

Andrew E. Dessler

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Research Areas: Climate change, climate feedbacks, atmospheric chemistry, remote sensing, climate change policy

Education: 1994 - Ph.D. - Chemistry, Harvard University
1990 - A.M. - Chemistry, Harvard University
1986 - B.A. - Physics, Rice University

Employment

2005-present	Associate Professor, Dept. of Atmospheric Sciences, Texas A&M University
2000	Senior Policy Analyst, White House Office of Science and Technology Policy, Environment Division, Washington, DC
1998-2005	Associate Research Scientist, Earth System Science Interdisciplinary Center (ESSIC), Univ. of Maryland, College Park, MD
1996-1998	Assistant Research Scientist, ESSIC and the Dept. of Meteorology
1994-1996	National Research Council Research Associateship in the Atmospheric Chemistry and Dynamics Branch of NASA Goddard Space Flight Center, Greenbelt, MD.
1986-1988	Financial Analyst, Investment Banking/Corporate Finance, The First Boston Corporation, New York, NY.

Awards

2006	Aldo Leopold Leadership Program Fellowship
1999	NASA Goddard Laboratory for Atmospheres Best Senior Author Publication Award for "A reexamination of the 'stratospheric fountain' hypothesis" [<i>Geophys. Res. Lett.</i> , 1998].
1999	NASA New Investigator Award recipient
1994-1996	National Research Council Research Associateship
1993	AGU Atmospheric Sciences Section Outstanding Student Paper Award
1991-1994	NASA Graduate Student Fellowship in Global Change Research

Community Service

2005-present	Chair, TAMU Atmospheric Sciences Awards Committee
2005-present	Chair, TAMU Atmospheric Sciences Computer Committee
2004-present	Member, EOS Aura Microwave Limb Sounder science team
2002-2003	Member, GSFC DAAC User Working Group
2002	Associate Editor, <i>Journal of Geophysical Research</i>
2002	NASA Atmospheric Chemistry, Modeling, and Analysis Program proposal review panel, 2002
2001, 2002	NASA Earth System Science Fellowship proposal review panel
1999	NASA SOLVE mission proposal review panel
1997-2002	Editor, AGU Books Board (Head Editor, 1998)
1996-2000	AGU Publications Committee
1998	Member, Editor search committee for <i>Geophysical Research Letters</i>
1994-1996	AGU Committee on Education and Human Resources

Professional Activity

Reviewer for:	Science, Nature, Geophysical Research Letters, Journal of Geophysical Research, Journal of the Atmospheric Sciences, Journal of Climate, Atmospheric Chemistry and Physics, Bulletin of the American Meteorological Society,
Member:	American Geophysical Union, American Meteorological Society

Graduate students:

At the University of Maryland:

Jun Wu — M.S., 1998 — Calculation of ozone loss rates in the Antarctic polar vortex

Aiwu Li — M.S., 2000 — The fate of aircraft exhaust emitted in the tropical upper troposphere

Hyun Cheol Kim — Ph.D., 2005 — The impact of convection on the tropical tropopause

Presently advising two TAMU graduate students (Sean Casey and Joonsuk Lee).

Postdoctoral Associates:

Christian Alcala (2001-2002), Likun Wang (2004-2005), Sun Wong (2003-present), Wei Wu (2005-present).

Classes taught

At the University of Maryland:

METO 637, Atmospheric Chemistry (graduate level), with Dr. R. D. Hudson, Spring 1997

METO 123, Causes and Implications of Climate Change (undergraduate non-science level), with Dr. R. DeFries, A. J. Kaufman, and O. Thompson, Spring 2001 and 2002

At Texas A&M University

GEOS 489-500, The science and politics of global climate change, Spring 2006

Selected recent meetings, workshops, and presentations

2006: MODIS science team meeting (Baltimore, MD), AIRS science team meeting (Pasadena, CA), presentation on science/policy interface to AAAS Congressional Fellows (Washington, DC), department seminar at Texas A&M (College Station, TX), presentation to William and Mary Public Policy Program on climate change (Williamsburg, VA), Earth Day lecture on climate change at SMU (Dallas, TX), presentation on climate change to Dallas City Council (Dallas, TX); invited to SPARC Tropical Tropopause Layer workshop (June 2006, Victoria, Canada)

