	1680	-4550
2850	0.186	-3290	1430	-4720	-3610	1450	-5060	-2560	2040	-4600	2850	0.186	-3970	1410	-5380
2750	0.093	-3090	1360	-4450	-3290	1370	-4660	-2710	1950	-4660	2750	0.093	-4170	1250	-5420
3990-2698	*3.126*	*520*	*2620*	*-2100*	*40*	*2490*	*-2450*	*340*	*2660*	*-2320*	**3990-2698**	**3.126**	*-310*	*2480*	*-2790*
recalc.	**3.126**	**369**	**2500**	**-2131**	**-8**	**2479**	**-2487**	**298**	**2658**	**-2360**	**recalc.**	**3.126**			
Djankuat cont.															
Altitude	**Area**	**1992, bn**	**1992, bw**	**1992, bs**	**Altitude**	**Area**	**1993, bn**	**19993, bw**	**1993, bs**	**1994, bn**	**1994, bw**	**1994, bs**	**1995, bn**	**1995, bw**	**1995, bs**
3795	0.228	730	1350	-620	3795	0.187	1240	1970	-730	700	1590	-890	440	1650	-1210
3550	0.491	1650	2540	-890	3550	0.572	2920	4180	-1260	1620	2970	-1350	2460	3630	-1170
3450	0.373	990	2210	-1220	3450	0.343	2060	3360	-1300	490	2160	-1670	1140	2560	-1420
3350	0.375	410	1880	-1470	3350	0.365	1740	3250	-1510	180	2330	-2150	890	2570	-1680
3250	0.435	210	2120	-1910	3250	0.419	1640	3540	-1900	-480	2270	-2750	570	2790	-2220
3150	0.362	-450	1900	-2350	3150	0.36	1140	3210	-2070	-1490	1840	-3330	-510	2270	-2780
3050	0.296	-1040	1940	-2980	3050	0.288	380	3040	-2660	-2630	1610	-4240	-1450	2320	-3770
2950	0.287	-2490	1560	-4050	2950	0.286	-1100	2460	-3570	-3990	1330	-5320	-2820	1950	-4770
2850	0.186	-3310	1380	-4690	2850	0.18	-2540	2020	-4560	-4650	1190	-5840	-3570	1570	-5140
2750	0.093	-3500	1340	-4840	2750	0.1	-3380	1880	-5260	-5060	900	-5960	-3630	1480	-5110
3990-2698	**3.126**	*-130*	*1950*	*-2080*	**3990-2698**	*3.100*	*1100*	*3180*	*-2080*	*-840*	*2070*	*-2910*	*40*	*2540*	*-2500*
recalc.	**3.126**				**recalc.**	**3.100**									
Garabashy															
Altitude	**Area**	**1984, bn**	**1984, bw**	**1984, bs**	**1985, bn**	**1985, bw**	**1985, bs**	**1986, bn**	**1986, bw**	**1986, bs**	**1987, bn**	**1987, bw**	**1987, bs**		
4800	0.228	250	225	25	180	160	20	100	95	5	440	450	-100		
4550	0.13	280	320	-40	390	395	-5	0	195	-195	480	560	-80		
4450	0.156	300	370	-70	360	390	-30	-20	235	-255	440	600	-160		
4350	0.152	300	415	-115	270	330	-60	-40	275	-315	350	640	-290		
4250	0.221	380	500	-120	380	435	-55	-50	310	-360	490	800	-310		
4150	0.263	600	730	-130	570	610	-40	210	580	-370	780	1020	-240		
4050	0.422	1290	1400	-110	1090	1100	-10	700	1070	-370	1350	1630	-280		
3950	0.628	1500	1590	-90	1280	1420	-140	80	1120	-1040	1760	2250	-490		
3850	0.635	790	1260	-470	260	1060	-800	-690	970	-1660	660	1790	-1130		
3750	0.489	210	1200	-990	-720	650	-1370	-1050	860	-1910	200	1680	-1480		
3650	0.322	-300	1160	-1460	-1130	730	-1860	-1220	950	-2170	-410	1510	-1920		
3550	0.269	-660	1310	-1970	-1350	970	-2320	-1560	1130	-2690	-760	1480	-2240		
3450	0.302	-1080	1190	-2270	-1900	900	-2800	-2290	1040	-3330	-1050	1420	-2470		
3350	0.255	-1530	970	-2500	-2510	660	-3170	-3150	780	-3930	-1100	1530	-2630		
5000-3300	*4.472*	*340*	*1080*	*-740*	*-100*	*840*	*-940*	*-640*	*820*	*-1460*	*410*	*1470*	*-1060*		
recalc.	**4.472**	**342**	**1079**	**-737**							**410**	**1470**	**-1060**		

Garabashy																
Altitude	**Area**	**1988, bn**	**1988, bw**	**1988, bs**	**1989, bn**	**1989, bw**	**1989, bs**	**1990, bn**	**1990, bw**	**1990, bs**	**1991, bn**	**1991, bw**	**1991, bs**	**1992, bn**	**1992, bw**	**1992, bs**
4800	0.228	350	350	0	300	300	0	240	220	20	260	240	20	230	205	25
4550	0.13	400	410	-10	400	430	-30	170	290	-120	280	325	-45	350	360	-10
4450	0.156	350	410	-60	340	430	-90	140	325	-185	260	360	-100	270	340	-70
4350	0.152	240	410	-170	220	400	-180	150	385	-235	150	365	-215	190	340	-150
4250	0.221	350	550	-200	400	570	-170	120	440	-320	210	510	-300	340	490	-150
4150	0.263	680	860	-180	770	920	-150	290	670	-380	380	720	-340	620	775	-155
4050	0.422	1070	1330	-260	1540	1740	-200	870	1210	-340	1000	1200	-200	1160	1320	-160
3950	0.628	1060	1570	-510	1470	1970	-500	1110	1550	-440	1250	1630	-380	1010	1360	-350
3850	0.635	600	1510	-910	420	1580	-1160	540	1400	-860	190	1420	-1230	230	1090	-860
3750	0.489	120	1380	-1260	-470	1430	-1900	-100	1320	-1420	-410	1270	-1680	-100	940	-1040
3650	0.322	-390	1220	-1610	-1200	1230	-2430	-500	1300	-1800	-800	1270	-2070	-470	940	-1410
3550	0.269	-420	1530	-1950	-1380	1570	-2950	-730	1440	-2170	-1020	1415	-2435	-670	1030	-1700
3450	0.302	-920	1370	-2290	-1960	1400	-3360	-1210	1350	-2560	-1590	1240	-2830	-1080	980	-2060
3350	0.255	-1250	1270	-2520	-2470	1180	-3650	-1810	1000	-2810	-2170	970	-3140	-1270	910	-2180
5000-3300	*4.472*	*270*	*1190*	*-920*	*30*	*1310*	*-1280*	*90*	*1110*	*-1020*	*-30*	*1110*	*-1140*	*140*	*930*	*-790*
recalc.	**4.472**	**269**	**1192**	**-923**	**29**	**1305**	**-1276**									

Garabashy cont.										
Altitude	**Area**	**1993, bn**	**1993, bw**	**1993, bs**	**1994, bn**	**1994, bw**	**1994, bs**	**1995, bn**	**1995, bw**	**1995, bs**
4800	0.228	0	20	-20	180	160	20	240	220	20
4550	0.13	-90	20	-110	80	215	-135	180	275	-95
4450	0.156	-130	20	-150	40	245	-205	190	330	-140
4350	0.152	-200	20	-220	30	270	-240	220	400	-180
4250	0.221	-160	30	-190	140	400	-260	300	495	-195
4150	0.263	0	180	-180	350	660	-310	400	600	-200
4050	0.422	1360	1440	-80	710	1090	-380	1090	1380	-290
3950	0.628	1630	1650	-20	750	1520	-770	1130	1490	-360
3850	0.635	580	1320	-740	-270	1350	-1620	80	1130	-1050
3750	0.489	720	1650	-930	-1010	1170	-2180	-600	950	-1550
3650	0.322	290	1490	-1200	-1470	1080	-2550	-730	1100	-1830
3550	0.269	-630	1310	-1940	-1620	1300	-2990	-830	1320	-2150
3450	0.302	-1130	1070	-2200	-2080	1240	-3320	-1260	1260	-2520
3350	0.255	-1590	820	-2410	-2630	970	-3600	-1800	950	-2750
5000-3300	*4.472*	*310*	*1050*	*-740*	*-430*	*1010*	*-1440*	*-10*	*-1010*	*-1020*

Marukh												
Altitude	**Area**	**1967, bn**	**1968, bn**	**1969, bn**	**1970, bn**	**1971, bn**	**1972, bn**	**1973, bn**	**1974, bn**	**1975, bn**	**1976, bn**	**1977, bn**
3075	0.18	1660	2220	1230	1290	1760	1380	3050	2110	1000	3300	1670
3025	0.2	1550	2170	1300	1240	1490	100	2970	1910	1070	3320	1680
2975	0.26	1400	2070	1150	1220	1260	850	2470	1550	730	3140	1360
2925	0.64	700	1510	670	1100	720	1060	1160	610	30	2480	640
2875	0.5	-460	-90	-870	900	-920	-1490	-780	-870	-1430	60	-820
2825	0.35	-1380	-880	-1570	1250	-1970	-2090	-1610	-1230	-2390	-900	-1570
2775	0.28	-1290	-1390	-1710	-180	-2210	-3020	-1990	-1840	-3020	-1700	-2440
2725	0.32	-1850	-2050	-2770	-920	-2740	-2610	-2040	-2140	-2920	-2140	-3300
2675	0.23	-1560	-2670	-3270	-1530	-2980	-2850	-1550	-1890	-3260	-2380	-3920
2625	0.13	-1950	-2780	-3420	-1390	-3420	-2760	-1390	-2010	-3530	-2140	-3750
2575	0.13	-2420	-2980	-3720	-1720	-3180	-3060	-1470	-2090	-3760	-2140	-3750
2525	0.11	-2730	-2930	-3520	-1460	-3080	-3090	-1850	-1950	-4210	-3000	-4020
2500-3100	**3.33**	*-430*	*-170*	*-940*	*390*	*-900*	*-1190*	*-120*	*-370*	*-1260*	*340*	*-820*
recalc.	**3.33**	**-442**	**-224**	**-963**	**339**	**-938**	**-1124**	**-170**	**-508**	**-1468**	**235**	**-1086**

Leviy Aktru															
Altitude	**Area**	**1988, bn**	**1988, bw**	**1988, bs**	**1989, bn**	**1989, bw**	**1969, bs**	**Altitude**	**Area**	**1991, bn**	**1991, bw**	**1991, bs**	**1992, bn**	**1992, bw**	**1992, bs**
3950	0.16	1310	1310	0	1130	1130	0	3950	0.15	880	560	320	690	470	220
3850	0.16	1100	1100	0	950	950	0	3850	0.17	860	540	320	730	500	230
3750	0.33	900	900	0	810	810	0	3750	0.36	610	370	240	580	350	230
3650	0.69	970	980	-10	940	940	0	3650	0.7	700	560	140	590	430	160
3550	0.55	1160	1180	-20	1100	1100	0	3550	0.53	630	610	20	670	620	50
3450	0.58	1150	1240	-90	1000	1040	-40	3450	0.56	590	690	-100	780	740	40
3350	0.74	1120	1260	-140	990	1080	-90	3350	0.71	310	660	-350	470	660	-190
3250	0.54	660	1100	-440	570	1100	-530	3250	0.49	-240	570	-810	20	570	-550
3150	0.48	160	940	-780	-90	1040	-1130	3150	0.49	-730	450	-1180	-120	660	-780
3050	0.46	30	1160	-1130	-350	1150	-1500	3050	0.4	-1330	490	-1820	-460	580	-1040
2950	0.57	-600	1050	-1650	-1380	1020	-2400	2950	0.57	-2040	330	-2370	-1550	560	-2110
2850	0.6	-910	970	-1880	-2070	730	-2800	2850	0.53	-2350	350	-2700	-1950	310	-2260
2.5-2.8	0.38	-1980	670	-2650	-2840	560	-3400	2750	0.22	-3140	240	-3380	-2720	230	-2950
4.0-2.5	*6.24*	*370*	*1070*	*-700*	*30*	*980*	*-950*	2650	0.07	-3400	170	-3570	-3200	140	-3340
recalc.	**6.24**	**367**	**1069**	**-702**	**26**	**979**	**-953**	**4.0-2.5**	*5.95*	*-480*	*510*	*-990*	*-190*	*530*	*-720*
								recalc.	**5.95**	-417	**504**	**-922**	**-168**	**533**	**-701**
L. Aktru cont.															
Altitude	**Area**	**1993, bn**	**1993, bw**	**1993, bs**	**1994, bn**	**1994, bw**	**1994, bs**	**1995, bn**	**1995, bw**	**1995, bs**					
3950	0.15	1190	860	330	670	380	290	650	690	-40					
3850	0.17	1050	720	330	580	470	110	660	720	-60					
3750	0.36	880	550	330	320	630	-310	440	910	-270					**N**
3650	0.7	980	690	290	510	630	-120	800	910	-110					
3550	0.53	1050	960	90	620	650	-30	960	940	20					
3450	0.56	1170	1050	120	690	770	-80	1120	1120	0					
3350	0.71	930	980	-50	480	810	-330	1140	1180	-40					
3250	0.49	660	1020	-360	20	760	-740	820	1110	-290					
3150	0.49	290	1060	-770	-240	800	-1040	440	1130	-690					
3050	0.4	-60	890	-950	-540	760	-1300	-540	1020	-1560					
2950	0.57	-890	780	-1670	-1380	570	-1950	-1510	880	-2390					
2850	0.53	-1520	560	-2080	-2560	560	-3120	-2480	690	-3170					
2750	0.22	-2570	290	-2860	-3850	420	-4270	-3510	470	-3980					
2650	0.07	-2900	250	-3150	-4100	360	-4460	-4050	290	-4340					
4.0-2.5	**5.95**	*240*	*820*	*-580*	*-360*	*630*	*-990*	*-30*	*910*	*-940*					
recalc.	5.95	**268**	**827**	**-560**	**-315**	**666**	**-981**	**20**	**950**	**-930**					
Praviy Aktru															
Altitude	**Area**	**1988, bn**	**1988, bw**	**1988, bs**	**1089, bn**	**1989, bw**	**1989, bs**								
3650	0.17	1260	1260	0	1100	1100	0								
3550	0.4	1470	1470	0	1200	1200	0								
3450	0.37	1300	1300	0	1160	1160	0								
3350	0.55	1450	1450	0	1290	1290	0								
3250	0.34	810	1130	-320	810	1150	-340								
3150	0.79	280	990	-710	410	1120	-710								
3050	0.66	-180	890	-1070	-100	950	-1050								
2950	0.5	-520	950	-1470	-800	790	-1590								
2850	0.26	-870	840	-1710	-1410	680	-2090								
2750	0.14	-1370	750	-2120	-2260	510	-2770								
2650	0.1	-2040	720	-2760	-2500	480	-2980								
2550	0.12	-2340	430	-2770	-2760	460	-3220								
2450	0.02	-5440	370	-2910	-3140	420	-3560								
3.7-2.4	*4.42*	*310*	*1080*	*-770*	*190*	*1020*	*-830*								
recalc	**4.42**	**282**	**1078**	**-796**	**138**	**1010**	**-871**								

M. Aktru																
Altitude	**Area**	**1970, bn**	**1971, bn**	**1972, bn**	**1973, bn**	**1974, bn**	**Altitude**	**Area**	**1973, bn**	**1973, Ct**	**1973, At**	**1974, bn**	**1974, Ct**	**1974, At**		
3700	0.06	680	650	700	750	720	3700	0.11	680	680	0	-140	660	-800		
3500	0.7	880	830	870	950	900	3500	0.75	650	650	0	-600	630	-1230		
3300	1.6	850	870	770	800	100	3300	1.65	290	460	-170	-2120	450	-2570		
3100	0.4	50	350	-400	-200	-950	3100	0.49	-390	650	-1040	-2030	630	-2660		
2900	0.45	-700	-370	-800	-600	-1800	2900	0.22	-138	540	-1920	-2910	510	-3420		
2700	0.22	-1200	-1100	-1400	-1700	-3000	2700	0.13	-330	360	-3660	-4720	350	-5070		
2500	0.15	-2400	-2000	-2000	-3000	-4150	2500	0.28	-330	360	-3660	-4720	350	-5070		
2300	0.23	-3500	-3300	-3100	-4100	-5100	2300									
3800-2200	*3.81*	*80*	*180*	*10*	*0*		**3.8-2.2**	*3.63*	*90*	*640*	*-560*	*-1560*	*630*	*-2190*		
recalc.	**3.81**	**77**	**180**	**11**	**-33**	**-738**	**recalc.**									
M. Aktru cont.																
Altitude		**1975, bn**	**1975, Ct**	**1975, At**	**1976, bn**	**1976, Ct**	**1976, At**	**1977, bn**	**1977, Ct**	**1977, At**	**1978, bn**	**1978, Ct**	**1978, At**	**1979, bn**	**1979, Ct**	**1979, At**
3700	0.11	1340	1340	0	1110	1110	0	1420	1420	0	560	560	0	730	730	0
3500	0.75	1340	1340	0	1120	1120	0	1280	1280	0	320	510	-190	50	740	-690
3300	1.65	150	680	-530	390	570	-180	320	720	400	-540	410	-950	-1160	560	-1720
3100	0.49	680	1420	-740	980	1200	-220	500	1040	-540	-700	620	-1320	-1230	730	-1960
2900	0.22	-540	1210	-1750	-330	1030	-1360	-1330	690	-2020	-1710	530	-2240	-2010	610	-2620
2700	0.13	-2740	760	-3500	-2490	670	-3160	-3400	520	-3920	-3510	410	-3920	-3370	420	-4190
2500	0.28	-2740	760	-3500	-2490	670	-3160	490	520	-3920	-3510	410	-3920	-3370	420	-4190
3800-2200		*470*	*1250*	*-780*	*680*	*1040*	*-360*	*490*	*1090*	*-600*	*-480*	*660*	*-1140*	*-580*	*780*	*-1360*
M. Aktru cont.																
Altitude		**1980, bn**	**1980, Ct**	**1980, At**	**Altitude**	**Area**	**1988, bn**	**1988, Ct**	**1988, At**	**1989, bn**	**1989, Ct**	**1989, At**				
3700	0.11	1030	1030	0	>3700	0.02	790	790	0	990	990	0				
3500	0.75	1020	1020	0	3650	0.14	1050	1050	0	930	1060	-130				
3300	1.65	390	620	-230	3550	0.27	1330	1330	0	870	1050	-180				
3100	0.49	-130	1000	-1130	3450	0.29	1480	1500	-20	1240	1360	-120				
2900	0.22	-1420	790	-2210	3350	0.68	1310	1460	-150	1070	1300	-230				
2700	0.13	-3340	550	-3890	3250	0.79	870	1280	-410	570	1070	-500				
2500	0.28	-3340	550	-3890	3150	0.18	-40	890	-930	-20	850	-870				
3800-2200		*220*	*940*	*-720*	3050	0.13	-140	780	-920	-320	870	-1190				
					2950	0.08	-230	700	-930	-300	860	-1160				
					2850	0.04	-1000	640	-1640	-780	770	-1550				
					2750	0.05	-1300	590	-1890	-1850	540	-2390				
					2650	0.05	-1500	580	-2080	-2000	570	-2570				
					2550	0.06	-2280	540	-2820	-2200	530	-2730				
					2450	0.03	-2800	740	-3540	-3000	720	-3720				
					2350	0.04	-3280	590	-3870	-4260	410	-4670				
					2250	0.01	-3800	530	-4330	-4800	400	-5200				
					3800-2200	*2.86*	*470*	*1160*	*-690*	*220*	*1040*	*-820*				
					recalc.	**2.86**	**670**	**1205**	**-535**	**416**	**1074**	**-658**				**K**
M. Aktru																
Altitude	**Area**	**1991, bn**	**1991, bw**	**1991, bs**	**1992, bn**	**1992, bw**	**1992, bs**	**1993, bn**	**1993, bw**	**1993, bs**	**1994, bn**	**1994, bw**	**1994, bs**	**1995, bn**	**1995, bw**	**1995, bs**
3650	0.13	510	610	-100	370	490	-120	860	850	10	600	610	-10	1190	810	380
3550	0.26	270	650	-380	470	600	-130	1150	1120	30	710	620	90	1110	910	200
3450	0.29	420	860	-440	650	770	-120	1380	1270	110	860	760	100	1290	1040	250
3350	0.61	40	760	-720	550	730	-180	1140	1260	-120	730	790	-60	1160	950	210
3250	0.74	-440	570	-1010	160	540	-380	580	870	-290	100	620	-520	230	740	-510
3150	0.16	-1080	290	-1370	-490	250	-740	-200	460	-660	-800	480	-1280	-670	610	-1280
3050	0.12	-1250	330	-1580	-850	250	-1100	-500	490	-990	-1060	540	-1600	-910	650	-1560
2950	0.08	-1790	240	-2030	-1310	230	-1540	-920	450	-1370	-1430	610	-2040	-1100	810	-1910
2850	0.03	-2040	110	-2150	-1800	190	-1990	-1400	370	-1770	-2160	610	-2770	-1240	810	-2050
2750	0.06	-2250	90	-2340	-2200	190	-2390	-1820	350	-2170	-2710	490	-3200	-1460	630	-2090
2650	0.04	-2370	90	-2460	-2620	170	-2790	-2180	300	-2480	-3080	500	-3580	-2450	650	-3100
2550	0.06	-2600	110	-2710	-2930	210	-3140	-2480	360	-2840	-3300	240	-3540	-3260	650	-3910
2450	0.05	-3130	220	-3350	-3400	150	-3550	-2840	280	-3120	-3560	120	-3680	-3420	520	-3940
2350	0.06	-3690	230	-3920	-3940	160	-4100	-3510	260	-3770	-3940	140	-4080	-3860	200	-4060
2250	0.04	-4270	110	-4380	-4480	220	-4700	-4330	180	-4510	-4470	350	-4820	-4400	540	-4940
3800-2200	*2.73*	*-550*	*560*	*-1100*	*-170*	*530*	*-700*	*340*	*900*	*-560*	*-150*	*610*	*-760*	*180*	*810*	*-630*
recalc.	**2.73**	**-551**	**563**	**-1114**	**-192**	**527**	**-719**	**314**	**899**	**-585**	**-176**	**624**	**-799**	**144**	**805**	**-661**

No 125															
Altitude	**Area**	**1988, bn**	**1988, bw**	**1988, bs**	**1989, bn**	**1989, bw**	**1989, bs**								
3526	0.1	160	460	-300	170	560	-390								
3450	0.22	180	570	-390	190	580	-390								
3350	0.22	250	760	-510	230	640	-410								
3250	0.15	540	940	-400	490	860	-370								
3150	0.15	90	700	-610	-100	520	-620								
3050	0.09	-570	750	-1320	-790	520	-1310								
3.55-3.0	*0.93*	*160*	*700*	*-540*	*100*	*620*	*-520*								
recalc.	**0.93**	**165**	**701**	**-536**	**104**	**622**	**-518**								
Kozelskiy															
Altitude	**Area**	**1988, bn**	**1988, bw**	**1988, bs**	**1989, bn**	**1989, bw**	**1989, bs**	**1990, bn**	**1990, bw**	**1990, bs**	**1991, bn**	**1991, bw**	**1991, bs**		
1975	0.12	-60	3000	-3060	120	3260	-3140	180	3640	-3460	1980	3790	-1810		
1850	0.333	-730	2750	-3480	-210	3140	-3350	30	3340	-3310	760	3070	-2310		
1750	0.273	-430	4060	-4490	800	4640	-3840	140	4810	-4670	1340	4180	-2840		
1650	0.165	-1570	3150	-4720	-160	4580	-4740	-250	5310	-5560	670	4240	-3570		
1550	0.11	-3000	2450	-5450	-1310	3920	-5230	-1900	4510	-6410	200	4210	-4010		
1450	0.11	-4010	2310	-6320	-2570	3300	-5870	-3590	3540	-7130	-500	4340	-4840		
1350	0.143	-3820	3150	-6970	-2770	3730	-6500	-5150	3400	-8550	570	4810	-4240		
1250	0.095	-5290	2450	-7740	-3730	3210	-6940	-6230	2850	-9080	-450	2560	-3010		
1150	0.141	-5990	1850	-7840	-1350	3430	-4780	-2570	2330	-4900	-680	1350	-2030		
1050	0.204	-800	1600	-2400	-400	1800	-2200	-100	1750	-1850	-100	1600	-1700		
940	0.106	-350	1000	-1350	-200	1700	-1900	-200	1140	-1340	-100	1500	-1600		
2050-880	*1.800*	*-1940*	*2670*	*-4610*	*-740*	*3400*	*-4140*	*-1280*	*3440*	*-4720*	*460*	*3250*	*-2790*		
recalc.	**1.800**	**-1940**	**2669**	**-4609**	**-741**	**3402**	**-4143**	**-1282**	**3437**	**-4719**	**470**	**3258**	**-2788**		
Kozelskiy cont.															
Altitude	**Area**	**1992, bn**	**1992, bw**	**1992, bs**	**1993, bn**	**1993, bw**	**1993, bs**	**1994, bn**	**1994, bw**	**1994, bs**	**Area**	**1995, bn**	**1995, bw**	**1995, bs**	
1975	0.12	1760	3980	-2220	1270	4200	-2930	650	4110	-3460	0.116	940	3880	-2940	
1850	0.333	400	3310	-2910	150	3170	-3020	130	3930	-3800	0.333	140	3220	-3080	
1750	0.273	710	4510	-3800	600	4180	-3580	250	4770	-4520	0.273	700	4050	-3350	
1650	0.165	100	4480	-4380	100	3900	-3800	-1230	4120	-5350	0.165	-300	3230	-3530	
1550	0.11	-2120	3020	-5140	-1410	2660	-4070	-2030	3520	-5550	0.11	-920	2830	-3750	
1450	0.11	-2730	2810	-5540	-1800	2420	-4220	-2630	3530	-6160	0.11	-1470	2740	-4210	
1350	0.143	-2580	2540	-5120	-2340	2120	-4460	-2510	3180	-5690	0.143	-1720	2290	-4010	
1250	0.095	-1950	2160	-4110	-1620	1760	-3380	-1730	2800	-4530	0.095	-1250	1950	-3200	
1150	0.141	-1040	2090	-3130	-700	1770	-2470	-730	2610	-3340	0.141	-470	1900	-2370	
1050	0.204	-270	1480	-1650	-140	1190	-1330	-220	2030	-2250	0.204	-120	1210	-1330	
940	0.106	-130	1210	-1340	-150	790	-940	-120	1690	-1810	0.1	-230	820	-1050	
2050-880	*1.800*	*-410*	*3060*	*-3470*	*-350*	*2740*	*-3090*	*-670*	*3480*	*-4150*	*1.79*	*-230*	*2740*	*-2970*	
recalc.	**1.800**	**-404**	**3047**	**-3452**	**-335**	**2750**	**-3084**	**-672**	**3467**	**-4140**	**1.79**	**-263**	**2713**	**-2976**	

IGAN				
Altitude	**Area**	**1960-77, <bn>**	**1960-77, <bw>**	**1960-77, <bs>**
1208	0.001	1250	3550	-2300
1175	0.004	1250	3550	-2300
1125	0.057	560	2900	-2340
1075	0.083	390	2790	-2400
1025	0.175	200	2650	-2450
975	0.2	-80	2470	-2550
925	0.197	-670	1940	-2610
875	0.163	-1000	1680	-2680
840	0.02	-490	1980	-2470
1217-830	*0.9*	*-240*	*2300*	*-2450*
recalc.	**0.9**	**-239**	**2298**	**-2537**
Obruchev				
Altitude	**Area**	**1960-77, <bn>**	**1960-77, <bw>**	**1960-77, <bs>**
655	0.001	1580	4000	-2420
625	0.02	1360	3890	-2530
575	0.079	690	3410	-2720
525	0.122	-370	2490	-2860
475	0.051	-1310	1900	-3210
425	0.026	-1260	1840	-3100
395	0.001	-910	2040	-2950
660-390	*0.3*	*-210*	*2680*	*-2890*
recalc.	**0.3**	**-208**	**2673**	**-2880**

Abramov																
Altitude	**Area**	**1968, bn**	**1968, bw**	**1971, bn**	**1971, bw**	**1972, bn**	**1972, bw**	**1973, bn**	**1973, bw**	**1974, bn**	**1974, bw**	**1975, bn**	**1975, bw**	**1976, bn**	**1976, bw**
4650	0.685	1170	1700	530	1710	400	1990	880	3180	2100	1000	1170	1960	530	1810
4550	2.092	900	1530	590	2050	510	1800	480	2310	1450	1190	500	1780	410	1600
4450	4.337	450	1350	220	1710	750	1760	240	2170	430	1120	75	1500	130	1290
4350	5.192	80	1120	-60	1600	970	1520	100	1830	310	900	-800	890	-640	1130
4250	4.067	-450	1050	-1030	1240	560	1320	-1090	1580	-240	780	-1350	790	-860	1050
4150	2.538	-1050	900	-1880	1030	100	1140	-1870	1420	-1570	440	-2060	760	-1860	780
4050	1.557	-1450	750	-2240	870	-330	860	-2700	1230	-2050	200	-2390	650	-2520	650
3950	1.05	-2820	470	-3410	420	-1540	690	-3700	910	-2820	110	-3000	420	-3020	380
3850	0.736	-4020	360	-4030	310	-2630	540	-4370	710	-3900	0	-3680	390	-3520	240
3750	0.249	-4090	360	-4350	220	-2850	570	-4410	670	-3880	-10	-4010	320	-3500	250
4700-3660	*22.5*	*-310*	*930*	*-790*	*1370*	*330*	*1400*	*-820*	*1760*	*-580*	*770*	*-2580*	*1000*	*-900*	*1040*
recalc.	**22.503**	**-384**	**1093**	**-793**	**1374**	**328**	**1401**	**-818**	**1756**	**-311**	**774**	**-1034**	**1029**	**-903**	**1064**
Abramov cont.															
Altitude	**Area**	**1977, bn**	**1977, bw**	**1987, bn**	**1978, bw**	**1979, bn**	**1979, bw**	**1980, bn**	**1980, bw**	**1981, bn**	**1981, bw**	**1982, bn**	**1982, bw**	**1983, bn**	**1983, bw**
4650	0.685	-250	1650	-180	1470	1510	2750	700	1900	2300	2200	1325	1850	1090	1750
4550	2.092	90	2040	-40	2020	1160	2440	420	1710	1610	1730	690	1650	980	1910
4450	4.337	-240	1850	-200	1940	630	2220	150	1550	1250	1580	390	1380	440	1620
4350	5.192	-810	1650	-740	1690	40	1660	-700	1360	580	950	-280	1130	-80	1350
4250	4.067	-1690	1450	-1430	1390	-420	1520	-1260	1170	50	810	-900	960	-640	1220
4150	2.538	-2400	1220	-2230	1130	-1300	1400	-2010	1100	-720	780	-1740	810	-1290	1080
4050	1.557	-3120	940	-2960	850	-2070	1200	-2660	890	-1620	570	-2490	500	-2020	850
3950	1.05	-4180	580	-3690	820	-2940	840	-3510	670	-2610	430	-3380	200	-2730	670
3850	0.736	-5200	510	-4660	560	-3810	630	-4630	460	-3560	460	-4490	50	-3780	450
3750	0.249	-5320	360	-4960	400	-4000	550	-4980	430	-3900	440	-4850	-90	-4170	320
4700-3660	*22.5*	*-1450*	*1490*	*-1310*	*1490*	*-390*	*1670*	*-1080*	*1110*	*60*	*1030*	*-840*	*1020*	*-510*	*1310*
recalc.	**22.503**	**-1448**	**1490**	**-1313**	**1495**	**-387**	**1619**	**-1081**	**1277**	**129**	**1065**	**-774**	**1046**	**-507**	**1305**
Abramov cont.															
Altitude	**Area**		**1984, bw**	**1985, bn**	**1985, bw**	**1986, bn**	**1986, bw**	**1987, bn**	**1987, bw**	**1988, bn**	**1988, bw**	**1989, bn**	**1989, bw**	**1990, bn**	**1990, bw**
4650	0.685		2500	850	1590	160	1060	1090	2090	1270	2850	990	1810	1070	2310
4550	2.092		2190	520	1910	110	1460	1490	2350	1560	2460	910	1630	990	2170
4450	4.337		1910	320	1930	-30	1380	1210	2140	1340	2270	690	1520	750	2110
4350	5.192		1480	-190	1600	-510	1120	700	1890	650	2120	200	1340	170	1860
4250	4.067		1400	-960	1360	-1190	990	170	1690	-280	1740	-380	1150	-700	1590
4150	2.538		1170	-1740	1150	-1800	840	-650	1470	-1130	1600	-1090	970	-1650	1350
4050	1.557		850	-2600	840	-238	640	-1230	1230	-2000	1320	-1770	760	-2490	1050
3950	1.05		600	-3730	620	-320	430	-2380	930	-3070	1080	-2570	630	-3560	800
3850	0.736		430	-5030	460	-393	380	-3580	850	-4220	940	-3290	630	-4450	750
3750	0.249		330	-5330	370	-417	400	-3670	870	-4210	950	-3420	620	-4590	720
4700-3660	*22.5*		*1450*	*-860*	*1450*	*-1020*	*1050*	*170*	*1770*	*-50*	*1890*	*-290*	*1240*	*-540*	*1690*
recalc.	**22.503**		**1479**	**-855**	**1449**	**-575**	**1047**	**170**	**1768**	**-52**	**1920**	**-286**	**1235**	**-539**	**1690**
Abramov cont.															
Altitude	**Area**	**1991, bn**	**1991, bw**	**1992, bn**	**1992, bw**	**1993, bn**	**1993, bw**	**1994, bn**	**1994, bw**	**Altitude**	**Area**	**1995, bn**	**1995, bw**	**1995, bs**	
4650	0.685	1340	1850	1830	1980	1470	1730	340	2350	4650	0.84	700	810	-110	
4550	2.092	940	1840	1580	2280	1430	2220	490	1910	4550	0.91	560	1080	-520	
4450	4.337	630	1700	1390	2140	1430	2080	520	1780	4450	1.55	650	1490	-840	
4350	5.192	150	1430	960	1840	920	1810	130	2100	4350	4.89	630	1580	-950	
4250	4.067	-610	1250	300	1560	250	1580	-990	1230	4250	4.72	100	1340	-1240	
4150	2.538	-1520	1080	-420	1410	-430	1340	-1800	980	4150	5.13	-1090	1030	-2120	
4050	1.557	-2450	810	-1490	1070	-1460	1000	-2860	720	4050	4.01	-1780	920	-2700	
3950	1.05	-3520	650	-2510	800	-2580	650	-3940	380	3950	1.97	-2790	620	-3410	
3850	0.736	-4650	610	-3660	710	-3940	520	-5110	240	3850	1.27	-3770	440	-4210	
3750	0.249	-5150	580	-4210	530	-4050	520	-5240	240	3750	0.5	-5280	280	-5560	
4700-3660	*22.5*	*-540*	*1350*	*310*	*1690*	*270*	*1640*	*-800*	*1460*	3675	0.05	-5140	180	-5320	
recalc.	**22.503**	**-540**	**1345**	**312**	**1691**	**267**	**1637**	**-803**	**1488**	**4700-3660**	*25.84*	*-780*	*1120*	*-1900*	
										recalc.	**25.84**	**-784**	**1119**	**-1903**	

Shumskiy												
Altitude	**Area**	**1985, bn**	**1985, bw**	**1985, bs**	**Area**	**1986, bn**	**1986, bw**	**1986, bs**	**Area**	**1987, bn**	**1987, bw**	**1987, bs**
4411	0.013	424	303	121	0.013	304	217	87	0.013	357	254	103
4340	0.053	451	321	130	0.053	322	230	92	0.053	377	269	108
4260	0.072	491	345	146	0.072	351	247	104	0.072	408	288	120
4180	0.094	563	379	184	0.094	403	272	131	0.094	475	317	158
4100	0.115	629	425	204	0.115	442	304	138	0.115	528	356	172
4020	0.133	640	477	163	0.133	406	344	62	0.133	494	402	92
3940	0.121	770	543	227	0.121	503	390	113	0.121	610	456	154
3860	0.177	825	624	201	0.177	476	451	25	0.177	594	525	69
3780	0.255	706	738	-32	0.255	279	528	-249	0.255	355	617	-262
3730	0.096	617	868	-251	0.096	-55	646	-701	0.096	94	750	-456
3710	0.114	164	673	-509	0.114	-258	543	-801	0.114	-196	622	-818
3690	0.145	-355	633	-988	0.145	-266	580	-846	0.145	-721	589	-1310
3670	0.111	-534	537	-1071	0.111	-373	533	-906	0.111	-940	450	-1390
3650	0.077	-702	465	-1167	0.077	-491	495	-986	0.077	-1154	436	-1590
3630	0.089	-724	443	-1167	0.089	-784	447	-1231	0.089	-1324	507	-1831
3610	0.076	-715	430	-1145	0.076	-728	510	-1238	0.076	-1171	563	-1734
3590	0.076	-815	500	-1315	0.076	-761	527	-1288	0.076	-1120	554	-1674
3570	0.092	-964	491	-1455	0.092	-935	509	-1444	0.092	-1180	525	-1705
3550	0.104	-1220	401	-1621	0.104	-1099	501	-1600	0.104	-1364	526	-1890
3530	0.113	-1456	372	-1828	0.113	-1237	470	-1707	0.113	-1588	539	-2127
3510	0.043	-1256	478	-1734	0.043	-1101	521	-1622	0.043	-1370	562	-1932
3490	0.035	-1026	852	-1608	0.035	-926	575	-1501	0.035	-1125	601	-1726
3470	0.043	-910	608	-1518	0.042	-824	577	-1613	0.043	-987	609	-1596
3450	0.058	-1036	572	-1608	0.058	-1054	559	-1613	0.058	-1235	609	-1844
3430	0.092	-1272	469	-1741	0.092	-1284	536	-1820	0.092	-1449	601	-2050
3410	0.052	-1376	432	-1808	0.052	-1394	461	-1855	0.052	-1563	636	-2199
3390	0.038	-1281	419	-1700	0.038	-1373	454	-1827	0.038	-1514	669	-2183
3370	0.031	-1214	438	-1652	0.031	-1297	464	-1761	0.031	-1456	709	-2165
3350	0.034	-1388	460	-1848	0.034	-1358	461	-1819	0.034	-1623	631	-2254
3330	0.053	-1718	432	-2150	0.053	-1587	442	-2029	0.053	-1928	608	-2536
3310	0.046	-1895	389	-2284	0.046	-1740	412	-2152	0.046	-2054	574	-2628
3290	0.026	-1707	500	-2207	0.026	-1601	490	-2090	0.026	-1745	647	-2392
3270	0.02	-1480	622	-2102	0.02	-1403	510	-1913	0.02	-1407	643	-2050
3250	0.023	-1528	609	-2137	0.023	-1400	491	-1891	0.023	-1496	655	-2151
3230	0.027	-1795	507	-2302	0.027	-1685	439	-2124	0.026	-1825	506	-2331
3210	0.028	-1926	494	-2420	0.028	-1867	446	-2313	0.028	-2010	509	-2519
3190	0.025	-2067	473	-2540	0.025	-2083	478	-2561	0.024	-2245	555	-2800
3170	0.015	-2151	369	-2520	0.015	-2179	450	-2629	0.015	-2541	567	-3108
3150	0.006	-2120	306	-2426	0.006	-2248	430	-2678	0.006	-2488	579	-3067
4442-3140	*2.821*	*-338*	*525*	*-863*	*2.82*	*-438*	*468*	*-906*	*2.819*	*-581*	*530*	*-1111*
recalc.	**2.821**	**-334**	**529**	**-863**	**2.82**	**-442**	**468**	**-909**	**2.819**	**-574**	**530**	**-1104**

Shumskiy cont.															
Altitude	**Area**	**1988, bn**	**1988, bw**	**1988, bs**	**Area**	**1989, bn**	**1989, bw**	**1989, bs**	**Area**	**1990, bn**	**1990, bw**	**1990, bs**	**Area**	**1991, bn**	**1991, bw**
4411	0.013	531	287	244	0.013	759	473	286	0.013	151	217	-66	0.013	-155	147
4340	0.053	539	304	255	0.053	801	502	299	0.053	122	234	-112	0.053	-190	158
4260	0.072	595	326	269	0.072	855	538	317	0.072	131	254	-123	0.072	-179	172
4180	0.094	679	359	290	0.094	934	591	343	0.094	210	280	-70	0.094	-102	190
4100	0.115	714	402	312	0.115	1034	663	371	0.115	254	312	-58	0.115	-72	211
4020	0.133	771	452	319	0.133	1130	738	392	0.133	199	353	-154	0.133	-155	239
3940	0.121	868	514	354	0.121	1275	844	431	0.121	311	405	-94	0.121	-72	275
3860	0.177	956	592	364	0.177	1426	966	460	0.177	286	473	-187	0.177	-177	321
3780	0.255	996	698	298	0.255	1609	1151	458	0.255	231	560	-329	0.255	-406	379
3730	0.096	893	829	64	0.096	1602	1325	278	0.096	-29	693	-722	0.096	-722	373
3710	0.114	588	657	-69	0.114	1148	973	176	0.114	-406	653	-1059	0.114	-892	383
3690	0.145	-23	613	-636	0.145	741	714	27	0.145	-337	746	-1083	0.145	-865	421
3670	0.111	-136	539	-675	0.111	34	452	-418	0.111	-591	662	-1253	0.111	-1082	339
3650	0.077	-280	496	-776	0.077	-103	431	-534	0.077	-787	509	-1296	0.077	-1119	330
3630	0.089	-305	496	-801	0.089	-84	448	-532	0.089	-933	521	-1454	0.089	-1169	347
3610	0.076	-185	491	-676	0.076	-44	512	-556	0.076	-870	627	-1497	0.076	-1243	374
3590	0.076	-230	437	-667	0.076	-86	505	-591	0.076	-902	630	-1532	0.076	-1308	368
3570	0.092	-518	487	-805	0.092	-237	459	-696	0.092	-1012	555	-1567	0.092	-1441	359
3550	0.104	-506	478	-984	0.104	-425	417	-842	0.104	-1287	526	-1813	0.104	-1790	351
3530	0.113	-734	485	-1219	0.113	-644	399	-1043	0.113	-1360	579	-1939	0.113	-2108	353
3510	0.043	-558	511	-1069	0.043	-593	431	-1024	0.042	-1083	590	-1673	0.043	-1788	341
3490	0.035	-335	563	-869	0.035	-468	461	-929	0.035	-907	624	-1531	0.035	-1530	352
3470	0.043	-284	554	-838	0.043	-335	477	-812	0.043	-1002	624	-1626	0.043	-1580	327
3450	0.058	-467	540	-1007	0.058	-511	454	-965	0.058	-1209	648	-1857	0.058	-1817	292
3430	0.092	-760	540	-1300	0.092	-794	460	-1254	0.092	-1419	583	-2002	0.092	-2082	284
3410	0.052	-932	558	-1490	0.052	-1058	456	-1514	0.052	-1562	553	-2115	0.052	-2249	329
3390	0.038	-833	578	-1411	0.038	-1013	466	-1479	0.038	-1477	529	-2006	0.038	-2210	352
3370	0.031	-752	585	-1337	0.031	-939	466	-1405	0.031	-1440	523	-1963	0.031	-2082	374
3350	0.034	-944	544	-1488	0.034	-1130	446	-1576	0.034	-1558	567	-2125	0.034	-2279	334
3330	0.053	-1190	494	-1684	0.053	-1426	425	-1851	0.053	-1690	550	-2240	0.053	-2610	276
3310	0.046	-1402	433	-1835	0.046	-1558	407	-1965	0.046	-1883	570	-2453	0.046	-2835	271
3290	0.026	-1280	489	-1769	0.026	-1398	433	-1831	0.026	-1753	614	-2367	0.026	-2579	290
3270	0.02	-1169	456	-1625	0.02	-1287	464	-1751	0.02	-1647	656	-2303	0.02	-2345	304
3250	0.023	-1222	454	-1676	0.023	-1324	474	-1798	0.023	-1753	656	-2409	0.023	-2392	287
3230	0.026	-1337	443	-1780	0.026	-1558	432	-1990	0.026	-1904	586	-2490	0.026	-2492	271
3210	0.028	-1701	540	-2241	0.027	-1922	441	-2363	0.027	-2146	617	-2763	0.027	-2805	287
3190	0.024	-1831	611	-2442	0.023	-2053	463	-2516	0.023	-2199	649	-2848	0.022	-2928	305
3170	0.014	-2108	537	-2645	0.014	-2313	432	-2745	0.013	-2416	647	-3063	0.012	-2969	313
3150	0.006	-2090	529	-2619	0.005	-2309	414	-2723	0.004	-2470	659	-3129	0.004	-2972	308
4442-3140	*2.818*	*29*	*532*	*-503*	*2.815*	*274*	*657*	*-383*	*2.816*	*-581*	*533*	*-1114*	*2.814*	-1101	318
recalc.	**2.818**	**29**	**532**	**-502**	**2.815**	**273**	**657**	**-384**	**2.812**				**2.811**		

