

CURRICULUM VITAE

JEFFREY P. THAYER

ASSOCIATE PROFESSOR
AEROSPACE ENGINEERING SCIENCES DEPARTMENT
COLORADO CENTER FOR ASTRODYNAMICS RESEARCH
UNIVERSITY OF COLORADO
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EDUCATION

1986 - 1990 University of Michigan
Ph.D. in Atmospheric and Space Science

- Thesis Title: Neutral Wind Vortices in the High-Latitude Thermosphere
- Graduate Advisor: Prof. Timothy L. Killeen

1984 - 1986 University of Michigan
M.S. in Atmospheric Science

1980 - 1984 State University of New York, College at Oneonta
B.S. in Meteorology, magna cum laude

PROFESSIONAL EXPERIENCE

2009 - present University of Colorado, Boulder, CO
Associate Professor (Tenured), Aerospace Engineering Sciences Department

2004 - 2009 University of Colorado, Boulder, CO
Associate Professor (Tenure-Track), Aerospace Engineering Sciences Department

1995 - 2004 SRI International, Menlo Park, CA
Senior Research Physicist

1990 - 1994 SRI International, Menlo Park, CA
Research Physicist

1984 - 1990 University of Michigan Ann Arbor, MI
Graduate Research Assistant

Developed remote sensing techniques and numerical tools to study geophysical fluid dynamics in the high latitude thermosphere. These tools included Fabry-Perot observations from the Dynamics Explorer-2 spacecraft and from groundbased instrumentation in Thule and Sondrestrom Greenland; numerical simulations using the NCAR TIGCM; and the development of a vector spherical harmonic neutral wind model.

PUBLICATIONS AND PRESENTATIONS

70+ Scientific publications in professional journals, such as, Journal of Geophysical Research (Space Physics and Atmospheres), Geophysical Research Letters, Optical Engineering, Journal of Atmospheric and Solar-Terrestrial Physics. Preprints available upon request

30+ Invited talks at professional meetings and colloquia.

100+ Contributed talks at professional meetings.

RECENT PROFESSIONAL SERVICE ACTIVITIES

2010: Member of the NRC Atmosphere-Ionosphere-Magnetosphere committee for the Decadal Survey for Space Science

2007 - 2010: Chair of the NSF CEDAR Science Steering Committee

2008 - 2009: Organizing committee for the Ionosphere – Thermosphere – Mesosphere Research Program

2007 – 2009: Guest Editor for the Journal of Atmospheric and Solar-Terrestrial Physics

2006-2007: Co-chair of the Greenland Space Science Symposium

2005 – 2007: NSF CEDAR Science Steering Committee Member

2004 – 2006: Guest editor for the Journal of Atmospheric and Solar-Terrestrial Physics

2003 – 2005: Vice-chair of the URSI Commission G working group on incoherent scatter radar

2003 – 2005: NASA Geospace Mission and Operations Working Group

1999: NASA Sun-Earth Connections Roadmap Team Member

1998 – 2003: NASA Science and Technology Definition Team for Solar-Terrestrial Probe Geospace Electrodynamics Connections Mission

1998 – 2003: AGU Committee on Atmospheric and Space Electricity

1997 – 2002: NSF CEDAR Community Representative for the NASA TIMED mission

1997 – 2000: AMS Committee on Laser Atmospheric Studies

RECENT PROFESSIONAL AWARDS AND HONORS

2010 – University of Colorado Provost's Faculty Achievement Award

2005 – University of Michigan Alumni Merit Award

2005 – NASA Group Achievement Award

2004 – SRI Presidential Achievement Award

2000 – NASA Sun-Earth Connections Group Achievement Award

PROFESSIONAL MEMBERSHIPS

American Geophysical Union

Optical Society of America

American Institute of Aeronautics and Astronautics

Institute of Electrical and Electronics Engineers

Peer-reviewed journal articles*

*Authors that are graduate students supported and advised by Prof. Thayer are indicated in Bold and postdoctoral authors supported and advised by Prof. Thayer are indicated by the ψ symbol in superscript.

1. **Neely, R. R.** and J. P. Thayer (2010), Raman Profiling and Balloon Validation of Tropospheric Water Vapor in Kangerlussuaq, Greenland, Journal of Atmospheric and Oceanic Technology, in submission.
2. **Mitchell, S.**, J. P. Thayer, M. Hayman (2010), Polarization Lidar for Shallow Water Depth Measurement, Applied Optics, 49(36), 20 Dec 2010.
3. Thayer, J. P., **K. Greer**, and V. L. Harvey (2010), Front-like behavior in the Arctic wintertime upper stratosphere and lower mesosphere, J. Geophys. Res., 115, doi:10.1029/2010JD014278.
4. **Hayman, M.** and J. P. Thayer, (2010), Lidar polarization measurements of PMCs, J. Atmos. Solar-Terr. Phys., doi:10.1016/j.jastp.2010.08.007.
5. **Reimuller, J.D.**, Thayer, J.P., Baumgarten, G., Chandran, A., Hulley, B., Rusch, D. , Nielsen K., Lumpe, J. (2010), Synchronized Imagery of Noctilucent Clouds at the Day-Night Terminator using Airborne and Spaceborne Platforms, J. Atmos. Solar-Terr. Phys., in press.
6. Lei, J., J. P. Thayer, W. Wang, and R. L. McPherron (2010), Impact of CIR Storms on Thermosphere Density Variability during the Solar Minimum of 2008, Solar Physics, DOI 10.1007/s11207-010-9563-y.
7. Lei, J., J. P. Thayer, A. G. Burns, G. Lu, and Y. Deng (2010), Wind and temperature effects on thermosphere mass density response to the November 2004 geomagnetic storm, J. Geophys. Res., 115, A05303, doi:10.1029/2009JA014754.
8. Lei, J., J. P. Thayer, and J. M. Forbes (2010), Longitudinal and geomagnetic activity modulation of the equatorial thermosphere anomaly, J. Geophys. Res., 115, A08311,

doi:10.1029/2009JA015177.

