

STANLEY COBB SOLOMON

CURRICULUM VITAE

Stan Solomon is a scientist at the National Center for Atmospheric Research, High Altitude Observatory, specializing in the physics and chemistry of the upper atmosphere and ionosphere. He received the A.B. from Harvard College, and the M.S. and Ph.D. from the University of Michigan. His dissertation research was on tomographic methods for analysis of satellite measurements of the aurora. After receiving the Ph.D. in 1987, Solomon studied auroral physics and upper-atmosphere modeling as a post-doctoral visiting scientist at NCAR. In 1990, he moved to the University of Colorado, Laboratory for Atmospheric and Space Physics, where he conducted chemical modeling and electron transport theory studies, and participated in the CU solar/airglow rocket program. In 1993, he was named an Interdisciplinary Scientist for the NASA Thermosphere-Ionosphere-Mesosphere Energetics and Dynamics (TIMED) mission, and in 1995, he became the Deputy Principal Investigator and Project Manager of the Student Nitric Oxide Explorer (SNOE), a small satellite constructed at the University of Colorado. He also taught several graduate seminars at the University of Colorado on topics ranging from solar-terrestrial physics to satellite system design, and supervised Ph.D. and Masters students. In 2000, Solomon returned to NCAR, and was appointed a Senior Scientist in 2006. He was the Deputy Director of the High Altitude Observatory from 2005 to 2009, and served as its Acting Director from October 2009 through June 2010. Solomon has authored or co-authored over 150 scientific papers and has also written articles for the public. He has been on numerous committees for NASA and the National Science Foundation, and served as the Secretary for Aeronomy of the American Geophysical Union.

EDUCATION

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| 1987 | Ph.D. (Atmospheric Science), The University of Michigan, Ann Arbor, Michigan |
| 1982 | M.S. (Atmospheric Science), The University of Michigan, Ann Arbor, Michigan |
| 1975 | A.B. (Psychology & Social Relations), Harvard College, Cambridge, Massachusetts |

APPOINTMENTS

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|--------------|--|
| 2006–Present | Senior Scientist, High Altitude Observatory, National Center for Atmospheric Research |
| 2009–2010 | Acting Director, High Altitude Observatory, National Center for Atmospheric Research |
| 2005–2009 | Deputy Director, High Altitude Observatory, National Center for Atmospheric Research |
| 2001–2006 | Scientist III, High Altitude Observatory, National Center for Atmospheric Research |
| 2000–2001 | Project Scientist III, High Altitude Observatory, National Center for Atmospheric Research |
| 1994–2000 | Lecturer, Astrophysical and Planetary Sciences Department, University of Colorado |

- 1990–2000 Research Associate, Laboratory for Atmospheric and Space Physics, University of Colorado
- 1987–1989 Post-Doctoral Visiting Scientist, High Altitude Observatory, National Center for Atmospheric Research
- 1987 Research Fellow, Space Physics Research Laboratory, The University of Michigan

COMMUNITY SERVICE

Professional Service

- 2014 Steering Committee, NASA Living With a Star Institutes
- 2014 Program Committee, NASA Living With a Star Workshop, Portland, Oregon
- 2013–Present Task Group Lead, Role of the Sun and Middle Atmosphere in Climate program.
- 2013 Guest Editor, “Causes and Consequences of the Extended Solar Minimum between cycles 23 and 24,” *J. Geophys. Res.*
- 2013 Lead Convener, “New Observations of the Thermosphere-Ionosphere,” American Geophysical Union Fall Meeting.
- 2013 Program Committee, Next-Generation Suborbital Researchers Conference, Broomfield, Colorado
- 2013 Scientific Committee, Chapman Conference on the Causes and Consequences of the Solar Minimum between cycles 23 and 24, Key Largo, Florida
- 2012–Present Suborbital Applications Research Group, Commercial Spaceflight Federation
- 2012 Local Organizing Committee, HEPPA/SOLARIS workshop, Boulder, Colorado
- 2010–2011 Steering Committee, NASA Living With a Star Targeted Research and Technology Program
- 2011 Guest Editor, “Dynamic Coupling Between the Earth’s Atmospheric and Plasma Environments,” *Space Sci. Rev.*, 168, 2012.
- 2010 Co-Convener, Session SA11 “Heliosphere-Atmosphere Coupling and Climate,” American Geophysical Union Fall Meeting
- 2010 Local Organizing Committee, TREND-2010 Workshop, Boulder, Colorado
- 2009–2010 Conveners Committee, “Coupling Between the Earth’s Atmospheric and Plasma Environments,” International Space Sciences Institute, Bern, Switzerland
- 2009 Local Organizing Committee, High Energy Particle Precipitation in the Atmosphere (HEPPA) workshop, Boulder, Colorado
- 2008–2014 Management Operations Working Group, NASA Geospace Program
- 2008–2010 Ad Hoc Steering Committee, Ionosphere-Thermosphere-Mesosphere Research
- 2008 Main Session Organizer, 7th Thermospheric/Ionospheric Geospheric Research (TIGER) Symposium, COSPAR meeting, Montreal, Canada
- 2008–2011 Focused Science Team Leader, Ionosphere-Thermosphere Variability, NASA Living With a Star program
- 2008–2009 Mission Planning Working Group, NASA Heliophysics program
- 2007–2008 Management Operations Working Group, NASA Living With a Star program
- 2007 Co-Chair, Local Organizing Committee, Living With a Star Science Workshop, Boulder, Colorado

2006–2007 Steering Committee, NASA Living With a Star Targeted Research and Technology program

2005 Co-Convener, Sessions SA32A “Global Change in the Upper Atmosphere” and SA51A “Solar EUV and X-ray Effects on Planetary Atmospheres,” American Geophysical Union Spring Meeting

2004 Organizing Committee, 5th Thermospheric/Ionospheric Geospheric Research (TIGER) Symposium, COSPAR meeting, Paris, France

2002–2004 Secretary for Aeronomy, SPA Section, American Geophysical Union

2002 Program Committee, Fall Meeting, American Geophysical Union

2001 Organizing Committee, 3rd Thermospheric/Ionospheric Geospheric Research (TIGER) Symposium, Boulder, Colorado

2000 Guest Editor, Theory and Modeling, TIGER Proceedings, *Phys. Chem. Earth*

1999 Organizing Committee, 2nd Thermospheric/Ionospheric Geospheric Research (TIGER) Symposium, St. Petersburg, Russia

1999 Co-Convener, Session SA51A “Direct Sampling in the Ionosphere,” American Geophysical Union Fall Meeting

1998–2000 AGU Space Physics and Aeronomy Student Awards Committee

1998 Lead Convener, Session SA42A “Odd Nitrogen in the Upper Atmosphere,” American Geophysical Union Fall Meeting

1998 Launch Vehicle Interface Working Group, Universities Space Research Association

1998 Organizing Committee, 1st Thermospheric/Ionospheric Geospheric Research (TIGER) Symposium, Freiburg, Germany

1997 Advisory Committee, University of Colorado Heritage Center

1997 NASA International Consultative Group

1997 Convener, Session 2.3 “Auroral Spectroscopy,” IAGA Meeting

1996–1998 NASA Geospace Multiprobes Science Definition Team

1996 Organizer, Auroral Arcs Workshop, CEDAR Workshop

1995–1998 CEDAR/TIMED Collaborative Science Coordination Committee

1993–2007 Science Working Group, NASA TIMED Mission

1993–1998 Science Team, Arizona Imaging Spectrograph STS Experiments

1993–1994 Phase I Study Team, ESA ATON Mission

1993 Local Organizing Committee, Division for Planetary Sciences annual meeting

1992–1996 Steering Committee, Multi-Station Auroral Spectroscopy Campaign

1991–1994 Sun-Earth Environment Exhibits Committee, National Science Foundation

1990–2006 EUV Working Group, Solar Electromagnetic Radiation Study

1989–1991 Steering Committee, CEDAR/DE Lower Ionosphere Thermosphere Experiment

1989–Present Proposal Reviewer for the National Aeronautical and Space Administration and the National Science Foundation

