

## SUSAN SOLOMON

### **Personal:**

Business Address:                   Chemical Sciences Division  
  Earth System Research Laboratory  
  National Oceanic and  
  Atmospheric Administration  
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### **Education:**

Illinois Institute of Technology, Chicago, Illinois - B.S. in  
Chemistry, 1977. Graduation with high honors.

University of California, Berkeley, California - M.S. in Chemistry,  
1979, Ph.D in Chemistry, 1981.

### **Professional Employment:**

Research Chemist at the Aeronomy Laboratory, National Oceanic and  
Atmospheric Administration, Boulder, 1981-1988. Program Leader, Middle  
Atmosphere group of the Aeronomy Laboratory, 1988-1990. Senior Scientist,  
Aeronomy Laboratory (now called the Chemical Sciences Division), 1991-  
present.

Acting Director, Atmospheric Chemistry Division, National Center for  
Atmospheric Research, Boulder, Nov. 1995-Nov. 1996.

### **Other Major Professional Affiliations:**

Affiliate Scientist, National Center for Atmospheric Research, Boulder, 1992-  
2006.

Adjoint Professor, Department of Astrophysical, Planetary and Atmospheric  
Sciences, University of Colorado, Boulder. Principal research advisor for two  
M. S. students and five Ph.D. students since 1985; often serves as a member on  
University of Colorado thesis committees. Frequently guest lectures for

undergraduate chemistry and atmospheric science classes. Team-teaches graduate courses on the middle atmosphere.

Head project scientist, National Ozone Expedition, McMurdo Station, Antarctica, August-November, 1986 (NOZE-1) and August-November, 1987 (NOZE-2).

Co-chair, Working Group 1, Intergovernmental Panel on Climate Change (IPCC), April 2002-September 2008.

Visiting Scholar, Atmospheric Sciences Department, University of Washington, Seattle, WA March-June, 2007. Provided lecture series on ozone depletion and climate change.

### **Current Research Interests:**

Chemistry and chemistry/climate coupling processes in the stratosphere and troposphere. Interpretation of ozone depletion at mid-latitudes and in polar regions. Coupling between trace gases and the Earth's climate system.

### **Honors and Awards:**

UCAR (University Corporation for Atmospheric Research) Fellow, 1977-1978.

Elected outstanding teaching assistant by the Berkeley freshman chemistry class of September, 1977.

James B. MacElwane award, American Geophysical Union, 1985.

Gold medal for exceptional service, U. S. Department of Commerce, 1989.

Henry G. Houghton award for excellence in research, American Meteorological Society, January 1991.

Common Wealth Award for Excellence in Science and Invention, April 1992.

Member, National Academy of Sciences, April 1992 - present.

Scientist of the Year, R&D Magazine, Cahners Publications, September 1992.

Fellow, American Academy of Arts and Sciences, April 1993 - present.

Honorary doctorate, University of Colorado, Boulder, CO, May 1993.

Arthur S. Flemming award for excellence in government service, May 1994.

Honorary doctorate, Tulane University, New Orleans, LA, May 1994.

H. J. Reid award, NASA Langley Research Center, August 1994.

Solomon Glacier (78°23'S, 162°30'E) and Solomon Saddle (78°23'S, 162°39'E) were named in honor of leadership in Antarctic research in 1994.

Associé étranger (Foreign associate), Academie des Sciences de France, 1995 - present.

Honorary doctorate, Williams College, Williamstown, MA, June 1996.

Stratospheric Ozone Protection Award of the Environmental Protection Agency, October 1996.

United Nations Environment Programme (UNEP) Award for key contributions to the development of the Montreal Protocol, September 1997.

Co-recipient, Climate Protection Award of the Environmental Protection Agency, October 1998.

Carl-Gustaf Rossby Research Medal, highest award of the American Meteorological Society, January 2000.

Foreign Member, Academia Europaea, 2000-present.

U. S. National Medal of Science, 1999; award presented in March 2000.

Award of the Bonfils-Stanton Trust, Denver, CO, April 2001.

ARCS Woman of the Year, Denver Chapter, April 2001.

Honorary doctorate, Illinois Institute of Technology, May 2001.

Honorary doctorate, State University of New York at Stony Brook, May 2001.

Weizmann Women and Science Award, presented at Rockefeller University, June 2002.

Gold Medal, Department of Commerce, for contributions as a leading author of the third assessment report of the Intergovernmental Panel on Climate Change, 2002.

Distinguished Presidential Rank Award, May 2003.

Honorary doctorate, University of Miami, May 2003.

Honorary doctorate, University of East Anglia, Norwich, UK, July 2004.

Blue Planet Laureate, Asahi Glass Foundation, Tokyo, Japan, November 2004.

Honorary Member, International Polar Foundation, January 2005.

UNEP/WMO Vienna Convention Award for outstanding contributions to the Vienna Convention for the Protection of the Ozone Layer, November 2005.

Member, Colorado Women's Hall of Fame, March 2006.

Fellow, Royal Society of Chemistry, April 2006.

Honorary doctorate, Northwestern University, June 2006.

Goldschmidt Award, highest honor of the Geochemical Society, August 2006.

Alumni Achievement Award, University of California, Berkeley, March 2007.

Lowell Thomas Award, Explorers Club, New York, October 2007.

Lemaitre Prize, Foundation Georges Lemaitre, Brussels, Belgium, November 2007.

The Nobel Peace Prize for 2007 was awarded to the Intergovernmental Panel on Climate Change (IPCC) and Mr. Albert Gore, Junior. As co-chair of IPCC Working Group One, Susan Solomon led the process that produced the highly influential IPCC Working Group One Fourth Assessment Climate Science Report [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.), *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 2007.]

