

# **RESUME - Michael P. Hickey**

## **PERSONAL DATA**

Dean of Research and Graduate Studies  
Professor, Department of Physical Sciences  
Embry-Riddle Aeronautical University, 386-226-7059  
October 12, 1956  
Durban, South Africa  
US Citizenship

## **EDUCATION**

Ph.D., La Trobe University, 1986, Physics  
B.Sc. (Hons), La Trobe University, 1979, Physics

## **PROFESSIONAL EXPERIENCE**

Embry-Riddle Aeronautical University, February 2013-, Dean of Research and Graduate Studies

Embry-Riddle Aeronautical University, June 2012-February 2013, Associate Vice President for Research and Graduate Studies

Embry-Riddle Aeronautical University, May 2012-June 2012, Assistant Vice President for Research and Graduate Programs

Embry-Riddle Aeronautical University, May 2011- May2012, Interim Chair, Department of Physical Sciences

Embry-Riddle Aeronautical University, May 2005- May 2012, Associate Dean, COAS

Embry-Riddle Aeronautical University, 2005-, Professor with tenure

Embry-Riddle Aeronautical University, January 2005-May 2005, Interim Assistant Dean, COAS

University of Central Florida, 2003-, Affiliate Professor

Embry-Riddle Aeronautical University, 2002-2005, Associate Professor

Clemson University, 2001-2002, Associate Professor

Clemson University, 1999-2001, Assistant Professor

Clemson University, 1998-1999, Research Associate

University of Alabama in Huntsville, 1996-1998, Adjunct Professor

University of Alabama in Huntsville, 1993-1998, Senior Research Scientist

Physitron, Inc., 1992-1993, Senior Scientist

FWG Associates, 1990-1992, Senior Scientist

Universities Space Research Association, 1986-1990, Associate Scientist

Deakin University, Melbourne, Australia, 1986, Lecturer

La Trobe University, Melbourne, Australia, 1979-1985, Teaching Assistant

### **CONSULTING EXPERIENCE**

Physitron, Inc., Huntsville, Alabama (1994 - 1995), Developed thermospheric wave simulation model for NASA Space Station Program.

The Aerospace Corporation, Los Angeles, CA (2002 - 2012)

### **HONORS AND AWARDS**

NASA Group Achievement Award, NASA National AeroSpace Plane (1991)

Researcher of the Year, Embry-Riddle Aeronautical University (2005)

NASA Group Achievement Award, Seismic-Ionosphere Exploration Team (2013)

### **MEMBERSHIPS**

Fellow, Royal Meteorological Society, RMetS (2007- )

Member, American Geophysical Union, AGU (1980- )

Member, American Meteorological Society, AMS (1997-

Member, Sigma Pi Sigma (1999-2002)

Member, Sigma Xi (1999-2002)

Member, American Association for the Advancement of Science (2000- )

Member, American Association of University Professors (2000-2002)

### **PROFESSIONAL ACTIVITIES**

Member of science steering committee, NSF Coupling Energetics and Dynamics of Atmospheric Regions (CEDAR) program (1997- 2000)

Member of the NASA Thermosphere, Thermal and Solar Working Group of the Space Environment and Effects Program (1994 - )

Florida Space Grant Consortium Advisory Board (2005 - 2012)

Board of Directors, Space Florida (2007-2010)

Associate Director, Florida Space Grant Consortium (2009 - 2010)

## PUBLICATIONS

### Manuscripts Submitted/In Preparation

Crowley, G., R. L. Walterscheid, M. P. Hickey and J. H. Hecht, Acoustic waves detected by the TID Detector Built in Texas (TIDDBIT) System, *J. Geophys. Res.*, *submitted* 2012.

Heale, C. J., J. Snively, M. P. Hickey and C. Ali, Thermospheric Dissipation of Upward Propagating Gravity Wave Packets, *J. Geophys. Res.* *submitted*, 2013.

Yang, Yu-Ming, A. Komjathy, M. Butala, A. J. Mannucci, J. Snively, M. P. Hickey, D. Galvan, J-Y. Yee and R. B. Langley, Investigating natural hazards using GNSS measurements: The Chelyabinsk meteor ionospheric impact, *ION Conference paper*, *submitted*, 2013.

Ghodpage, R. N., A. Taori, M. P. Hickey, S. Gurubaran and P. T. Patil (2013), Response of OH airglow emissions to the mesospheric gravity waves over a low latitude Indian station and its comparisons with full wave model simulation, *Earth, Planets and Space*, *submitted*.

Yonghui Yu, Yachong Wang, Wei Chen, and M. P. Hickey (2013), The thermospheric response to atmospheric gravity waves induced by the 2011 Tohoku tsunami, *Science China Earth Sciences*, *submitted*.

### Refereed Publications

#### 2013

63. Walterscheid, R. L., M. P. Hickey and G. Schubert (2013), Wave heating and Jeans escape in the Martian upper atmosphere, *J. Geophys. Res. Planets*, *118*, 2413-2422, doi:10.1002/jgre.20164.

62. Snively, J., K. Nielsen, M. P. Hickey, C. J. Heale, M. J. Taylor and T. Moffat-Griffin (2013), Numerical and statistical evidence for long-range ducted gravity wave propagation over Halley, Antarctica, *Geophys. Res. Lett.*, *2013GL057310R*, *in press*.

#### 2012

61. Walterscheid, R. L., J. H. Hecht, G. L. Gelinis, M. P. Hickey and I. M. Reid (2012), An Intense Traveling Airglow Front in the Upper Mesosphere-Lower Thermosphere with Characteristic of a Turbulent Bore Observed over Alice Springs, Australia, During a Strong Two-Day Wave Period, *J. Geophys. Res.*, doi:10.1029/2012JD017847.

60. Komjathy, A., D. A. Galvan, P. Stephens, M. Butala, V. Akopian, B. Wilson, O. Verkhoglyadova, A. Mannucci and M. P. Hickey (2012), Detecting Ionospheric TEC Perturbations Caused by Natural Hazards Using a Global Network of GPS Receivers: The Tohoku Case Study, *Earth, Planets and Space*, *64*, 1-8.

59. Galvan, D. A., A. Komjathy, M. P. Hickey, P. Stephens, J. Snively, Y. T. Song, M. Butala, A. Mannucci (2012), Ionospheric Signatures of Tohoku-Oki Tsunami of March 11, 2011: Model Comparisons Near the Epicenter, *Radio Sci.*, *47*, RS4003, doi:10.1029/2012RS005023.

58. Walterscheid, R. L., and M. P. Hickey (2012), Gravity Wave Propagation in a Diffusively Separated Gas: Effects on the Total Gas, *J. Geophys. Res.*, *A05303*, doi:10.1029/2011JA017451.

57. T. Y.-Huang, and M. P. Hickey (2012), Gravity Wave-induced Variations in Exothermic Heating in the Low-Latitude, Equinox MLT Region, *J. Geophys. Res.*, 117, A02307, doi:10.1029/2011JA017148.

## **2011**

56. Hickey, M. P., R. L. Walterscheid, and G. Schubert (2011), Gravity wave heating and cooling of the thermosphere: Roles of the sensible heat flux and viscous flux of kinetic energy, *J. Geophys. Res.*, 116, A12326, doi:10.1029/2010JA 016792.
55. Galvin, D. A. Komjathy, M. Hickey, and A. Mannucci (2011), The 2009 Samoa and 2010 Chile tsunamis as observed in the ionosphere using GPS total electron content, *J. Geophys. Res.*, 116, A06318, doi:10.1029/2010JA016204.
54. Walterscheid, R. L., and M. P. Hickey (2011), Group velocity and energy flux in the thermosphere: Limits on the validity of group velocity in a viscous atmosphere, *J. Geophys. Res.*, 116, D12101, doi:10.1029/2010JD014987.
53. Hickey, M. P. (2011), Atmospheric Gravity Waves and Effects in the Upper Atmosphere Associated with Tsunamis, Chapter in *The Tsunami Threat: Research and Technology*, ed. Nils-Axel Mörner, InTech Education and Publishing, Rijeka, Croatia, pp.667-690.