9. Pedatella, N. M., J. Lei, J. P. Thayer, and J. M. Forbes (2010), Ionosphere response to recurrent geomagnetic activity: Local time dependency, *J. Geophys. Res.*, 115, A02301, doi:10.1029/2009JA014712.
10. Kelley, M. C., M. J. Nicolls, R. H. Varney, R. L. Collins, R. Doe, J. M. C. Plane, J. Thayer, M. Taylor, B. Thurairajah, and K. Mizutani (2010), Radar, lidar, and optical observations in the polar summer mesosphere shortly after a space shuttle launch, *J. Geophys. Res.*, 115, A05304, doi:10.1029/2009JA014938.
11. **Brower, L.**, J. P. Thayer, and J. St.-Maurice, Frictionally heated electrons in the high-latitude D region, *J. Geophys. Res.*, 114, A12302, doi:10.1029/2009JA014421, 2009.
12. Chang, L. C., J. P. Thayer, J. Lei, and S. E. Palo, Isolation of the global MLT thermal response to recurrent geomagnetic activity, *Geophys. Res. Lett.*, 36, L15813, doi:10.1029/2009GL039305, 2009.
13. Chu, X., C. Yamashita, P. J. Espy, G. J. Nott, E. J. Jensen, H. Liu, W. Huang, J. P. Thayer, Responses of Polar Mesospheric Cloud Brightness to Stratospheric Gravity Waves at the South Pole and Rothera, Antarctica, *J. Atmos. Solar-Terr. Phys.*, 71, 434-445, 2009.
14. **Hayman, M.** and J. P. Thayer, Explicit description of polarization coupling in Lidar applications, *Optics Letters*, Vol. 34, 5, 2009.
15. Lei, J.^ψ, J. P. Thayer, J. M. Forbes, Q. Wu, C. She, W. Wan, W. Wang, Ionosphere response to solar wind high-speed streams, *Geophys. Res. Lett.*, 35, L19105, doi:10.1029/2008GL035208, 2008.
16. Crowley G., A. Reynolds, J. P. Thayer, J. Lei, L. J. Paxton, A. B. Christensen, Y. Zhang, R. R. Meier, D. J. Strickland, Periodic modulations in thermospheric composition by solar wind high speed streams, *Geophys. Res. Lett.*, 35, L21106, doi:10.1029/2008GL035745, 2008.
17. Pedatella, N. M., J. M. Forbes, J. Lei, J. P. Thayer, and K. M. Larson, Changes in the longitudinal structure of the low-latitude ionosphere during the July 2004 sequence of geomagnetic storms, *J. Geophys. Res.*, 113, A11315, doi:10.1029/2008JA013539, 2008.
18. Lei, J.^ψ, J. P. Thayer, J. M. Forbes, E. K. Sutton, R. S. Nerem, M. Temmer, and A. M. Veronig, Global thermospheric density variations caused by high-speed solar wind streams during the declining phase of solar cycle 23, *J. Geophys. Res.*, 113, A11303, doi:10.1029/2008JA013433, 2008.
19. Thayer, J. P., and J. M. Livingston, Observations of wintertime arctic mesosphere cooling associated with stratosphere baroclinic zones, *Geophys. Res. Lett.*, 35, L18803, doi:10.1029/2008GL034955, 2008.
20. Thayer, J. P., J. Lei^ψ, J. M. Forbes, E. K. Sutton, and R. S. Nerem, Thermospheric density oscillations due to periodic solar wind high-speed streams, *J. Geophys. Res.*, 113, A06307, doi:10.1029/2008JA013190, 2008.
21. Lei, J.^ψ, J. P. Thayer, J. M. Forbes, E. K. Sutton, and R. S. Nerem, Rotating Solar Coronal Holes and Periodic Modulation of the Upper Atmosphere, *Geophys. Res. Lett.*, 35, L10109, doi:10.1029/2008GL033875, 2008.

22. Cosgrove, R. B., and J. P. Thayer, Parametric dependence of electric field variability in the Sondrestrom database: A linear relation with K_p , *J. Geophys. Res.*, 111, A10313, doi:10.1029/2006JA011658, 2006.
23. Milikh, G. M., L. P. Goncharenko, Y. S. Dimant, J. P. Thayer, and M. A. McCready, Anomalous electron heating and its effect on the electron density in the auroral electrojet, *Geophys. Res. Lett.*, 33, doi:10.1029/2006GL026530, 2006.
24. Kwak, Y.-S., B.-H. Ahn, B.A. Emery, J.P. Thayer, M. McCready, J.F. Watermann, Electrodynamical characteristics of the polar ionosphere over the auroral and polar cap regions based on incoherent scatter radar measurements, *J. Atmos. Solar-Terr. Phys.*, Vol. 68, pp. 881-900, 2006.
25. Thayer, J. P. and G. E. Thomas, "Foreword: Special issue on phenomena of the summertime mesosphere," *J. Atmos. Solar-Terr. Phys.*, Vol. 68, 1, pp. 1-4, 2006.
26. Thayer, J.P. and W. Pan[¶], Lidar observations of sodium density depletions in the presence of polar mesospheric clouds, *J. Atmos. Solar-Terr. Phys.*, doi:10.1016/j.jastp.2005.08.012, Vol. 68, 1, pp. 85-92, 2006.
27. Doe, R. A., J. P. Thayer, and S. C. Solomon, Incoherent scatter radar measurements and modeling of high-latitude solar photoionization, *J. Geophys. Res.*, 110, A10303, doi:10.1029/2005JA011129, 2005.
28. Goncharenko, L., J. E. Salah, A. Van Eyken, V. Howells, J. P. Thayer, V. I. Taran, B. Shpynev, Q. Zhou, J. Chau, Observations of the April 2002 geomagnetic storm by the global network of incoherent scatter radars, *Annales Geophysicae*, Vol 23, pp 163-181, 2005.
29. Fromm, M., R. Bevilacqua, R. Servranckx, J. Rosen, J.P. Thayer, J. Herman, and D. Larko, Pyrocumulonimbus injection of smoke to the stratosphere: Observations and impact of a super blowup in northwestern Canada on 3-4 August 1998, *J. Geophys. Res.*, 110, D08205, doi:10.1029/2004JD005350, 2005.
30. Keckhut et al., J. P. Thayer, Review of ozone and temperature lidar validations performed within the framework of the Network for the Detection of Stratospheric Change, *J. Environ. Monit.*, 6, 721-733, 2004.
31. Gerrard, A. J., T. J. Kane, S. D. Eckermann, and J. P. Thayer, "Gravity waves and mesospheric clouds in the summer middle atmosphere: A comparison of lidar measurements and ray modeling of gravity waves over Sondrestrom, Greenland," *J. Geophys. Res.*, 109, D10103, doi:10.1029/2002JD002783, 2004.
32. Gerrard, A. J., T. J. Kane, J. P. Thayer, and S. D. Eckermann, "Concerning the Upper Stratospheric Gravity Wave and Mesospheric Cloud Relationship Over Sondrestrom, Greenland," *J. Atmos. Solar-Terr. Phys.*, 2004, 66, pp. 229-240, 2004.
33. Zhang, S. P., J. P. Thayer, R. G. Roble, J. E. Salah, G. G. Sheperd, L. P. Goncharenko, Q. H. Zhou, "Latitudinal variations of neutral wind structures in the E-region for the March equinox period", *J. Atmos. Solar-Terr. Phys.*, 2004, 66, pp. 105-117, 2004.
34. Thayer, J. P. and J. Semeter, "The convergence of magnetospheric energy flux in the polar atmosphere," doi: 10.1016/j.jastp.2004.01.035, 66, 10, pp. 805-822, 2004.