Bowie Medal, highest honor of the American Geophysical Union, December 2007.

Listed by Time magazine as one of the 100 most influential people in the world in 2008.

Fellow, American Philosophical Society, April 2008.

Fellow, Royal Society of London, May 2008.

Honorary doctorate, Butler University, May 2008.

Chevalier (knight) in the French Legion of Honor, July 2008.

Honorary Fellow, Geological Society of London, September 2008.

Distinguished Presidential Rank Award, October 2008.

American Geological Institute Award for Advancing Public Understanding of the Geosciences, October 2008.

Grande Medaille, Academie des Sciences de France, November 2008.

John Scott Award, John Scott Foundation Trust, Philadelphia, PA, November 2008.

Member, National Women's Hall of Fame, March, 2009.

#### **Awards for Specific Scientific Studies:**

NOAA Environmental Research Laboratories outstanding scientific publication award for "Transport process and ozone perturbations," by Solomon, Garcia and Stordal, *J. Geophys. Res.*, 90, 12981-12989, 1985.

NOAA Environmental Research Laboratories outstanding scientific publication award for "Visible Spectroscopy at McMurdo Station, 2. Observations of OCIO," by Solomon, Mount, Sanders, and Schmeltekopf, *J. Geophysical Res.*, 92, 8329-8338, 1987.

NOAA Environmental Research Laboratories outstanding review publication award for "The Mystery of the Antarctic Ozone Hole," by S. Solomon, *Rev. Geophys.*, 26, 131-148, 1988.

NCAR outstanding publication award for "Transport of nitric oxide and the D-region winter anomaly," by Garcia, Solomon, Avery and Reid, *J. Geophys. Res.*, 92, 977-994, 1987.

NOAA Environmental Research Laboratories outstanding scientific publication award for "On the evaluation of ozone depletion potentials," by Solomon, Mills, Heidt, and Tuck, *J. Geophys. Res.*, 97, 825, 1992.

NOAA Environmental Research Laboratories outstanding scientific publication award for "Atmospheric lifetimes of long-lived species," by Ravishankara, Solomon, Turnipseed, and Warren, *Science*, 259, 194-199, 1993.

NOAA Environmental Research Laboratories outstanding scientific publication award for “Role of aerosol variations in anthropogenic ozone depletion in polar regions,” by Portmann, Solomon, Garcia, Thomason, Poole, and McCormick, J. Geophys. Res., 101, 22991-23006, 1996.

NOAA Environmental Research Laboratories outstanding scientific review paper award for “Stratospheric Ozone Depletion: A Review of Concepts and History,” by S. Solomon, Reviews of Geophysics, 37, 275-316, 1999.

NOAA OAR outstanding scientific publication award for “Interpretation of recent Southern Hemisphere climate change,” by Thompson and Solomon, Science, 296, 895-899, 2002.

NOAA OAR outstanding scientific publication award for “Detection of human influence on twentieth-century precipitation trends,” by Zhang, Zwiers, Hegerl, Lambert, Gillet, Solomon, Stott, and Nozawa, Nature, 448, 461-465, 2007.

NOAA OAR outstanding scientific publication special award for “Technical Summary, *Climate Change 2007: The Physical Science Basis*, Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change,” Solomon and 30 coauthors, Cambridge University Press, 74 pp., 2007.

### **Professional Societies:**

Fellow, American Geophysical Union

Fellow, American Meteorological Society

Fellow, Royal Meteorological Society

Member, American Chemical Society

Fellow, Royal Society of Chemistry

### **Editorships, Committees, Science Teams, etc.:**

Co-Investigator, Solar Mesosphere Explorer (SME) satellite, 1981-1986.

Co-Investigator, Earth Observing System (EOS) theoretical project with W. L. Grose, NASA Langley, project selected for EOS science team, 1988-1995.

Associate editor, Journal of the Atmospheric Sciences, 1983-1986.

Member, editorial board, Planetary and Space Science, 1989-1992.

Associate editor, Journal of Geophysical Research 1985-1991.

Associate editor, Geophysical Research Letters, 1987-1991.

Guest editor, John F. Noxon memorial issue of the Journal of Geophysical Research, 1985-1986.

Guest editor, Polar ozone issue of Geophysical Research Letters, 1988.

Member, Committee on Solar and Space Physics of the National Academy of Sciences 1983-1986.

Member, American Meteorological Society Committee on the Middle Atmosphere, 1986-1987.

Member, Space and Earth Science Advisory Committee (SESAC) of the National Aeronautics and Space Administration, 1985-1988.

Member, Science and Technology advisory committee for Congressman David Skaggs, 1988-1994.

Member, Polar Research Board, National Academy of Sciences, 1989-1993.

Chairperson, Scientific Advisory Committee, Division of Polar Programs, National Science Foundation, 1990-1992.

Member, Scientific Advisory Committee, Climate and Global Change Program, NOAA, 1991-present.

Member, National Research Council review panel for the Air Force Office of Scientific Research, 1988-1990.

Member, MacElwane award committee, American Geophysical Union, 1988-1989.

Member, SPEC review panel, Atmospheric Chemistry Division of NCAR, 1990.

Member, NCAR-wide review panel, 1992.

Member, Steering Committee for the Network for Detection of Stratospheric Change, 1990-1995.

Member, International Ozone Commission, 1992-present.

Member, Stratospheric Processes and their Role in Climate (SPARC) steering committee, World Climate Research Programme, 1993-1998.

Member, Scientific Review Panel for the NASA Langley Aerosol Research Branch, August, 1990.