## **2010**

52. Hickey, M. P., R. L. Walterscheid, and G. Schubert (2010), Wave mean flow interactions in the thermosphere induced by a major tsunami, *J. Geophys. Res.*, 115, A09309, doi:10.1029/2009JA014927.
51. Hickey, M. P., G. Schubert, and R. L. Walterscheid (2010), Atmospheric airglow fluctuations due to a tsunami-driven gravity wave disturbance, *J. Geophys. Res.*, 115, A06308, doi:10.1029/2009JA014977.

## **2009**

50. Yu, Y., M. P. Hickey, and Y. Liu, 2009, A numerical model characterizing internal gravity wave propagation into the upper atmosphere, *Advances in Space Research* (2009), doi:10.1016/j.asr.2009.05.104.
49. Walterscheid, R. L., and M. P. Hickey, 2009, Gravity wave ducting in the upper mesosphere and lower thermosphere duct system, *J. Geophys. Res.*, 114, D19109, doi:10.1029/2008JD011269.
48. Hickey, M. P., G. Schubert, and R. L. Walterscheid, 2009, The Propagation of Tsunami-Driven Gravity Waves into the Thermosphere and Ionosphere, *J. Geophys. Res.*, 114, A08304, doi:10.1029/2009JA014105.
47. Parish, H. F., G. Schubert, M. P. Hickey, and R. L. Walterscheid, Propagation of tropospheric gravity waves into the upper atmosphere of Mars, *Icarus* (2009), doi:10.1016/j.icarus.2009.04.031.

## **2008**

46. Huang, T-Y, and M. P. Hickey, 2008, Secular variations of OH nightglow emission and of the OH intensity-weighted temperature induced by gravity wave forcing in the MLT region, *Adv. Space Res.*, *41*, 1477-1486, doi:10.1016/j.asr.2007.10.020.

## **2007**

45. Loughmiller, P. M., M. P. Hickey, M. C. Kelley, P. P. Wintersteiner, R. H. Picard, J. R. Winick and E. M. Dewan (2007), Observational and Modeling Study of Mesospheric Bores, *Proceedings of the Advanced Maui Optical and Space Surveillance Technologies Conference*, Wailea, Maui, Hawaii, September 12-15, 2007, Ed.: S. Ryan, p.E28.
44. Yu, Y., and M. P. Hickey (2007), Simulated ducting of high-frequency atmospheric gravity waves in the presence of background winds, *Geophys. Res. Lett.*, *34*, L11103, doi:10.1029/2007GL029591.
43. Yu, Y., and M. P. Hickey (2007), Numerical modeling of a gravity wave packet ducted by the thermal structure of the atmosphere, *J. Geophys. Res.*, *112*, A06308, doi:10.1029/2006JA012092.
42. Huang, T-Y., and M. P. Hickey (2007), On the Latitudinal Variations of the Non-periodic Response of Minor Species Induced by a Dissipative Gravity-wave Packet in the MLT Region, *J. Atmos. Sol-Terr. Phys.*, *69*, 741-757, doi:10.1016/j.jastp.2007.01.011.
41. Yu, Y., and M. P. Hickey (2007), Time-resolved ducting of atmospheric acoustic-gravity waves by analysis of the vertical energy flux, *Geophys. Res. Lett.*, *34*, L02821, doi:10.1029/2006GL028299.

## **2005**

40. Walterscheid, R. L., and M. P. Hickey (2005), Acoustic waves generated by gusty flow over hilly terrain, *J. Geophys. Res.*, *110*, A10307, doi:1029/2005JA011166.
39. Schubert, G., M. P. Hickey, and R. L. Walterscheid (2005), Physical processes in acoustic wave heating of the thermosphere, *J. Geophys. Res.*, *110*, D07106, doi:10.1029/2004JD005488.
38. Hickey, M. P., and Y. Yu (2005), A full-wave investigation of the use of a “cancellation factor” in gravity wave-OH airglow interaction studies, *J. Geophys. Res.*, *110*, A01301, doi:10.1029/2003JA01372.

## **2004**

37. Hickey, M. P., R. L. Walterscheid, and G. Schubert, Erratum to “Gravity Wave Heating and Cooling in Jupiter’s Thermosphere”, *Icarus*, *170*, 524-525, 2004.

## **2003**

36. Hickey, M. P., T.-Y. Huang, and R. L. Walterscheid, Gravity wave packet effects on chemical exothermic heating in the mesopause region, *J. Geophys. Res.*, *108*(A12), 1448, doi:10.1029/2002JA009363, 2003.
35. Huang, T-Y., M. P. Hickey, and T-F. Tuan, On nonlinear response of minor species with a layered structure to gravity waves, *J. Geophys. Res.*, *108*(A5), 1173, doi:10.1029/2002JA009497, 2003.

34. Schubert, G., M. P. Hickey, and R. L. Walterscheid, Heating of Jupiter's thermosphere by the dissipation of upward propagating acoustic waves, *Icarus.*, 163, 398-413, 2003.

## **2002**

33. Hickey, M. P., M. J. Taylor, and C. S. Gardner, Correction to "Full-wave modeling of small-scale gravity waves using Airborne Lidar and Observations of the Hawaiian Airglow (ALOHA-93) O(<sup>1</sup>S) images and coincident Na wind/temperature lidar measurements" by Michael P. Hickey et al., *J. Geophys. Res.*, 107(D18), 4357, doi:10.1029/2002JD002446, 2002.
32. Hecht, J. H., R. L. Walterscheid, M. P. Hickey, R. J. Rudy, and A. Z. Liu, An observation of a fast external atmospheric acoustic-gravity wave, *J. Geophys. Res.*, 107(D20), 10.1029/2002JD001438, 2002.
31. Hickey, M. P., and J. S. Brown, A simulation study of space-based observations of waves in the airglow using observed ALOHA-93 wave parameters, *J. Geophys. Res.*, 107(A12), 1431, doi:10.1029/2001JA009225, 2002.
30. Leko, J. J., M. P. Hickey, and P. G. Richards, Comparison of simulated gravity wave-driven mesospheric airglow fluctuations observed from the ground and space, *J. Atmos. Sol. Terr. Phys.*, 64, 397-403, 2002.
29. Huang, T.-Y., M. P. Hickey, T.-F. Tuan, E. Dewan, and R. Picard, Further investigations of a mesospheric inversion layer observed in the ALOHA-93 campaign, *J. Geophys. Res.*, 107(D19), 10.1029/2002JD001186, 2002.

## **2001**

28. Walterscheid, R. L., and M. P. Hickey, One-gas models with height-dependent mean molecular weight: Effects on gravity wave propagation, *J. Geophys. Res.*, 106, 28,831-28,839, 2001.
27. Hickey, M. P., G. Schubert, and R. L. Walterscheid, Acoustic wave heating of the thermosphere, *J. Geophys. Res.*, 106, 21,543-21,548, 2001.
26. Hickey, M. P., Reflection of a long-period gravity wave observed in the nightglow over Arecibo on May 8-9, 1989?, *J. Geophys. Res.*, 106, 28,199-28,208, 2001.
25. Hickey, M. P., Airglow Variations Associated with Non-Ideal Ducting of Gravity Waves in the Lower Thermosphere Region, *J. Geophys. Res.*, 106, 17,907-17,917, 2001.
24. Hickey, M. P., and R. L. Walterscheid, Secular Variations of OI 5577 Å Airglow in the Mesopause Region Induced by Transient Gravity Wave Packets, *Geophys. Res. Lett.*, 28, 701-704, 2001.
23. Hecht, J. H., R. L. Walterscheid, M. P. Hickey, and S. J. Franke, Climatology and Modeling of Quasi-Monochromatic Atmospheric Gravity Waves Observed over Urbana, Illinois, *J. Geophys. Res.*, 106, 5181-5195, 2001.

22. Brown, J. S., and M. P. Hickey, Gravity Wave Propagation Directions Inferred From Satellite Observations Including Smearing Effects, *J. Geophys. Res.*, *106*, 3631-3643, 2001.

