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Education

May 1988 Ph.D. Physics, Iowa State University

Thesis Title: Numerical Studies of Barotropic Stability of Stratospheric States

May 1982 B.S. Engineering Physics, University of Kansas

Career Outline

2000-present JPL Principal Scientist/Senior Research Scientist, Microwave Atmospheric Science Element

2005-present Adjunct Professor, New Mexico Institute of Mining and Technology, Department of Physics

1992-2000 JPL Scientist/Research Scientist, Earth and Planetary Atmospheres Element

1991-1992 JPL Postdoctoral Associate, Atmospheric and Oceanographic Sciences Section

1989-1991 JPL National Research Council Research Associate, Atmospheric and Oceanographic Sciences Section

1988 Postdoctoral Research Associate, Atmospheric Physics, Iowa State University

Honors and Awards

2007 NASA Group Achievement Award, UARS Science Team

2007 NASA Board Award, NTR#44936 "Derived Meteorological Products for Solar Occultation Satellites, EOS MLS, and User-Defined Locations"

2005 NASA Goddard Space Flight Center Group Achievement Award, Aura Team

2005 NASA Group Achievement Award, Aura Project

2005 NASA Group Achievement Award, Aura Microwave Limb Sounder Ground Data System Development Team

2004 Elected to International Ozone Commission, Membership, through election by peers, is limited to approximately 30 of the world's top ozone scientists

1995 Lew Allen Award for Excellence, For innovative use of conventional meteorological data, remote sensing observations and atmospheric models to achieve quantitative estimates of the relative contributions of dynamical and chemical processes to seasonal changes in Arctic stratospheric ozone

1995 NASA Exceptional Achievement Medal, For outstanding contributions to scientific analysis in support of the Upper Atmosphere Research Satellite

1993 NASA Group Achievement Award, UARS Microwave Limb Sounder Data Processing/Analysis Team

Professional Memberships

American Meteorological Society

Royal Meteorological Society

American Geophysical Union

Current/Recent Projects/Experience

- 2004-present Member, International Ozone Commission**
- 2003-present Convenor, Earth Observing System (EOS) Aura Satellite Meteorological Products Working Group**
- 2003-present Co-Investigator, EOS Microwave Limb Sounder (MLS) Experiment**
- 2008-present Principal Investigator, ROSES-2008 Aura Science Team (AST) Investigation** “Modeling and Climate Implications of Stratopause and Tropopause Evolution”
- 2008-present Co-Investigator, ROSES-2008 AST Investigation** “Stratospheric Chlorine, Polar Processes, and Ozone Loss” (PI: M. L. Santee, JPL)
- 2005-present Principal Investigator, Atmospheric Chemistry, Modeling and Analysis Program (ACMAP) Investigation** “Interannual Variability in the Extratropical Stratosphere: Transport, Trend, and Tropospheric Implications”
 - 1998-2005 Principal Investigator, ACPMAP Investigation** “Stratospheric Polar Vortex Development and Evolution: Interannual Variability and Transport Implications”
- 2003-present Co-Investigator, ACPMAP Investigation** “Analysis and Modeling of Active Chlorine and PSCs” (PI: M. L. Santee, JPL)
 - 1998-2003 Co-Investigator, Upper Atmosphere Research Satellite (UARS) Science Investigation** “Studies of PSC Processes and Denitrification Based on Satellite Observations” (PI: M. L. Santee, JPL)
- 2003-2005 Co-Investigator, ACPMAP/Solar Occultation Satellite Science Team (SOSST) Investigation** “Occultation Data Intercomparison and Evaluation” (PI: C. E. Randall, CU-LASP)
- 2004-present ACE (Atmospheric Chemistry Experiment) Science Team Member**
- 2002-present Stratospheric Processes and their Role in Climate (SPARC) Data Assimilation Working Group Member**
- 1999-present Polar Ozone and Aerosol Measurement (POAM) Science Team Member**
 - 2005 Invited talk** “Polar Stratopause and Tropopause Evolution: Implications for Assimilated Analyses”, presented at SPARC Data Assimilation Workshop and SPARC Workshop on the International Polar Year, 4-7 September 2007, Toronto, Ontario, Canada.
 - 2005 Invited talk** “Review and Update of Assimilated Meteorological Dataset Intercomparisons”, presented at SPARC Data Assimilations Workshop and SPARC Workshop on Stratospheric Winds, 12-16 September 2005, Banff, Alberta, Canada.
 - 2005 Invited talk** “Polar Processing in the 2004-2005 Arctic Winter From EOS MLS and SOSST Observations”, presented at Solar Occultation Satellite Science Team 2005 Workshop, 6-9 June 2005, Columbia, MD.