Chair, Visiting Review Committee for Code 916, NASA Goddard Space Flight Center, March, 1997.

Co-principal lecturer and co-organizer, NCAR Summer Colloquium on "Chemistry of the lower and middle atmosphere," July 8-25, 1986.

Co-principal lecturer, NCAR Summer Colloquium on Atmospheric Chemistry, June 3-12, 1991.

Co-principal lecturer and organizer, NASA-sponsored workshop on middle atmosphere chemistry, Keystone, Colorado, July, 1987.

Chairperson, Polar ozone chapter, United Nations Environmental Program/World Meteorological Organization assessment of the state of the ozone layer, 1989.

Member, Theory Team, Airborne Arctic Stratosphere Experiment (AASE), Stavanger, Norway, Jan-Feb., 1989.

Member, Advisory Committee, Airborne Arctic Stratosphere Experiment II (AASE II), Bangor, Maine, November, 1991-March, 1992.

Chairperson, Ozone depletion potentials chapter, United Nations Environmental Program/World Meteorological Organization assessment of the state of the ozone layer, 1991.

Chairperson, Ozone depletion potentials and global warming potentials chapter, United Nations Environment Program/World Meteorological Organization assessment of the state of the ozone layer, 1994.

Member, NAS/NRC Committee on Antarctic Policy and Science, Jan-June, 1993.

Member, NAS/NRC Committee on High Speed Civil Transportation, Jan.-Oct., 1993.

Member, NAS/NRC Committee on International Organizations and Programs, 1994-1997.

Member, NAS Nominating Committee, 1995.



Member, Special Blue Ribbon panel on Antarctic Science in the 21st Century, National Science Foundation, 1995-6.

Member, Joint Scientific Committee (JSC), World Climate Research Programme (WCRP), 1996-2001.

Member, NAS/NRC Committee on Women in Science and Engineering (CWSE), 1996-1999.

Featured lecturer at NATO Advanced Study Institute on “The Stratosphere and Its Role in the Climate System,” Quebec, Canada, September, 1996.

Chairperson, search committee for NSF Geosciences Associate Director, 1999.

Chairperson, search committee for NCAR Atmospheric Chemistry Division Director, 2000.

Author, Intergovernmental Panel on Climate Change (IPCC) reports, 1994, 1996, 2001.

Co-convenor, Chapman conference on the Absorption of Solar Radiation, Estes Park, Colorado, August, 2001.

Guest lecturer at Department of Applied Mathematics and Theoretical Physics summer institute in fluid dynamics, Cambridge, UK, September, 2001.

Co-chair, National Academy of Sciences Temporary Nominating Group on Global Human and Environmental Sciences, 2000-2003.

Chairperson and member, American Meteorological Society Atmospheric Research Awards Committee, 2001-2002.

Co-chair, Working Group I Intergovernmental Panel on Climate Change (IPCC), April 2002-September 2008.

Member, National Academy of Sciences Temporary Nominating Group for Younger Nominees, Class I, 2003-2006.

Member, National Research Council committee on Strategic Guidance for NSF's Support of the Atmospheric Sciences, 2004-2007.

Member, National Academy of Sciences Geophysics Section Diversity Committee, 2007-present.

Member, National Research Council committee on America's Climate Choices, 2008-2009.

## **Journal Publications:**

Susan Solomon was named the third most highly cited geoscientist in the world during the decade of the 1990s by Science Watch in December, 2001.

Her publication record is as follows:

- Fishman, J., S. Solomon, and P.J. Crutzen, Observational and theoretical evidence in support of a significant in situ photochemical source of tropospheric ozone, *Tellus*, 31, 432, 1979.
- Johnston, H.S. and S. Solomon, Thunderstorms as possible micrometeorological sink for stratospheric water, *J. Geophys. Res.*, 84, 3155, 1979.
- Crutzen, P.J. and S. Solomon, Response of mesospheric ozone to particle precipitation, *Planet. and Space Sci.*, 28, 1147, 1980.
- Solomon, S., H.S. Johnston, M. Kowalczyk, and I. Wilson, Instantaneous global ozone balance including observed nitrogen dioxide, *Pure App. Geophys.*, 118, 58, 1980.
- Solomon, S. and P.J. Crutzen, Analysis of the August 1972 solar proton event including chlorine chemistry, *J. Geophys. Res.*, 86, 1140, 1980.
- Rusch, D.W., J.C. Gerard, S. Solomon, P.J. Crutzen, and G.C. Reid, The effect of particle precipitation events on the neutral and ion chemistry of the middle atmosphere - I. Odd nitrogen, *Planet. and Space Sci.*, 29, 767, 1981.
- Solomon, S., D.W. Rusch, J.C. Gerard, G.C. Reid, and P.J. Crutzen, The effect of particle precipitation on the neutral and ion chemistry of the middle atmosphere - II. Odd hydrogen, *Planet. and Space Sci.*, 29, 885, 1981.
- Solomon, S., P.J. Crutzen, and R.G. Roble, Photochemical coupling between the thermosphere and the lower atmosphere I. Odd nitrogen from 50 to 120 km, *J. Geophys. Res.*, 87, 7206, 1982.
- Solomon, S., G.C. Reid, R.G. Roble, and P.J. Crutzen, Photochemical coupling between the thermosphere and the lower atmosphere II. D region ion chemistry and winter anomaly, *J. Geophys. Res.*, 87, 7221, 1982.
- Solomon, S., E.E. Ferguson, D.W. Fahey and P.J. Crutzen, On the chemistry of H<sub>2</sub>O, H<sub>2</sub> and meteoritic ions in the mesosphere and lower thermosphere, *Planet. Space Sci.*, 30, 1117, 1982.