### **2000**

21. Hickey, M. P., R. L. Walterscheid, and P. G. Richards, Secular Variations of Atomic Oxygen in the Mesopause Region Induced by Transient Gravity Wave Packets, *Geophys. Res. Lett.*, *27*, 3599-3602, 2000.
20. Hickey, M. P., R. L. Walterscheid, and G. Schubert, Gravity Wave Heating and Cooling in Jupiter's Thermosphere, *Icarus*, *148*, 266-281, 2000.
19. Hickey, M. P., and J. S. Brown, Resolving Ambiguities in Gravity Wave Propagation Directions Inherent in Satellite Observations: A Simulation Study, *Geophys. Res. Lett.*, *27*, 2901, 2000.

### **1999**

18. Hickey, M. P., and R. L. Walterscheid, A Note on Gravity Wave-Driven Volume Emission Rate Weighted Temperature Perturbations Inferred from O<sub>2</sub> Atmospheric and O I 5577 Airglow Observations, *J. Geophys. Res.*, *104*, 4279, 1999.
17. Walterscheid, R. L., J. H. Hecht, R. Vincent, I. M. Reid, J. Woithe, and M. P. Hickey, Analysis and Interpretation of Airglow and Radar Observations of Quasi-Monochromatic Gravity Waves in the Upper Mesosphere and Lower Thermosphere over Adelaide, Australia (35° S, 138° E), *J. Atmos. Solar-Terr. Phys.*, *61*, 461-478, 1999.
16. Schubert, G., R. L. Walterscheid, M. P. Hickey, and C. A. Tepley, Observations and Interpretation of Gravity Wave Induced Fluctuations in the OI (557.7 nm) Airglow, *J. Geophys. Res.*, *104*, 14,915-14,924, 1999.

### **1998**

15. Hickey, M. P., M. J. Taylor, C. S. Gardner, and C. R. Gibbons, Full-wave Modeling of Small-Scale Gravity Waves Using Airborne Lidar and Observations of the Hawaiian Airglow (ALOHA-93) O(<sup>1</sup>S) Images and Coincident Na wind/temperature Lidar Measurements, *J. Geophys. Res.*, *103*, 6439, 1998.

### **1997**

14. Hickey, M. P., R. L. Walterscheid, M. J. Taylor, W. Ward, G. Schubert, Q. Zhou, F. Garcia, M. C. Kelley, and G. G. Shepherd, Numerical Simulations of Gravity Waves Imaged over Arecibo during the 10-day January 1993 Campaign, *J. Geophys. Res.*, *102*, 11,475, 1997.

### **1995**

13. Hickey, M. P., and J. M. C. Plane, A Chemical-Dynamic Model of Wave-Driven Sodium Fluctuations, *Geophys. Res. Letts.*, *22*, 2861, 1995.
12. Hickey, M. P., P. G. Richards, and D. G. Torr, New Sources for the Hot Oxygen Geocorona: Solar Cyclical, Seasonal, Latitudinal and Diurnal Variations, *J. Geophys. Res.*, *100*, 17,377, 1995.

## **1994**

11. Walterscheid, R. L., G. Schubert, and M. P. Hickey, A Comparison of Theories for Gravity Wave Induced Fluctuations in Airglow Emissions, *J. Geophys. Res.*, *99*, 3935, 1994.
10. Richards, P. G., M. P. Hickey, and D. G. Torr, New Sources for the Hot Oxygen Geocorona, *Geophys. Res. Letts.*, *21*, 657, 1994.
9. Hickey, M. P. and R. L. Walterscheid, Wave-Modified Mean Exothermic Heating in the Mesopause Region, *Geophys. Res. Letts.*, *21*, 2413, 1994.

## **1993**

8. Hickey, M. P., G. Schubert, and R. L. Walterscheid, Gravity Wave-Driven Fluctuations in the O<sub>2</sub> Atmospheric (0-1) Nightglow from an Extended, Dissipative Emission Region, *J. Geophys. Res.*, *98*, 13,717-13,730, 1993.

## **1992**

7. Hickey, M. P., G. Schubert, and R. L. Walterscheid, Seasonal and Latitudinal Variations of Gravity Wave-Driven Fluctuations in OH Nightglow, *J. Geophys. Res.*, *97*, 14,911-14,922, 1992.

## **1991**

6. Schubert, G., R. L. Walterscheid, and M. P. Hickey, Gravity Wave-Drive Fluctuations in OH Nightglow from an Extended, Dissipative Emission Region, *J. Geophys. Res.*, *96*, 13,869-13,880, 1991.

## **1988**

5. Hickey, M. P., Effects of Eddy Viscosity and Thermal Conduction and Coriolis Force in the Dynamics of Gravity Wave-Driven Fluctuations in the OH Nightglow, *J. Geophys. Res.*, *93*, 4077, 1988.
4. Hickey, M. P., Wavelength Dependence of Eddy Dissipation and Coriolis Force in the Dynamics of Gravity Wave-Driven Fluctuations in the OH Nightglow, *J. Geophys. Res.*, *93*, 4089, 1988.
3. Hickey, M. P. and K. D. Cole, A Numerical Model for Gravity Wave Dissipation in the Thermosphere, *J. Atmos. Terr. Phys.*, *50*, 689, 1988.

## **1987**

2. Hickey, M. P. and K. D. Cole., A Quartic Dispersion Equation for Internal Gravity waves in the Thermosphere, *J. Atmos. Terr. Phys.*, *49*, 889, 1987.

## **1981**

1. Hickey, M. P. and K. D. Cole, Energy Transfer by Gravity Wave Dissipation, *Adv. Space Res.*, *1*, 65, 1981.



### **Conference Proceedings (Unreviewed)**

1. Hickey, M. P., A Theoretical Comparison of Internal Gravity Wave Propagation and Dissipation in High and Low Temperature Thermospheres: Implications for Orbiting Spacecraft, *Proceedings of the American Institute of Aeronautics and Astronautics 25th Aerospace Sciences Meeting*, Reno, Nevada (January 1987).

### **Research Reports**

6. Hickey, M. P., An Engineering Model for the Simulation of Small-Scale Thermospheric Density Variations for Orbital Inclinations Greater than 40 Degrees, NASA Contractor Report NAS8-38333, NASA/MSFC (August 1996).
5. Hickey, M. P., A Simulation of Small-Scale Thermospheric Density Variations for Engineering Applications, NASA Contractor Report 4605, NASA/MSFC (May 1994).
4. Smith, R. E. and M. P. Hickey, The Marshall Engineering Thermosphere Model Atmosphere Statistical Analysis Mode (MET\_SAM), Physitron Report PHY-92R032 for NASA/MSFC (November 1992).
3. Hickey, M. P., and R. E. Smith, Ninety-day Solar and Geomagnetic Activity Input Files for Thermospheric Variation Simulation: Simulation Data Files/Release 2, Physitron Report PHY-92R031 for NASA/MSFC (September 1, 1992).
2. Hickey, M. P., The NASA Marshall Engineering Thermosphere Model, NASA CR-179359 (July 1988).
1. Hickey, M. P., An Improvement in the Numerical Integration Procedure used in the NASA Marshall Engineering Thermosphere Model, NASA CR-179389 (August 1988).

### **Other Scholarly Publications**

Hickey, M. P., Gravity wave modeling in the mesosphere, thermosphere and ionosphere, *CAWSES TG4 Newsletter*, 11, pp. 4-5, April 2013.  
[http://www.cawses.org/wiki/images/8/8b/TG4\\_newsletter\\_issue11.pdf](http://www.cawses.org/wiki/images/8/8b/TG4_newsletter_issue11.pdf)

(Invited Review) Hickey, M. P., A Review of Gravity Wave Interactions with Selected Mesopause Nightglow Emissions, in *Trends in Geophysical Research*, 2, Council of Scientific Research Integration, India (1993).

Hickey, M. P., *The Propagation and Dissipation of Internal Gravity Waves in the Thermosphere*, Ph.D. dissertation, La Trobe University, Melbourne, Australia (1986).

### **PRESENTATIONS**

#### **Invited Papers**

15. Galvan, D A., A. Komjathy, M. P. Hickey, and A. J. Mannucci, Observing the Ionospheric Signature of Ocean Tsunamis Using GPS Total Electron Content, AGU Fall Meeting, San Francisco, December 2010.
14. Hickey, M. P., Tsunamigenic gravity waves in the thermosphere- ionosphere system: Challenges and opportunities, AGU Fall Meeting, San Francisco, December 2010.

