

Curriculum Vitae
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Professional Experience

August, 1992 -- present	Scientist, High Altitude Observatory, National Center for Atmospheric Research; promoted to Senior Scientist in 2003.
March, 2013 -- August, 2013	Interim Director, National Center for Atmospheric Research, Boulder, Colorado.
August, 2008 -- September, 2013	Deputy Director, National Center for Atmospheric Research, Boulder, Colorado.
August, 2005 -- May, 2010	Director, Advanced Study Program, National Center for Atmospheric Research.
July, 2004 -- August, 2005	Acting Director, Advanced Study Program, National Center for Atmospheric Research.
June, 1986 --August, 1992 01886.	Research Staff Member, Massachusetts Institute of Technology, Haystack Observatory, Westford, Massachusetts
August, 1990 -- June, 1991	Visiting Scientist, National Center for Atmospheric Research, Boulder, Colorado 80307-3000.
September, 1983 --August, 1986	Research Assistant, Department of Physics, Boston College, Chestnut Hill, Massachusetts 02167.
January, 1977 --July, 1983	Research Analyst, Space Data Analysis Laboratory, Boston College, Chestnut Hill, Massachusetts 02167.

Research Interests

Physics of the upper atmosphere including: chemical/dynamical coupling between the lower, middle, and upper atmosphere; atmospheric tides and waves; electrodynamic coupling between

ionospheric plasma and the neutral thermosphere. The effects of global change, meteorological disturbances, and space weather on the middle and upper atmosphere.

Education

Ph.D. in Physics, 1987, Boston College, Chestnut Hill, Massachusetts. Dissertation entitled "Solar Cycle Variability of Exospheric Temperature."

M.S. in Physics, 1980, Boston College, Chestnut Hill, Massachusetts.

B.A. in Physics, 1975, Emmanuel College, Boston, Massachusetts.

Honors

American Geophysical Union Space Physics and Aeronomy Marcel Nicolet Lecturer, Fall Meeting of the American Geophysical Union, 2014

Outstanding Accomplishment Award for Mentoring, University Corporation for Atmospheric Research, 2013

Robert A. Jenkins Memorial Lecturer, University of Wyoming Undergraduate Research Day, 2012

Fellow, American Geophysical Union, 2011

Fellow, American Meteorological Society, 2011

NASA Group Achievement Award, Thermosphere Ionosphere Mesosphere Energetics and Dynamics (TIMED) Satellite Team Member, 2008

Michael J. Buonsanto Memorial Lecturer, Massachusetts Institute of Technology, Haystack Observatory, 2008

NASA Group Achievement Award, Upper Atmosphere Research Satellite (UARS) Team Member, 2006

NSF Coupling Energetics and Dynamics of Atmospheric Regions (CEDAR) Prize Lecturer, 2004

Nominee, Australian Institute of Physics Women in Physics Lecture Series, 1998

Young Careerist Award, Massachusetts Business and Professional Women's Organization, 1983

Service on Boards and Committees

Member, Board on Atmospheric Sciences and Climate (BASC) of the National Academies, September 2014 to present

Member, NSF CEDAR Science Steering Committee, June 1997 to June 2000, and September 2014 to present

Member, International Council for Sciences (ICSU) Scientific Committee on Solar-Terrestrial Physics (SCOSTEP) Visiting Scholars Subcommittee, April 2014 to present

Acting Chair, NSF Geospace Sciences Committee of Visitors, June 2014

Member, American Geophysical Union (AGU) Space Physics and Aeronomy (SPA) Advocacy Committee, July 2013 to July 2014

Member, Association of Universities for Research in Astronomy (AURA) Solar Observatory Council (SOC), July 2013 to present

Member, American Meteorological Society Awards Nominating Committee, January 2013 to present

Member, American Geophysical Union Space Physics and Aeronomy Fellows Committee, December 2012 to present

Member, Science Committee of the NASA Advisory Council and Chair of the Heliophysics Subcommittee, May 2012 to April 2015

Member, Wyoming Experimental Program to Stimulate Competitive Research (EPSCoR) Governing Committee, August 2011 to present

Member, UCAR Community Advisory Committee for the National Center for Environmental Prediction (NCEP), July 2011 to June 2012

Member, NASA Living with a Star (LWS) Steering Committee for the Heliophysics Postdoctoral Fellowship Program, 2009 to 2012

Member, National Research Council Committee on Solar and Space Physics (CSSP), November 2007 to 2011

Chair, NSF Advanced Modular Incoherent Scatter Radar (AMISR) Review Panel, March 2007 and March 2008

Member, American Geophysical Union Journal of Geophysical Research Editors Search Committee, March 2006 to 2009