Muravlev												
Altitude	**Area**	**1979, bn**	**Area**	**1980, bn**	**Area**	**1981, bn**	**1982, bn**	**Area**	**1983, bn**	**1984, bn**	**Area**	**1985, bn**
3615	0.027	-620	0.027	-790	0.027	40	-420	0.027	-1040	-740	0.027	-1090
3605	0.022	-650	0.022	-840	0.022	30	-450	0.022	-1110	-770	0.022	-1070
3595	0.011	-650	0.011	-880	0.011	20	-480	0.011	-1150	-780	0.011	-1060
3585	0.009	-660	0.009	-900	0.009	10	-490	0.009	-1180	-800	0.009	-1060
3575	0.01	-670	0.01	-920	0.01	-10	-480	0.01	-1200	-820	0.01	-1080
3565	0.015	-760	0.015	-1020	0.015	-100	-610	0.015	-1290	-890	0.015	-1170
3555	0.015	-880	0.015	-1160	0.015	-210	-770	0.015	-1420	-990	0.015	-1240
3545	0.015	-1000	0.015	-1300	0.015	-320	-910	0.015	-1540	-1080	0.015	-1240
3535	0.017	-1130	0.017	-1450	0.017	-460	-1070	0.017	-1680	-1180	0.017	-1250
3525	0.015	-1250	0.015	-1590	0.015	-580	-1200	0.015	-1800	-1280	0.015	-1420
3515	0.015	-1340	0.015	-1690	0.015	-660	-1300	0.015	-1870	-1360	0.015	-1650
3505	0.014	-1360	0.014	-1730	0.014	-690	-1340	0.014	-1890	-1360	0.014	-1640
3495	0.017	-1380	0.017	-1760	0.017	-740	-1380	0.017	-1930	-1390	0.017	-1680
3485	0.011	-1440	0.011	-1810	0.011	-820	-1450	0.011	-1980	-1420	0.011	-1730
3475	0.011	-1530	0.011	-1870	0.011	-940	-1530	0.011	-2040	-1500	0.011	-1820
3465	0.009	-1630	0.009	-1920	0.009	-1060	-1610	0.009	-2110	-1580	0.009	-1920
3455	0.012	-1740	0.012	-1940	0.012	-1190	-1690	0.012	-2160	-1680	0.012	-1980
3445	0.014	-1710	0.014	-1930	0.014	-1190	-1630	0.014	-2130	-1650	0.014	-2030
3435	0.013	-1670	0.013	-1910	0.013	-1180	-1560	0.013	-2110	-1620	0.013	-1990
3425	0.011	-1670	0.011	-1900	0.011	-1170	-1550	0.011	-2100	-1620	0.011	-1970
3415	0.008	-1700	0.008	-1910	0.008	-1190	-1600	0.008	-2110	-1650	0.008	-1960
3405	0.012	-1730	0.011	-1930	0.011	-1200	-1640	0.01	-2130	-1680	0.009	-1930
3400-3620	*0.303*	*-1140*	*0.302*	*-1420*	*0.302*	*-510*	*-1050*	*0.301*	*-1650*	*-1190*	*0.300*	*-1480*
Muravlev cont.												
Altitude	**Area**	**1986, bn**	**1987, bn**	**Area**	**1988, bn**	**1989, bn**	**Area**	**1990, bn**	**1991, bn**			
3615	0.027	-970	-1130	0.027	-550	-230	0.027	-660	-1540			
3605	0.022	-960	-1120	0.022	-540	-250	0.022	-660	-1510			
3595	0.011	-950	-1120	0.011	-530	-270	0.011	-720	-1510			
3585	0.009	-980	-1050	0.009	-550	-300	0.009	-950	-1610			
3575	0.01	-1020	-1010	0.01	-560	-290	0.01	-990	-1640			
3565	0.015	-1130	-1120	0.015	-660	-430	0.015	-1200	-1930			
3555	0.015	-1190	-1190	0.015	-690	-490	0.015	-1320	-2010			
3545	0.015	-1170	-1170	0.015	-660	-430	0.015	-1300	-1940			1
3535	0.017	-1180	-1180	0.017	-680	-480	0.017	-1380	-2100			
3525	0.015	-1320	-1300	0.015	-840	-750	0.015	-1520	-2360			
3515	0.015	-1490	-1390	0.015	-980	-910	0.015	-1590	-2440			
3505	0.014	-1510	-1390	0.014	-970	-910	0.014	-1640	-2450			
3495	0.017	-1610	-1510	0.017	-1020	-950	0.017	-1750	-2590			
3485	0.011	-1690	-1690	0.011	-1110	-1110	0.011	-1840	-2710			
3475	0.011	-1830	-1910	0.011	-1300	-1330	0.011	-1930	-2810			
3465	0.009	-1920	-2010	0.009	-1340	-1410	0.009	-1960	-2850			
3455	0.012	-1970	-2050	0.012	-1450	-1450	0.012	-2010	-2950			
3445	0.014	-1970	-2050	0.014	-1400	-1430	0.014	-2000	-2920			
3435	0.013	-1870	-2040	0.013	-1450	-1390	0.013	-1960	-2930			1
3425	0.011	-1810	-2030	0.011	-1450	-1380	0.011	-1940	-2940			
3415	0.008	-1800	-2020	0.008	-1440	-1380	0.008	-1930	-2940			
3405	0.008	-1760	-2010	0.007	-1440	-1360	0.006	-1920	-2940			
3620-3400	*0.299*	*-1380*	*-1430*	*0.298*	*-900*	*-760*	*0.297*	*-1420*	*-2230*			
recalc.							**0.297**	**-1427**	**-2258**			

Tuyuksu																
Altitude	**Area**	**1965, bn**	**1965, Ct**	**1965, At**	**1966, bn**	**1966, Ct**	**1966, At**	**1967, bn**	**1967, Ct**	**1967, At**	**1968, bn**	**1968, Ct**	**1968, At**			
4160	0.15	830	830	0	540	540	0	720	720	0	320	570	-250			
4050	0.34	930	930	0	710	710	0	870	870	0	250	650	-400			
3950	0.3	1160	1160	0	960	960	0	1200	1200	0	390	920	-530			
3850	0.41	820	1330	-510	710	1220	-510	1130	1520	-390	170	1120	-950			
3750	0.91	-170	1180	-1350	220	1290	-1070	380	1470	-1090	-690	930	-1620			
3650	0.32	-600	1200	-1800	-370	1230	-1600	-340	1190	-1520	1630	750	-2380			
3550	0.37	-1070	1230	-2300	-810	1350	-2160	-770	1240	-2010	-2050	580	-2630			
3450	0.37	-1230	1180	-2410	-1310	1120	-2430	-1240	1370	-2610	-2600	480	-3080			
4219-3414	*3.17*	*-20*	*1160*	*-1180*	*60*	*1130*	*-1070*	*230*	*1280*	*-1050*	*-780*	*810*	*-1590*			
recalc.	**3.17**	**-23**	**1162**	**-1185**												
Tuyuksu cont.																
Altitude	**Area**	**1969, bn**	**1969, Ct**	**1969, At**	**1970, bn**	**1970, Ct**	**1970, At**	**Area**	**1971, bn**	**1971, Ct**	**1971, At**	**1972, bn**	**1972, Ct**	**1972, At**		
4160	0.15	690	810	-190	950	950	0	0.15	610	610	0	900	900	0		
4050	0.34	800	980	-180	1220	1220	0	0.34	740	740	0	900	900	0		
3950	0.3	1200	1320	-120	1310	1310	0	0.3	550	940	-390	990	990	0		
3850	0.41	1530	1590	-60	810	1610	-800	0.41	310	1090	-780	620	1020	-400		
3750	0.91	240	1310	-1070	230	1140	-910	0.91	-530	1040	-1570	90	890	-800		
3650	0.32	-330	1140	-1470	-610	990	-1600	0.32	-900	1060	-1960	-200	890	-1090		
3550	0.37	-770	1140	-1910	-1060	960	-2020	0.37	-1130	1160	-2290	-580	1050	-1630		
3450	0.37	-1470	940	-2410	-1440	820	-2260	0.34	-1390	950	-2340	-1380	970	-2350		
4219-3414	*3.17*	*210*	*1210*	*-1000*	*130*	*1150*	*-1010*	*3.14*	*-330*	*990*	*-1320*	*100*	*950*	*-840*		
Tuyuksu cont.																
Altitude	**Area**	**1973, bn**	**1973, Ct**	**1973, At**	**1974, bn**	**1974, Ct**	**1974, At**	**Altitude**	**Area**	**1975, bn**	**1975, Ct**	**1975, At**	**1976, bn**	**1976, Ct**	**1976, At**	
4160	0.15	580	580	0	650	650	0	4160	0.15	680	690	0	590	590	0	
4050	0.34	780	780	0	730	730	0	4050	0.34	680	770	0	680	680	0	
3950	0.3	1050	1050	0	340	860	-520	3950	0.3	850	890	-680	310	780	-470	
3850	0.41	470	1290	-820	60	990	-930	3850	0.41	50	1050	-1060	-300	900	-1200	
3750	0.91	-440	1120	-1560	-860	780	-1640	3750	0.91	-700	1070	-1470	-870	820	-1690	
3650	0.32	-860	1040	-1900	-1440	810	-2250	3650	0.32	-1200	920	-1910	-1400	740	-2140	
3550	0.37	-1320	960	-2280	-1730	800	-2530	3550	0.37	-2400	880	-2300	-1970	840	-2810	
3450	0.34	-1970	740	-2710	-1590	580	-2170	3450	0.34	-3500	1000	-2830	-1720	720	-2440	
4219-3414	*3.14*	*-310*	*1000*	*-1310*	*-620*	*790*	*-1410*		*3.14*	*-450*	*950*	*-1400*	*-720*	*780*	*1500*	
Tuyuksu cont.																
Altitude	**Area**	**1977, bn**	**1977, Ct**	**1977, At**	**1978, bn**	**1978, Ct**	**1978, At**	**Area**	**1979, bn**	**1979, Ct**	**1979, At**	**Area**	**1980, bn**	**1980, Ct**	**1980, At**	
4160	0.15	380	620	-240	450	450	0	0.15	610	810	-200	0.15	220	600	380	
4050	0.34	290	730	-440	80	460	-380	0.34	350	720	-370	0.34	190	610	420	
3950	0.3	110	890	-780	-80	620	-700	0.3	460	910	-450	0.3	360	870	510	
3850	0.41	-350	960	-1310	-510	860	-1370	0.41	-70	970	-1040	0.35	540	1230	660	
3750	0.91	-1530	840	-2370	-1860	910	-2770	0.91	-670	990	-1660	0.95	-820	980	1800	
3650	0.32	-1890	880	-2770	-2540	890	-3430	0.32	-970	900	-1870	0.32	-1140	880	2020	
3550	0.37	-2220	900	-3120	-273	850	-3530	0.37	-1400	960	-2360	0.37	-1770	800	2570	
3450	0.3	-2560	810	-3370	-280	880	-3680	0.3	-1630	1000	-2630	0.24	-2080	750	2830	
4219-3414	*3.10*	*-1140*	*850*	*-1990*	*-1450*	*790*	*-2240*	*3.1*	*-520*	*930*	*-1450*	*3.02*	*-630*	*880*	*-1510*	
Tuyuksu cont.																
Altitude	**Area**	**1981, bn**	**1981, Ct**	**1981, At**	**1982, bn**	**1982, Ct**	**1982, At**	**1983, bn**	**1983,Ct**	**1983, At**	**1984, bn**	**1984, Ct**	**1984, At**	**1985, bn**	**1985, Ct**	**1985, At**
4160	0.15	520	590	-70	490	700	-210	200	910	-710	0	400	-400	420	500	-80
4050	0.34	330	700	-370	490	900	-410	130	960	-830	-150	440	-590	360	620	-260
3950	0.3	620	980	-360	420	900	-480	-30	1090	-1120	-550	560	-1110	140	640	-500
3850	0.35	600	1130	-530	310	900	-590	-170	1220	-1390	-1000	680	-1680	-400	760	-1160
3750	0.95	410	1300	-890	-830	900	-1730	-520	1290	-1810	-1590	760	-2350	-480	870	-1350
3650	0.32	-270	1160	-1430	-1200	920	-2120	-840	1230	-2070	-1700	790	-2490	-1040	780	-1820
3550	0.37	-740	1130	-1870	-2120	960	-3080	-1330	1160	-2490	-2030	830	-2860	-1420	770	-2190
3450	0.24	-1130	1130	-2260	-1840	830	-2670	-1570	1160	-2730	-1720	940	-2660	-1850	900	-2750
4219-3414	*3.02*	*120*	*1110*	*-990*	*-630*	*890*	*-1520*	*-540*	*1170*	*-1710*	*-1250*	*710*	*-1960*	*-552*	*771*	*-1323*

Tuyuksu cont.														
Altitude	**Area**	**1986, bn**	**1986, Ct**	**1986, At**	**1987, bn**	**1987, Ct**	**1987, At**	**Area**	**1988, bn**	**1988, Ct**	**1988, At**	**1989,bn**	**1989, Ct**	**1989, At**
4160	0.15	370	810	-440	180	660	-480	0.14	500	820	-320	310	660	-350
4050	0.34	450	920	-470	230	780	-550	0.3	470	1090	-620	370	890	-520
3950	0.3	370	1130	-760	290	970	-680	0.3	300	1220	-920	200	940	-740
3850	0.36	290	1310	-1020	290	1140	-850	0.3	220	1380	-1160	150	1070	-920
3750	0.82	-700	1270	-1970	-530	1040	-1570	0.89	-710	1150	-1860	-570	850	-420
3650	0.34	-1130	1100	-2230	-820	820	-1640	0.32	-1280	980	-2260	-800	730	-530
3550	0.38	-1740	1100	-2840	-980	820	-1800	0.35	-1760	910	-2670	-1370	610	-980
3450	0.17	-1690	970	-2660	-1130	890	-2020	0.2	-2030	900	-2930	-1540	640	-180
4219-3414	*2.86*	*-520*	*1130*	*-1650*	*-340*	*930*	*-1270*	*2.8*	*-610*	*1090*	*-1700*	*-460*	*820*	*-1280*
Tuyuksu cont.														
Altitude	**Area**	**1990, bn**	**1990, Ct**	**1990, At**	**Altitude**	**Area**	**1991, bn**	**1991, Ct**	**1991, At**	**1992, bn**	**1992, Ct**	**1992, At**		
4160	0.14	160	560	-400	4150	0.14	160	440	-280	490	560	-70		
4050	0.3	300	750	-450	4050	0.3	100	500	-400	530	640	-110		
3950	0.3	240	950	-710	3950	0.3	140	620	-480	680	780	-90		
3850	0.3	-220	1120	-1340	3850	0.3	-530	720	-1250	320	900	-580		
3750	0.89	-980	1020	-2000	3750	0.89	-1430	690	-2120	-350	870	-1220		
3650	0.32	-1760	870	-2630	3650	0.32	-1680	620	-2300	-670	840	-1510		
3550	0.35	-2500	840	-3340	3550	0.35	-2220	560	-2780	-1130	830	-1960		
3450	0.15	-3000	940	-3940	3450	0.12	-2490	690	-3180	-1820	800	-2620		
4219-3414	*2.75*	*-960*	*920*	*-1880*	*4219-3414*	*2.72*	*-1100*	*630*	*-1730*	*-240*	*810*	*-1050*		
Grigoriev i.c.														
Altitude	**Area**	**1987, bn**	**1988, bn**	**1988, bw**	**1988, bs**									
4580	0.97	983	186	481	-295									
4525	0.96	794	12	423	-441									**C**
4475	1.2	562	-164	364	-528									
4425	1.08	406	-267	328	-595									
4375	1.26	140	-318	303	-621									
4325	1.3	-11	-393	263	-656									
4275	1.13	-190	-490	220	-710									
4225	0.79	-410	-598	171	-769									
4175	0.66	-565	-750	108	-858									
4609-4159	*9.45*	*-217*	*-291*	*304*	*-595*									
recalc.	**9.35**	**222**	**-295**	**304**	**-599**									
Suyok Zapadniy														
Altitude	Area	1984, bn	1984, bw	1984, bs	Area	1989, bn	1989, bw	1989, bs						
4400	0.07	65	365	-300	0.283	880	1106	-226						
4250	0.21	-623	421	-1044	0.309	-340	608	-1020						
4150	0.35	-1251	379	-1629	0.339	-1401	676	-2077						
4050	0.33	-1678	346	-2024	0.203	-1040	448	-1488						
3950	0.22	-1940	315	-2255	0.076	-843	289	-1132						
3870	0.061	-2111	290	-2401	0.038	-448	184	-632						
3845-4496	*1.25*				*1.248*	*-499*	*699*	*-1198*						
recalc.	**1.241**	**-1348**	**361**	**-1709**	**1.248**	**-517**	**681**	**-1198**						

Golubina																
Altitude	**Area**	**1981, bn**	**1981, bw**	**1981, bs**	**1982, bn**	**1982, bw**	**1982, bs**	**1983, bn**	**1983, bw**	**1983, bs**	**1984, bn**	**1984, bw**	**1984, bs**	**1985, bn**	**1985, bw**	**1985, bs**
4325	0.02	140	140	0	360	360	0	150	190	-40	80	100	-20	20	50	-30
4275	0.08	230	250	-20	360	380	-20	190	240	-50	240	280	-40	50	130	-80
4225	0.25	590	640	-50	360	420	-60	230	300	-70	370	420	-50	110	260	-150
4175	0.19	770	840	-60	390	470	-80	280	380	-100	500	580	-80	150	400	-250
4125	0.41	950	1040	-90	470	570	-100	320	440	-120	560	700	-140	200	540	-340
4075	0.35	1080	1200	-120	470	610	-140	350	520	-170	530	780	-250	240	740	-500
4025	1.29	960	1100	-140	410	580	-170	400	580	-180	370	760	-390	190	1010	-820
3975	0.47	710	910	-200	320	570	-250	140	560	-420	260	750	-490	-260	660	-920
3925	0.54	360	640	-280	120	510	-390	20	690	-670	220	800	-580	-160	810	-970
3875	0.59	530	820	-290	-50	490	-540	30	840	-810	120	780	-660	-140	850	-990
3825	0.42	330	760	-430	-230	460	-690	-190	760	-950	-20	950	-970	-230	780	-1010
3775	0.18	-320	520	-840	-450	420	-870	-530	620	-1150	-1150	650	-1800	-420	610	-1030
3725	0.33	-950	390	-1340	-850	390	-1240	-820	560	-1380	-2210	490	-2700	-1470	480	-1950
3675	0.27	-1640	230	-1870	-1270	240	-1510	-1090	570	-1660	-2900	400	-3300	-2480	380	-2860
3625	0.24	-1790	140	-1930	-1470	190	-1660	-1430	550	-1980	-2870	500	-3370	-2210	410	-2620
3575	0.21	-1700	230	-1930	-1690	150	-1840	-1540	550	-2100	-2940	400	-3340	-2510	200	-2710
3525	0.17	-1790	200	-1990	-1900	90	-1990	-1940	450	-2390	-3070	240	-3310	-2720	140	-2860
3475	0.15	-1620	350	-1970	-2240	30	-2270	-2280	230	-2510	-3350	90	-3440	-2760	150	-2910
3425	0.1	-1640	310	-1950	-2260	110	-2370	-2660	220	-2880	-3200	160	-3360	-2830	200	-3030
3375	0.04	-1850	260	-2110	-2610	40	-2650	-2850	340	-3190	-3560	100	-3660	-3160	140	-3300
3325	0.03	-2620	100	-2720	-2940	20	-2960	-2950	280	-3230	-3840	140	-3980	-3500	120	-3620
3275	0.01	-2730	50	-2780	-3000	60	-3060	-3650	160	-3810	-4200	90	-4290	-3840	100	-3940
4437-3250	*6.34*	*150*	*770*	*-620*	*-210*	*460*	*-670*	*-230*	*570*	*-800*	*-500*	*640*	*-1140*	*-560*	*650*	*-1210*
	6.34	**128**	**738**	**-611**	**-212**	**447**	**-659**	**-252**	**566**	**-817**	**-515**	**646**	**-1161**	**-573**	**647**	**-1220**
Golubina cont.																
Altitude	**Area**	**1986, bn**	**1986, bw**	**1986, bs**	**1987, bn**	**1987, bw**	**1987, bs**	**1988, bn**	**1988, bw**	**1988, bs**	**1989, bn**	**1989, bw**	**1989, bs**	**1990, bn**	**1990, bw**	**1990, bs**
4325	0.018	300	400	-100	60	60	0	200	500	-300	0	50	-50	40	60	-20
4275	0.076	410	560	-150	200	200	0	280	630	-630	64	170	-106	340	440	-100
4225	0.25	530	720	-190	350	360	-10	350	760	-410	129	291	-162	545	730	-185
4175	0.188	610	870	-260	500	520	-20	430	900	-470	192	411	-219	690	960	-270
4125	0.406	590	980	-390	1080	1100	-20	496	1036	-540	257	532	-275	649	1009	-360
4075	0.352	570	1070	-500	1210	1290	-80	761	1358	-597	321	652	-331	681	1154	-473
4025	1.293	200	810	-610	590	1170	-580	520	1220	-700	196	584	-388	329	1069	-740
3975	0.465	-430	600	-1030	290	930	-640	249	1064	-815	73	517	-444	26	1010	-984
3925	0.54	-210	680	-890	420	910	-490	363	1117	-754	281	585	-304	-90	865	-955
3875	0.589	-120	770	-890	1130	1450	-320	102	1042	-940	67	543	-476	235	1110	-875
3825	0.416	-120	740	-860	710	1010	-300	-1070	980	-2050	-536	485	-1021	-484	956	-1440
3775	0.184	-420	660	-1080	470	1010	-540	-1210	980	-2190	-1139	427	-1566	-1608	432	-2040
3725	0.229	-910	570	-1480	-400	700	-1100	-1866	712	-2578	-1742	369	-2111	-2000	640	-2640
3675	0.271	-1850	470	-2320	-1300	680	-1980	-1952	750	-2702	-1708	311	-2019	-2781	480	-3261
3625	0.235	-1980	420	-2400	-1550	530	-2080	-2474	413	-2887	-1771	275	-2046	-2900	361	-3261
3575	0.206	-2270	290	-2560	-1680	450	-2130	-2524	431	-2955	-2021	278	-2299	-2949	403	-3352
3525	0.17	-2060	180	-2240	-2030	250	-2280	-3032	252	-3284	-2218	197	-2415	-3328	250	-3578
3475	0.145	-2210	230	-2440	-2180	180	-2360	-3269	175	-3444	-2425	164	-2589	-3737	303	-4040
3425	0.101	-2390	210	-2600	-2450	230	-2680	-3413	290	-3703	-2776	125	-2901	-3889	177	-4075
3375	0.044	-2770	160	-2930	-2820	220	-3040	-3748	181	-3929	-3111	133	-3244	-4400	185	-4585
3325	0.029	-2830	160	-2990	-2870	290	-3160	-4134	300	-4434	-3083	193	-3276	-4663	105	-4768
3275	0.008	-3350	240	-3590	-2820	440	-3260	-3935	378	-4313	-2791	609	-3400	-4842	8	-4850
4437-3250	*6.215*	*-372*	*685*	*-1057*	*150*	*910*	*-760*	*-432*	*942*	*-1374*	*-422*	*466*	*-888*	*-590*	*820*	*-1410*
recalc.	**6.215**	**-372**	**685**	**-1058**	**151**	**913**	**-762**	**-433**	**943**	**-1376**	**-421**	**486**	**-887**	**-570**	**840**	**-1411**

Davydova																
Altitude	**Area**	**1984, bn**	**1984, bw**	**1984, bs**	**1985, bn**	**1985, bw**	**1985, bs**									
4925	0.03	300	300	0	306	306	0									
4875	0.05	332	332	0	321	321	0									
4825	0.09	270	357	-87	374	374	0									
4775	0.1	366	584	-218	393	393	0									
4725	0.15	257	605	-348	406	406	0									
4675	0.22	151	630	-479	413	413	0									
4625	0.27	41	650	-609	427	427	0									
4575	0.43	-54	686	-740	478	478	0									
4525	0.45	-129	742	-871	483	483	0									
4475	0.63	-245	756	-1000	554	554	0									
4425	0.94	-327	805	-1132	582	582	0									
4375	1.1	-463	800	-1263	536	536	0									
4325	1.15	-499	780	-1279	419	525	-106									
4275	0.86	-896	635	-1531	370	594	-220									
4225	0.81	-1221	486	-1697	121	435	-314									
4175	0.66	-1409	427	-1836	-11	381	-370									
4125	0.57	-1515	408	-1923	-45	381	-426									
4075	0.74	-1688	400	-2088	-426	374	-800									
4025	0.83	-1915	330	-2245	-619	338	-957									
3975	0.47	-1979	318	-2297	-690	284	-974									
3925	0.33	-2135	292	-2427	-849	212	-1061									
3875	0.32	-2368	120	-2488	-1011	94	-1105									
3825	0.2	-2631	70	-2701	-1054	68	-1122									
3790	0.03	-2808	22	-2830	-1339	25	-1364									
4950-3780	*11.43*	*-856*	*481*	*-1337*	*7*	*374*	*-367*									
recalc.	**11.43**	**-949**	**567**	**-1516**	**101**	**439**	**-338**									
Sary-Tor																
Altitude	**Area**	**1986, bn**	**1986, bw**	**1986, bs**	**Altitude**	**Area**	**1987, bn**	**1987, bw**	**1987, bs**	**1988, bn**	**1988, bw**	**1988, bs**	**1989, bn**	**1989, bw**	**1989, bs**	
4650	0.38	750	650	100	4700	0.208	796	830	-34	682	1060	-378	426	357	69	
4475	0.16	850	1240	-390	4575	0.07	969	918	51	1158	1271	-113	628	481	147	
4375	0.98	176	516	-340	4525	0.102	984	1030	-46	730	1257	-527	693	603	90	
4250	0.56	130	502	-372	4475	0.156	1128	1004	124	586	970	-384	1087	748	339	
4175	0.34	-340	420	-760	4425	0.18	984	940	44	488	622	-134	970	646	324	
4125	0.27	-650	430	-1080	4375	0.375	838	776	62	171	406	-235	284	420	-136	
4075	0.27	-802	346	-1148	4325	0.422	657	780	-123	12	432	-420	84	371	-287	
4025	0.21	-800	360	-1160	4275	0.289	462	672	-210	-111	310	-421	28	411	-383	
3975	0.18	-946	280	-1226	4225	0.273	303	658	-355	-629	403	-1032	-46	389	-435	
3905	0.27	-1230	256	-1486	4175	0.336	92	483	-391	-881	343	-1224	-618	344	-962	
4800-3860	*3.61*	*-143*	*491*	*-634*	4125	0.273	-20	469	-489	-905	314	-1219	-738	395	-1133	
recalc.	**3.61**	**-142**	**492**	**-634**	4075	0.266	-241	416	-657	-1236	291	-1527	-765	334	-1099	
					4025	0.211	-410	397	-807	-1431	270	-1701	-862	323	-1185	
					3975	0.18	-733	301	-1034	-1567	257	-1824	-1079	250	-1329	
					3925	0.173	-948	258	-1106	-1768	251	-2019	-1236	182	-1418	
					3880	0.1	-1142	147	-1289	-2166	225	-2391	-1774	73	-1847	
					4800-3860	*3.614*	*220*	*625*	*-405*	*-453*	*466*	*-919*	*-176*	*400*	*-576*	
					recalc.	**3.614**	**270**	**625**	**-355**	**-453**	**466**	**-918**	**-192**	**389**	**-581**	

GL#1,E.Branch												
Altitude	**Area**	**1989, bn**	**Altitude**	**Area**	**1990, bn**	**Altitude**	**Area**	**1991, bn**	**1992, bn**	**1993, bn**	**1994, bn**	**1995, bn**
4260	0.001	456	4235	0.046	500	4210	0.145	47	616	504	533	293
4225	0.046	590	4175	0.099	735	4125	0.112	86	618	492	509	327
4175	0.099	522	4125	0.112	584	4075	0.115	-147	474	310	9	97
4125	0.112	446	4075	0.115	313	4025	0.147	-546	155	97	-167	22
4075	0.115	417	4025	0.147	300	3975	0.138	-444	196	172	-169	14
4025	0.147	256	3975	0.138	249	3925	0.194	-612	161	89	-350	-134
3975	0.138	172	3925	0.194	226	3875	0.155	-1185	-148	-218	-991	-759
3925	0.194	41	3875	0.155	-400	3825	0.097	-1949	-870	-1200	-1895	-1404
3875	0.155	-199	3825	0.097	-1054	3775	0.055	-2574	-1492	-1801	-2325	-1803
3825	0.097	-918	3770	0.054	-1849	3745	0.004	-2880	-2202	-2489	-2998	-2157
3775	0.055	-1363	**4269-3740**	**1.163**	*18*	**4269-3740**	*1.163*	*-734*	*15*	*-34*	*-384*	*-225*
3745	0.004	-1457				**recalc.**	**1.162**	**-677**	**90**	**-35**	**-394**	**-251**
4269-3740	1.163	*99*										
GL#1,W.Branch												
Altitude	**Area**	**1989, bn**	**1990, bn**	**1991, bn**	**1992, bn**	**1993, bn**	**1994, bn**	**1995, bn**				
4468	0.038	848	555	142	504	406	532	90				
4375	0.04	1080	718	142	504	406	532	90				
4325	0.041	773	766	265	504	436	520	140				
4275	0.037	813	660	172	706	568	323	270				
4225	0.037	776	710	43	883	518	388	263				
4175	0.044	597	761	6	590	362	175	153				
4125	0.055	540	502	41	558	395	305	158				
4075	0.116	225	120	-484	90	146	-165	35				
4025	0.107	10	77	-760	32	3	-588	-234				
3975	0.073	-204	-354	-1422	-333	-404	-1127	-814				
3925	0.047	-825	-603	-1928	-777	-842	-1545	-1212				
3875	0.024	-1146	-1518	-2582	-1682	-2045	-2643	-1161				
3830	0.018	-1429	-1496	-2480	-1684	-2220	-2498	-1949				
3810-4486	*0.677*	*110*	*110*	*-657*	*37*	*-20*	*-367*	*-233*				
recalc.	**0.677**	**210**	**144**	**-600**	**85**	**-20**	**-342**	**-225**				
Carstenz				**Meren**								
Altitude	Area	1973, bn		**Altitude**	**Area**	**1973, bn**						
4770	0.01	950		4825	0.03	1000						
4725	0.09	850		4775	0.29	950						
4675	0.16	800		4725	0.22	850						
4625	0.27	600		4675	0.16	800						
4590	0.06	200		4625	0.33	600						
4565	0.12	-500		4590	0.12	200						
4525	0.1	-1300		4565	0.18	-500						
4475	0.06	-2600		4525	0.22	-1300						
4420	0.03	-3800		4475	0.18	-2600						
4390-4790	*0.89*	*-60*		4425	0.12	-3700						
recalc.	**0.90**	**-81**		4375	0.06	-5000						
				4305	0.04	-6300						
				4850-4260	*1.94*	*-510*						
				recalc.	**1.95**	**-512**						

Glacier	White						Baby						Devon NW						South I.C.	South I.C.
Country	Canada						Canada						Canada						Canada	Canada
Geogr.area	Axel H.I						Axel H.I						Devon Isl.						Melville Isl.	
PSFG NR	CD02340						CD00205						CD 00431						CD01961	
Code	515						650						303						303	
Lat	79°27'N						79°26'N						75°25'N						75°25' N	
Long	90°40'W						90°58'W						83°15'W						115°01'W	
Elev. Max, m	1780						1170						1890						715	
Elev. Med, m	1160						1020						1200						600	
Elev. Min, m	80						710						0						490	
Length, km	15.4						1.4						50						15	
Area, km^2	38.5						0.613						1667.6						66	
Aspect	SE/SE						SW/SW						NW/NW						R.K., 2000	R.K., 2000
Variables	s	bn	bw	bs	ELA	AAR	s	bn	bw	bs	ELA	AAR	s	bn	bw	bs	ELA	AAR	bn	bw
1946																				
1947																				
1948																				
1949																				
1950																				
1951																				
1952																				
1953																				
1954																				
1955																				
1956																				
1957																				
1958																				
1959																				
1960	38.5	-406			1200	75	0.630	-878												
1961	38.5	24			900	74	0.630	106					1695.1	-197	109	-306	1323	33		
1962	38.5	-780			1350	34	0.630	-979					1695.1	-359	97	-456	1510	22		
1963	38.5	-153			1100	58	0.630	-150					1695.1	44	150	-106	744	82	-100	170
1964	38.5	350			450	91	0.630	250					1695.1	125	115	10	610	94	290	310
1965	38.5	-7			950	71	0.630	150			930	82	1695.1	64	87	-23	700	90	100	140
1966	38.5	-21			1000	68	0.630	70			940	79	1695.1	-135	104	-239	1230	47	-130	150
1967	38.5	122			830	78	0.630	210			885	92	1695.1	-27	151	-178	1100	64	160	140
1968	38.5	-406			1200	45	0.630	-506			1130	2	1695.1	-175	112	-287			25	183
1969	38.5	75			900	74	0.630	140	300	-160	933	81	1695.1	-175	115	-290	1368		25	150
1970	38.5	-2			910	74	0.630	110	240	-130	925	84	1695.1	39	115	-76	910	81	-260	160
1971	38.5	-184			1090	59	0.630	-476	210	-680	1113	1	1695.1	-69	120	-189	1167	52	-470	183
1972	38.5	116			630	86	0.630	321	330	-10		100	1695.1	102	116	-14	920	83	-390	183
1973	38.5	192			780	80	0.630	66					1695.1	-95	106	-201	1200	50	-390	183
1974	38.5	-46			1000	68	0.630	66					1695.1	-77	110	-187	1199	49	-220	260
1975	38.5	257			750	81	0.630	319				100	1695.1	-69	94	-163	1092	58	-73	160
1976	38.5	113	290	-640	725	82	0.630	149	310	-160	930	83	1695.1	171	111	65	579	93	-73	183
1977	38.5	-370	110	-1440	985	69	0.630	-480					1695.1	-99	134	-233	1360	79	-73	183
1978	38.5	-133	220	-1000	950	71							1695.1	27	107	-80	1000	67	-73	183
1979	38.5	-108	190	-780	940	72							1695.1	39	101	-62	920	79	-73	183
1980	38.5	-178											1695.1	-57	101	-158	1130	67	-73	183
1981	38.5	-175											1695.1	-146	115	-261	1300		-160	183
1982	38.5	-92											1695.1	-95	108	-203	1240		-310	180
1983	38.5	-82											1695.1	105	147	-42	840		-50	160
1984	38.5	-54			860	76							1695.1	-31	127	-158	1140		50	150
1985	38.5	-10			890	75							1667.6	-108	137	-245	1220		-40	150
1986	38.5	-259			875	76							1667.6	185	104	81	670		230	240
1987	38.5	-615			915	73							1667.6	44	144	-100	900		0	240
1988	38.5	131			1165	50							1667.6	-216	86	-302	1265		-570	200
1989	38.5	30			700	83							1667.6	-69	113	-182	1140		-320	180
1990	38.5	-447					0.630	-351					1667.6	-166	144	-310	1220		-250	190
1991	38.5	-179			1168	50	0.613	-162					1667.6	-230	84	-314	1270		210	250
1992	38.5	-295			1389	16	0.613	-91					1667.6	96	139	-43	825		-290	180
1993	38.5	-480			1432	12	0.613	-509					1667.6	-62	103	-165	1150		-740	130
1994	38.5	-314			1325	28							1667.6	-32	62	-94	1025		-110	140
1995	38.5	-362			1204	46							1667.6	-147	87	-234	1143		-470	120
1996	38.5	38			759	82							1667.6	-80	120	-201	1280		-210	200
1997	38.5	-56			1055	65							1667.6	-13	134	-147	1093		10	270
1998	38.5	-229			1061	65							1667.6	-276	141	-417	1300		-780	147
1999	38.5	-494			1249	40														
2000																				
Years	40	40	4	4	35	35	22	22	5	5	8	10	38	38	38	38	37	18	36	36
Average	38.5	-137	203	-965	983	65	0.628	-119	278	-228	973	70	1687.6	-45	113	-174	1064	66	-156	183
Stdev	0.0	239	75	350	224	19	0.01	377	51	260	93	37	13.44	126	21	103	211	21	250	42
Sqrt. Error	0.0	38	37	175	38	3	0.0	80	23	116	33	12	3.7	21	4	18	37	5	42	7

Glacier	South I.C.			Laika GL.			Laika GL.+ I.C.				Barnes S. Dome-1	
Country	Canada			Canada				Canada			Canada	
Geogr.area	Melville Isl.			Coburg Isl.				Coburg Isl.			Baffin Isl.	
PSFG NR	CD01961			CD00720				CD00721			CD00210	
Code	303			431				230				
Lat	75°25' N			75°53'N				75°53'N			69°47'N	
Long	115°01'W			79°10'W				79°10'W			72°25'W	
Elev. Max, m	715			520				520			951	
Elev. Med, m	600			360				370				
Elev. Min, m	490			20				20			365	
Length, km	15			4				4				
Area, km^2	66			4.25				9.82			266.6	
Aspect	IASC, 1996	IASC, 1996	IASC, 1996	NE/NE				NE			Dome 1	
Variables	bn	bw	bs	s	bn	bw	bs	bn	bw	bs	s	bn
1946												
1947												
1948												
1949												
1950												
1951												
1952												
1953												
1954												
1955												
1956												
1957												
1958												
1959												
1960												
1961												
1962												
1963	-124	170	-295									
1964	288	310	-23									
1965	69	140	-71									
1966	-153	150	-303									
1967	130	140	-10									
1968	21											
1969	21	150										
1970	-284	160	-434									
1971	-491	180	-674								266.6	96
1972	-402										266.6	-206
1973	-402										266.6	339
1974	-258	260	-518	4.25	-451	386	-837				266.6	-618
1975	-80	160		4.28	-575	456	-1031	-624	424	-1048		
1976	-80										266.6	370
1977	-80										266.6	-80
1978	-80										266.6	380
1979	-80										266.6	230
1980	-80											
1981	-188	180	-371								266.6	-890
1982	-319	180	-494									
1983	-74	160	-234								266.6	-380
1984	38	150	-112									
1985	-56	150	-260									
1986	208	240	-32									
1987	16	240	-224									
1988	-629	200	-829									
1989	-342	180	-522									
1990	-262	190	-452									
1991	199	250	-51									
1992	-320	170	-490									
1993	-752	130	-882									
1994	-110	140	-250									
1995	-470	120	-590									
1996												
1997												
1998												
1999												
2000												
Years	33	25	23	2	2	2	2	1	1	1	10	10
Average	-155	180	-353	4.27	-513	421	-934	-624	424	-1048	266.6	-76
Stdev	238	46	251	0.02	88	49	137				0.0	443
Sqrt. Error	41	9	52	0.1	62	35	97					140

Glacier	Barnes S.Dome-2	Barnes Ice Cap N.		Boas		Decade		Meighen				Drambuie		Gilman	
Country	Canada	Canada		Canada		Canada		Canada				Canada		Canada	
Geogr.area	Baffin Isl.	Baffin Isl.		Baffin Isl.		Baffin Isl.		Baffin Isl.				N.Ellesmere Isl.		Ellesmere	
PSFG NR		CD00210				CD00415		CD01335							
Code	Dome 2	300				408		303							
Lat	70°15'N	69°45'N		67°58 N		69°38' N		79°57' N				80°86N		82°6'N	
Long	72°00'W	73°40'W		65°27W		69°49'W		99°08'W				71°44W		70°37'W	
Elev. Max, m	951	970		1350		1470		1267				2000		1850	
Elev. Med, m						1100		600							
Elev. Min, m	365	420		750		400		70				300		410	
Length, km						6.1		56							
Area, km^2	675.0	3090		1.40		8.65		85				297.3		480	
Aspect						NW/NW						ablation area			
Variables	bn	s	bn	s	bn	s	bn	s	bn	bw	bs	bn	ELA	s	bn
1946															
1947															
1948															
1949															
1950															
1951															
1952															
1953															
1954															
1955															
1956															
1957														480	-183
1958														480	-110
1959														480	-42
1960								85	-750	130	-880			480	-202
1961								85	-110	180	-290			480	52
1962		3090	-615					85	-970	160	-1130				
1963		3090	-40					85	-200	200	-400				
1964		3090	42					85	360	330	30				
1965								85	60	180	-120				
1966						8.65	-710	85	-70	160	-230				
1967						8.65	-20	85	-50	110	-160				
1968						8.65	240	85	50	190	-140				
1969						8.65	-750	85	110	180	-70				
1970				1.40	404	8.65	80	85	-10	120	-130				
1971								85	-420	190	-610				
1972				1.40	210			85	30	164	-134				
1973								85	30	164	-134				
1974								85	-30	170	-200				
1975	-724							85	80	120	-40				
1976								85	80	160	-80				
1977								85	-240	120	-360	-260	967		
1978								85	-90	140	-230	-400	960		
1979								85	-5	100	-105	-200	990		
1980								85	-5	164	-169	-200	922		
1981								85	-170	180	-350	-460	1082		
1982								85	160	164	-4	-440	940		
1983								85	-250	100	-350	-300	940		
1984								85	230	200	30	-370	1100		
1985								85	-30	170	-200	-460	990		
1986								85	250	200	50	-70	860		
1987								85	-180	180	-360	-310	955		
1988								85	-290	170	-460	-700	1040		
1989								85	290	250	40	-400	970		
1990								85	-210	150	-360	-540	960		
1991								85	-220	130	-350	-640	1010		
1992								85	10	150	-140	-180	930		
1993								85	-590	100	-690	-740	1080		
1994								85	-200	150	-350	-410	990		
1995								85	60	410	-350	-470	1020		
1996								85	190	180	10	-380	1030		
1997								85	-60	240	-300	-460	960		
1998								85	-100	220	-320	-660	1140		
1999								85		140					
2000															
Years	1	3	3	2	2	5	5	40	39	40	39	22	22	5	5
Average	-724	3090	-204	1.40	307	8.65	-232	85	-84	173	-257	-411	993	480	-97
Stdev		0	358	0.0	137	0.0	464	0	265	58	248	175	66	0.0	105
Sqrt. Error			207		97		208		42	9	40	37	14		47

Glacier	Nirukittuq	Per Ardua	Quviagivaa	Un-named i.c.				Ward H.I. R.		Ward H.I.Sh.		
Country	Canada	Canada	Canada	Canada				Canada		Canada		
Geogr.area	Ellesmere Isl.	Ellesmere Isl.	Ellesmere Isl.	Ellesmere				Ellesmere		Ellesmere		
PSFG NR		CD01635		CD05050				CD02318		CD02320		
Code		408		300				804		804		
Lat	79°55' N	81°31' N	79°55' N	81°57'N				83°07'N		83°05'N		
Long	83°30W	76°27W	83°34W	64°12'W				74°10'W		73°30'W		
Elev. Max, m	1100	1710	1250	650				30		10		
Elev. Med, m		1150		420				10		10		
Elev. Min, m	800	310	550	200				0		0		
Length, km		5						10		89		
Area, km^2	0.4	4.26	4.7	7.60				602		2000		
Aspect		SW/SW						N/N		N/N		
Variables	bn	bn	bn	s	bn	bw	bs	s	bn, ice rise	bn, ice shelf	bw	bs
1946												
1947												
1948												
1949												
1950												
1951												
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1955												
1956												
1957												
1958												
1959								602		-110	173	-283
1960								602		-68	255	-323
1961								602		-288		
1962								602		-288		
1963								602		117	251	-134
1964								602		104	171	-67
1965								602		202	177	-25
1966								602		-137		
1967								602		-91	152	-243
1968		-320						602		-7	174	-181
1969											146	
1970												
1971											180	
1972				7.60	140	90	50	602	-110	-105	164	-269
1973				7.60	140	80	60	602	150	146	179	-33
1974				7.60	300	140	160	602	170	168	144	24
1975				7.60	-80	100	-180	602	140	140	176	-36
1976										39	173	-134
1977										-177		
1978										-177		
1979										-177		
1980										-140	136	
1981								602	-101	-140		
1982								602	-101	-150	134	
1983								602	-10	36	221	-185
1984								602	2	-28	176	-204
1985								602	-20			
1986												
1987												
1988												
1989												
1990												
1991												
1992												
1993	-530		-532									
1994												
1995												
1996												
1997												
1998												
1999												
2000												
Years	1	1	1	4	4	4	4	19	9	23	18	14
Average	-530	-320	-532	7.60	125	103	23	602	13	-49	177	-150
Stdev				0.0	156	26	144	0	113	144	34	109
Sqrt. Error					78	13	72		38	30	8	29

Glacier	**Tats**					**Abraham**				**Hidden**				**Minaret**			
Country	Canada					Canada				Canada				Canada			
Geogr.area	St. Elias Mnt.					Labrador P.				Labrador				Labrador P.			
PSFG NR	CD02007					CD00110				CD00875				CD01350			
Code	519					648				648				648			
Lat	59°41'N					58°56'N				58°56'N				58°53'N			
Long	137°46'W					63°32'W				63°33'W				63°41'W			
Elev. Max, m	1980					1150				1090				1505			
Elev. Med, m	1450					900				920				1250			
Elev. Min, m	670					690				790				1020			
Length, km	16					1.2				1.5				1.9			
Area, km^2	28					0.971				0.853				0.860			
Aspect	NW/SE					NW/NW				NW/NW				NE/NE			
Variables	**bn**	**bw**	**bs**	**ELA**	**AAR**	**s**	**bn**	**ELA**	**AAR**	**s**	**bn**	**ELA**	**AAR**	**s**	**bn**	**ELA**	**AAR**
1946																	
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1980																	
1981																	
1982						0.97	109	960	35	0.85	-229	1010	41	0.86	25	1290	47
1983						0.97	96	960	37	0.85	-213	990	47	0.86	263	1260	58
1984						0.97	-775	1030	26	0.85	-816	1100	25	0.86	-184	1320	41
1985																	
1986																	
1987																	
1988																	
1989	-178	151	-328	1450	36												
1990																	
1991																	
1992																	
1993																	
1994																	
1995																	
1996																	
1997																	
1998																	
1999																	
2000																	
Years	1	1	1	1	1	3	3	3	3	3	3	3	3	3	3	3	3
Average	-178	151	-328	1450	36	0.97	-190	983	33	0.85	-419	1033	38	0.86	35	1290	49
Stdev						0	507	40	6	0	344	59	12	0.00	224	30	9
Sqrt. Error							293	23	3		198	34	7		129	17	5

Glacier	Superguksoak				Alexander						Andrei					
Country	Canada				Canada						Canada					
Geogr.area	Labrador P.				Coast Mts. N.						Coast Mts. N.					
PSFG NR	CD01983				CD00133						CD00148					
Code	649				538						428					
Lat	58°57'N				57°06'N						56°56'N					
Long	63°47'W				130°49'W						130°59'W					
Elev. Max, m	1080				1820						2190					
Elev. Med, m	820				1670						1280					
Elev. Min, m	660				1190						610					
Length, km	2				5.3						22.5					
Area, km^2	1.395				5.740						91.89					
Aspect	N/N				NE/NE											
Variables	s	bn	ELA	AAR	s	bn	bw	bs	ELA	AAR	s	bn	bw	bs	ELA	AAR
1946																
1947																
1948																
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1975																
1976																
1977																
1978											92.14	-830	1660	-2490	1610	45
1979					5.83	-500	1590	-2090	1630	33	92.14	-640	1620	-2260	1565	22
1980					5.83	-520	1720	-2240	1790	42	92.14	-180	1890	-2070	1415	65
1981					5.83	-180	2024	-2203	1602	60	92.14	75	2400	-2335	1385	64
1982	1.40	-64	910	46	5.83	-1181	1488	-2668	1900	0	92.14	-984	1637	-2621	1615	36
1983	1.40	210	860	61	5.83	-1397	1287	-2684	1900	0	92.14	-797	1403	-2200	1605	43
1984	1.40	-606	970	20	5.83	94	1687	-1593	1530	54	92.14	132	1597	-1465	1400	63
1985					5.83		2070						2170			
1986																
1987																
1988																
1989					5.82	-970	1720	-2690	1730	21	91.94	-460	2090	-2550	1535	47
1990					5.74	-1070	1900	-2970	1815	16	91.89	-420	1980	-2400	1540	33
1991																
1992																
1993																
1994																
1995																
1996																
1997																
1998																
1999																
2000																
Years	3	3	3	3	9	8	9	8	8	8	9	9	10	9	9	9
Average	1.40	-153	913	42	5.82	-716	1721	-2392	1737	28	92.09	-456	1845	-2266	1519	46
Stdev	0.00	415	55	21	0.03	521	252	443	139	23	0.10	399	312	347	94	15
Sqrt. Error		240	32	12	0.012	184	84	157	49	8	0.03	133	99	116	31	5