- 2003 Invited talk** “Simulating dynamics and transport during the 2002 Antarctic major warming”, presented at Royal Meteorological Society ACSG Special Meeting on 2002 Antarctic Winter, 29 August 2003, Cambridge, UK.
- 2002 Invited talk** “Interannual variability and uncertainties in dynamical processes and implications for quantifying Arctic ozone loss” at the Arctic Ozone Loss (AOL) Workshop, 4-6 March 2002, Potsdam, Germany.
- 2002 Invited talk** “Comparison of measurements and models in stratospheric polar vortex studies” at Global Chemistry for Climate Annual Workshop, 17-18 December 2002, Toronto, Canada.
- 1995 Invited talk** “Ozone loss in the Arctic lower stratosphere from UARS observations” at 1995 Fall AGU Meeting, December 1995, San Francisco, CA.

1995-2007 Seminars – Presented seminars by invitation at University of Washington, National Oceanographic and Aeronautics Administration (NOAA), Freie Universität Berlin, Jet Propulsion Laboratory (multiple times), UK Met Office, University of Edinburgh, New Mexico Highlands University (multiple times), New Mexico Institute of Mining and Technology, University of Toronto (multiple times), Meteorological Service of Canada.

1987-present Publications – Over 120 peer-reviewed publications, 48 as lead author.

Publications since 1999

- Manney, G. L.**, K. Krüger, S. Pawson, K. Minschwaner, M.J. Schwartz, W.H. Daffer, N.J. Livesey, M.G. Mlynczak, E.E. Remsberg, J.M. Russell III, and J.W. Waters, The evolution of the stratopause during the 2006 major warming: Satellite Data and Assimilated Meteorological Analyses, *J. Geophys. Res.*, 113, doi:10.1029/2007009097, in press.
- Manney, G.L.**, W.H. Daffer, K.B. Strawbridge, K.A. Walker, C.D. Boone, P.F. Bernath, T. Kerzenmacher, M.J. Schwartz, K. Strong, R.J. Sica, K. Krüger, H.C. Pumphrey, L. Froidevaux, A. Lambert, M.L. Santee, N.J. Livesey, E.E. Remsberg, M.G. Mlynczak, and J.R. Russell III, The High Arctic in Extreme Winters: Vortex, Temperature, and MLS and ACE-FTS Trace Gas Evolution, *Atmos. Chem. Phys.*, 8, 505-522, 2008.
- Manney, G.L.**, W.H. Daffer, J.M. Zawodny, P.F. Bernath, K.W. Hoppel, K.A. Walker, B.W. Knosp, C. Boone, E.E. Remsberg, M.L. Santee, V. Lynn Harvey, S. Pawson, D.R. Jackson, L. Deaver, C.T. McElroy, C.A. McLinden, J.R. Drummond, H.C. Pumphrey, A. Lambert, M.J. Schwartz, L. Froidevaux, S. McLeod, L.L. Takacs, M.J. Suarez, C.R. Trepte, D.T. Cuddy, N.J. Livesey, R.S. Harwood, and J.W. Waters, Solar Occultation Satellite Data and Derived Meteorological Products: Sampling Issues and Comparisons with Aura MLS, *J. Geophys. Res.* 112, D24S50, 10.1029/2007JD008709, 2007.
- Fraser, A., F. Goutail, K. Strong, P.F. Bernath, C. Boone, W.H. Daffer, J.R. Drummond, D.G. Dufour, T.E. Kerzenmacher, **G.L. Manney**, C.T. McElroy, C. Midwinter, C.A. McLinden, F. Nichitiu, C.R. Nowlan, J. Walker, K.A. Walker, H. Wu, and J. Zou, Intercomparison of UV-visible measurements of ozone and NO₂ during the Canadian Arctic ACE validation campaigns: 2004/2006, *Atmos. Chem. Phys.*, 8, 1763-1788, 2008.
- Froidevaux, L., Y.B. Jiang, A. Lambert, N.J. Livesey, W.G. Read, J.W. Waters, R.A. Fuller, T.P. Marcy, P.J. Popp, R.S. Gao, D.W. Fahey, K.W. Jucks, R.A. Stachnik, G.C. Toon, L.E. Christensen, C.R. Webster, P.F. Bernath, C.D. Boone, K.A. Walker, H.C. Pumphrey, R.S. Harwood, **G.L. Manney**, M.J. Schwartz, W.H. Daffer, B.J. Drouin, R.E. Cofield, D.T. Cuddy, R.F. Jarnot, B.W. Knosp, V.S. Perun, W.V. Snyder, P.C. Stek, R.P. Thurstans, and P.A. Wagner, Validation of Aura Microwave Limb Sounder HCl measurements, *J. Geophys. Res.*, 113, doi:10.1029/2007JD009025, in press.