Affiliate Faculty Member, Physics Department, Colorado State University, September 2003 to 2008

Member, Atmospheric Coupling Working Group, Climate and Weather of the Sun-Earth System (CAWSES), Scientific Committee on Solar-Terrestrial Physics (SCOSTEP), International Council of Scientific Unions, April 2004 to 2007

Member, NSF Upper Atmosphere Facilities (UAF) Review Panel, September 2003 to June 2004

Member, NASA Geospace Management Operations Working Group (GMOWG) April 2003 to December 2007

Member, Atmosphere-Ionosphere-Magnetosphere Panel for the Solar and Space Physics Community Assessment and Strategy for the Future, September 2001 to September 2002

Scientific Discipline Representative, Scientific Committee on Solar-Terrestrial Physics (SCOSTEP), International Council of Scientific Unions, August 1999 to November 2007

Member, NCAR Significant Opportunities in Atmospheric and Related Sciences (SOARS) Steering Committee, September 1996 to May 2001

Co-chair, SCOSTEP Planetary Scale Mesopause Observing System (PSMOS) Steering Committee, July 1996 to December 2002

Member, National Research Council Committee on Solar Terrestrial Research (CSTR), September 1996 to June 2000

Member, NASA Ionosphere-Thermosphere-Mesosphere Management Operations Working Group (ITM MOWG) 1995-1996

Other Service

Guest Editor, Journal of Atmospheric and Solar-Terrestrial Physics, Special Issue on the Ionosphere/Thermosphere, February 2008 to March 2010

Guest Lectures, Aerospace Environment Graduate Course, Department of Aerospace Engineering Sciences, University of Colorado, February and April, 2008.

Member, Program Organizing Committee, International Symposium on Climate And Weather of the Sun-Earth System (CAWSES), Kyoto, Japan on October 23-27, 2007

Lecturer, International Advanced School on Space Weather, The Abdus Salam International Centre for Theoretical Physics, Trieste Italy, May 2006

Co-Investigator, NASA Thermosphere-Ionosphere-Mesosphere Energetics and Dynamics (TIMED) Tides, Planetary Waves and Eddy Forcing of the Mean Mesosphere and Lower Thermosphere Circulation interdisciplinary science (IDS) investigation, May 1998 to 2010

NCAR Resource Member, UCAR University Relations Committee, October 1997 to October 2000

Associate Editor, Geophysical Research Letters, December 1993 to June 1997

Project Leader, NSF CEDAR Coordinated Analysis of the Thermosphere, 1990 to 1994

Referee for Journal of Geophysical Research-Space Physics, Journal of Geophysical Research-Atmospheres, Journal of Atmospheric and Terrestrial Physics, Journal of the Atmospheric Sciences, Planetary and Space Science, Geophysical Research Letters, Annales Geophysicae, Earth Planets and Space

NSF, NOAA, NASA, and AFOSR Reviewer

Refereed Journal Publications

Maute, A., M. E. Hagan, V. Yudin, H.-L. Liu, E. Yizengaw, Causes of the longitudinal differences in the equatorial vertical ExB drift during the 2013 SSW period as simulated by the TIME-GCM, *J. Geophys. Res.*, in revision, May 2015.

Hagan, M. E., Häusler, K., G. Lu, J. M. Forbes, and X. Zhang (2015), Upper thermospheric responses to forcing from above and below during April 1-10, 2010, *J. Geophys. Res. Space Physics*, 120, doi:10.1002/2014JA020706.

Häusler, K., M. E. Hagan, J. M. Forbes, X. Zhang, E. Doornbos, S. Bruinsma, and G. Lu (2015), Intra-annual variability of tides in the thermosphere from model simulations and in-situ satellite observations, *J. Geophys. Res. Space Physics*, 119, doi:10.1002/2014JA020579.

Lu, G., M. Hagan, K. Häusler, E. Doornbos, S. Bruinsma, B. J. Anderson, and H. Korth (2015), Global ionospheric and thermospheric response to the 5 April 2010 geomagnetic storm: An integrated data-model investigation, *J. Geophys. Res. Space Physics*, 119, 10,358-

10,375, doi:10.1002/2014JA020555.

Jones Jr., M., J. M. Forbes, and M. E. Hagan (2014), Tidal-induced net transport effects on the oxygen distribution in the thermosphere *Geophys. Res. Lett.*, doi: 10.1002/2014GL060698.

Häusler, K., M. E. Hagan, A. J. G. Baumgaertner, A. Maute, G. Lu, E. Doornbos, S. Bruinsma, J. M. Forbes, and F. Gasperini (2014), Improved short-term variability in the thermosphere-ionosphere-mesosphere-electrodynamics general circulation model, *J. Geophys. Res.*, doi: 10.1002/2014JA020006.