Glacier	**Yuri**						**Bench**						**Bridge**					
Country	Canada						Canada						Canada					
Geogr.area	Coast Mts. N.						Coast Mtns. S						Coast Mtns. S					
PSFG NR	CD02530						CD00234						CD00275					
Code	638						648						414					
Lat	56°58'N						51°26'N						50°49'N					
Long	130°41'W						124°55'W						123°34'W					
Elev. Max, m	2010						2740						2900					
Elev. Med, m	1645						2000						2100					
Elev. Min, m	1390						1480						1400					
Length, km	3						8						18.2					
Area, km^2	3.576						10.509						88.101					
Aspect	NW/NW						SW/NW						SE/E					
Variables	**s**	**bn**	**bw**	**bs**	**ELA**	**AAR**	**s**	**bn**	**bw**	**bs**	**ELA**	**AAR**	**s**	**bn**	**bw**	**bs**	**ELA**	**AAR**
1946																		
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1974																		
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1976																		
1977																		
1978	3.58	-50	1290	-1340	1765	59												
1979	3.58	-570	1560	-2130	1855	36												
1980	3.58	-730	1520	-2250	1885	23												
1981	3.58	-142	1481	-1624	1745	43	10.51	-614	1917	-2531	1835	49	88.101	-404	2019	-2423	2190	
1982	3.58	-965	1326	-2292	1930	10	10.51	-929	1735	-2664	1910	22	88.101	-509	1921	-2430	2255	
1983	3.58	-1107	1131	-2239	1960	16	10.51	-538	1940	-2478	1845	50	88.101	205	1989	-1783	2040	65
1984	3.58	139	1213	-1074	1665	61	10.51	-194	1760	-1954	1850	58	88.101	228	1759	-1531	1995	70
1985	3.58		1580				10.51	-878	1493	-2371	1990		88.101	-1869	1625	-3494	2555	
1986																		
1987																		
1988							10.51	0	2300	-2300	1820							
1989	3.58	-1820	1270	-3090	2010	0	10.51	-1060	1900	-2960	1990	34						
1990	3.58	-420	1980	-2400	1540		10.51	-1070	1870	-2940	1905	31						
1991																		
1992																		
1993																		
1994																		
1995																		
1996																		
1997																		
1998																		
1999																		
2000																		
Years	10	9	10	9	9	8	8	8	8	8	8	6	5	5	5	5	5	2
Average	3.58	-629	1435	-2049	1817	31	10.51	-660	1864	-2525	1893	41	88.10	-470	1863	-2332	2207	68
Stdev	0.0	610	246	611	152	23	0.0	400	228	335	68	14	0.0	852	167	760	222	4
Sqrt. Error		203	78	204	51	8		141	81	118	24	6		386	75	346	99	3

Glacier	**Helm**						**Place**						**Sentinel**					
Country	Canada						Canada						Canada					
Geogr.area	Coast Mts., S.						Coast Mts. S.						Coast Mts. S					
PSFG NR	CD00855						CD01660						CD01915					
Code	626						538						530					
Lat	49°58'N						50°26'N						49°54'N					
Long	123°00'W						122°36'W						122°59'W					
Elev. Max, m	2150						2610						2105					
Elev. Med, m	1900						2089						1850					
Elev. Min, m	1770						1860						1660					
Length, km	2.5						4.2						1.9					
Area, km^2	0.92						3.45						1.722					
Aspect	NW/NW						NE/NE						N/NW					
Variables	**s**	**bn**	**bw**	**bs**	**ELA**	**AAR**	**s**	**bn**	**bw**	**bs**	**ELA**	**AAR**	**s**	**bn**	**bw**	**bs**	**ELA**	**AAR**
1946																		
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1962																		
1963																		
1964																		
1965							3.98	-514	1582	-2096	2170							
1966							3.96	115	2023	-1908	2080		1.99	146	3278	-3133	1820	
1967							3.96	-1212	2100	-3312	2370		1.99	-191	4199	-4390	1875	
1968							3.96	-131	2316	-2447	2030		1.99	376	3419	-3043	1720	
1969							3.96	-216	2046	-2262	2090		1.99	118	3516	-3399	1800	
1970							3.96	-1510	1436	-2946	2380		1.93	-1297	2618	-3916	2080	
1971							3.97	-340	2044	-2384	2195	25	1.91	566	3860	-3294	1795	72
1972							3.91	-344	1760	-2104	2130	42	1.90	204	2933	-2729	1825	70
1973							3.90	-300	1790	-2090	2185	26	1.85	785	3386	-2602	1750	91
1974							3.88	-564	2770	-2206	2016	77	1.85	2108	4807	-2698	1600	100
1975							3.86	-240			2080	42	1.84	880	2960	-2080	1790	74
1976	2.83	568	2623	-2055	1890	77	3.84	877			1960	87	1.83	1470	3906	-2436	1670	90
1977	2.83	-1464	1464	-2928	2110	13	3.82	-1227			2250	17	1.82	-1329	2073	-3402	1995	23
1978	2.83	-783	2162	-2946	2120	13	3.80	-433			2230	27	1.81	363	2842	-2479	1830	64
1979	2.83	-2301	1247	-3978	2150	0	3.78	-2212			2500	0	1.80	-1740	2010	-3750	2060	1
1980	2.83	-944	1403	-2347	2100	9	3.76	-923			2315	15	1.79	272	3020	-2748	1830	60
1981	2.83						3.76	-1097	1547	-2643	2310	13	1.77	168	2844	-2677	1865	63
1982	2.83	-347	2403	-2750	2130		3.76	-754	2009	-2763	2305	35	1.77	868	4045	-3177	1775	70
1983	2.44	-209	2129	-2339	1945	39	3.71	-443	1737	-2181	2285	37	1.77	1201	3955	-2754	1690	86
1984	2.44	-328	1785	-2113	2005	19	3.70	-341	1717	-2058	2140	35	1.77	854	3287	-2433	1780	83
1985	2.25	-1732	1694	-3426	2200	0	3.70	-1887	1225	-3102	2550	3	1.72	838	2363	-3202	2000	22
1986	2.15	-1333	2150	-3484			3.70	-1317	1664	-2977			1.76	-372	2975	-3347		
1987	1.95	-789	2128	-2917			3.67	-867	1935	-2802			1.75	98	2916	-2818		
1988	1.46	-559	2065	-2624			3.65	-961	1541	-2501			1.74	366	2753	-2387		
1989	1.41	-1623	1641	-3264			3.62	-1010	1469	-2480			1.74	-880	2137	-3018		
1990	0.92	-1790			2138	8	3.59	-938			2290	21						
1991	0.92	-2239			2179	0	3.56	-990			2280	23						
1992	0.92	-2798				0	3.52	-790			2250	25						
1993	0.92	-2342				0	3.48	-2280			2460	2						
1994	0.92	-1885				0	3.45	-2010	1601	-3611	2445	4						
1995	0.92	-1465				0	3.45	-2486	1143	-3629	2602	0						
1996	0.92	211			1967	47	3.45	-211			2055	54						
1997	0.92	-1073			2035	22	3.45	-888			2240	24						
1998	0.92	-2850			2150	0	3.45	-2450			2610	0						
1999	0.92	1500			1920	68	3.45	620			1985	76						
2000																		
Years	24	23	13	13	15	18	35	35	21	21	31	25	24	24	24	24	20	15
Average	1.83	-1276	1915	-2859	2080	15	3.73	-909	1784	-2595	2260	26	1.84	245	3171	-2996	1828	65
Stdev	0.85	941	410	573	95	21	0.18	773	373	512	174	23	0.09	898	709	539	126	28
Sqrt. Error	0.19	201	114	158	25	5	0.04	132	81	111	32	5	0.02	183	145	110	28	7

Glacier	**Sykora**						**Tiedemann**						**Woolsey**					
Country	Canada						Canada						Canada					
Geogr.area	Coast Mts. S.						Coast Mts., S.						Coast Mts. S					
PSFG NR	CD01995						CD02040						CDN2380					
Code	418						529						628					
Lat	50°52'N						51°20'N						51°07'N					
Long	123°35'W						125°03'W						118°03'W					
Elev. Max, m	2750						3800						2670					
Elev. Med, m	2050						1950						2240					
Elev. Min, m	1520						700						1920					
Length, km	9.2						24						2.9					
Area, km^2	25.35						62.67						3.865					
Aspect	E/E						SE/SE						NE/NE					
Variables	**s**	**bn**	**bw**	**bs**	**ELA**	**AAR**	**s**	**bn**	**bw**	**bs**	**ELA**	**AAR**	**s**	**bn**	**bw**	**bs**	**ELA**	**AAR**
1946																		
1947																		
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1957																		
1958																		
1959																		
1960																		
1961																		
1962																		
1963																		
1964																		
1965													3.88	-60				
1966													3.87	-171	2610	-2781	2200	
1967													3.87	143	3193	-3050	2270	
1968													3.87	23	2689	-2666	2200	
1969													3.87	-808	2296	-3104	2380	
1970													3.87	-1908	1866	-3774	2600	
1971													3.92	72	2870	-2797	2220	54
1972													3.92	258	2748	-2490	2180	60
1973													3.92		2159			
1974													3.92	700	2886	-2186	2110	70
1975													3.92	360	2510	-2150	2250	49
1976	25.35	830																
1977	25.35	-510																
1978	25.35	-160																
1979	25.35	-1080																
1980	25.35	-510																
1981	25.35	128	2169	-2041	2190		62.67	-1115	1870	-3030	1845	53						
1982	25.35	-115	2090	-2204	2255		62.67	-1324	2099	-3422	2155	30						
1983	25.35	647	2202	-1555	2035	80	62.67	-517	2039	-2555	1880	50						
1984	25.35	750	1928	-1178	1995	84	62.67	206	2095	-1889	1685							
1985	25.35	-1340	1562	-2901	2515		62.67	-1372	1855	-3227	2080							
1986																		
1987																		
1988																		
1989							62.69	-1510	1930	-3440	1990	36						
1990							62.69	-1560	1940	-3500	2045	35						
1991																		
1992																		
1993																		
1994																		
1995																		
1996																		
1997																		
1998																		
1999																		
2000																		
Years	10	10	5	5	5	2	7	7	7	7	7	5	11	10	10	9	9	4
Average	25.35	-136	1990	-1976	2198	82	62.68	-1027	1975	-3009	1954	41	3.89	-139	2583	-2778	2268	58
Stdev	0	747	262	657	207	3	0.01	647	102	592	161	10	0.03	734	390	502	145	9
Sqrt. Error		236	117	294	93	2	0.004	245	39	224	61	4	0.008	232	123	167	48	5

Glacier	**Zavisha**						**Peyto**						**Ram River**					
Country	Canada						Canada						Canada					
Geogr.area	Coast Mts. S.						Rockies N.						Rockies N.					
PSFG NR	CD02605						CD01640						CDN1815					
Code	636						538						648					
Lat	50°48'N						51°40'N						51°51'N					
Long	123°25'W						116°32'W						116°11'W					
Elev. Max, m	2500						3185						3020					
Elev. Med, m	2200						2635						2750					
Elev. Min, m	2010						2125						2560					
Length, km	3.1						5						2					
Area, km^2	6.492						11.75						1.80					
Aspect							NE/NE						NE/N					
Variables	**s**	**bn**	**bw**	**bs**	**ELA**	**AAR**	**s**	**bn**	**bw**	**bs**	**ELA**	**AAR**	**s**	**bn**	**bw**	**bs**	**ELA**	**AAR**
1946																		
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1961																		
1962																		
1963																		
1964																		
1965																		
1966							13.84	-107	1444	-1550	2610		1.85	-63	1002	-1065	2760	
1967							13.84	-804	1686	-2491	2720		1.85	-1107	915	-2022	3000	
1968							13.84	-201	1400	-1601	2620		1.85	290	906	-616	2760	
1969							13.84	-617	1263	-1880	2700		1.85	-283	807	-1090	2760	
1970							13.84	-1329	1057	-2386	2780		1.85	-1246	788	-2034	>3000	
1971							13.40	-411	1306	-1717	2700	38	1.80	-941	782	-1723	2930	4
1972							13.40	-250	1670	-1921	2680	41	1.80	-132	1067	-1200	2770	48
1973							13.40	434	1722	-1289	2580	62	1.80	-37	812	-849	2750	57
1974							13.40	238	1624	-1386	2600	58	1.80	58	1111	-1053	2740	60
1975							13.40	-570	1150	-1720	2720	43	1.80	-620	610	-1230	2910	6
1976	6.500	1100	2330	-1230	2070	98	13.40	638	1661	-1023	2550	68						
1977	6.500	-260	1490	-1750	2325	29	13.40	-203	889	-1093	2580	67						
1978	6.500	390	1620	-1230	2205	72	13.40	-1060	1109	-2169	2800	21						
1979	6.500	-690	1470	-2160	2285	2	13.40	-810	1245	-2056	2750	47						
1980	6.500	-670	1560	-2230	2395	14	13.40	-576	788	-1364	2700	38						
1981	6.492	-204	2159	-2363	2315	30	13.35	-1127	1032	-2158	2764	26						
1982	6.492	-524	1967	-2491	2360	17	13.35	-565	1245	-1810	2703	38						
1983	6.492	366	1915	-1549	2170	83	13.35	-389	870	-1259	2656	46						
1984	6.492	314	1552	-1238	2195	75	13.35	-580	1209	-1789	2711	36						
1985	6.492	-1215	1427	-2642	2500	0	13.35	-812	1125	-1938	2755	28						
1986							12.88	-472	1200	-1672	2685	40						
1987							12.88	-621	820	-1441	2645	49						
1988							12.88	-992	891	-1883	2715	34						
1989							12.88	-599	1124	-1723	2690	39						
1990							12.88	-734	1143	-1877	2695	38						
1991																		
1992																		
1993							11.75	-1198	708	-1906	2842	14						
1994							11.75	-1268	946	-2214	2754	28						
1995							11.75	-280	1112	-1391	2675	43						
1996							11.75	129			2581	62						
1997							11.75	-818			2722	34						
1998							11.75	-2230			3190	0						
1999							11.75	-320			2580	51						
2000																		
Years	10	10	10	10	10	10	32	32	28	28	32	27	10	10	10	10	9	5
Average	6.496	-139	1749	-1888	2282	42	13.059	-587	1194	-1740	2706	40	1.828	-408	880	-1288	2820	35
Stdev	0.004	682	320	555	125	36	0.708	564	288	372	113	16	0.026	535	151	481	98	28
Sqrt. Error	0.001	216	101	175	39	11	0.131	101	54	70	20	3	0.009	169	48	152	33	12

Glacier	**Grasshoper**					**Dinwoody**	**Arapaho**					**Henderson**			
Country	USA					USA	USA					USA			
Geogr.area	Rockies S.					Rockies S.	Rockies S.					Rockies S.			
PSFG NR							US07000					US07001			
Code							648					648			
Lat	45°13' N					43°11'N	40°03'N					40°03'N			
Long	109°88W					109°35'W	105°38'W					105°38'W			
Elev. Max, m	3350					4023	4070								
Elev. Med, m															
Elev. Min, m	3145					3414	3690								
Length, km															
Area, km^2	0.41					3.4	0.28					0.1			
Aspect															
Variables	**s**	**bn**	**bw**	**ELA**	**AAR**	**bn**	**s**	**bn**	**bw**	**bs**	**AAR**	**bn**	**bw**	**bs**	**AAR**
1946															
1947															
1948															
1949															
1950						860									
1951															
1952															
1953															
1954															
1955															
1956															
1957															
1958															
1959															
1960															
1961															
1962															
1963															
1964															
1965															
1966															
1967	0.41	810	2100	3180	60										
1968	0.41	530	2250	3160	63										
1969															
1970							0.28	250	3300	-3050		250	4500	-4250	100
1971							0.28	1170	3180	-2010	100				
1972							0.28	-600	3020	-3620	0				
1973							0.28	230	2430	-2220	100				
1974															
1975															
1976															
1977															
1978															
1979															
1980															
1981															
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1991															
1992															
1993															
1994															
1995															
1996															
1997															
1998															
1999															
2000															
Years	2	2	2	2	2	1	4	4	4	4	3	1	1	1	1
Average	0.41	670	2175	3170	62	860	0.28	263	2983	-2725	67	250	4500	-4250	100
Stdev		198	106	14	2		0	723	386	747	58				
Sqrt. Error		140	75	10	2			362	193	0	33				

Glacier	Arikaree				Navajo			Isabelle				St.Vrain No 1			St.Vrain No 2		
Country	USA				USA			USA				USA			USA		
Geogr.area	Rockies S.				Rockies S.			Rockies S.				Rockies S.			Rockies S.		
PSFG NR	US07002				US07003			US07004				US07005			US07006		
Code	648				648			648				648			648		
Lat	40°03'N				40°03'N			40°04'N				40°09'N			42°09'N		
Long	105°39'W				105°39'W			105°39'W				105°38'W			105°38'W		
Elev. Max, m	3870				4020			3910				3620			3600		
Elev. Med, m																	
Elev. Min, m	3790				3810			3660				3430			3490		
Length, km					0.2			0.6				0.4			0.2		
Area, km^2	0.06				0.02			0.12				0.07			0.04		
Aspect																	
Variables	s	bn	bw	bs	bn	bw	bs	s	bn	bw	bs	bn	bw	bs	bn	bw	bs
1946																	
1947																	
1948																	
1949																	
1950																	
1951																	
1952																	
1953																	
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1956																	
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1961																	
1962																	
1963																	
1964																	
1965																	
1966																	
1967																	
1968																	
1969	0.06	100	2080	-1980				0.12	120								
1970	0.06	400	3150	-2750	-300	3400	-3700	0.12	300	3550	-3250	50	3350	-3300	100	4100	-4000
1971	0.06	1140	3360	-2220													
1972	0.06	-700	2620	-3320													
1973	0.06	200	2270	-2070													
1974																	
1975																	
1976																	
1977																	
1978																	
1979																	
1980																	
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1991																	
1992																	
1993																	
1994																	
1995																	
1996																	
1997																	
1998																	
1999																	
2000																	
Years	5	5	5	5	1	1	1	2	2	1	1	1	1	1	1	1	1
Average	0.06	228	2696	-2468	-300	3400	-3700	0.12	210	3550	-3250	50	3350	-3300	100	4100	-4000
Stdev	0	659	551	562					127								
Sqrt. Error		295	246	248					90								

Glacier	St.Vrain No 3			St.Vrain No 4			St.Vrain No 5			St.Vrain No 6			Andrews		
Country	USA			USA			USA			USA			USA		
Geogr.area	Rockies S.			Rockies S.			Rockies S.			Rockies S.			Rockies S.		
PSFG NR	US07007			US07008			US07009			US07010			US07011		
Code	648			648			648			648			648		
Lat	42°09'N			42°10'N			40°10'N			40°10'N			40°17'N		
Long	105°39'W			105°39'W			105°40'W			105°40'W			105°41'W		
Elev. Max, m	3650			3590			3740			3770			3660		
Elev. Med, m															
Elev. Min, m	3410			3490			3600			3610			3410		
Length, km				0.2			0.4			0.4			0.4		
Area, km^2	0.04			0.02			0.04			0.07			0.14		
Aspect															
Variables	bn	bw	bs	bn	bw	bs	bn	bw	bs	bn	bw	bs	bn	bw	bs
1946															
1947															
1948															
1949															
1950															
1951															
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1962															
1963															
1964															
1965															
1966															
1967															
1968															
1969															
1970	-100	4200	-4300	150	4000	-3850	200	3050	-2850	650	2750	-2100	200	4700	-4500
1971															
1972															
1973															
1974															
1975															
1976															
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1993															
1994															
1995															
1996															
1997															
1998															
1999															
2000															
Years	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Average	-100	4200	-4300	150	4000	-3850	200	3050	-2850	650	2750	-2100	200	4700	-4500
Stdev															
Sqrt. Error															

Glacier	Fair		Maclure						Blue				Eliot		Noisy	
Country	USA		USA						USA				USA		USA	
Geogr.area	Rockies S.		Sierra Nevada						Olympic Range				N.Cascades		N.Cascades	
PSFG NR	US07012		US04000						US02126						US02078	
Code	648		64						528						648	
Lat	40°04'N		37°75'N						47°49'N				45° 38' N		48°40'N	
Long	105°39'W		119°28W						123°41'W				121°68'W		121°32'W	
Elev. Max, m	3770		3598						2320				1920		1890	
Elev. Med, m									2377						1791	
Elev. Min, m	3460		3460						1280						1683	
Length, km			0.4						4.2						0.53	
Area, km^2	0.15		0.2						4.3				1.8		1.14	
Aspect									NE/NW						N/N	
Variables	bn	bw	s	bn	bw	bs	ELA	AAR	s	bn	AAR	ELA	s	bn	bn	bw
1946																
1947																
1948																
1949																
1950																
1951																
1952																
1953																
1954																
1955																
1956									4.2	1390	81	1530				
1957																
1958									4.2	-1660	25	2100				
1959									4.2	-60	50	1725				
1960									4.2	-40	52	1730				
1961									4.2	710	57	1675				
1962									4.2	450	55	1700				
1963									4.2	-340	39	1900				
1964									4.2	870	62	1645				
1965									4.2	-320	36	1950				
1966									4.2	580	59	1655	1.8	-500		
1967			0.2	1210	3500	-2290	3640	86	4.2	580	54	1675	1.8	-1600		
1968			0.2	-760	1230	-1990	3740	18	4.2	270	40	1850	1.8	-2600		
1969			0.2	700	2500	-1800	3670	80	4.2	950	59	1660	1.8	700		
1970	400	2200							4.2	-150	42	1825	1.8	-300		
1971									4.2	1390	74	1580				
1972									4.2	640	72	1600				
1973									4.2	100	52	1730				
1974									4.2	2240	84	1505				
1975									4.3	910	72	1620				
1976									4.3	1660						
1977									4.3	-1000						
1978									4.3	750						
1979									4.3	-910	34	1970				
1980									4.3	-1370	33	2020				
1981									4.3	-1070	32	2030				
1982									4.3	990	62	1645				
1983									4.3	1580	69	1610				
1984									4.3	730	60	1660				
1985									4.3	660	58	1665				
1986									4.3	-680	40	1910				
1987									4.3	10		1750				
1988									4.3	1010		1625				
1989									4.3	150		1725				
1990									4.3	-390		1850				
1991									4.3	10		1750				
1992									4.3	-390		1850				
1993									4.3	-550		1900			-952	2030
1994									4.3	-960		2050			-1063	2526
1995									4.3	780		1650			-108	3486
1996									4.3	10		1750			224	3039
1997									4.3	310		1790				
1998																
1999																
2000																
Years	1	1	3	3	3	3	3	3	41	41	27	38	5	5	4	4
Average	400	2200	0.20	383	2410	-2027	3683	61	4.25	313	54	1759	1.80	-860	-475	2770
Stdev			0	1022	1138	247	51	38	0.05	927	16	151	0	1270	632	630
Sqrt. Error				590	657	143	30	22	0.008	178	3	25		568	316	315

Glacier	Noisy			N.Klawatti						Sandalee				
Country	USA			USA						USA				
Geogr.area	N.Cascades			N.Cascades						N.Cascades				
PSFG NR	US02078			US02076						US02079				
Code	648			55						645				
Lat	48°40'N			48°34'N						48°25'N				
Long	121°32'W			121°07'W						120°48'W				
Elev. Max, m	1890			2399						2280				
Elev. Med, m	1791									2154				
Elev. Min, m	1683			1729						1965				
Length, km	0.53			2.77						0.79				
Area, km^2	1.14			1.46						0.2				
Aspect	N/N			SE/SE						N/N				
Variables	bs	ELA	AAR	s	bn	bw	bs	ELA	AAR	bn	bw	bs	ELA	AAR
1946														
1947														
1948														
1949														
1950														
1951														
1952														
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1956														
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1989														
1990														
1991														
1992														
1993	-2982	1929	0	1.46	-1069	1760	-2829	2243	45					
1994	-3589	1929	9	1.46	-1926	2104	-4031	2400	0					
1995	-3594	1817	67	1.46	-470	3071	-3542	2135	66	365	3053	-2688	2072	84
1996	-2815	1768	64	1.46	343	3208	-2865	2040	74	825	3234	-2398	2075	84
1997														
1998														
1999														
2000														
Years	4	4	4	4	4	4	4	4	4	2	2	2	2	2
Average	-3245	1861	35	1.46	-781	2536	-3317	2205	46	595	3144	-2543	2074	84
Stdev	406	81	36	0	958	713	578	154	33	325	128	205	2	
Sqrt. Error	203	41	18		479	357	289	77	17	230	91	145	1.5	

Glacier	Columbia		Daniels		Foss		Ice Worm		Lower Curtis		Lynch	
Country	USA		USA		USA		USA		USA		USA	
Geogr.area	N.Cascades		N.Cascades		N.Cascades		N.Cascades		N.Cascades		N.Cascades	
PSFG NR	US02057		US02052		US02053		US02054		US02055		US02056	
Code	648		636		638		648		648		654	
Lat	47°58'N		47°33'N		47°33'N		47°50'N		48°48'N		48°39'N	
Long	121°21'W		121°10'W		121°12'W		121°10'W		121°37'W		121°11'W	
Elev. Max, m	2080		2385		2100		2120		1730		2390	
Elev. Med, m	1950		2200				2030		1625		2140	
Elev. Min, m	1840		1970		1840		1900		1500		1780	
Length, km	0.7		0.8				0.55		0.8		1.1	
Area, km^2	0.9		0.4		0.4		0.1		0.8		0.7	
Aspect	NE/NE		NE/NE		NE/NE		E/E		W/W		N/N	
Variables	bn	AAR	bn	AAR	bn	AAR	bn	AAR	bn	AAR	bn	AAR
1946												
1947												
1948												
1949												
1950												
1951												
1952												
1953												
1954												
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1982												
1983												
1984	210		110		510		860		390		330	
1985	-310		-510		-690		-750		-160		-220	
1986	-200	61	-360	60	120	71	-450	50	-220	62	-70	69
1987	-630	50	-870	40	-380	57	-1390	30	-560	50	-300	62
1988	140		-150	60	230	71	-240	65	-60	69	170	75
1989	-90	67	-370	60	90	64	-670	50	-290	56	30	69
1990	-60	67	-680	50	-270	57	-920	40	-510	50	-120	62
1991	380		-70		300		630		40		360	
1992	-1850		-170		-1920		-2230		-1760		-1380	
1993	-900		-830		-730		-1020		-480		-620	
1994	-960		-450		-680		-1230		-550		-400	
1995	-550		240		150		370		-310		100	
1996	-620		450		340		570		-180		530	
1997	350		880		500		760		270		620	
1998	-1460		-1820		-1750		-1640		-1380		-1870	
1999												
2000												
Years	15	4	15	5	15	5	15	5	15	5	15	5
Average	-437	61	-307	54	-279	64	-490	47	-384	57	-189	67
Stdev	654	8	635	9	760	7	958	13	561	8	682	6
Sqrt. Error	169	4	164	4	196	3	247	6	145	4	176	2

Appendix 3 Annual data on glacier regime

Glacier	Rainbow		Watson		Yawning
Country	USA		USA		USA
Geogr.area	N.Cascades		N.Cascades		N.Cascades
PSFG NR	US02003		US02051		US02050
Code	638		636		658
Lat	48°48'N		48°39'N		48°27'N
Long	121°46'W		121°34'W		121°02'W
Elev. Max, m	2200		1790		2080
Elev. Med, m	1760		1620		1950
Elev. Min, m	1240		1475		1840
Length, km	2.4		0.7		0.7
Area, km^2	1.6		0.2		0.3
Aspect	E/E		N/N		NE/NE
Variables	bn	AAR	bn	AAR	bn
1946					
1947					
1948					
1949					
1950					
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1979					
1980					
1981					
1982					
1983					
1984	580				90
1985	40				-230
1986	200	70			-100
1987	-260	62			-470
1988	430	75	550	80	-60
1989	-240	59	-340	50	-190
1990	-460	56	-240	60	-320
1991	440				230
1992	-1650				-2060
1993	-800				-660
1994	-720				-620
1995	-340				-260
1996	120				340
1997	510				500
1998	-1490				-2030
1999					
2000					
Years	15	5	3	3	15
Average	-243	64	-10	63	-389
Stdev	692	8	488	15	748
Sqrt. Error	179	4	281	9	193

Glacier	Silver						S. Cascade						Vesper	Eklutna				
Country	USA						USA						USA	USA				
Geogr.area	N.Cascades						N.Cascades						Cascade R.	Alaska Range				
PSFG NR	US02077						US02013							US00391				
Code	648						538							538				
Lat	48°59'N						48°22'N						48° N	61°15'N				
Long	121°15'W						121°03'W						121°50W	148°58'W				
Elev. Max, m	2698						2140						1710	1769				
Elev. Med, m	2309						1920							1373				
Elev. Min, m	2088						1630						1110	732				
Length, km	0.48						3.1							12.9				
Area, km^2	1.08						2.03						0.2	31.6				
Aspect	N/NE/SE						N/N							N/N				
Variables	s	bn	bw	bs	ELA	AAR	s	bn	bw	bs	ELA	AAR	bn	s	bn	bw	bs	ELA
1946																		
1947																		
1948																		
1949																		
1950																		
1951																		
1952																		
1953																		
1954																		
1955																		
1956																		
1957							2.8	-200										
1958							2.8	-3300										
1959							2.8	700	3280	-2580								
1960							2.8	-500	2210	-2710	1880							
1961							2.8	-1100	2400	-3500	1950							
1962							2.8	200	2500	-2300	1860							
1963							2.8	-1300	2230	-3530	2040							
1964							2.8	1200	3250	-2050	1795							
1965							2.8	-87	3526	-3613	1880							
1966							2.8	-1072	2513	-3585	2380							
1967							2.8	-507	3345	-3852	1870							
1968							2.8	-54	2994	-3048	2080							
1969							2.8	-731	3167	-3898	1910							
1970							2.8	-1201	2418	-3619	2050							
1971							2.74	596	3513	-2917	1820	70						
1972							2.73	1451	4270	-2819	1770	86						
1973							2.73	-1037	2205	-3242	2070	15						
1974							2.73	999	3642	-2643	1850	78	-1200					
1975							2.72	-69	3059	-3128	1800	65	-400					
1976							2.72	881	3530	-2649	1825	78						
1977							2.59	-1301	1574	-2875	2250	0						
1978							2.59	-383	2494	-2877	1925	61						
1979							2.59	-1561	2177	-3738	2225	1						
1980							2.55	-1093	1820	-2913	2150	0						
1981							2.545	-840	2280	-3120								
1982							2.54	80	3110	-3030								
1983							2.535	-770	1910	-2680								
1984							2.53	120	2380	-2260								
1985							2.525	-1200	2180	-3380								
1986							2.52	-710	2430	-3140	1950	48		31.6	-325	1450	-1775	1281
1987							2.51	-2560	1880	-4440	2100	8		31.6	-200	1375	-1575	1281
1988							2.51	-1640	1890	-3530	2030	24		31.6	425	2500	-2075	1220
1989							2.5	-710	2350	-3060	1950	48						
1990							2.5	-730	2800	-3530	1960	44						
1991							2.1	-200	3350	-3550	1860	75						
1992							2.09	-2010	1910	-3920	2020	8						
1993	1.08	-57	1528	-1584	2237	70.7	2.08	-1230	1980	-3210	1986	17						
1994	1.08	-185	1709	-1894	2313	34.1	2.05	-1020	2390	-3410	2005	11						
1995	1.08	436	2436	-2000	2237	53.7	2.03	-690	2810	-3500	1945	23						
1996	1.08	888	2918	-2030	2088	73.2	2.01	100	2940	-2840	1901	40						
1997							1.99	630	3710	-3080	1857	70						
1998							1.97	-1860	2760	-4620	2125	0						
1999							1.97	1020			1800	84						
2000																		
Years	4	4	4	4	4	4	43	43	40	40	35	24	2	3	3	3	3	3
Average	1.08	271	2148	-1877	2219	58	2.60	-588	2679	-3210	1973	38	-800	31.6	-33	1775	-1808	1261
Stdev	0.0	491	646	204	94	18	0.24	990	636	549	141	30	566	0.0	402	629	252	35
Sq. root error		246	323	102	47	9	0.038	153	101	87	24	6	400		232	363	145	20

Glacier	Fork East			Fork West				Gulkana						West Gulkana
Country	USA			USA				USA						USA
Geogr.area	Alaska Range			Alska Range				Alaska Range						Alaska Range
PSFG NR	US00207			US00205				US00200						US00195
Code	518							529						538
Lat	63°26'N			63°31'N				63°14'N						63.27 N
Long	146°47'W			147°23'W				145°28'W						145.5 W
Elev. Max, m	3500			3591				2460						2100
Elev. Med, m								1840						
Elev. Min, m	880			845				1165						1325
Length, km	17			41				8.5						4.2
Area, km^2	46			311				19.3						2.23
Aspect	W/SW			SW/S				S/SW						S/SE
Variables	bn	bw	bs	s	bn	bw	bs	s	bn	bw	bs	ELA	AAR	bn
1946														
1947														
1948														
1949														
1950														
1951														
1952														
1953														
1954														
1955														
1956														
1957														
1958														
1959														
1960														
1961														
1962														
1963														
1964														
1965														
1966								19.32	-160	930	-1090	1670	68	
1967								19.32	20	1100	-1080	1743	60	
1968								19.32	-170	1520	-1690	1791	55	
1969								19.32	-1020	670	-1690	1906	39	
1970								19.32	350	700	-350	1664	68	
1971								19.32	250	1260	-1010	1728	61	
1972								19.32	-410	1060	-1470	1814	52	
1973								19.32	470	1410	-940	1656	69	
1974								19.32	-1200	540	-1740	1920	37	
1975								19.32	-320	1090	-1410	1788	55	
1976								19.32	-1040	950	-1990	1815	52	
1977								19.32	-350	1360	-1710	1758	58	
1978								19.32	-320	960	-1280	1755	59	
1979								19.32	-660	1330	-1990	1785	55	
1980								19.32	-190	1090	-1280	1738	60	
1981				311.0	-10	860	-870	19.32	-60	950	-1010	1687	66	
1982	-200	770	-970	311.0	-240	780	-1020	19.32	-250	1490	-1740	1746	60	
1983	90	780	-690	311.0	120	930	-810	19.32	-130	1100	-1230	1751	59	
1984								19.32	-440	1250	-1690	1768	57	
1985								19.32	570	1370	-800	1650	70	
1986								19.32	-60	1070	-1130	1682	66	-450
1987								19.32	-260	1210	-1470	1737	60	-245
1988								19.32	-350	1240	-1590	1759	58	
1989								19.32	850			1791	55	
1990								19.32	-810	1340	-2150	1794	54	
1991								19.32	-180	1290	-1470	1708	64	
1992								19.32	-340	960	-1300	1758	58	
1993								19.32	-1810	810	-2620	1880	43	
1994								19.30	-710	1340	-2050	1777	56	
1995								19.30	-820	920	-1740	1806	53	
1996								19.30	-650	830	-1480	1768	57	
1997								19.30	-1830	960	-2790	1865	45	
1998								19.30	-750	770	-1520	1793	55	
1999								19.30	-1140	1010	-2150	1842	48	
2000														
Years	2	2	2	3	3	3	3	34	34	33	33	34	34	2
Average	-55	775	-830	311	-43	857	-900	19.32	-409	1087	-1535	1767	57	-348
Stdev	205	7	198	0	182	75	108	0.0	595	246	505	67	8	145
Sq. root error	145	5	140		105	43	62	0.0	96	46	93	14	2	103

Glacier	Maclaren				Susitna				Columbia	McCall				Variegated
Country	USA				USA				USA	USA				USA
Geogr.area	Alaska Range				Alaska Range				Chugach Mnt.	Brooks Range				St. Elias Mnt.
PSFG NR	US00208				US00206				US00627	US00001				US01302
Code	518				519				514	528				529
Lat	60°21'N				63°31'N				61°00'N	69°17'N				60°00'N
Long	146°32'W				146°57'W				147°06'W	143°50'W				139°18'W
Elev. Max, m	3000				3600				3353	2700				2492
Elev. Med, m									800	2010				1000
Elev. Min, m	930				815				0	1350				53
Length, km	17				36				61	7.6				20
Area, km^2	68				323.00				1090	7.40				28.0
Aspect	S/S				W/SW				SE/S	NW/N				W/W
Variables	s	bn	bw	bs	s	bn	bw	bs	bn	s	bn	ELA	AAR	bn
1946														
1947														
1948														
1949														
1950														
1951														
1952														
1953														
1954														
1955														
1956														
1957														
1958														
1959														
1960														
1961														
1962														
1963														
1964														
1965														
1966														
1967														
1968														
1969										7.23	-450	2150	34	
1970										7.23	-40	1940	62	
1971										7.23	-120	2070	48	
1972										7.23	-140	2060	47	
1973														0
1974														-1000
1975														
1976														
1977														
1978									360					
1979														
1980														
1981	68	310	830	-520	323	-300	730	-1030						
1982	68	140	1140	-1000	323	-220	650	-870						
1983	68	370	1070	-700	323	400	780	-380						
1984														
1985														
1986														
1987														
1988														
1989														
1990														
1991														
1992														
1993										7.23	-500	2190	30	
1994										7.23	-770	2260	22	
1995										7.23	-550	2330	18	
1996										7.40	30	1970	58	
1997														
1998														
1999														
2000														
Years	3	3	3	3	3	3	3	3	1	8	8	8	8	2
Average	68	273	1013	-740	323	-40	720	-760	360	7.25	-318	2121	40	-500
Stdev		119	163	242		383	66	339		0.06	287	137	16	707
Sq. root error		69	94	140		221	38	196		0.02	102	48	6	500

Glacier	Lemon Creek			Mendenhall	Wolverine						Sherman	Ventorillo		
Country	USA			USA	USA						USA	Mexico		
Geogr.area	Juneau Icefield			Juneau Icefield	Kenai Mount.						Kenai Mount.	Popocatepetl		
PSFG NR					US00411						US 00636			
Code	438			424	538						528			
Lat	59°36'N			approx. 59°N	60°22'N						60°55N	19°01' N		
Long	134°36'W			approx. 59°N	148°54'W						145°13'W	98°38'W		
Elev. Max, m	1512			1600	1700						1590	5380		
Elev. Med, m					1310									
Elev. Min, m	470			20	400						110	4760		
Length, km	5.6			21.5	8						13	0.785		
Area, km^2	11.728			120	17.24						54.10	0.453		
Aspect					S/S						W	NW		
Variables	**s**	**bn**	**ELA**	**bn**	**s**	**bn**	**bw**	**bs**	**ELA**	**AAR**	**bn**	**bn**	**ELA**	**AAR**
1946														
1947														
1948														
1949														
1950														
1951														
1952														
1953	11.728	-560	1080											
1954	11.728	-180	1025											
1955	11.728	1120	810											
1956	11.728	-640	1075											
1957	11.728	0	1000											
1958	11.728	-580	1040											
1959	11.728	-900	1150											
1960	11.728	-820	1130											
1961	11.728	-240	1080											
1962	11.728	-690	1115											
1963	11.728	170	970											
1964	11.728	1040	885											
1965	11.728	80	980								400			
1966	11.728	-490	1100		17.60	-780	1640	-2420	1195	61	200			
1967	11.728	-600	1130		17.60	-2180	1570	-3750	1460	10	-800			
1968	11.728	-220	1060		17.60	-880	1850	-2730	1222	57	0			
1969	11.728	210	1000		17.60	-560	1740	-2300	1179	63				
1970	11.728	-90	1060		17.60	1540	3400	-1860	957	87				
1971	11.728	-400	1110		17.60	130	2130	-2000	1089	71				
1972	11.728	-650	1140		17.60	-1560	860	-2420	1319	40				
1973	11.728	-520	1110		17.60	260	1610	-1350	1089	71				
1974	11.728	-370	1090		17.60	-1650	1530	-3180	1311	42				
1975	11.728	290	1010		17.60	-220	2540	-2760	1109	69				
1976	11.728	-250	1080		17.62	-1210	980	-2190	1247	53				
1977	11.728	-480	1110		17.62	1390	4250	-2860	1044	78				
1978	11.728	-800	1150		17.62	460	3390	-2930	1104	69				
1979	11.728	-630	1110		17.62	-1580	1450	-3030	1279	48				
1980	11.728	-270	1090		17.62	2320	4650	-2330	915	90				
1981	11.728	-810	1120		17.24	1620	5900	-4280	961	87				
1982	11.728	-430	1070		17.24	-340	2050	-2390	1168	64				
1983	11.728	-1620	1220		17.24	110	2760	-2650	1134	67				
1984	11.728	-250	1010		17.24	-370	2370	-2740	1171	64				
1985	11.728	330	965		17.24	420	1890	-1470	1086	72				
1986	11.728	-510	1070		17.24	-250	2150	-2400	1159	65				
1987	11.728	-840	1100		17.24	1340	3310	-1970	1015	82				
1988	11.728	110	1130		17.24	2000	3360	-1360	982	85				
1989	11.728	-1240	1125		17.24	-1920	1350	-3270	1306	43				
1990	11.728	-1110	1050		17.24	-2430	1250	-3680	1344	33				
1991	11.728	-380	1075		17.24	-600	2160	-2760	1194	62				
1992	11.728	-660	1130		17.24	-210	2280	-2490	1157	65				
1993	11.728	-980	1100		17.24	-560	2370	-2930	1142	66				
1994	11.728	-760	1150		17.24	-690	2210	-2900	1197	61				
1995	11.728	-1310	1220		17.24	-440	2630	-3070	1174	63				
1996	11.728	-1580	1220		17.24	-1180	1250	-2430	1238	55				
1997	11.728	-1810	1220		17.24	-2530	2210	-4740	1437	13				
1998	11.728	-1460	1070	-1520	17.24	530	3230	-2700	1072	74		-2871	5115	43
1999				0	17.24	-850	2220	-3070	1205	60				
2000				820										
Years	46	46	46	3	34	34	34	34	34	34	4	1	1	1
Average	11.728	-495	1081	-233	17.40	-320	2369	-2689	1167	61	-50	-2871	5115	43
Stdev	0.00	605	81	1187	0.18	1241	1079	733	128	19	526			
Sq. root error	0	89	12	711	0.03	220	202	128	25	4	263			

Glacier	Enchaurren	Chacaltaya				Zongo				Antizana			Piloto East	De Los Tres				
Country	Norte, Chile	Bolivia				Bolivia				Equador			Argentina	Argentina				
Geogr.area	Centr. Andes	Real Bolivia				Real Bolivia				Real Bolivia			Central Andes	S.Patagonia				
PSFG NR		RB05180				RB05150				EC00001								
Code		648				538				478								
Lat	33°35' S	16°21' S				16°15'S				0° 29' S			32° 27' S					
Long	70°08'W	68°07'W				68°10'W				79°09'W			70°09'W					
Elev. Max, m		5395				6000				5760			4740	1830				
Elev. Med, m		5320				5450				5200							820	
Elev. Min, m		5125				4890				4800			4185	1198				
Length, km		0.59				3				2			2.5					
Area, km^2		0.082				2.180				0.353			0.504	0.976				
Aspect	GMB, 2001	S/S				S/E				NW/NW			SE/S					
Variables	bn	s	bn	ELA	AAR	s	bn	ELA	AAR	bn	ELA	AAR	bn	bn	bw	bs	ELA	AAR
1946																		
1947																		
1948																		
1949																		
1950																		
1951																		
1952																		
1953																		
1954																		
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1973																		
1974																		
1975																		
1976																		
1977																		
1978																		
1979																		
1980	300												950					
1981	360												-800					
1982	-2420												-1000					
1983	3700												1550					
1984	-1240												-200					
1985	340												200					
1986	1510												-750					
1987	950												100					
1988	2430												150					
1989	-1260												-850					
1990	-1530												-700					
1991	-1050												-800					
1992	1740	0.08	-1160	5371	0	2.18	-1498	5460	41				650					
1993	-290	0.08	277	5180	83	2.18	163	5100	86				-450					
1994	-1860	0.08	-1080	5359	3	2.18	-736	5300	58				250					
1995	-950	0.08	-1470	5368	2	2.18	-1276	5420	45	-1880	5370	35	-800					
1996	-1180	0.08	-1874	5454	0	2.18	-675	5425	47	-359	5100	57	-1500	45	2318	-2273	1440	66
1997	-2880	0.08	-659	5322	10	2.18	797	5075	89	-864	5130	50	-2400	661	2047	-1389	1410	27
1998	2890	0.08	-3716	5744	0	2.18	-1962	5500	39	-816	5100	65		-280				43
1999	-4260	0.08	-1827	5689	0	2.18	-333	5350	59	526	4960	84						
2000																		
Years	20	8	8	8	8	8	8	8	8	5	5	5	18	3	2	2	2	3
Average	-235	0.08	-1439	5436	12	2.18	-690	5329	58	-679	5132	58	-356	142	2183	-1831	1425	45
Stdev	2027		1152	190	29		901	161	20	873	149	18	925	478	192	625	21	20
Sq. root error	452		466	32	12		363	66	8	321	65	6	221	271	140	430	15	11