35. Zhang, S. P., J. E. Salah, N. Mitchell, W. Singer, Y. Murayama, R. R. Clark, A. van Eyken, and J. P. Thayer, Responses of the mesospheric wind at high latitudes to the April 2002 space storm, *Geophys. Res. Lett.* 30, 23, 2225, doi:10.1029/2003GL018521, 2003.
36. Gerding M., G. Baumgarten, U. Blum, J.P. Thayer, K. H. Fricke, R. Neuber, J. Fiedler, "Observation of an unusual mid-stratospheric aerosol layer in the Arctic: possible sources and implications for polar vortex dynamics", *Annales Geophysicae*, Vol 21, pp 1057-1069, 2003.
37. Semeter, J., C.J. Heinselman, J.P. Thayer, R.A. Doe, and H.U. Frey, "Ion upflow enhanced by drifting F-region plasma structure on the nightside polar cap boundary," *Geophys. Res. Lett.* 30, 22, 2139, doi:10.1029/2003GL017747, 2003.
38. Thayer, J. P., G. E. Thomas, and F.-J. Lübken, Foreword: Layered phenomena in the mesopause region, *J. Geophys. Res.*, 108(D8), 8434, doi:10.1029/2002JD003295, 2003.
39. Thayer, J. P., M. Rapp, A. J. Gerrard, E. Gudmundsson, and T. J. Kane, Gravity-wave influences on Arctic mesospheric clouds as determined by a Rayleigh lidar at Sondrestrom, Greenland, *J. Geophys. Res.*, 108(D8), 8449, doi:10.1029/2002JD002363, 2003.
40. Watermann, J., G.S. Bust, J.P. Thayer, T. Neubert, and C. Coker, Mapping plasma structures in the high-latitude ionosphere using beacon satellite, incoherent scatter radar and ground-based magnetometer observations, *Ann. Geophysics*, Vol. 45, p. 177-189, 2002.
41. Watermann, J., P. Stauning, O. Rasmussen, V.O. Papitashvili, V.A. Popov, and J.P. Thayer, "Observation of field-aligned and ionospheric currents during space weather month, September 1999," *Adv. Space Res.*, Vol. 30, No. 10, pp. 2203-2208, 2002.
42. Gerrard, A. J., J. P. Thayer, and T. J. Kane, Mesospheric clouds and the duality of gravity waves, *Eos Transactions of the American Geophysical Union*, 83(43), 488, 2002.
43. Gerrard, A.J., T.J. Kane, J. P. Thayer, T.J. Duck, J. Whiteway, "Synoptic-scale study of the arctic polar vortex's influence on the middle atmosphere," *J. Geophys. Res.*, 107 (D16), doi 10.1029/2001JD000681, pp ACL1,1-15, 2002.
44. Gerrard, A.J., T.J. Kane, J.P. Thayer, C.S. Ruf, and R.L. Collins, "Consideration of non-Poisson distributions for Lidar applications," *Applied Optics*, Vol. 40, No. 9, pp. 1488-1492, 2001.
45. Xu, L., A.V. Kustov, J.P. Thayer, and M.A. McCready, "SuperDARN Convection and Sondrestrom plasma drift," *Annales Geophys.*, 19, 749-759, 2001.
46. Hecht, J.H., D.L. McKenzie, A.B. Christensen, D.J. Strickland, J.P. Thayer, J. Watermann, "Simultaneous observations of lower thermospheric composition change during moderate auroral activity from Kangerlussuaq and Narsarsuaq Greenland," *J. Geophys. Res.*, Vol. 105, No. A12, pp. 27109-27118, 2000.
47. Thayer, J.P., "High latitude currents and their energy exchange with the ionosphere-thermosphere system," *J. Geophys. Res.*, Vol. 105, No. A10, pp. 23015-23024, 2000.
48. Gerrard, A.J., T.J. Kane, J.P. Thayer, "Year-round temperature and wave measurements of the Arctic middle atmosphere for 1995-1998," *Geophysical Monograph 123*, Atmospheric Science across the Stratopause, AGU, 2000.
49. Richmond, A.D., and J.P. Thayer, *Ionospheric electrodynamics: A tutorial*, Magnetospheric

Current Systems, Geophysical Monograph Volume 118, 2000.

50. Buonsanto, M.J., S.A. Gonzalez, G.Lu, B.W. Reinisch, and J.P. Thayer, "Coordinated incoherent scatter radar study of the January, 1997 storm," *J. Geophys. Res.*, Vol. 104, No. A11, pp. 24625–24637, 1999.
51. Buonsanto, M.J., S. Gonzales, X. Pi, J. M. Ruohoniemi, M. Sulzer, W. Swartz, J.P. Thayer, and D.N. Yuan, "Radar chain study of the May, 1995 storm," *J.A.S.T.P.*, pp. 233-248, 1999.
52. Heinselman, C.J., J.P. Thayer, and B.J. Watkins, "A high-latitude observation of sporadic sodium and sporadic E layer formation," *Geophys. Res. Lett.* Vol. 25 , No. 16 , p. 3059, 1998.
53. Gerrard, A.J., T.J. Kane , and J.P. Thayer, "Noctilucent clouds and wave dynamics: Observations at Sondrestrom, Greenland," *Geophys. Res. Lett.* Vol. 25 , No. 15 , p. 2817, 1998.
54. Sanchez, E.R., J.P. Thayer, J.D. Kelly, and R.A. Doe, "Energy transfer between the ionosphere and magnetosphere during the January 1997 CME event," *Geophys. Res. Lett.* Vol. 25 , No. 14 , p. 2597, 1998.
55. Lu. et al., J.P. Thayer, "Global energy deposition during the January 1997 magnetic cloud event," *J. Geophys. Res.*, Vol. 103, No. A6, pp. 11,685-11,694, 1998.
56. Thayer, J.P., "Radar measurements of the energy rates associated with the dynamic ionospheric load/generator," *Geophys. Res. Lett.*, Vol. 25, No. 4, pp. 469-472, 1998.
57. Thayer, J.P., " Height-resolved Joule heating rates in the high-latitude E region and the influence of neutral winds," *J. Geophys. Res.*, Vol. 103, No. A1, pp. 471–487, 1998.
58. Thayer, J.P., N.B. Nielsen, R. Warren, C.J. Heinselman, and J. Sohn, "Rayleigh lidar system for middle atmosphere research in the arctic," *Opt. Eng.*, Vol. 36, No. 7, pp. 2045-2061, 1997.
59. Hecht, J.H., J.P. Thayer, D.J. Gutierrez, and D.L. McKenzie, "Multi-instrument zenith observations of noctilucent clouds over Greenland on July 30/31, 1995," *J. Geophys. Res.*, Vol. 102, No. D2, pp. 1959-1970, 1997.
60. Gerrard, A.J., T.J. Kane, D.D. Meisel, J.P. Thayer, R.B. Kerr, "Investigation of a resonant lidar for measurement of ionospheric metastable helium," *Journal of Atmospheric and Solar-Terrestrial Physics*, Vol. 59, No. 16, pp. 2023-2035, 1997.
61. Thayer, J.P., N.B. Nielsen, and J. Jacobsen, "Noctilucent Cloud Observations over Greenland by a Rayleigh Lidar," *Geophys. Res. Lett.*, Vol. 22, No. 21, pp. 2961-2964, 1995.
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63. Thayer, J.P., J.F. Vickrey, R.A. Heelis, and J.B. Gary, "Interpretation and Modeling of the High-Latitude Electromagnetic Energy Flux," *J. Geophys. Res.*, Vol. 100, No. A10, pp. 19,715-19,728, 1995.
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68. Killeen, T.L., F.G. McCormac, A.G. Burns, J.P. Thayer, R.M. Johnson, and R.J. Niciejewski, "On the Dynamics and Composition of the High-Latitude Thermosphere," *J. Atmos. Terr. Phys.*, Vol. 53, No. 9, pp. 797-815, 1991.
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71. McCormac, F.G., T.L. Killeen, J.P. Thayer, G. Hernandez, C.R. Tschan, J-J. Ponthieu, and N.W. Spencer, "Circulation of the Polar Thermosphere During Geomagnetically Quiet and Active Times as Observed by Dynamics Explorer 2," *J. Geophys. Res.*, Vol. 92, pp. 10133-10139, 1987.
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PEER-REVIEWED CONFERENCE PROCEEDINGS