Jones Jr., M., J. M. Forbes, M. E. Hagan, and A. Maute (2014), Impacts of vertically propagating tides on the mean state of the ionosphere-thermosphere system, *J. Geophys. Res.*, doi: 10.1002/2013JA019744.

Maute, A., M. E. Hagan, A. D. Richmond, and R. G. Roble (2014), TIME-GCM study of the ionospheric equatorial vertical drift changes during the 2006 Stratospheric Sudden Warming, *J. Geophys. Res.*, doi: 10.1002/2013JA019490.

Jones Jr., M., J. M. Forbes, M. E. Hagan, and A. Maute (2013), Non-migrating tides in the ionosphere-thermosphere: In-situ versus tropospheric sources, *J. Geophys. Res.*, doi: 10.1002/jgra.50257.

Pedatella, N., M. E. Hagan, and A. Maute (2012), The comparative importance of DE3, SE2, and SPW4 on the generation of wavenumber-4 longitude structures in the low-latitude ionosphere, *Geophys. Res. Lett.*, doi:10.1029/2012GL053643.

Sakazaki, T., M. Fujiwara, X. Zhang, M. E. Hagan, and J. M. Forbes (2012), Diurnal tides in the troposphere to lower mesosphere as deduced with TIMED/SABER satellite data and six global reanalysis data sets, *J. Geophys. Res.*, doi:10.1029/2011JD017117.

Pedatella, N., H.-L. Liu, and M. E. Hagan (2012), Day-today migrating and nonmigrating tidal variability due to the six-day planetary wave, *J. Geophys. Res.*, 117, A06301, doi:10.1029/2012JA017581.

Zhang, X., J. M. Forbes, and M. E. Hagan (2011), Seasonal-latitudinal variation of the eastward propagating diurnal tide with zonal wavenumber 3, *J. Atmos. Solar Terr. Phys.*, 10.1016/j.jastp.2011.03.005.

Chang, L. C., W. E. Ward, S. E. Palo, J. Du, D. Y. Wang; H.-L. Liu, M. E. Hagan, Y. Portnyagin, J. Oberheide, L. P. Goncharenko, T. Nakamura, P. Hoffmann, W. Singer, P. P. Batista, B. Clemesha, A. H. Manson; D. M. Rigglin, C.-Y. She. T. Tsuda, T. Yuan (2010) Comparison of diurnal tide in models and ground-based observations during the 2005 Equinox CAWSES Tidal Campaign, *J. Atmos. Solar Terr. Phys.*, doi:10.1016/j.jastp.2010.12.010.

Ma, R., J. Xu, W. Wang, J. Lei, H.-L. Liu, A. Maute, and M. E. Hagan (2010), Variations of the nighttime thermospheric mass density at low and middle latitudes, *J. Geophys. Res.*, doi:10.1029/2010JA015784.

Liu, H.-L., B. T. Foster, M. E. Hagan, J. M. McInerney, A. Maute, L. Qian, A. D. Richmond, R. G. Roble, S. C. Solomon, R. R. Garcia, D. Kinnison, D. R. Marsh, A. K. Smith, J. Richter, F. Sassi, and J. Oberheide (2010), Thermosphere extension of the Whole Atmosphere Community Climate Model, *J. Geophys. Res.*, doi:10.1029/2010JA015586.

Zhang, X., J. M. Forbes, and M. E. Hagan (2010), Longitudinal variation of tides in the MLT