1985–Present Referee for *Advances in Space Research*, *Annales Geophysicae*, *Canadian Journal of Physics*, *Geophysical Research Letters*, *Journal of Atmospheric and Solar-Terrestrial Physics*, *Journal of Geophysical Research*, *Planetary and Space Sciences*, *Reviews of Geophysics*, *Space Science Reviews*

Management Activities

- 2012–Present Appointments Review Group, NCAR
- 2012–Present Scientific Advisory Committee, NCAR High Altitude Observatory
- 2007–2010 Appointments Review Group, NCAR
- 2006–Present Appointments Committee, NCAR High Altitude Observatory
- 2005–Present Directors Advisory Committee, NCAR High Altitude Observatory
- 2005–2009 Chair, Computer Advisory Group, NCAR High Altitude Observatory
- 2003 Scientist I Selection Committee, NCAR
- 2002–2013 Co-Director for Ionosphere-Thermosphere, Center for Integrated Space weather Modeling (a NSF Science and Technology Center led by Boston University)
- 2001–2005 Instrumentation Group Advisory Committee, NCAR High Altitude Observatory
- 2001–2002 Project Scientist / Associate Scientist Review Committee, NCAR
- 2000–2005 Deputy Science Manager, TIMED Doppler Imager, NASA
- 1999–2000 Interactions Committee, Aerospace Department and Laboratory for Atmospheric and Space Physics, University of Colorado
- 1998–1999 Student Concerns Committee, Laboratory for Atmospheric and Space Physics, University of Colorado
- 1998 Practicum Committee, Department of Astrophysical and Planetary Sciences, University of Colorado
- 1997–2000 Projects Steering Committee, Laboratory for Atmospheric and Space Physics, University of Colorado
- 1996 Strategic Planning Committee, University of Colorado
- 1995–2000 Deputy Principal Investigator and Project Manager, Student Nitric Oxide Explorer satellite, University of Colorado / USRA / NASA
- 1995–2000 Executive Committee, Laboratory for Atmospheric and Space Physics, University of Colorado
- 1990–1994 Computer Policy Committee, Laboratory for Atmospheric and Space Physics, University of Colorado

Educational Activities

- 2013–Present Lecturer, Space Weather Summer School, NCAR High Altitude Observatory
- 2014–Present Supervised post-doctoral research, Justin Yonker, NCAR High Altitude Observatory
- 2012–2014 Supervised post-doctoral research, Roger Varney, NCAR High Altitude Observatory
- 2008–2009 Lecturer, Heliophysics Summer School, Boulder, Colorado
- 2007–2009 Supervised post-doctoral research, Xiaoli Luan, NCAR High Altitude Observatory
- 2007 Supervised graduate research and member of Ph.D. Committee, Liying Qian, Department of Meteorology, Pennsylvania State University
- 2006–2007 Supervised post-doctoral research, Zhen Zeng, NCAR High Altitude Observatory
- 2005–2007 Supervised post-doctoral research, Jiuhou Lei, NCAR High Altitude Observatory

- 2005–2007 Supervised post-doctoral research, Geonhwa Jee, NCAR High Altitude Observatory
- 2003–2005 Supervised post-doctoral research, Naomi Maruyama, NCAR High Altitude Observatory
- 2002–2005 Supervised graduate research, Alexey Semenov, NCAR High Altitude Observatory and St. Petersburg University
- 2001–2012 Lecturer, Space Weather Summer School, Boston University
- 2000 Lecturer, Astrophysical and Planetary Sciences 5835, “Solar Influence on the Earth’s Climate?,” University of Colorado
- 2000 Member of Ph.D. Committee, Michael Moreau, Aerospace Engineering Sciences Department, University of Colorado
- 1999 Advisor and Chair of Ph.D. Committee, Steven M. Hill, Astrophysical and Planetary Sciences Department, University of Colorado
- 1998 Lecturer, Aerospace Engineering Sciences 5519, “Satellite Design for Low-Earth Orbit,” University of Colorado
- 1995 Lecturer, Astrophysical and Planetary Sciences 5000, “Sun-Earth Connections,” University of Colorado
- 1995 Member of Ph.D. Committee, Scott M. Bailey, Astrophysical and Planetary Sciences Department, University of Colorado
- 1994–1997 Lecturer, Aerospace Engineering Sciences 4519, “Student Explorer Satellite Project,” University of Colorado
- 1992 Chair of Comps II Examination Committee, Scott M. Bailey, Astrophysical and Planetary Sciences Department, University of Colorado
- 1990–2014 Assisted many additional Ph.D. students, including: Joan Alexander (University of Colorado), Monica Coakley (University of Wisconsin), Vicky Fang (National Central University Taiwan), Xiaohua Fang (University of Michigan), Matthew Harris (University College London), Brooke Hatfield (University of Arizona), Timothy Holden (University of Colorado), Edward Hume (University of Michigan), Redgie Lancaster (Boston University), Aimee Merkel (University of Colorado), John Noto (Boston University), Erica Rodgers (University of Alaska), Brad Sandor (University of Colorado), Anke Schlesier (Göttingen), Donald Schmit (University of Colorado), Joshua Semeter (Boston University), Thomas Stone (University of Arizona), John Worden (University of Colorado)
- 1990–2000 Supervised numerous undergraduate and masters-level graduate research assistants in the CU Aerospace Engineering Sciences Department, including project supervision for M.S. students John Fulmer and Christopher Zeller
- 1990–2014 Various guest lectures in University of Colorado courses
- 1990–2014 Various lectures, tours, and public outreach activities, including Boulder Valley elementary schools, Denver Museum of Natural History, NCAR COMET program, global change workshop, and ASP colloquia

Professional Affiliations

American Association for the Advancement of Science

American Geophysical Union

Society of Photo-Optical Instrumentation Engineers

HONORS AND AWARDS

2012	John W. Firor Outstanding Publication Award, High Altitude Observatory
2012	NAIRAS Team Agency Group Achievement Award, NASA
2011	Solar EUV Experiment Group Achievement Award, NASA
2008	TIMED Mission Group Achievement Award, NASA
2000	Alumni Society Merit Award, The University of Michigan
1995	Editor's Citation for Excellence in Refereeing, Journal of Geophysical Research
1991	Outstanding Service Award, American Geophysical Union
1988–1989	CEDAR Post-Doctoral Fellow
1985	Distinguished Achievement Award, Atmospheric Science, The University of Michigan
1975	A.B. cum laude, Harvard College