- Garcia, R.R., and S. Solomon. A numerical model of the zonally averaged dynamical and chemical structure of the middle atmosphere, *J. Geophys. Res.*, 88, 1379, 1983.
- Solomon, S., The possible effects of translationally excited nitrogen atoms on lower thermospheric odd nitrogen, *Planet. Space Sci.*, 31, 135, 1983.
- Solomon, S., Minor constituents in the stratosphere and mesosphere, *Rev. Geophys. Space Phys.*, 21, 276, 1983.
- Solomon, S., G.C. Reid, D.W. Rusch, and R.J. Thomas, Mesospheric ozone depletion during the solar proton event of July 13, 1982, Part II. Comparison between theory and measurements, *Geophys. Res. Lett.*, 10, 257, 1983.
- Solomon, S., D.W. Rusch, R.J. Thomas and R.S. Eckman, Comparison of mesospheric ozone abundances measured by the solar mesosphere explorer and model calculations, *Geophys. Res. Lett.*, 10, 249, 1983.
- Solomon, S., and R.R. Garcia, On the distribution of nitrogen dioxide in the high latitude stratosphere, *J. Geophys. Res.*, 88, 5497, 1983.
- Solomon, S., and R.R. Garcia, Simulation of NO<sub>x</sub> partitioning along isobaric parcel trajectories, *J. Geophys. Res.*, 88, 5497, 1983.
- Garcia, R.R., S. Solomon, R.G. Roble, and D.W. Rusch, A numerical model study of the response of the middle atmosphere to changing solar activity, *Planet. Space Sci.*, 32, 411, 1984.
- Russell, J.M., S.Solomon, L.Gordley, E.Remsberg, and L.Callis, The variability of stratospheric and mesospheric NO<sub>2</sub> in the polar winter night observed by LIMS, *J. Geophys. Res.*, 89, 7267, 1984.
- Solomon, S., and R.R. Garcia, Transport of thermospheric NO to the upper stratosphere?, *Planet. Space Sci.*, 32, 399, 1984.
- Solomon, S., and R.R. Garcia, On the distribution of long lived tracers and chlorine species in the middle atmosphere, *J. Geophys. Res.*, 89, 11633, 1984.
- Solomon, S., G.H. Mount, and J.M. Zawodny, Measurements of stratospheric NO<sub>2</sub> from the solar mesosphere explorer satellite II. General morphology of observed NO<sub>2</sub> and derived N<sub>2</sub>O<sub>5</sub>, *J. Geophys. Res.*, 89, 7317, 1984.
- Thomas, R.J., C.Barth, and S.Solomon, Seasonal variations of ozone in the upper mesosphere and gravity waves, *Geophys. Res. Lett.*, 11, 673, 1984.

- Garcia, R.R., and S.Solomon, The effect of breaking gravity waves on the dynamics and chemical composition of the mesosphere and lower thermosphere, *J. Geophys. Res.*, 90, 3850, 1985.
- Solomon, S., R.R. Garcia, J.J. Olivero, R.M. Bevilacqua, P.R. Schwartz, R.T. Clancy, and D.O. Muhleman, Photochemistry and transport of carbon monoxide in the middle atmosphere, *J. Atmos. Sci.*, 42, 1072, 1985.
- Solomon, S., R.R. Garcia, and F. Stordal, Transport processes and ozone perturbations, *J. Geophys. Res.*, 90, 12981-12989, 1985.
- Austin, J., R.R. Garcia, J.M. Russell, S.Solomon, and A.F. Tuck, On the atmospheric photochemistry of nitric acid, *J. Geophys. Res.*, 91, 5477-5485, 1986.
- Kiehl, J.T., and S.Solomon, On the radiative balance of stratosphere, *J. Atmos. Sci.*, 43, 1525-1534, 1986.
- Reid, G.C., and S. Solomon, On the existence of an extraterrestrial source of water vapor in the middle atmosphere, *Geophys. Res. Lett.*, 13, 1129-1132, 1986.
- Solomon, S., J.M. Russell III, and L.L. Gordley, Observations of the diurnal variation of nitrogen dioxide in the stratosphere, *J. Geophys. Res.*, 91, 5455-5464, 1986.
- Solomon, S., R.R. Garcia, F.S. Rowland, and D.J. Wuebbles, On the depletion of Antarctic ozone, *Nature*, 321, 755-758, 1986.
- Solomon, S., J.T. Kiehl, R.R. Garcia, and W. Grose, Tracer transport by the diabatic circulation deduced from satellite observations, *J. Atmos. Sci.*, 43, 1603-1617, 1986.
- Solomon, S., J.T. Kiehl, B.J. Kerridge, E. E. Remsberg, and J.M. Russell, Evidence for non-local thermodynamic equilibrium in the  $n_3$  mode of mesospheric ozone, *J. Geophys. Res.*, 91, 9865-9876, 1986.
- Bjarnason, G. G., S. Solomon, and R.R. Garcia, Tidal influences on vertical diffusion and diurnal variability of ozone in the mesosphere, *J. Geophys. Res.*, 92, 5609-5620, 1987.
- Garcia, R. R., S. Solomon, S.K. Avery and G.C. Reid, Transport of nitric oxide and the D-region winter anomaly, *J. Geophys. Res.*, 92, 977-994, 1987.
- Garcia, R.R., and S. Solomon, A possible relationship between interannual variability in Antarctic ozone and the quasi-biennial oscillation, *Geophys. Res. Lett.*, 14, 848-851, 1987.