Glacier	**Narssaq Br.**					**Qapiarf. Ser.**					**Valhaltinde**				
Country	Denmark					Denmark					Denmark				
Geogr.area	Greenland					Greenland					Greenland				
PSFG NR	G00005					G00009					G00001				
Code	620					366					640				
Lat	60°15'N					65°36'N					61° 26'N				
Long	45°55'W					52°08'W					45°21'W				
Elev. Max, m	1300					1040					1630				
Elev. Med, m	1110										1420				
Elev. Min, m	900					517					1080				
Length, km	1.6										2.2				
Area, km^2	1.430					20.85					1.90				
Aspect	W/W										NW/N				
Variables	**s**	**bn**	**bw**	**bs**	**ELA**	**s**	**bn**	**bw**	**bs**	**ELA**	**s**	**bn**	**bw**	**bs**	**ELA**
1946															
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1976															
1977															
1978															
1979											1.90	-10	630	-640	1375
1980											1.90	-220	450	-670	1440
1981	1.43	-360	1580	-1940	1130	20.85	-40	1050	-1090	790	1.90	-500	570	-1070	1400
1982	1.43	-320	930	-1260	1150	20.85	-50	1120	-1180	800	1.90	-270	280	-550	1440
1983	1.43	400	1160	-760	1100	20.85	870	1310	-440	550	1.90	170	550	-380	1340
1984						20.85	650	1280	-630	620					
1985						20.85	-630	840	-1470	860					
1986															
1987															
1988															
1989															
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1991															
1992															
1993															
1994															
1995															
1996															
1997															
1998															
1999															
2000															
Years	3	3	3	3	3	5	5	5	5	5	5	5	5	5	5
Average	1.43	-93	1223	-1320	1127	20.85	160	1120	-962	724	1.90	-166	496	-662	1399
Stdev		428	330	592	25		603	190	420	132	0	256	137	254	43
Sq. root error		247	190	342	15		269	85	188	59	0	115	61	114	19

Glacier	Storstroemmen			Baegisarjokull	Bruarjokull						Blagnipujokull					
Country	Denmark			Iceland	Iceland						Iceland					
Geogr.area	NE Greenland			N.Iceland	Vatnajokull						Hofsjok.SW					
PSFG NR	G00018			IS0304	IS02400						IS0510C					
Code	104			530	433						433					
Lat	77° 30' N			65°59'N	64°40'N						64°43'N					
Long	24° 00 W			18°38W	16°10'W						19°03'W					
Elev. Max, m				1300	1900						1750					
Elev. Med, m				1120	1255						1205					
Elev. Min, m				920	550						750					
Length, km				1.4	45						13					
Area, km^2	32100			1.7	1695						51.3					
Aspect	SE			N/N	N/N						SW/SW					
Variables	ba	AA	ELA	bn	s	bn	bw	bs	ELA	AAR	s	bn	bw	bs	ELA	AAR
1946																
1947																
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1986																
1987																
1988																
1989											51.3	450	1730	-1280	1160	
1990											51.3	-680	1350	-2020	1300	
1991											51.3	-1490	1730	-3210	1340	29
1992											51.3	680	1960	-1280	1180	52
1993					1695	1090	1630	-540	1060	77	51.3	130	1730	-1600	1230	45
1994	7	-510	1280		1695	280	1750	-1470	1140	67	51.3	-720	1420	-2140	1310	34
1995	-83	-810	1350		1695	-200	1640	-1840	1260	52	51.3	-1170	1330	-2490	1350	27
1996					1695	-220	1660	-1880	1230		51.3	-1230	1570	-2800	1370	24
1997											51.3	-1420	1500	-2910	1410	18
1998					1695	-670			1275	45	51.3	-1590			1440	12
1999					1695	-300			1200	62	51.3	-1090			1310	33
2000																
Years	2	2	2	1	6	6	4	4	6	5	11	11	9	9	11	9
Average	-38	-660	1315	250	1695	-3	1670	-1433	1194	61	51.3	-739	1591	-2192	1309	30
Stdev	64	212	49		0	615	55	623	81	13	0.0	805	212	712	89	12
Sq. root error	45	150	35		0	299	27	311	41	7	0.0	266	71	237	30	5

Glacier	Dyngjujokull						Eyjabakkajokull						Koldukvislar					
Country	Iceland						Iceland						Iceland					
Geogr.area	Vatnajokull						Vatnajokull						Vatnajokull					
PSFG NR	IS02600						IS02300						IS02700					
Code	423						423						433					
Lat	64°40'N						64°39'N						64°35'N					
Long	17°00'W						15°35'W						17°40'W					
Elev. Max, m	2000						1520						2000					
Elev. Med, m	1475						1095						1410					
Elev. Min, m	700						680						850					
Length, km							18						25					
Area, km^2	1040						107.9						309					
Aspect	N/N						N/NE						NW/NW					
Variables	s	bn	bw	bs	ELA	AAR	s	bn	bw	bs	ELA	AAR	s	bn	bw	bs	ELA	AAR
1946																		
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1990																		
1991							107.9	-900	2280	-3190	1150							
1992	1040	1650	2075	-425	1200	80	107.9	40	2110	-2070	1070		309	980	1830	-850	1200	66
1993	1040	1270	1600	-330	1100	86	107.9	740	2070	-1330	1010		309					
1994	1040	190	1440	-1250	1250	71	107.9	460	2300	-1830	1045	61	309				1300	55
1995	1040	20	1470	-1450	1310	66	107.9	-420	1760	-2180	1140	44	309	-590	1300	-1890	1410	47
1996	1040	-390	1370	-1760	1410		107.9	-850	2380	-3230	1080	53	309	-390	1370	-1760	1410	48
1997																		
1998	1040	-490			1385	59	107.9	-1390			1240	29	309	-980			1540	35
1999							107.90	-1120			1120	45	309	-540			1300	61
2000																		
Years	6	6	5	5	6	5	8	8	6	6	8	5	7	5	3	3	6	6
Average	1040	375	1591	-1043	1276	72	107.9	-430	2150	-2305	1107	46	309	-304	1500	-1500	1360	52
Stdev	0	885	283	635	117	11	0.0	772	225	760	72	12	0	750	288	567	118	11
Sq. root error	0	361	127	284	48	5	0.0	294	92	310	29	7	0	426	166	327	57	5

Glacier	Satujokull						Sidujokull					Hofsjok.E.					
Country	Iceland						Iceland					Iceland					
Geogr.area	Hofsjok.N.						Vatnajokull					Thjorsarjokull					
PSFG NR	IS00530						IS0015B					IS0510B					
Code	433						432					433					
Lat	64°55'N						64°11'N					64°48'N					
Long	18°50'W						17°53'W					18°35'W					
Elev. Max, m	1800						1700					1800					
Elev. Med, m							1050					1185					
Elev. Min, m	860						650					620					
Length, km	20						40					19					
Area, km^2	90.6						380					248.8					
Aspect	SW/S						SW/S					E/E					
Variables	s	bn	bw	bs	ELA	AAR	bn	bw	bs	ELA	AAR	s	bn	bw	bs	ELA	AAR
1946																	
1947																	
1948																	
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1986																	
1987																	
1988	90.6	-960	1310	-2270	1330												
1989	90.6	500	1740	-1240	1190							248.8	1000	2220	-1220	1010	
1990	90.6	-600	1450	-2050	1340	38						248.8	110	1750	-1640	1160	
1991	90.6	-1410	1940	-3350	1490	19						248.8	-990	2090	-3080	1230	45
1992	90.6	1060	1870	-810	1160	67	500	2100	-1600	1050	63	248.8	1610	2590	-980	1000	45
1993	90.6	910	1770	-860	1165	64						248.8	1120	2570	-1450	1070	72
1994	90.6	80	1700	-1620	1250	50						248.8	-180	1750	-1930	1155	59
1995	90.6	-580	1720	-2300	1320	38						248.8	-800	1740	-2540	1280	87
1996	90.6	-780	1600	-2370	1340	36						248.8	-1170	1530	-2700	1360	31
1997	90.6	-1050	1130	-2180	1410	31						248.8	-1150	1450	-2600	1380	30
1998	90.6	-680			1370	35						248.8	-1180			1370	30
1999	90.6	-250			1250	51						248.8	-510			1185	50
2000																	
Years	12	12	10	10	12	10	1	1	1	1	1	11	11	9	9	11	9
Average	90.6	-313	1623	-1905	1301	43	500	2100	-1600	1050	63	248.8	-195	1966	-2016	1200	50
Stdev	0.0	790	255	782	101	15						0.0	1022	424	741	138	20
Sq. root error	0.0	250	81	247	32	5						0.0	339	141	247	46	7

Glacier	Thrandarjokull						Tungnaarjokull					Grimsvotn	Au. Broggebr.					
Country	Iceland						Iceland					Iceland	Norway					
Geogr.area	E. Iceland						Vatnajokull					Vatnajokull	Svalbard					
PSFG NR	IS01940						IS02214						N15504					
Code	300						433						529					
Lat	64°42'N						64°19'N					64°25'N	78° 53'N					
Long	14°53'W						18°04'W					17°20'W	11°50'E					
Elev. Max, m	1240						1660					1760	600					
Elev. Med, m	1080						1210						260					
Elev. Min, m	820						690					1380	60					
Length, km							40					15	6					
Area, km^2	19.4						309					160	6.12					
Aspect							SW/W					S	NW/N					
Variables	s	bn	bw	bs	ELA	AAR	bn	bw	bs	ELA	AAR	bn	s	bn	bw	bs	ELA	AAR
1946																		
1947																		
1948																		
1949																		
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1964																		
1965																		
1966																		
1967													6.10	-650	770	-1420	450	7
1968													6.10	-100	570	-670	295	65
1969													6.10	-930	400	-1330	650	0
1970													6.10	-540	370	-910	490	7
1971													6.10	-580	650	-1230	400	23
1972													6.10	-310	950	-1260	360	32
1973													6.10	-80	740	-820	270	60
1974													6.10	-920	750	-1670	550	2
1975													6.10	-310	780	-1090	340	35
1976													6.10	-450	720	-1170	410	20
1977													6.10	-110	760	-870	320	45
1978													6.10	-560	750	-1310	410	20
1979													6.10	-710	770	-1480	550	2
1980													6.10	-520	750	-1270	430	17
1981													6.00	-550	460	-1010	450	14
1982													6.00	-40	640	-680	280	56
1983													6.00	-270	700	-970	345	34
1984													6.00	-730	690	-1420	500	6
1985													6.00	-550	930	-1480	450	14
1986							30	1510	-1480	1155	62		6.10	-320	980	-1300	380	25
1987													6.10	220	820	-600	200	83
1988													6.10	-520	610	-1130	440	15
1989													6.10	-450	560	-1010	420	15
1990													6.12	-660	750	-1410	500	8
1991	19.4	-990	2250	-3240	1240								6.12	24	820	-796	275	58
1992	19.4	390	2270	-1880	950		240	1750	-1510	1120	67	3000	6.12	-200	690	-890	340	39
1993	19.4	720	2140	-1430	985		130	1870	-1740	1130	65	2840	6.12	-1022	545	-1567	600	0
1994	19.4	400	2240	-1840	1020	74	-140	1700	-1840	1160	60	1600	6.12	-176	784	-961	310	48
1995	19.4	-1130	1270	-2410	1240	0	-990			1240	0		6.12	-641	489	-1130	500	8
1996	19.4	-450	2350	-2810	1130	32							6.12	-170	780	-950	310	49
1997													6.12	-620	500	-1120	490	7
1998							-1480			1460	18		6.12	-860			600	0
1999							-1020			1230	51		6.12	-360			450	
2000																		
Years	6	6	6	6	6	3	7	4	4	7	7	3	33	33	31	31	33	32
Average	19.4	-177	2087	-2268	1094	35	-461	1708	-1643	1214	46	2480	6.09	-444	693	-1127	417	25
Stdev	0.0	788	406	677	128	37	685	150	176	118	26	766	0.04	298	151	278	108	22
Sq. root error	0.0	322	166	277	52	21	286	75	88	53	12	442	0.01	53	27	50	19	4

Glacier	Bertil				Longyerbreen		West Ice			Voering					
Country	Norway				Norway		Norway			Norway					
Geogr.area	Svalbard				Svalbard		Svalbard			Svalbard					
PSFG NR															
Code															
Lat	78° 40' N				78° 20' N		80° N			78° N					
Long	17° 20' E				16° E		20°05'E			14° E					
Elev. Max, m	600				1030		600			560					
Elev. Med, m															
Elev. Min, m	240						0			100					
Length, km															
Area, km^2	4.8				3.30		2683			2.65					
Aspect															
Variables	s	bn	bw	bs	s	bn	ba	Ct	At	s	ba	Ct	At	ELA	AAR
1946															
1947															
1948															
1949															
1950															
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1958							14	400	-260						
1959															
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1964															
1965															
1966															
1967										2.65	-200	870	-1070	320	88
1968															
1969															
1970															
1971															
1972															
1973															
1974										2.65	-1160	640	-1800		
1975	4.8	-290								2.65	-260	730	-990		
1976	4.8	-720	340	-1060						2.65	-1170	440	-1610		
1977	4.8	-590	480	-1070	3.30	-420				2.65	-130	620	-750		
1978	4.8	-1000	440	-1440	3.30	-730				2.65	-1160	500	-1660		
1979	4.8	-850	500	-1350	3.30	-1230				2.65	-890	540	-1430		
1980	4.8	-920	310	-1230	3.30	-690				2.65	-500	550	-1050		
1981	4.8	-660	420	-1080	3.30	-330				2.65	-940	490	-1430		
1982	4.8	-170	340	-510	3.30	120				2.65	-20	500	-520		
1983	4.8	-470	410	-880						2.65	-530	600	-1130		
1984	4.8	-1030	430	-1460						2.65	-1100	700	-1800		
1985	4.8	-970	440	-1410						2.65	-450	760	-1210		
1986										2.65	-550	700	-1250		
1987										2.65	-320	620	-940		
1988										2.65	-540	840	-1380		
1989										2.65	-540	650	-1190		
1990										2.65	-870	660	-1530		
1991										2.65	-420	900	-1320		
1992															
1993															
1994															
1995															
1996															
1997															
1998															
1999															
2000															
Years	11	11	10	10	6	6	1	1	1	19	19	19	19	1	1
Average	4.8	-697	411	-1149	3.30	-547	14	400	-260	2.65	-618	648	-1266	320	88
Stdev	0	293	62	297	0	454				0	370	132	342		
Sq. root error	0	88	20	94	0.00	185				0	85	30	78		

Glacier	Nordensheld					Fritjof					Greenfjord					Bogerbreen			
Country	Norway					Norway					Norway					Norway			
Geogr.area	Svalbard					Svalbard					Svalbard					Svalbard			
PSFG NR																			
Code																			
Lat	78° 05'N					78° N					78°0'N					78°25' N			
Long	17°E					20° E					14°05'E					16°10'E			
Elev. Max, m	1200										600					945			
Elev. Med, m																			
Elev. Min, m	30										5					320			
Length, km																			
Area, km^2	199.5					67					17.8					4.2			
Aspect																			
Variables	ba	Ct	At	ELA	AAR	s	bn	bw	bs	ELA	s	ba	Ct	At	ELA	s	bn	bw	bs
1946																			
1947																			
1948																			
1949																			
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1962																			
1963																			
1964																			
1965	320	810	-490	560	80														
1966											17.8	-330	850	-1180	370				
1967											17.8	-340	1080	-1420	380				
1968																			
1969																			
1970																			
1971																			
1972																			
1973																			
1974																			
1975																4.2	0	570	-570
1976																4.2	-200		
1977																4.2	-260	620	-880
1978																4.2	-810	340	-1150
1979																4.2	-1070	610	-1680
1980																4.2	-650	480	-1130
1981																4.2	-360	560	-920
1982																4.2	250	380	-130
1983																4.2	-300	480	-780
1984		900		650												4.2	-610	620	-1230
1985																4.2	-570	540	-1110
1986										340						4.2	-600		
1987						67	-170	730	-900	375									
1988						67	-370	800	-1170	360	17.8	-460	800	-1260					
1989						67	-330	710	-1040	350	17.8	-500	700	-1200					
1990						67	-410	740	-1150	425	17.8	-490	750	-1240					
1991	340					67	50	960	-910	315	17.8	-170	1020	-1190					
1992																			
1993																			
1994																			
1995																			
1996																			
1997																			
1998																			
1999																			
2000																			
Years	2	2	1	2	1	5	5	5	5	6	6	6	6	6	2	12	12	10	10
Average	330	855	-490	605	80	67	-246	788	-1034	361	17.8	-382	867	-1248	375	4.20	-432	520	-958
Stdev	14	64		64		0	189	102	128	37	0	127	152	90	7	0	361	99	416
Sq. root error	10	45		45		0	84	46	57	15	0	52	62	37	5	0	104	31	132

Glacier	Daud				E. & S. Ice			Finsterwalder	two years	Werenskiold		Kongsvegen					
Country	Norway				Norway			Norway	mass	Norway		Norway					
Geogr.area	Svalbard				Svalbard			Svalbard	balance	Svalbard		Svalbard					
PSFG NR										N 12501		N15510					
Code										528		424					
Lat	78°10' N				79°05'N			77°50' N		77°05'N		78°48'N					
Long	18°50'E				24°0'E			15°50'E		15°24'E		12°59'E					
Elev. Max, m	560				750					810		1050					
Elev. Med, m										400		500					
Elev. Min, m	100				0					27		0					
Length, km										7		27					
Area, km^2	4.7				7895			33.8		28		101.9					
Aspect										SW/W		NW/NW					
Variables	s	ba	Ct	At	ba	Ct	At	s	bn	s	bn	s	bn	bw	bs	ELA	AAR
1946																	
1947																	
1948																	
1949																	
1950																	
1951								33.8	-1350								
1952								33.8	-1350								
1953								33.8	50								
1954								33.8	50								
1955								33.8	-1200								
1956								33.8	-1200								
1957								33.8	200								
1958					240	560	-320	33.8	200								
1959								33.8	-50								
1960								33.8	-50								
1961								33.8	-1150								
1962								33.8	-1150								
1963								33.8	-100								
1964								33.8	-100								
1965								33.8	-400								
1966								33.8	-400								
1967								33.8	-550								
1968								33.8	-550								
1969																	
1970																	
1971																	
1972																	
1973																	
1974																	
1975																	
1976	4.7		720														
1977																	
1978	4.7	-660	690	-1350													
1979	4.7	-580	540	-1120													
1980	4.7	-570	670	-1240						28	-650						
1981	4.7	-120	690	-810													
1982	4.7	120	490	-370													
1983	4.7	-100															
1984																	
1985																	
1986																	
1987												101.9	540	920	-390		
1988												101.9	0	740	-740	525	63
1989												101.9	-150	550	-700	570	53
1990												101.9	-310	810	-1120	580	50
1991												101.9	430	880	-450	450	73
1992												101.9	320	920	-600	475	68
1993												101.9	-380	740	-1120	670	25
1994										28	-360	101.9	500	1000	-500	400	78
1995												101.9	-250	640	-890	650	28
1996												101.9	390	1160	-770	435	59
1997												101.9	100	700	-600	540	45
1998												101.9	-710			705	8
1999												101.9	-150			575	
2000																	
Years	7	6	6	5	1	1	1	18	18	2	2	13	13	11	11	12	11
Average	4.70	-318	633	-978	240	560	-320	33.8	-506	28	-505	101.9	25	824	-716	548	50
Stdev	0	325	94	395				0	574	0	205	0.0	391	174	247	96	22
Sq. root error	0.0	133	39	177				0.0	135	0	145	0.0	104	53	75	29	6

Glacier	**Md. Lovenbreen**						**Hans**						**Waldemar**			
Country	Norway						Norway						Poland			
Geogr.area	Svalbard						Svalbard						Svalbard			
PSFG NR	N15506						N12419									
Code	529						424									
Lat	78°53'N						77°05'N						78°67'N			
Long	12°04'E						15°40'E						12°03'E			
Elev. Max, m	650						600									
Elev. Med, m	330						350									
Elev. Min, m	50						0						140			
Length, km	4.8						15.8									
Area, km^2	5.45						56.76						2.66			calculated
Aspect	NE/N						S/S									by M.D.
Variables	**s**	**bn**	**bw**	**bs**	**ELA**	**AAR**	**s**	**bn**	**bw**	**bs**	**ELA**	**AAR**	**s**	**bw**	**bs**	**bn**
1946																
1947																
1948																
1949																
1950																
1951																
1952																
1953																
1954																
1955																
1956																
1957																
1958																
1959																
1960																
1961																
1962																
1963																
1964																
1965																
1966																
1967																
1968	5.80	-30	480	-510	295											
1969	5.80	-840	410	-1250	650											
1970	5.80	-530	360	-890	500											
1971	5.80	-460	700	-1160	385											
1972	5.80	-220	980	-1200	350											
1973	5.80	-20	820	-840	310											
1974	5.80	-890	700	-1590	550											
1975	5.80	-210	830	-1040	340											
1976	5.80	-350	750	-1100	420											
1977	5.80	-40	800	-840	300											
1978	5.80	-480	810	-1290	420											
1979	5.80	-660	800	-1460	480											
1980	5.80	-430	830	-1260	415											
1981	5.80	-460	510	-970	435											
1982	5.80	20	660	-640	290											
1983	5.80	-170	750	-920	330											
1984	5.80	-680	740	-1420	440											
1985	5.80	-480	980	-1460	445											
1986	5.80	-210	1060	-1270	370	42										
1987	5.80	240	820	-580	225	77										
1988	5.80	-490	560	-1050	425	27										
1989	5.80	-240	630	-870	375	41	56.76	-530	970	-1500	325	45				
1990	5.80	-510	870	-1380	450	19	56.76	-900			370	32				
1991	5.45	100	980	-880	265	68	56.76	130	1160	-1030	280	54				
1992	5.45	-140	840	-980	375	40	56.76	-270	890	-1160	380	27				
1993	5.45	-880	680	-1560	600	0	56.76	-680	930	-1610	400	22				
1994	5.45	-120	860	-1000	270	66	56.76	200	760	-560	240	69				
1995	5.45	-790	520	-1310	500	6	56.76	-450	760	-1210	390	25				
1996	5.45	20	800	-780	305	58							2.66	750	-724	26
1997	5.45	-430	560	-980	390	36							2.66	480	-860	-380
1998	5.45	-590			425	30	56.76	-600			390	25	2.66	420	-1205	-785
1999	5.45	-340			425		56.76	-350			350	39				
2000																
Years	32	32	30	30	32	13	9	9	6	6	9	9	3	3	3	3
Average	5.70	-353	736	-1083	399	39	56.76	-388	912	-1178	347	37	2.66	550	-930	-380
Stdev	0.16	298	174	285	97	24	0.0	386	150	373	59	17	0	176	248	406
Sq. root error	0.03	54	32	52	18	7	0.0	137	61	152	21	6	0	101	143	234

Glacier	**Engabr.**						**Svartisheibreen**					
Country	Norway						Norway					
Geogr.area	Svartisen						Svartisen					
PSFG NR	N 67011						N65509					
Code	438											
Lat	66°40'N						66° 35' N					
Long	13°45'E						13° 45' E					
Elev. Max, m	1594						1420					
Elev. Med, m	1220						1040					
Elev. Min, m	40						770					
Length, km	11.5						4					
Area, km^2	38.023						5.48					
Aspect	N/NW						SE/SE					
Variables	**s**	**bn**	**bw**	**bs**	**ELA**	**AAR**	**s**	**bn**	**bw**	**bs**	**ELA**	**AAR**
1946												
1947												
1948												
1949												
1950												
1951												
1952												
1953												
1954												
1955												
1956												
1957												
1958												
1959												
1960												
1961												
1962												
1963												
1964												
1965												
1966												
1967												
1968												
1969	38.020	-990	2050	-3040	1280							
1970	38.040	1017	3213	-2195	1070	78						
1971	38.040	-82	3208	-3289	1250	64						
1972	38.040	2718	4370	-1652	830	94						
1973	38.040	789	3393	-2604	1090	83						
1974	38.040	1602	3175	-1572	960	89						
1975	38.020	2413	3862	-1449	910	93						
1976	38.020	879	2077	-1198	1000	86						
1977	38.020	-507	2485	-2993	1250	54						
1978	38.020	404	3626	-3222	1170	54						
1979	38.020	-507	2676	-3183	1250	54						
1980	38.020	980	2910	-1930	965							
1981	38.020	840	2270	-1430	1030							
1982	38.020	1060	2340	-1280	1020							
1983	38.020	1050	3830	-2780	990							
1984	38.020	-950	1500	-2400	1350							
1985	38.020	252	2702	-2450	1140	66						
1986	38.020	941	2568	-1627	1015	83						
1987	38.020	-1791	2258	-4049	1400	6						
1988	38.020	3178	4624	-1446	890	93	5.48	-1610	2420	-4030	1180	22
1989	38.020	849	3492	-2643	1000	86	5.48	2360	3720	-1360	900	80
1990	38.020	689	2830	-2140	1090	75	5.48	820	3790	-2970	930	73
1991	38.020	2339	4046	-1707	875	94	5.48	173	2610	-2437	950	70
1992	38.020	1039	3060	-2022	985	87	5.48	1209	3886	-2677	900	81
1993	38.020	417	1969	-1553	1080	76	5.48	918	3502	-2584	890	81
1994	38.020	1734	3508	-1775	940	90	5.48	-29	1826	-1855	975	65
1995	38.020	831	2970	-2135	970	88						76
1996	38.020	1223	4440	-3217	1010	85						
1997	38.020	160	2980	-2820	1155	73						
1998	38.023	779	3049	-2269	1068	76	5.48	100			1000	
1999	38.023	-30	2120	-2200	1215	51	5.48	-600			1100	
2000												
Years	31	31	31	31	31	25	9	9	7	7	9	8
Average	38.023	38	3019	-2267	1073	75	5.48	371	3108	-2559	981	69
Stdev	0.009	1090	776	733	143	20	0	1154	813	846	95	20
Sq. root error	0.002	199	142	134	26	4	0	408	307	320	34	7

Glacier	A.Okstinbr.						Trollbergdalsbr.						Storglombr.					
Country	Norway						Norway						Norway					
Geogr.Area	Svartisen						Svartisen						Svartisen					
PSFG NR	N64902						N68507						N89013					
Code	438						538						-					
Lat	66° 14' N						66°43'N						66°40'N					
Long	14° 22' E						14°27'E						14°00'E					
Elev. max	1750						1300						1580					
Elev. med	1340						1050											
Elev. min	730						900						520					
Length, km	7.25						2.1						10.5					
Area, km^2	14.01						1.591						59.16					
Aspect	N/NE						SE/SE						NE/NE					
Variables	s	bn	bw	bs	ELA	AAR	s	bn	bw	bs	ELA	AAR	s	bn	bw	bs	ELA	AAR
1946																		
1947																		
1948																		
1949																		
1950																		
1951																		
1952																		
1953																		
1954																		
1955																		
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1960																		
1961																		
1962																		
1963																		
1964																		
1965																		
1966																		
1967																		
1968																		
1969																		
1970							2.02	-2470	1740	-4210	1400							
1971							2.02	-337	2127	-2463	1100	29						
1972							1.97	-1236	2437	-3673	1160	21						
1973							1.92	755	3188	-2433	<900	100						
1974							1.87	-403	2566	-2969	1095	21						
1975							1.83	-284			1090	40						
1976																		
1977																		
1978																		
1979																		
1980																		
1981																		
1982																		
1983																		
1984																		
1985													59.16	-1190	1400	-2590	1300	
1986													59.16	-420	2450	-2870	1100	62
1987													59.16	450	2320	-1870	1020	74.5
1988													59.16	-1690	2065	-3754	1350	4.5
1989																		
1990	14.01	287	2989	-2702	1410	61	1.819	-117	3056	-3174	1075	35						
1991	14.01	-518	1784	-2302	1315	60	1.77	1	2320	-2321	1070	38						
1992	14.01	1230	2883	-1654	1260	73	1.72	599	2639	-2040	900	100						
1993	14.01	193	2199	-2006	1290	66	1.66	228	2530	-2302	1060	50						
1994	14.01	-169	1454	-1623	1310	62	1.591	-1108	1489	-2597	1180	5						
1995	14.01	458	2250	-1792	1280	62												
1996	14.01	-301	1621	-1922	1330	57												
1997	14.01	-260	2600	-2860	1301	63												
1998																		
1999																		
2000																		
Years	8	8	8	8	8	8	11	11	10	10	10	10	4	4	4	4	4	3
Aver	14	115	2223	-2108	1312	63	1.82	-397	2409	-2818	1113	44	59.16	-713	2059	-2771	1193	47
Stdev	0	560	575	469	45	5	0.14	920	527	688	125	32	0	935	467	779	158	37
Sq. root error	0	198	203	166	16	2	0.04	277	167	218	40	10	0	467	234	390	79	22

Glacier	**Tretten-Null-to**						**Hogtuvbreen**						**Langfjordjokelen**					
Country	Norway						Norway						Norway					
Geogr.Area	Svartisen						Svartisen						Finnmark					
PSFG NR	N67315						N65507						N85008					
Code	538						528						438					
Lat	66°43'N						66°27'N						70°10' N					
Long	14°01'E						13°39'E						21°45' E					
Elev. max	1260						1160						1050					
Elev. med							940						850					
Elev. min	580						588						280					
Length, km	3.4						2.7						4					
Area, km^2	4.92						2.59						3.65					
Aspect	E/E						E/E						SE/E					
Variables	**s**	**bn**	**bw**	**bs**	**ELA**	**AAR**	**s**	**bn**	**bw**	**bs**	**ELA**	**AAR**	**s**	**bn**	**bw**	**bs**	**ELA**	**AAR**
1946																		
1947																		
1948																		
1949																		
1950																		
1951																		
1952																		
1953																		
1954																		
1955																		
1956																		
1957																		
1958																		
1959																		
1960																		
1961																		
1962																		
1963																		
1964																		
1965																		
1966																		
1967																		
1968																		
1969																		
1970																		
1971							2.59	-742	3055	-3796	950	42						
1972							2.59	-963	3335	-4299	970	37						
1973							2.59	1088	3907	-2819	720	83						
1974							2.6	-207	3478	-3685	900	54						
1975							2.6	722	3000	-2278	760	78						
1976							2.598	909	3660	-2751	730	79						
1977							2.598	-523	2197	-2720	900	54						
1978																		
1979																		
1980																		
1981																		
1982																		
1983																		
1984																		
1985	4.92	-1730	1470	-3200	1740													
1986	4.92	-440	2400	-2840	1100	50												
1987																		
1988																		
1989													3.70	-560	2400	-2960	870	48
1990													3.70	-320	2740	-3060	780	53
1991													3.65	193	2315	-2121	710	67
1992													3.65	443	2680	-2237	700	64
1993													3.65	182	2548	-2365	720	64
1994													3.65	-300	1600	-1900		
1995													3.66	900	2200	-1300		
1996													3.66	20	2250	-2230	680	77
1997													3.66	-690	2650	-3340	820	58
1998													3.65	-1440	1800	-3240	1050	0
1999													3.65	-1570	1330	-2910	960	45
2000																		
Years	2	2	2	2	2	1	7	7	7	7	7	7	11	11	11	11	9	9
Aver	4.92	-1085	1935	-3020	1420	50	2.60	41	3233	-3193	847	61	3.66	-286	2228	-2515	810	53
Stdev	0	912	658	255	453		0.005	848	558	733	107	19	0.02	755	466	636	128	22
Sq. root error	0	645	465	180	320		0.002	320	211	277	40	7	0.01	208	119	208	44	4

Glacier	Svartfjelljokelen				Storstainfjellbr.						Cainhavarre				
Country	Norway				Norway						Norway				
Geogr.Area	Finnmark				Skjomen						Skjomen				
PSFG NR					N073811						N73934				
Code					528						238				
Lat	70°N				68°13'N						68°06'N				
Long	21°E				17°55'E						18°00'E				
Elev. max					1850						1540				
Elev. med					1380						1410				
Elev. min					930						1210				
Length, km					5.3						1.4				
Area, km^2	2.7				5.92						0.683				
Aspect					E/SE						NE/N				
Variables	s	bn	bw	bs	s	bn	bw	bs	ELA	AAR	s	bn	bw	bs	ELA
1946															
1947															
1948															
1949															
1950															
1951															
1952															
1953															
1954															
1955															
1956															
1957															
1958															
1959															
1960															
1961															
1962															
1963															
1964					6.12	650	1850	-1200	1220						
1965					6.12	440	1696	-1257	1270		0.68	201	1406	-1205	1300
1966					6.12	-809	1065	-1874	1500		0.68	-954	1119	-2074	
1967					6.12	-403	1367	-1770	1450		0.68	-165	1626	-1791	1450
1968					6.12	455	1444	-989	1275		0.68	257	1307	-1050	1290
1969															
1970															
1971															
1972															
1973															
1974															
1975															
1976															
1977															
1978	2.70	-100	2300	-2400											
1979	2.70		2100												
1980															
1981															
1982															
1983															
1984															
1985															
1986															
1987															
1988															
1989															
1990															
1991					6.12	-36	1562	-1598	1395	43					
1992					6.12	1043	2070	-1028	1205	86					
1993					6.12	949	2169	-1220	1190	88					
1994					5.92	205	1142	-1347	1375	57					
1995					5.92	572	1813	-1241	1290	74					
1996															
1997															
1998															
1999															
2000															
Years	2	1	2	1	10	10	10	10	10	5	4	4	4	4	3
Aver	2.70	-100	2200	-2400	6.08	307	1618	-1352	1317	70	0.68	-165	1365	-1530	1347
Stdev	0		141		0.08	583	370	299	107	19	0.00	558	211	483	90
Sq. root error	0		100		0.03	184	117	95	34	9	0	279	106	242	52

Glacier	Blaisen					Alfotbreen						Hansebreen					
Country	Norway					Norway						Norway					
Geogr.Area	Skjomen					Alfotbreen						Aalfotbr. ice cap					
PSFG NR	N 74211					N36204						N36206					
Code	648					436						322					
Lat	68°20'N					61°45'N						61°45'N					
Long	17°51'E					5°39'E						5°41'E					
Elev. max	1240					1380						1320					
Elev. med	1040					1230						1160					
Elev. min	860					890						925					
Length, km	2.3					2.9						2.5					
Area, km^2	2.18					4.36						3.29					
Aspect	NE/NE					NE/NE						NE/N					
Variables	s	bn	bw	bs	ELA	s	bn	bw	bs	ELA	AAR	s	bn	bw	bs	ELA	AAR
1946																	
1947																	
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1951																	
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1955																	
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1958																	
1959																	
1960																	
1961																	
1962																	
1963	2.18	200	2600	-2400	1050	4.67	-1100			1300	27						
1964	2.18	630	2300	-1670	980	4.69	280			1140	75						
1965	2.18	539	1997	-1458	960	4.67	494	3640	-3140	1150	73						
1966	2.18	-1276	1116	-2392	1200	4.69	-1557	2484	-4041	1380	0						
1967	2.18	-973	1378	-2351	1175	4.69	1310	4454	-3144	950	99						
1968	2.18	259	1621	-1362	1010	4.86	990	4570	-3580	1075	87						
1969						4.86	-2104	2555	-4659	1380	0						
1970						4.86	-1278	2492	-3769	1380	0						
1971						4.86	935	4285	-3450	1140	75						
1972						4.81	115	3815	-3700	1195	61						
1973						4.81	2182	4670	-2488	870	100						
1974						4.81	1026	3570	-2544	1065	90						
1975						4.81	1210	4639	-3429	1050	92						
1976						4.79	1524	4394	-2870	870	100						
1977						4.79	-560	2330	-2890	1280	34						
1978						4.82	-509	2547	-3056	1290	30						
1979						4.82	-130	3280	-3410	1220	53						
1980						4.82	-610	2530	-3140	1275	35						
1981						4.82	220	4040	-3820	1210	57						
1982						4.82	-130	3350	-3480	1240	46						
1983						4.82	1600	4790	-3190	1010	96						
1984						4.82	1320	4090	-2770	1050	92						
1985						4.82	-560	2440	-3000	1290	30	3.32	-580	2280	-2870		
1986						4.82	-413	2343	-2755	1255	42	3.32	1130	3760	-2630	1200	
1987						4.82	2070	4290	-2220	870	100	3.32	-2740	2500	-5240	1100	
1988						4.82	-2480	2720	-5200	1380	0	3.32	420	4130	-3710	>1320	
1989						4.85	2242	5198	-2956	1030	94	3.32	320	4420	-4100	1140	
1990						4.85	1772	5981	-4209	980	97	3.32	260	3370	-3110	1140	
1991						4.85	775	4080	-3305	1035	94	3.32	974	4406	-3432	1050	
1992						4.85	2092	5294	-3202	1050	92	3.32	1082	4234	-3151	1125	63
1993						4.85	2101	4818	-2718	870	100	3.32	426	3393	-2967	925	100
1994						4.85	782	3716	-2934	925	100	3.32	481	4381	-3901	1120	66
1995						4.85	1109	5095	-3987	1120	80	3.32	-2021	1737	-3758	1140	57
1996						4.85	-1896	1829	-3724	1380	0	3.32	-148	3774	-3922	1320	0
1997						4.36	77	4220	-4143	1200	60	2.91	-300	3210	-3510	1160	50
1998						4.36	110	3660	-3550	1185	58	3.29	-54	3507	-3562	1170	52
1999						4.36	60	4610	-4550		64	3.29	110	4300	-4190	1155	70
2000																	
Years	6	6	6	6	6	37	37	35	35	36	37	15	15	15	15	13	8
Aver	2.18	-104	1835	-1939	1063	4.77	353	3795	-3401	1141	63	3.29	-43	3560	-3604	1134	57
Stdev	0.00	813	566	495	102	0.14	1268	1042	652	162	34	0.11	1075	837	648	88	28
Sq root error	0	332	231	202	42	0.02	214	180	108	27	6	0.03	298	225	174	27	11

Glacier	Hardangerjokulen						Omnsbreen					Austre Memurubre					
Country	Norway						Norway					Norway					
Geogr.Area	SW. Scand.						Hardangerjok					Jotunheimen					
PSFG NR	N22303											N00533					
Code	438											627					
Lat	60°32'N						61° N					61°33'N					
Long	7°22'E						6° E					8°26'E					
Elev. max	1850						1570					2280					
Elev. med	1740		820									1940					
Elev. min	1050						1460					1630					
Length, km	8.1											4					
Area, km^2	17.10						1.52					8.77					
Aspect	W/W											SE/SE					
Variables	s	bn	bw	bs	ELA	AAR	s	bn	bw	bs	ELA	s	bn	bw	bs	ELA	AAR
1946																	
1947																	
1948																	
1949																	
1950																	
1951																	
1952																	
1953																	
1954																	
1955																	
1956																	
1957																	
1958																	
1959																	
1960																	
1961																	
1962																	
1963	17.65	-1400	1150	-2550	>1860												
1964	17.65	540	1850	-1310	1620												
1965	17.65	510	2050	-1540	1620												
1966	17.60	-640	1600	-2240	1750		1.52	-840	1440	-2280							
1967	17.55	1190	2440	-1250	1540		1.52	490	2210	-1720							
1968	17.55	530	2680	-2150	1600		1.52	-180	2200	-2380	1520	8.86	13	1771	-1758	1960	
1969	17.18	-1900	1070	-2970	1950		1.52	-2590	1090	-3680		8.86	-1460	995	-2455	2130	
1970	17.40	-600	1290	-1890	1780		1.52	-1500	1120	-2620		8.71	-899	808	-1707	2090	
1971	17.81	702	1955	-1253	1600							8.71	-189	1331	-1521	1960	44
1972	17.81	-70	1786	-1856	1650							8.77	-392	1015	-1408	1985	37
1973	17.76	846	2631	-1785	1570												
1974	17.71	410	1910	-1500	1615												
1975	17.66	150	2250	-2100	1620												
1976	17.61	150	2450	-2300	1620												
1977	17.56	-720	1200	-1920	1880												
1978	17.51	-300	1800	-2100													
1979	17.46	300	2400	-2100													
1980	17.41	-1400	1450	-2850	1900												
1981	17.36	850	2650	-1800	1590												
1982	17.31	-700	1400	-2100	1800												
1983	17.26	1700	3750	-2050	1450												
1984	17.21	-100	2050	-2150	1675												
1985	17.16	-520	1480	-2000	1715												
1986	17.16	-101	1471	-1572	1670												
1987	17.16	936	2081	-1145	1535												
1988	17.16	-1521	1614	-3135	1860												
1989	17.16	2111	3480	-1369	1420												
1990	17.17	1924	3646	-1722	1450												
1991	17.17	-96	1518	-1614	1660												
1992	17.18	1797	3513	-1716	1525												
1993	17.16	1910	2819	-909	1450												
1994	17.14	169	1798	-1629	1600												
1995	17.12	289	2456	-2167	1565												
1996	17.11	-1081	998	-2079	>1860	0											
1997	17.11	-470	2942	-3412	1700	74											
1998	17.10	690	2470	-1780	1585	86											
1999	17.10	50	2040	-1990	1685	72											
2000																	
Years	37	37	37	37	33	4	5	5	5	5	1	5	5	5	5	5	2
Aver	17.37	166	2112	-1946	1644	58	1.52	-924	1612	-2536	1520	8.78	-585	1184	-1770	2025	41
Stdev	0.24	1004	733	542	132	39	0	1190	558	720		0.07	595	378	408	80	5
Sq. root error	0.04	170	124	92	24	27	0	355	166	215	0	0.03	266	169	183	36	4

Glacier	Vestre Memurubre						Storbreen						Hellstugubr.					
Country	Norway						Norway						Norway					
Geogr.Area	Jotunheimen						Jotunheimen						Jotunheimen					
PSFG NR	N00531						N00541						N00511					
Code	638						526						518					
Lat	61°32'N						61°34'N						61°34'N					
Long	8°30'E						8°08'E						8°26'E					
Elev. max	2200						1970						2130					
Elev. med	1880						1440						1900					
Elev. min	1570						1380						1470					
Length, km	4						3						3.4					
Area, km^2	8.97						5.35						2.970					
Aspect	SE/E						NE/NE						N/N					
Variables	s	bn	bw	bs	ELA	AAR	s	bn	bw	bs	ELA	AAR	s	bn	bw	bs	ELA	AAR
1946																		
1947																		
1948																		
1949							5.42	200	2280	-2080	1650							
1950							5.42	-290	1520	-1810	1750							
1951							5.42	-540	1130	-1670	1770							
1952							5.42	310	1440	-1130	1630							
1953							5.42	-850	1400	-2250	1850							
1954							5.42	-770	1210	-1980	1830							
1955							5.42	-490	1570	-2060	1800							
1956							5.42	-170	1310	-1480	1705							
1957							5.42	50	1420	-1370	1680							
1958							5.42	-80	1540	-1620	1700							
1959							5.42	-1280	1070	-2350	1930							
1960							5.42	-1090	980	-2070	1910							
1961							5.42	-520	1100	-1620	1820							
1962							5.42	720	1540	-820	1510		3.38	780				
1963							5.41	-1180	960	-2140	1900	13	3.38	-980			2020	15
1964							5.41	210	1160	-950	1655	73	3.38	-120			1900	50
1965							5.40	340	1540	-1200	1650	74	3.38	515			1690	81
1966							5.40	-610	1250	-1860	1815	35	3.38	-665			1940	33
1967							5.39	720	1890	-1170	1570	88	3.38	558			1800	72
1968	9.05	241	1705	-1464	1820		5.39	50	1640	-1590	1700	66	3.38	-111			1875	55
1969	9.01	-1060	1046	-2106	2170		5.38	-1420	1220	-2640	2020	2	3.38	-1279			2130	2
1970	9.01	-786	849	-1635	1990		5.38	-720	970	-1690	1840	26	3.38	-1007			2020	15
1971	9.01	105	1299	-1194	1845	67	5.37	180	1460	-1280	1690	68	3.27	-142	1115	-1256	1860	59
1972	8.97	-261	1205	-1466	1885	48	5.37	-310	1390	-1700	1770	49	3.32	-496	936	-1432	1950	29
1973							5.36	80	1480	-1400	1705	65	3.34	-221	1193	-1414	1880	54
1974							5.36	240	1260	-1020	1630	77	3.31	238	1001	-764	1785	74
1975							5.35	-150	1550	-1700	1760	52	3.31	-369	1343	-1712	1950	29
1976							5.35	-90	1810	-1900	1740	56	3.29	-751	1151	-1903	1970	23
1977							5.34	-540	940	-1480	1840	25	3.29	-693	711	-1404	2075	8
1978							5.34	-440	1260	-1700	1815	35	3.29	-565	1050	-1615	1890	52
1979							5.33	100	1550	-1450	1700	66	3.29	-34	1423	-1457	1820	68
1980							5.33	-1310	990	-2300	1975	5	3.29	-1240	806	-2046	2050	12
1981							5.32	-100	1300	-1400	1730	59	3.27	-330			1950	29
1982							5.32	-470	1280	-1750	1780	45	3.25	-350			1920	42
1983							5.31	200	1900	-1700	1625	72	3.23	170			1820	68
1984							5.31	-300	1700	-2000	1760	47	3.21	-510			1965	25
1985							5.30	-400	1200	-1600	1790	42	3.19	-290			1880	54
1986							5.29	-320	1050	-1370	1770	51	3.16	-494	779	-1272	1940	33
1987							5.28	300	1550	-1230	1580	87	3.13	457	1156	-698	1690	81
1988							5.27	-950	1450	-2400	1970	6	3.10	-1034	1283	-2317	2025	15
1989							5.26	1200	2300	-1100	1550	90	3.07	720	1624	-903	1660	85
1990							5.26	1249	2594	-1345	1530	92	3.04	660	1807	-1147	1630	87
1991							5.26	-145	1263	-1408	1740	57	3.01	-459	974	-1433	1950	30
1992							5.26	86	1612	-1526	1715	68	2.98	139	1170	-1031	1850	61
1993							5.26	757	1812	-1055	1610	80	2.98	296	1249	-953	1670	83
1994							5.26	-245	1521	-1766	1800	39	2.97	65	1255	-1190	1860	59
1995							5.26	-155	1771	-1925	1810	34	2.97	-123	1416	-1539	1885	51
1996							5.26	-1028	814	-1842	1890	19	2.97	-737	650	-1387	1955	38
1997							5.26	-1029	1752	-2781	1875	23	2.97	-1654	1121	-2775	2200	0
1998							5.35	220	1550	-1330	1675	77	2.98	-20	1000	-1020	1870	38
1999							5.35	-240	1670	-1910	1850	42	2.98	-420	2980	-1640	1930	55
2000																		
Years	5	5	5	5	5	2	51	51	51	51	51	37	38	38	24	24	37	37
Aver	9.01	-352	1221	-1573	1942	58	5.35	-216	1449	-1665	1752	51	3.21	-276	1216	-1430	1899	45
Stdev	0.03	561	320	337	143	13	0.06	605	358	432	117	25	0.16	585	464	484	127	25
Sq. root error	0.01	251	143	151	64	10	0.01	86	51	62	17	4	0.03	97	58	103	21	4