RESEARCH GRANTS

2014–Present	Co-Investigator, “Miniature X-ray Solar Spectrometer Cubesat Mission,” NASA, Heliophysics Division, Heliophysics Technology and Instrument Development for Science Program, T. Woods
2014–Present	Co-Principal Investigator, “Response of the Atmosphere to Impulsive Solar Events,” NASA, Heliophysics Division, Living With a Star Program, C. Randall
2014–Present	Co-Investigator, “Satellite Drag Physical Model for a Near-Real-Time Operation Test Bed,” AFOSR, STTR Program, G. Crowley
2014–Present	Co-Investigator, “Solar Cyclic and Climatic Trends in Geocoronal Hydrogen, NSF, CEDAR Program, S. Nossal
2013–Present	Co-Investigator, “Global Observations of the Limb and Disk,” NASA, Heliophysics Division, Explorer Program, R. Eastes
2013–Present	Principal Investigator, “Thermosphere-Ionosphere Impacts of Solar Extreme Ultraviolet Variability,” NASA, Heliophysics Division, Guest Investigator Program
2013–2014	Co-Principal Investigator, “Gravity Wave Parameterization in GISS Climate Models,” subcontract from The State University of New York, M. Geller
2012–Present	Co-Investigator, CISM Space Weather Summer School, NSF, Aeronomy Program, M. Wiltberger
2012–2013	Principal Investigator, “CEDAR Database Transitional Support,” NSF, Aeronomy Program
2011–Present	Co-Principal Investigator, “Sun-to-Ice,” NSF, Frontiers in Earth Systems Dynamics Program, H. Spence
2011–2013	Co-Investigator, “Global Observations of the Limb and Disk (Phase-A Study),” NASA, Heliophysics Division, Explorer Program, R. Eastes
2010–2014	Principal Investigator, “The Upper Atmosphere and Ionosphere at Solar Minimum: Cyclical and Secular Variation,” NASA, Heliophysics Division, Supporting Research and Technology Program

2009–Present Co-Investigator, “Integrated Modeling of the Atmosphere and Ionosphere,” NASA, Heliophysics Division, Living With a Star Strategic Capability Program, R. Garcia

2009–2014 Co-Investigator, “Thermospheric Energetics on Solar-cycle, Seasonal, and Storm Time Scales,” NASA, Heliophysics Division, Guest Investigator Program, G. Lu

2008–2011 Principal Investigator, “Ionosphere-Thermosphere Variability: The Interaction of Solar Irradiance Changes with Atmospheric Dynamics,” NASA, Heliophysics Division, Living With a Star Program

2008–2011 Co-Investigator, “Solar Cyclic and Climatic Trends in Geocoronal Hydrogen, NSF, CEDAR Program, S. Nossal

2008–2010 Principal Investigator, “Space Weather Prediction Testbed,” AFWA, Developmental Testbed Center Program

2008–2010 Co-Investigator, “Modeling Density Variation in the Thermosphere,” AFOSR, A. Richmond

2007–2011 Co-Investigator, “Nowcast of Atmospheric Ionizing Radiation for Aviation Safety,” NASA, Earth Sciences Division, Applied Science Program, C. Mertens

2007 Principal Investigator, “Living With a Star Science Workshop,” NASA, Heliophysics Division, Living With a Star Program

2007–2009 Co-Investigator, “Thermospheric/Ionospheric Extension of the Whole Atmosphere Community Climate Model,” ONR, H. Liu

2006–2009 Co-Investigator, “Global Observations of the Limb and Disk (Phase-A Study),” NASA, Heliophysics Division, Mission of Opportunity, R. Eastes

2006–2009 Co-Investigator, “Whole Atmosphere Modeling of the Thermosphere-Ionosphere Responses to Lower-Atmosphere Dynamics and Variability,” NSF, Atmospheric Sciences Division, CEDAR Program, A. Richmond

2005–2008 Co-Investigator, “A Virtual Solar Terrestrial Observatory,” NSF, Cyberinfrastructure Program, P. Fox

2005–2008 Principal Investigator, “Quantification of the Thermospheric Density Response to Solar Forcing,” NASA, Earth-Sun Science Division, Living With a Star Program

2005–2008 Co-Investigator, “Solar Cycle Studies using the Whole Atmosphere Community Climate Model,” NASA, Earth-Sun Science Division, Living With a Star Program, R. Garcia

2004–2007 Co-Investigator, “A Complement of Optical Instruments for the Polar Cap Observatory,” NSF, CEDAR Program, Q. Wu

2003–2006 Principal Investigator, “Global Modeling of Thermospheric Nitric Oxide,” NASA, Sun-Earth Connection, Supporting Research and Technology Program

2002–2013 Co-Director, “Center for Integrated Space Weather Modeling,” NSF, Science and Technology Centers Program, W. J. Hughes

2002–2003 Principal Investigator, “Solar Ultraviolet Energy Deposition for General Circulation Models,” NCAR, Opportunity Fund Program

2001–2004 Principal Investigator, “Measurements of Upper Atmosphere Winds and Temperatures,” NCAR, Strategic Initiative Program

2000–2003 Principal Investigator, “Thermospheric Odd-Nitrogen Response to Auroral Energy,” NASA, Sun-Earth Connection, Supporting Research and Technology Program

2000–2005 Co-Investigator, “Jovian Magnetosphere Explorer (study phase),” NASA, Small Explorer Program, N. Schneider

2000–2001 Co-Investigator, “Ocean Winds and Land Surface Student Satellite (study phase),” NASA, UnESS Program, W. Emery

1997–2002 Co-Investigator, “Program of Excellence Award to ASEN and LASP,” Colorado Commission for Higher Education, A. Seebass

1997–2000 Principal Investigator, “Lower Ionosphere Thermosphere Explorer Concept Study,” NASA, Sun-Earth Connection, Space Physics New Missions Concepts Program

1996–1997 Principal Investigator, “Thermospheric Airglow Model Validation,” NASA, Space Physics Division, Supporting Research and Technology Program

1994–2000 Deputy Principal Investigator, “The Student Nitric Oxide Explorer,” USRA/NASA, Student Explorer Demonstration Initiative, C. Barth

1994–1997 Co-Investigator, “Solar Irradiance and Thermospheric Airglow Rocket Experiments,” NASA, Space Physics Division, Sub-orbital Program, T. Woods

1994–1997 Co-Investigator, “Confirmatory Analysis of SAGE-I and -II Data,” DOE, Atmospheric Chemistry Program, D. Rusch

1993–2007 Principal Investigator, “Energy Transfer in the Thermosphere and Mesosphere,” NASA, Sun-Earth Connection, TIMED Mission Interdisciplinary Scientist

1993–2010 Co-Investigator, “Solar Extreme-Ultraviolet Experiment,” NASA, Sun-Earth Connection, TIMED Mission, T. Woods

1993–1997 Principal Investigator, “Auroral Emissions Modeling (continuation),” NSF, Atmospheric Sciences Division, CEDAR Program

1993–1996 Co-Investigator, “3D Modeling of Gravity Waves and Airglow,” NSF, Atmospheric Sciences Division, CEDAR Program, J. Isler

1993–1994 Principal Investigator, “Algorithm Development and Testing,” NRL, Space Science Division, E. O. Hulburt Center for Space Research

1992–1995 Principal Investigator, “Thermospheric Airglow Model Enhancement,” NASA, Space Physics Division, Supporting Research and Technology Program

1991–1994 Co-Investigator, “Solar Ultraviolet Irradiance Variation during Solar Cycle 22,” NASA, Space Physics Division, Guest Investigator Program, T. Woods