- LeTexier, H., S. Solomon, and R.R. Garcia, Seasonal variability of the OH Meinel bands, *Planet. Space Sci.*, 35, 977-989 1987.
- Roble, R.G., B.A. Emery, T.L. Killeen, G.C. Reid, S. Solomon, R.R. Garcia, D.S. Evans, P.B. Hays, G.R. Carrigan, R.A. Heelis, W.B. Hanson, D.J. Winningham, N.W. Spencer, and L.H. Brace, Joule heating in the mesosphere and thermosphere during the July 13, 1982 solar proton event, *J. Geophys. Res.*, 92, 6083-6090, 1987.
- Solomon, S., A.L. Schmeltekopf, and R.W. Sanders, On the interpretation of zenith sky absorption measurements, *J. Geophys. Res.*, 92, 8311-8319, 1987.
- Mount, G. H., R.W. Sanders, A.L. Schmeltekopf, and S. Solomon, Visible spectroscopy at McMurdo Station, Antarctica, 1. Overview and daily variations of NO<sub>2</sub> and O<sub>3</sub>, austral spring, 1986, *Geophys. Res.*, 92, 8320-8328, 1987.
- Solomon, S., G.H. Mount, R.W. Sanders and A.L. Schmeltekopf, Visible spectroscopy at McMurdo Station, Antarctica, 2. Observation of OClO, *J. Geophys. Res.*, 92, 8329-8338, 1987.
- Sanders, R. W., S. Solomon, G.H. Mount, M.W. Bates and A.L. Schmeltekopf, Visible spectroscopy at McMurdo Station Antarctica, 3. Observations of NO<sub>3</sub>, *J. Geophys. Res.*, 92, 8339-8342, 1987.
- Solomon, S., and R.R. Garcia, Current understanding of mesospheric transport processes, *Phil. Trans. R. Soc. Lond. A*, 323, 655-666, 1987.
- Spear, K.A., and S. Solomon, Mesospheric ionization and O<sub>2</sub> (<sup>1</sup>D<sub>g</sub>) depletion, *Planet. Space Science.*, 35, 1057-1091, 1987.
- Le Texier, H., S. Solomon, and R.R. Garcia, The role of molecular hydrogen and methane oxidation in the water vapor budget of the stratosphere, *Quart. J. Roy. Met. Soc.*, 114, 281-295, 1988.
- Solomon, S., The mystery of the Antarctic ozone hole, *Rev. Geophys*, 26, 131-148, 1988.
- Mount, G.H., S. Solomon, R.W. Sanders, R.O. Jakoubek, and A.L. Schmeltekopf, Observations of stratospheric NO<sub>2</sub> and O<sub>3</sub> at Thule, Greenland, *Science*, 242, 555-558, 1988.
- Solomon, S., G.H. Mount, R.W. Sanders, R.O. Jakoubek, and A.L. Schmeltekopf, Observation of the nighttime abundance of OClO in the winter stratosphere above Thule, Greenland, *Science*, 242, 550-555, 1988.

- Hofmann, D., and S. Solomon, Ozone depletion through heterogeneous chemistry following the eruption of the El Chichon Volcano, *J. Geophys. Res.*, 94, 5029-5041, 1989.
- Le Texier, H., S. Solomon, R.J. Thomas and R.R. Garcia, OH (7-5) Meinel band day glow and night glow measured by the SME limb scanning near infrared spectrometer: comparison of the observed seasonal variability with two-dimensional model simulations, *Ann. Geophysicae*, 7, 365, 1989.
- Sanders, R.W., S. Solomon, M.A. Carroll, and A.L. Schmeltekopf, Visible and near-ultraviolet spectroscopy at McMurdo Station, Antarctica, 4. overview and daily measurements of NO<sub>2</sub>, O<sub>3</sub> and OCIO in 1989, *J. Geophys. Res.*, 94, 11381, 1989.
- Solomon, S., R.W. Sanders, M.A. Carroll and A.L. Schmeltekopf, Visible and near-ultraviolet spectroscopy at McMurdo Station, Antarctica, 5. Diurnal variations of OCIO and BrO, *J. Geophys. Res.*, 94, 11393, 1989.
- Carroll, M.A., R.W. Sanders, S. Solomon, and A.L. Schmeltekopf, Visible and near-ultraviolet spectroscopy at McMurdo Station, Antarctica, 6. Observations of BrO, *J. Geophys. Res.*, 94, 16633, 1989.
- Solomon, S., H.L. Miller, Jr., J.P. Smith, R.W. Sanders, G.H. Mount, A.L. Schmeltekopf, and J.F. Noxon, Atmospheric NO<sub>3</sub>, 1. Measurement technique and the annual cycle at 40°N, *J. Geophys. Res.*, 94, 11041-11048, 1989.
- Solomon, S., R. W. Sanders, G. H. Mount, M. A. Carroll, R. O. Jakoubek and A. L. Schmeltekopf, Atmospheric NO<sub>3</sub>, 2. Observations in polar regions, *J. Geophys. Res.*, 94, 16423-16428, 1989.
- Perliski, L., S. Solomon and J. London, On the interpretation of seasonal variations in stratospheric ozone, *Planet. Space. Sci.*, 37, 1527, 1989.
- Vaida, V., S. Solomon, E. C. Richard, E. Ruehl, and A. Jefferson, Photoisomerisation of OCIO: a polar ozone depletion mechanism, *Nature*, 342, 405-408, 1989.
- Poole, L. R., S. Solomon, M. P. McCormick and M. C. Pitts, The interannual variability of polar stratospheric clouds and related parameters in Antarctica during September and October, *Geophys. Res. Lett.*, 16, 1157-1160, 1989.
- Smith, J. P., and S. Solomon, Atmospheric NO<sub>3</sub>, 3. Sunrise disappearance and the stratospheric profile, *J. Geophys. Res.*, 95, 13819, 1990.
- Jones, R. L., D. S. McKenna, L. R. Poole and S. Solomon, On the influence of polar stratospheric clouds on chemical composition during the 1988/9 Arctic winter, *Geophys. Res. Lett.*, 17, 545, 1990.