Glacier	Nordbogl.			Tverrabr.				Blabreen					Grasubr.					
Country	Norway			Norway				Norway					Norway					
Geogr.Area	Jotunheimen			Jotunheimen				Jotunheimen					Jotunheimen					
PSFG NR													N00547					
Code													676					
Lat	62° N			62° N				62° N					61°39'N					
Long	10° E			21°E				21°E					8°36'E					
Elev. max				2200				2150					2300					
Elev. med													2060					
Elev. min				1415				1550					1850					
Length, km													2					
Area, km^2	57			5.9				3.6					2.36					
Aspect													NE/E					
Variables	bn	bw	bs	s	bn	bw	bs	s	bn	bw	bs	ELA	s	bn	bw	bs	ELA	AAR
1946																		
1947																		
1948																		
1949																		
1950																		
1951																		
1952																		
1953																		
1954																		
1955																		
1956																		
1957																		
1958																		
1959																		
1960																		
1961																		
1962				5.90	750	2030	-1280	3.60	800	1150	-350	1550	2.39	-710			2275	0
1963				5.90	-1220	1240	-2460	3.60	-860	850	-1750	1970	2.39	-320			2160	18
1964													2.39	408			1900	96
1965													2.39	-285			2150	21
1966													2.39	711			1870	100
1967													2.53	-80			2140	24
1968													2.53	-1359			2275	0
1969													2.53	-664			2200	9
1970													2.52	-469	495	-964	2200	9
1971													2.51	-644	660	-1304	2240	3
1972													2.49	-891	720	-1611	2275	0
1973													2.47	346	586	-240	1870	100
1974													2.45	-948	912	-1859	2275	0
1975													2.43	-1002	620	-1622	2275	0
1976													2.41	-389	510	-899	2275	0
1977													2.39	-218	669	-887	2140	24
1978													2.37	42	913	-870		52
1979													2.34	-895	457	-1352	2225	5
1980	-1240	420	-1660										2.31	-190			2180	14
1981													2.28	-510			2275	0
1982													2.26	-40			2090	39
1983													2.22	-370			2275	0
1984													2.20	0			2100	36
1985													2.21	-765	415	-1180	2275	0
1986													2.23	708	941	-233	1870	100
1987													2.24	-585	1078	-1664	2175	10
1988													2.25	446	1116	-670	1850	100
1989													2.26	726	1327	-601	1850	100
1990													2.27	-530	666	-1196	2195	10
1991													2.28	-93	703	-796	2150	22
1992													2.29	415	927	-512	<1850	100
1993													2.30	1	1157	-1156	2075	44
1994													2.31	-114	1186	-1300	2170	16
1995													2.32	-446	530	-976	2205	14
1996													2.33	-1687	697	-2383	2290	0
1997													2.34	110	780	-670		
1998													2.36	-286	785	-1085	2140	30
1999													2.36	-390	910	-1300	2210	18
2000																		
Years	1	1	1	2	2	2	2	2	2	2	2	2	38	38	25	25	35	37
Aver	-1240	420	-1660	5.90	-235	1635	-1870	3.60	-30	1000	-1050	1760	2.36	-289	790	-1093	2146	30
Stdev				0	1393	559	834	0	1174	212	990	297	0.10	553	248	500	141	36
Sq. root error				0	985	395	590	0	830	150	700	210	0.03	92	51	104	25	6

Glacier	Nigardsbr.							Tunsbergdalsbr.						Vesledalsbr.					
Country	Norway							Norway						Norway					
Geogr.Area	Jostedal							Jostedal						Jostedal					
PSFG NR	N31014							N31007						N37333					
Code	438							428						438					
Lat	61°43'N							61°36'N						61°50'N					
Long	7°08'E							7°03'E						7°16'E					
Elev. max	1950							1930						1730					
Elev. med	1618							1530						1450					
Elev. min	355							540						1130					
Length, km	9.6							18.5						3					
Area, km^2	47.80							47.7						4.19					
Aspect	SE/SE							SE/SE						N/NW					
Variables	s	bn	bn	bw	bs	ELA	AAR	s	bn	bw	bs	ELA	AAR	s	bn	bw	bs	ELA	AAR
1946																			
1947																			
1948																			
1949																			
1950																			
1951																			
1952																			
1953																			
1954																			
1955																			
1956																			
1957																			
1958																			
1959																			
1960																			
1961																			
1962	42.19	2250				1260													
1963	40.86	-220				1550	65												
1964	40.86	945				1400	87												
1965	40.86	903				1395	88												
1966	47.03	-922				1700	28	43.77	-1088	1570	-2658	1640							
1967	47.03	2156				1310	92	43.77	1794	3311	-1517	1160		4.22	354	2066	-1711	1400	
1968	47.03	221				1550	65	43.77	39	2741	-2703	1270		4.22	637	3140	-2502	1320	
1969	46.40	-1318				1850	4	50.10	-1692	1535	-3227	1700		4.22	-2180	1260	-3440	>1730	
1970	46.56	-560				1650	40	50.10	-840	1540	-2380	1590		4.22	-1140	1520	-2660	>1730	
1971	46.61	827		2116	-1289	1400	87	49.37	568	2362	-1794	1290	66	4.19	422	2216	-1794	1375	74
1972	47.21	-145		1878	-2023	1570	61	49.88	-500	2023	-2523	1490	56	4.19	-350	1918	-2268	1570	42
1973	48.20	1110		2407	-1297	1410	86												
1974	48.20	472		2059	-1587	1490	76												
1975	48.20	275		2501	-2226	1450	81												
1976	48.20	401		2878	-2477	1540	66												
1977	48.20	-777		1519	-2296	1650	40												
1978	48.20	-128		2117	-2245	1590	56												
1979	48.20	712		2755	-2043	1500	75												
1980	48.20	-1222		1774	-2996	1730	23												
1981	48.20	310				1560	63												
1982	48.20	-420				1600	55												
1983	48.20	1090				1445	82												
1984	48.20	340				1500	75												
1985	48.20	-100				1590	56												
1986	47.82	-102		1611	-1713	1590	56												
1987	47.82	1479		2732	-1253	1350	90												
1988	47.82	-896		2236	-3132	1660	37												
1989	47.82	3196		4049	-853	1175	94												
1990	47.82	1763		1762	-1754	1430	83												
1991	47.82	203		1954	-1751	1520	73												
1992	47.82	1602		3166	-1564	1360	89												
1993	47.82	1850		3129	-1279	1300	92												
1994	47.82	569		2285	-1716	1400	87												
1995	47.82	1187		3157	-1970	1325	91												
1996	47.82	-409	-410	1399	-1807	1660	55												
1997	47.82	31	470	2656	-2625	1500	82												
1998	47.80	970		2500	-1530	1350	93	47.70	660										
1999	47.80	170		2380	-2210	1450	90												
2000																			
Years	38	38	2	24	24	38	37	8	8	7	7	7	2	6	6	6	6	4	2
Aver	47.07	469	30	2376	-1902	1494	69	47.31	-132	2155	-2400	1449	61	4.21	-376	2020	-2396	1416	58
Stdev	2.11	1012	622	623	560	143	22	3.03	1124	689	578	209	7	0.02	1099	653	635	108	23
Sq. root error	0.35	168	440	133	118	24	4	1.07	397	260	218	79	5	0.01	449	267	259	54	16

Glacier	Harbardsbreen						Jostefonn						Store Suphellebreen				
Country	Norway						Norway						Norway				
Geogr.Area	Jostedal						Jostedal						Jostedal				
PSFG NR													N33015				
Code													438				
Lat							61°25'N						61°31'N				
Long							6°35'E						6°48'E				
Elev. max	1970						1620						1730				
Elev. med																	
Elev. min	1250						950						720				
Length, km													7				
Area, km^2	13.20						3.81						12.00				
Aspect	E/E												S/S				
Variables	s	bn	bw	bs	ELA	AAR	s	bn	bw	bs	ELA	AAR	s	bn	bw	bs	ELA
1946																	
1947																	
1948																	
1949																	
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1962																	
1963																	
1964													11.99	700	2200	-1500	1190
1965													11.99	560	2320	-1760	1250
1966													11.99	-770	1630	-2400	1590
1967													11.99	1220	2720	-1500	1190
1968																	
1969																	
1970																	
1971																	
1972																	
1973													11.80	1500			
1974													11.80	800			
1975													11.80	1000			
1976																	
1977																	
1978																	
1979													11.90	1100			
1980													11.95	-1400			
1981													12.00	200			
1982													12.00	-1700			
1983																	
1984																	
1985																	
1986																	
1987																	
1988																	
1989																	
1990																	
1991																	
1992																	
1993																	
1994																	
1995																	
1996							3.81	-1625	1187	-2812	1615						
1997	13.16	-542	2174	-2716	1970		3.81	-421	3450	-3871	1400						
1998	13.20	60	1660	-1600	1500	75	3.81	300	2840	-2540	1250	76					
1999	13.20	-340	1810	-2150	1960	0	3.81	380	2920	-2540	1200	79					
2000																	
Years	3	3	3	3	3	2	4	4	4	4	4	2	11	11	4	4	4
Aver	13.19	-274	1881	-2155	1810	38	3.81	-342	2599	-2941	1366	78	11.93	292	2218	-1790	1305
Stdev	0.02	306	264	558	269		0	928	980	633	186		0.09	1093	450	425	192
Sq. root error	0.02	301	257	558	235		0	562	676	406	106		0.03	329	225	212	96

Glacier	Austdalsbreen						Spoerteggbreen					Folgefonna					
Country	Norway						Norway					Norway					
Geogr.Area	Jostedal						Jostedal					Folgefonni Midtre					
PSFG NR	N37323						N31027					N21024					
Code	424						303					303					
Lat	61°48'N						63°36N					60°09'N					
Long	7°21'E						7°27E					6°29'E					
Elev. max	1630						1770					1570					
Elev. med	1480						1575					1460					
Elev. min	1160						1260					1190					
Length, km	6						6.8					2					
Area, km^2	11.87						27.94					8.63					
Aspect	SE/SE											NW/NW					
Variables	s	bn	bw	bs	ELA	AAR	bn	bw	bs	ELA	AAR	s	bn	bw	bs	ELA	AAR
1946																	
1947																	
1948																	
1949																	
1950																	
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1965																	
1966																	
1967																	
1968																	
1969																	
1970												8.63	-620	2070	-2690	>1580	
1971												8.63	370	2330	-1960	1260	
1972																	
1973																	
1974																	
1975																	
1976																	
1977																	
1978																	
1979																	
1980																	
1981																	
1982																	
1983																	
1984																	
1985																	
1986																	
1987																	
1988	11.95	-1108	1948	-3056	1575	12											
1989	11.95	1845	3192	-1346	1270	93	1140	2760	-1620	1405	73						
1990	11.95	1434	3659	-2225	1315	88	1020	3340	-2330	1395	75						
1991	11.95	142	1647	-1505			30	1400	-1370	1540	62						
1992	11.84	897	2800	-1903	1375	80											
1993	11.84	1212	2600	-1389	1320	87											
1994	11.87	167	1797	-1630	1425	69											
1995	11.87	893	2715	-1821	1360	83											
1996	11.87	-848	1203	-2050	1560	0											
1997	11.87	-253	2670	-2922	1450	60											
1998	11.87	170	2200	-2030	1420	71											
1999	11.87	-480	2080	-2560	1435	68											
2000																	
Years	12	12	12	12	11	11	3	3	3	3	3	2	2	2	2	1	0
Aver	11.89	339	2376	-2036	1410	65	730	2500	-1773	1447	70	8.63	-125	2200	-2325	1260	
Stdev	0.04	928	693	567	96	31	609	996	498	81	7	0	700	184	516		
Sq. root error	0.01	282	217	172	32	11						0	495	130	365		

Glacier	Folgefonna					Bondhusbreen						Blabreen, Ruklebreen				
Country	Norway					Norway						Norway				
Geogr.Area	Folg. West, East					Folgefonna						Folgefonna				
PSFG NR						N20408										
Code						438										
Lat	60°09'N					60°02'N						60°N				
Long	6°29'E					6°20'E						21°E				
Elev. max	1580					1635						1610				
Elev. med						1450										
Elev. min	1100					450						1065				
Length, km						6										
Area, km^2	19.52					10.672						4.50				
Aspect						NW/NW										
Variables	s	bn	bw	bs	ELA	s	bn	bw	bs	ELA	AAR	s	bn	bw	bs	ELA
1946																
1947																
1948																
1949																
1950																
1951																
1952																
1953																
1954																
1955																
1956																
1957																
1958																
1959																
1960																
1961																
1962																
1963	19.86	-1249			1690							4.50	-2100	1300	-3400	1620
1964	19.86	376			1400							4.50	500	2180	-1680	1350
1965	19.74	40	2370	-2330	1490							4.50	50	2530	-2480	1450
1966	19.74	-1400	1680	-3080								4.50	-1500	1760	-3260	1620
1967	19.74	1360	3590	-2230	1350							4.50	1300	3860	-2560	1300
1968	19.52	640	3360	-2720	1365							4.50	370	3180	-2800	1395
1969																
1970																
1971																
1972																
1973																
1974																
1975																
1976																
1977						10.160	-998	1961	-2960	1620	29					
1978						10.160	-513	2366	-2879	1540	67					
1979						10.672	336	2681	-2345	1445	66					
1980						10.672	-455	2310	-2765	1500	67					
1981						10.672	1320	3320	-2000	1460						
1982																
1983																
1984																
1985																
1986																
1987																
1988																
1989																
1990																
1991																
1992																
1993																
1994																
1995																
1996																
1997																
1998																
1999																
2000																
Years	6	6	4	4	5	5	5	5	5	5	4	6	6	6	6	6
Aver	19.74	-39	2750	-2590	1459	10.467	-62	2528	-2590	1513	57	4.50	-230	2468	-2697	1456
Stdev	0.12	1087	888	389	140	0.28	909	511	406	70	19	0	1298	938	620	136
Sq. root error	0.05	444	444	195	63	0.13	406	229	182	31	9	0	530	383	253	56

Glacier	Blomsterskardsbreen					Grabreen						Marmaglaciaren					
Country	Norway					Norway						Sweden					
Geogr.Area	Folgefonna					Folgefonna						Kebnekaise					
PSFG NR	N19303					N33014						S00799					
Code	438											521					
Lat	59°59'N					61°08'N						68°05'N					
Long	6°17'E					6°40'E						18°41'E					
Elev. max	1640					1660						1740					
Elev. med						1510											
Elev. min	820					1030						1340					
Length, km	10					5						3.5					
Area, km^2	45.72					9.54						3.90					
Aspect	SW/SW											NE/E					
Variables	s	bn	bw	bs	ELA	s	bn	bw	bs	ELA	AAR	s	bn	bw	bs	ELA	AAR
1946																	
1947																	
1948																	
1949																	
1950																	
1951																	
1952																	
1953																	
1954																	
1955																	
1956																	
1957																	
1958																	
1959																	
1960																	
1961																	
1962						5.65	-1000	1300	-2300	1620							
1963						5.65	340	1990	-1620	1410							
1964						5.65	40	2300	-2260	1480							
1965						5.65	-1370	1660	-3030	1660							
1966						5.65	1370	3510	-2140	1360							
1967						5.65	720	3420	-2690	1350							
1968						9.54	599	2155	-1556	1380	76						
1969						9.54	371	2624	-2253	1375	77						
1970	45.72	0			1370												
1971	45.72	980	2850	-1870	1240												
1972	45.72	320			1340												
1973	45.72	1570			1180												
1974	45.72	510			1325												
1975	45.72	1700			1170												
1976	45.72	1400			1210												
1977	45.72	-1400			1640												
1978																	
1979																	
1980																	
1981																	
1982																	
1983																	
1984																	
1985																	
1986																	
1987																	
1988																	
1989																	
1990												3.90	-110	1290	-1400	1624	26
1991												3.90	-240	1150	-1390	1624	25
1992												3.90	90	1310	-1220	1539	51
1993												3.90	270	1300	-1030	1533	54
1994												3.90	-340	820	-1160	1619	23
1995												3.90	100	1110	-1010	1521	59
1996												3.90	-380			1631	19
1997												3.90	-200			1634	15
1998						6.62	134	2370	-2231	1454	77	3.90	-280			1611	23
1999												3.90	-300			1644	15
2000																	
Years	8	8	1	1	8	9	9	9	9	9	3	10	10	6	6	10	10
Aver	45.72	635	2850	-1870	1309	6.62	134	2370	-2231	1454	77	3.90	-139	1163	-1202	1598	31
Stdev	0	1026			154	1.68	847	734	460	114	1	0	220	188	169	47	17
Sq. root error	0	363			54	0.56	282	245	153	38	0	0	75	77	69	16	6

Glacier	**Partegl.**					**Riukojietna**							
Country	Sweden					Sweden							
Geogr.Area	NE Scand.					NE Scand.							
PSFG NR	S00763					S00790							
Code						303							
Lat	67° 10' N					68°05'N							
Long	17° 40'E					18°05'E							
Elev. max	1860					1456							
Elev. med													
Elev. min	1080					1130							
Length, km	5.4					3							
Area, km^2	9.913					4.648							
Aspect	E/E					E/E							
Variables	**bn**	**bw**	**bs**	**ELA**	**AAR**	**s**	**bn**	**bw**	**AC**	**bs**	**AA**	**ELA**	**AAR**
1946													
1947													
1948													
1949													
1950													
1951													
1952													
1953													
1954													
1955													
1956													
1957													
1958													
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1971													
1972													
1973													
1974													
1975													
1976													
1977													
1978													
1979													
1980													
1981													
1982													
1983													
1984													
1985													
1986						4.600	-540	1230		-1770		1444	2
1987						4.590	-260	1070		-1330		1414	12
1988						4.590	90	1130		-1040	-910	1526	0
1989						4.600	890		890			1150	100
1990						4.600	210	1410		-1200		1300	82
1991						4.200	80					1350	60
1992						4.200	586	2120		-1533		1130	82
1993						4.200	350	2180		-1830		1300	87
1994						4.200	-295	1003		-1298		1410	26
1995						4.200	253	1452		-1199		1287	85
1996						4.648	-61	1395		-1457		1346	59
1997	-970	1720	-2590	1703	2	4.648	-984	1703		-2687		>1460	0
1998						4.648	-910					1456	23
1999						4.65	-780					1460	5
2000													
Years	1	1	1	1	1	14	14	10	1	10	1	13	14
Aver	-970	1720	-2590	1703	2	4.469	-98	1469	890	-1534	-910	1352	45
Stdev						0.210	562	414		477		118	38
Sq. root error						0.061	152	131		151		34	11

Tarfala							
Sweden							
Kebnekaise							
S00791							
670							
67°56'N							
18°39'E							
1710							
1390							
1							
0.86							
E/E							
s	**bn**	**bw**	**AC**	**bs**	**AA**	**ELA**	**AAR**
0.86	17	2110	145	-2093	-222	1510	65
0.86	884	1859	884	-975		1390	100
0.86	-1290	1590		-2880	-1290	1730	0
0.86	1230	3100	1210	-1870		1390	100
0.86	130	2000	332	-1870	-291	1500	54
0.86	160	1950		-1790		1450	63
0.86	1360	2470		-1110		1390	100
7	7	7	4	7	3	7	7
0.86	356	2154	643	-1798	-601	1480	69
0	910	494	491	635	598	122	36
0	344	187	246	240	345	46	14

Glacier	**Karsojietna**						**Storglaciaren**					
Country	Sweden						Sweden					
Geogr.Area	Kebnekaise						Kebnekaise					
PSFG NR	S00798						S00778					
Code	538						528					
Lat	68°21'N						67°54'N					
Long	18°19'E						18°34'E					
Elev. max	1515						1828					
Elev. med	1100											
Elev. min	940						1125					
Length, km	1.7						3.7					
Area, km^2	1.23						3.24					
Aspect	NE/E						E/E					
Variables	**s**	**bn**	**bw**	**bs**	**ELA**	**AAR**	**s**	**bn**	**bw**	**bs**	**ELA**	**AAR**
1946	1.20	-400					3.10	-1130	1130	-2260	1480	
1947							3.10	-2070	1030	-3100	1600	
1948	1.20	-240					3.10	0	1450	-1450	1400	
1949							3.10	910	2230	-1320	1410	
1950							3.10	-1290	1420	-2710	1550	
1951							3.10	-640	810	-1450	1500	
1952							3.10	-160	870	-1030	1450	
1953							3.10	-800	1940	-2740		
1954							3.10	-970	1130	-2100		
1955							3.10	-160	1610	-1770		
1956							3.10	-480	1290	-1770		
1957							3.10	-330	1610	-1940		
1958							3.10	-650	1450	-2100		
1959							3.10	-970	970	-1940		
1960							3.10	-1610	680	-2290	1620	
1961							3.10	-1090	810	-1900	1575	35
1962							3.10	330	1100	-770	1400	54
1963							3.09	-200	1450	-1650	1425	52
1964							3.08	480	1580	-1100	1400	54
1965							3.07	410	1470	-1060	1400	54
1966							3.07	-530	1200	-1730	1500	39
1967							3.07	-230	1350	-1580	1500	39
1968							3.07	-100	1270	-1370	1480	
1969							3.07	-1040	980	-2020	1570	32
1970							3.07	-1520	990	-2510	1610	
1971							3.07	-196	1343	-1539	1490	42
1972							3.07	-1058	1389	-2447	1550	27
1973							3.07	30	1670	-1640	1490	41
1974							3.07	-350	1309	-1659	1480	43
1975							3.07	1152	1978	-826	1380	63
1976							3.03	270	1930	-1660	1440	43
1977							2.999	200	1230	-1030	1420	51
1978							2.995	-80	1460	-1540	1469	46
1979							2.99	-220	1540	-1760	1497	38
1980							2.985	-1190	980	-2170	1591	22
1981							2.981	-180	1168	-1348	1510	39.3
1982	1.43	330	1630	-1300	1175	61	2.981	325	1552	-1227	1385	51.8
1983	1.43	340	1810	-1470	1160	68	2.981	267	1465	-1198	1375	54
1984	1.43		2050				2.981	120	1824	-1704	1460	44.6
1985	1.43		1040				2.981	-612	997	-1609	1570	32.7
1986							3.035	-79	1608	-1687	1465	44.5
1987							3.035	474	1690	-1216	1370	55.8
1988							3.035	-865	1390	-2255	1565	27
1989							3.035	1223	2541	-1318	1374	64
1990	1.21	350	2130	-1780	1100	71	3.035	591	2253	-1662	1395	60
1991	1.23	70	1860	-1790	1144	55	3.02	168	1677	-1509	1460	47
1992	1.23	870	2260	-1390	1012	91	2.93	947	2280	-1333	1393	58
1993							3.134	1044	2243	-1199	1397	58
1994							3.087	-368	1061	-1429	1500	41
1995							3.087	699	1932	-1233	1400	57
1996							3.24	-360	1300	-1660	1493	42
1997							3.24	-630	1870	-2500	1498	41
1998							3.24	-520			1504	35
1999							3.24	-180			1492	42
2000												
Years	9	7	7	5	5	5	54	54	52	52	47	37
Aver	1.31	189	1826	-1546	1118	69	3.070	-246	1452	-1693	1474	45
Stdev	0.11	424	406	226	66	14	0.062	730	423	508	71	11
Sq. root error	0.04	160	153	101	29	6	0.008	100	59	70	11	2

Glacier	Rabots								Sydostra	Argentiere		Mer de Glace		de Marinet			
Country	Sweden								Sweden	France		France		France			
Geogr.Area	NE Scand.								NE Scand.	Fr. Alps		Fr. Alps		Fr. Alps			
PSFG NR	S00785									F00002		F00003					
Code	528									519		519					
Lat	67°54'N								67.9	45°55'N		45°53'N		45° N			
Long	18°33'E								18.58	6°57' E		6°56' E		6° E			
Elev. Max, m	1700								1800	4000		3580		3000			
Elev. Med, m										2600		3000					
Elev. Min, m	1071								1400	1550		1480		2782			
Length, km	4.1								0.5	9.4		12					
Area, km^2	3.876								3.9	15.6		33		0.2			
Aspect	NW/W								NW/W	NW/NW		N/N					
Variables	s	bn	bw	AC	bs	AA	ELA	AAR	bn	s	bn	s	bn	bn	bs	ELA	AAR
1946																	
1947																	
1948																	
1949																	
1950																	
1951																	
1952																	
1953																	
1954																	
1955																	
1956																	
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1959																	
1960																	
1961																	
1962																	
1963																	
1964																	
1965																	
1966																	
1967																	
1968												33	-400				
1969												33	430				
1970												33	530				
1971												33	-410				
1972												33	300				
1973												33	-650				
1974												33	-350				
1975												33	360				
1976										15.6	-1580						
1977										15.6	700						
1978										15.6	800						
1979										15.6	-170						
1980										15.6	830						
1981																	
1982	4	-66	503		-588		1325	55.6									
1983	4	-109	420		-677		1342	51.7									
1984	4	-514	472		-936		1483	29.9									
1985	4	-1275	685		-1960		1840	3.2									
1986	3.88	-158	540	1295	-787	-1454	1385	45	110								
1987	3.907	223	682	1164	-444	-941	1335	59	445								
1988	3.823	-1052	800	1075	-1339	-2126	1540	11	-1020								
1989	3.823	615	636	1780	-568	-1165	1278	74									
1990	3.823	-33		1690	-999	-1723	1378	47									
1991	3.87	-200		1508		-1709	1358	49									
1992	3.778	91		1641		-1550	1283	61									
1993	3.778	487		1848		-1361	1347	57									
1994	3.876	-106		910		-1016	1350	57						-860	-970	3114	18
1995	3.876	81		1450		-1369	1351	57									
1996	3.876	-470					1475	30									
1997	3.876	-140					1485	30									
1998	3.876	-470					1485	23									
1999	3.876																
2000																	
Years	18	17	8	10	9	10	17	17	3	5	5	8	8	1	1	1	1
Aver	3.886	-182	592	1436	-922	-1441	1414	44	-155	15.6	116	33	-24	-860	-970	3114	18
Stdev	0.074	479	129	316	474	358	134	19	768	0	1034	0.0	471				
Sq.root error	0.018	116	46	100	158	113	33	5	443	0	462	0	167				

Glacier	Sarennes				St. Sorlin		Rhone						Limmern					
Country					France		Switz.						Switz.					
Geogr.Area	Fr. Alps				Fr. Alps		Alps						Alps					
PSFG NR	F00029				F00015		CH00001						CH00078					
Code	640				529		514						627					
Lat	45°07'N				45°11'N		46°37'N						46°49'N					
Long	6°10'E				6°10'E		8°24'E						8°59'E					
Elev. Max, m	3190				3463	FoG, v.7	3620						3421					
Elev. Med, m	3000				2900	1988	2940						2760					
Elev. Min, m	2830				2650	Tab.CC	2125						2260					
Length, km	1.5				2.9		10.2						2.9					
Area, km^2	0.5				3		17.38						2.524					
Aspect	S/S				N/N		S/S						NE/NE					
Variables	s	bn	bw	bs	s	bn	s	bn	bw	bs	ELA	AAR	s	bn	bw/AC	bs/AA	ELA	AAR
1946																		
1947																		
1948													2.718	400				
1949	0.83	-2990	710	-3700									2.718	-1670				
1950	0.83	-1620	1680	-1620									2.718	-1346				
1951	0.83	200	2500	-2300									2.718	372				
1952	0.83	-1620	1750	-3370									2.718	-511				
1953	0.83	-640	1770	-2410									2.718	-145				
1954	0.83	-550	1050	-1600									2.718	484				
1955	0.83	660	2200	-1540									2.718	726				
1956	0.83	-600	1080	-1680									2.718	-265				
1957	0.83	-520	1380	-1900	3.0	-360							2.718	56				
1958	0.83	-670	1470	-2140	3.0	-220							2.718	-836				
1959	0.83	-1260	1430	-2690	3.0	-1180							2.546	-1035				
1960	0.83	120	1200	-1080	3.0	130							2.546	-27				
1961	0.83	-390	2150	-2540	3.0	-280							2.546	202				
1962	0.83	-910	1550	-2460	3.0	-520							2.546	-137				
1963	0.83	190	1450	-1260	3.0	110							2.546	-458				
1964	0.83	-1830	890	-2720	3.0	-1460							2.546	-1396				
1965	0.83	30	1030	-1000	3.0	530							2.546	1102				
1966	0.83	420	2140	-1720	3.0	690							2.546	874				
1967	0.83	-410	1630	-2040	3.0	-260							2.546	538				
1968	0.83	340	1130	-790	3.0	960							2.546	780				
1969	0.83	-360	1590	-1950	3.0	450							2.546	332				
1970	0.83	-410	1820	-2230	3.0	600							2.546	-159				
1971	0.83	-1100	1220	-2320	3.0	-1310							2.546	-1332				
1972	0.83	-370	1010	-1380	3.0	-270							2.546	-225				
1973	0.83	-870	950	-1820	3.0	-640							2.546	-1043				
1974	0.83	-1600	880	-2480	3.0	-670							2.546	39				
1975	0.83	110	1320	-1210	3.0	-810							2.546	540				
1976	0.80	-2070	330	-2400	3.0	-1390							2.546	-993	102	-1116	2980	10
1977	0.80	990	2780	-1790	3.0	1200							2.524	788	1221	-322	2555	72
1978	0.78	550	2070	-1520	3.0	1020							2.524	902	934	-143	2410	93
1979	0.76	-110	2260	-2370	3.0	200							2.524	-36	544	-490	2800	44
1980	0.74	320	2250	-1930	3.0	1040	17.38	888	2306	-1418	2715	64	2.524	721	842	-677	2302	92
1981	0.72	40	1650	-1610	3.0	40	17.38	87	2042	-1955	2875	53	2.524	-111	553	-648	2730	45
1982	0.70	-100	2030	-2130	3.0	-340	17.38	-375	2754	-3129	3035	45	2.524	-649	356	-980	2860	25
1983	0.68	-70	2850	-2920	3.0	-170	17.38	-160			2940	48	2.524	-810	375	-1027	2950	16
1984	0.66	-40	2230	-2270	3.0	610							2.524	-335	417	-680	2820	32
1985	0.64	-1210	2070	-3280	3.0	-470							2.524	250	592	-422	2665	66
1986	0.62	-1790	1890	-3680	3.0	-1150							2.524	-360				
1987	0.60	-920	1720	-2640	3.0	-640							2.524	190				
1988	0.58	-690	2200	-2890	3.0	10							2.524	-220			2780	42
1989	0.56	-2590	1360	-3950	3.0	-1790							2.524	-308			2770	44
1990	0.54	-2140	1580	-3720	3.0	-1290												
1991	0.5	-1200	1810	-3010	3.0	-1150												
1992	0.5	-1310	1360	-2670	3.0	-690												
1993	0.5	-1200	1750	-2950	3.0	-780												
1994	0.5	-630	2150	-2780	3.0	-340												
1995	0.5	760	2790	-2030	3.0	750												
1996	0.5	0			3.0	-480												
1997	0.5	-500			3.0	-130												
1998	0.5	-2340			3.0	-2200												
1999	0.5	-1190			3.0	-1040												
2000																		
Years	51	51	47	47	43	43	4	4	3	3	4	4	42	42	10	10	12	12
Aver	0.81	-668	1662	-2266	3.0	-318	17.38	110	2367	-2167	2891	53	2.591	-122	594	-651	2719	48
Stdev	0.04	909	565	756	0	810	0.00	552	360	875	135	8	0.083	700	325	318	205	27
Sq.root error	0.01	129	82	110	0	125	0.00	276	208	505	67	4	0.013	108	103	101	59	8

Glacier	Plattalva				Limm+Platt				Gries						Silvretta			
Country	Switz.				Switz.				Switzerland						Switzerland			
Geogr.Area	Alps				Alps				Alps						Alps			
PSFG NR	CH00114				CH00078				CH00003						CH00090			
Code	656				656				534						626			
Lat	46°50'N				46°49'N				46°26'N						46°51'N			
Long	8°59'E				8°59'E				8°20'E						10°05'E			
Elev. Max, m	2980				3420				3373						3160			
Elev. Med, m	2740				2760				2920						2780			
Elev. Min, m	2550				2190				2389						2439			
Length, km	1.1				2.9				6.2						3.5			
Area, km^2	0.73				3.29				6.194						3.15			
Aspect	E/E								NE/NE						NW/W			
Variables	s	bn	ELA	AAR	s	bn	ELA	AAR	s	bn	bw	bs	ELA	AAR	s	bn	ELA	AAR
1946																		
1947																		
1948	0.756	472																
1949	0.756	-1418																
1950	0.756	-1357																
1951	0.756	382																
1952	0.756	-497																
1953	0.756	-71																
1954	0.756	352																
1955	0.756	634																
1956	0.756	-171																
1957	0.756	50																
1958	0.756	-950																
1959	0.741	-1024																
1960	0.741	-308			3.290	-55	2720								3.15	544	2610	85
1961	0.741	-107			3.290	136	2650								3.15	387	2715	71
1962	0.741	-359			3.290	-396	2840		6.644	-786			3010	31	3.15	-488	2860	38
1963	0.741	-557			3.290	-309	2750		6.644	270			2740	65	3.15	-919	2975	16
1964	0.741	-1437			3.290	-1833	2950		6.644	-882			3010	31	3.15	-1312	3019	9
1965	0.741	985			3.290	924	2510		6.644	770			2685	71	3.15	1388	2490	97
1966	0.741	849			3.290	505	2420		6.644	46			2735	66	3.15	1284	2520	95
1967	0.741	505			3.290	-363	2860		6.644	409			2695	70	3.15	411	2695	75
1968	0.741	864			3.290	397	2530		6.644	619			2680	72	3.15	704	2610	85
1969	0.741	383			3.290	-140	2740		6.644	468			2705	69	3.15	-181	2785	54
1970	0.741	-26			3.290	-165	2820		6.644	-506			2970	38	3.15	186	2715	71
1971	0.741	-1406			3.290	-1340	2930	9	6.644	-981			3145	7	3.15	-833	2920	27
1972	0.741	-363			3.290	-247	2750	43	6.644	453			2710	68	3.15	-199	2825	45
1973	0.741	-985			3.290	-1013	2900	7	6.644	-1067			3135	7	3.15	-1212	2980	15
1974	0.741	189			3.290	85	2750	50	6.644	-185			2835	56	3.15	745	2560	92
1975	0.741	659			3.290	572	2420	89	6.644	266			2740	65	3.15	792	2580	89
1976	0.860	-849	2875	9					6.644	-1060	211	-1457	3100	10	3.15	-509	2860	34
1977	0.860	544	2620	92					6.644	1246	1404	-670	2530	91	3.15	620	2665	77
1978	0.860	1275		100					6.644	928	1153	-526	2670	74	3.15	926	2550	93
1979	0.860	-159	2915	24					6.333	-863	246	-1165	3070	18	3.15	-59	2790	48
1980	0.860	980		100					6.333	665	1038	-616	2660	78	3.15	1030	2505	98
1981	0.860	-181	2825	42					6.333	-123	581	-1084	2940	46	3.15	512	2675	75
1982	0.860	-246	2870	36					6.333	-890	316	-1390	3030	28	3.15	-211	2790	48
1983	0.860	-549	2940	6					6.333	-557	553	-1088	3000	36	3.15	-547	2905	25
1984	0.860	74	2770	62					6.333	-8	681	-802	2865	56	3.15	280	2690	73
1985	0.860	400	2655	84					6.333	-259	349	-1107	2878	54	3.15	509	2650	79
1986	0.860	-750							6.333	-535			2946	44	3.15	-290		
1987	0.860	260							6.333	-659			2985	38	3.15	-369	2820	42
1988	0.730	-310	2850	23					6.333	-878			3073	16	3.15	-604	2890	28
1989	0.730	-780	2890	13					6.333	-1063			3201	2	3.15	-251	2791	48
1990									6.333	-1743			3401	1	3.15	-576	2880	30
1991									6.194	-1097			3264	1	3.15	-1178	3078	2
1992									6.194	-724			3028	33	3.15	-826	2966	14
1993									6.194	-32			2839	63	3.15	-229	2787	49
1994									6.194	-494			2953	48	3.15	-668	2912	24
1995									6.194	158			2799	67	3.15	204	2704	70
1996									6.194	-230			2884	58	3.15	-70	2754	57
1997									6.194	-270			2893	57	3.15	540	2650	80
1998									6.194	-1660			3401	1	3.15	-1530	3101	1
1999									6.194	-580			2979	44	3.15	520	2654	79
2000																		
Years	42	42	10	12	16	16	16	5	38	38	10	10	38	38	40	40	39	39
Aver	0.778	-119	2821	49	3.29	-203	2721	40	6.463	-311	653	-991	2926	44	3.15	-37	2767	54
Stdev	0.053	714	108	118	0.00	714	172	34	0.184	717	414	322	208	26	0.0	736	161	30
Sq.root error	0.008	110	34	34	0.0	178	43	15	0.032	118	131	102	34	4	0.0	118	26	5

Glacier	Gr. Aletch		N.Schneef.				Hintereis.						Kesselwand.					
Country	Switzerland		Germany				Austria						Austria					
Geogr.Area	Alps		Alps				Otzt. Alps						Otzt. Alps					
PSFG NR	CH00005		D00001				A00209						A00226					
Code	519		648				528						638					
Lat	46°30'N		47°25'N				46°48'N						46°50'N					
Long	8°02'E		10°59'E				10°46'E						10°48'E					
Elev. Max, m	4160		2820				3710						3490					
Elev. Med, m	3140		2688				3050						3180					
Elev. Min, m	1556		2556				2426						2720					
Length, km	24.7		0.9				7.13						4.2					
Area, km^2	126.99		0.325				8.3						4.24					
Aspect	SE/S		E/E				E/NE						SE/E					
Variables	s	bn	s	bn	ELA	AAR	s	bn	bw	bs	ELA	AAR	s	bn	AC	AA	ELA	AAR
1946	132.62	-56																
1947	132.35	-2399																
1948	132.08	684																
1949	131.81	-1810																
1950	131.54	-1240																
1951	131.27	200																
1952	131.00	-710																
1953	130.83	-320					10.24	-540	860	-1400	3020	53						
1954	130.57	60					10.20	-286	374	-660	2970	69						
1955	130.30	620					10.15	76	706	-630	2850	75						
1956	130.03	415					10.11	-275	685	-960	2920	69						
1957	129.76	-10					10.06	-189	511	-700	2930	65						
1958	129.71	-650					10.02	-981	599	-1580	3100	35	4.06	-382				
1959	129.68	-1070					9.97	-763	677	-1440	3060	34	4.06	-372				
1960	129.62	410					9.92	-63	628	-690	2880	72	4.06	118			3070	
1961	129.57	-180					9.88	-205	1705	-1910	2940	63	4.06	271			3080	
1962	129.51	-410					9.20	-696	584	-1280	3080	39	4.06	-416			3140	
1963	129.47	-120	0.33	-1282			9.17	-603	727	-1330	3010	53	4.06	-406			3140	
1964	129.40	-1270	0.33	-1401			9.06	-1245	695	-1940	3180	25	4.05	-537			3150	
1965	129.24	1180	0.33	1877	2560	100	9.05	925	1385	-460	2770	81	4.04	1040			3000	
1966	129.05	620	0.33	997	2560	100	9.05	344	1184	-840	2850	75	4.02	590	1034	-440	3040	82
1967	128.96	300	0.33	576	2560	94	9.03	20	1140	-1120	2920	69	3.94	299	769	-470	3070	83
1968	128.94	670	0.34	625	2560	100	9.03	338	858	-520	2850	73	3.94	452	832	-380	3060	84
1969	128.89	310					9.03	-431	549	-980	2960	56	3.94	-154	426	-578	3090	77
1970	128.83	-120					9.03	-553	747	-1300	3030	49	3.94	5	525	-520	3080	79
1971	128.74	-710					9.03	-600	800	-1400	3040	49	3.94	43			3090	81
1972	128.67	-220					9.03	-73	327	-400	2935	66	3.94	367			3070	85
1973	128.56	-530					9.03	-1230	670	-1900	3250	24	3.94	-418			3150	63
1974	128.46	70					9.03	55	1105	-1050	2910	68	3.94	552			3060	87
1975	128.45	560					9.03	65	1285	-1220	2905	71	3.94	339			3070	86
1976	128.42	-688					8.96	-314	526	-840	2995	58	4.28	-40	389	-418	3080	81
1977	128.36	1477					8.88	761	1461	-700	2840	78	4.28	700	966	-267	3060	67
1978	128.28	1805					8.88	411	1191	-780	2825	77	4.38	420	680	-250	3080	80
1979	128.22	162					9.08	-219	751	-970	2970	59	4.42	70	428	-355	3100	75
1980	128.20	1534					9.08	-50	1140	-1190	2930	67	4.44	160	529	-355	3080	79
1981	128.14	1276					9.08	-173	1087	-1260	2940	64	4.45	161			3085	78
1982	128.11	346					9.07	-1240	790	-2030	3260	22	4.45	-620			3250	34
1983	127.86	149					9.07	-581	1779	-2360	3075	41	4.45	-182			3120	66
1984	127.74	797					9.07	32	1102	-1070	2970	63	4.45	178			3070	78
1985	127.62	166					9.07	-574	1286	-1860	3010	50	4.45	-8			3100	75
1986	127.56	-152					9.06	-731	1179	-1910	3080	40	4.44	-496	217	-713	3160	52
1987	127.50	40					9.05	-717	1183	-1900	3070	45	4.44	-242	355	-597	3120	65
1988	127.46	-345					9.03	-946	804	-1750	3130	29	4.44	-265	339	-604	3150	56
1989	127.43	-190					8.99	-636	564	-1200	3080	38	4.44	-150	367	-517	3120	66
1990	127.38	-1029					8.98	-996	484	-1480	3115	32	4.43	-243	312	-555	3130	60
1991	127.35	-616					8.88	-1325	1035	-2360	3260	18	4.43	-847			3500	21
1992	127.32	-674					8.88	-1119	1051	-2170	3155	24	4.43	-414			3160	51
1993	127.30	92					8.75	-574	886	-1460	3050	49	4.41	-74			3105	72
1994	127.28	-449					8.74	-1107	983	-2090	3145	31	4.37	-828			3240	33
1995	126.99	-965					8.73	-461	909	-1370	3080	53	4.29	144			3080	78
1996							8.72	-826	1004	-1830	3100	41	4.29	-110			3160	55
1997							8.70	-591	594	-1185	3050	48	4.26	9			3120	74
1998							8.30	-1230			3160	25	4.24	-604			3235	18
1999							8.30	-861			3105	39	4.24	-12			3125	72
2000																		
Years	50	50	6	6	4	4	47	47	45	45	47	47	42	42	15	15	40	34
Aver	129.05	-60	0.33	232	2560	99	9.18	-446	902	-1322	3016	52	4.22	-45	545	-468	3120	67
Stdev	1.47	822	0.00	1306	0	3	0.47	536	333	528	119	18	0.21	418	252	132	82	18
Sq.root error	0.21	116	0	533	0	2	0.07	79	50	79	18	3	0.03	65	65	34	13	3

Glacier	Vernagtf.						Filleck K.			Sonnblick K.					
Country	Austria						Austria			Austria					
Geogr.Area	Otztaler Alps						Sonnblick			Sonnblick					
PSFG NR	A00211						A A601			A 0601A					
Code	626						606			606					
Lat	46°53'N						47°08'N			47°08'N					
Long	10°49'E						12°36'E			12°36'E					
Elev. Max, m	3627						2920			3050					
Elev. Med, m	3187					820	2860			2780					
Elev. Min, m	2748						2780			2500					
Length, km	3.3						0.4			1.5					
Area, km^2	9.07						0.148			1.5					
Aspect	S/SE						SE/SE			NE/E					
Variables	s	bn	AC	AA	ELA	AAR	s	bn	AAR	s	bn	AC	AA	ELA	AAR
1946															
1947															
1948															
1949															
1950															
1951															
1952															
1953															
1954															
1955															
1956															
1957															
1958															
1959										1.77	-374				
1960										1.77	249				
1961										1.75	148				
1962										1.72	54				
1963										1.70	-1426				
1964							0.11	-1260	2	1.62	-928	43	-872	2910	21
1965	9.56	751					0.16	1890	100	1.76	1976	1990	-16	2500	99
1966	9.56	932	1010	-775	2935	94	0.16	680	97	1.76	736	841	-105		89
1967	9.55	83	288	-205	3015	71	0.16	190	79	1.76	160	344	-184		72
1968	9.55	301	423	-121	2995	86	0.16	350	94	1.76	234	405	-169		76
1969	9.46	-313			3153	56	0.16	-430	8	1.76	-246	148	-395		42
1970	9.46	-225			3113	61	0.16	280	90	1.76	144	349	-205		68
1971	9.46	-483			3234	39	0.13	-300	16	1.71	-386				42
1972	9.46	138			3028	79	0.13	120	65	1.71	129				64
1973	9.30	-460			3185	43	0.14	-860	2	1.71	-721				23
1974	9.30	240			2999	81	0.15	690	98	1.75	568				88
1975	9.30	170			3025	80	0.15	560	100	1.75	397				83
1976	9.30	76	252	-176	3036	75	0.15	280	89	1.76	79	285	-209		73
1977	9.30	352	409	-59	2984	88	0.15	230	82	1.76	148	352	-209		71
1978	9.55	309	374	-81	3004	85	0.16	870	100	1.76	833	889	-61		92
1979	9.55	44	275	-236	3059	73	0.16	130	73	1.77	224	379	-156		78
1980	9.55	139	263	-120	3027	77	0.15	860	100	1.76	834	897	-57		93
1981	9.55	-55	290	-949	3101	72				1.78	414	536	-122		82
1982	9.35	-845	159	-1159	3418	24				1.78	-1376	20	-1396		9
1983	9.35	-535	246	-798	3304	25				1.71	-535	104	-639		33
1984	9.34	24	308	-686	3063	71				1.78	338	481	-143		80
1985	9.34	-112	302	-762	3102	61				1.78	-281	169	-450		46
1986	9.34	-796	255	-1050	3291	19				1.74	-1432	225	-1575	2950	8
1987	9.31	-289	182	-867	3143	55				1.74	-525	317	-948	2850	33
1988	9.05	-500	180	-936	3230	39				1.71	-711	290	-1054	2875	26
1989	9.05	-315	200	-759	3170	50				1.72	252	564	-693	2715	75
1990	9.05	-571	172	-913	3283	32				1.72	-561				
1991	9.09	-1079				8				1.57	-818			2885	22
1992	9.09	-858			3270	22				1.55	-2092			2975	3
1993	9.09	-472			3225	37				1.54	-315			2780	44
1994	9.09	-1028			3650	22				1.50	-1385			2950	9
1995	9.09	-398			3226	40				1.50	142			2720	70
1996	9.09	-413			3225	40				1.50	-246			2780	48
1997	9.07	-487			3220	41				1.50	314			2780	78
1998	9.07	-1003			3280	30				1.50	-1695			2960	5
1999	9.07	-108			3097	56				1.50	-652			2865	28
2000															
Years	35	35	18	18	33	34	17	17	17	41	41	21	21	15	35
Aver	9.32	-222	310	-592	3154	54	0.15	252	70	1.70	-192	484	-460	2833	53
Stdev	0.19	489	191	386	149	24	0.01	718	38	0.10	797	475	462	130	30
Sq.root error	0.03	84	45	91	26	4	0.00	174	9	0.02	126	115	101	35	5