1. **Hayman, M.**, J. P. Thayer, **R. R. Neely III**, New polarization measurement technique developed using the Stokes vector lidar equation, International Laser Radar Conference, 2010.
2. Thayer, J. P. and **M. Hayman**, Lidar polarization approaches for polar mesospheric cloud detection, International Laser Radar Conference, 2010.
3. **Neely III, R. R.**, J. P. Thayer, R. M. Hardesty, **M. Hayman**, M. O'Neill, W. Eberhard, R. Alvarez, R. Marchbanks, S. Sandberg, Depolarization LIDAR at Summit, Greenland for the detection of cloud phase and stratospheric aerosols, International Laser Radar Conference, 2010.
4. **Mitchell, S.**, J. P. Thayer, **M. Hayman**, J. Adler, L. Safari, Superglacial lake water depth measurement using modulated polarization lidar, International Laser Radar Conference, 2010.
5. **Hayman, M.**, J. P. Thayer, W. Pan^ψ, **N. Bradley, S. Mitchell**, Greenland Lidar depolarization measurement technique for polar mesospheric cloud detection, International Laser Radar Conference, 2008.
6. Thayer, J.P., N.B. Nielsen, R.B. Kerr, J. Noto, Rayleigh Lidar observations during Arctic summer conditions, IGARRS Symposium, Lincoln Nebraska, May, 1996.

PAPERS IN PRESS, REVISION, REVIEW AND PREPARATION

1. **Hayman, M.** and J. P. Thayer, Diattenuation technique for detection of oriented scatterers developed using the Stokes Vector Lidar Equation, Applied Optics, to be submitted 2011.
2. A. J. Gerrard and J. P. Thayer, Observations of in-situ generated gravity waves during a stratospheric temperature enhancement (STE) event, to be submitted, GRL, 2011.
3. **K. Greer**, Thayer, J. P. and V. L. Harvey, A Summary of Characteristics of Upper Stratospheric Lower Mesospheric Disturbances in the Polar Winter, in preparation, JGR, 2011.

INVITED TALKS AND SYMPOSIA*

*All invited talks and symposia listed are those presented by Dr. Thayer since 1996. Numerous talks with Dr. Thayer as coauthor presented by others are not listed.

1. Thayer, J. P., "The Global Implications and Grand Challenge of Neutral-Ion Interactions in the Polar Regions", American Geophysical Union, SA53B-04, San Francisco, CA, December 2010.
2. Thayer, J. P., "CEDAR Strategic Plan," CEDAR Meeting 2010, Boulder, CO, June 2010
3. Thayer, J. P., "The Periodic Rise and Fall of the Earth's Upper Atmosphere", MIT, Haystack Observatory, Buonsanto Lecture, Nov 19, 2009.
4. Thayer, J. P., "Solar Wind – Thermosphere Coupling: A Newly Discovered Breathing Mode of the Upper Atmosphere", Boston University, Center for Space Physics, Invited Seminar, Feb. 2009.
5. Thayer, J. P., J. Lei, J. M. Forbes, G. Crowley, M. Mlynczak, Q. Wu, "A New Solar-Terrestrial Connection: Multi-Day Oscillations in Thermosphere and Ionosphere Properties," American Geophysical Union, San Francisco, CA, December 2008.
6. Thayer, J. P., "A System Science Approach to Geospace Research," Space-Based Ionosphere Thermosphere Conference, Manhattan Beach, California, October 2007.
7. Thayer, J. P., "The Polar Ionosphere-Thermosphere: A System in Flux," IUGG, Perugia, Italy, July 2007.
8. Thayer, J. P., "Observations of High Latitude Energy Deposition," NCAR MLT Seminar, March 2007.
9. Thayer, J. P., "Polar Ionosphere-Thermosphere science and its coupling: A broad perspective from a narrow view", 2006 CEDAR Meeting, Santa Fe, NM, June 2006.
10. Thayer, J. P., "Space Systems and Science Education at the University of Colorado", 2006 Space Weather Week Conference, Boulder, Colorado, March, 2006.
11. Thayer, J. P., "Future Direction for Polar Energetics", American Geophysical Union, Fall Meeting, San Francisco, CA., December, 2005.
12. Thayer, J. P., "Polar Studies of the Ionosphere-Thermosphere System", Atmospheric, Oceanic, Space Sciences Department Seminar, University of Michigan, October, 2005.
13. Thayer, J. P., "Remote sensing of the aurora," Remote Sensing Seminar Series, University of Colorado, Boulder, CO., March 2005.

14. Thayer, J. P., "Remote sensing of the polar aerospace environment," Program for Atmospheric and Oceanic Science Seminar, University of Colorado, Boulder, CO., November, 2004.
15. Thayer, J. P., "The high-latitude ionosphere-thermosphere system and its coupling to the magnetosphere," Electrical Engineering Seminar, Stanford University, Palo Alto, CA., March, 2004.
16. Thayer J. P., "Remote sensing of the polar aerospace environment," Aerospace Engineering Sciences Department Seminar, University of Colorado, Boulder, CO., February, 2004.
17. Thayer, J. P., X. Chu, C. Gardner, J. Friedman, M. Hagan, R. Roble, J. Plane, "Narrowband Fe/Rayleigh Doppler Lidar For Middle Atmosphere Observations From Research Aircraft and Remote Sites," CEDAR Lidar Working Group, Boulder, CO., September, 2004.
18. Kozyra, J. et al., "Extreme Solar Activity in 2002 – What happened in our atmosphere?," American Geophysical Union, Fall Meeting, San Francisco, CA., December, 2003.
19. Thayer, J. P., "Height resolved observations of electrodynamic properties in the high-latitude E region," American Geophysical Union, Fall Meeting, San Francisco, CA., December, 2003.
20. Thayer, J. P., "The polar ionosphere-thermosphere system: Where the field lines end," NCAR Seminar, Boulder, CO., June, 2003.
21. Thayer, J. P., "M-I coupling from the ionosphere-thermosphere perspective: Melting the frozen-in flux," Geospace Electrodynamic Modeling Conference, Snowmass, CO., July, 2003.
22. Thayer, J. P., "Small-scale structure in plasma and electrodynamic parameters as observed by incoherent scatter radar," Coupling of Energetics and Dynamics of Atmospheric Regions Conference, E-field variability workshop, Longmont, CO., June 2003.
23. Thayer, J. P., "Future Challenges in Polar Aeronomy," American Geophysical Union, Fall Meeting, San Francisco, CA., December, 2001.
24. Thayer, J. P., M. Rapp, A. J. Gerrard, E. Gudmundsson, T. J. Kane, "Arctic Mesospheric Cloud Observations and Characterization by the Sondrestrom, Greenland Rayleigh Lidar, 1994 through 2000," International Conference on Layered Phenomena of the Mesopause Region, Asilomar, CA, October, 2001.
25. Thayer, J. P., "Polar aeronomy: Where the field lines end," CEDAR Conference, Longmont, CO., June 2001.
26. Thayer, J. P., "Portable instruments with an ISR," Relocatable Atmospheric Observatory Conference, Penn State University, March 2001.
27. Thayer, J. P. and C. J. Heinselman, ISR contributions to neutral studies, Physics Department Seminar, Clemson University, Clemson, SC, September 2000.
28. Thayer, J. P., Review of NLC measurements by lidar, Electrical Engineering Seminar, Stanford University, Palo Alto, CA., March, 2000.
29. Thayer, J. P., Monitoring of noctilucent clouds by lidar, American Meteorological Society, Long Beach, CA, January 2000.
30. Thayer, J. P., Review of NLC measurements by lidar, IUGG, Birmingham, England, July 1999.