- region: Part 1, Tides driven by troposphere net radiative heating, *J. Geophys. Res.*, doi:10.1029/2009JA014897.
- Zhang, X., J. M. Forbes, and M. E. Hagan (2010), Longitudinal variation of tides in the MLT region: Relative effects of solar radiative and latent heating, *J. Geophys. Res.*, doi:10.1029/2009JA014898.
- England, S. L., T. J. Immel, J. D. Huba, M. E. Hagan, A. Maute, and R. DeMajistre (2010), Modeling of multiple effects of atmospheric tides on the ionosphere: an examination of possible coupling mechanisms responsible for the longitudinal structure of the equatorial ionosphere, *J. Geophys. Res.*, *115*, A05308, doi:10.1029/2009JA014894.
- Häusler, K., H. Lühr, M. E. Hagan, A. Maute, and R. G. Roble (2010), Nonmigrating tidal signals in the thermospheric zonal wind as seen by CHAMP and TIME-GCM, *J. Geophys. Res.*, *115*, D00I08, doi:10.1029/2009JD012394.
- Offermann, D., O. Gusev, M. Donner, J. M. Forbes, M. Hagan, M. G. Mlynczak, J. Oberheide, P. Preusse, H. Schmidt, and J. M. Russell III (2009), Relative Intensities of Middle Atmosphere Waves, *J. Geophys. Res.*, *114*, doi:10.1029/2008JD010662.
- Hagan, M. E., A. Maute, and R. G. Roble (2009), Tropospheric tidal effects on the middle and upper atmosphere, *J. Geophys. Res.*, *114*, A01302, doi:10.1029/2008JA013637.
- Wu, Q., D. A. Ortland, T. L. Killeen, R. G. Roble, M. E. Hagan, H.-L. Liu, S. C. Solomon, J. Xu, W. R. Skinner, and R. J. Niciejewski (2008), Global distribution and interannual variations of mesospheric and lower thermospheric neutral wind diurnal tide: 1. Migrating tide, *J. Geophys. Res.*, *113*, A05308, doi:10.1029/2007JA012542.
- Wu, Q., D. A. Ortland, T. L. Killeen, R. G. Roble, M. E. Hagan, H.-L. Liu, S. C. Solomon, J. Xu, W. R. Skinner, R. J. Niciejewski (2008), Global Distribution and Inter-annual Variations of Mesospheric and Lower Thermospheric Neutral Wind Diurnal Tide. Part 2: Nonmigrating Tide *J. Geophys. Res.*, doi:10.1029/2007JA012543.
- Zeng, Z., W. Randel, S. Sokolovskiy, C. Deser, Y.-H. Kuo, M. Hagan, J. Du, and W. Ward (2008), Detection of Migrating Diurnal Tide in the Tropical Middle Atmosphere using the Challenging Minisatellite Payload Radio Occultation Data, *J. Geophys. Res.*, doi:10.1029/2007JD008725.
- Hagan, M. E., A. I., Maute, R. G. Roble, A. D. Richmond, T. J. Immel, and S. L. England (2007), Connections between deep tropical clouds and the Earth's ionosphere, *Geophys. Res. Lett.*, *34*, L20109, doi:10.1029/2007GL030142.
- Liu, H.-L., T. Li, C.-Y. She, J. Oberheide, Q. Wu, M. E. Hagan, J. Xu, R. G. Roble, M. G. Mlynczak, and J. M. Russell III (2007), Comparative study of short term tidal variability, *J. Geophys. Res.*, *112*, D18108, doi:10.1029/2007JD008542.
- Oberheide, J., Q. Wu, T. L. Killeen, M. E. Hagan, and R. G. Roble (2007), A Climatology of semidiurnal nonmigrating tides from TIMED Doppler Interferometer wind data, *J. Atmos. Solar Terr. Phys.*, doi:10.1016/j.jastp.2007.05.010.
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- ionosphere observed by the FORMOSAT-3/COSMIC: Three-dimensional electron density structures, *Geophys. Res. Lett.*, 34, L11112, doi:10.1029/2007GL029265.
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- Forbes, J. M., X. Zhang, and M. E. Hagan (2007), Seasonal cycle of nonmigrating diurnal tides in the MLT region due to tropospheric heating rates from the NCEP/NCAR reanalysis project, *Adv. Space Res.*, 39(8), 1347-1350.
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- Zhang, X., J. M. Forbes, M. E. Hagan, J. M. Russell III, S. E. Palo, and M. Mlynczak (2006), Monthly tidal temperatures 20-120 km from TIMED/SABER, *J. Geophys. Res.*, 111, A10S08, doi:10.1029/2005JA011504.
- Murphy, D. J., J. M. Forbes, R. L. Walterscheid, M. E. Hagan, S. K. Avery, T. Aso, G. J. Fraser, D. C. Fritts, M. J. Jarvis, A. J. McDonald, D. M. Riggan, M. Tsutsumi and R. A. Vincent (2006), A Climatology of Tides in the Antarctic Mesosphere and Lower Thermosphere, *J. Geophys. Res.*, 111, D23104, doi:10.1029/2005JD006803.
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- Forbes, J. M. , J. M. Russell III, S. Miyahara, X. Zhang, S. E. Palo, M. Mlynczak, C. J. Mertens, and M. E. Hagan (2006), Troposphere-Thermosphere tidal coupling as measured by the SABER instrument on TIMED during July-September 2002, *J. Geophys. Res.*, 111, A10S06, doi:10.1029/2005JA011492.
- Oberheide, J., Q. Wu, T. L. Killeen, M. E. Hagan, and R. G. Roble (2006), Diurnal nonmigrating tides from TIMED Doppler Interferometer wind data: Monthly climatologies and seasonal variations, *J. Geophys. Res.*, 111, A10S03, doi:10.1029/2005JA011491.
- T. Yuan, C. Y. She, M. E. Hagan, T. Li, K. Arnold, T. D. Kawahara, B. P. Williams, P. E. Acott, J. D. Vance, D. A. Krueger, and R.G. Roble (2006), Seasonal variations of diurnal tidal-period perturbations in mesopause region temperature zonal and meridional winds above Fort Collins, CO (40.6°N, 105°W), *J. Geophys. Res.* , 111, D06103, doi:10.1029/2004JD005486.
- Oberheide, J., Q. Wu, D. A. Ortland, T. L. Killeen, M. E. Hagan, R. G. Roble, R. J. Niciejewski, and W. R. Skinner (2005), Nonmigrating diurnal tides as measured by the TIMED doppler interferometer: Preliminary results, *Adv. Space Res.*, 35, 1911-1917, doi: 10.1016/j.asr.2005.01.063.