13. Galvan, D., A. Komjathy, M. P. Hickey, and A. Mannucci, Towards observing tsunamis in the ionosphere using GPS TEC measurements, IEEE International Geoscience and Remote Sensing Symposium , Honolulu, Hawaii, 2010.
12. Hickey, M. P., R. L. Walterscheid, G. Schubert, A. Komjathy, D. Galvin, and A. Mannucci, Effects of tsunamis on the upper atmosphere, IEEE International Geoscience and Remote Sensing Symposium, Honolulu, Hawaii, 2010.
11. Hickey, M. P., G. Schubert, and R. L. Walterscheid, Gravity wave heating and cooling in Saturn's thermosphere, AGU Spring Meeting, New Orleans, May 2005.
10. Schubert, G., M. P. Hickey, and R. L. Walterscheid, Physical processes in acoustic wave heating of the thermosphere, AGU Spring Meeting, Montreal, May 2004.
9. Hickey, M. P., G. Schubert, and R. L. Walterscheid, The Effects of Ion Drag on Gravity Wave Heating and Cooling in Jupiter's Thermosphere, IUGG, Sapporo, Japan, July 10, 2003.
8. Hickey, M. P., Gravity Wave Packet Interactions with Chemical Processes in the Mesopause Region, AGU Spring Meeting, Washington DC, May 28, 2002.
7. Hickey, M. P., Gravity Wave Heating in Jupiter's and Earth's Thermosphere, Science Highlight at the XV CEDAR Meeting, Boulder, Colorado, June 2000.
6. Hickey, M. P., The Mesosphere Inversion Layer: Quasi-Nonlinear Simulations of Gravity Wave Forcing in the Mesopause Region, *EOS Trans.*, 79, no. 45, F681, San Francisco, California (December 1998).
5. Hickey, M. P., Gravity Wave Dynamics in the Mesopause Region and Related Effects, *AGU Western Pacific Meeting*, Brisbane, Australia (July 23-27, 1996).
4. Hickey, M. P., Gravity Wave Effects in the Mesopause Region, *AIP 12th Congress*, Hobart, Australia (June 30-July 5, 1996).
3. Hickey, M. P., Gravity Waves in the Sodium Layer, ALOHA Workshop, Lanai, Hawaii, May 10, 1995
2. Hickey, M. P., Wave-Driven Exothermic Heating in the Mesopause Region, *International Conference on Gravity Waves in the Atmosphere*, Lake Louise, Alberta, Canada (March 22-26, 1994).
1. Hickey, M. P., Internal Gravity Waves in the Upper Atmosphere, *World Ionosphere-Thermosphere Study (WITS)*, Canberra, Australia (January 1988).

### **Invited Colloquia**

15. Hickey, M. P., How to write a persuasive research grant proposal, *Embry-Riddle Aeronautical University WW2013 Worldwide Conference*, Atlanta, 29<sup>th</sup> August 2013.
14. Hickey, M. P., Full-Wave Modeling Studies of the Effects of Acoustic-Gravity Waves in the Terrestrial Mesosphere and Thermosphere, Embry-Riddle Aeronautical University, Prescott, AZ (January 31<sup>st</sup>, 2012).

13. Hickey, M. P., Tips to Writing a Persuasive Grant Proposal, *Leadership Enhancement Program*, Embry-Riddle Aeronautical University (November 19, 2010).
12. Hickey, M. P., Seven Tips to Writing a Persuasive Grant Proposal, *Leadership: Soaring to New Heights Conference*, Embry-Riddle Aeronautical University (April 4, 2009).
11. Hickey, M. P., Simulation of atmospheric gravity waves and effects in the upper atmosphere, Penn State Lehigh Valley-Berks, April 12, 2006.
10. Hickey, M. P., Atmospheric Acoustic-Gravity Wave Studies at Embry-Riddle Aeronautical University, University of Central Florida (September 19, 2003).
9. Hickey, M. P., Simulations of Atmospheric Gravity Waves in the Mesosphere and Lower Thermosphere, Embry-Riddle Aeronautical University (May 15, 2002).
8. Hickey, M. P., Atmospheric Gravity Waves and Their Ducting in the Mesosphere and Lower Thermosphere, Wake Forest University (November 8, 2001).
7. Hickey, M. P., Atmospheric Gravity Waves and Their Ducting in the Mesosphere and Lower Thermosphere, Clemson University (October 4, 2001).
6. Hickey, M. P., Atmospheric Gravity Waves: Their Behavior and Atmospheric Effects, Utah State University (November 6, 2000).
5. Hickey, M. P., Atmospheric Gravity Wave Effects in the Airglow, Johns Hopkins University/Applied Physics Laboratory (March 1998).
4. Hickey, M. P., The Effects of Atmospheric Gravity Waves on Chemical and Airglow Processes in the Mesosphere and Lower Thermosphere Region, Clemson University (March 25, 1997).
3. Hickey, M. P., A Model of Gravity Wave Propagation in an Inhomogeneous Atmosphere: Coupling Between Different Atmospheric Regions, Presented at the January 1993 Workshop, Boulder, Colorado (January 1995).
2. Hickey, M. P., Gravity Waves in the Terrestrial Upper Mesosphere and Lower Thermosphere, The University of Alabama in Huntsville (11 January, 1994).
1. Hickey, M. P., Mesopause Region Gravity Waves and Their Effects on Minor Species Distributions, The University of Alabama in Huntsville (Nov 12, 1993).

### **Invited Speeches**

1. (Invited) Hickey, M. P., Math Education: Thoughts and Reflections on the Old and the New, the US and Overseas, AAPT Lunchtime Speech, Embry-Riddle Aeronautical University, January 8<sup>th</sup> 2011.

### **Contributed**

79. Walterscheid, R. L. and M. P. Hickey, Gravity Wave Propagation in Diffusively Separated Gases: Mutual Diffusion and Collisional Effects on the Total Gas, Fall Meeting, AGU, San Francisco, CA, December ~~x~~, 2012.

78. Heale, C. J., J. B. Snively, and M. P. Hickey, Thermospheric dissipation and reflection of upward propagating gravity wave packets, 2012 CEDAR Workshop, MLT Poster Session, Santa Fe, NM, June 27, 2012.
77. Grabenhorst, E., C. J. Ali, C. J. Heale, J. B. Snively, G. G. Sivjee, M. P. Hickey, A. Z. Liu, Infrared Measurements of Hydroxyl Airglow Emissions and Gravity Wave Perturbations over Daytona Beach, Florida, 2011 CEDAR Workshop, MLT Poster Session, Santa Fe, NM, June 28, 2011.
76. Snively, J. B., M. J. Taylor, W. R. Pendleton, and M. P. Hickey, Ducted gravity waves in the mesosphere and lower thermosphere, Geophysical and Astrophysical Internal Waves, Les Houches, France, February 2011.
75. Galvan, D., A. Komjathy, M. P. Hickey, P. Stephens, J. Snively, Y. Tony Song, J. Foster, M. D. Butala, A. Mannucci, Ionospheric Signatures of Tohoku-Oki Tsunami in GPS TEC: Comparisons with Models Near the Epicenter and Far Afield, Abstract U53D-0112, Fall Meeting, AGU, San Francisco, CA, December 9, 2011.
74. Snively, J. B., R. L. Walterscheid, and M. P. Hickey (2011), Coupling between mesospheric and lower-thermospheric ducted gravity waves, Abstract SA31B-1980, 2011 Fall Meeting, AGU, San Francisco, CA, 5-9 Dec.
73. Komjathy, A., D. Galvan & M. Hickey, Can GPS Total Electron Content Measurements Be Used to Augment Tsunami Early Warning Systems?, IUGG Meeting, Melbourne, July 5<sup>th</sup> 2011.
72. Walterscheid, R., M. Hickey, M. Schubert, Gravity Wave Heating and Cooling of the Thermosphere and its Relation to the Sensible Heat Flux, IUGG Meeting, Melbourne, July 5<sup>th</sup> 2011.
71. Hickey, M. P., R. L. Walterscheid, and G. Schubert, Gravity wave propagation in a diffusively separated and viscous atmosphere, IUGG Meeting, Melbourne, July 5<sup>th</sup> 2011.
70. Hickey, M., B. Berhane, and J. Mosca, Using Kinematics of the Assembly Line to Teach Doppler Shift, AAPT Winter Meeting, Jacksonville, 2011.
69. Walterscheid, R. L., J. H. Hecht, M. P. Hickey, L. J. Gelinas, R. A. Vincent, I. M. Reid, and J. Woithe, An Intense Traveling Airglow Front in the Upper Mesosphere-Lower Thermosphere with Characteristic of a Turbulent Bore Observed over Alice Springs, Australia, AGU Fall Meeting, San Francisco, December 2010.
68. Snively, J. B., M. P. Hickey, and M. J. Taylor, Nonlinear airglow signatures of ducted gravity waves in the mesosphere and lower thermosphere, Abstract SA23A-1781, Fall Meeting, AGU, San Francisco, December 2010.
67. Hickey, M. P., R. L. Walterscheid, and G. Schubert, The accuracy of gravity wave models for a diffusively separated atmosphere, AGU Fall Meeting, San Francisco, December 2010.
66. Walterscheid, R. L., M. P. Hickey, and G. Schubert, Compositional and dissipative effects on wave propagation in a diffusively separated atmosphere, SCOSTEP, Bremen, Germany, July 2010.
65. Galvan, D., A. Komjathy, M. Hickey, J. Foster and A.J. Mannucci (2010). "Observing Traveling Ionospheric Disturbances Caused by Tsunamis Using GPS TEC