1991–1994 Co-Investigator, “Solar Extreme Ultraviolet Irradiance Comparison Experiment,” NASA, Space Physics Division, Sub-orbital Program, T. Woods

1990–1993 Co-Investigator, “Aeronomical Spectroscopy in the Ultraviolet at Søndre Strømfjord, Greenland,” NSF, Atmospheric Sciences Division, CEDAR Program, R. Niciejewski

1990–1992 Principal Investigator, “Auroral Emissions Modeling,” NSF, Atmospheric Sciences Division, CEDAR Program

1990–1992 Principal Investigator, “Thermospheric Airglow Model Development,” NASA, Space Physics Division, Supporting Research and Technology Program

PUBLICATIONS

1. Thesis

Title: *Tomographic Inversion of Auroral Emissions*
Date: April 1987
Institution: The University of Michigan
Advisors: Paul B. Hays and Vincent J. Abreu

2. Publications in Refereed Journals

- 2.1. Abreu, V. J., S. C. Solomon, W. E. Sharp, and P. B. Hays, The dissociative recombination of O_2^+ : The quantum yield of $O(^1S)$ and $O(^1D)$, *J. Geophys. Res.*, **88**, 4140, 1983.
- 2.2. Solomon, S. C., P. B. Hays, and V. J. Abreu, Tomographic inversion of satellite photometry, *Appl. Opt.*, **23**, 3409, 1984.
- 2.3. Abreu, V. J., A. Dalgarno, J.-H. Yee, S. Chakrabarti, and S. C. Solomon, The OI 989Å tropical nightglow, *Geophys. Res. Lett.*, **11**, 569, 1984.
- 2.4. Solomon, S. C., P. B. Hays, and V. J. Abreu, Tomographic inversion of satellite photometry, *Appl. Opt.*, **24**, 4134, 1985.
- 2.5. Abreu, V. J., R. W. Eastes, J.-H. Yee, S. C. Solomon, and S. Chakrabarti, Ultraviolet nightglow production near the Earth's equator by neutral particle precipitation, *J. Geophys. Res.*, **91**, 11365, 1986.
- 2.6. Abreu, V. J., J.-H. Yee, S. C. Solomon, and A. Dalgarno, The quenching rate of $O(^1D)$ by $O(^3P)$, *Planet. Space Sci.*, **34**, 1143, 1986.
- 2.7. Hays, P. B., V. J. Abreu, S. C. Solomon, and J.-H. Yee, The visible airglow experiment: A review, *Planet. Space Sci.*, **36**, 21, 1988.
- 2.8. Solomon, S. C., P. B. Hays, and V. J. Abreu, The auroral 6300Å emission: Observations and modeling, *J. Geophys. Res.*, **93**, 9867, 1988.
- 2.9. Solomon, S. C., and V. J. Abreu, The 630 nm dayglow, *J. Geophys. Res.*, **94**, 6817, 1989.
- 2.10. Solomon, S. C., Auroral excitation of the N_2 2P(0,0) and VK(0,9) bands, *J. Geophys. Res.*, **94**, 17215, 1989.
- 2.11. Solomon, S. C., Optical aeronomy, *Rev. Geophys.*, **29**, 1089, 1991.
- 2.12. Buonsanto, M. J., S. C. Solomon, and W. K. Tobiska, Comparison of measured and modeled solar EUV flux and its effect on the $E-F_1$ region ionosphere, *J. Geophys. Res.*, **97**, 10513, 1992.
- 2.13. Schmidtke, G., T. N. Woods, H. Doll, J. Worden, S. C. Solomon, C. Wita, and G. J. Rottman, Solar EUV irradiance from the San Marco ASSI: A reference spectrum, *Geophys. Res. Lett.*, **19**, 2175, 1992.
- 2.14. Solomon, S. C., Auroral electron transport using the Monte Carlo method, *Geophys. Res. Lett.*, **20**, 185, 1993.
- 2.15. Alexander, M. J., A. I. F. Stewart, S. C. Solomon, and S. W. Bougher, Local-time asymmetries in the Venus thermosphere, *J. Geophys. Res.*, **98**, 10849, 1993.
- 2.16. Chang, T., D. G. Torr, P. G. Richards, and S. C. Solomon, Re-evaluation of the $O^+(^2P)$ reaction rate coefficients derived from Atmosphere Explorer-C observations, *J. Geophys. Res.*, **98**, 15589, 1993.
- 2.17. Woods, T. N., G. J. Rottman, S. Bailey, and S. C. Solomon, Vacuum-ultraviolet instruments for solar irradiance and thermospheric airglow, *Opt. Eng.*, **33**, 438, 1994.

- 2.18. Lancaster, R. S., R. B. Kerr, K. Ng, J. Noto, M. Franco, and S. C. Solomon, Recent observations of the OI 8446 Å emission over Millstone Hill, *Geophys. Res. Lett.*, *21*, 829, 1994.
- 2.19. Buonsanto, M. J., P. G. Richards, W. K. Tobiska, S. C. Solomon, Y.-K. Tung, and J. A. Fennelly, Ionospheric electron densities calculated using different EUV flux models and cross sections: Comparison with radar data, *J. Geophys. Res.*, *100*, 14569, 1995.
- 2.20. Worden, J., T. N. Woods, G. Rottman, G. Schmidtke, H. Tai, H. Doll, and S. C. Solomon, Calibration of the San Marco airglow-solar spectrometer instrument in the extreme-ultraviolet, *Opt. Eng.*, *35*, 554, 1996.
- 2.21. Niciejewski, R. J., T. L. Killeen, and S. C. Solomon, Observations of thermospheric horizontal neutral winds at Watson Lake, Yukon Territory, *J. Geophys. Res.*, *101*, 241, 1996.
- 2.22. Woods, T. N., G. J. Rottman, S. M. Bailey, S. C. Solomon, and J. R. Worden, Solar extreme ultraviolet irradiance measurements during solar cycle 22, *Solar Phys.*, *177*, 133, doi:10.1117/12.330255, 1998.
- 2.23. Swenson, G. R., R. L. Rairden, S. C. Solomon, and S. Ananth, Imaging spectroscopy for 2-D characterization of auroral emissions, *Appl. Opt.*, *37*, 5760, 1998.
- 2.24. Rusch, D. W., C. E. Randall, M. T. Callan, M. Horanyi, R. T. Clancy, S. C. Solomon, S. J. Oltmans, B. J. Johnson, U. Koehler, H. Claude, and D. DeMuer, A new inversion for SAGE II data, *J. Geophys. Res.*, *103*, 8465, 1998.
- 2.25. Bailey, S. M., T. N. Woods, L. R. Canfield, R. Korde, S. C. Solomon, and G. J. Rottman, Sounding rocket measurements of the solar soft X-ray irradiance, *Solar Phys.*, *186*, 243, 1999.
- 2.26. Barth, C. A., S. M. Bailey, and S. C. Solomon, Solar-terrestrial coupling: Solar soft X-rays and thermospheric nitric oxide, *Geophys. Res. Lett.*, *26*, 1251, 1999.
- 2.27. Bailey, S. M., T. N. Woods, C. A. Barth, and S. C. Solomon, Measurements of the solar soft X-ray irradiance from the Student Nitric Oxide Explorer, *Geophys. Res. Lett.*, *26*, 1255, 1999.
- 2.28. Solomon, S. C., C. A. Barth, and S. M. Bailey, Auroral production of nitric oxide measured by the SNOE Satellite, *Geophys. Res. Lett.*, *26*, 1259, 1999.
- 2.29. Lancaster, R. S., L. S. Waldrop, R. B. Kerr, J. Noto, S. C. Solomon, C. A. Tepley, R. Garcia, and J. Friedman, Brightness measurements of the OI 8446 Å airglow emission from Millstone Hill and Arecibo Observatories, *J. Geophys. Res.*, *105*, 5275, 2000.
- 2.30. Hill, S. M., S. C. Solomon, D. D. Cleary, and A. L. Broadfoot, Temperature dependence of the reaction $N_2(A^3\Sigma_u^+) + O$ in the terrestrial thermosphere, *J. Geophys. Res.*, *105*, 5275, 2000.
- 2.31. Solomon, S. C., Modeling of the thermosphere/ionosphere system, *Physics and Chemistry of the Earth: Solar-Terrestrial and Planetary Science*, *25*, 499, 2000.
- 2.32. Woods, T. N., S. M. Bailey, F. G. Eparvier, G. M. Lawrence, J. Lean, W. E. McClintock, R. G. Roble, G. J. Rottman, S. C. Solomon, W. K. Tobiska, and O. R. White, The TIMED solar EUV experiment, *Physics and Chemistry of the Earth: Solar-Terrestrial and Planetary Science*, *25*, 393, 2000.
- 2.33. Woods, T. N., G. J. Rottman, and S. C. Solomon, Solar extreme ultraviolet irradiance measurements from sounding rockets during Solar Cycle 22, *Physics and Chemistry of the Earth: Solar-Terrestrial and Planetary Science*, *25*, 397, 2000.