- Froidevaux, L., Y.B. Jiang, A. Lambert, N.J. Livesey, W.G. Read, J.W. Waters, E.V. Browell, J.W. Hair, M.A. Avery, T.J. McGee, L.W. Twigg, G.K. Sumnicht, K.W. Jucks, J.J. Margitan, B. Sen, R.A. Stachnik, G.C. Toon, P.F. Bernath, C.D. Boone, K.A. Walker, M.J. Filipiak, R.S. Harwood, R.A. Fuller, **G.L. Manney**, M.J. Schwartz, W.H. Daffer, B.J. Drouin, R.E. Cofield, D.T. Cuddy, R.F. Jarnot, B.W. Knosp, V.S. Perun, W.V. Snyder, P.C. Stek, R.P. Thurstans, and P.A. Wagner, Validation of Aura Microwave Limb Sounder stratospheric ozone measurements, *J. Geophys. Res.*, doi:10.1029/2007JD008771, in press.
- Harvey, V.L., C.E. Randall, C. Singleton, and **G.L. Manney**, Low-ozone pockets observed by EOS-MLS, *J. Geophys. Res.*, 113, doi:10.1029/2007JD009181, in press.
- Hegglin, M.I., P.F. Bernath, C.D. Boone, W.H. Daffer, P. Hoor, **G.L. Manney**, C. Schiller, K. Strong, and K.A. Walker, Validation of ACE-FTS satellite data in the upper troposphere/lower stratosphere (UTLS) using non-coincident measurements, *Atmos. Chem. Phys.*, 8, 1483-1499, 2008.
- Santee, M.L., I.A. MacKenzie, **G.L. Manney**, M.P. Chipperfield, P.F. Bernath, K.A. Walker, C.D. Boone, L. Froidevaux, N.J. Livesey, and J.W. Waters, "A study of stratospheric chlorine partitioning based on new," *J. Geophys. Res.*, 113, doi:10.1029/2007JD009057, in press.
- Santee, M.L., A. Lambert, W.G. Read, N.J. Livesey, **G.L. Manney**, R.E. Cofield, D.T. Cuddy, W.H. Daffer, B.J. Drouin, L. Froidevaux, R.A. Fuller, R.F. Jarnot, B.W. Knosp, V.S. Perun, W.V. Snyder, P.C. Stek, R.P. Thurstans, P.A. Wagner, J.W. Waters, J. Urban, D. Murtagh, P. Ricaud, J.W. Barrett, A. Kleinboehl, J. Kuttippurath, H. Kullmann, G.C. Toon, and R.A. Stachnik, Validation of the Aura Microwave Limb Sounder ClO Measurements, *J. Geophys. Res.*, 113, doi:10.1029/2007JD008762, in press.
- Schwartz, M.J., A. Lambert, **G.L. Manney**, W.G. Read, N.J. Livesey, L. Froidevaux, C.O. Ao, P.F. Bernath, C.D. Boone, R.E. Cofield, W.H. Daffer, B.J. Drouin, E.J. Fetzer, R.A. Fuller, R.F. Jarnot, J.H. Jiang, Y.B. Jiang, B.W. Knosp, K. Krüger, J.-L.F. Li, M.G. Mlynczak, S. Pawson, J.M. Russell III, M.L. Santee, W.V. Snyder, P.C. Stek, R.P. Thurstans, A.M. Tompkins, P.A. Wagner, K.A. Walker, J.W. Waters, and D.L. Wu, Validation of the Aura Microwave Limb Sounder Temperature and Geopotential Height Measurements, *J. Geophys. Res.*, 113, doi:10.1029/2007JD008783, in press.