- Jones, R. L., D. S. McKenna, L. R. Poole, and S. Solomon, Simulating the evolution of the chemical composition of the 1988/9 winter vortex, *Geophys. Res. Lett.*, 17, 549, 1990.
- Poole, L. R., S. Solomon, B. W. Gandrud, K. A. Powell, J. Dye, R. L. Jones, and D. J. McKenna, The polar stratospheric cloud event of January 24, 1989, 1., *Microphysics, Geophys. Res. Lett.*, 17, 537, 1990.
- Jones, R. L., S. Solomon, D. S. McKenna, L. R. Poole, W. H. Brune, D. Toohey, J. G. Anderson and D. W. Fahey, The polar stratospheric cloud event of January 24, 1989, 2., *Photochemistry, Geophys. Res. Lett.*, 17, 541, 1990.
- McKenna, D. S., R. L. Jones, L. R. Poole, S. Solomon, D. W. Fahey, K. K. Kelly, M. T. Proffitt, W. H. Brune, M. Loewenstein and K. R. Chan, Calculations of ozone destruction during the 1988/9 Arctic winter, *Geophys. Res. Lett.*, 17, 553, 1990.
- Fahey, D. W., S. Solomon, S. R. Kawa, M. Loewenstein, J. R. Podolske, S. E. Strahan, and K. R. Chan, Reactive nitrogen and nitrous oxide in the lower polar stratosphere: a case study in the coupling of photochemistry and dynamics, *Nature*, 345, 698, 1990.
- Solomon, S., Nitrogen chemistry in Antarctica: A brief review, in *NATO Advanced Study Workshop on the Middle Atmosphere of the Southern Hemisphere*, A. O'Neill and C. Mechoso, eds., pp. 191-202, D. Reidel Pub. Co., 1990.
- Salby, M. L., P. Callaghan, S. Solomon, and R. R. Garcia, Chemical fluctuations associated with vertically propagating equatorial Kelvin waves, *J. Geophys. Res.*, 95, 20491-20506, 1990.
- Solomon, S., R. W. Sanders, and H. L. Miller, Jr., Visible and near-ultraviolet spectroscopy at McMurdo Station, Antarctica, 7. OCIO diurnal photochemistry and implications for ozone destruction, *J. Geophys. Res.*, 95, 13807, 1990.
- Solomon, S., Antarctic ozone: progress towards a quantitative understanding, *Nature*, 347, 347-354, 1990.
- Kawa, S. R., D. W. Fahey, S. Solomon, D. L. Anderson, W. H. Brune, M. H. Proffitt, D. W. Toohey, L. C. Anderson, and K. R. Chan, Interpretation of aircraft measurements of NO, ClO, and O<sub>3</sub> in the lower stratosphere, *J. Geophys. Res.*, 95, 18597, 1990.
- Mlynczak, M. G. and S. Solomon, Middle atmosphere heating by exothermic chemical reactions involving odd-hydrogen species, *Geophys. Res. Lett.*, 18, 37, 1991.
- Mlynczak, M. G., and S. Solomon, On the efficiency of solar heating in the middle atmosphere, *Geophys. Res. Lett.*, 18, 1201, 1991.

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### **Books:**

- Brasseur, G., and S. Solomon, *Aeronomy of the Middle Atmosphere*, Reidel Pub., Co., Dordrecht, 1984. (in English, also translated into Russian and Chinese). Second edition, 1986. Third edition, 2005.
- Solomon, S., *The Coldest March*, Yale University Press, New Haven and London, 2001. [selected for the prestigious '2001 Books of the Year' lists of the New York Times, the Economist (UK), and the Independent (UK)]. Finalist, Independent

Publishers' Book Awards, 2001. Winner, Colorado Book Award, 2002. Louis Battan Prize of the American Meteorological Society, 2003.]

Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.), *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 2007. [2007 Association of Atmospheric Science Librarians International award for high impact comprehensive publication]

### **Selected Seminars and Presentations:**

S. Solomon, and R. R. Garcia, Numerical modeling of the dynamics and chemistry of the middle atmosphere, (Invited) Sixth ESA-PAC Meeting, Interlaken, Switzerland, April, 1983.

S. Solomon, Chemical coupling of the strato - meso - thermosphere system, (Invited) IUGG-IAMAP, Hamburg, Germany, August, 1983.

S. Solomon and R.W.Sanders, Some needs for measurement of photon cross sections and reaction rates in the lower thermosphere/mesosphere (Invited), Fall AGU Meeting, San Francisco, California, December, 1985.

S. Solomon, Photochemistry and transport in the mesosphere, (Invited), Royal Society discussion meeting on the middle atmosphere, London, December, 1986.

Testimony on ozone depletion before the subcommittee on health and the environment, U. S. House of Representatives, March, 1987.

Testimony on ozone depletion before the subcommittee on natural resources, agricultural research and environment, U. S. House of Representatives, March, 1987.

S. Solomon, The hole in the sky, National Academy of Sciences, Benjamin Franklin Lecturer, April, 1987.

Testimony on ozone depletion before the subcommittee on environmental protection and subcommittee on hazardous waste and toxic substances, U. S. Senate, May, 1987.