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- Manson, A. H., C. Meek, M. E. Hagan, X. Zhang, and Y. Luo (2004), Global distributions of diurnal and semi-diurnal tides: Observations from HRDI-UARS of the MLT region and comparisons with GSWM-02 (migrating, non-migrating components), *Ann. Geophys.*, *22*, 1529-1548.
- Forbes, J. M., M. E. Hagan, S. Miyahara, Y. Miyoshi, and X. Zhang (2003), Diurnal nonmigrating tides in the tropical lower thermosphere, *Earth Planets Space*, *55*(7), 419-426.
- Oberheide, J., M. E. Hagan, R. G. Roble, and O. Gusev (2003), A global view of tidal temperature perturbations above the mesopause: Preliminary model/observation intercomparison, *Adv. Space Res.*, *32*(5), 857-862.
- Murphy, D. J., M. Tsutsumi, D. M. Riggin, G. O. L. Jones, R. A. Vincent, M. E. Hagan, and S. K. Avery (2003), Observation of a nonmigrating component of the semidiurnal tide over Antarctica, *J. Geophys. Res.*, *108*(D8), 4241, doi:10.1029/2002JD003077.
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- Oberheide, J., M. E. Hagan, R. G. Roble, and D. Offermann (2002), The sources of nonmigrating tides in the tropical middle atmosphere, *J. Geophys. Res.*, *107*(D21), 4567, doi:10.1029/2002JD002220.
- Hagan, M. E. and J. M. Forbes (2002), Migrating and nonmigrating diurnal tides in the middle and upper atmosphere excited by tropospheric latent heat release, *J. Geophys. Res.*, *107*(D24), 4754, doi: 10.1029/2001JD001236.
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Other Publications

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- Hagan, M. E. (1980) Tides in the Presence of Friction and Rotation: An f-plane Approximation, M.S. Thesis, Department of Physics, Boston College, Chestnut Hill, Massachusetts.

First and Sole Authored Scientific Presentations

- Dynamical Connections between Meteorological and Space Weather via Thermal Atmospheric Tides Challenges in Forecasting the Quiescent Thermosphere-Ionosphere Variability that Underlies Responses to Extreme Space Weather Events (invited), Department of Physics and Astronomy Colloquium, Clemson University, February 2015.
- Challenges in Forecasting the Quiescent Thermosphere-Ionosphere Variability that Underlies Responses to Extreme Space Weather Events (invited; with K. Häusler, A. Maute, and G. Lu), Technical Interchange Meeting on Scientific Challenges in Thermosphere-Ionosphere Forecasting, October 2014.
- Pseudo-Tides in the Upper Atmosphere during the April 2010 Solar Geomagnetic Storm (with K. Häusler and G. Lu), Effects of Forcing From Above and Below CEDAR Workshop, June 2014.
- Upper Atmospheric Response to the April 2010 Storm as Observed by GOCE, CHAMP, and GRACE and Modeled by TIME-GCM (with A. Maute, K. Häusler, G. Lu, J. Forbes, X. Zhang, E. Doornbos, and S. Bruinsma), European Geophysical Union Meeting, May 2014.
- Tidal Signals in GOCE Measurements and TIME-GCM (with K. Häusler, G. Lu, and J. Forbes), European Space Agency Living Planet Symposium, September 2013.

Nonlinear Interactions Between Large-Scale Waves in the Atmosphere, Part II: Numerical Experiments to Unravel Ionosphere-Thermosphere Impacts (invited; with A. Maute and R. G. Roble) 9th international Nonlinear Wave and Chaos Workshop, March 2013.

Comparative effects of meteorological and in-situ forcing in the Earth's upper atmosphere (invited; with A. Maute, R. G. Roble, and A. D. Richmond) Fall Meeting of the AGU, December 2011.

Connections between meteorology and space weather: Nonmigrating tidal effects in the thermosphere and ionosphere (with A. Maute, R. G. Roble, and A. D. Richmond), 8th Conference on Space Weather, 91st Annual Meeting of the AMS, January 2011.