- 2.34. Kanik, I., L. W. Beegle, J. M. Ajello, and S. C. Solomon, Electron-impact excitation and photoabsorption cross sections important in the terrestrial airglow and auroral analysis of rocket and satellite observations, *Physics and Chemistry of the Earth: Solar-Terrestrial and Planetary Science*, 25, 573, 2000.
- 2.35. Bailey, S. M., T. N. Woods, C. A. Barth, S. C. Solomon, L. R. Canfield, and R. Korde, Measurements of the solar soft X-ray irradiance by the Student Nitric Oxide Explorer: First analysis and underflight calibrations, *J. Geophys. Res.*, 105, 27179, 2000.
- 2.36. Solomon, S. C., Auroral particle transport using Monte Carlo and hybrid methods, *J. Geophys. Res.*, 106, 107, 2001.
- 2.37. Solomon, S. C., S. M. Bailey, and T. N. Woods, Effect of solar soft X-rays on the lower ionosphere, *Geophys. Res. Lett.*, 28, 2149, 2001.
- 2.38. Bailey, S. M., T. N. Woods, C. A. Barth, S. C. Solomon, L. R. Canfield, and R. Korde, Correction to “Measurements of the solar soft X-ray irradiance by the Student Nitric Oxide Explorer: First analysis and underflight calibrations,” *J. Geophys. Res.*, 106, 15791, 2001.
- 2.39. Hubert, B., J.-C. Gerard, D. V. Bisikalo, V. I. Shematovich, and S. C. Solomon, The role of proton precipitation in the excitation of auroral FUV emissions, *J. Geophys. Res.*, 106, 21475, 2001.
- 2.40. Bailey, S. M., C. A. Barth, and S.C. Solomon, A model of nitric oxide in the lower thermosphere, *J. Geophys. Res.*, 107, 1205, doi:10.1029/2001JA000258, 2002.
- 2.41. Wu, Q. T. L. Killeen, D. McEwen, and S. C. Solomon, Observation of the Mesospheric and Lower Thermospheric Neutral Wind 10-hour Wave in the Northern Polar Region, *J. Geophys. Res.*, 107, 1082, doi:10.1029/2001JA000192, 2002.
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- 2.130. Yue, X., W. S. Schreiner, Y.-H. Kuo, D. C. Hunt, W. Wang, S. C. Solomon, A. G. Burns, D. Bilitza, J.-Y. Liu, W. Wan, and J. Wickert, Global 3-D ionospheric electron density reanalysis based on multi-source data assimilation, *J. Geophys. Res.*, *117*, A09325, doi:10.1029/2012JA017968, 2012.
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- 2.132. Deng, Y., Y. Huang, S. C. Solomon, L. Qian, D. J. Knipp and D. R. Weimer, Anomalous low geomagnetic energy inputs during 2008 solar minimum, *J. Geophys. Res.*, *117*, A09307, doi:10.1029/2012JA018039, 2012.
- 2.133. Qian, L., A. G. Burns, S. C. Solomon, and W. Wang, Annual/semiannual variation of the ionosphere, *Geophys. Res. Lett.*, *40*, 1928, doi:10.1002/grl.50448, 2013.
- 2.134. Qian, L., D. R. Marsh, A. W. Merkel, S. C. Solomon, and R. G. Roble, Effect of trends of middle atmosphere gases on the mesosphere and thermosphere, *J. Geophys. Res. Space Physics*, *118*, 3846, doi:10.1002/jgra.50354, 2013.
- 2.135. Solomon, S. C., L. Qian, and A. G. Burns, The anomalous ionosphere between solar cycles 23 and 24, *J. Geophys. Res. Space Physics*, *118*, 6524, doi:10.1002/jgra.50561, 2013.
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- 2.138. Jee, G., H.-W. Lee, and S. C. Solomon, Global TECs during last two solar minima, *J. Geophys. Res. Space Physics*, *119*, 2090, doi:10.1002/2013JA019407, 2014.
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- 2.142. Duderstadt, K. A., J. E. Dibb, N. A. Schwadron, H. E. Spence, C. H. Jackman, C. E. Randall, S. C. Solomon, and M. J. Mills, Nitrate deposition to surface snow at Summit, Greenland following the 9 November 2000 solar proton event, *J. Geophys. Res. Atmospheres*, *119*, doi:10.1002/2013JD021389, 2014.

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- 2.145. Lei, J., W. Wang, J. P. Thayer, X. Luan, X. Dou, A. G. Burns, and S. C. Solomon, Simulations of the equatorial thermosphere anomaly: Geomagnetic activity modulation, *J. Geophys. Res. Space Physics*, submitted, 2014.