S. Solomon, The National Ozone Expedition, Invited Lecturer at the Center for Global Habitability, Columbia University, May, 1987.

S. Solomon, Results from the National Ozone Expeditions, 1986-1987 (Invited), Royal Meteorological Society, discussion meeting on Antarctic Ozone, London, February, 1988.

S. Solomon, Antarctic ozone depletion, President's forum on global change, NAS, Woods Hole, Mass., July, 1988.

S. Solomon, Ozone depletion, (invited) ACS regional meeting, Cincinnati, OH, November, 1988.

Testimony on ozone depletion before the subcommittee on science, technology and space, U. S. Senate, February, 1989.

S. Solomon, Ozone depletion at the ends of the earth, Fermilab, Batavia, Illinois, January, 1989.

S. Solomon, Global ozone depletion, Invited lecture at the National Academy forum on global change, Washington, D. C., May, 1989.

S. Solomon, Ozone depletion, Midland, Michigan town festival of arts and sciences, June, 1989.

S. Solomon, Polar ozone depletion, Elizabeth M. Laird Memorial Lecture, University of Western Ontario, London, Canada, October, 1989.

S. Solomon, Ozone depletion, Invited lecture at the American Meteorological Society Annual Meeting, Anaheim, CA, February, 1990.

S. Solomon, Ozone depletion, Invited lecture at the Washington Interparliamentary Conference on Global Change, May, 1990.

S. Solomon, Ozone depletion, Lecture at the National Library, Wellington, New Zealand, at the invitation of the U. S. Embassy, Oct. 9, 1990.

S. Solomon, Heterogeneous Processes and Ozone Depletion, Invited lecture at the Gordon Conference on Atmospheric Chemistry, New Hampton, N. H., June 20, 1991.

S. Solomon, Global Ozone Depletion: A brief review, Invited lecture at the American Meteorological Society Meeting, Atlanta, GA, January 8, 1992.

S. Solomon, Ozone Depletion at the Ends of the Earth and Points In Between, Plenary lecture at the American Association for the Advancement of Science Meeting, Chicago, IL, Feb. 10, 1992.

- S. Solomon, New Findings on Stratospheric Ozone, Keynote address, Quadrennial Ozone Symposium, Charlottesville, VA, June 4, 1992.
- S. Solomon, Ozone Depletion in the Last Place on Earth, Paul C. Daniels Memorial Lecture, Antarctic Society, Washington, DC, September 22, 1992.
- S. Solomon, Ozone Depletion at the Ends of the Earth and Points In Between, Distinguished Lecture Series, University of Maryland, College Park, MD, Oct. 8, 1992.
- S. Solomon, Ozone Depletion at the Ends of the Earth and Points In Between, Marlar Lecture, Department of Space Physics and Astronomy, Rice University, Houston, TX, Nov. 11, 1992.
- S. Solomon, Atmospheric Chemistry and Global Change, Short Course at the University of Oklahoma, Norman, OK, Jan. 6-10, 1993.
- S. Solomon, Ozone Depletion, Keynote speaker at Chemistry Day at the Adler Planetarium in Chicago, sponsored by the American Chemical Society, Nov. 6, 1993.
- S. Solomon, Ozone Depletion at the Ends of the Earth and Points in Between, Gamow Memorial Lecture, University of Colorado, Boulder, April 20, 1994.
- S. Solomon, The interface between ozone science and policy, Global Change Forum, George Washington University, Washington, DC, May, 1994.
- S. Solomon, Ozone Depletion, plenary lecture at the American Society for Mass Spectrometry meeting in Chicago, IL, May 30, 1994.
- S. Solomon, Ozone Depletion, Marple-Schweitzer lecture in the Department of Chemistry, Northwestern University, Evanston, IL, May 31, 1994.
- S. Solomon, Global Changes: Ozone Depletion, Lindsey lecture at the NASA Goddard Space Flight Center, June 7, 1994.
- S. Solomon, Global Changes: An update on ozone depletion, Invited lecture at the American Chemical Society meeting in Washington, DC, August 24, 1994.
- S. Solomon, Ozone Depletion at the Ends of the Earth and Points in Between, Frontiers of Science Lecture Series, University of Utah, Salt Lake City, February 22, 1995.
- S. Solomon, Invited plenary speaker at IUGG Symposium, Boulder, CO, July 1995.

S. Solomon, Stratospheric Chemistry and Ozone Depletion, NATO Advanced Study Institute, Val Morin, Quebec, Canada, September, 1995.

S. Solomon, Jean Day Memorial Lecture, Rutgers University, November, 1995.

S. Solomon, Frank T. Gucker Memorial Lecture, University of Indiana, February, 1996.

S. Solomon, Keynote Speaker, Women's History Month, National Science Foundation, Arlington, VA, March, 1996.

S. Solomon, Jennifer Mills Memorial Lecture, Kalamazoo College, Kalamazoo, MI, July, 1996.

S. Solomon, Plenary lecture, American Association for Aerosol Research, Orlando, FL, October, 1996.

S. Solomon, Randolph T. Major symposium speaker, University of Connecticut, Storres, CN, March, 1997.

S. Solomon, E. Lee Memorial Lecture, University of California, Irvine, CA, May, 1997.

S. Solomon, Plenary Speaker, International Association for Geophysics and Aeronomy (IAGA), Upsalla, Sweden, August, 1997.

S. Solomon, G. N. Lewis Lecturer, University of California, Berkeley CA, February, 1998.

S. Solomon, J. B. Priestley Lecturer, Commonwealth Scientific and Industrial Research Organization (CSIRO), Melbourne, Australia, September, 1998.