Measurements.” On the CD-ROM of Proceedings of Institute of Navigation (ION) GNSS 2010 Meeting, Portland, OR, Sept 20-24. (Won Best Presentation Award).

64. Komjathy, A., D.A. Galvan, M.P. Hickey and A.J. Mannucci (2010b). “Towards Observing Tsunamis in the Ionosphere Using GPS Total Electron Content Measurements.” Presented at the George H. Born Symposium at the University of Colorado at Boulder, May 13-14, 2010.
62. Huang, T., and M. P. Hickey, Investigations of exothermic heating and OH nightglow variations induced by a gravity wave packet at 18 degrees south, presented at the 2009 Fall AGU Meeting, SA53A-1243, December 2009.
62. Galvan, D. A., A. Komjathy, A. Mannucci, M. P. Hickey, G. Schubert, and R. L. Walterscheid, Towards observing tsunamis in the ionosphere using GPS TEC measurements, presented at the 2009 Fall AGU Meeting, NH42A-03, December 2009.
61. Udrea, B., R. B. Cosgrove, R. A. Doe, F. Herrero, M. P. Hickey, S. Vadas, J. Malsbury, S. Fuller, and A. Huang, Dipping Thermospheric Explorer CubeSat, presented at the 2009 Fall AGU Meeting, SM33C-1582, December 2009.
60. Hickey, M. P., Walterscheid, R. L., and G. Schubert, Effects of a major tsunami on the energetics and dynamics of the thermosphere, presented at the 2009 Fall AGU Meeting, SA11A-1452, December 2009.
59. Walterscheid, R. L., and M. P. Hickey, Models of gravity wave energy flow and group velocity in the viscous lower thermosphere: Implications for ray tracing, presented at the 2009 CEDAR Meeting, Santa Fe, NM, June 30, 2009.
58. Hickey, M. P., Aeronomic measurements as an early-warning detection of tsunami-driven gravity waves in the thermosphere and ionosphere, ITM Meeting, February 10-12, 2009, Los Angeles, CA.
57. Hickey, M. P., Simulations of Tsunami Effects in the F-Region Ionosphere, AGU Fall Meeting, San Francisco, December 16, 2008.
56. Hickey, M. P., Simulations of Tsunami Effects in the Ionosphere, Embry-Riddle Aeronautical University, November 6, 2008.
55. Dzienis, N. M., Huang, T.-Y., Hickey, M. P. (2008). Simulations of wave-induced variations of minor species and OH airglow in the MLT region at north and south 18 degree latitude, CEDAR workshop, Utah, USA.
54. Dzienis, N. M., Huang, T.-Y., Hickey, M. P. (2008). Simulations of wave-induced variations of minor species in the MLT region at north and south 18 degree latitude, The 2008 Penn State Lehigh Valley Undergraduate Research and Scholarship Symposium, Fogelsville, Pennsylvania, USA.
53. Walterscheid, R. L., J. H. Hecht, L. Gelinias, and M. P. Hickey, Ducting conditions for observed bore-like events in the upper mesosphere and lower thermosphere, AGU Fall Meeting, San Francisco, December 2007.
52. Walterscheid, R. L., and M. P. Hickey, Conditions for the formation of mesospheric undular bores, IUGG, Perugia, Italy, July 2007.

51. Huang, T.-Y., & Hickey, M. P. (2006). Investigations of wave-induced secular variations of OH nightglow emission and the intensity-weighted temperature in the MLT region, The 36<sup>th</sup> COSPAR Scientific Assembly, Beijing, China.
50. Loughmiller, P. J., M. C. Kelley, and M. P. Hickey, "Observational and Modeling Study of Mesospheric Bores", COSPAR, Beijing, China, July, 2006.
49. Yu, Y., and M. P. Hickey, "The Numerical Simulation of Gravity Waves Propagating Upward Through the Middle Atmosphere Forced by Latent and Convective Heating", COSPAR, Beijing, China, July, 2006.
48. Walterscheid, R. L. and M. P. Hickey, Acoustic Waves Generated by Gusty Flow Over Hilly Terrain, EGU, Vienna, Austria, April, 2006.
47. Loughmiller, P. J., M. C. Kelley, and M. P. Hickey, "Observational and Modeling Study of Mesospheric Bores", AMOS Meeting, Maui, Hawaii, September, 2005.
46. Huang, T.-Y., and M. P. Hickey, "The Formation of MILs in the MLT Region Triggered by Gravity Wave Forcing", 2nd IAGA/ICMA workshop, Bath, United Kingdom, 2004.
45. Huang, T.-Y., and M. P. Hickey, On latitudinal dependence of secular variations induced by a dissipating gravity wave packet, AGU Fall Meeting, San Francisco, December 2003.
44. Hickey, M. P., G. Schubert, and R. L. Walterscheid, Ion drag effects in gravity wave heating and cooling in Jupiter's thermosphere, IUGG Meeting, Sopporo, Japan, July 2003.
43. Huang, T.-Y., & Hickey, M. P. (2003). A comparative study of the observed airglow intensity with the full-wave model simulations, EGS-AGU-EUG Joint Assembly, Nice, France.
42. Hickey, M. P., A Note on The Effects of Wind Shear Instabilities on Airglow Emissions in the MLT Region, EGS/AGU Spring Meeting, Nice, France, April 2003.
41. Hickey, M. P., and T. Y. Huang, T. -Y, Simulation of MILs in the MLT region using a quasi-linear full-wave model, AGU Western Pacific Meeting, Wellington, New Zealand, 2002.
40. Huang, T.-Y., & Hickey, M. P. (2001). Simulations of MILs in the MLT region using a quasi-linear full-wave model, AGU Fall Meeting, San Francisco, California, USA.
39. Schubert, G., M. P. Hickey, and R. L. Walterscheid, Acoustic wave dissipation and heating of Jupiter's thermosphere, DPS, New Orleans, 2001.
38. Hickey, M. P., G. Schubert, and R. L. Walterscheid, Heating of Jupiter's thermosphere by dissipating acoustic waves, *Eos. Trans. AGU*, 82(47), Fall Meet. Suppl., F973, 2001.
37. Huang, T. Y., and M. P. Hickey, Secular Variations of Minor Species and OH Airglow in the Mesopause Region by Transient Gravity Wave Packets, Fall Meeting of the American Geophysical Union, San Francisco, December 2000.
36. Hickey, M. P., & Huang, T.-Y. (2000). Secular variations of chemical exothermic heating in the mesopause region induced by transient and dissipating gravity wave packets, AGU Fall Meeting, San Francisco, California, USA.