3. Other Refereed Publications

- 3.1. Abreu, V. J., P. B. Hays, and S. C. Solomon, The tomographic inversion of satellite photometric data, *RSRM '87: Advances in Remote Sensing Retrieval Methods*, A. Deepak, H. E. Fleming, and J. S. Theon, eds., A. Deepak Publishing, Hampton, Virginia, 1989.
- 3.2. Solomon, S. C., and R. G. Roble, Temperature variation in the thermosphere: simulations using the NCAR Thermosphere/ Ionosphere General Circulation Model, *SOLERS22: Proceedings of the Workshop on the Solar Electromagnetic Radiation Study for Solar Cycle 22*, R. F. Donnelly, ed., NOAA, Boulder, Colorado, 399, 1992.
- 3.3. Siskind, D. E., S. C. Solomon, J. U. Kozyra, and J. D. Winningham, Inferring the temporal variation of the solar soft X-ray flux, *SOLERS22: Proceedings of the Workshop on the Solar Electromagnetic Radiation Study for Solar Cycle 22*, R. F. Donnelly, ed., 445, 1992.
- 3.4. Solomon, S. C., S. M. Bailey, F. G. Eparvier, and T. N. Woods, Thermosphere-ionosphere modeling using solar measurements by TIMED/SEE and SNOE/SXP, *Proceedings of the 4th Thermospheric/Ionospheric Geospheric Research (TIGER) Symposium*, 2002.
- 3.5. Fuller-Rowell, T. J., S. C. Solomon, R. Viereck, and R. G. Roble, Impact of EUV and X-ray variations on Earth's atmosphere, *Solar Variability and Its Effect on Climate*, J. M. Pap, P. Fox, C. Fröhlich, H. S. Hudson, J. Kuhn, J. McCormack, G. North, W. Sprigg, and S. T. Wu, eds., *AGU Geophysical Monograph Series*, 141, 2004.
- 3.6. Woods, T. N., L. W. Acton, S. M. Bailey, F. G. Eparvier, H. Garcia, D. Judge, J. Lean, J. T. Mariska, D. McMullin, G. Schmidtke, S. C. Solomon, W. K. Tobiska, H. P. Warren, and R. Viereck, Solar extreme ultraviolet and X-ray irradiance variations, *Solar Variability and Its Effect on Climate*, J. M. Pap, P. Fox, C. Fröhlich, H. S. Hudson, J. Kuhn, J. McCormack, G. North, W. Sprigg, and S. T. Wu, eds., *AGU Geophysical Monograph Series*, 141, 127, 2004.
- 3.7. Kozyra, J. U., G. Crowley, B. A. Emery, X. H. Fang, G. Maris, M. G. Mlynczak, R. J. Niciejewski, S. E. Palo, L. J. Paxton, C. E. Randall, P.-P. Rong, J. M. Russell III, W. R. Skinner, S. C. Solomon, E. R. Talaat, Q. Wu, and J.-H. Yee, Response of the upper/middle atmosphere to coronal holes and powerful high-speed solar wind streams in 2003, *Recurrent Magnetic Storms: Corotating Solar Wind Streams*, B. Tsurutani, R. McPherron, W. Gonzalez, G. Lu, J. H. A. Sobral, and N. Gopalswamy, eds., *AGU Geophysical Monograph Series*, 167, 319, 2006.
- 3.8. Eastes, R. W., W. McClintock, M. V. Codrescu, A. Aksnes, D. N. Anderson, L. Andersson, D. N. Baker, A. G. Burns, S. A. Budzien, R. E. Daniell, K. F. Dymond, F. G. Eparvier, J. E. Harvey, T. J. Immel, A. Krywonos, M. R. Lankton, J. D. Lumpe, G. W. Prölss, A. D. Richmond, D. W. Rusch, O. H. Siegmund, S. C. Solomon, D. J. Strickland and T. N. Woods, Global-scale observations of the limb and disk (GOLD):

- New observing capabilities for the ionosphere-thermosphere, *Midlatitude Ionospheric Dynamics and Disturbances*, P. M. Kintner, A. J. Coster, T. J. Fuller-Rowell, A. J. Mannucci, M. Mendillo, and R. Heelis, eds., *AGU Geophysical Monograph Series*, 181, 319, 2008.
- 3.9. Fuller-Rowell, T. J., and S. C. Solomon, Atmospheric Response to Geomagnetic Storms and Solar Flares, *Heliophysics, Vol. II, Space Storms and Radiation: Causes and Effects*, C. J. Schrijver and G. L. Siscoe, eds., Cambridge University Press, Cambridge, UK, 321, 2010.
 - 3.10. Solomon, S. C., Terrestrial Ionospheres, *Heliophysics, Vol. III, Evolving Solar Activity and the Climates of Space and Earth*, C. J. Schrijver and G. L. Siscoe, eds., Cambridge University Press, Cambridge, UK, 351, 2010.
 - 3.11. Burns, A. G., W. Wang, S. C. Solomon, and L. Qian, Energetics and composition in the thermosphere, *Modeling the Ionosphere-Thermosphere System*, J. Huba, R. Schunk, and G. Khazanov, eds., *AGU Geophysical Monograph Series*, 201, 39, doi:10.1002/9781118704417.ch4, 2014.
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- 4. Non-Refereed Publications**
- 4.1. Woods, T. N., S. M. Bailey, S. C. Solomon, and G. J. Rottman, Far ultraviolet and extreme ultraviolet instrumentation for measuring the solar spectral irradiance and terrestrial airglow, *Instrumentation for Planetary and Terrestrial Atmospheric Remote Sensing*, S. Chakrabarti and A. B. Christensen, eds., *Proceedings of the SPIE*, 1745, 140, 1992.
 - 4.2. Rusch, D. W., C. A. Barth, R. T. Clancy, S. C. Solomon, G. M. Lawrence, W. E. McClintock, C. E. Randall, G. E. Thomas, R. R. Garcia, and R. G. Roble, Temperature, Ozone, and Nitric Oxide Experiment (TONE) for the TIMED mission, *Proceedings of the SPIE*, 2266, 424, 1994.
 - 4.3. Woods, T. N., G. J. Rottman, R. G. Roble, O. R. White, S. C. Solomon, G. M. Lawrence, J. Lean, and W. K. Tobiska, The TIMED solar EUV experiment, *Proceedings of the SPIE*, 2266, 467, 1994.
 - 4.4. Solomon, S. C., S. M. Bailey, T. E. Holden, D. C. O'Connor, J. P. Perich, M. A. Salada, G. Stafford, K. Taylor, J. E. Vian, and P. R. Withnell, The Student Nitric Oxide Explorer, *Proceedings of the 9th Annual AIAA/USU Conference on Small Satellites*, Utah State University, 1995.
 - 4.5. Solomon, S. C., S. M. Bailey, T. E. Holden, D. C. O'Connor, J. P. Perich, M. A. Salada, G. Stafford, K. Taylor, J. E. Vian, and P. R. Withnell, The Student Nitric Oxide Explorer, *Proceedings of the SPIE*, 2810, 121, 1996.
 - 4.6. Bailey, S. M., C. A. Barth, M. J. Erickson, R. A. Kohnert, A. W. Merkel, E. M. Rodgers, S. C. Solomon, S. D. Straight, and J. E. Vian, Science instrumentation for the Student Nitric Oxide Explorer, *Proceedings of the SPIE*, 2830, 264, 1996.
 - 4.7. Solomon, S. C., et al., The SNOE Spacecraft: Integration, test, launch, operation, and on-orbit performance, *Proceedings of the 12th Annual AIAA/USU Conference on Small Satellites*, SSC98-IV-3, Utah State University, 1998.