S. Solomon, Zucker Fellow, Yale University, October, 1999.

S. Solomon, Thompson Lecturer, Advanced Study Program, NCAR, January, 2000.

S. Solomon, NSF-Geo Distinguished Lecturer, March 6, 2000.

S. Solomon, Chesley Lecturer, Carleton College, Northfield, MN, April, 2000.

S. Solomon, Byrne Lecturer, Oregon State University, Corvallis, OR, Feb., 2001.

S. Solomon, Director's Lecture Series, Lawrence Livermore National Lab, May 31, 2001

S. Solomon, Meteorology Day Lecture, Bureau of Meteorology, Melbourne, Australia, Mar, 2002.

S. Solomon, Weizmann Memorial Lecture, Weizmann Institute, Rehovot, Israel, December, 2002.

S. Solomon, A Chemist Looks at Climate Change, Mickel lecture, Chemistry Department, University of Colorado, Boulder, March, 2003.

S. Solomon, Ozone depletion and climate change, International Science Symposium, Beijing, China, April, 2003.

S. Solomon, The IPCC Special Report on HFCs, Earth Technology Forum, Washington, DC, April, 2003.

S. Solomon, Climate Change: A Review of the Issue, University of Miami, Miami, FL, May, 2003.

S. Solomon, The IPCC 2007 Assessment, Climate System Model Workshop, Breckenridge, CO, June, 2003

S. Solomon, The IPCC 2007 Assessment, Gordon Research Conference, Colby College, NH, July, 2003

S. Solomon, Climate Change: A Review of the Issue, University of East Anglia, Norwich, UK, September, 2003.

S. Solomon, IPCC 2007: Progress and Plans, CLIVAR conference, Baltimore, MD, June 2004

S. Solomon, Climate Change, City of Boulder Public Library, August, 2004

S. Solomon, Ozone Depletion and Climate Change: A Tale of Two Environmental Issues, Trustee's Council of Penn Women, University of Pennsylvania, Philadelphia, PA February, 2005

S. Solomon, Lewis and Clark: Pioneering Meteorological Observers in the American West, Academy of Natural Sciences, Philadelphia, PA February, 2005

S. Solomon, IPCC (2005) Special report: Safeguarding the Ozone Layer and the Global Climate System, to the Subsidiary Body on Scientific and Technical Advice (SBSTA), United Nations Framework Convention on Climate Change, May, 2005 and to the Open Ended Working Group of the Montreal Protocol, June, 2005.

S. Solomon, IPCC 2007: Progress and Plans, GEWEX conference, Orange County, CA, June 2005

S. Solomon, Atmospheric Chemistry and Scientific Assessment: Where we have been, where we are, and where we may be going, Gordon Conference on Atmospheric Chemistry, Big Sky, MT, September 2005

S. Solomon, Ozone Depletion: What's New and How Can It Link to Climate?, Gal-Chen Lecture, Norman, OK, March, 2006

S. Solomon, Keynote Speaker, Antarctic Peninsula Climate Variability Meeting, Boulder, CO May 2006

S. Solomon, My life in science, commencement speaker at Illinois Math And Science Academy Graduation, June, 2006

S. Solomon, Ozone and volcanoes: a review, lecture given in association with receipt of the Goldschmidt prize of the Geochemical Society, Melbourne, Australia, August, 2006.

S. Solomon, Climate Change: A Review for Everyone, Juday Lecturer, University of Montana, November, 2006.

S. Solomon, Anthropogenic Climate Change, Wright Colloquium, University of Geneva, November, 2006.

S. Solomon, Climate Change (2007): The IPCC Assessment, French Academy of Sciences, Paris, Feb. 6, 2007.

S. Solomon, Testimony to the United States House of Representatives and the United States Senate on the IPCC (2007) Working Group One Scientific Assessment, February 8, 2007.

S. Solomon, Climate Change (2007): The IPCC Assessment, Plenary Lecture, AAAS, San Francisco, February 19, 2007.

S. Solomon, Climate Change (2007): The IPCC Assessment, Royal Society, London, March 1, 2007

S. Solomon, Climate Change (2007): The IPCC Assessment, Director's distinguished lecture, LLNL, March, 2007.

S. Solomon, Climate Change and Ozone Depletion: A Tale of Two Environmental Issues, National Science Teachers' Association, St. Louis, April 1, 2007.



- S. Solomon, Climate Change (2007): The IPCC Assessment, The Norwegian Academy, Oslo, April, 2007.
- S. Solomon, Roundtable on climate change, United Nations Business Council for Sustainable Development, New York, May, 2007.
- S. Solomon, A Review of Ozone Depletion and Its Links to Climate Change, New Zealand Antarctic Programme 50<sup>th</sup> Anniversary Conference, Wellington, NZ, July, 2007.
- S. Solomon, Review of Coupling Between Climate and Chemistry, NATO summer school for students and young scientists, Oleron, France, September, 2007.
- S. Solomon, A Review of Stratospheric Ozone Depletion, and Some Linkages and Parallels to Climate Change, Bjerknes Lecture, American Geophysical Union, December, 2007.
- S. Solomon, Linnett Lecturer, University of Cambridge, UK, February, 2008.
- S. Solomon, Bolin Lecturer, Stockholm, University, Stockholm, Sweden, May, 2008.
- S. Solomon, Keynote lecture, Stratospheric Processes and their Role in Climate (SPARC) symposium, August, 2008.
- S. Solomon, Climate Change, AAAS presentation conference for congressional staff, January, 2009.
- S. Solomon, Certainty and Uncertainty in Climate Change: Framing a Basis for Decisions, National Academy of Sciences Climate Summit, April, 2009.