31. Thayer, J. P., Recent scientific highlights from the Sondrestrom research facility, URSI, Toronto, Canada, August 1999.
32. Thayer, J. P., NLC characteristics and behavior as determined by Rayleigh lidar measurements over Greenland, International Workshop on Layered Phenomena in the Mesopause Region, Kuehlungsborn, Germany, September, 1998.
33. Thayer, J. P., Lidar measurements of NLCs, CEDAR, Boulder, CO, June 1998.

CONFERENCE PRESENTATIONS*

*All presentations listed are those presented by Dr. Thayer since 1996. Numerous talks with Dr. Thayer as coauthor presented by others are not listed.

1. Thayer, J. P., "CEDAR: The Integrative Aeronomy Approach," 2008 CEDAR Meeting, Midway, Utah, June 2008.
2. Thayer, J. P., "CEDAR: The Integrative Aeronomy Approach," 2008 CEDAR Meeting, Midway, Utah, June 2008.
3. Thayer, J. P., "A System Science Approach to Geospace Research," 2007 CEDAR Meeting, Santa Fe, NM, June 2007.
4. Thayer, J. P., "Sondrestrom Greenland Lidar Status," 2007 CEDAR Meeting, Santa Fe, NM, June 2007.
5. Thayer, J. P., X. Chu, G. Swenson, D. Fritts, and J. She, "A consortium of resonance and Rayleigh lidars," 2006 CEDAR Meeting, Santa Fe, NM, June 2006.
6. Thayer, J. P. and A. Wires, "AMISR coordination with rockets," 2006 CEDAR Meeting, Santa Fe, NM, June 2006.
7. Thayer, J. P., J. Livingston, A. J. Gerrard, and A. Sivjee, "Wintertime Stratopause warmings," 2005 CEDAR Meeting, Santa Fe, NM, June 2005.
8. Thayer, J. P., "E-region electrodynamic at high latitudes," 2005 CEDAR Meeting, Santa Fe, NM, June 2005.
9. Thayer, J.P. and W. Pan, "Lidar investigation of polar mesospheric clouds from Sondrestrom, Greenland," *International Conference on Layered Phenomena of the Mesopause Region*, Cambridge, England, August, 2004.
10. Thayer, J. P. and J. Semeter, "Observations of high-latitude magnetospheric energy deposition," *American Geophysical Union*, Fall Meeting, San Francisco, CA., December, 2003.
11. Niciejewski, R.J. and J.P. Thayer, "Small scale structure in Neutral Winds at Sondre Stromfjord, Greenland," *American Geophysical Union*, Fall Meeting, San Francisco, CA., December, 2003.
12. Thayer, J. P., C.J. Heinselman, R.A. Doe, J. Semeter, M.A. McCreedy and T.A. Valentic, "Variability and structure in ionospheric state parameters as observed by the Sondrestrom incoherent scatter radar for an entire solar cycle," *COSPAR International Conference*, Houston, TX, October, 2002.

13. Thayer, J. P., "Sondrestrom radar support of the NASA TIMED mission," *CEDAR Conference*, Longmont, CO., June 2002.
14. Thayer, J. P., M. A. McCready, C. J. Heinselman, R. Tsunoda, A. Stromme, A. van Eyken, "Observations of the High-Latitude Ionospheric Response to the Onset of the April 2002 Storm," *American Geophysical Union, Fall Meeting*, San Francisco, CA, December, 2002.
15. Thayer, J. P., SABER / Sondrestrom facility TIMED science, *NASA TIMED pre-launch science meeting*, April 2001.
16. Thayer, J. P. and C. J. Heinselman, "Radar measurements of electromagnetic exchange within the high latitude ionosphere-thermosphere system," *European Geophysical Society*, Nice, France, March, 2001.
17. Thayer, J. P., "High latitude energy exchange within ionosphere-thermosphere system," *American Geophysical Union, Spring Meeting*, Baltimore, MD, May 2000.
18. Thayer, J. P., A. J. Gerrard, T. J. Kane, T. J. Duck, and J. A. Whiteway, Synoptic-scale Study of the Arctic Polar Vortex's Influence on the Stratosphere and Mesosphere, *CEDAR*, Boulder, CO, June 2000.
19. Heinselman, C. J. and J. P. Thayer, E-region neutral winds and ion-neutral collision frequencies: new insights, *CEDAR*, Boulder, CO, June 2000.
20. Thayer, J. P., Electrical energy deposition at high latitudes: A statistical look, *American Geophysical Union, Fall Meeting*, San Francisco, CA, December, 1999.
21. Thayer J. P., Sondrestrom facility status, *CEDAR*, Boulder, CO, June 1999.
22. Thayer, J. P., M-I-T energy transfer: The electrodynamic role of the ionosphere-thermosphere system, *AGU Chapman Conference on Magnetospheric Currents*, Kona, Hawaii, January 1999.
23. Thayer, J. P., The neutral wind's role in high-latitude electrodynamics: How significant a factor?, *American Geophysical Union, Fall Meeting*, San Francisco, CA, December, 1998.
24. Thayer, J. P., N. B. Nielsen, R. B. Kerr, J. Noto, Rayleigh lidar observations during arctic summer conditions, *IEEE International Geoscience and Remote Sensing Society (IGARSS) Symposium*, Lincoln, Nebraska, May 1996.
25. Thayer, J. P., N. B. Nielsen, and J. Sohn, Two Seasons of Noctilucent Cloud Observations by a Rayleigh Lidar over Greenland, *International Laser Radar Conference*, Free Universitie of Berlin, Berlin Germany, July, 1996.

STUDENT/RESEARCH ASSOCIATE CONFERENCE PRESENTATIONS (ORAL AND POSTER)*

*All presentations listed are those presented by Dr. Thayer's graduate students, advised students, or research associates

1. **Neely III, R. R., M. Hayman, J. P. Thayer, R. M. Hardesty, M. O'Neill, M. Shupe**, Initial Results of the Cloud, Aerosol Polarization and Backscatter Lidar at Summit, Greenland, AGU conference, San Francisco CA, 12-17 December 2010.