- 4.8. Woods, T. N., S. M. Bailey, F. Eparvier, G. Lawrence, J. Lean, W. McClintock, R. G. Roble, G. Rottman, S. C. Solomon, W. K. Tobiska, G. Ucker, and O. R. White, TIMED solar EUV experiment, *Proceedings of the SPIE*, 3442, 180, 1998.
- 4.9. Solomon, S. C., and D. C. Fritts, What is the Aurora?, *Newton*, 19, 3, 92, 1999.
- 4.10. Withnell, P. R., S. C. Solomon, and D. N. Baker, Small scientific spacecraft from the University of Colorado, *Novel Concepts for Smaller, Faster, and Better Space Missions*, International Astronautical Federation, 1999.
- 4.11. Wu, Q., T. L. Killeen, S. C. Solomon, D. McEwen, and W. Guo, All sky camera and Fabry-Perot interferometer observations in the northern polar cap, *Ocean and Polar Res.*, 24, 237, 2003.
- 4.12. Skinner, W. R., R. J. Niciejewski, T. L. Killeen, S. C. Solomon, R. D. Gablehouse, Q. Wu, D. A. Ortland, D. A. Gell, A. R. Marshall, E. Wolfe., M. Cooper, and J. F. Kafkalidis, Operational Performance of the TIMED Doppler Interferometer (TIDI), *Proceedings of the SPIE*, 5157, 47, 2003.
- 4.13. Wu, Q., R. D. Gablehouse, S. C. Solomon, T. L. Killeen, and C.-Y. She, A new NCAR Fabry-Perot interferometer for upper atmospheric research, *Proceedings of the SPIE*, 5660, 218, 2004.
- 4.14. Luhmann, J. G., and S. C. Solomon, The Sun-Earth Connection, *Encyclopedia of the Solar System*, 2nd edition, L. McFadden, P. R. Weissman, and T. V. Johnson, eds., pp. 213-226, Academic Press/Elsevier, 2007.
- 4.15. Solomon, S. C., Effects of carbon dioxide on the upper atmosphere, *McGraw-Hill Yearbook of Science and Technology*, 107, 2008.
- 4.16. Solomon, S. C., and R. G. Roble, Thermosphere, *McGraw-Hill Encyclopedia of Science and Technology*, 2012.
- 4.17. Luhmann, J. G., and S. C. Solomon, Space Weather, *Encyclopedia of the Solar System*, 3rd edition, L. McFadden, P. R. Weissman, and T. V. Johnson, eds., Academic Press/Elsevier, *in press*, 2014.
- 4.18. Solomon, S. C., and R. G. Roble, Thermosphere, *Encyclopedia of Atmospheric Science*, *in press*, 2014.

5. Selected Conference Presentations

Over 350 presentations at conferences, symposia, and workshops, including the following invited first-author presentations:

- 5.1. “Airglow and Auroral Emissions Modeling,” S. C. Solomon, CEDAR Summer Workshop, Boulder, Colorado, 1989 (invited).
- 5.2. “Dynamical Effects on Polar Thermosphere Composition and Auroral Spectra,” S. C. Solomon and R. G. Roble, American Geophysical Union Fall Meeting, San Francisco, California, 1989 (invited).
- 5.3. “Effects of Solar Radiation on the Thermosphere and Ionosphere,” S. C. Solomon, American Geophysical Union Fall Meeting, San Francisco, California, 1990 (invited).
- 5.4. “Global Modeling of the Twilight Airglow,” S. C. Solomon, R. G. Roble, and V. J. Abreu, American Geophysical Union Spring Meeting, Baltimore, Maryland, 1991 (invited).
- 5.5. “Airglow Emissions and Photochemical Processes,” S. C. Solomon, Chapman Conference on the Mesosphere and Lower Thermosphere, Asilomar, California, 1992 (invited).

- 5.6. “Numerical Models of Auroral Particle Transport,” S. C. Solomon, 7th Scientific Assembly of the International Association of Geomagnetism and Aeronomy, Buenos Aires, Argentina 1993 (invited).
- 5.7. “Educational Aspects of the Student Explorer Demonstration Initiative,” S. C. Solomon, C. A. Barth, D. Cotton, and S. Chakrabarti, American Geophysical Union Spring Meeting, Baltimore, Maryland, 1995 (invited).
- 5.8. “The STEDI Program — The Reality of Low Cost Access to Space,” S. C. Solomon and D. Cotton, GSFC Small Spacecraft Workshop, Greenbelt, Maryland 1995 (invited).
- 5.9. “The Student Nitric Oxide Explorer,” S. C. Solomon and C. A. Barth, American Geophysical Union Front Range Meeting, Boulder, Colorado, 1996 (invited).
- 5.10. “The Student Nitric Oxide Explorer,” S. C. Solomon, GSFC Small Spacecraft Missions Symposium, Greenbelt, Maryland, 1996 (invited).
- 5.11. “Lower Ionosphere Thermosphere Explorer,” S. C. Solomon, S. M. Bailey, G. M. Lawrence, and W. E. McClintock, Space Physics Roadmap Meeting, Pasadena, California, 1996 (invited).
- 5.12. “The Student Nitric Oxide Explorer,” S. C. Solomon and C. A. Barth, Universities Space Research Association Annual Meeting, Washington, District of Columbia, 1998 (invited).
- 5.13. “Thermosphere/Ionosphere and Airglow Modeling,” S. C. Solomon, TIGER Meeting, Freiburg, Germany, 1998 (invited).
- 5.14. “Photochemical Modeling of the Thermosphere and Ionosphere,” S. C. Solomon, TIGER meeting, St. Petersburg, Russia, 1999 (invited).
- 5.15. “Electron Densities in the Mid-latitude E and F_1 Ionosphere: Measurements, Models, and the Effects of New Solar Soft X-ray Observations,” S. C. Solomon and S. M. Bailey, American Geophysical Union Fall Meeting, San Francisco, California, 2000 (invited).
- 5.16. “Solar extreme-ultraviolet and X-ray variability: Effects on the thermosphere and ionosphere,” S. C. Solomon, TIGER Meeting, Boulder, Colorado, 2001 (invited).
- 5.17. “Thermosphere-ionosphere modeling using solar ultraviolet and X-ray measurements from TIMED and SNOE,” S. C. Solomon, S. M. Bailey, F. G. Eparvier, G. R. Gladstone, L. J. Paxton, and T. N. Woods, Western Pacific Geophysics Meeting, Wellington, New Zealand, 2002 (invited).
- 5.18. “New measurements by the TIMED Solar Extreme-Ultraviolet Experiment: Implications for Thermospheric Modeling,” S. C. Solomon, S. M. Bailey, F. G. Eparvier, G. R. Gladstone, L. J. Paxton, and T. N. Woods, European Geophysical Society Spring Meeting, Nice, France, 2003 (invited).
- 5.19. “Solar ultraviolet and X-ray energy deposition in the thermosphere,” S. C. Solomon, American Geophysical Union Fall Meeting, San Francisco, California, 2003 (invited).
- 5.20. “Thermosphere/ionosphere response to large solar flares,” S. C. Solomon, L. Qian, A. D. Richmond, R. G. Roble, and T. N. Woods, Living with a Star Workshop, Boulder, Colorado, 2004 (invited).
- 5.21. “Coupled Solar-Terrestrial Simulations by the Center for Integrated Space Weather Modeling,” S. C. Solomon and the CISM Team, Challenges to Modeling the Sun-Earth System workshop, Huntsville, Alabama, 2004 (invited).
- 5.22. “Simulations of Ionospheric Storms using a Coupled Magnetosphere-Ionosphere-Thermosphere Model,” S. C. Solomon, American Geophysical Union Fall Meeting, San Francisco, California, 2005 (invited).