35. Hickey, M. P., R. L. Walterscheid, and P. G. Richards, Secular Variations of Atomic Oxygen and OI 5577 Airglow in the Mesopause Region Induced by Transient Gravity Wave Packets, XV CEDAR Meeting, Boulder, Colorado, June 2000.
34. Hickey, M. P., and J. S. Brown, Gravity Wave Propagation Directions Inferred from Satellite Observations Including Smearing Effects, XV CEDAR Meeting, Boulder, Colorado, June 2000.
33. Hammett, R., and M. P. Hickey, Effects of Mean Winds on Gravity Wave-Driven O<sub>2</sub> Atmospheric Airglow Fluctuations, XV CEDAR Meeting, Boulder, Colorado, June 2000.
32. Huang, T. Y., M. P. Hickey, and S. Stanhope, Investigation of Gravity Waves Using Starfire Data, XV CEDAR Meeting, Boulder, Colorado, June 2000.
31. Hickey, M. P., and R. L. Walterscheid, The Numerical Simulation of Wave Packets and Their Effects on the OI 5577 Airglow, *EGS XXV General Assembly*, Nice, France, April 2000.
30. Hecht, J. H., R. L. Walterscheid, M. P. Hickey, and S. J. Franke, Airglow observations and modeling of quasi-monochromatic atmospheric gravity waves in the lower thermosphere thermal duct over Urbana, Illinois, *EOS Trans.*, 80, no. 46, F774, San Francisco, California (December 1999).
29. Hickey, M. P., R. L. Walterscheid, and G. Schubert: Gravity Wave Heating and Cooling in Jupiter's Thermosphere, *IUGG General Assembly*, Birmingham, UK, 1999.
28. R. DeMajistre, J. H. Yee, Xun Zhu, F. Morgan, L. J. Paxton, G. J. Romick, C-I Meng, and M. P. Hickey, Wavebreaking features in the mesopause region revealed by the airglow measurements obtained by the UVISI/MSX instruments, *EOS Trans.*, 79, no. 45, F684, San Francisco, California (December 1998).
27. Hickey, M. P., G. Schubert, and R. L. Walterscheid, Full-Wave Modeling of Gravity Wave Heating in Jupiter's Thermosphere, *EOS Trans.*, 79, no. 45, F550, San Francisco, California (December 1998).
26. Walterscheid, R. L., J. H. Hecht, R. A. Vincent, I. M. Reid, J. Woithe, and M. P. Hickey, Analysis and interpretation of airglow and radar observations of quasi-monochromatic gravity waves in the upper mesosphere and lower thermosphere over Adelaide, Australia (35S, 138E), *EOS Trans.*, 78, no. 46, F518, San Francisco, California (December 1997).
25. Leko, J. J., M. F. Morgan, M. J. Taylor, G. J. Romick, J. H. Yee, M. P. Hickey, C. I. Meng, L. J. Paxton, and D. E. Anderson, Simultaneous observations of gravity waves at mid-latitudes using coordinated MSX satellite data collection events, *EOS Trans.*, 78, no. 46, F517, San Francisco, California (December 1997).
24. Hickey, M. P., P. G. Richards, R. L. Walterscheid, and M. Wellman, A 2-D, Time-Dependent, Nonlinear Model of Gravity Wave-Driven Fluctuations in the OI 557.7 nm Nightglow, *EOS Trans.*, 78, no. 46, F510, San Francisco, California (December 1997).
23. Hickey, M. P., and P. G. Richards, Time-Dependent, Nonlinear Modeling of Gravity Wave-Driven Fluctuations in the O(S) Nightglow, *EOS Trans.*, 77, no. 46, F547, San Francisco, California (December 1996).
22. Hickey, M. P., R. L. Walterscheid, and G. Schubert, The Propagation and Dissipation of Gravity Waves in the Terrestrial Atmosphere: Full-wave versus WKB models, *Fall Meeting of the American Geophysical Union*, San Francisco, California (December 1995).

21. Leko, J., and M. P. Hickey, Simulating Space-Based Observations of Gravity Wave-Driven Mesospheric Airglow Fluctuations, *Fall Meeting of the American Geophysical Union*, San Francisco, California (December 1995).
20. (Session Chair) Hickey, M. P., R. L. Walterscheid, and G. Schubert, A Model of Gravity Wave Propagation in an Inhomogeneous Atmosphere, *Fall meeting of the American Geophysical Union*, San Francisco, California (December 1994).
19. Hickey, M. P., P. G. Richards, and D. G. Torr, New Sources for the Hot Oxygen Geocorona, *Spring Meeting of the American Geophysical Union*, Baltimore, Maryland (May 1994).
18. Hickey, M. P. and R. L. Walterscheid, Wave-Driven Exothermic Heating in the Mesopause Region, *Fall Meeting of the American Geophysical Union*, San Francisco, California (December 1993).
17. Hickey, M. P. and J. M. C. Plane, A Model of Wave-Driven Fluctuations in the Sodium Nightglow and Sodium Layer, *Fall Meeting of the American Geophysical Union*, San Francisco, California (December 1993).
16. Hickey, M. P., R. L. Walterscheid, and G. Schubert, A Model of Wave-Driven Fluctuations in the O(<sup>1</sup>S) Nightglow, *Spring Meeting of the American Geophysical Union*, Baltimore, Maryland, (May 1993).
15. (Session Chair) Hickey, M. P., Gravity Waves in the O<sub>2</sub> Atmospheric Nightglow: Modeling and Observations, *Fall Meeting of the American Geophysical Union*, San Francisco, California (December 1992).
14. Walterscheid, R. L., G. Schubert, and M. P. Hickey, A Comparison of Theories for Gravity Wave-Induced Fluctuations in Airglow Emissions, *Fall Meeting of the American Geophysical Union*, San Francisco, California (December 1992).
13. Smith, R. E., M. P. Hickey, C. A. Gipson, and P. N. Sonnenburg, Identification of Accurate Discrete Periods in Solar Activity and Subsequent Regression Results, *Fall Meeting of the American Geophysical Union*, San Francisco, California (December 1992).
12. Hickey, M. P., G. Schubert, and R. L. Walterscheid, Modeling Gravity Wave-Driven O<sub>2</sub> (0-1) Band Emission Fluctuations, *CEDAR Meeting*, Boulder, Colorado (June 1992).
11. Hickey, M. P., G. Schubert, and R. L. Walterscheid, Gravity Wave-Driven Fluctuations in the O<sub>2</sub> Atmospheric (0-1) Nightglow at Arecibo During the AIDA Act'89 Campaign: Comparisons of Observations and a Model, *Spring Meeting of the American Geophysical Union*, Montreal, Canada (May 1992).
10. Hickey, M. P., G. Schubert, and R. L. Walterscheid, Wave-Driven Fluctuations in the O<sub>2</sub> Atmospheric (O<sub>2</sub>(b'<sup>1</sup>Σ<sub>g</sub><sup>+</sup>)) Nightglow, *Fall Meeting of the American Geophysical Union*, San Francisco (December 1991).
9. Anderson, B., R. J. Suggs, R. E. Smith, M. P. Hickey and K. Catlett, Recent Improvements in Atmospheric Environment Models for Space Station Applications, *AIAA 29<sup>th</sup> Aerospace Sciences Meeting*, Reno, Nevada (January 1988).
8. Hickey, M. P., R. L. Walterscheid, and G. Schubert, Gravity Wave Modulations of the Mesopause OH Nightglow, *Fall Meeting of the American Geophysical Union*, San Francisco, California (December 1989).



