

Name: _____ Section: _____ Date: _____

EXERCISE F: CLIMATE CLASSIFICATION

REFERENCE: Textbook: Geosystems: An Introduction to Physical Geography Ch.10 Global Climate Systems. Website references are within the text, or on the class website under Lab B, List of Websites.

PURPOSE: The purpose of climate classification is to bring order to the seemingly unending variety of climatic conditions on earth. There have been many attempts to classify climates and there are several good methods in use today. In this lab, we examine and use the Köppen System of Climate Classification. Biome classifications deal with the flora and fauna that live in given regions, but are inextricably linked to climate classes. By knowing one, one can often predict the general characteristics of the other one. Plants and animals have physical and behavioral characteristics that allow them to survive in their biomes and Köppen classes.

KEY TERMS AND CONCEPTS:

GACM	Biome	Structure
Species diversity	Adaptations	Biodiversity
Hotspots		

Climatic Groups:

A Tropical Rainy Climates
B Dry Climates
C Humid Mesothermal (Warm Temperate Rainy) Climates
D Humid Microthermal (Cold-Snowy Forest) Climates
E Polar Climates
H Highland Climates (H is not a climate group in itself but is a miscellaneous category for highland areas where climate conditions change abruptly with elevation differences.)

Climatic Types (some additional types of lesser significance are not shown here)

Af	Tropical Rainforest	Csa/b	Mediterranean
Am	Tropical Monsoon	Cwa/b	Subtropical Monsoon
Aw	Tropical Savanna	Dfa/Dwa	Humid Continental-Long Summer
BWh	Low Latitude Desert	Dfb/Dwb	Humid Continental-Short Summer
BWk	Mid Latitude Desert	Dfc/Dwc	Subarctic
BSh	Low Latitude Steppe	Dfd/Dwd	Subarctic
BSk	Mid Latitude Steppe	ET	Tundra
Cfa	Humid Subtropical	EF	Ice Cap
Cfb/c	Marine West Coast		

Part I: Köppen Climate Classification

1) Go to http://www.uwmc.uwc.edu/geography/100/Koppen_web/koppen_map.htm (This image does not appear correctly using Internet Explorer). Here is a fuzzy graphic of the Köppen Climate classes. Look at the information that is given to you at the “X” marks from around the world. These climographs are like the one we created in Lab B for Colorado Springs and San Francisco.

What two sources of information is the Köppen Climate Classification based on?

- 1
- 2

2) Go to www.harpercollege.edu/mhealy/geogres/maps/worldgif/wwclima.gif . Here is a map of the globe where you can isolate the Köppen climate classification regions. Change the last letter of the website (...wwclima, ...wwclimb, ...wwclimbc, ...wwclimbd, ...wwclimbh) to see the five regions (there is no graph for the polar region, “p”). How many Köppen classes have you been to?

3) Go to www.uwmc.uwc.edu/geography/100/climlab.htm. Under the Climate data heading, check out the links to climographs from different continents. Using the Climate Classification Procedure pages from the class website, (under Lab F, List of Websites, Climate Classification Procedure) identify the Köppen classification of four different towns.

Continent	Town	Köppen climate class
1		
2		
3		
4		

4) Go back to www.harpercollege.edu/mhealy/geogres/maps/worldgif/wwclima.gif. Now color/shade in the map on page 40 of this lab one style for all three A regions and one for both B regions.

Part II: Interaction of Climate Classes

5) How can the distribution of the A and B regions around the globe be explained by the general atmospheric circulation model (GACM)? A figure of the GACM is on page 156 of your textbook, or go to http://www.uwmc.uwc.edu/geography/100/koppen_web/koppen_climates_crosssection.htm. Be sure to include moisture levels, temperatures, pressure systems, and positions on the Earth in your explanation.

6) This connection between the GACM and Köppen classes is not readily apparent in all areas of the world. For which continent is the relationship between GACM and the Köppen climates most clearly shown? Maybe the first site, http://www.uwmc.uwc.edu/geography/100/Koppen_web/koppen_map.htm is most useful for this question, or page 284-5 in the textbook.

7) Look at the stylized continent on the class website (LabF, List of Websites, Stylized Continent—page 41). This is how Köppen classes would be arranged on a “perfect” continent. No continent is actually arranged this simply, though. What aspects of other continents interfere with the pretty picture of the GACM directly creating the climate of the Earth? OR What other factors in addition to the GACM are responsible for a region’s climate?

- 1.
- 2.
- 3.

Part III: Biomes

8) Go to www.runet.edu/~swoodwar/CLASSES/GEOG235/biomes/main.html. Scroll down to The Biomes heading. According to this website, what five biomes exist on Africa?

- 1
- 2
- 3
- 4
- 5

9) Which of these biomes is the most structurally diverse?

10) Which is has the highest ungulate (hoofed mammal) species diversity?

Part IV: Ecological Adaptations

11) Adaptations are changes in behavior and physical structure of organisms that allow them to survive within their environments. What are some adaptations that plants and animals typically have in the African tropical broadleaf forest biome?

(www.runet.edu/~swoodwar/CLASSES/GEOG235/biomes/main.html)

- 1
- 2

3

12) Use <http://www.museum.state.il.us/exhibits/midewin/plantadapt.html> to name three adaptations that plants or animals exhibit in the prairie of North America.

1

2

3

Part V: Real-World Biodiversity Issues

13) Now go to www.biodiversityhotspots.org/xp/Hotspots and chose a biodiversity hotspot. Click on the map that is on the right side in the website for a more in depth question.

What are three reasons why this area and its species are threatened?

1

2

3