2. **Mitchell, S.**, J. Adler, J.P. Thayer, **M. Hayman**, Polarization Lidar for Shallow Water Supraglacial Lake Depth Measurement, AGU conference, San Francisco CA, 12-17 December 2010.
3. **Greer, K.**, J. P. Thayer, V. L. Harvey, A Climatology of Upper Stratospheric / Lower Mesospheric Disturbances in the Polar Winter, AGU conference, San Francisco CA, 12-17 December 2010.
4. **Liu, X.**, J. P. Thayer, C., Heinselman, Ion-neutral interactions in the Polar E-region, Coupling, AGU conference, San Francisco CA, 12-17 December 2010.
5. **Hsu, V.**, L. Goncharenko, S.-R. Zhang, A. Coster, J. P. Thayer, Mid-latitude ion temperature during a sudden stratospheric warming event, AGU conference, San Francisco CA, 12-17 December 2010.
6. **Greer, K.**, J. P. Thayer, V. L. Harvey, and J. Livingston, Front-like Behavior in the Polar Wintertime Upper Stratosphere and Lower Mesosphere, CEDAR conference, Boulder CO, 20-25 June 2010. (Finalist in CEDAR Student Poster Competition)
7. **Greer, K.**, J. P. Thayer, V. L. Harvey, Front-Like Formations in the Middle Atmosphere: A Precursor to Sudden Stratospheric Warmings?, CEDAR Workshop on Atmospheric Coupling During Stratospheric Sudden Warmings, CEDAR conference, Boulder CO, 22 June 2010.
8. **Liu, X.**, J. P. Thayer, C., Heinselman, Polar E region neutral and ion motion in the current density reference frame, CEDAR conference, Boulder CO, 22 June 2010.
9. **Hsu, V.**, J. P. Thayer, **X. Liu**, Height-resolved joule heating rates in the polar E-region, CEDAR conference, Boulder CO, 22 June 2010.
10. **Greer, K.**, J. P. Thayer, V. L. Harvey, Front-Like Formations in the Middle Atmosphere: Vertical Coupling of Winter Polar Regions, PASI student research, PASI conference, San Juan Argentina, 5 October 2010.
11. **Hayman, M.**, J. P. Thayer, **R. R. Neely III**, New polarization measurement technique developed using the Stokes vector lidar equation, International Laser Radar Conference, 2010.
12. Thayer, J. P. and **M. Hayman**, Lidar polarization approaches for polar mesospheric cloud detection, International Laser Radar Conference, 2010.
13. **Neely III, R. R.**, J. P. Thayer, R. M. Hardesty, **M. Hayman**, M. O'Neill, W. Eberhard, R. Alvarez, R. Marchbanks, S. Sandberg, Depolarization LIDAR at Summit, Greenland for the detection of cloud phase and stratospheric aerosols, International Laser Radar Conference, 2010.
14. **Neely III, R. R.** and J. P. Thayer, Initial Results from ARCLITE Tropospheric Water Vapor Profiling and Balloon Validation, International Laser Radar Conference, 2010.
15. **Neely III, R. R.**, J. P. Thayer, **M. Hayman**, M. O'Neill, Depolarization LIDAR at Summit, Greenland for the Detection of Cloud Phase and Stratospheric Aerosols, Annual CIRES Science Rendezvous, 2010.
16. **Neely III, R. R.** and J. P. Thayer, Raman Profiling and Balloon Validation of Tropospheric Water Vapor in Kangerlussuaq, Greenland, CU's Department of Atmospheric and Oceanic Science's Annual Poster Session, 2010.

17. **Hayman, M.**, J. P. Thayer, J. D. Vance, Accounting for system effects in depolarization lidar, CLEO, Baltimore, MD June 2009.
18. **Hayman, M.**, J. P. Thayer, J. D. Vance, Arclite lidar for PMC depolarization measurements, CEDAR, Santa Fe, NM June 2009.
19. **Hayman, M.**, J. P. Thayer, Depolarization calibration and measurement in the atmosphere, CEDAR, Santa Fe, NM June 2009.
20. **Hayman, M.**, J. P. Thayer, J. D. Vance, Depolarization Lidar applied to polar mesospheric clouds, LPMR, Stockholm, Sweden July 2009.
21. **Hayman, M.**, J. P. Thayer, Optical theory for development of advanced polarization lidar, CPIA, Boulder, CO June 2009.
22. **Liu X.**, J. P. Thayer, J. Lei, Altitude Dependence of the Thermospheric Density Response to Geomagnetic Forcing, CEDAR, Santa Fe, NM, June 2009.
23. **Greer, K.**, J. P. Thayer, V. L. Harvey, and J. Livingston, Baroclinic conditions and anomalous temperature excursions in the arctic winter middle atmosphere, AGU Joint Assembly, Toronto, Canada, May 2009.
24. **Greer, K.**, J. P. Thayer, V. L. Harvey, and J. Livingston, Baroclinic conditions and anomalous temperature excursions in the arctic winter middle atmosphere, CEDAR, Santa Fe, New Mexico, June 2009.
25. **Greer, K.** and J. P. Thayer, A separated mesopause with front-like behavior in the polar winter middle atmosphere, CEDAR, Santa Fe, New Mexico, June 2009.
26. **Greer, K.**, J. P. Thayer, V. L. Harvey, and J. Livingston, Baroclinic conditions and anomalous temperature excursions in the arctic winter middle atmosphere, CU ATOC, Boulder CO, December 2009.
27. Adler, J., **Mitchell, S.**, Chu, X., Thayer, J. Development of a Micro Blue / Green Lidar System for Multi-Mission use by Unmanned Aerial Systems (UAS), CIRES Innovative Research Grant Reception, Boulder CO Nov 2009.
28. **Mitchell, S.**, Thayer, J., Chu, X. Monitoring Outlet Glacier Mass-Balance and Dynamics With Low-Cost Unmanned Aerial Systems (UAS), ATOC Graduate Student Poster Session, Boulder CO Dec 2009.
29. Adler, J., **Mitchell, S.**, Chu, X. A micro blue/green laser for unmanned aerial systems (UAS) geoscience research, 2009 CIRES Annual Report
30. Lei J. ^ψ, J. P. Thayer, J. M. Forbes, Impact of CIR storms on the thermosphere during the current solar minimum, Fall AGU meeting, San Francisco , Dec 14-18, 2009.
31. **Brower, L.**, J. P. Thayer, J.-P. St. Maurice, Enhanced Electron Temperatures in the Polar D region, AGU Fall Meeting, San Francisco, CA, December 2009.
32. Lei J. ^ψ, J. P. Thayer, J. M. Forbes, Impact of high speed solar wind streams on the thermosphere during the solar minimum of 2008, HSS-GI workshop, University of Cumbria, Ambleside, UK, 6-11th September, 2009 (Invited).
33. Lei J. ^ψ, J. P. Thayer, Impact of high speed solar wind streams on the thermosphere/ionosphere,