Glacier	**Wurtenkees**						**Jamtalf.**								**Vermuntgl.**					
Country	Austria						Austria								Austria					
Geogr.Area	Sonnblick						Alps								Alps					
PSFG NR	A00804						A00106								A00104					
Code	628						528								628					
Lat	47°02'N						46°42'N								46°51'N					
Long	13°00'E						10°10'E								10°08'E					
Elev. Max, m	3120						3160								3130					
Elev. Med, m	2680						2810								2790					
Elev. Min, m	2380						2408								2430					
Length, km	3						2.8								2.8					
Area, km^2	1.09						3.78								2.16					
Aspect	SW/S						N/N								NW/NW					
Variables	**s**	**bn**	**AC**	**AA**	**ELA**	**AAR**	**s**	**bn**	**bw**	**AC**	**bs**	**AA**	**ELA**	**AAR**	**s**	**bn**	**bw**	**bs**	**ELA**	**AAR**
1946																				
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1978																				
1979																				
1980																				
1981																				
1982																				
1983	1.35	-1033	1361	-2395	3180	7														
1984	1.32	14	909	-887	2670	57														
1985	1.30	-1111	1123	-2238		8														
1986	1.24	-1606	1164	-2770		1														
1987	1.19	-870	1474	-2337	3105	14														
1988	1.16	-825	1341	-2153	3130	11														
1989	1.14	-172	1242	-1414	2940	28	3.85	-441		324		-833	2870	34						
1990	1.13	-800	1147	-1947	3040	21	3.85	-430		239		-738	2900	32						
1991	1.11	-1074	1257	-2357	3070	16	3.85	-1439	783		-2222		3200	10	2.24	-1491	875	-2366	3140	3
1992	1.10	-1310	1550	-2860	>3120	7	3.85	-1232	1453		-2685		3160	7	2.24	-1346	1187	-2534	3140	0
1993	1.10	-484	1513	-1997	3020	15	3.85	-369	1283		-1652		2860	44	2.24	-570	1100	-1669	2950	20
1994	1.10	-1617	1421	-3039	3170	5	3.85	-827	1297		-2125		3150	18	2.24	-1447	1128	-2575	3150	4
1995	1.10	-403	1518	-1947	2940	32	3.85	-159	1426		-1585		2820	63	2.24	-238	1299	-1537	2845	41
1996	1.09	-638	770	-1408	2860	11	3.79	-552	598		-1150		2900	34	2.24	-723	500	-1220	2970	13
1997	1.09	-242	1932	-2174	2880	45	3.78	-217	1403		-1620		2800	56	2.21	-498	1332	-1830	2955	18
1998	1.09	-1315			3070	8	3.78	-1320	1020		-2340		3120	9	2.16	-1544	996	-2540	3130	3
1999	1.09	-1135			3040	13	3.78	-257					2870	47	2.16	-528			2980	20
2000																				
Years	17	17	15	15	14	17	11	11	8	2	8	2	11	11	9	9	8	8	9	9
Aver	1.17	-860	1315	-2128	3008	18	3.82	-658	1158	282	-1922	-786	2968	32	2.23	-982	1052	-2034	3035	13
Stdev	0.09	496	282	574	145	15	0.03	475	322	60	502	67	159	20	0.03	528	269	534	118	14
Sq.root err	0.02	124	73	148	40	4	0.01	150	114	43	177	48	50	6	0.01	187	95	189	42	5

Glacier	**Ochsentaler**						**Langtaler**				**Careser**				
Country	Austria						Austria				Italy				
Geogr.Area	Alps						Alps				Ortles-Cevedale				
PSFG NR	A00103						A00223				I00701				
Code	528						538				638				
Lat	46°51'N						46°48'N				46°27'N				
Long	10°06'E						11°01'E				10°42'E				
Elev. Max, m	3160						3420				3350				
Elev. Med, m	2910						2910				3092				
Elev. Min, m	2290						2450				2857				
Length, km	2.8						5.1				2.2				
Area, km^2	2.59						3.0492				3.857				
Aspect	N/N						N/NW				S/S				
Variables	**s**	**bn**	**bw**	**bs**	**ELA**	**AAR**	**s**	**bn**	**ELA**	**AAR**	**s**	**bn**	**bw**	**bs**	**ELA**
1946															
1947															
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1952															
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1954															
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1956															
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1958															
1959															
1960															
1961															
1962															
1963							2.932	-623	3050	44					
1964							2.931	-1067	3150	37					
1965							2.903	771	2750	71					
1966							2.902	478	2815	65					
1967							2.901	-63	2820	64	4.71	-386	1016	-1402	
1968							2.901	190	2795	66	4.73	247	788	-541	
1969							3.049	-515	2917	44	4.68	-5	989	-994	
1970							3.049	-706	2975	36	4.69	-631	995	-1626	
1971											4.69	-650	1083	-1733	
1972											4.69	400	1065	-665	
1973											4.69	-1276	602	-1878	
1974											4.69	-319	995	-1314	
1975											4.68	145	1152	-1006	
1976											4.68	-268	611	-879	
1977											4.68	988	1894	-907	
1978											4.68	79	1204	-1125	
1979											4.83	-182	1103	-1285	
1980											4.83	12			3083
1981											4.83	-839			3350
1982											4.83	-1678	684	-2362	3350
1983											4.83	-787			3350
1984											4.83	-591			3273
1985											4.83	-758			3350
1986											4.83	-1138			3383
1987											4.83	-1645			3485
1988											4.83	-1056			3398
1989											4.83	-817			3275
1990											3.86	-1578			3420
1991	2.64	-695			2920	42					3.86	-1734			3463
1992	2.64	-1119	1536	-2655	3160	21					3.86	-1199			3315
1993	2.64	-188	1345	-1533	2865	60					3.86	-303			3148
1994	2.63	-979	1484	-2463	2990	34					3.86	-1743			>3330
1995	2.61	32	1540	-1509	2845	63					3.86	-1081			3330
1996	2.60	-265	740	-1005	2880	59					3.86	-1320			3330
1997	2.59	58	1498	-1440	2940	66					3.86	-920			3264
1998	2.59	-936	1044	-1980	2980	36					3.86	-2240			3313
1999	2.59	-30			2850	65					3.86	-1800			3398
2000															
Years	9	9	7	7	9	9	8	8	8	8	33	33	14	14	19
Aver	2.62	-512	1312	-1798	2948	48	2.946	-192	2909	53	4.57	-727	1013	-1266	3327
Stdev	0.02	476	307	594	100	17	0.065	639	140	14	0.38	736	321	502	98
Sq.root error	0.01	168	116	225	36	6	0.023	226	50	5	0.07	130	86	134	23

Glacier	Ciardoney						Sforzellina				Marmolada			Fontana B.					
Country	Italy						Italy				Italy			Italy					
Geogr.Area	Gran Paradiso						Alps				Alps			Alps					
PSFG NR	I00081						I00516				I 00941			I00713					
Code	640						648				606			640					
Lat	45°31'N						46°20'N				46°26'N			46°29'N					
Long	7°26'E						10°30'E				11°52'E			10°46'E					
Elev. Max, m	3170						3120				3340			3355					
Elev. Med, m	3000						2925				2825			3197					
Elev. Min, m	2900						2760				2475			2880					
Length, km	1.9						0.7				1.5			1.1					
Area, km^2	0.76						0.42				1.5415			0.656					
Aspect	N/N						NW/NW				N/N			E/E					
Variables	s	bn	bw	bs	ELA	AAR	s	bn	ELA	AAR	s	ba	AC	s	bn	bw	bs	ELA	AAR
1946																			
1947																			
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1962																			
1963																			
1964																			
1965											0.88	682	946						
1966											1.54	359	600						
1967																			
1968																			
1969																			
1970																			
1971																			
1972																			
1973																			
1974																			
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1979																			
1980																			
1981																			
1982																			
1983																			
1984														0.66	395				
1985														0.66	-600				
1986														0.66	-106				
1987							0.42	-920	3050	0				0.66	-466				
1988							0.42	-970	3080	0				0.66	-1096				
1989							0.42	-570	2950	26									
1990							0.42	-1160	3100	0									
1991							0.42	-1210	3025	0									
1992	0.76	-970	940	-1910	3114	18	0.42	-770	2980	26				0.66	-1091	844	-1935	3443	10
1993	0.76	-410	2340	-2750	3050	41	0.42	-286	2960	30				0.66	-556	968	-1524	3443	13
1994	0.76	-1100	1240	-2340	3140	4	0.42	-712	2975	28				0.66	-955	1375	-2330	3443	19
1995	0.76	-560	1120	-1680	3090	23	0.42	-728	3000	14				0.66	-682	503	-1185	3443	0
1996	0.76	-370	870	-1240	3085	25								0.66	-440			3440	0
1997	0.76	-660	470	-1130	3100	18								0.66	-620			3440	8
1998														0.66	-1620			3450	0
1999														0.66	-970			3400	0
2000																			
Years	6	6	6	6	6	6	9	9	9	9	2	2	2	13	13	4	4	8	8
Aver	0.76	-678	1163	-1842	3097	22	0.42	-814	3013	14	1.21	521	773	0.66	-653	923	-1744	3443	7
Stdev	0.0	298	634	628	30	12	0.0	289	54	14	0.47	228	245	0.00	514	360	497	3	7
Sq.root error	0.0	122	259	256	12	5	0.0	96	18	5	0.33	162	173	0.00	148	180	248	1	3

Glacier	**Maladeta**						**Lewis**				**Djankuat**					
Country	Pyrenea						Kenya				Russia					
Geogr.Area	Spain						E.Africa				C. Caucasus					
PSFG NR	E 09020						KN00008				SU3010					
Code	648						533				528					
Lat	42°39'N						0°09'S				43°12'N					
Long	0°38'E						37°18'E				42°46'E					
Elev. Max, m	3180						4962				3798					
Elev. Med, m	3025						4750				3280					
Elev. Min, m	2790						4611				2700					
Length, km	1.1						0.95				4.2					
Area, km^2	0.5						0.2047				3.1					
Aspect	NE/NE						SW/SW				N/NW					
Variables	**s**	**bn**	**bw**	**bs**	**ELA**	**AAR**	**s**	**bn**	**ELA**	**AAR**	**s**	**bn**	**bw**	**bs**	**ELA**	**AAR**
1946																
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1966																
1967																
1968											3.13	154	2042	-1877	3140	66
1969											3.13	-977	1879	-2855	3340	39
1970											3.13	486	2406	-1920	3060	75
1971											3.13	-40	2486	-2527	3210	56
1972											3.13	-1032	2182	-3214	3320	42
1973											3.13	-107	2201	-2308	3190	60
1974											3.13	397	2403	-2006	3090	72
1975											3.13	-652	2211	-2864	3280	47
1976											3.13	327	2237	-1910	3170	57
1977											3.13	-129	2064	-2193	3270	48
1978											3.13	561	2636	-2075	3170	62
1979							0.260	-70			3.13	-167	2584	-2752	3280	49
1980							0.260	-1750			3.13	531	2857	-2327	3180	61
1981							0.295	-1216	5000	0	3.13	-914	2385	-3299	3320	45
1982							0.261	-320	4800	52	3.13	372	2508	-2136	3170	67
1983							0.261	-721	5000	92	3.13	-1014	1637	-2651	3250	55
1984							0.261	-898	5000	0	3.13	173	2264	-2091	3180	44
1985							0.261	-941	4900	92	3.13	-423	1809	-2231	3280	44
1986							0.247	-696	5000	0	3.13	-545	2243	-2788	3280	50
1987							0.247	-721	5000	20	3.13	1507	4003	-2496	3020	80
1988							0.247	-2282	5000	0	3.13	369	2616	-2131	3090	74
1989							0.247	769	4700	82	3.13	-8	2479	-2487	3170	66
1990							0.231	-953	5000	0	3.13	298	2658	-2360	3180	63
1991							0.231	-810		0	3.13	-358	2468	-2826	3240	56
1992	0.50	-327	1682	-2009	3090	26	0.231	-1746	5000	0	3.13	-171	1951	-2122	3220	60
1993	0.50	-32	2132	-2164	3066	35	0.205	-440	4800	1	3.10	1077	3183	-2106	3020	79
1994	0.50	351	1975	-1624	3028	49	0.205	-2287	5000	0	3.10	-867	2048	-2915	3320	45
1995	0.50	-643	1976	-2619	3075	31	0.205	-452	4830	1	3.10	10	2530	-2520	3200	61
1996	0.50	207			3049	41	0.205	-490	4875	46	3.10	-172	2262	-2434	3200	62
1997	0.50	512			3025	50					3.10	240	2797	-2557	3150	67
1998	0.50	-955			3100	21					3.10	-430			3380	33
1999	0.50	-912			3104	20					3.10	-1000			3270	49
2000																
Years	8	8	4	4	8	8	18	18	15	16	32	32	30	30	32	32
Aver	0.50	-127	1941	-2104	3062	36	0.242	-890	4927	24	3.12	-49	2401	-2433	3205	58
Stdev	0	540	188	412	29	11	0.025	762	102	36	0.01	603	446	381	91	11
Sq.root error	0	204	94	206	11	4	0.006	180	26	9	0.00	108	82	70	16	2

Glacier	**Garabashi**						**Kayarta**	**left**	**right**	**average**	**Marukh**	**include**				
Country	Russia						Russia	Kayarta	Kayarta	of two	Russia	internal				
Geogr.Area	Central Caucasus						C.Caucasus			branches	W.Cucasus	accum.				
PSFG NR	SU03031										SU03001					
Code	OO8						622				539					
Lat	43°18'N						43° N				43°05'N					
Long	42°28'E						43° E				41°10'E					
Elev. Max, m	5000										3160					
Elev. Med, m	3880										2785					
Elev. Min, m	3316										2490					
Length, km	5.8										4					
Area, km^2	4.472						1.9				3.33					
Aspect	SE/S						N	N	N	N	NE/NE					
Variables	**s**	**bn**	**bw**	**bs**	**ELA**	**AAR**	**s**	**bn left**	**bn right**	**bn**	**s**	**bn**	**ELA**	**AAR**	**Ct**	**At**
1946																
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1962																
1963																
1964							1.90	390	420	405						
1965							1.90	-650	-1010	-830						
1966							1.90	-680	-1060	-870						
1967							1.90	610	450	530	3.33	-260	2850		2420	-2680
1968							1.90	580	410	495	3.33	60	2820		2950	-2890
1969							1.90	-390	-710	-550	3.33	-740	2960		2170	-2910
1970							1.90	830	700	765	3.33	770	2750		3690	-2920
1971							1.90	320	110	215	3.33	-740			2350	-3090
1972							1.90	-430	-750	-590	3.33	-1080	2970		2220	-3300
1973							1.90	270	60	165	3.33	130	2870		2600	-2470
1974							1.90	690	540	615	3.33	-140	2890		2880	-3020
1975							1.90	-240	-540	-390	3.33	-1170			2370	-3540
1976							1.90	740	590	665	3.33	670		53	3220	-2550
1977							1.90	190	-30	80	3.33	-660		31	2600	-3260
1978											3.33	190		47	2950	-2760
1979											3.33	-160		41	2630	-2790
1980											3.33	-1470		5	1790	-3260
1981											3.33	-360			3510	-3870
1982											3.33	-180			3150	-3330
1983																
1984	4.47	340	1080	-740	3700	70										
1985	4.47	-100	840	-940	3860	52										
1986	4.47	-640	820	-1460	3950	38										
1987	4.47	410	1470	-1060	3700	71										
1988	4.47	269	1192	-923	3730	74										
1989	4.47	29	1305	-1276	3830	90										
1990	4.47	90	1110	-1020	3780	65										
1991	4.47	-30	1110	-1140	3850	54										
1992	4.47	140	930	-790	3780	66										
1993	4.47	310	1050	-740	3630	80										
1994	4.47	-430	1010	-1440	3890	48										
1995	4.47	-10	1010	-1020	3850	55										
1996	4.47	-30			3840	55										
1997	4.47	190			3780	66										
1998	4.47	-1510			4350	13										
1999	4.47	-820			4000	34										
2000																
Years	16	16	12	12	16	16	14	14	14	14	16	16	7	5	16	16
Aver	4.47	-62	1077	-1046	3821	60	1.90	159	-59	50	3.33	-321	2873	35	2719	-3040
Stdev	0.0	480	185	247	123	18	0.0	534	629	581	0.00	630	77	19	512	372
Sq.root error	0.0	124	53	71	32	5	0.0	143	168	155	0.00	157	29	8	128	93

Glacier	Koiavgan		Visyachiy		Viatau		Tbilisa			Yunom				
Country	Russia		Russia		Russia		Georgia			Russia				
Geogr.Area	N-C. Caucasus		N-C. Caucasus		N-C. Caucasus		S. Caucasus	STR		N-C. Caucasus				
PSFG NR							SU03012			SU03011				
Code	648		640		648		528			538				
Lat	43°12'N		43°12'N		43°12'N		43°18'N			43°N				
Long	42°46'E		42°46'E		42°46'E		42°28'E			42°E				
Elev. Max, m	3600		3700		3600		4300			4342				
Elev. Med, m														
Elev. Min, m	3300		3200		3300		2950			3100				
Length, km	0.6		1		0.8		2.96			2.8				
Area, km^2	0.36		0.45		0.21		3.75			3.34				
Aspect	NW		NW		NW		SE/SE			NW/W				
Variables	s	bn	s	bn	s	bn	s	bn	ELA	bn	bw	bs	ELA	AAR
1946														
1947														
1948														
1949														
1950														
1951														
1952														
1953														
1954														
1955														
1956														
1957														
1958														
1959														
1960														
1961														
1962														
1963														
1964														
1965														
1966														
1967														
1968	0.36	-190	0.45	0	0.21	-50	3.75	310	3380					
1969	0.36	-1180	0.45	-1000	0.21	-800	3.75	-353	3440					
1970	0.36	250	0.45	840	0.21	950	3.75	-464	3450					
1971	0.36	-570	0.45	540	0.21	700	3.75	-2	3415					
1972	0.36	-1380	0.45	-1100	0.21	-900	3.75	-488	3460					
1973	0.36	-250	0.45	600	0.21	420	3.75	115						
1974	0.36	-260	0.45	990	0.21	850	3.75	-127	3400					
1975							3.75	-932	3510					
1976							3.75	-186	3420					
1977							3.75	-284	3430	630	1990	-1360	3480	46
1978							3.75	-137						
1979							3.75	-137	3410					
1980							3.75	-281	3470					
1981														
1982														
1983														
1984														
1985														
1986														
1987														
1988														
1989														
1990														
1991														
1992														
1993														
1994														
1995														
1996														
1997														
1998														
1999														
2000														
Years	7	7	7	7	7	7	13	13	11	1	1	1	1	1
Aver	0.36	-511	0.45	124	0.21	167	3.75	-228	3435	630	1990	-1360	3480	46
Stdev	0.0	580	0.0	860	0.0	769	0.0	306	36					
Sq.root error	0.0	219	0.0	325	0.0	291	0.0	85	11					

Glacier	Kelbashi		Bezengi		Tseya		Khakel		L.Aktru							
Country	Russia		Russia		Russia		Russia		Russia							
Geogr.Area	N-C. Caucasus		N-C. Caucasus		N-C. Caucasus		N-C. Caucasus		Altaiy							
PSFG NR			SU03006		SU03007		SU03003		SU07102							
Code			529		529		5		536							
Lat	43° N		43°10'N		42°55'N		43°10'N		50°05'N							
Long	42° E		43°00'E		43°40'E		41°40'E		87°44'E							
Elev. Max, m	3980		5050		4460		3240		4043							
Elev. Med, m			-		-				3250							
Elev. Min, m	3340		2080		2200		2270		2559							
Length, km			17.6		8.6		3.9		5.9							
Area, km^2	1.5		36.2		9.7		2.7		5.95							
Aspect			NE/NE		NE/NE				SE/SE							
Variables	s	bn	s	bn	s	bn	s	bn	s	bn	bw	Ct	bs	At	ELA	AAR
1946																
1947																
1948																
1949																
1950																
1951																
1952																
1953																
1954																
1955																
1956																
1957																
1958																
1959																
1960																
1961			36.20	470	9.70	60										
1962			36.20	-620	9.70	-630										
1963			36.20	-960	9.70	-390										
1964			36.20	250	9.70	1150										
1965			36.20	30	9.70	-40										
1966	1.50	-60	36.20	-600	9.70	-250										
1967	1.50	930	36.20	40	9.70	40										
1968	1.50	70	36.20	290	9.70	1410										
1969	1.50	290	36.20	-910	9.70	-200										
1970	1.50	740	36.20	-530	9.70	-500										
1971			36.20	130	9.70	360										
1972			36.20	-970												
1973			36.20	-860												
1974			36.20	-980			2.7	-680								
1975			36.20	-820			2.7	-360								
1976							2.7	390								
1977							2.7	260	6.25	240		1240	-750	-1000	3070	72
1978							2.7	-320	6.25	-370		820	-910	-1190	3270	56
1979							2.7	441	6.25	-630		890	-1270	-1520	3300	53
1980									6.25	-20		1070	-880	-1090	3160	65
1981									6.24	-320		850	-680	-1170	3190	62
1982									6.24	-410		810	-650	-1220	3270	56
1983									6.24	330		1060	-410	-730	3060	73
1984									6.24	320		1140	-220	-820	3040	74
1985									6.24	150		1050	-390	-900	3140	67
1986									6.24	60		1120	-870	-1060	3150	66
1987									6.24	200		1130	-720	-930	3120	68
1988									6.24	367	1069	1310	-702	-940	3070	72
1989									6.24	25	979	1280	-953	-1250	3180	63
1990									5.95	50		1100		-1050	3120	68
1991									5.95	-418	504	920	-922	-1400	3290	52
1992									5.95	-168	533	970	-701	-1160	3240	56
1993									5.95	268	827	1390	-560	-1150	3070	72
1994									5.95	-315	666	1080	-981	-1440	3250	56
1995									5.95	20	950	1510	-930	-1550	3130	67
1996									5.95	-170					3210	61
1997									5.95	-150					3220	60
1998									5.95	-1120					3380	44
1999									5.95	-140					3220	60
2000																
Years	5	5	15	15	11	11	6	6	23	23	7	19	18	19	23	23
Aver	1.5	394	36.2	-403	9.7	92	2.7	-45	6.15	-94	790	1092	-750	-1135	3179	63
Stdev	0.0	427	0.0	537	0.0	652	0.0	468	0.14	363	225	193	250	229	92	8
Sq.root error	0.0	191	0.0	139	0.0	197	0.0	191	0.03	77	85	44	59	52	20	2

Glacier	M.Aktru			f		snow	intern			Pr.Aktru						No 125		f	snow	intern		
Country	Russia			inclu-		and	nourish-			Russia						Russia		inclu-	and	nourish-		
Geogr.Area	Altaiy			ded		ice	ment			Altaiy						Altaiy		ded	ice	ment		
PSFG NR	SU07100					melt				SU07101						SU07105			melt			
Code	538									536						303						
Lat	50°05'N									50°05'N						50°06'N						
Long	87°45'E									87°44'E						87°42'E						
Elev. Max, m	3714									3750						3550						
Elev. Med, m	3200									3000						3100						
Elev. Min, m	2229									2500						3025						
Length, km	4.22									5.3						1.4						
Area, km^2	2.73									3.88						0.75						
Aspect	E/N									NE/NE						N/N						
Variables	s	bn, ba	bw	Ct	bs	At	f	ELA	AAR	s	bn	bw	Ct	bs	At	s	ba	Ct	At	f	ELA	AAR
1946																						
1947																						
1948																						
1949																						
1950																						
1951																						
1952																						
1953																						
1954																						
1955																						
1956																						
1957																						
1958																						
1959																						
1960																						
1961																						
1962	2.88	-400	740	1070		-1470	140	3220	67													
1963	2.88	-340	480	710		-1050	80	3180	73													
1964	2.88	-280	830	1170		-1450	120	3190	73													
1965	2.88	-560	570	860		-1420	100	3300	46													
1966	2.88	-380	740	1020		-1400	130	3190	73													
1967	2.88	290	650	1100		-810	180	3010	82													
1968	2.88	-20	550	940		-960	160	3150	75													
1969	2.88	290	860	1380		-1090	200	3100	78													
1970	2.88	120	610	1020		-900	190	3090	78													
1971	2.88	250	650	1080		-830	200	3040	81													
1972	2.88	70	670	1030		-960	170	3160	75													
1973	2.88	100	660	1090		-990	190	3150	76													
1974	2.88	-1470	540	690		-2160	80	3380	29													
1975	2.88	400	800	1350		-950	250	2900	86													
1976	2.88	680	860	1410	-210	-730	270	2850	87													
1977	2.88	490	790	1380	-520	-890	280	2960	84							0.93	80	630	-550	130	3150	83
1978	2.87	-410	580	920	-1050	-1330	130	3290	49							0.92	-190	770	-960	100	3230	70
1979	2.87	-580	610	860	-860	-1440	100	3300	47							0.92	-780	430	-1210	50		9
1980	2.87	110	680	1160	-340	-1050	160	3100	78	4.76	250		1180		-930	0.91	-120	680	-800	110	3220	71
1981	2.87	-310	540	900	-590	-1210	140	3220	67	4.76	-330		940		-1270	0.90	-10	510	-520	140	3200	75
1982	2.87	-660	600	800	-820	-1460	90	3310	45	4.76	-310		930		-1240	0.89	-310	360	-670	30		22
1983	2.87	150	610	1040	-390	-890	150	3060	81	4.76	330		1020		-690	0.88	160	510	-350	100	3170	80
1984	2.87	310	620	1130	-310	-820	220	3030	82	4.76	330		1160		-830	0.87	290	820	-530	190	3150	83
1985	2.87	240	590	1060	-330	-820	210	3060	81	4.76	290		1100		-810	0.86	210	700	-490	180	3160	82
1986	2.86	40	610	1080	-860	-1040	180	3170	75	4.76	150		1180		-1030	0.85	120	670	-550	130	3170	80
1987	2.86	170	680	1120	-730	-950	220	3140	77	4.76	230		1070		-840	0.83	180	670	-490	170	3170	80
1988	2.86	470	780	1470	-690	-1000	310	3040	83	4.42	310	1078	1320	-796	-1010	0.81	160	860	-700	160	3130	86
1989	2.86	220	620	1330	-820	-1110	290	3150	76	3.88	190	1010	1340	-871	-1150	0.79	100	750	-650	130	3160	82
1990	2.73	130	680	1280	-990	-1150	220	3180	75	3.88	70					0.77	140	760	-620	120	3160	82
1991	2.73	-540	650	980	-1114	-1520	110	3340	38							0.75	-420	730	-1150	90	3480	15
1992	2.73	-170	530	930	-719	-1100	150	3230	67							0.75	-20	530	-550	70	3220	71
1993	2.73	340	900	1510	-585	-1170	240	3180	76							0.75	100	820	-720	80	3170	80
1994	2.73	-150	610	1230	-799	-1380	220	3230	67							0.75	-210	800	-1010	80	3240	68
1995	2.73	180	810	1450	-661	-1270	270	3200	74							0.75	50	830	-780	110	3210	73
1996	2.73	-130	530	1080		-1210	170	3220	68							0.75	-120	700	-820	90	3240	68
1997	2.73	-50	660	1310		-1360	200	3220	68							0.75	-170	670	-840	100	3250	66
1998	2.73	-1230	540	790		-2020	90	3390	27							0.75	-980	480	-1460	70	3552	0
1999	2.73	-110	630	1050		-1160	130	3210	72							0.75	-90	670	-760	90	3220	71
2000																						
Years	38	38	38		20	38	38	38	38	11	11	2	10	2	10	23	23	23	23		21	23
Aver	2.84	-72	695		-669	-1140	177	3160	70	4.34	137	1044	1124	-834	-980	0.86	-79	675	-700		3222	65
Stdev	0.06	449	283		258	292	62	123	16	0.44	240	48	141	53	195	0.09	317	145	235		107	27
Sq.root error	0.01	76	63		58	50		20	3	0.20	72	34	45	38	62	0.02	68	33	54		24	6

Glacier	Stager			M. Berel'	cumulative		B. Berel'	cumulative		S-Hayata	Indigirka			Grechishkin		
Country	Russia			Russia	values		Russia	values		Russia	river			Russia		
Geogr.Area	Altaiy			Altaiy	of mass		Altaiy	of mass		E.Siberia	Indigirka river			Kamchatka		
PSFG NR					balance			balance		N 31				SU 8001		
Code					over			over		538				538		
Lat	50°07'N			50°'N	1962-67		49°49'N	1962-67		60° N				58°00'N		
Long	87° 41'E			88°44'E	period		88°44'E	period		90° E				160°38'E		
Elev. Max, m										2728				1770		
Elev. Med, m														1550		
Elev. Min, m										2023				790		
Length, km				abl area 3.45			abl.area 4.12			4				8.1		
Area, km^2	0.24			6.84			9.45			3.2				14.2		
Aspect	N/N													W/W		
Variables	bn	Ct	At	s	bn	ELA	s	bn	ELA	s	ba	Ct	At	ba	Ct	At
1946																
1947																
1948																
1949																
1950																
1951																
1952																
1953																
1954																
1955																
1956																
1957										3.2	-140	380	-520			
1958										3.2	180	560	-380			
1959										3.2	-410	270	-680			
1960										3.2	-490					
1961										3.2	-740					
1962					cumulative			cumulative		3.2	110					
1963					mass balance			mass balance		3.2	-305					
1964					over			over		3.2	330					
1965					1962-67			1962-67		3.2	220					
1966					period			period		3.2	-130					
1967				6.84	10	2800	9.45	70	3000	3.2	45					
1968										3.2	-320					
1969										3.2	-120					
1970																
1971																
1972																
1973																
1974																
1975																
1976																
1977	760	1010	-250													
1978																
1979														-140	2690	-2830
1980																
1981																
1982																
1983																
1984																
1985																
1986																
1987																
1988																
1989																
1990																
1991																
1992																
1993																
1994																
1995																
1996																
1997																
1998																
1999																
2000																
Years	1	1	1	7	7	7	7	7	7	13	13	3	3	1	1	1
Aver	760	1010	-250							3.2	-136	403	-527	-140	2690	-2830
Stdev										0.0	312	146	150			
Sq.root error										0.0	86	85	87			

Glacier	Koryto								Kozelskiy						Kropotkina				
Country	Russia								Russia						Russia				
Geogr.Area	Kamchatka								Kamchatka						Kamchatka				
PSFG NR	SU08003								SU08005						SU08003				
Code	538								539						649				
Lat	54°41'N								53°14'N						54°20'N				
Long	161°38'E								158°49'E						160°01'E				
Elev. Max, m	1200								2050						1300				
Elev. Med, m	810								1590						1180				
Elev. Min, m	320								880						1025				
Length, km	6.95								4.6										
Area, km^2	7.55								1.79						0.6				
Aspect	NW/NW								S/S						N/N				
Variables	s	bn	bw	At	bs	Ct	ELA	AAR	s	bn	bw	bs	ELA	AAR	bn	bw	bs	ELA	AAR
1946																			
1947																			
1948																			
1949																			
1950																			
1951																			
1952																			
1953																			
1954																			
1955																			
1956																			
1957																			
1958																			
1959																			
1960	8.9	-90					580												
1961																			
1962																			
1963																			
1964																			
1965																			
1966																			
1967																			
1968																			
1969																			
1970																			
1971	7.9	580					540	90											
1972																			
1973									1.8	410	3690	-3280	1180	77					
1974									1.8	1470	4130	-2660	1160	75					
1975									1.8	-220	3630	-3850	1210	75					
1976									1.8	1330	3810	-2480	1210	73					
1977									1.8	-1050	3700	-4750	1280	30					
1978									1.8	-1110	3310	-4420	1330	30					
1979									1.78	-370	2970	-3340	1450	29					
1980									1.78	-170	3620	-3790	1470	57					
1981									1.78	-2125	2575	-4700	1540	24.2					
1982	7.55	-284	3490	-3874	-3770	3490	790	63	1.781	-110	3500	-3610							
1983									1.782	-420	3330	-3750							
1984							600		1.784	-340	4000	-4340							
1985									1.785	2020	3610	-1590			1600	2350	-500	1095	73
1986									1.786	-1660			1250	58					
1987									1.788	-300			1270	45					
1988									1.8	-1940	2669	-4609	1300	6					
1989									1.8	-741	3402	-4143	1470	24					
1990									1.8	-1282	3437	-4719	1330	37					
1991									1.8	470	3258	-2788	1280	67					
1992									1.8	-405	3047	-3452	1635	45					
1993									1.8	-334	2750	-3084	1620	47					
1994									1.8	-673	3467	-4140	1675	37					
1995									1.79	-263	2713	-2976	1620	45					
1996	7.55	1140					565	83	1.79	600			1200	68					
1997	7.55	2350					525	90	1.79	940			1150	70					
1998																			
1999																			
2000																			
Years	5	5	1	1	1	1	6	4	25	25	21	21	21	21	1	1	1	1	1
Average	7.87	739	3490	-3874	-3770	3490	600	82	1.79	-251	3363	-3641	1363	49	1600	2350	-500	1095	73
Stdev	0.53	1062					97	13	0.01	1021	437	848	173	21					
Sq. root error	0.21	475					40	6	0.00	204	95	185	38	5					

Glacier	Mutnovs.SW						Mutnovs.NE						IGAN					
Country	Russia						Russia						Russia					
Geogr.Area	Kamchatka						Kamchatka						Ural					
PSFG NR	SU08011						SU08011						SU02001					
Code	660						660						648					
Lat	52°23'N						52°25'N						67°40N					
Long	158°07'E						158°10'E						65°80' E					
Elev. Max, m	1800						1950						1180					
Elev. Med, m	1710						1700						950					
Elev. Min, m	1500						1460						820					
Length, km	1.5						1.7						1.4					
Area, km^2	1.090						1.38						0.88					
Aspect	NE/NE						NW/NW						E/E					
Variables	s	bn	bw	bs	ELA	AAR	s	bn	bw	bs	ELA	AAR	s	bn	bw	bs	ELA	AAR
1946																		
1947																		
1948																		
1949																		
1950																		
1951																		
1952																		
1953																		
1954																		
1955																		
1956																		
1957																		
1958													0.81	-300	1150	-1450		
1959													0.81	-350	2650	-3000		
1960													0.81	-680	1400	-2080	1015	19
1961													0.81	-260	2200	-2460	1004	28
1962													0.81	0	3200	-3200	1003	41
1963													0.81	-1270	2100	-3370	1057	5
1964													0.81	-1000	1000	-200	1042	8
1965													0.81	-660	2500	-3160	1020	16
1966													0.81	-200	1750	-1950	983	34
1967													0.81	310	3140	-2830	938	56
1968													0.81	2490	3410	-920		100
1969													0.81	-580	1420	-2000	998	22
1970													0.81	10	1780	-1770	992	32
1971													0.81	-140	1840	-1980	986	31
1972													0.81	380	2910	-2530	940	42
1973													0.81	320	3000	-2680	924	65
1974													0.81	-930	2190	-3120	1022	11
1975													0.81	920	2720	-1800	886	86
1976													0.81	-1320	2510	-3830	990	4
1977													0.81	-1660	2360	-4020	1015	5
1978													0.81	890	3250	-2360	898	80
1979													0.88	-370	2550	-2920	959	32
1980	1.09	290					1.37	280					0.88	1020			895	86
1981	1.09	-480	2920	-3370	1685	61	1.37	-470	3040	-3430	1645	59	0.88	-1110			1039	17
1982	1.09	1150	3730	-2550	1570	83	1.37	680	3340	-2580	1610	74						
1983	1.09	-140	2640	-2750	1655	66	1.37	-160	2720	-2800	1635	67						
1984	1.09	230	3390	-3130	1630	71	1.38	550	3780	-3150	1610	75						
1985																		
1986																		
1987																		
1988																		
1989																		
1990																		
1991																		
1992																		
1993																		
1994																		
1995																		
1996																		
1997																		
1998																		
1999																		
2000																		
Years	5	5	4	4	4	4	5	5	4	4	4	4	24	24	22	22	21	22
Average	1.09	210	3170	-2950	1635	70	1.37	176	3220	-2990	1625	69	0.82	-187	2320	-2438	981	37
Stdev	0.00	610	485	369	49	9	0.00	483	451	376	18	8	0.02	916	704	914	50	29
Sq. root error	0.00	273	242	185	24	5	0.00	216	226	188	9	4	0.00	187	150	195	11	6

Glacier	**Obrucheva**						**Vavilova C.**				**Shokalskiy**						
Country	Russia						Russia				Russia						
Geogr.Area	Ural						North Land				Nowaya Zemlya						
PSFG NR	SU02002						SU01001										
Code	648						3										
Lat	67°43'N						79°22'N				76°N						
Long	65°70' E						95°39'E				62°05'E						
Elev. Max, m	650						728				860						
Elev. Med, m	520						500										
Elev. Min, m	400						40				0						bn
Length, km	0.9						55										plus
Area, km^2	0.3						1817.0				515						calving
Aspect	E/E																(C)
Variables	**s**	**bn**	**bw**	**bs**	**ELA**	**AAR**	**s**	**bn**	**bw**	**bs**	**s**	**bn**	**bw**	**bs**	**ELA**	**AAR**	**bn+C**
1946																	
1947																	
1948																	
1949																	
1950																	
1951																	
1952																	
1953																	
1954																	
1955																	
1956																	
1957																	
1958	0.3	-500	1850	-2350							515	10	410	-400	680	46	-20
1959	0.3	-555	2900	-3450							515	-290	610	-900	720	33	-320
1960	0.3	-500	1750	-2250	530	48											
1961	0.3	-210	2800	-3010	522	51											
1962	0.3	-150	3500	-3650	516	56											
1963	0.3	-730	2500	-3230	562	19											
1964	0.3	-1300	1100	-2400	566	15											
1965	0.3	-360	2420	-2780	540	40											
1966	0.3	280	2030	-1750	507	65											
1967	0.3	200	3760	-3560	497	69											
1968	0.3	1810	3410	-1600	471	88											
1969	0.3	-550	1480	-2030	556	23					515	140	430	-290	500		110
1970	0.3	340	2200	-1860	490	71											
1971	0.3	-210	2260	-2470	517	48											
1972	0.3	850	3650	-2800	483	73											
1973	0.3	180	3080	-2900	520	62											
1974	0.3	-680	2620	-3300	581	30	1805.8	40									
1975	0.3	170	2750	-2580	502	68	1805.8	-210	120	-330							
1976	0.3	-1350	3520	-4870	574	20	1805.8	350	390	-40							
1977	0.3	-1640	3350	-4990	584	16	1805.8	150	310	-160							
1978	0.3	1560	3760	-2200	484	81	1805.8	-530	170	-700							
1979	0.3	-10	2980	-2990	543	44	1805.8	-630	210	-820							
1980	0.3	1070			491	81	1805.0	-160	160	-320							
1981	0.3	-940			574	25	1805.0	260	380	-130							
1982																	
1983																	
1984																	
1985																	
1986							1817.0	80	360	-280							
1987							1817.0	-70	310	-380							
1988							1817.0	460	440	20							
1989							1817.0		380								
1990							1817.0	540									
1991																	
1992																	
1993																	
1994																	
1995																	
1996																	
1997																	
1998																	
1999																	
2000																	
Years	24	24	22	22	22	22	13	12	11	10	3	3	3	3	3	2	3
Average	0.3	-134	2712	-2865	528	50	1810.0	23	294	-314	515	-47	483	-530	633	40	-77
Stdev	0.0	856	767	885	35	23	5.8	366	110	270	0	221	110	325	117	9	221
Sq. root error	0.0	175	164	189	8	5	1.6	106	33	85	0	127	64	188	68	7	127

Glacier	Sedov						Abramov					No.314						Abramov
Country	Russia						Kirghizstan					Kirghizstan						Kirghizstan
Geogr.Area	FJL						Pamir					Pamir						Pamir
PSFG NR							SU04101					SU04102						snow patch
Code							528					536						
Lat	80° N						39°40'N					39°21'N						39°40'N
Long	53° E						71°30'E					70°08'E						71°30'E
Elev. Max, m	360						4960					4340						
Elev. Med, m							4200					3980						
Elev. Min, m	0					bn	3620					3660						3620
Length, km						plus	9.4					2.2						
Area, km^2	5.5					calving	22.50					1.46						0.120
Aspect						(C)	N/N					NW/NW						N
Variables	bn	bw	bs	ELA	AAR	bn+C	s	bn	bw	ELA	AAR	s	bn	bw	bs	ELA	AAR	bn
1946																		
1947																		
1948																		
1949																		
1950																		
1951																		
1952																		
1953																		
1954																		
1955																		
1956																		
1957																		
1958	-290	40	-330	340	38	-510												
1959																		
1960																		
1961																		
1962																		
1963																		
1964																		
1965																		
1966																		
1967																		
1968							22.50	-384	1093	4140	61							
1969							22.50	1349	2115	4040	79							
1970							22.50	312	1516	4200	50							
1971							22.50	-793	1374	4265	37							
1972							22.50	328	1401	4020	74							
1973							22.50	-818	1756	4250	24							
1974							22.50	-311	774	4148	40							
1975							22.50	-1034	1029	4310	29							
1976							22.50	-903	1064	4325	24							
1977							22.50	-1448	1490	4393	5							
1978							22.50	-1313	1495	4450	6							650
1979							22.50	-387	1619	4230	46							430
1980							22.50	-1081	1277	4324	26							-340
1981							22.50	129	1065	4146								20
1982							22.50	-774	1046	4276								100
1983							22.50	-507	1305	4245		1.46	-125	1325	-1450	4050	30	380
1984							22.50	-971	1479			1.46	-850	1360	-2410	4120	14	-1000
1985							22.50	-855	1449	4265		1.46	-385	1075	-1460	4030	37	600
1986							22.50	-575	1047	4358	28							-620
1987							22.50	170	1768	4130	64							1030
1988							22.50	-52	1920	4182	54							-530
1989							22.50	-286	1235	4209	50							130
1990							22.50	-539	1690	4220	46							
1991							22.50	-540	1345	4220	46							
1992							22.50	312	1691	4103	68							
1993							22.50	267	1637	4107	66							
1994							22.50	-803	1488	4228	44							
1995							22.50	-780	1120	4240	46							
1996							22.50	-350		4163	48							
1997							22.50	-1730		4440	13							
1998							22.50	210		4130	64							
1999																		
2000																		
Years	1	1	1	1	1	1	31	31	28	30	26	3	3	3	3	3	3	12
Average	-290	40	-330	340	38	-510	22.50	-457	1403	4225	44	1.46	-453	1253	-1773	4067	27	71
Stdev							0.00	640	310	106	20	0.00	367	155	551	47	12	597
Sq. root error							0.00	115	59	19	4	0.00	212	90	318	27	7	172

Glacier	**Shumskiy**								**Ts. Tuyuksu**							
Country	Kazakhstan								Kazakhstan							
Geogr.Area	Dzhungariya								Tien Shan							
PSFG NR	SU06001								SU05075							
Code	536								536							
Lat	45°05'N								43°00'N							
Long	80°14'E								77°06'E							
Elev. Max, m	4464								4219							
Elev. Med, m	3660								3770							
Elev. Min, m	3126								3414							
Length, km	3.51								3.1							
Area, km^2	2.81								2.66							
Aspect	N/N								N/N							
Variables	**s**	**bn**	**bw**	**bs**	**Ct**	**At**	**ba**	**ELA**	**s**	**ba, bn**	**bw**	**bs**	**Ct**	**At**	**ELA**	**AAR**
1946																
1947																
1948																
1949																
1950																
1951																
1952																
1953																
1954																
1955																
1956																
1957									3.23	-150			1070	-1220	3760	
1958									3.23	330			1250	-920	3670	
1959									3.23	-420			970	-1390	3800	
1960									3.23	-100			1090	-1190	3740	
1961									3.22	-560			920	-1480	3820	
1962									3.21	-690			870	-1560	3840	
1963									3.21	440			1290	-850	3640	
1964									3.21	520			1320	-800	3600	
1965									3.17	-50			1160	-1210	3770	47
1966									3.17	40			1120	-1080	3710	63
1967	2.87	761	896	-135	1473	-712	761	3590	3.17	230			1280	-1050	3700	67
1968	2.87	-358	588	-946	987	-1346	-359	3656	3.17	-780			810	-1590	3840	
1969	2.87	383	771	-388	1292	-910	382	3617	3.17	210			1210	-1000	3710	65
1970	2.87	715	937	-222	1576	-861	715	3590	3.17	110			1130	-1020	3720	61
1971	2.86	-62	628	-690	950	-1011	-61	3670	3.14	-360			980	-1340	3810	37
1972	2.86	1041	1199	-158	1867	-510	1357	3550	3.14	130			970	-840	3720	62
1973	2.86	61	597	-536	1086	-1025	61	3625	3.14	-290			1010	-1300	3800	39
1974	2.85	-1157	450	-1607	742	-1899	-1157	4442	3.14	-620			790	-1410	3840	32
1975	2.85	-408	469	-877	893	-1301	-408	3700	3.14	-450			950	-1400	3840	39
1976	2.85	466	641	-175	1239	-772	467	3620	3.14	-720			780	-1500	3940	62
1977	2.84	-263	593	-856	987	-1250	-263	3669	3.10	-1100			850	-1950	3840	30
1978	2.84	-483	463	-946	616	-1099	-483	3738	3.10	-1480			790	-2240	4210	3
1979	2.84	-25	580	-605	1009	-1034	-25	3664	3.10	-520			930	-1450	3850	31
1980	2.83	-418	446	-864	758	-1175	-417	3691	3.02	-630			880	-1510	3850	32
1981	2.83	590	792	-202	1484	-894	590	3600	3.02	110			1100	-990	3760	60
1982	2.83	-1082	348	-1430	707	-1788	-1081	4442	3.02	-690			890	-1580	3850	38
1983	2.83	-471	443	-914	750	-1221	-471	3720	3.02	-550			1170	-1720	3930	24
1984	2.83	-208	580	-788	864	-1072	-208	3700	3.02	-1250			710	-1960	4050	11
1985	2.82	-334	529	-863	927	-1265	-338	3664	3.02	-550			770	-1320	3840	34
1986	2.82	-438	468	-906	758	-1197	-439	3716	2.86	-520			1130	-1650	3850	34
1987	2.82	-574	530	-1104	902	-1483	-581	3700	2.86	-340			930	-1270	3800	40
1988	2.82	30	532	-502	792	-596	196	3676	2.80	-610			1090	-1700	3835	35
1989	2.82	273	657	-384	1051	-737	314	3615	2.75	-460			820	-1280	3825	37
1990	2.82	-581	533	-1114				3727	2.75	-960			920	-1880	3885	28
1991	2.81	-1101	318	-1419				3825	2.72	-1100	270	-1370			3950	28
1992									2.68	-240	550	-790			3800	38
1993									2.68	602	585	17			3632	80
1994									2.67	-443	570	-1013			3790	44
1995									2.66	-587	279	-866			3870	31
1996									2.66	-456					3850	34
1997									2.66	-1467					4220	0
1998									2.66	-359					3780	45
1999									2.66	-230					3785	45
2000																
Years	25	25	25	25	23	23	23	25	43	43	5	5	34	34	43	34
Average	2.84	-146	600	-745	1031	-1094	-63	3728	3.00	-396	451	-804	999	-1372	3821	40
Stdev	0.02	583	196	414	319	343	599	223	0.21	493	161	510	169	347	124	18
Sq. root error	0.00	117	39	83	67	71	125	45	0.03	79	72	228	29	122	20	3