Thermospheric and ionospheric variability during 2006: Nonmigrating tides in the presence of variable solar geomagnetic conditions (with A. Maute, R. G. Roble, and A. D. Richmond), Fall Meeting of the AGU, December 2010.

Anthropogenic and natural variability in the Earth's upper atmosphere: unraveling solar cycle variations and decadal trends (invited), Aspen Global Change Institute: Global Change and the Solar-Terrestrial Environment, June, 2010.

Non-Migrating Tidal Effects on the Middle and Upper Atmosphere: New Tropospheric Forcing (with A. Maute, X. Zhang, J.M. Forbes, and R.G. Roble), Fall Meeting of the AGU, December, 2009.

Thermosphere Variability due to Upward-Propagating Non-Migrating Tides (invited; with A. Maute, and R.G. Roble), 6th Asia Oceania Geosciences Society (AOGS) Meeting, Singapore, August, 2009.

Middle and Upper Atmospheric and Ionospheric Variability: What about the role of nonmigrating tides? (invited; with A. Maute, R.G. Roble, and A. D. Richmond), 37th Committee on Space Research (COSPAR) Assembly, Montreal, Canada, July, 2008.

Wave-Driven Upper Atmospheric and Ionospheric Variability (invited; with A. Maute, R.G. Roble, and A. D. Richmond), Spring Meeting of the AGU, May, 2008.

Longitudinal Variability in the Geomagnetically Quiescent Ionosphere (invited; with A. Maute, R.G. Roble, and A. D. Richmond), Fall Meeting of the AGU, December, 2007.

Lower Atmospheric Sources of Longitudinal Variability in the Quiescent Ionosphere (invited), Climate and Weather of the Sun-Earth System (CAWSES) Symposium, Kyoto Japan, October 2007.

Tropospheric Tidal Effects in the Earth's Ionosphere (invited), Symposium on Coupling Processes in the Equatorial Atmosphere (CPEA Symposium), Kyoto Japan, March 2007.

Understanding Atmospheric Coupling Processes through Numerical Modelling (invited), 3rd IAGA/ICMA Workshop on Vertical Coupling in the Atmosphere/Ionosphere System, Varna Bulgaria, September 2006.

PSMOS: Planetary Waves and Tides (invited), 11th Quadrennial SCOSTEP Symposium, Rio de Janeiro Brazil, March 2006.

Interannual variability of nonmigrating tides due to tropical latent heat release (invited; with J.M. Forbes and X. Zhang), ICMA Symposium, IAGA Scientific Assembly, Toulouse France, July 2005.

Nonmigrating Diurnal Tidal Variability in Mesopause Region Winds: TIDI, TIME-GCM and GSWM Comparisons (with J. Oberheide, Q. Wu, D A Ortland, T L Killeen, R G Roble, R Niciejewski, W Skinner), Fall Meeting of the AGU, December, 2004.

Thermal Tides in the Earth's Atmosphere (invited), Geophysical Fluid Dynamics Program, Woods Hole Oceanographic Institute, June 2004.

Space Weather in the Earth's Mesopause Region(invited; with R. G. Roble, G. Lu, J. Oberheide, S. Solomon, A. D. Richmond, Scott Bailey, Gonzalo Hernandez, C. Jackman, Scott Palo, Dennis Riggan, James Russell), Symposium on Space Weather, 84th Annual Meeting of the American Meteorological Society, January 13, 2004.

The Penetration of Solar Storm Effects into the Earth's Atmosphere (invited; with R. G. Roble, G. Lu, J. Oberheide, S. Solomon, A. D. Richmond, Scott Bailey, Gonzalo Hernandez, C. Jackman, Scott Palo, Dennis Riggan, James Russell), Fall Meeting of the AGU, December, 2003.

The effects of tropospheric tidal forcing on the upper atmosphere and ionosphere, (invited; with A.D. Richmond, A. I. Maute, R. G. Roble, J. Oberheide, and J. M. Forbes), 2003 IUGG General Assembly, Sapporo, Japan, , July 2, 2003.

Geomagnetic Storm Effects in the Upper Mesosphere And Lower Thermosphere (invited), MLT Radar Workshop, University of Colorado, June 13, 2003.

Another Sun-Earth Connection: Solar Radiation and the Neutral Atmosphere (invited CISM tutorial), NCAR HAO Colloquium, May 28, 2003.

Tidal Coupling in the Earth's Atmosphere: On the Large-Scale Dynamics of the Upper Regions, NCAR ASP Seminar, April 2, 2003.

A Preliminary Investigation of the Diurnal Tide during April 2002 (with J. Oberheide, G. Lu, R. G. Roble, J. M. Russell III, M. G. Mlynczack, and C. J. Mertens), TIMED Science Working Group Meeting, February 11-13, 2003.