- 5.23. “Application of Measured Parameters to Large-Scale Numerical Modeling of Solar-Terrestrial Systems: An Overview,” S. C. Solomon and G. Siscoe, American Meteorological Society Annual Meeting, Atlanta, Georgia, 2006 (invited).
- 5.24. “Modeling Thermospheric Neutral Density — Past, Present, and Future,” S. C. Solomon, L. Qian, and R. G. Roble, Neutral Density Workshop, Colorado Springs, Colorado, 2006 (invited).
- 5.25. “Upper Atmosphere Response to Solar Irradiance Variation — A Review of Progress in the International TIGER Program,” S. C. Solomon, 36th COSPAR Scientific Assembly, Beijing, China, 2006 (invited).
- 5.26. “Observations and Modeling of Space Weather Impacts on the Earth,” S. C. Solomon, American Physical Society Four Corners Meeting, Logan, Utah, 2006 (invited).
- 5.27. “Preliminary Evaluation of GNSS Occultation Measurements of the Ionosphere by COSMIC,” S. C. Solomon, A. G. Burns, J. Lei, and Z. Zeng, COSMIC Retreat, Boulder, Colorado, 2006 (invited).
- 5.28. “Community Modeling in the Atmospheric Sciences,” S. C. Solomon, SHINE Meeting, Whistler, British Columbia, Canada, 2007.
- 5.29. “Ultraviolet and X-ray solar Irradiance: Consequences for the Terrestrial Upper Atmosphere,” S. C. Solomon, L. Qian, and R. G. Roble, Living With a Star Workshop, Boulder, Colorado, 2007 (invited).
- 5.30. “Modeling the Atmosphere/Ionosphere: The Known Unknowns,” S. C. Solomon, Space-Based Ionosphere-Thermosphere Research Meeting, Manhattan Beach, California, 2007 (invited).
- 5.31. “Measurements and Models of the Ionosphere: Results from the Formosat-3/COSMIC Mission,” S. C. Solomon, A. G. Burns, J. Lei, X. Luan, W. Wang, and Z. Zeng, 4th Asian Space Conference, Taipei, Taiwan, 2008 (invited).
- 5.32. “The Thermosphere at Solar Minimum,” S. C. Solomon, American Geophysical Union Fall Meeting, San Francisco, California, 2008 (invited).
- 5.33. “Measurements and Models of the Ionosphere: Science Requirements for Space Weather,” S. C. Solomon, A. G. Burns, J. Lei, C. Lin, X. Luan, P. Straus, W. Wang, and Z. Zeng, GNSS Radio Occultation Workshop, Pasadena, California, 2009 (invited).
- 5.34. “Particle Precipitation in the Thermosphere/Ionosphere,” S. C. Solomon, HEPPA Workshop, Boulder, Colorado, 2009 (invited).
- 5.35. “Whi is the Thermosphere Cold?,” S. C. Solomon and L. Qian, Whole Heliosphere Interval Workshop, Boulder, Colorado, 2009 (invited).
- 5.36. “The Upper Atmosphere and Ionosphere at Solar Minimum: Cyclical and Secular Variation,” S. C. Solomon and L. Qian, American Geophysical Union Fall Meeting, San Francisco, California, 2009 (invited).
- 5.37. “Solar Forcing of the Thermosphere-Ionosphere System from Maximum to Minimum,” S. C. Solomon, L. Qian, and T. N. Woods, American Geophysical Union Fall Meeting, San Francisco, California, 2009 (invited).
- 5.38. “TIE-GCM at CCMC,” S. C. Solomon, B. Foster, A. D. Richmond, R. G. Roble, A. Maute, A. G. Burns, W. Wang, L. Qian, and P. Schmitt, CCMC Workshop, Key Largo, Florida, 2010 (invited).
- 5.39. “Search for a Thermospheric Ground State Suspended due to Cold and Dark,” S. C. Solomon, Meeting of the Americas, Iguazu, Brazil, 2010 (invited).

- 5.40. "Modeling Upper Atmosphere Trends," S. C. Solomon, R. G. Roble, and L. Qian, Coupling Between The Earth's Atmosphere And Its Plasma Environment Workshop, International Space Science Institute, Bern, Switzerland, 2010 (invited).
- 5.41. "Is There Enough Extreme Ultraviolet Radiation to Maintain the Global Mean Thermospheric Temperature? Revisiting a 37-year-old Problem," S. C. Solomon, American Geophysical Union Fall Meeting, San Francisco, California, 2010 (invited).
- 5.42. "Solar, Geomagnetic, and Chemical Effects on the Climate of the Upper Atmosphere," S. C. Solomon, Space Climate Symposium 4, Goa, India, 2011 (invited).
- 5.43. "Causes of Low Thermospheric Density During the 2007-2009 Solar Minimum," S. C. Solomon and L. Qian, European Geosciences Union General Assembly, Vienna, Austria, 2011 (invited).
- 5.44. "The Future of Space Weather Modeling," S. C. Solomon, CEDAR Summer Workshop, Santa Fe, New Mexico, 2011 (invited).
- 5.45. "Thermosphere-Ionosphere Response to Structures in the Solar Wind and Interplanetary Magnetic Field," S. C. Solomon, American Geophysical Union Fall Meeting, San Francisco, California, 2011 (invited).
- 5.46. "TIE-GCM Updates," S. C. Solomon, A. G. Burns, B. A. Emery, B. Foster, A. Maute, L. Qian, A. D. Richmond, R. G. Roble, and W. Wang, CCMC Workshop, Key Largo, Florida, 2012 (invited).
- 5.47. "Thermospheric Temperature Trends: Modeling and Observations," S. C. Solomon, Polar Mesospheric Cloud Trends Workshop, Boulder, Colorado, 2012 (invited).
- 5.48. "An Introduction to Terrestrial Ionospheres," S. C. Solomon, Comparative Climatology of Terrestrial Planets Meeting, Boulder, Colorado, 2012 (invited).
- 5.49. "The Solar Minimum Between Cycles 23 and 24," S. C. Solomon, Solar Dynamics Observatory Extreme-Ultraviolet Variability Experiment Workshop, Yosemite, California, 2012 (invited).
- 5.50. "Ionosphere-Thermosphere Disturbances During Solar Minimum," S. C. Solomon, M. Wiltberger, and L. Qian, Earth-Sun System Exploration Conference, Kona, Hawaii, 2013 (invited).
- 5.51. "The Effect of Co-Rotating Interaction Regions on the Thermosphere and Ionosphere," S. C. Solomon, M. Wiltberger, and L. Qian, Asia Oceania Geophysical Society Annual Meeting, Brisbane, Australia, 2013 (invited).
- 5.52. "Upper Atmosphere Observations from the International Space Station," S. C. Solomon, International Space Station Research and Development Conference, Denver, Colorado, 2013 (invited).
- 5.53. "Solar Variability and the Upper Atmosphere," S. C. Solomon, Living With a Star 10th Anniversary Workshop, Princeton, New Jersey, 2013 (invited).
- 5.54. "Evolution of the Thermosphere Under a Quiet Sun," S. C. Solomon and L. Qian, Climate and Weather of the Sun-Earth System Symposium, Nagoya, Japan, 2013 (invited).
- 5.55. "Forecasting Space Weather in the Upper Atmosphere and Ionosphere," S. C. Solomon, American Geophysical Union Fall Meeting, San Francisco, California, 2013 (invited).
- 5.56. "TIE-GCM v. 2.0," Solomon, S. C., A. G. Burns, B. A. Emery, B. Foster, A. Maute, L. Qian, A. D. Richmond, R. G. Roble, and W. Wang, Community Coordinated Modeling Center Workshop, Annapolis, Maryland, April 2014 (invited).