7. Johnson, D. L., R. E. Smith, and M. P. Hickey, Comparisons of the MSFC/J70 and CIRA 1986 Thermosphere Models at Shuttle (230 km) and Tethered Satellite (130 km) Altitudes: Atomic Oxygen and Total Densities, *AIAA 26<sup>th</sup> Aerospace Sciences Meeting*, Reno, Nevada (January 1988).
6. Hickey, M. P., Wavelength Dependence of Eddy Dissipation and Coriolis Force in the Dynamics of Gravity Wave Driven Fluctuations in the OH Nightglow, *Fall Meeting of the American Geophysical Union*, San Francisco, California (December 1987).
5. Hickey, M. P., A Theoretical Comparison of Internal Gravity Wave Propagation and Dissipation in High and Low Temperature Thermospheres: Implications for Orbiting Spacecraft, *AIAA 25th Aerospace Sciences Meeting*, Reno, Nevada (January 1987).
4. Hickey, M. P., Attenuation Distances of Internal Gravity Waves in the Thermosphere and Their Dependence on the Thermospheric Structure, *Fall Meeting of the American Geophysical Union*, San Francisco, California (December 1986).
3. Hickey, M. P. and K. D. Cole, Gravity Wave Dissipation and Energy Input to the Thermosphere, *Sixth National Congress of the Australian Institute of Physics*, Brisbane, Australia (1984).
2. Hickey, M. P. and K. D. Cole, The Dissipation of Gravity Waves in the Thermosphere and Its Relation to Propagation, *Discussion Meeting on Solar-Terrestrial Physics*, Melbourne, Australia (1980).
1. Hickey, M. P. and K. D. Cole, Gravity Wave Heating of the Thermosphere in Magnetically Quiet and Disturbed Conditions, *XVII IUGG General Assembly*, Canberra, Australia (1979).

## **SPONSORED RESEARCH**

### **Submitted Proposals**

### **Funded Proposals**

1. "A Dynamical-Chemical Model of Wave-Driven Fluctuations in the Sodium Nightglow", NSF, Principal Investigator, \$40,000, (\$40,000), (1993-1994)
2. "Data Fusion and Visualization System", Navy SBIR, Principle Investigator, \$50,000, (\$50,000), (1993-1994)
3. "Investigating Chemical Processes in the MLT Region Using a Model of Wave-Driven Airglow Fluctuations", NSF, Principal Investigator, \$199,774, (\$199,774), (1994-1997)
4. "Wave-Driven Exothermic Heating in the Mesopause Region", NASA, Principal Investigator, \$230,578, (\$230,578), (1994-1997)

5. "Determining Gravity Wave Energetics from Coincident Space-Based and Ground-Based Observations of Nightglow Emissions", NASA, Principal Investigator, \$40,000, (\$40,000), (1997-1998)
6. "Modeling Mesospheric Gravity Waves Using Starfire and MesoD Data: A CEDAR Study", NSF, Principal Investigator, \$147,055, (\$147,055), (1997 - 2000)
7. "A Detailed Investigation of Gravity Wave Influences on Minor Species and Their Transport, Associated Nightglow Emissions, and Related Effects in the Mesopause Region: Explanations of Some Outstanding or Unresolved Issues", NSF, Principal Investigator, \$188,719, (\$188,719), (1997 - 2000)
8. "Investigating the Feasibility of and Limitations Associated with Recovering Gravity Wave Parameters from Simulated/Observed Space-Based Measurements of Airglow Structures", NASA, Principal Investigator, \$158,676, (\$79,623), (1998 - 2000)
9. "Numerical Simulation and Parameterization of Gravity Wave Propagation and Effects in the Lower, Middle, and Upper Atmosphere", NSF, Principal Investigator, \$180,000, (\$180,000), (1998 - 2000)
10. NSF Supplement to "A Detailed Investigation of Gravity Wave Influences on Minor Species and Their Transport, Associated Nightglow Emissions, and Related Effects in the Mesopause Region: Explanations of Some Outstanding or Unresolved Issues", NSF, Principal Investigator, \$17,400, (\$17,400), (2000 - 2001)
11. "CEDAR Studies of the Numerical Simulation of Gravity Wave Packets: Effects on Chemical Exothermic Heating", NSF, Principal Investigator, \$131,566, (\$131,566), (2001 - 2004)
12. "CEDAR POSTDOC: A Numerical Study on Time-Dependent Effects of Ducting", NSF, Principal Investigator, \$100,000, (\$100,000), (2001 - 2003)
13. "Small Scale Wave Disturbances in the Upper Mesosphere and Lower Thermosphere: Wave Propagation in Highly Structured and Variable Backgrounds", The Aerospace Corporation, Principal Investigator, \$52,000, (\$52,000), (2000 - 2003)
14. "Studies of Wind-Shear Instabilities and Gravity Waves in the MLT Region Airglow and Related Effects", NASA, Principal Investigator, \$248,521, (\$248,521), (2001-2004)
15. "ITR/AP (GEO): Small-Scale Dynamical Interactions with Chemical Processes in the Terrestrial Upper Atmosphere", NSF, Principal Investigator, \$350,000, (\$350,000), (2001-2004)
16. "A Large Beowulf Cluster for Across Discipline Research and Education at Embry-Riddle Aeronautical University", NSF, Principal Investigator, \$757,825 (2004-2007)
17. "The Contribution of Atmospheric Gravity Waves to the Energy Budget of Jupiter's Thermosphere", Florida Space Grant Consortium, Principal Investigator, \$3,000 (2004)
18. "Mutual Diffusion Effects in Mesospheric and Thermospheric Gravity Wave Processes", NASA, Principal Investigator, \$43,000, (\$43,000), (2004-2007).
19. "A Modeling Investigation of Ducted Gravity Waves in the MLT Region: Energetics, Airglow Response, and Relation to "Wall" Events", \$365, 025, (\$365,025), (2004-2007)

20. "A CEDAR Postdoc Observational and Modeling Study of Mesospheric Bores", NSF, Principal Investigator, \$160,001 (\$160,001), (2005-2007)
21. "Development of a Numerical Model to Investigate the Propagation, Dissipation and Effects of Atmospheric Acoustic-Gravity Waves in Planetary Atmospheres", ERAU Internal Proposal, Principal Investigator, \$4,700, (\$4,700), (2005)
22. "Human Exploration and Development of Space (HEDS) High School Teachers Program", NASA. Co-Principal Investigator, \$145,200, (2005-2006)
23. "TeachSpace: Human Exploration and Development of Space High School Teachers Program", NASA. Principal Investigator, \$45,000, (2006)
24. "Study of Mutual Diffusion Effects in the Upper Atmosphere and Thermospheric Gravity Wave Processes", NSF, Principal Investigator, \$258,080 (\$183,000) (2007-2010)
25. "Research Experience for Teachers: Aviation and Aerospace", NSF, Co-PI, \$499,208 (2009-2012)
26. "Collaborative Research: Observation and Modeling of Acoustic Waves in the Ionosphere and Lower Thermosphere", NSF, Principal Investigator, \$90,000 (2010-2013)
27. Improving the Calculation of the Ionospheric Response to Atmospheric Acoustic-Gravity Waves in a Full-Wave Model for Tsunami-Ionosphere Interaction Studies, NASA/JPL Subcontract, \$20,000 (2010-2011)
28. "Tsunami Imaging Using Ionospheric Radio Occultation Data", NASA ROSES 2010, Co-I, \$78,000 (PI Dr. Attila Komjathy, NASA/JPL, \$440,500 total), 2013-2016.

#### **UNDER-GRADUATE STUDENT ADVISING**

Curt Turner, Senior Thesis, Clemson University (2000)

Holly Bowen, Senior Thesis, Clemson University (2001)

#### **GRADUATE STUDENT ADVISING**

Mr. Justin Lory, M.S. Candidate, Embry-Riddle Aeronautical University (2003-2006)

Mr. Yonghui Yu, Ph.D. Candidate, Embry-Riddle Aeronautical University/University of Central Florida (2003-2007)

Mr. Yonghui Yu, M.S. Candidate, Embry-Riddle Aeronautical University (2001-2003)

Ms. Martha Davis, M.S. Candidate, Clemson University (2000-2002)

#### **POST-DOCTORAL ADVISING**

Dr. Jason Brown, Clemson University (1999-2000)

Dr. Tai-Yin Huang, Clemson University (1999-2002)

Dr. Pamela Loughmiller, Embry-Riddle Aeronautical University (2006-2008)

Dr. Yonghui Yu, Embry-Riddle Aeronautical University (2007)

## **STAFF SUPERVISION**

Mr. Sourabh Pandit, Computer Engineer, Embry-Riddle Aeronautical University (2003-2008)

Mrs. Teresa Ochoa, TeachSpace Communications Coordinator, Embry-Riddle Aeronautical University (2005-2011)

## **TEACHING**

### **Courses Taught**

Senior Electronics, Jan.-May 1986, Deakin University, formerly Rusden Teachers' College.