Lower Thermospheric Dynamics during April 2002 (with G. Lu, J. Oberheide, and R. G. Roble), Fall Meeting of the AGU, December, 2002.

NCAR Simulations of the April 2002 Storms (with R. G. Roble and G. Lu), CEDAR-TIMED Storm Workshop, MIT Haystack Observatory, Westford MA, October 28-29, 2002.

Longitudinal Variability of Tides in the Mesopause Region (invited), PSMOS 2002 International Symposium on Dynamics and Chemistry of the MLT Region, Foz do Iguacu, Brazil, October 2002.

Semidiurnal Tides Excited by Latent Heat Release (with J. M. Forbes), Spring Meeting of the AGU, Washington, DC, May 2002.

Lower Thermospheric Weather during April 15-21, 2002, Workshops on Sun-Earth Connections, Space Weather during April 14-24 2002 Storms, The Johns Hopkins University, Applied Physics Laboratory, Laurel MD, August 2002.

Wave Coupling in the Earth's Atmosphere (invited), Center for Space Physics Seminar, Boston University, October 18, 2001.

SOARS: Significant Opportunities in Atmospheric Research and Science (invited; with T. L. Windham), Spring Meeting of the AGU, May 2001.

Nonmigrating tides in the mesosphere and lower thermosphere (invited; with J. M. Forbes), European Geophysical Society XXVI General Assembly, Nice, France, March 2001.

The Earth's mesosphere (invited), Physics Department Colloquium, Utah State University, February 6, 2001.

Geomagnetic activity effects in the lower thermosphere, M. E. Hagan, (with R. G. Roble and C. S. Hartsough), First S-RAMP Conference, October 2-6, 2000, Sapporo Japan.

Dynamical Coupling in the Earth's Atmosphere: Motivation for Comparative Planetary Studies, (invited) Yosemite Meeting on Comparative Aeronomy in the Solar System, February 2000.

The Dynamics of the Middle Atmosphere during CRISTA 1 as Simulated by the NCAR TIME-GCM (with R. G. Roble), Fall Meeting of the AGU, December 1999.

Diurnal Tidal Excitation and Propagation in the Flux Coupled NCAR CCM/TIME-GCM (with R. G. Roble), paper presented at the Chapman Conference, Atmospheric Science across the Stratopause, April 19-22, 1999, Annapolis, MD.

Mesospheric and Lower Thermospheric Diurnal Tidal Signatures in the flux coupled NCAR CCM/ TIME-GCM (with R. G. Roble), Spring AGU Meeting, June 1999, Boston, MA.

Tides in the Mesosphere and Lower Thermosphere: Sources and Variability, (invited) Massachusetts Institute of Technology, Haystack Observatory, July 1998.

Estimates of Tidal Variability in the Mesosphere and Lower Thermosphere (with M. D. Burrage and W. J. Randel), Spring Meeting of the AGU, May 1998.

GSWM Estimates of QBO Effects on the Migrating Diurnal Tide (invited), International Symposium on the Dynamics and Structure of the Mesopause Region, Kyoto Japan, March 1998.

Tides in the Middle and Upper Atmosphere: Origins and Effects, (invited) Laboratory for Atmospheric and Space Physics, University of Colorado, March 1998.

Tidal Coupling between Atmospheric Regions (invited), Department of Physics, Colorado State University, February 1998.

Upper Atmospheric Tidal Variability Attributable to Deep Convective Activity in the Troposphere (with J. M. Forbes and X. Zhang), Fall Meeting of the AGU, December 1997.

Dynamical Coupling from the Troposphere and Stratosphere: Solar Tides and Normal Modes (invited tutorial lecture series), International Workshop on Atmospheric Wave Dynamics, October 1997.

GSWM Studies of Non-Migrating Tides in the MLT (with J. M. Forbes and X. Zhang), IAGA Assembly, August, 1997.

GSWM Estimates of Zonal Mean Wind Acceleration by Tides and Planetary Waves in the Middle and Upper Atmosphere, Fall Meeting of the AGU, December 1996.

What's Going on with Tides? (with C. McLandress and J. M. Forbes) (invited), Second Workshop on Wind Observations in the Middle Atmosphere, May, 1996.

Modeling Tides and Planetary Waves into the Mesosphere and Lower Thermosphere (invited), Fall Meeting of the AGU, December 1995.

Tides and Planetary Waves in the Mesosphere and Lower Thermosphere during January 1993, IUGG Symposium, July, 1995.

The Origin of Tides in the Mesosphere and Lower Thermosphere, Spring Meeting of the AGU, May 1995.