Glacier	Igly Tuyuksu					Molodezhniy					Mametova					Korzhenevsky	
Country	Kazakhstan					Kazakhstan					Kazakhstan					Kazakhstan	
Geogr.Area	Tien Shan					Tien Shan					Tien Shan					Tien Shan	
PSFG NR	SU05076					SU05090					SU05091						
Code	536					736					736						
Lat	43°00'N					43°00'N					43°00'N					42°37'N	
Long	77°06'E					77°06'E					77°06'E					77°24'E	
Elev. Max, m	4220					4150					4190					5020	
Elev. Med, m																	
Elev. Min, m	3450					3450					3610					3300	
Length, km	2.2					1.7					0.6					11.5	
Area, km^2	1.72					1.43					0.35					38	
Aspect	NW/NW					NE/NE					W/W						
Variables	s	ba, bn	Ct	At	ELA	s	ba	Ct	At	ELA	s	ba	Ct	At	ELA	s	bn
1946																	
1947																	
1948																	
1949																	
1950																	
1951																	
1952																	
1953																	
1954																	
1955																	
1956																	
1957	1.72	30				1.68	90				0.51	100					
1958	1.72	450				1.68	410				0.51	380					
1959	1.72	-170				1.68	-110				0.51	-110					
1960	1.72	210				1.68	160				0.51	180					
1961	1.72	-230				1.68	-60				0.51	-110					
1962	1.72	-370				1.68	-330				0.51	-150					
1963	1.72	400				1.68	360				0.51	200					
1964	1.72	460				1.68	460				0.51	410				38	60
1965	1.72	-190	980	-1170	3770	1.43	-230	990	-1220	3680	0.35	-310	950	-1260	3800	38	60
1966	1.72	20	1330	-1310	3730	1.43	-80	1340	-1420	3700	0.35	190	1300	-1110	3770	38	70
1967	1.72	-10	1150	-1160	3700	1.43	-80	1160	-1240	3700	0.35	140	1130	-1990	3760		
1968	1.72	-820	850	-1670	3850	1.43	-1010	770	-1780	3900	0.35	-630	840	-1470	3870		
1969	1.72	160	1240	-1080	3670	1.43	240	1240	-1000	3680	0.35	260	1270	-1010	3780		
1970	1.72	-230	970	-1200	3770	1.43	-390	970	-1360	3680	0.35	-60	970	-1030	3780		
1971	1.72	-200	890	-1090	3700	1.43	-370	900	-1270	3740	0.35	-430	900	-1330	3900		
1972	1.72	190	930	-740	3690	1.43	30	930	-900	3670	0.35	330	930	-600	3750		
1973	1.72	-210	980	-1190	3740	1.43	-240	990	-1230	3670	0.35	-60	980	-1040	3800		
1974	1.72	-500	840	-1340	3860	1.43	-670	850	-1520	3810	0.35	-540	820	-1360	3960		
1975	1.72	-270	890	-1160	3780	1.43	-390	900	-1290	3750	0.35	-270	870	-1140	3820		
1976	1.72	-460	910	-1370	3850	1.43	-700	920	-1610	3870	0.35	-250	860	-1130	3880		
1977	1.72	-750	920	-1670	3870	1.43	-1220	920	-2140		0.35	-770	880	-1650			
1978	1.72	-1720	800	-2520	4200	1.43	-2030	810	-2840	4147	0.35	-2350	770	-3120	4100		
1979	1.72	-440	996	-1436	3725	1.43	-391	1014	-1405	3750	0.35	-486	943	-1429	3860		
1980	1.72	-460	1010	-1470	3750	1.43	-890	1020	-1910	3830	0.35	-730	920	-1650	3950		
1981	1.72	-30				1.43	-120				0.35	80					
1982	1.72	-620				1.43	-780				0.35	-660					
1983	1.72	-540				1.43	-670				0.35	-550					
1984	1.72	-1200				1.43	-1420				0.35	-149					
1985	1.72	-550				1.43	-700				0.35	-550					
1986	1.72	-520				1.43	-660				0.35	-510					
1987	1.72	-340				1.43	-450				0.35	-270					
1988	1.72	-600				1.43	-750				0.35	-630					
1989	1.72	-460				1.43	-590				0.35	-430					
1990	1.72	-940				1.43	-1160				0.35	-1100					
1991																	
1992																	
1993																	
1994																	
1995																	
1996																	
1997																	
1998																	
1999																	
2000																	
Years	34	34	16	16	16	34	34	16	16	15	34	34	16	16	15	3	3
Average	1.72	-321	980	-1349	3791	1.49	-434	983	-1508	3772	0.39	-289	958	-1395	3852	38	63
Stdev	0.00	459	145	388	126	0.11	547	152	478	128	0.07	523	151	563	96	0	6
Sq. root error	0.00	79	36	97	32	0.02	94	38	119	33	0.01	90	38	141	25	0	3

Glacier	Teu-S.		Teu-N.		Shokalskiy		No.131						Kayandy			
Country	Kazakhstan		Kazakhstan		Kazakhstan		Kirgizstan						Kirgizstan			
Geogr.Area	Tien Shan		Tien Shan		Tien Shan		Tien Shan						Tien Shan			
PSFG NR					SU05078		SU05081									
Code					536		538									
Lat	43° N		43° N		43°00'N		41°51'N						42° N			
Long	77° E		77° E		77°18'E		77°46'E						79° E			
Elev. Max, m					4540		4433						5520			
Elev. Med, m							4151									
Elev. Min, m					3560		3864						3400			
Length, km					4.7		1.28						29			
Area, km^2	1.88		1.90		10.8		0.511						84.1			
Aspect					N/N		NE/NE									
Variables	s	bn	s	bn	s	bn	s	bn	bw	bs	ELA	AAR	s	bn	bw	bs
1946																
1947																
1948																
1949																
1950																
1951																
1952																
1953																
1954																
1955																
1956																
1957																
1958																
1959																
1960																
1961																
1962																
1963	1.88	580	1.90	630	10.8	470										
1964	1.88	680	1.90	710	10.8	690										
1965																
1966																
1967																
1968																
1969																
1970																
1971																
1972																
1973																
1974																
1975																
1976																
1977																
1978																
1979																
1980																
1981																
1982																
1983																
1984													84.1	-335	555	-890
1985													84.1	-131	527	-658
1986																
1987							0.511	-260	375	-635						
1988							0.511	-714	507	-1221	4370					
1989							0.511	-352	549	-900	4260	37				
1990							0.511	-282	560	-610						
1991							0.511	-502			4200	37				
1992																
1993																
1994																
1995																
1996																
1997																
1998																
1999																
2000																
Years	2	2	2	2	2	2	5	5	4	4	3	2	2	2	2	2
Average	1.88	630	1.90	670	10.8	580	0.511	-422	498	-842	4277	37	84.1	-233	541	-774
Stdev	0.00	71	0.00	57	0.0	156	0.00	189	85	285	86	0	0.0	144	20	164
Sq. root error	0.00	50	0.00	40	0.0	110	0.00	84	42	143	50	0	0.0	102	14	116

Glacier	**S.Inylchek**				**Kara-Batkak**						**Grigor'yev**				**Golubina**					
Country	Kirgizstan				Kirgizstan						Kirgizstan				Kirgizstan					
Geogr.Area	Tien Shan				Tien Shan						Tien Shan				Tien Shan					
PSFG NR					SU05080										SU05060					
Code					538						ice cap				538					
Lat	42° N				42°06'N						42° 30' N				42°27'N					
Long	79° E				78°18'E						78° E				74°30'E					
Elev. Max, m	6870				4829						4609				4437					
Elev. Med, m					3886										3970					
Elev. Min, m	2800				3293						4150				3250					
Length, km	60.5				3.55										5.1					
Area, km^2	567.2				4.6						9.35				5.750					
Aspect					N/N										NW/NW					
Variables	**s**	**bn**	**bw**	**bs**	**s**	**bn**	**bw**	**bs**	**ELA**	**AAR**	**s**	**bn**	**bw**	**bs**	**s**	**bn**	**bw**	**bs**	**ELA**	**AAR**
1946																				
1947																				
1948																				
1949																				
1950																				
1951																				
1952																				
1953																				
1954																				
1955																				
1956																				
1957					4.10	-31	548	-579												
1958					4.10	62	728	-666												
1959					4.10	-344	737	-1081												
1960					4.10	-291	666	-957												
1961					4.10	-806	474	-1280												
1962					4.10	-86	656	-742												
1963					4.10	-40	666	-706												
1964					4.10	144	893	-749												
1965					4.10	-41	711	-752												
1966					4.10	-156	879	-1035												
1967					4.10	10	796	-786												
1968					4.10	-652	613	-1265												
1969					4.10	0	665	-665							5.60	-130				
1970					4.10	-182	619	-801							5.60	150				
1971					4.10	148	722	-574							5.60	-90				
1972					4.10	53	610	-557							5.60	-109	343	-452	3690	
1973					4.10	-753	496	-1249							5.60	-391	510	-901	3835	
1974					4.10	-51	632	-683							5.60	-462	394	-856	3960	
1975					4.56	-475	505	-980							6.20	-236	601	-837	3900	
1976					4.56	-841	444	-1285	3800	64					6.20	-397	501	-898	3940	
1977					4.56	-864	371	-1235	3820	61					6.20	-322	764	-1086	3900	
1978					4.56	-1176	406	-1582	3840	59					6.20	-462	394	-856	3950	
1979					4.56	-501	573	-1074	3750	68					6.20	-289	790	-1079	3860	
1980					4.56	-364	670	-1034	3670	74					6.21	-500	850	-1350	3920	
1981					4.56	-447	577	-1024	3750	68					6.34	128	738	-611	3795	85
1982					4.56	-784	323	-1107	3840	59					6.34	-212	447	-659	3820	64
1983					4.56	-948	211	-1159	3900	52					6.34	-251	566	-817	3870	66
1984	567.2	-35.00	574	-609	4.56	-1572	235	-1807	3990	52					6.34	-515	646	-1161	4000	75
1985	567.2	98.00	578	-480	4.56	-1292	263	-1555	3850	57					6.34	-573	647	-1220	4005	50
1986					4.56	-392	663	-1055	3900	52					6.22	-372	685	-1058	4005	42
1987					4.56	-682	432	-1114	3820	56	9.35	-217	304	-599	6.22	151	913	-762	3780	77
1988					4.56	-456	791	-1247	3950	46	9.35	-295			6.22	-433	943	-1376	3870	67
1989					4.56	-396	691	-1087	3900	52					6.22	-421	486	-887	3870	67
1990					4.56	-778	730	-1508	3850	54					6.22	-570	840	-1411	3900	52
1991					4.56	-398			3900	51					6.21	-573	597	-1170	3850	67
1992					4.56	-352			3830	61					5.75	-454	645	-1099	3830	63
1993					4.56	-185			3810	68					5.75	-276	509	-785	3810	63
1994					4.56	-505			3900	51					5.75	-501	673	-1174	3750	73
1995					4.56	-515			3850	54										
1996					4.56	-373			3900	51										
1997					4.56	-648			4000	42										
1998																				
1999																				
2000																				
Years	2	2	2	2	41	41	34	34	22	22	2	2	1	1	26	26	23	23	23	14
Average	567.2	32	576	-545	4.36	-438	588	-1029	3855	57	9.35	-256	304	-599	6.04	-312	630	-978	3874	65
Stdev	0.0	94	3	91	0.23	399	175	314	77	8	0.00	55			0.30	218	169	251	82	11
Sq. root error	0.0	67	2	65	0.04	62	30	54	16	2	0.00	39			0.06	43	35	52	17	3

Glacier	**Davidov**				**Suyok Zap.**						**Sary-Tor**							
Country	Kirgizstan				Kirgizstan						Kirgizstan							
Geogr.Area	Tien Shan				Tien Shan						Tien Shan							
PSFG NR	SU05109				SU05082						SU05106							
Code	526				538						538							
Lat	41°50'N				41°47'N						41°50'N							
Long	78°12'E				77°47'E						78°11'E							
Elev. Max, m	4980				4496						4800							
Elev. Med, m	4280				4187						4252							
Elev. Min, m	3780				3895						3860							
Length, km	6.13				2.5						4.48							
Area, km^2	11.43				1.248						3.614							
Aspect	NW/NW				N/N						NE/NE							
Variables	**s**	**bn**	**bw**	**bs**	**s**	**ba**	**Ct**	**At**	**ELA**	**AAR**	**s**	**bn**	**bw**	**Ct**	**bs**	**At**	**ELA**	**AAR**
1946																		
1947																		
1948																		
1949																		
1950																		
1951																		
1952																		
1953																		
1954																		
1955																		
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1959																		
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1961																		
1962																		
1963																		
1964																		
1965																		
1966																		
1967																		
1968																		
1969																		
1970																		
1971					1.60	-461	123	-584	4250	25								
1972																		
1973																		
1974																		
1975																		
1976																		
1977																		
1978																		
1979																		
1980																		
1981																		
1982																		
1983																		
1984	11.43	-949	567	-1516	1.241	-1348	361	-1709	4280		3.614	-88						
1985	11.43	100	439	-338							3.614	-145	494	869	-639	1024	4290	42
1986											3.614	-142	492	856	-634	999	4265	38
1987											3.614	270	625	1270	-355	1050	4150	56
1988											3.614	-453	466	660	-918	1113	4340	27
1989					1.248	-517	681	-1198	4270	23	3.614	-192	389	487	-581	654	4258	37
1990					1.248	-676			4300	22								
1991					1.248	-527			4300	22								
1992																		
1993																		
1994																		
1995																		
1996																		
1997																		
1998																		
1999																		
2000																		
Years	2	2	2	2	5	5	3	3	5	4	6	6	5	5	5	5	5	5
Average	11.43	-425	503	-927	1.317	-706	388	-1164	4280	23	3.614	-125	493	828	-625	968	4261	40
Stdev	0.00	742	91	833	0.158	368	280	563	21	1	0.00	232	85	293	201	181	70	11
Sq. root error	0.00	525	64	589	0.071	164	162	325	9	1	0.00	95	38	131	90	81	31	5

Glacier	Urumqihe S. No 1						No1 E.Branch				No1 W.Branch			
Country	China						China				China			
Geogr.Area	E.Tien Shan						E.Tien Shan				E.Tien Shan			
PSFG NR	CN0010						CN0010				CN0010			
Code	622						622				622			
Lat	43°05'N						43°05'N				43°05'N			
Long	86°49'E						86°49'E				86°49'E			
Elev. Max, m	4486						4224				4476			
Elev. Med, m	4040													
Elev. Min, m	3736						3736				3795			
Length, km	2.2						2.2				1.95			
Area, km^2	1.84						1.163				0.677			
Aspect	NE/NE						NE/NE				NE/NE			
Variables	s	ba	Ct	At	ELA	AAR	s	bn	ELA	AAR	s	bn	ELA	AAR
1946														
1947														
1948														
1949														
1950														
1951														
1952														
1953														
1954														
1955														
1956														
1957														
1958														
1959	1.95	87	543	-456	4005	60								
1960	1.95	-188	608	-796	4060	44								
1961	1.95	-33	630	-663	4060	47								
1962	1.95	-167	624	-791	4075	44								
1963	1.95	235	633	-399	3971	69								
1964	1.95	2	589	-587	4055	48								
1965	1.95	375	650	-276	3948	78								
1966	1.95	-374	511	-885	4110	36								
1967	1.95	-69	608	-678	4063	46								
1968	1.95	-457	545	-1001	4121	35								
1969	1.95	148	647	-499	4008	59								
1970	1.95	-313	539	-852	4106	37								
1971	1.95	102	625	-523	4015	57								
1972	1.95	262	669	-407	3981	67								
1973	1.95	-707	503	-1211	4146	31								
1974	1.95	-24	606	-720	4075	43								
1975	1.87	306	747	-459	3982	68								
1976	1.87	29	517	-488	4066	45								
1977	1.87	180	714	-534	4001	65								
1978	1.87	-110	441	-551	4155	28								
1979	1.87	-76	462	-546	4120	33								
1980	1.86	-337	390	-725	4038	48								
1981	1.86	-655	536	-1188	4122	30								
1982	1.85	-49	656	-701	4025	50								
1983	1.85	100	668	-568	4005	60								
1984	1.85	-83	455	-538	4007	60								
1985	1.85	-612	478	-1090	4097	30								
1986	1.84	-669	482	-1151	4130	30								
1987	1.84	-175	474	-650	4025	50								
1988	1.84	-644	463	-1106	4080	40	1.163	-646	4050	32	0.677	-639	4110	43
1989	1.84	105	578	-473	3976	70	1.163	99	3923	68	0.677	210	4036	74
1990	1.84	52	596	-544	3959	70	1.163	18	3908	69	0.677	144	4010	73
1991	1.84	-706	456	-1162	4130	31	1.163	-734	4110	25	0.677	-600	4150	41
1992	1.84	23	605	-587	3975	68	1.163	15	3918	69	0.677	85	4032	67
1993	1.84	-29			3984	69	1.163	-34	3932	69	0.677	-20	4028	69
1994	1.84	-378			4058	40	1.163	-384	4037	37	0.677	-342	4079	46
1995	1.84	-228			4035	50	1.163	-225	4021	49	0.677	-225	4049	53
1996	1.84	42			3986	67								
1997	1.84	-853			4160	25								
1998	1.84	-790			4085	33								
1999	1.84	-791			4122	31								
2000														
Years	41	41	34	34	41	41	8	8	8	8	8	8	8	8
Average	1.89	-182	566	-700	4052	49	1.163	-236	3987	52	0.677	-173	4062	58
Stdev	0.05	340	87	259	60	15	0.00	320	76	19	0.00	331	48	14
Sq. root error	0.01	52	15	44	9	2	0.00	113	27	7	0.00	117	17	5

Glacier	Qiyi						Shuiguan. No 4						Yanglonghe No 5					
Country	China						China						China					
Geogr.Area	Qilanshan						Qilanshan						Qilanshan					
PSFG NR	CN00003						CN00001						CN00002					
Code	520						640						538					
Lat	39°14'N						37°33'N						39°14'N					
Long	97°54'E						101°45'E						98°34'E					
Elev. Max, m	5145						5024						5262					
Elev. Med, m	4720						4620						4840					
Elev. Min, m	4310						4200						4420					
Length, km	3.8						2.2						2.5					
Area, km^2	3.04						1.36						1.62					
Aspect	NW/NW												NE/NE					
Variables	s	bn	bw	bs	ELA	AAR	s	bn	AC	AA	ELA	AAR	s	bn	AC	AA	ELA	AAR
1946																		
1947																		
1948																		
1949																		
1950																		
1951																		
1952																		
1953																		
1954																		
1955																		
1956																		
1957																		
1958																		
1959																		
1960																		
1961																		
1962																		
1963							1.40	-53			4450							
1964																		
1965																		
1966																		
1967																		
1968																		
1969																		
1970																		
1971																		
1972																		
1973																		
1974																		
1975	3.04	35	259	-224	4650													
1976	3.04	384	434	-50	4550	87	1.36	276	499	-191	4420	68						
1977	3.04	351	434	-84	4620	82	1.36	74	500	-467	4430	56	1.62	496	557	-208	4600	92
1978													1.62	-275	200	-637	4750	43
1979													1.62	35	242	-275	4700	
1980																		
1981																		
1982																		
1983																		
1984	3.04	221	288	-67	4600													
1985	3.04	-30	169	-199	4710													
1986																		
1987																		
1988																		
1989																		
1990																		
1991																		
1992																		
1993																		
1994																		
1995																		
1996																		
1997																		
1998																		
1999																		
2000																		
Years	5	5	5	5	5	2	3	3	2	2	3	2	3	3	3	3	3	2
Average	3.04	192	317	-125	4626	85	1.37	99	500	-329	4433	62	1.62	85	333	-373	4683	68
Stdev	0.00	185	116	81	59	4	0.02	166	1	195	15	8	0.00	388	195	231	76	35
Sq. root error	0.00	83	52	36	27	3	0.01	96	1	138	9	6	0.00	224	113	133	44	25

Glacier	**Hailogou**			**Laohuguo**					**Changmekhan.**					
Country	China			China					India					
Geogr.Area	Gongga			Qilanshan					Himalaya					
PSFG NR	CN0004			CN0004					IN02522					
Code	518			518					530					
Lat	29°35'N			39°26'N					27°57'N					
Long	101°56'E			96°33'E					88°41'E					
Elev. Max, m	7514			5481					5520					
Elev. Med, m				4880					5300					
Elev. Min, m	2980			4260					4840					
Length, km	13.1			10.1					5.6					
Area, km^2	25.71			21.91					4.50					
Aspect	SE			N/NW					S/S					
Variables	**s**	**bn**	**ELA**	**ba**	**AC**	**AA**	**ELA**	**AAR**	**s**	**bn**	**AC**	**AA**	**ELA**	**AAR**
1946														
1947														
1948														
1949														
1950														
1951														
1952														
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1965														
1966														
1967														
1968														
1969														
1970														
1971														
1972														
1973														
1974														
1975														
1976				331	460	-359	4700	84						
1977														
1978														
1979														
1980														
1981									4.50	-392	635	-565	5305	59
1982									4.50	-297	358	-461	5285	46
1983									4.50	-291	520	-560	5335	54
1984									4.50	-157	598	-482	5283	55
1985									4.50	-240	335	-515	5280	50
1986									4.50	-72	515	-329	5325	50
1987														
1988														
1989	25.71	-81	4970											
1990	25.71	-115												
1991	25.71	-155												
1992	25.71	-145												
1993	25.71	-659												
1994														
1995														
1996														
1997														
1998														
1999														
2000														
Years	5	5	1	1	1	1	1	1	6	6	6	6	6	6
Average	25.71	-231	4970	331	460	-359	4700	84	4.50	-242	494	-485	5302	52
Stdev	0.00	241							0.00	113	123	87	23	5
Sq. root error	0.00	108							0.00	46	50	36	10	2

Glacier	Dunagiri						Shaune Garang						Gor Garang		Tipra Bank					
Country	India						India						India		India					
Geogr.Area	Himalaya						Himalaya						Himal		Himalaya					
PSFG NR	IN00191						IN00084						Pradezh		IN00004					
Code	537						527													
Lat	30°33'N						31°17'N						31°37'N		30°44'N					
Long	79°54'E						78°20'E						78°49' E		79°41'E					
Elev. Max, m	5150						5360								5730					
Elev. Med, m	4560						4600								4400					
Elev. Min, m	4240						4400						4760		3720					
Length, km	5.5						5.5								6					
Area, km^2	2.56						4.94						2.0		7.0					
Aspect	N/N						W/N								N/NW					
Variables	s	bn	AC	AA	ELA	AAR	s	bn	AC	AA	ELA	AAR	s	bn	s	bn	AC	AA	ELA	AAR
1946																				
1947																				
1948																				
1949																				
1950																				
1951																				
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1969																				
1970																				
1971																				
1972																				
1973																				
1974																				
1975																				
1976																				
1977													2.0	-670						
1978													2.0	-520						
1979													2.0	-330						
1980													2.0	-470						
1981													2.0	-970						
1982							4.94	-570	440	-515	4900	32	2.0	200						
1983							4.94	-500	420	-1030	4893	47	2.0	510						
1984							4.94	460	970	-570	4716	68	2.0	-750						
1985							4.94	-100	250	-550	4812	57								
1986	2.56	-945	1815	-1428	4835	15	4.94	30	670	-1000	4800	62			7.0	-59	809	-387	4600	27
1987	2.56	-1038	918	-1332	4840	13	4.94	-790	480	-1150	4930	22			7.0	-65	841	-343	4650	23
1988	2.56	-1289	465	-1673	4835	18	4.94	-630	880	-1200	4940	46			7.0	-605	723	-920	4750	14
1989	2.56	-976	887	-1217	4835	14	4.94	340	840	-450	4790	62								
1990	2.56	-1235	686	-1516	4870	13	4.94	-270	330	-790	4800	46								
1991																				
1992																				
1993																				
1994																				
1995																				
1996																				
1997																				
1998																				
1999																				
2000																				
Years	5	5	5	5	5	5	9	9	9	9	9	9	8	8	3	3	3	3	3	3
Average	2.56	-1097	954	-1433	4843	15	4.94	-226	587	-806	4842	49	2.0	-375	7.0	-243	791	-550	4667	22
Stdev	0.00	156	514	174	15	2	0.00	440	261	295	76	15	0.0	497	0.0	314	61	321	76	7
Sq. root err	0.00	70	230	78	7	1	0.00	147	87	98	25	5	0.0	176	0.0	181	35	185	44	4

Glacier	Neh Nar		Kolahoi	Shishram	Xiaodongkemadi						Meikuang	AX010		
Country	India		India	India	China						China	Nepal		
Geogr.Area	Himalaya		Himalaya	Himalaya	Tibet						Kunlun	Himalaya		
PSFG NR					CN00038							NP00005		
Code					538						628	636		
Lat	34°16N		34°20N	34°20N	33°10'N						35°40'N	27° 42' N		
Long	75°52' E		75°47E	75°43' E	92°08'E						94°11'E	86° 34'E		
Elev. Max, m	4925		5000	4900	5926						5520	5360		
Elev. Med, m												5220		
Elev. Min, m	3920		3690	3740	5380						4805	4952		
Length, km					2.8						1.8	1.7		
Area, km^2	1.7		11.90	9.90	1.767						1.1	0.568		
Aspect					S/SW							E/SE		
Variables	**s**	**bn**	**bn**	**bn**	**s**	**bn**	**bw**	**bs**	**ELA**	**AAR**	**bn**	**bn**	**ELA**	**AAR**
1946														
1947														
1948														
1949														
1950														
1951														
1952														
1953														
1954														
1955														
1956														
1957														
1958														
1959														
1960														
1961														
1962														
1963														
1964														
1965														
1966														
1967														
1968														
1969														
1970														
1971														
1972														
1973														
1974														
1975														
1976														
1977														
1978														
1979														
1980	1.7	-450												
1981	1.7	-480												
1982	1.7	-240												
1983	1.7	-10												
1984	1.7	-630	-265	-287										
1985														
1986														
1987														
1988														
1989					1.767	525	152	-373	5454	95	274			
1990					1.767	49			5570	78	-90			
1991					1.767	-191			5695	42	-300			
1992					1.767	376			5550	90	120			
1993					1.767	211			5505	80	100			
1994					1.767	-540					-400			
1995					1.767	-570					-456			
1996					1.767	-530						-512	5380	0
1997					1.767	370					10	-472	5210	24
1998					1.767	-670					-420	-1320	5270	0
1999												-510	5210	33
2000														
Years	5	5	1	1	10	10	1	1	5	5	9	4	4	4
Average	1.7	-362	-265	-287	1.767	-97	152	-373	5555	77	-129	-492	5295	12
Stdev	0.0	241			0.00	458			90	21	272	28	120	17
Sq. root err	0.0	108			0.00	125			40	9	9	20	85	12

Glacier	**Hamaguri-yuki**				**Ivory**						**Tasman**	**48**	**Carstenz**		
Country	Japan				New Zeland						New Zeland	N.Zealand	Indonesia		
Geogr.Area	N.Japan Alps				S. Island						S. Island	Glaciers	Irian Java		
PSFG NR	J000001				NZ9011						NZ7111		RI00004		
Code	730				644						524		538		
Latitude	36°35'N				43°08'S						43°31S		4°06'S		
Longitude	137°37'E				170°55'E						170°19'E		137°10'E		
Elev. max	2720				1730						2830		4800		
Elev. med	-				1510								4600		
Elev. min	2690				1390						730		4380		
Length, km	0.07				1.35						28.5		1.8		
Area, km^2	0.001				0.8						98.34		0.9		
Aspect	NE/NE				S/S								W/NW		
Variables	**s**	**bn**	**bw**	**bs**	**s**	**bn**	**bw**	**bs**	**ELA**	**AAR**	**bn**	**ELA**	**bn**	**ELA**	**AAR**
1946															
1947															
1948															
1949															
1950															
1951															
1952															
1953															
1954															
1955															
1956															
1957															
1958															
1959											-770				
1960															
1961															
1962															
1963															
1964															
1965															
1966															
1967															
1968															
1969															
1970					0.8	-2110	2050	-4160	1675	19					
1971					0.8	-1320	3920	-5240	1650	35					
1972					0.8	-1660	3030	-4690	1625	16					
1973					0.8	-1730	3110	-4840	1600	32			-81	4580	65
1974					0.8	-3480	1620	-5100		0					
1975					0.8	-4000	2050	-6050		0					
1976															
1977												1842			
1978												1872			
1979												1861			
1980												1827			
1981	0.01	3200	13000	-9800								1815			
1982	0.01	-1200	7700	-8900								1859			
1983	0.01	-400	7400	-7800								1744			
1984												1754			
1985	0.01	-2800	8200	-11000								1774			
1986	0.007	3510	14520	-11010								1825			
1987	0.003	-681	9450	-10131								1814			
1988												1849			
1989												1842			
1990	0.002	5658										2064			
1991	0.001	-633	8856	-9489								1796			
1992												1758			
1993	0.003	423	11491	-11159								1742			
1994	0.003	-4834	5257	-4834								1782			
1995												1728			
1996												1788			
1997												1748			
1998															
1999															
2000															
Years	10	10	9	9	6	6	6	6	4	6	1	21	1	1	1
Aver	0.0060	224	9542	-9347	0.80	-2383	2630	-5013	1638	17	-770	1814	-81	4580	65
Stdev	0.0038	3126	2940	2018	0.00	1093	866	632	32	15		73			
Sq. root error	0.0011	988	980	673	0.00	446	353	258	16	6		16			

Glacier	Meren			Hodges	Hamberg	Spartan		Alberich					Heimdall				
Country	Indonesia			Gr.Britan	Gr.Britan	Antarctica		Antarctica					Antarctica				
Geogr.Area	Irian Java			S.Georgia	S.Georgia	Alexandra Island		Dry Valley					Dry Valley				
PSFG NR	RI00003							AN0002					AN0003				
Code	536												538				
Lat	4°05'S			54°27' S	54°40' S	71°03'S		77°35'S					77°35'S				
Long	137°10'E			36°53' W	36°50' W	68°20'E		161°37'E					162°52'E				
Elev. max	4860			1730	2000	450		1800					1800				
Elev. med	4610												1500				
Elev. min	4260			1390	0	40		1400					1200				
Length, km	2.1												6				
Area, km^2	1.95			0.3	11.4	6.3		1.36					7.96				
Aspect	SW/W												W/NW				
Variables	bn	ELA	AAR	bn	bn	s	bn	s	bn	bw	bs	AAR	s	bn	bw	bs	AAR
1946																	
1947																	
1948																	
1949																	
1950																	
1951																	
1952																	
1953																	
1954																	
1955																	
1956																	
1957																	
1958				-150	-254												
1959																	
1960																	
1961																	
1962																	
1963																	
1964																	
1965																	
1966																	
1967																	
1968																	
1969																	
1970																	
1971						6.3	-86										
1972						6.3	-76	1.36	20	0	10	67	7.96	-10	0	10	30
1973	-512	4580	59			6.3	-189	1.36	30	0	30	75	7.96	-20	-10	0	39
1974						6.3	-62	1.36	-20	-10	0	35	7.96	-20	0	20	32
1975								1.36	10	10	0	60	7.96	-10	20	30	28
1976																	
1977																	
1978																	
1979																	
1980																	
1981																	
1982																	
1983																	
1984																	
1985																	
1986																	
1987																	
1988																	
1989																	
1990																	
1991																	
1992																	
1993																	
1994																	
1995																	
1996																	
1997																	
1998																	
1999																	
2000																	
Years	1	1	1	1	1	4	4	4	4	4	4	4	4	4	4	4	4
Aver	-512	4580	59	-150	-254	6.3	-103	1.36	10	0	10	59	7.96	-15	3	15	32
Stdev						0	58	0.00	22	8	14	17	0.00	6	13	13	5
Sq. root error						0	29	0.00	11	4	7	9	0.00	3	6	6	2

Glacier	**Jeremy Sykes**					**G1**		
Country	Antarctica					Sub Ant.		
Geogr.Area	Dry Valley					Desep. Isl.		
PSFG NR	AN0001							
Code								
Lat	77°36'S					63°0'S		
Long	161°33'E					60°35'W		
Elev. max	2040					400		
Elev. med								
Elev. min	1170					100		
Length, km								
Area, km^2	9.92					0.418		
Aspect								
Variables	**s**	**bn**	**bw**	**bs**	**AAR**	**s**	**bn**	
1946								
1947								
1948								
1949								
1950								
1951								
1952								
1953								
1954								
1955								
1956								
1957								
1958								
1959								
1960								
1961								
1962								
1963								
1964								
1965								
1966								
1967								
1968								
1969						0.418	-10	
1970						0.418	-300	
1971						0.418	-560	
1972	9.92	20	0	10	60			
1973	9.92	0	-10	10	45			
1974	9.92	-10	0	0	43			
1975	9.92	20	20	0	58			
1976								
1977								
1978								
1979								
1980								
1981								
1982								
1983								
1984								
1985								
1986								
1987								
1988								
1989								
1990								
1991								
1992								
1993								
1994								
1995								
1996								
1997								
1998								
1999								
2000								
Years	4	4	4	4	4	3	3	
Aver	9.92	8	3	5	52	0.418	-290	
Stdev	0.00	15	13	6	9	0.00	275	
Sq. root error	0.00	8	6	3	4	0.00	159	

Averaged annual or net mass balance calculations made in Aug. 2000	All glaciers with mass balance records				20 years and longer since 1962 mass balance records						
Variables		number of	Cumulative		number of						
Years	<bn>, mm	glaciers	<bn>, mm		glaciers	<bn20>, mm	Min, bn20	Max, bn20	Median, bn20	Stdev20	Sq.root error
1946	-529	3	-529		2	-593	-1130	-56	-593	759	537
1947	-1770	3	-2298		2	-2235	-2399	-2070	-2235	233	165
1948	301	6	-1997		2	342	0	684	342	484	342
1949	-994	7	-2991		4	-923	-2990	910	-805	1796	898
1950	-1109	8	-4100		4	-1110	-1620	-290	-1265	572	286
1951	-360	8	-4460		4	-195	-640	200	-170	458	229
1952	-648	7	-5108		4	-545	-1620	310	-435	829	415
1953	-431	8	-5539		6	-618	-850	-320	-600	193	79
1954	-201	9	-5740		6	-449	-970	60	-418	385	157
1955	221	9	-5519		6	304	-490	1120	348	598	244
1956	-200	10	-5719		7	-51	-640	1390	-275	729	276
1957	-85	18	-5804		10	-174	-520	50	-170	185	58
1958	-361	28	-6165		12	-732	-3300	330	-615	959	277
1959	-484	26	-6649		14	-586	-1280	700	-592	579	155
1960	-229	30	-6877		17	-252	-1610	544	-100	562	136
1961	-191	32	-7068		18	-232	-1100	710	-201	475	112
1962	-239	38	-7308		23	-187	-970	2250	-410	734	153
1963	-363	52	-7671		26	-380	-1426	440	-210	558	109
1964	-73	54	-7743		26	-81	-1830	1200	177	845	166
1965	301	57	-7443		28	373	-651	1976	358	599	113
1966	-113	67	-7556		32	-46	-1557	1284	-85	636	112
1967	120	74	-7436		34	45	-2090	2156	50	731	125
1968	90	82	-7345		37	37	-1359	990	25	492	81
1969	-358	75	-7704		38	-360	-2104	1349	-231	730	118
1970	-211	90	-7915		38	-292	-1520	1510	-243	668	108
1971	-152	77	-8067		38	-170	-1310	1390	-268	586	95
1972	-148	79	-8215		38	-38	-1530	2718	-72	691	112
1973	-83	77	-8298		38	-158	-1276	2182	-164	722	117
1974	-103	79	-8401		38	-5	-1600	2240	-38	883	143
1975	-7	78	-8408		38	110	-1034	2413	95	658	107
1976	-64	67	-8472		38	-108	-2070	1524	-57	767	124
1977	-184	75	-8655		38	-106	-1464	1477	-166	819	133
1978	-149	73	-8804		38	-64	-1480	1805	-100	694	113
1979	-373	77	-9177		39	-449	-2301	712	-219	673	108
1980	-217	80	-9394		39	-160	-1400	2330	-178	853	137
1981	-177	86	-9571		38	-120	-1127	1600	-153	616	100
1982	-299	91	-9870		39	-289	-1678	1060	-330	583	93
1983	-113	90	-9983		39	-57	-1620	1700	-170	732	117
1984	-127	89	-10111		39	-93	-1572	1320	-31	579	93
1985	-390	78	-10501		39	-345	-1887	838	-400	619	99
1986	-320	73	-10821		39	-430	-1790	941	-413	548	88
1987	-221	73	-11042		38	-177	-2560	2070	-216	902	146
1988	-424	78	-11466		38	-393	-2480	3178	-540	938	152
1989	-109	84	-11575		38	-126	-2590	3196	-246	1133	184
1990	-310	85	-11885		37	-410	-2470	1924	-561	1023	168
1991	-345	78	-12230		36	-430	-2239	2339	-369	790	132
1992	-228	80	-12458		36	-301	-2798	2092	-290	1022	170
1993	-109	85	-12567		37	-202	-2342	2101	-229	1014	167
1994	-528	83	-13094		37	-498	-2010	1734	-449	712	117
1995	-287	79	-13381		37	-254	-2486	1187	-280	746	123
1996	-292	72	-13673		36	-405	-1896	1223	-238	615	102
1997	-294	64	-13967		36	-537	-2480	630	-479	731	122
1998	-966	65	-14933		33	-848	-2850	970	-780	1032	180
1999											
2000											
AVERAGE					**AVERAGE**						
1961-98	**-212**	**74**			**1961-98**	**-215**	**-1814**	**1652**	**-213**	**741**	**125**
1961-76	**-100**	**67**			**1961-76**	**-93**	**-1464**	**1646**	**-80**	**673**	**119**
1977-98	**-294**	**70**			**1977-98**	**-304**	**-2069**	**1656**	**-311**	**790**	**129**

Averaged annual or net mass balance calculations made in Aug. 2000	30 years and longer mass balance series over 1967-98					
Variables	**number of**					
Years	**glaciers**	**Mean, bn30**	**Min, bn30**	**Max, bn30**	**Stdev30**	**Sq.root error**
1946						
1947						
1948						
1949						
1950						
1951						
1952						
1953						
1954						
1955						
1956						
1957						
1958						
1959						
1960						
1961						
1962						
1963						
1964						
1965						
1966						
1967	33	52	-2090	2156	741	129
1968	36	28	-1359	990	495	83
1969	37	-373	-2104	1349	736	121
1970	37	-265	-1520	1510	656	108
1971	37	-190	-1310	1390	581	96
1972	37	-45	-1530	2718	699	115
1973	37	-183	-1276	2182	714	117
1974	37	-62	-1600	2240	821	135
1975	37	89	-1034	2413	654	108
1976	37	-121	-2070	1660	780	128
1977	37	-61	-1448	1477	785	129
1978	37	-34	-1480	1805	702	115
1979	37	-364	-2212	712	574	94
1980	37	-150	-1400	2330	863	142
1981	37	-128	-1127	1600	623	102
1982	37	-319	-1678	1060	566	93
1983	37	-86	-1620	1700	722	119
1984	37	-112	-1572	1320	572	94
1985	37	-340	-1887	660	559	92
1986	37	-408	-1790	941	542	89
1987	37	-163	-2560	2070	908	149
1988	37	-371	-2480	3178	970	160
1989	37	-59	-2590	3196	1114	183
1990	37	-372	-2470	1924	996	164
1991	36	-367	-1734	2339	730	122
1992	36	-234	-2092	2092	928	155
1993	37	-154	-2280	2101	949	156
1994	37	-473	-2010	1734	677	111
1995	37	-194	-2486	1187	736	121
1996	36	-410	-1896	1223	610	102
1997	36	-498	-2480	630	739	123
1998	32	-785	-2450	970	982	174
1999						
2000						
Years		**AVERAGE**				
1967-98		**-224**	**-1864**	**1714**	**741**	**123**
1967-76		**-107**	**-1589**	**1861**	**688**	**114**
1977-98		**-276**	**-1988**	**1648**	**766**	**127**

Averaged winter mass balance or annual accumulation made in Aug. 2000	All glaciers with mass balance records					
Variables				number of		
Years	<bw>	Min, bw	Max, bw	glaciers	bw, stdev	<bw>Sq.root err.
1946	1130	1130	1130	1		
1947	1235	1030	1440	2	290	205
1948	1830	1450	2210	2	537	380
1949	1855	710	2280	4	764	382
1950	1428	1090	1680	4	249	125
1951	1390	810	2500	4	755	377
1952	1353	870	1750	3	446	258
1953	1493	860	1940	4	478	239
1954	941	374	1210	4	384	192
1955	1522	706	2200	4	615	308
1956	1091	685	1310	4	290	145
1957	988	380	1610	7	504	191
1958	924	40	1850	13	555	154
1959	1252	173	3280	13	1027	285
1960	966	130	2210	12	606	175
1961	1290	109	2800	12	924	267
1962	1371	97	3500	16	996	249
1963	1172	150	2600	21	761	166
1964	1298	115	3250	21	838	183
1965	1476	87	3640	29	933	173
1966	1465	104	3510	36	769	128
1967	1877	110	4454	45	1177	175
1968	1715	112	4570	46	1073	158
1969	1328	115	3516	45	814	121
1970	1859	115	4700	57	1253	166
1971	1661	120	4285	51	1102	154
1972	1521	0	4370	52	1154	160
1973	1589	-10	4670	48	1193	172
1974	1416	-10	4807	49	1212	173
1975	1347	10	4639	51	1137	159
1976	1367	102	4394	50	1211	171
1977	1341	110	4210	52	911	126
1978	1399	107	3760	52	1012	140
1979	1338	100	3280	55	886	119
1980	1292	101	4600	51	936	131
1981	1682	115	13000	58	1871	246
1982	1469	108	7700	64	1308	163
1983	1502	100	7400	61	1290	165
1984	1328	127	4090	61	951	122
1985	1295	137	8200	63	1144	144
1986	1576	104	14520	51	2003	280
1987	1509	144	9450	52	1452	201
1988	1439	86	4624	56	945	126
1989	1559	113	5198	63	1152	145
1990	1702	144	5981	57	1152	153
1991	1750	84	8856	52	1390	193
1992	1806	139	5294	56	1042	139
1993	1913	100	11491	57	1581	209
1994	1634	62	5257	58	949	125
1995	1684	87	5095	55	957	129
1996	1600	120	4440	41	1007	157
1997	1793	134	4220	34	1076	185
1998	1800	141	3660	20	1078	241
1999				1		
2000				0		
Years						
1961-98	**1531**	**100**	**5475**		**1122**	**169**
1967-76	**1484**	**83**	**3982**		**1034**	**174**
1977-98	**1564**	**112**	**6560**		**1186**	**166**

Averaged summer mass balance or annual ablation made in Aug. 2000	All glaciers with mass balance records					
Variables					number of	
Years	<bs>	Min, bs	Max, bs	stded, bs	glaciers	Sq.root error
1946	-2260	-2260	-2260		1	
1947	-2690	-3100	-2280	580	2	410
1948	-1585	-1720	-1450	191	2	135
1949	-2370	-3700	-1320	993	4	496
1950	-2455	-3680	-1620	945	4	472
1951	-2010	-2620	-1450	543	4	272
1952	-1843	-3370	-1030	1323	3	764
1953	-2200	-2740	-1400	571	4	286
1954	-1585	-2100	-660	652	4	326
1955	-1500	-2060	-630	618	4	309
1956	-1473	-1770	-960	363	4	181
1957	-1176	-1940	-520	600	7	227
1958	-1117	-2350	-260	785	13	218
1959	-1711	-3450	-283	1032	13	286
1960	-1443	-2710	-323	784	12	226
1961	-1747	-3500	-290	1024	12	296
1962	-1535	-3650	-350	980	16	245
1963	-1649	-3530	-106	1143	21	249
1964	-1172	-2720	30	843	21	184
1965	-1439	-3613	-23	1027	29	191
1966	-1850	-4041	-230	929	35	157
1967	-1818	-4390	-10	1059	43	162
1968	-1626	-3580	-140	863	45	129
1969	-1883	-4659	-70	1118	43	171
1970	-2194	-4500	-76	1237	57	164
1971	-1781	-5240	-189	977	50	138
1972	-1632	-4690	50	1237	52	171
1973	-1563	-4840	60	1051	47	153
1974	-1628	-5100	160	1099	49	157
1975	-1483	-6050	30	1170	50	165
1976	-1470	-4870	65	1016	49	145
1977	-1660	-4990	-84	1173	52	163
1978	-1752	-4420	-80	938	52	130
1979	-1795	-3978	-62	953	54	130
1980	-1685	-3790	-158	848	50	120
1981	-1817	-9800	-130	1511	58	198
1982	-1672	-8900	3490	1481	63	187
1983	-1595	-7800	-42	1215	61	156
1984	-1468	-4340	30	870	59	113
1985	-1751	-11000	1024	1603	59	209
1986	-1720	-11010	999	1665	51	233
1987	-1554	-10131	1050	1648	52	228
1988	-1815	-5200	1113	1182	55	159
1989	-1551	-4143	654	1095	62	139
1990	-1918	-4719	-310	998	57	132
1991	-2000	-9489	-51	1398	51	196
1992	-1627	-3920	-43	897	56	120
1993	-1811	-11159	-165	1469	57	195
1994	-1953	-4834	-94	995	59	130
1995	-1884	-3987	-234	878	55	118
1996	-1968	-3922	10	897	41	140
1997	-2186	-4143	-147	1053	34	181
1998	-2059	-4620	-320	1091	20	244
1999						
2000						
Years						
1961-98	**-1729**	**-5507**	**141**	**1122**		**171**
1967-76	**-1654**	**-4311**	**-68**	**1048**		**180**
1977-98	**-1784**	**-6377**	**293**	**1175**		**165**