General Physics, Jan.-May 1986, Deakin University, formerly Rusden Teachers' College.

Calculus and Trigonometry, Jan-May 1986, Deakin University, formerly Rusden Teachers' College.

ATS663-01, The Dynamics and Chemistry of the Atmosphere Above 75 km Altitude, Winter 1994, The University of Alabama in Huntsville.

Phys. 455/655, Quantum Physics, Fall 1999, Clemson University.

Phys. 456/656, Quantum Physics, Spring 2000, Clemson University.

Phys. 455/655, Quantum Physics, Fall 2000, Clemson University.

Phys. 456/656, Quantum Physics, Spring 2001, Clemson University.

Phys. 240, The Physics of Weather, Spring 2001, Clemson University.

Phys. 240, The Physics of Weather, Spring 2002, Clemson University.

Phys. 875-6, Geophysical Fluid Dynamics I, Fall 2001, Clemson University.

Phys. 875-6, Geophysical Fluid Dynamics II, Spring 2002, Clemson University.

PS 160 (2 sections), Spring 2003, Embry-Riddle Aeronautical University

PS 160 (2 sections), Fall 2003, Embry-Riddle Aeronautical University

PS 160 (2 sections), Spring 2004, Embry-Riddle Aeronautical University

PS 103 (1 section), Spring 2004, Embry-Riddle Aeronautical University

PS 150 (2 sections), Fall 2004, Embry-Riddle Aeronautical University

PS 250 (2 sections), Fall 2004, Embry-Riddle Aeronautical University

PS 150 (1 section), Fall 2007, Embry-Riddle Aeronautical University

PS 150 (1 section), Fall 2008, Embry-Riddle Aeronautical University

PS 150 (1 section), Fall 2009, Embry-Riddle Aeronautical University

EP 399 (Special Topics), Spring 2010, Embry-Riddle Aeronautical University

PS 150 (1 section), Fall 2010, Embry-Riddle Aeronautical University

### **New Course Development**

Senior Electronics, Rusden Teachers' College, 1986.

ATS663-01, The Dynamics and Chemistry of the Atmosphere Above 75 km Altitude, Winter 1994, The University of Alabama in Huntsville.

Phys. 875-6, Geophysical Fluid Dynamics I, Fall 2001, Clemson University.

Phys. 875-6, Geophysical Fluid Dynamics II, Spring 2002, Clemson University.

### **UNIVERSITY AND PUBLIC SERVICE**

#### **Program Development**

Embry-Riddle Aeronautical University, Ph.D. Degree in Engineering Physics, 2007-2008  
Helped plan and lead the development of a new Ph.D. program in Engineering Physics, including the development of an internal report for submission to the Provost ("*A Road Map for a Ph.D. Degree Program in Space and Engineering Physics*", September 18<sup>th</sup> 2007), filing of the internal A-04M form (April 2008), and helping with the development of the required Commission on Colleges, Southern Association of Colleges and Schools (SACS) application forms seeking accreditation at a more advanced degree level (August 2008).

#### **Invited presentation to Board Of Trustees:**

Hickey, M. P., *Engineering Physics PhD Program Update*, Embry-Riddle Aeronautical University (March 26<sup>th</sup>, 2010).

#### **Committees**

The University of Alabama in Huntsville, College of Science, Member, Graduate Student Committee (1994 - 1998)

The University of Alabama in Huntsville, Jay Leko, Ph.D. (1994-1998) (chair)

The University of Alabama in Huntsville, Marylyn Wellman, M.S. (1996-1997) (chair)

The University of Alabama in Huntsville, Judy Fennelly, Ph.D. (1995-1997)

The University of Western Ontario, Canada, Member of Graduate (Ph.D.) Committee for R. G. Stockwell (1997-1999)

Clemson University, Joel Burcham, Ph.D., (1998-2000)

Clemson University, Robert Wilson, Ph.D., (1998-2001)

Clemson University, Daniel Tekleab, Ph.D., (2000)

Clemson University, Inger-Marie Bjolseth, M.S., (2001)

Clemson University, Martha Davis, MS (2000-2002) (chair)

Clemson University, Yonghui Yu, MS (2001-2003) (chair)

Clemson University, Physics Faculty Search Committee (1999-2000)

Clemson University, Qualifier Examination Committee (1999)

Clemson University, Curriculum Committee (2000-2003)

Clemson University, Graduate Student Recruiting Committee (2000-2003)

Clemson University, College Computer Committee (2000-2003)

Embry-Riddle Aeronautical University, Graduate Committee (2003-)

Embry-Riddle Aeronautical University, Yonghui Yu, MS (2002-2003) (chair)

Embry-Riddle Aeronautical University, Justin Lori, MS (2003-2005) (chair)

Embry-Riddle Aeronautical University, Yonghui Yu, Ph.D. (2003-) (chair)

Embry-Riddle Aeronautical University, Joshua Bryson, M.S. (2003-2005)

Embry-Riddle Aeronautical University, David Mackler, M.S. (2003-2005)

Embry-Riddle Aeronautical University, President's Council (2004-2006)

Embry-Riddle Aeronautical University, PS Dept. Faculty Development Committee (2003-)

Embry-Riddle Aeronautical University, Faculty Senate (Fall 2004-2005)

Embry-Riddle Aeronautical University, Dept. Physical Sciences Faculty Search Committee (Fall 2004-Spring 2005) (chair)

Embry-Riddle Aeronautical University, Dept. Mathematics Chair Search Committee (Spring 2005) (chair)

Embry-Riddle Aeronautical University, Life Sciences Associate Chair Search Committee (Spring 2005)

Embry-Riddle Aeronautical University, University Diversity Committee (2006)

Embry-Riddle Aeronautical University, College of Arts and Sciences Dean Search Committee (2007)

Embry-Riddle Aeronautical University, The Inventors and Entrepreneurs Program Ad-Hoc Committee (2008 - )

Embry-Riddle Aeronautical University, Dept. Physical Sciences Faculty Search Committee (Fall 2009-Spring 2010) (chair)

Embry-Riddle Aeronautical University, Dept. Aeronautical Engineering Chair Search Committee (Fall 2010) (chair)

## **Other Service**

(Invited) Chair, NASA Panel Review for the Heliospheric Guest Investigator Program, August 2008.

Organizer, “Bores and Ducted Gravity Waves Workshop”, Embry-Riddle Aeronautical University, February 21-22 2008.

Convener & Session Chair (with Dr. Alan Aylward) “Comparative Studies of Dynamics and Structure of Thermospheres of the Planets Using GCM’s”, AGU Spring Meeting, New Orleans, May 2005.

(Invited) Chair, NASA Panel Review, August 2004.

(Invited) Convener & Session Chair for “Mesosphere-Thermosphere-Ionosphere Coupling Processes and Issues for the Earth and Planets”, AGU Spring Meeting, Montreal, Canada, May 17-21, 2004.

Convener & Session Chair for “The Mesosphere, Lower Thermosphere Region: Structure, Dynamics and Composition”, European Geophysical Society/AGU Spring Meeting, Nice, France, April 9-12 2003.

Convener & Session Chair for “The Dynamics of the Mesosphere, Lower Thermosphere Region”, AGU Western Pacific Meeting, Wellington, New Zealand, July 9-12 2002.

(Invited) Chair of Comparative Atmospheres Plenary Session, XV CEDAR Meeting, Boulder, CO, June 2000.

(Invited) Co-Chair of Atmospheric Dynamics and Chemistry Session, *EGS XXV General Assembly*, Nice, France, April 2000.

Panel Member and Mail-in Proposal Reviewer for NASA

Panel Member and Mail-in Proposal Reviewer for NSF

Mail-in Proposal Reviewer for the Air Force Office of Scientific Research

Mail-in Proposal Reviewer for the United States Civilian Research and Development Foundation For The Independent States of The Former Soviet Union

Mail-in Reviewer for the Natural Sciences and Engineering Research Council of Canada

Referee for: The Journal of Geophysical Research, The Journal of Atmospheric and Solar-Terrestrial Physics, Annales Geophysicae, Geophysical Research Letters, The Journal of Applied Optics, Geophysical and Astrophysical Fluid Dynamics, Dynamics of Atmospheres and Oceans, Icarus.