2009 CEDAR Workshop, June 27 - July 2, 2009, Santa Fe, New Mexico, USA (Invited)

34. **Brower, L.**, J. P. Thayer, "Frictionally Enhanced Electron Temperatures in the D Region," CEDAR Meeting, Santa Fe, NM, June 2008.
35. **Hayman, M.**, J. P. Thayer, W. Pan^ψ, **N. Bradley, S. Mitchell**, Greenland Lidar depolarization measurement technique for polar mesospheric cloud detection, ILRC, Boulder, CO June 2008.
36. **Wiren A.** and J. P. Thayer, "Polar E-region Ion Motion and Related Thermospheric Properties," AGU Meeting, San Francisco, CA, December 2007.
37. **Brower, L.**, J. P. Thayer, G. Lu, "Mesospheric Joule Heating During the Halloween Superstorm 2003," AGU Meeting, San Francisco, CA, December 2007.
38. **Wiren A.** and J. P. Thayer, "Polar E-region Ion Motion and Related Thermospheric Properties," CEDAR Meeting, Santa Fe, NM, June 2007. (Runner-up for best student poster out of 40).
39. **Brower, L.**, J. P. Thayer, G. Lu, "Mesospheric Joule Heating During the Halloween Superstorm 2003," CEDAR Meeting, Santa Fe, NM, June 2007.
40. **Reimuller, J.**, J. P. Thayer, A. Merkel, S. Corda, "Time Evolution Imaging of Polar Mesospheric Clouds using Airborne and Spaceborne Platforms," CEDAR Meeting, Santa Fe, NM, June 2007.
41. **Greer, K.**, J. P. Thayer, V. L. Harvey, J. Livingston, "Wintertime Stratopause Warmings and Mesosphere Coolings," CEDAR Meeting, Santa Fe, NM, June 2007.
42. **Brower, L.**, J. P. Thayer, J.-P., G. Lu and J.-P. St.-Maurice, "Mesospheric Joule Heating During the Halloween Superstorm 2003," Greenland Space Science Symposium, Kangerlussuaq, Greenland, May 2007.
43. **Wiren, A.** and J. P. Thayer, "E-region Ion Motion and Related Thermospheric Properties," Greenland Space Science Symposium, Kangerlussuaq, Greenland, May 2007.

CU INTERNAL SERVICE

2009-2011: AES ABET Committee Member

2004 – Present: Graduate Committee for the Atmospheric And Oceanic Science Department

2005 – Present: AES remote sensing, earth and space focus area, graduate curriculum committee

2008 – 2010: AES undergraduate curriculum and teaching committee

2007 – 2008: AES Chair of the Graduate Program Committee

2007 – 2008: AES Executive Committee

2005 – 2007: AES undergraduate curriculum and teaching committee (lead on aerospace sciences and instrumentation area)

SUPERVISED THESES

Doctoral

- 1) Jason Reimuller, Observations and Analysis of Polar Mesospheric Clouds, AES Post-Comp, expected completion: May 2011
- 2) Matt Hayman, Polarization Lidar, ECE Post-Comp, expected completion: May 2011
- 3) Steve Mitchell, Airborne Lidar System Design for Glacial Studies, AES Pre-Comp, expected completion: May 2013.
- 4) Xianjing Liu, E-region Electrodynamics, AES Pre-Comp, expected completion May 2013.
- 6) Ryan Neely III, Raman and Depolarization Lidar for Arctic Stratosphere Studies, ATOC Pre-Comp, expected completion May 2013.
- 7) Katelynn Greer, Polar Atmosphere Dynamics, AES Pre-Comp, expected completion May 2014.
- 8) Katrina Bossert, Lidar Technologies for Atmospheric Application, AES Pre-Comp, expected completion May 2015.
- 9) Michael Rhodes, Coherent Lidar for Wind Turbine Analysis, AES Pre-comp, expected completion May 2015.

Masters

-
- 1) Andrew Chereck, Lidar System Detection Scheme, AES Masters, completed May 2007.
 - 2) Laura Brower, Thesis Title: Aerospace Environment Study of Electron Temperatures in Earth's Polar *D* region, AES Masters, completed May 2008.
 - 3) Ashley Wiren, Incoherent Scatter Radar studies of the near-earth space environment, AES Masters, completed May 2008
 - 3) Katelynn Greer, Thesis Title: Baroclinic Conditions and Anomalous Temperature Excursions in the Arctic Winter Middle Atmosphere, AES Masters, completed May 2009.

DOCTORAL THESIS COMMITTEE MEMBER

Andrew Gerrard, Penn State University, External PhD Advisor, 2000

Eric Sutton, CU Aerospace Engineering Sciences, committee member, completed May 2008.

Chunmei Kang, CU Aerospace Engineering Sciences, committee member, completed May 2008.

Jonathan Fentzke, CU Aerospace Engineering Sciences, committee member, completed May 2009.

Loren Chang, CU Aerospace Engineering Sciences, committee member, completed May 2010.

Quyen Hart, CU Astrophysics and Planetary Sciences Department, committee member, May 2010.

Xiaoli Zhang, CU Aerospace Engineering Sciences, committee member, completed May 2010.

Milos Jokavic, CU Electrical and Computer Science Engineering, committee member, completed May 2010.

Jonathan Mettes, CU Aerospace Engineering Sciences, committee member, completed Dec. 2010

Licia Ray, CU Astrophysical and Planetary Sciences Department, completed May 2010.

Milos Jankovic, CU Electrical, Computer, Energy Engineering Sciences, committee member, completed May 2010.

Scott Knappmiller, CU Physics Department, committee member, expected completion May 2011.

Keith Krause, CU Aerospace Engineering Sciences, committee member, expected completion Dec. 2012

Nick Pedatella, CU Aerospace Engineering Sciences, committee member, expected completion May 2011

John Smith, CU Aerospace Engineering Sciences, committee member, expected completion May 2012

John Creasey, CU Aerospace Engineering Sciences, committee member, expected completion May 2012.

Susanne Benze, CU Department of Atmospheric and Oceanic Sciences, expected completion May 2013.

Jeff France, CU Department of Atmospheric and Oceanic Sciences, expected completion May 2013.

Rob Redmon, CU Aerospace Engineering Sciences, committee member, expected completion May 2013

Waqas Qazi, CU Aerospace Engineering Sciences, committee member, expected completion May 2013

UNDERGRADUATE STUDENTS MENTORED

Robert Stillwell 2010-2011 Discovery Learning Apprenticeship, Junior

Vicki Hsu 2010 - 2011 UROP, Senior

Leyla Safari 2010-2011 UROP, Freshman

Leyla Safari 2009-2010 RSR High School Senior

Vicki Hsu 2009 - 2010 Discovery Learning Apprenticeship, Junior

Vicki Hsu 2008 - 2009 Radar data analysis tools, Freshman, Sophomore
Nick Bradley 2008 Discovery Learning Apprenticeship, Senior
Nick Bradley 2007 Greenland lidar system evaluation and data analysis, Junior
William Wheeler 2007 Lidar telescope stability testing and verification, Sophomore
Katelynn Greer 2006 Design and construction of a research lidar system, REU Program, Senior
Stephen Crooks 2006 Design and construction of a research lidar system, Senior

POSTDOCTORAL FELLOWS & RESEARCH ASSOCIATES

Weilin Pan Post-doc from 2003 – 2005, SRI International
Wentao Huang Post-doc from 2005 – 2007 and Research Associate from 2007 – present, CU AES Department
Jiuhou Lei Research Associate from 2008 – present, CU AES Department

CLASSES TAUGHT

Aerospace Environments (ASEN 5335): Spring '09
Aerospace Engineering Senior Project (ASEN 4018/4028): Fall '04 and Spr '05
Thermodynamics and Aerodynamics (ASEN 2002): Fall '05, '06, '07, '08, '09, '10
Thermodynamics and Heat Transfer (ASEN 3113): Fall '05, '10
Radar and Remote Sensing (ASEN 5254/ECEN5245): Spring '05, '06, '07, '09, '10
Remote Sensing Seminar (ASEN 6210): Spring '06
Special Topics: Upper Atmospheres (ASEN 6619): Spring '08