Global-Scale Waves in the Mesosphere and Lower Thermosphere (invited), NCAR HAO Colloquium, April 27, 1995.

Tides in the Mesosphere and Lower Thermosphere (invited), NOAA Space Environment Laboratory Seminar, February 23, 1995.

An Updated Model of Migrating Tides in the Middle Atmosphere: Initial Results and Measurement Comparisons (with J. M. Forbes and F. Vial), Workshop on Wind Observations in the Middle Atmosphere, November, 1994.

Variability in the Thermosphere and Ionosphere over Millstone Hill during the CEDAR LTCS-2 and LTCS-6 Campaigns (with J. E. Salah), Fall Meeting of the AGU, December, 1993.

Dynamical Coupling into the Thermosphere (invited), IUGG IAMAP Symposium, July, 1993.

An Overview of Current CEDAR/CAT Investigations (with C. G. Fesen), Spring Meeting of the AGU, May 1993.

An Investigation of Wave-Tide Interactions over Millstone Hill, Chapman Conference on the Upper Mesosphere and Lower Thermosphere, November, 1992.

Quiet-Time Winds over Millstone Hill Between 1984 and 1990, Spring Meeting of the AGU, May, 1992.

Selected Results of a Coordinated Analysis of the Thermosphere (with A. Aruliah, M. A. Biondi, M. J. Buonsanto, M.-L. Duboin, B. Fejer, C. G. Fesen, S. Fukao, A. E. Hedin, R. Niciejewski, W. L. Oliver, D. P. Sipler, and J. Thayer), IUGG General Assembly, August, 1991.

Evidence of Variability in the Upward Propagating Semidiurnal Tide due to Effects of QBO in the Lower Atmosphere (with F. Vial and J. M. Forbes), IUGG General Assembly, August, 1991.

A Numerical Investigation Of Upper Atmospheric Weather using the NCAR-TIGCM (with R. G. Roble), Spring Meeting of the AGU, May, 1991.

Incoherent Scatter Radar Measurements and TIGCM Model Predictions during Solar Maximum Equinox Conditions (with R. G. Roble), Fall Meeting of the AGU, December, 1990.

Evidence of Variability in Upward Propagating Semidiurnal Tides due to Effects of QBO in the Lower Atmosphere (with J. M. Forbes and F. Vial), Spring Meeting of the AGU, May, 1990.

Combined Incoherent Scatter and Fabry-Perot Interferometer Measurements of Frictional Heating Effects over Millstone Hill (with D. P. Sipler), Spring Meeting of the AGU, May, 1990.

Observations of Thermospheric and Ionospheric Weather During Solar Minimum Winter (with M. J. Buonsanto, R. G. Burnside, G. J. Fraser, J. A. Klobuchar, A. H. Manson, and V. B. Wickwar), fourth annual CEDAR workshop, Boulder, CO, June, 1989.

A Comparison of Modelled and Measured Thermospheric Winds over Millstone Hill (with D. P. Sipler), fourth annual CEDAR workshop, Boulder, CO, June, 1989.

A Simulation of Wave Activity in the F-region Ionosphere over Shigaraki (with W. L. Oliver), Fall Meeting of the AGU, December, 1988.

A Numerical Study of Upper Atmospheric and Ionospheric Interaction over Millstone Hill (with J. M. Forbes and M. Codrescu), Fall Meeting of the AGU, December, 1988.

Effects of Frictional Heating Observed at Millstone Hill Between 7-10 February 1986, Spring Meeting of the AGU, May, 1987.

A Global Study of Exospheric Temperature and Neutral Winds During 14-17 January 1986 (with J. E. Salah), International Symposium on Large-Scale Processes in the Ionosphere-Thermosphere System, December, 1986.

Solar Cycle Variability of Exospheric Temperature at Millstone Hill (with W. L. Oliver), meeting of the International Union of Radio Science, January, 1986.

Thermospheric Neutral Temperature at Millstone Hill (with J. M. Forbes, P. Satyanaryana, and W. L. Oliver), Spring Meeting of the AGU, May, 1981.

Other Professional Presentations

Managing Mentoring (invited), Colorado Network of Women Leaders – Academic Management Institute, February 2013.

Moderator, Where NCAR Was and Where We Are Going: A Conversation with Female Scientists, University Corporation for Atmospheric Research, February 2013.

Panelist, Defining Your Research Identity (invited), Earth Science Women's Network, August 2012.

Panelist, Building Community Through Mentoring (invited), Women Succeeding Symposium, University of Colorado, February 2012.

Panelist, Working Together with Technology in Research and Operations: How YOU Can Shape the Future - Conversations with Professionals (invited), 11th Annual American Meteorological Society Student Conference, January 2012.