Averaged mass turnover calculations made in Aug. 2000	All glaciers with mass balance records						
Variables	**number of**	**|bw|+|bs|**	**|bw|+|bs|**	**|bw|+|bs|**	**|bw|+|bs|**	**|bw|+|bs|**	**|bw|+|bs|**
Years	**glaciers**	**Average**	**Min**	**Max**	**Median**	**Stdev**	**Cv**
1946	1	3390	3390	3390	3390		
1947	2	3925	3720	4130	3925	290	0.07
1948	2	3415	2900	3930	3415	728	0.21
1949	4	4225	3550	4580	4385	460	0.11
1950	4	3883	3300	4770	3730	706	0.18
1951	4	3400	2260	4800	3270	1116	0.33
1952	3	3197	1900	5120	2570	1699	0.53
1953	4	3693	2260	4680	3915	1043	0.28
1954	4	2526	1034	3230	2920	1029	0.41
1955	4	3022	1336	3740	3505	1134	0.38
1956	4	2564	1645	3060	2775	627	0.24
1957	7	2164	900	3550	2290	1092	0.50
1958	13	2040	370	4200	2170	1297	0.64
1959	13	2963	456	6350	2360	1986	0.67
1960	12	2413	578	4920	2280	1306	0.54
1961	12	3037	415	5900	2715	1914	0.63
1962	15	2864	553	7150	2360	1934	0.68
1963	21	2824	256	5760	2710	1802	0.64
1964	21	2465	238	5300	2635	1397	0.57
1965	31	2872	110	7139	2530	1844	0.64
1966	40	3088	343	6525	2967	1572	0.51
1967	48	3483	150	8589	3129	2126	0.61
1968	49	3236	355	8150	2983	1926	0.60
1969	45	3018	146	7214	3000	1801	0.60
1970	59	3995	191	9200	3920	2370	0.59
1971	51	3376	180	9160	2882	2008	0.59
1972	51	3214	10	7720	2460	2279	0.71
1973	46	3239	10	7950	2689	2104	0.65
1974	48	3103	10	7505	2395	2139	0.69
1975	51	2808	10	8100	2300	2141	0.76
1976	52	2778	176	8390	2191	2121	0.76
1977	56	2809	367	8450	2250	1945	0.69
1978	55	2994	187	7730	2630	1796	0.60
1979	56	3054	163	6848	2415	1810	0.59
1980	54	2873	259	7410	2320	1696	0.59
1981	59	3106	376	10060	2210	2124	0.68
1982	65	2973	220	7364	2495	1982	0.67
1983	62	2783	189	7980	2050	1812	0.65
1984	61	2772	230	8340	2160	1812	0.65
1985	58	2665	368	5565	2360	1543	0.58
1986	53	2838	185	6322	2420	1594	0.56
1987	54	2612	244	6510	2225	1679	0.64
1988	59	3211	388	7920	2742	1857	0.58
1989	66	3054	250	8154	2556	1926	0.63
1990	61	3529	454	10190	3370	2058	0.58
1991	53	3385	301	7385	3217	1666	0.49
1992	58	3434	182	8496	3250	1750	0.51
1993	58	3371	268	7536	3262	1558	0.46
1994	61	3332	156	7607	3427	1530	0.46
1995	58	3549	321	9082	3168	1792	0.50
1996	39	3590	1474	6073	3253	1454	0.40
1997	32	4349	1300	8363	4340	1977	0.45
1998	17	4266	1450	7380	4230	1833	0.43
1999							
2000							
Years							
1961-98	**48**	**3157**	**329**	**7645**	**2795**	**1860**	**0.60**
1961-76	**40**	**3087**					
1977-98	**43**	**3207**					

Averaged ELA calculations made in Aug. 2000	All glaciers with mass balance records			
Variables	ELA		number of	<ELA> Sq.
Years	Average	ELA Stdev	glaciers	root error
1946	1480		1	
1947	1600		1	
1948	1400		1	
1949	1527	120	3	69
1950	1650	141	2	100
1951	1635	191	2	135
1952	1540	127	2	90
1953	1983	977	3	564
1954	1942	977	3	564
1955	1820	1020	3	589
1956	1808	788	4	394
1957	2343	1238	4	619
1958	1804	1242	7	469
1959	2341	1292	7	488
1960	2045	1097	15	283
1961	2074	1085	15	280
1962	2130	1002	21	219
1963	2112	1001	29	186
1964	1928	1012	30	185
1965	1991	998	38	162
1966	2081	929	43	142
1967	2069	1026	54	140
1968	2199	1031	54	140
1969	2254	1005	51	141
1970	2200	1008	52	140
1971	2116	1102	53	151
1972	2159	1044	51	146
1973	2260	1238	47	181
1974	2227	1138	46	168
1975	2213	1192	46	176
1976	2361	1279	49	183
1977	2375	1165	52	162
1978	2354	1215	47	177
1979	2334	1113	52	154
1980	2302	1050	53	144
1981	2228	1107	59	144
1982	2233	1185	63	149
1983	2248	1198	65	149
1984	2264	1220	66	150
1985	2508	1218	58	160
1986	2416	1400	53	192
1987	2398	1319	53	181
1988	2476	1281	63	161
1989	2358	1339	74	156
1990	2265	1285	72	151
1991	2208	1279	69	154
1992	2219	1330	75	154
1993	2240	1238	76	142
1994	2273	1233	77	140
1995	2289	1222	75	141
1996	2269	1248	74	145
1997	2315	1246	65	155
1998	2297	1282	62	163
1999				
2000				
Years				
1961-98	**2243**	**1165**		**162**
1961-76	**2148**	**1068**		**171**
1977-98	**2312**	**1235**		**156**

Averaged AAR calculations made in Aug. 2000	All glaciers with mass balance records				AAR long-term records				Glacier area with mass balance records	
Variables	**AAR**	**AAR**	**number of**	**AAR**	**number of long-term**	**AAR**	**AAR**			**number of**
Years	**Average**	**St.dev.**	**glaciers**	**Sq.root**	**glaciers**	**average, l-t**	**St.dev., l-t**		**s, km^2**	**glaciers**
1946			0						136.92	3
1947			0						135.45	2
1948			0						139.85	5
1949			0						144.63	6
1950			0						147.76	7
1951			0						177.89	7
1952			0						177.62	7
1953			1						199.42	9
1954	69		1						199.12	9
1955	75		1						198.80	9
1956	75	8	2	6					202.69	10
1957	65		1						700.93	18
1958	36	9	4	4					9133.21	26
1959	44	13	4	7					3322.81	26
1960	56	23	7	9					2845.54	29
1961	51	17	9	6	9	51	17		4577.52	31
1962	40	18	12	5	11	44	13		7259.37	39
1963	42	25	17	6	16	41	27		7389.84	50
1964	50	32	19	7	17	49	30		7436.80	52
1965	69	25	23	5	18	69	24		4604.42	55
1966	63	26	26	5	22	56	25		4541.11	65
1967	67	23	30	4	23	67	23		4524.77	71
1968	64	26	29	5	22	66	19		4585.85	78
1969	44	28	30	5	24	41	29		3033.80	75
1970	55	27	31	5	24	51	26		2565.53	87
1971	49	25	46	4	29	51	22		4830.67	76
1972	54	23	47	3	29	57	21		5433.58	77
1973	55	27	43	4	30	51	26		5398.15	76
1974	56	28	41	4	30	61	26		7210.35	77
1975	61	26	42	4	30	63	22		7606.10	76
1976	59	29	42	4	30	56	28		6528.03	67
1977	52	28	45	4	32	51	30		6824.47	73
1978	57	25	43	4	32	54	25		7959.05	71
1979	42	24	44	4	33	46	23		6903.69	75
1980	52	31	43	5	32	52	29		6727.27	79
1981	57	50	43	8	28	50	24		8393.77	86
1982	50	46	48	7	25	42	18		6380.75	91
1983	51	24	52	3	25	55	20		6623.06	90
1984	54	23	51	3	26	56	25		6484.70	99
1985	48	26	42	4	26	52	21		4288.34	89
1986	48	22	51	3	28	46	20		4878.56	81
1987	53	26	49	4	28	64	22		4734.66	82
1988	41	28	56	4	28	38	26		4867.39	86
1989	57	25	68	3	28	61	25		5369.03	95
1990	48	25	67	3	27	54	29		7168.81	95
1991	42	24	58	3	28	42	25		3669.92	88
1992	52	29	67	4	28	49	25		5394.48	89
1993	54	28	69	3	29	59	28		6426.00	94
1994	42	25	71	3	29	45	22		38522.35	93
1995	47	25	70	3	29	53	23		38790.43	90
1996	45	24	66	3	29	51	19		6206.48	88
1997	43	25	57	3	29	46	27		3046.84	80
1998	32	25	54	3	22	30	27		8310.03	77
1999									85.00	1
2000									0.00	0
Years										
1961-98	**51**	**28**		**4**	**1961-98**	**52**	**24**		**7513**	**77**
1961-76	**50**	**28**		**4**	**1961-76**	**51**	**24**		**8918**	**86**
1977-98	**48**	**28**		**4**	**1977-98**	**50**	**24**		**8999**	**86**

Glacier	White		Devon NW		South I.C.	Meighen		Helm		Place		Sentinel		Peyto	Peyto
Country	Canada		Canada		Canada	Canada		Canada		Canada		Canada		Canada	Canada
Geogr.area	Axel H.I		Devon Isl.		Melville Is	Baffin Isl.		Coast Mts., S.		Coast Mts. S.		Coast Mts. S		Rockies N.	Rockies N.
PSFG NR	CD02340		CD 00431		CD01961	CD01335		CD00855		CD01660		CD01915		CD01640	CD01640
Code	515		303		303	303		626		538		530		538	538
Latitude	79°27'N		75°25'N		75°25' N	79°57' N		49°58'N		50°26'N		49°54'N		51°40'N	51°40'N
Longitude	90°40'W		83°15'W		115°01'W	99°08'W		123°00'W		122°36'W		122°59'W		116°32'W	116°32'W
Elev. Max,	1780		1890		715	1267		2150		2610		2105		3185	3185
Elev. Med,	1160		1200		600	600		1900		2089		1850		2635	2635
Elev. Min	80		0		490	70		1770		1860		1660		2125	2125
Length, km	15.4		50		15	56		2.5		4.2		1.9		5.3	5.3
Area, km^2	38.5		1667.6		66	85		0.92		3.45		1.722		11.75	11.75
Aspect	SE/SE		NW/NW					NW/NW		NE/NE		N/NW		NE/NE	NE/NE
Variables	s	bn	s	bn	bn	s	bn	s	bn	s	bn	s	bn	s	bn
1946															
1947															
1948															
1949															
1950															
1951															
1952															
1953															
1954															
1955															
1956															
1957															
1958															
1959															
1960	38.5	-406				85	-750								
1961	38.5	24	1695.1	-197		85	-110								
1962	38.5	-780	1695.1	-359		85	-970								
1963	38.5	-153	1695.1	44	-100	85	-200								
1964	38.5	350	1695.1	125	290	85	360								
1965	38.5	-7	1695.1	64	100	85	60			3.98	-651				
1966	38.5	-21	1695.1	-135	-130	85	-70			3.96	115	1.985	146	13.836	-107
1967	38.5	122	1695.1	-27	160	85	-50			3.957	-1212	1.985	-191	13.836	-804
1968	38.5	-406	1695.1	-175	25	85	50			3.957	-131	1.985	376	13.836	-201
1969	38.5	75	1695.1	-175	25	85	110			3.957	-216	1.985	118	13.836	-617
1970	38.5	-2	1695.1	39	-260	85	-10			3.957	-1510	1.927	-1297	13.836	-1329
1971	38.5	-184	1695.1	-69	-470	85	-420			3.97	-340	1.91	566	13.4	-411
1972	38.5	116	1695.1	102	-390	85	30			3.91	-344	1.9	204	13.4	-250
1973	38.5	192	1695.1	-95	-390	85	30			3.9	-300	1.85	785	13.4	434
1974	38.5	-46	1695.1	-77	-220	85	-30			3.88	-564	1.85	2108	13.4	238
1975	38.5	257	1695.1	-69	-73	85	80			3.86	-240	1.84	880	13.4	-570
1976	38.5	113	1695.1	171	-73	85	80	2.831	568	3.84	877	1.83	1470	13.4	638
1977	38.5	-370	1695.1	-99	-73	85	-240	2.831	-1464	3.82	-1227	1.82	-1329	13.4	-203
1978	38.5	-133	1695.1	27	-73	85	-90	2.831	-783	3.8	-433	1.81	363	13.4	-1060
1979	38.5	-108	1695.1	39	-73	85	-5	2.831	-2301	3.78	-2212	1.8	-1740	13.4	-810
1980	38.5	-178	1695.1	-57	-73	85	-5	2.831	-944	3.76	-923	1.79	272	13.4	-576
1981	38.5	-175	1695.1	-146	-160	85	-170			3.76	-1097	1.769	168	13.35	-1127
1982	38.5	-92	1695.1	-95	-310	85	160	2.831	-347	3.76	-754	1.769	868	13.35	-565
1983	38.5	-82	1695.1	105	-50	85	-250	2.435	-209	3.712	-443	1.769	1201	13.35	-389
1984	38.5	-54	1695.1	-31	50	85	230	2.435	-328	3.697	-341	1.77	854	13.35	-580
1985	38.5	-10	1667.6	-108	-40	85	-30	2.246	-1732	3.697	-1887	1.722	838	13.35	-812
1986	38.5	-259	1667.6	185	230	85	250	2.148	-1333	3.703	-1317	1.764	-372	12.88	-472
1987	38.5	-615	1667.6	44	0	85	-180	1.952	-789	3.668	-903	1.753	98	12.88	-621
1988	38.5	131	1667.6	-216	-570	85	-290	1.456	-559	3.647	-961	1.739	366	12.88	-992
1989	38.5	30	1667.6	-69	-320	85	290	1.411	-1582	3.62	-1010	1.743	-880	12.88	-599
1990	38.5	-447	1667.6	-166	-250	85	-210	0.92	-1790	3.59	-938			12.88	-734
1991	38.5	-179	1667.6	-230	210	85	-220	0.92	-2239	3.56	-990				
1992	38.5	-295	1667.6	96	-290	85	10	0.92	-2798	3.52	-790				
1993	38.5	-480	1667.6	-62	-740	85	-590	0.92	-2342	3.48	-2280			11.75	-1198
1994	38.5	-314	1667.6	-32	-110	85	-200	0.92	-1885	3.45	-2010			11.75	-1268
1995	38.5	-362	1667.6	-147	-470	85	60	0.92	-1465	3.45	-2486			11.75	-280
1996	38.5	38	1667.6	-80	-210	85	190	0.92	211	3.45	-211			11.75	129
1997	38.5	-56	1667.6	-13	10	85	-60	0.92	-1073	3.45	-888			11.75	-818
1998	38.5	-229	1667.6	-276	-780	85	-100	0.92	-2850	3.45	-2450			11.75	-2230
1999	38.5	-494						0.92	1500	3.45	620			11.75	-320
2000															
Years	40	40	38	38	36	39	39	23	23	35	35	24	24	32	32
Average	38.5	-137	1685	-57	-156	85	-84	1.75	-1154	3.73	-870	1.84	245	13.02	-578
Stdev	0	239	13.0	126	250	0	265	0.85	941	0.18	772	0.09	898	0.71	564
Sqrt. Error	0	38	3.60	21	42		42	0.19	201	0.040	132	0.02	183	0.131	101

Blue		S. Cascade		Gulkana		Lemon Creek		Wolverine		Au. Broggbr.		Md. Lovenbreen		Engabr.	
USA		USA		USA		USA		USA		Norway		Norway		Norway	
Olympic Range		N.Cascades		Alaska Range		Juneau Icefield		Kenai Mount.		Svalbard		Svalbard		Svartisen	
US02126		US02013		US00200				US00411		N15504		N15506		N 67011	
528		538		529				538		529		529		438	
47°49'N		48°22'N		63°14'N		59°36N		60°22'N		78° 53'N		78°53'N		66°40'N	
123°41'W		121°03'W		145°28'W		134°36W		148°54'W		11°50'E		12°04'E		13°45'E	
2320		2140		2460		1512		1700		600		650		1594	
2377		1920		1840				1310		260		330		1220	
1280		1630		1165		470		400		60		50		40	
4.2		3.1		8.5		5.6		8		6		4.8		11.5	
4.3		2.03		19.3		11.728		17.24		6.12		5.45		38.02276	
NE/NW		N/N		S/SW				S/S		NW/N		NE/N		N/NW	
s	bn	s	bn	s	bn	s	bn	s	bn	s	bn	s	bn	s	bn
						11.728	-560								
						11.728	-180								
						11.728	1120								
4.2	1390					11.728	-640								
4.2	-1110	2.8	-200			11.728	0								
4.2	-1660	2.8	-3300			11.728	-580								
4.2	-60	2.8	700			11.728	-900								
4.2	-40	2.8	-500			11.728	-820								
4.2	710	2.8	-1100			11.728	-240								
4.2	450	2.8	200			11.728	-690								
4.2	-340	2.8	-1300			11.728	170								
4.2	870	2.8	1200			11.728	1040								
4.2	-320	2.8	-87			11.728	80								
4.2	580	2.8	-1072	19.32	-160	11.728	-490	17.6	-780						
4.2	580	2.8	-507	19.32	20	11.728	-600	17.6	-2180	6.1	-650				
4.2	270	2.8	-54	19.32	-170	11.728	-220	17.6	-880	6.1	-100	5.8	-30		
4.2	950	2.8	-731	19.32	-1020	11.728	210	17.6	-560	6.1	-930	5.8	-840	38.02	-990
4.2	-150	2.8	-1201	19.32	350	11.728	-90	17.6	1540	6.1	-540	5.8	-530	38.04	1017
4.2	1390	2.74	596	19.32	250	11.728	-400	17.6	130	6.1	-580	5.8	-460	38.04	-82
4.2	640	2.73	1451	19.32	-410	11.728	-650	17.6	-1560	6.1	-310	5.8	-220	38.04	2718
4.2	100	2.73	-1037	19.32	470	11.728	-520	17.6	260	6.1	-80	5.8	-20	38.04	789
4.2	2240	2.73	999	19.32	-1200	11.728	-370	17.6	-1650	6.1	-920	5.8	-890	38.04	1602
4.3	910	2.72	-69	19.32	-320	11.728	290	17.6	-220	6.1	-310	5.8	-210	38.02	2413
4.3	1660	2.72	881	19.32	-1040	11.728	-250	17.62	-1210	6.1	-450	5.8	-350	38.02	879
4.3	-1000	2.59	-1301	19.32	-350	11.728	-480	17.62	1390	6.1	-110	5.8	-40	38.02	-507
4.3	750	2.59	-383	19.32	-320	11.728	-800	17.62	460	6.1	-560	5.8	-480	38.02	404
4.3	-910	2.59	-1561	19.32	-660	11.728	-630	17.62	-1580	6.1	-710	5.8	-660	38.02	-507
4.3	-1370	2.55	-1093	19.32	-190	11.728	-270	17.62	2320	6.1	-520	5.8	-430	38.02	980
4.3	-1070	2.545	-840	19.32	-60	11.728	-810	17.24	1620	6	-550	5.8	-460	38.02	840
4.3	990	2.54	80	19.32	-250	11.728	-430	17.24	-340	6	-40	5.8	20	38.02	1060
4.3	1580	2.535	-770	19.32	-130	11.728	-1620	17.24	110	6	-270	5.8	-170	38.02	1050
4.3	730	2.53	120	19.32	-440	11.728	-250	17.24	-370	6	-730	5.8	-680	38.02	-950
4.3	660	2.525	-1200	19.32	570	11.728	330	17.24	420	6	-550	5.8	-480	38.02	252
4.3	-680	2.52	-710	19.32	-60	11.728	-510	17.24	-250	6.1	-320	5.8	-210	38.02	941
4.3	10	2.51	-2560	19.32	-260	11.728	-840	17.24	1340	6.1	220	5.8	240	38.02	-1791
4.3	1010	2.51	-1640	19.32	-350	11.728	110	17.24	2000	6.1	-520	5.8	-490	38.02	3178
4.3	150	2.5	-710	19.32	-850	11.728	-1240	17.24	-1920	6.1	-450	5.8	-240	38.02	849
4.3	-390	2.5	-730	19.32	-810	11.728	-1110	17.24	-2430	6.12	-660	5.8	-510	38.02	689
4.3	10	2.1	-200	19.32	-180	11.728	-380	17.24	-600	6.12	24	5.45	100	38.02	2339
4.3	-390	2.09	-2010	19.32	-340	11.728	-660	17.24	-210	6.12	-200	5.45	-140	38.02	1039
4.3	-550	2.08	-1230	19.32	-1810	11.728	-980	17.24	-560	6.12	-1022	5.45	-880	38.02	417
4.3	-960	2.05	-1020	19.3	-710	11.728	-760	17.24	-690	6.12	-176	5.45	-120	38.02	1734
4.3	780	2.03	-690	19.3	-820	11.728	-1310	17.24	-440	6.12	-641	5.45	-790	38.02	831
4.3	10	2.01	100	19.3	-650	11.728	-1580	17.24	-1180	6.12	-170	5.45	20	38.02	1223
4.3	310	1.99	630	19.3	-1830	11.728	-1810	17.24	-2530	6.12	-620	5.45	-430	38.02	160
		1.97	-1860	19.3	-750	11.728	-1460	17.24	530	6.12	-860	5.45	-590	38.02	779
		1.97	1020	19.3	-1240			17.24	-850	6.12	-360	5.45	-340	38.02	-30
42	42	43	43	34	34	46	46	34	34	33	33	32	32	31	31
4.25	208	2.54	-551	19.32	-462	11.73	-495	17.40	-320	6.091	-444	5.70	-353	38.02	752
0.05	927	0.24	990	0.00	544	0.00	605	0.19	1263	0.04	302	0.16	303	0.01	1090
0.008	178	0.038	153	0.00	96	0.00	89	0.03	220	0.01	53	0.03	54	0.00	199

Alfotbreen		Hardangerjokulen		Storbreen		Hellstugubr.		Grasubr.		Nigardsbr.		Storglac.	Storglac.	Sarennes	
Norway		Norway		Norway		Norway		Norway		Norway		Sweden	Sweden		
Alfotbreen		SW. Scand.		Jotunheimen		Jotunheimen		Jotunheimen		Jostedal		Kebnekaise	Kebnekaise	Fr. Alps	
N36204		N22303		N00541		N00511		N00547		N31014		S00778	S00778	F00029	
436		438		526		518		676		438		528	528	640	
61°45'N		60°32'N		61°34'N		61°34'N		61°39'N		61°43'N		67°54'N	67°54'N	45°07'N	
5°39'E		7°22'E		8°08'E		8°26'E		8°36'E		7°08'E		18°34'E	18°34'E	6°10'E	
1380		1850		1970		2130		2300		1950		1828	1828	3190	
1230		1740		1440		1900		2060		1618				3000	
890		1050		1380		1470		1850		355		1125	1125	2830	
2.9		8.1		2.9		3.4		2.3		9.6		3.7	3.7	1.5	
4.36		17.1		5.35		2.97		2.36		47.8		3.24	3.24	0.50	
NE/NE		W/W		NE/NE		N/N		NE/E		SE/SE		E/E	E/E	S/S	
s	bn	s	bn	s	bn	s	bn	s	bn	s	bn	s	bn	s	bn
												3.1	-1130		
												3.1	-2070		
												3.1	0		
				5.42	200							3.1	910	0.83	-2990
				5.42	-290							3.1	-1290	0.83	-1620
				5.42	-540							3.1	-640	0.83	200
				5.42	310							3.1	-160	0.83	-1620
				5.42	-850							3.1	-800	0.83	-640
				5.42	-770							3.1	-970	0.83	-550
				5.42	-490							3.1	-160	0.83	660
				5.42	-170							3.1	-480	0.83	-600
				5.42	50							3.1	-330	0.83	-520
				5.42	-80							3.1	-650	0.83	-670
				5.42	-1280							3.1	-970	0.83	-1260
				5.42	-1090							3.1	-1610	0.83	120
				5.42	-520							3.1	-1090	0.83	-390
				5.42	720	3.38	780	2.386	-710	42.19	2250	3.1	330	0.83	-910
4.669	-1100	17.646	-1400	5.41	-1180	3.38	-980	2.386	-320	40.86	-220	3.09	-200	0.83	190
4.69	280	17.646	540	5.41	210	3.38	-120	2.386	408	40.86	945	3.08	480	0.83	-1830
4.669	494	17.646	510	5.4	340	3.38	515	2.386	-285	40.86	903	3.07	410	0.83	30
4.69	-1557	17.6	-640	5.4	-610	3.38	-665	2.386	711	47.03	-922	3.07	-530	0.83	420
4.69	1310	17.549	1190	5.39	720	3.38	558	2.527	-80	47.03	2156	3.07	-230	0.83	-410
4.86	990	17.553	530	5.39	50	3.38	-111	2.527	-1359	47.03	221	3.07	-100	0.83	340
4.86	-2104	17.179	-1900	5.38	-1420	3.38	-1279	2.527	-664	46.4	-1318	3.07	-1040	0.83	-360
4.86	-1278	17.398	-600	5.38	-720	3.38	-1007	2.52	-469	46.56	-560	3.07	-1520	0.83	-410
4.86	935	17.81	702	5.37	180	3.27	-142	2.51	-644	46.61	827	3.07	-196	0.83	-1100
4.81	115	17.81	-70	5.37	-310	3.32	-496	2.49	-891	47.21	-145	3.07	-1058	0.83	-370
4.81	2182	17.76	846	5.36	80	3.34	-221	2.47	346	48.2	1110	3.07	30	0.83	-870
4.81	1026	17.71	410	5.36	240	3.31	238	2.45	-948	48.2	472	3.07	-350	0.83	-1600
4.81	1210	17.66	150	5.35	-150	3.31	-369	2.43	-1002	48.2	275	3.07	1152	0.83	110
4.786	1524	17.61	150	5.35	-90	3.293	-751	2.41	-389	48.2	401	3.03	270	0.8	-2070
4.786	-560	17.56	-720	5.34	-540	3.293	-693	2.39	-218	48.2	-777	2.999	200	0.8	990
4.815	-509	17.51	-300	5.34	-440	3.293	-565	2.37	42	48.2	-128	2.995	-80	0.78	550
4.815	-130	17.46	300	5.33	100	3.293	-34	2.34	-895	48.2	712	2.99	-220	0.76	-110
4.815	-610	17.41	-1400	5.33	-1310	3.293	-1240	2.31	-190	48.2	-1222	2.985	-1190	0.74	320
4.815	220	17.36	850	5.32	-100	3.27	-330	2.28	-510	48.2	310	2.981	-180	0.72	40
4.815	-130	17.31	-700	5.32	-470	3.25	-350	2.26	-40	48.2	-420	2.981	325	0.7	-100
4.815	1600	17.26	1700	5.31	200	3.23	170	2.22	-370	48.2	1090	2.981	267	0.68	-70
4.815	1320	17.21	-100	5.31	-300	3.21	-510	2.2	0	48.2	340	2.981	120	0.66	-40
4.815	-560	17.16	-520	5.3	-400	3.19	-290	2.21	-765	48.2	-100	2.981	-612	0.64	-1210
4.815	-413	17.155	-101	5.29	-320	3.16	-494	2.23	708	47.82	-102	3.035	-79	0.62	-1790
4.815	2070	17.157	936	5.28	300	3.13	457	2.24	-585	47.82	1479	3.035	474	0.6	-920
4.815	-2480	17.16	-1521	5.27	-950	3.1	-1034	2.25	446	47.82	-896	3.035	-865	0.58	-690
4.851	2242	17.164	2111	5.26	1200	3.07	720	2.26	726	47.82	3196	3.035	1223	0.56	-2590
4.851	1772	17.168	1924	5.26	1249	3.04	660	2.27	-530	47.82	1763	3.035	591	0.54	-2140
4.851	775	17.172	-96	5.26	-145	3.01	-459	2.28	-93	47.82	203	3.02	168	0.5	-1200
4.851	2092	17.177	1797	5.26	86	2.981	139	2.29	415	47.82	1602	2.93	947	0.5	-1310
4.851	2101	17.160	1910	5.26	757	2.981	296	2.3	1	47.82	1850	3.134	1044	0.5	-1200
4.851	782	17.140	169	5.26	-245	2.97	65	2.31	-114	47.82	569	3.087	-368	0.5	-630
4.851	1109	17.120	289	5.26	-155	2.97	-123	2.32	-446	47.82	1187	3.087	699	0.5	760
4.851	-1896	17.110	-1081	5.26	-1028	2.97	-737	2.33	-1687	47.82	-409	3.24	-360	0.5	0
4.358	77	17.1100	-470	5.26	-1029	2.97	-1654	2.34	110	47.82	31	3.24	-630	0.5	-500
4.360	110	17.100	690	5.35	220	2.98	-20	2.36	-286	47.80	970	3.24	-520	0.5	-2340
4.360	60	17.100	50	5.35	-240	2.98	-420	2.36	-390	47.80	170	3.24	-180	0.5	-1190
37	37	37	37	51	51	38	38	38	38	38	38	54	54	51	51
4.77	353	17.37	166	5.35	-216	3.21	-276	2.36	-289	47.07	469	3.07	-245	0.73	-668
0.12	1285	0.24	1018	0.06	611	0.15	592	0.10	560	2.14	1025	0.06	730	0.04	909
0.02	214	0.04	170	0.01	86	0.03	97	0.03	92	0.35	168	0.01	100	0.01	129

St. Sorlin		Gries		Silvretta		Gr. Aletch		Hintereis.		Kesselwand.		Vernagtf.		Sonnblick K.	
France		Switzerland		Switzerland		Switzerland		Austria		Austria		Austria		Austria	
Fr. Alps		Alps		Alps		Alps		Otzt. Alps		Otzt. Alps		Otztaler Alps		Sonnblick	
F00015		CH00003		CH00090		CH00005		A00209		A00226		A00211		A 0601A	
529		534		626		519		528		638		626		606	
45°11'N		46°26'N		46°51'N		46°30'N		46°48'N		46°50'N		46°53'N		47°08'N	
6°10'E		8°20'E		10°05'E		8°02'E		10°46'E		10°48'E		10°49'E		12°36'E	
3463	FoG, v.7	3373		3160		4160		3710		3490		3627		3050	
2900	1988	2920		2780		3140		3050		3180		3187		2780	
2650	Tab.CC	2389		2439		1556		2426		2720		2748		2500	
2.9		6.2		3.5		24.7		7.13		4.2		3.3		1.5	
3		6.194		3.15		126.99		8.3		4.24		9.07		1.5	
N/N		NE/NE		NW/W		SE/S		E/NE		SE/E		S/SE		NE/E	
s	bn	s	bn	s	bn	s	bn	s	bn	s	bn	s	bn	s	bn
						132.62	-56								
						132.35	-2399								
						132.08	684								
						131.81	-1810								
						131.54	-1240								
						131.268	200								
						131.00	-710								
						130.83	-320	10.24	-540						
						130.57	60	10.2	-286						
						130.3	620	10.15	76						
						130.03	415	10.11	-275						
3	-360					129.76	-10	10.06	-189						
3	-220					129.71	-650	10.02	-981	4.06	-382				
3	-1180					129.68	-1070	9.97	-763	4.06	-372			1.77	-374
3	130			3.15	544	129.62	410	9.92	-63	4.06	118			1.77	249
3	-280			3.15	387	129.57	-180	9.88	-205	4.06	271			1.75	148
3	-520	6.644	-786	3.15	-488	129.51	-410	9.2	-696	4.06	-416			1.72	54
3	110	6.644	270	3.15	-919	129.47	-120	9.17	-603	4.06	-406			1.7	-1426
3	-1460	6.644	-882	3.15	-1312	129.4	-1270	9.061	-1245	4.05	-537			1.62	-928
3	530	6.644	770	3.15	1388	129.24	1180	9.051	925	4.04	1040	9.555	751	1.76	1976
3	690	6.644	46	3.15	1284	129.05	620	9.046	344	4.02	590	9.555	932	1.76	736
3	-260	6.644	409	3.15	411	128.96	300	9.032	20	3.935	299	9.554	83	1.76	160
3	960	6.644	619	3.15	704	128.94	670	9.032	338	3.935	452	9.554	301	1.76	234
3	450	6.644	468	3.15	-181	128.89	310	9.032	-431	3.935	-154	9.46	-313	1.76	-246
3	600	6.644	-506	3.15	186	128.83	-120	9.032	-553	3.935	5	9.46	-225	1.76	144
3	-1310	6.644	-981	3.15	-833	128.74	-710	9.03	-600	3.94	43	9.46	-483	1.71	-386
3	-270	6.644	453	3.15	-199	128.67	-220	9.03	-73	3.94	367	9.46	138	1.71	129
3	-640	6.644	-1067	3.15	-1212	128.56	-530	9.03	-1230	3.94	-418	9.3	-460	1.71	-721
3	-670	6.644	-185	3.15	745	128.46	70	9.03	55	3.94	552	9.3	240	1.75	568
3	-810	6.644	266	3.15	792	128.45	560	9.03	65	3.94	339	9.3	170	1.75	397
3	-1390	6.644	-1060	3.15	-509	128.42	-688	8.955	-314	4.28	-40	9.301	76	1.758	79
3	1200	6.644	1246	3.15	620	128.36	1477	8.881	761	4.28	700	9.301	352	1.758	148
3	1020	6.644	928	3.15	926	128.28	1805	8.881	411	4.38	420	9.55	309	1.758	833
3	200	6.333	-863	3.15	-59	128.22	162	9.079	-219	4.42	70	9.55	44	1.772	224
3	1040	6.333	665	3.15	1030	128.2	1534	9.079	-50	4.44	160	9.55	139	1.76	834
3	40	6.333	-123	3.15	512	128.14	1276	9.075	-173	4.45	161	9.55	-55	1.78	414
3	-340	6.333	-890	3.15	-211	128.11	346	9.074	-1240	4.45	-620	9.35	-845	1.78	-1376
3	-170	6.333	-557	3.15	-547	127.86	149	9.072	-581	4.45	-182	9.35	-535	1.71	-535
3	610	6.333	-8	3.15	280	127.74	797	9.072	32	4.45	178	9.344	24	1.78	338
3	-470	6.333	-259	3.15	509	127.62	166	9.07	-574	4.45	-8	9.344	-112	1.78	-281
3	-1150	6.333	-535	3.15	-290	127.56	-152	9.06	-731	4.444	-496	9.343	-796	1.74	-1432
3	-640	6.333	-659	3.15	-369	127.5	40	9.054	-717	4.441	-242	9.308	-289	1.74	-525
3	10	6.333	-878	3.15	-604	127.46	-345	9.032	-946	4.441	-265	9.052	-500	1.71	-711
3	-1790	6.333	-1063	3.15	-251	127.43	-190	8.990	-636	4.441	-150	9.052	-315	1.72	252
3	-1290	6.333	-1743	3.15	-576	127.38	-1029	8.984	-996	4.434	-243	9.052	-571	1.72	-561
3	-1150	6.194	-1097	3.15	-1178	127.35	-616	8.884	-1325	4.432	-847	9.088	-1079	1.57	-818
3	-690	6.194	-724	3.15	-826	127.32	-674	8.878	-1119	4.430	-414	9.088	-858	1.55	-2092
3	-780	6.194	-32	3.15	-229	127.30	92	8.754	-574	4.406	-74	9.088	-472	1.54	-315
3	-340	6.194	-494	3.15	-668	127.28	-449	8.737	-1107	4.373	-828	9.088	-1028	1.50	-1385
3	750	6.194	158	3.15	204	126.99	-965	8.725	-461	4.291	144	9.088	-398	1.50	142
3	-480	6.194	-230	3.15	-70			8.72	-826	4.29	-110	9.09	-413	1.50	-246
3	-130	6.194	-270	3.15	540			8.70	-591	4.26	9	9.07	-487	1.50	314
3	-2200	6.194	-1660	3.15	-1530			8.30	-1230	4.24	-604	9.07	-1003	1.50	-1695
3	-1040	6.194	-580	3.15	520			8.30	-861	4.24	-12	9.07	-108	1.50	-652
43	43	38	38	40	40	50	50	47	47	42	42	35	35	41	41
3.00	-318	6.44	-311	3.15	-37	129.05	-60	9.16	-446	4.22	-45	9.31	-222	1.69	-203
0.00	810	0.18	717	0.00	736	1.47	822	0.47	536	0.21	418	0.19	489	0.10	797
0.00	125	0.03	118	0.00	118	0.21	116	0.07	79	0.03	65	0.03	84	0.02	126

Careser		Djankuat		M.Aktru		Abramov		Ts. Tuyuksu		Kara-Batkak	Kara-Batkak	Urumqihe S. No 1			
Italy		Russia		Russia		Kirghizstan		Kazakhstan		Kirgizstan	Kirgizstan	China			
Ortles-Cevedale		C. Caucasus		Altaiy		Pamir		Tien Shan		Tien Shan	Tien Shan	E.Tien Shan			
I00701		SU3010		SU07100		SU04101		SU05075		SU05080	SU05080	CN0010			
638		528		538		528		536		538	538	622			
46°27'N		43°12'N		50°05'N		39°40'N		43°00'N		42°06'N	42°06'N	43°05'N			
10°42'E		42°46'E		87°45'E		71°30'E		77°06'E		78°18'E	78°18'E	86°49'E			
3350		3798		3714		4960		4219		4829	4829	4486			
3092		3280		3200		4200		3770		3886	3886	4040			
2857		2700		2229		3620		3414		3293	3293	3736			
2.2		4.2		4.22		9.4		3.1		3.55	3.55	2.2		bn	bn
3.857		3.1		2.73		22.503		2.66		4.56	4.56	1.84		Number	
S/S		N/NW		E/N		N/N		N/N		N/N	N/N	NE/NE		of	
s	bn	s	bn	s	bn, ba	s	bn	s	ba, bn	s	bn	s	ba	Glaciers	Average
														2	-593
														2	-2235
														2	342
														4	-923
														4	-1110
														4	-195
														4	-545
														6	-618
														6	-449
														6	304
														7	-51
								3.23	-150	4.1	-31			11	-259
								3.23	330	4.1	62			12	-732
								3.23	-420	4.1	-344	1.95	87	14	-586
								3.23	-100	4.1	-291	1.95	-188	17	-252
								3.22	-560	4.1	-806	1.95	-33	18	-232
				2.88	-400			3.21	-690	4.1	-86	1.95	-167	23	-187
				2.88	-340			3.21	440	4.1	-40	1.95	235	26	-380
				2.88	-280			3.21	520	4.1	144	1.95	2	26	-81
				2.88	-560			3.17	-50	4.1	-41	1.95	375	28	373
				2.88	-380			3.17	40	4.1	-156	1.95	-374	32	-48
4.705	-386			2.88	290			3.17	230	4.1	10	1.95	-69	34	40
4.725	247	3.126	154	2.88	-20	22.503	-384	3.17	-780	4.1	-652	1.95	-457	37	35
4.682	-5	3.126	-977	2.88	290	22.503	1349	3.17	210	4.1	0	1.95	148	38	-362
4.69	-631	3.126	486	2.88	120	22.503	312	3.17	110	4.1	-182	1.95	-313	38	-292
4.69	-650	3.126	-40	2.88	250	22.503	-793	3.14	-360	4.1	148	1.95	102	38	-172
4.69	400	3.126	-1032	2.88	70	22.503	328	3.14	130	4.1	53	1.95	262	38	-41
4.69	-1276	3.126	-107	2.88	100	22.503	-818	3.14	-290	4.1	-753	1.95	-707	38	-158
4.69	-319	3.126	397	2.88	-1470	22.503	-311	3.14	-620	4.1	-51	1.95	-24	38	-8
4.68	145	3.126	-652	2.88	400	22.503	-1034	3.14	-450	4.56	-475	1.87	306	38	109
4.68	-268	3.126	327	2.878	680	22.503	-903	3.14	-720	4.56	-841	1.87	29	39	-65
4.68	988	3.126	-129	2.876	490	22.503	-1448	3.1	-1100	4.56	-864	1.87	180	39	-131
4.68	79	3.126	561	2.874	-410	22.503	-1313	3.1	-1480	4.56	-1176	1.87	-110	39	-45
4.829	-182	3.126	-167	2.872	-580	22.503	-387	3.1	-520	4.56	-501	1.87	-76	39	-450
4.829	12	3.126	531	2.87	110	22.503	-1081	3.02	-630	4.56	-364	1.86	-337	39	-162
4.829	-839	3.126	-914	2.869	-310	22.503	129	3.02	110	4.56	-447	1.86	-655	38	-121
4.829	-1678	3.126	372	2.868	-660	22.503	-774	3.02	-690	4.56	-784	1.85	-49	39	-292
4.829	-787	3.126	-1014	2.867	150	22.503	-507	3.02	-550	4.56	-948	1.85	100	39	-58
4.829	-591	3.126	173	2.866	310	22.503	-971	3.02	-1250	4.56	-1572	1.85	-83	39	-94
4.829	-758	3.126	-423	2.865	240	22.503	-855	3.02	-550	4.56	-1292	1.85	-612	39	-347
4.829	-1138	3.126	-545	2.864	40	22.503	-575	2.86	-520	4.56	-392	1.84	-669	39	-432
4.829	-1645	3.126	1507	2.863	170	22.503	170	2.86	-340	4.56	-682	1.84	-175	39	-174
4.829	-1056	3.126	369	2.862	470	22.503	-52	2.8	-610	4.56	-456	1.84	-644	39	-359
4.829	-817	3.126	-8	2.861	220	22.503	-286	2.75	-460	4.56	-396	1.84	105	39	-141
3.857	-1578	3.126	298	2.730	130	22.503	-539	2.75	-960	4.56	-778	1.84	52	38	-410
3.857	-1734	3.126	-358	2.730	-540	22.503	-540	2.72	-1100	4.56	-398	1.84	-706	37	-456
3.857	-1199	3.126	-171	2.730	-170	22.503	312	2.68	-240	4.56	-352	1.84	23	37	-281
3.857	-303	3.100	1077	2.730	340	22.503	267	2.68	602	4.56	-185	1.84	-29	38	-215
3.857	-1743	3.100	-867	2.730	-150	22.503	-803	2.67	-443	4.56	-505	1.84	-378	38	-513
3.857	-1081	3.100	10	2.730	180	22.503	-780	2.66	-587	4.56	-515	1.84	-228	38	-219
3.857	-1320	3.100	-172	2.730	-130	22.503	-350	2.66	-456	4.56	-373	1.84	42	37	-392
3.857	-920	3.100	240	2.730	-50	22.503	-1730	2.66	-1467	4.56	-648	1.84	-853	37	-517
3.857	-2240	3.100	-1000	2.730	-1230	22.503	210	2.66	-359			1.84	-790	35	-847
3.857	-1800	3.100	-560	2.730	-110			2.66	-230			1.84	-791	30	-295
33	33	32	32	38	38	31	31	43	43	41	41	41	41	period	AVERAGE
4.48	-760	3.12	-82	2.84	-72	22.503	-457	3.00	-396	4.36	-438	1.89	-182	1961-98	-214
0.38	736	0.01	603	0.06	449	0.00	640	0.20	505	0.23	399	0.05	330	1961-76	-92
0.07	130	0.00	108	0.01	76	0.00	115	0.03	79	0.04	62	0.01	52	1977-98	-302

bn	bn	bn	bn	bn
Min	Max	Median	Stdev	Sqrt. Error
-1130	-56	-593	759	537
-2399	-2070	-2235	233	165
0	684	342	484	342
-2990	910	-805	1796	898
-1620	-290	-1265	572	286
-640	200	-170	458	229
-1620	310	-435	829	415
-850	-320	-600	193	79
-970	60	-418	385	157
-490	1120	348	598	244
-640	1390	-275	729	276
-520	50	-170	332	58
-3300	330	-615	959	277
-1280	700	-592	579	155
-1610	544	-100	562	136
-1100	710	-201	475	112
-970	2250	-410	734	153
-1426	440	-210	558	109
-1830	1200	177	845	166
-651	1976	358	599	113
-1557	1284	-85	636	112
-2090	2156	50	739	125
-1359	990	25	494	81
-2104	1349	-231	732	118
-1520	1510	-243	670	108
-1310	1390	-268	585	95
-1530	2718	-72	694	112
-1276	2182	-164	721	117
-1600	2240	-38	888	143
-1034	2413	95	659	107
-2070	1524	-57	810	124
-1464	1477	-166	821	133
-1480	1805	-100	698	113
-2301	712	-219	674	108
-1400	2330	-178	852	137
-1127	1600	-153	618	100
-1678	1060	-330	582	93
-1620	1700	-170	733	117
-1572	1320	-31	580	93
-1887	838	-400	617	99
-1790	941	-413	547	88
-2560	2070	-216	890	146
-2480	3178	-540	951	152
-2590	3196	-246	1125	184
-2470	1924	-561	1008	168
-2239	2339	-369	765	132
-2798	2092	-290	987	170
-2342	2101	-229	1009	167
-2010	1734	-449	706	117
-2486	1187	-280	750	123
-1896	1223	-238	609	102
-2480	630	-479	741	122
-2850	970	-780	1003	180
-1800	1500	-330	667	133
AVERAGE	AVERAGE	AVERAGE	AVERAGE	AVERAGE
-1814	1652	-213	740	125
-1464	1646	-80	677	119
-2069	1656	-311	785	129