CURRENT RESEARCH PROJECTS

PI

Title: CEDAR: Investigation of Baroclinic Disturbances in the Polar Wintertime Middle Atmosphere

Funding Source: NSF

Total: \$102,000 /year

Duration: 01/15/10 – 12/31/10

PI

Title: Thermosphere Density Response to Geomagnetic and Solar Forcing a Consequence of the

Unique Conditions of the Current Solar Minimum

Funding Source: NASA

Total: \$100,610 /year

Duration: 01/22/10 – 01/21/13

Co-PI

Title: Investigation of Ion-Neutral Coupling Processes in the Equatorial F-Region

Funding Source: NASA

Total: \$100,000 /year

Duration: 08/04/10 – 08/3/14

PI

Title: Monitoring outlet glacier mass balance and dynamics with low cost unmanned aerial systems

Funding Source: NASA Earth and Space Science Fellowship

Total: \$30,000 / year

Duration: 09/01/08 – 08/31/11

PI

Title: CEDAR Science Steering Committee 2007-2010

Funding Source: NSF

Total: \$53,000 / year

Duration: 01/15/08 - 08/14/11

Co-I

Title: Neutral atmosphere density interdisciplinary research

Funding Source: AFOSR

Total: \$1,262,200 / year

Co-I portion: \$250,000

Duration: 05/01/07 - 04/30/12

PI

Title: Collaborative research: a consortium of resonance and Rayleigh lidars

Funding Source: NSF

Total: \$965,000 / year

Duration: 08/01/06 – 7/31/11

PI

Title: Lidar sensors and cyberinfrastructure for arctic atmospheric research

Funding Source: NSF

Total: \$130,000 / year

Duration: 10/01/05 - 09/30/11

PENDING PROPOSALS

PI

Title: High-Latitude Ionosphere Electrodynamics and Thermosphere Response

Funding Source: NASA

Duration: 07/2012 - 06/2017

Proposed Budget \$ 2,611,462.00

Commitment by Co-PI: 2 Mo per Year

RECENTLY DECLINED PROPOSALS

Co-PI

Title: CEDAR: Investigation of Ionospheric Response to Recurrent Geomagnetic Activity
Funding Source: NSF
Total: \$255,000
Duration: 10/01/08 - 09/30/11

Co-I

Title: Atmosphere-Space Transition Explorer
Funding Source: NASA
Total: \$105,000,000
Co-I portion: \$100,000 / year
Duration: 05/01/08 - 04/30/09

PI

Title: TIMED mission: Polar mesospheric cooling associated with stratospheric baroclinic zones
Funding Source: NASA
Total: \$324,000
Duration: 12/01/06 - 11/30/09

Co-PI

Title: Development of an advanced mobile iron-resonance/Rayleigh/Mie Doppler lidar for atmospheric science and environmental research
Funding Source: NSF
Total: \$1,320,000
Duration: 09/01/06 - 08/31/09

PI

Title: Collaborative research: development of an advanced iron-resonance/Rayleigh/Mie Doppler lidar for atmospheric science and environmental research
Funding Source: NSF
Total: \$1,900,000
Duration: 09/01/05 - 08/31/08

RECENTLY COMPLETED PROJECTS

PI

Title: Time evolution imaging of polar mesospheric clouds using airborne and spaceborne platforms
Funding Source: NASA Earth and Space Science Fellowship
Total: \$30,000 / year
Duration: 09/01/07 – 08/31/10

Co-PI

Title: MRI: Development of a mobile iron-resonance/Rayleigh/Mie Doppler lidar
Funding Source: NSF
Total: \$1,200,000

Co-PI portion: \$600,000
Duration: 09/01/07 - 08/31/09

PI

Title: AMISR: Graduate studies of high-latitude E-region electrodynamics
Funding Source: NSF
Total: \$228,000
Duration: 01/01/06 – 12/31/08

PI (SRI) / Co-I (CU)

Title: The Sondrestrom upper atmospheric research facility: a vision for science, service, education and leadership
Funding Source: NSF
Total: \$12,500,000
Co-PI portion: \$260,000
Duration: 10/01/04 - 09/30/08

Co-PI

Title: cedar polar mesospheric cloud research using the sondrestrom greenland lidar
Funding Source: NSF
Total:\$270,000
Co-PI portion: \$51,000
Duration:01/01/05 – 12/31/07

Co-PI (unfunded collaborator)

Title: HEX II and JOULE II sounding rocket mission
Funding Source: NASA
Duration:01/01/05 – 12/31/07

PI

Title: TIMED / CEDAR collaboration on high latitude heating rates
Funding Source: NASA
Total:\$201,000
Duration:07/01/04 – 01/31/06

PI

Title: The Sondrestrom upper atmospheric research facility: A vision for science, service, education and leadership
Funding Source: NSF
Total: \$12,500,000
Award Location: SRI International
Duration: 10/01/03 - 09/30/08

PAST PROJECTS INITIATED AND COMPLETED AT SRI INTERNATIONAL

Co-PI

Title: GEM: Observational Study of Time-Dependent MI-Coupling During Auroral Formation
Funding Source: NSF
Total: \$240,000
Award Location: SRI International
Duration: 06/01/03 - 05/31/06

PI

Title: CEDAR Post-doc: Investigating Noctilucent clouds at Sondrestrom, Greenland

Funding Source: NSF

Total: \$90,000

Award Location: SRI International

Duration: 1/15/03 - 01/14/05

PI

Title: The Sondrestrom radar facility into the next millenium

Funding Source: NSF

Total: \$11,000,000

Award Location: SRI International

Duration: 10/01/98 - 09/30/03

Co-PI

Title: Space Weather: Capturing Events and Their Geoeffectiveness

Funding Source: NSF

Total: \$180,000

Award Location: SRI International

Duration: 07/15/00 - 07/14/03

Co-PI

Title: Noctilucent clouds and dynamics: A CEDAR study

Funding Source: NSF

Total: \$210,000

Award Location: Penn State / SRI International

Duration: 10/01/98 - 09/30/01

Co-PI

Title: Space Weather: Event-Driven Operations and Analysis of the Sondrestrom Radar for the National Space Weather Program

Funding Source: NSF

Total: \$150,000

Award Location: SRI International

Duration: 09/15/97 - 09/14/00

PI

Title: CEDAR: Height-resolved Joule heating rates and the influence of neutral winds

Funding Source: NSF

Total: \$120,000

Award Location: SRI International

Duration: 01/15/98 - 01/14/00

Co-PI

Title: CEDAR: Comparison of Ionospheric Joule Heating Rate with Poynting Flux and Energetic Particle Precipitation Energy Deposition

Funding Source: NSF

Total: \$160,000

Award Location: SRI International

Duration: 08/30/92 - 08/31/96

PI

Title: CEDAR: Sondrestrom Arctic Lidar Technology (ARCLITE) Facility

Funding Source: NSF

Total: \$500,000

Award Location: SRI International

Duration: 07/15/91 - 12/31/93