2005: Aura science team meeting (Pasadena, CA), JPL Atmospheric chemistry, dynamics, and radiation seminar (Pasadena, CA), seminar at Naval Research Lab (Washington, DC), AMS middle atmosphere meeting (Boston, MA), department seminar at Texas A&M (College Station, TX), Fall AGU meeting (San Francisco, CA); invited to present, but unable to attend: Extratropical tropopause workshop (Mainz, Germany), International Association of Meteorology and Atmospheric Sciences meeting (Beijing, China)

2004: Pre-AVE mission (San Jose, Costa Rica), department seminar at Texas A&M (College Station, TX), Physics Department brownbag seminar at Rice University (Houston, TX), Solar occultation satellite science team meeting (Boulder, CO), SPARC general assembly (Victoria, Canada), Dept. of Meteorology seminar at Penn State (State College, PA), ICESat science team meeting (Boulder, CO), Workshop on "The global circulation of the atmosphere: Phenomena, Theory, Challenges" (Pasadena, CA), JPL Atmospheric chemistry, dynamics, and radiation seminar (Pasadena, CA)

2003: CRYSTAL-FACE science team meeting (Salt Lake City, UT), Aura science team meeting (Pasadena, CA), AGU/EGS meeting (Nice, France), NCAR UT/LS workshop (Boulder, CO), Dept. of Earth and Atmospheric Sciences seminar at Georgia Tech (Atlanta, GA), Fall AGU meeting (San Francisco, CA)

Funded Proposals (serving as Principal Investigator)

NASA Atmospheric Chemistry and Modeling Program, Investigations of tropical tropospheric water vapor, 1996-99, \$160K

NASA New Investigator Program, An investigation of tropical upper tropospheric humidity, 1999-2003, \$502K

NASA EOS Interdisciplinary Working Group Program, Investigations of the tropical tropopause layer, 2000-2003, \$757K (\$345K to U of MD)

NASA Radiation Sciences Program, Investigation of Deep Cumulus formation During CRYSTAL, 2002-2004, \$96K

NSF Large-Scale Atm. Dynamics Program, Upper troposphere/lower stratosphere water vapor in the NCAR WACCM, 2003-2006, \$428K

NASA EOS Interdisciplinary Working Group Program, Investigations of the tropical tropopause layer (proposal renewed), 2003-2006, \$858K (\$450K to U of MD)

NASA Atmospheric Chemistry and Analysis Program, Analysis of water isotopes in the tropical upper troposphere, 2003-2006, \$270K

NASA Aura Validation Program, Validation of Aura measurements of water vapor and odd-chlorine species by comparisons to UARS and *in situ* constraints and climatologies, 2006-2009, \$164K

Books

A. E. Dessler, *The Chemistry and Physics of Stratospheric Ozone*, Academic Press, San Diego, 2000.

A. E. Dessler and E. A. Parson, *The science and politics of global climate change: A guide to the debate*, Cambridge Univ. Press, 2006.

Refereed Publications

Students and postdoctoral associates are in bold

Dessler, A.E., S.P. Palm, W.D. Hart, and J.D. Spinhirne, Tropopause-level thin cirrus coverage revealed by ICESat/GLAS, *Journal of Geophysical Research*, 111, D08203, DOI: 10.1029/2005JD006586, 2006.

Dessler, A.E., S.P. Palm, and J.D. Spinhirne, Tropical cloud-top height distributions revealed by ICESat/GLAS, *Journal of Geophysical Research*, accepted, 2006.

Lee, J., P. Yang, A.E. Dessler, B.A. Baum, and S. Platnick, The influence of thermodynamic phase on the retrieval of mixed-phase cloud microphysical and optical properties in the visible and near infrared region, *Ieee Transactions on Geoscience and Remote Sensing*, in press, 2006.

Wong, S., and A.E. Dessler, Suppression of deep convection over the Tropical North Atlantic by the Saharan air layer, *Geophysical Research Letters*, 32, L09808, DOI: 10.1029/2004GL022295, 2005.

Wu, D.L., W.G. Read, A.E. Dessler, S.C. Sherwood, and J.H. Jiang, UARS MLS cloud ice measurements and implications for H₂O transport near the tropopause, *Journal of Atmospheric Sciences*, 62, 518-530, 2005.

Dessler, A.E., and S.C. Sherwood, The effect of convection on the summertime extratropical lower stratosphere, *Journal of Geophysical Research*, 109, D23301, DOI: 10.1029/2004JD005209, 2004.