- Fu, D., C.D. Boone, P.F. Bernath, K.A. Walker, R. Nassar, **G.L. Manney**, and S.D. McLeod, Global phosgene observations from the Atmospheric Chemistry Experiment (ACE) mission, *Geophys. Res. Lett.*, 34, L17815, doi:10.1029/2007GL029942, 2007.
- Gobiet, A., G. Kirchengast, **G.L. Manney**, M. Borsche, C. Retscher, and G. Stiller, Retrieval of temperature profiles from CHAMP for climate monitoring: Intercomparison with Envisat MIPAS and GOMOS and different atmospheric analyses, *Atmos. Chem. Phys.*, 7, 3519-3536, July 2007.
- Lambert, A., W.G. Read, N.J. Livesey, M.L. Santee, **G.L. Manney**, L. Froidevaux, D.L. Wu, M.J. Schwartz, H.C. Pumphrey, C. Jimenez, G.E. Nedoluha, R.E. Cofield, D.T. Cuddy, W.H. Daffer, B.J. Drouin, R.A. Fuller, R.F. Jarnot, B.W. Knosp, H.M. Pickett, V.S. Perun, W.V. Snyder, P.C. Stek, R.P. Thurstans, P.A. Wagner, J.W. Waters, K.W. Jucks, G.C. Toon, R.A. Stachnik, P.F. Bernath, C.D. Boone, K.A. Walker, J. Urban, D. Murtagh, J.W. Elkins, and E. Atlas, Validation of the Aura Microwave Limb Sounder middle atmosphere water vapor and nitrous oxide measurements, *J. Geophys. Res.* 112, D24S36, doi:10.1029/2007JD008724, 2007.
- Pumphrey, H.C., M.J. Filipiak, N.J. Livesey, M.J. Schwartz, C. Boone, K.A. Walker, P. Bernath, P. Ricaud, B. Barret, C. Clerbaux, R.F. Jarnot, **G.L. Manney**, and J.W. Waters, Validation of middle-atmosphere carbon monoxide retrievals from MLS on Aura, *J. Geophys. Res.*, 112, D24S38, doi:10.1029/2007JD008723, 2007.
- Santee, M.L., A. Lambert, W.G. Read, N.J. Livesey, R.E. Cofield, D.T. Cuddy, W.H. Daffer, B.J. Drouin, L. Froidevaux, R.A. Fuller, R.F. Jarnot, B.W. Knosp, **G.L. Manney**, V.S. Perun, W.V. Snyder, P.C. Stek, R.P. Thurstans, P.A. Wagner, J.W. Waters, G. Muscari, R.L. deZafra, J.E. Dibb, D.W. Fahey, P.J. Popp, T.P. Marcy, K.W. Jucks, G.C. Toon, R.A. Stachnik, P.F. Bernath, C.D. Boone, K.A. Walker, J. Urban, and D. Murtagh, Validation of Aura Microwave Limb Sounder HNO₃ Measurements, *J. Geophys. Res.*, 112, D24S40, doi:10.1029/2007JD008721, 2007.

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- Singleton, C.S., C.E. Randall, V.L. Harvey, M.P. Chipperfield, W. Feng, **G.L. Manney**, L. Froidevaux, C.D. Boone, P.F. Bernath, K.A. Walker, C.T. McElroy, and K.W. Hoppel, Quantifying Arctic ozone loss during the 2004-2005 winter using satellite observations and a chemical transport model, *J. Geophys. Res.*, 112, D07304, doi:10.1029/2006JD007463, 2007.
- Manney, G.L.**, N.J. Livesey, C.J. Jimenez, H.C. Pumphrey, M.L. Santee, I.A. MacKenzie, and J.W. Waters, EOS MLS observations of “frozen-in” anticyclonic air in Arctic summer, *Geophys. Res. Lett.*, 33, L06810, doi:10.1029/2005GL025418, 2006.
- Manney, G.L.**, M.L. Santee, L. Froidevaux, K. Hoppel, N.J. Livesey, and J.W. Waters, EOS MLS observations of ozone loss in the 2004-2005 Arctic winter, *Geophys. Res. Lett.*, 33, L04802, doi:10.1029/2005GL024494, 2006.
- Allen, D.R., S.D. Eckermann, J.P. McCormack, L. Coy, **G.L. Manney**, T.F. Hogan, and Y.-J. Kim, NOGAPS-ALPHA simulations of the 2002 southern hemisphere stratospheric major warming, *Mon. Wea. Rev.*, 134, 498–518, 2006.
- Dufour, G., R. Nassar, C.D. Boone, R. Skelton, K.A. Walker, P.F. Bernath, C.P. Rinsland, J.J. Lin, K. Semeniuk, and **G.L. Manney**, Partitioning between the inorganic chlorine reservoirs HCl and ClONO₂ during the Arctic winter 2005 derived from the ACE-FTS measurements, *Atmos. Chem. Phys.*, 6, 2355-2366, 2006.
- Jimenez, C.J., H.C. Pumphrey, I.A. MacKenzie, **G.L. Manney**, M.L. Santee, M.J. Schwartz, R.S. Harwood, J.W. Waters, EOS MLS observations of dehydration in the 2004-2005 polar winters, *Geophys. Res. Lett.*, 33, L16806, doi:10.1029/2006GL025926, 2006.
- Jin, J.J., K. Semeniuk, **G.L. Manney**, A.I. Jonsson, S.R. Beagley, J.C. McConnell, C.P. Rinsland, C.D. Boone, K.A. Walker, P.F. Bernath, and C.P. Rinsland, Denitrification in the Arctic winter 2004/2005: Observations from ACE-FTS, *Geophys. Res. Lett.*, 33, L19814, doi:10.1029/2006GL027687, 2006
- Jin, J.J., K. Semeniuk, G.L. Manney, A.I. Jonsson, S.R. Beagley, J.C. McConnell, G. Dufour, R. Nassar, C.D. Boone, K.A. Walker, P.F. Bernath, and C.P. Rinsland, Severe Arctic ozone loss in the winter 2004/2005: Observations from ACE-FTS, *Geophys. Res. Lett.*, 33, L15801, doi:10.1029/20067GL026752, 2006.
- Manney, G.L.**, K. Krüger, J.L. Sabutis, S.A. Sena, and S. Pawson, The remarkable 2003-2004 winter and other recent warm winters in the Arctic stratosphere since the late 1990s, *J. Geophys. Res.*, 110, D04107, doi:10.1029/2004JD005367, 2005.
- Manney, G.L.**, D.R. Allen, K. Krüger, B. Naujokat, M.L. Santee, J.L. Sabutis, S. Pawson, R. Swinbank, C.E. Randall, A.J. Simmons, and C. Long, Diagnostic Comparison of Meteorological Analyses during the 2002 Antarctic Winter, *Mon. Wea. Rev.*, 133, 1261–1278, 2005.
- Manney, G.L.**, J.L. Sabutis, D.R. Allen, W.A. Lahoz, A.A. Scaife, S. Pawson, C.E. Randall, B. Naujokat, and R. Swinbank, Simulations of dynamics and transport during the September 2002 Antarctic major warming, *J. Atmos. Sci.*, 62, 690–707, 2005.
- Manney, G.L.**, M.L. Santee, N.J. Livesey, L. Froidevaux, H.C. Pumphrey, W.G. Read, and J.W. Waters, EOS Microwave Limb Sounder Observations of the Antarctic Polar Vortex Breakup in 2004, *Geophys. Res. Lett.*, 32, L12811, doi:10.1029/2005GL022823, 2005.
- Filipiak, M.J., R.S. Harwood, J.H. Jiang, Q. Li, N.J. Livesey, **G.L. Manney**, W.G. Read, M.J. Schwartz, J.W. Waters, and D.L. Wu, Carbon Monoxide Measured by the EOS Microwave Limb Sounder on Aura: First Results, *Geophys. Res. Lett.*, 32, L14825, doi:10.1029/2005GL022765, 2005

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- Nassar, R., P.F. Bernath, C.D. Boone, **G.L. Manney**, S.D. McLeod, C.P. Rinsland, R. Skelton, and K.A. Walker, ACE-FTS measurements across the edge of the winter 2004 Arctic vortex, *Geophys. Res. Lett.*, 32, L15S05, doi:10.1029/2005GL022671, 2005.
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- Orsolini, Y.J., **G.L. Manney**, M.L. Santee, and C.E. Randall, An upper stratospheric layer of enhanced HNO₃ following exceptional solar storms, *Geophys. Res. Lett.*, 32, L12S01, doi:10.1029/2004GL021588, 2005.
- Randall, C.E., **G.L. Manney**, D.R. Allen, J. Hornstein, R.M. Bevilacqua, C. Trepte, W.A. Lahoz, J. Ajtic, and G. Bodeker, Reconstruction and simulation of stratospheric ozone distributions during the 2002 Austral winter, *J. Atmos. Sci.*, 62, 748–764, 2005.
- Randall, C.E., V.L. Harvey, **G.L. Manney**, Y.J. Orsolini, M. Codrescu, C. Sioris, S. Brohede, C.S. Haley, L.L. Gordley, J.M. Zawodny, and J.M. Russell III, Stratospheric effects of energetic particle precipitation in 2003–2004, *Geophys. Res. Lett.*, 32, L05802, doi:10.1029/2004GL022003, 2005.
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- Santee, M.L., **G.L. Manney**, N.J. Livesey and W.J. Read, Three-dimensional structure and evolution of stratospheric HNO₃ based on UARS Microwave Limb Sounder measurements, *J. Geophys. Res.*, 109, D15306, doi:10.1029/2004JD004578, 2004.
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- Manney, G.L.**, J.L. Sabutis, S. Pawson, M.L. Santee, B. Naujokat, R. Swinbank, M.E. Gelman, and W. Ebisuzaki, Lower stratospheric temperature differences between meteorological analyses in two cold Arctic winters and their impact on polar processing studies, *J. Geophys. Res.*, 108, 8328, doi:10.1029/2001JD001149, 2003.
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