- Minschwaner, K., and A.E. Dessler, Water vapor feedback in the tropical upper troposphere: Model results and observations, *Journal of Climate*, 17, 1272-1282, 2004.
- Dessler, A.E., and S.C. Sherwood, A model of HDO in the tropical tropopause layer, *Atmos. Chem. Phys.*, 3, 2173-2181, 2003.
- Dessler, A.E., and E.M. Weinstock, Comment on "Balloon-borne observations of water vapor and ozone in the tropical upper troposphere and lower stratosphere" by H. Vömel et al., *Journal of Geophysical Research*, 108, 4136, DOI: 10.1029/2002JD002811, 2003.
- Dessler, A.E., and P. Yang, The distribution of tropical thin cirrus clouds inferred from Terra MODIS data, *Journal of Climate*, 16, 1241-1248, 2003.
- Sherwood, S.C., and A.E. Dessler, Convective mixing near the tropical tropopause: Insights from seasonal variations, *Journal of Atmospheric Sciences*, 60, 2674-2685, 2003.
- Alcala, C.M., and A.E. Dessler, Observations of deep convection in the tropics using the TRMM precipitation radar, *Journal of Geophysical Research*, 107, 4792, DOI: 10.129/2002JD002457, 2002.
- Dessler, A.E., The effect of deep, tropical convection on the tropical tropopause layer, *Journal of Geophysical Research*, 107, 4033, DOI: 10.1029/2001JD000511, 2002.
- Sherwood, S.C., and A.E. Dessler, A model for transport across the tropical tropopause, *Journal of Atmospheric Sciences*, 58, 765-779, 2001.
- Wu, J., and A.E. Dessler, Comparisons between modeled and measured polar ozone loss, *Journal of Geophysical Research*, 106, 3195-3201, 2001.
- Dessler, A.E., and S.C. Sherwood, Simulations of tropical upper tropospheric humidity, *Journal of Geophysical Research*, 105, 20,155-20,163, 2000.
- Sherwood, S.C., and A.E. Dessler, On the control of stratospheric humidity, *Geophysical Research Letters*, 27, 2513-2516, 2000.
- Dessler, A.E., Reply to a comment on "A reexamination of the 'stratospheric fountain' hypothesis" by Vömel and Oltmans, *Geophysical Research Letters*, 26, 2739, 1999.
- Dessler, A.E., and H. Kim, Determination of the amount of water vapor entering the stratosphere based on HALOE data, *Journal of Geophysical Research*, 104, 30,605-30,607, 1999.
- Dessler, A.E., J. Wu, M.L. Santee, and M.R. Schoeberl, Satellite observations of temporary and irreversible denitrification, *Journal of Geophysical Research*, 104, 13,993-14,002, 1999.
- Considine, D.B., A.E. Dessler, C.H. Jackman, J.E. Rosenfield, P.E. Meade, M.R. Schoeberl, A.E. Roche, and J.W. Waters, Interhemispheric asymmetry in the 1 mbar O₃ trend: An analysis using an interactive zonal mean model and UARS data, *Journal of Geophysical Research*, 103, 1607-1618, 1998.
- Dessler, A.E., A reexamination of the "stratospheric fountain" hypothesis, *Geophysical Research Letters*, 25, 4165-4168, 1998.
- Dessler, A.E., M.D. Burrage, J.-U. Grooss, J.R. Holton, J.L. Lean, S.T. Massie, M.R. Schoeberl, A.R. Douglass, and C.H. Jackman, Selected science highlights from the first five years of the Upper Atmosphere Research Satellite (UARS) program, *Reviews of Geophysics*, 36, 183-210, 1998.

- Dessler, A.E., D.B. Considine, J.E. Rosenfield, S.R. Kawa, A.R. Douglass, and J.M. Russell, III, Lower stratospheric chlorine partitioning during the decay of the Mt. Pinatubo aerosol cloud, *Geophysical Research Letters*, 24, 1623-1626, 1997.
- Morris, G.A., D.B. Considine, A.E. Dessler, S.R. Kawa, J.B. Kumer, J.L. Mergenthaler, A.E. Roche, and J.M. Russell, III, Nitrogen partitioning in the middle stratosphere as observed by the Upper Atmosphere Research Satellite, *Journal of Geophysical Research*, 102, 8955-8965, 1997.
- Dessler, A.E., S.R. Kawa, D.B. Considine, J.W. Waters, L. Froidevaux, and J.B. Kumer, UARS measurements of ClO and NO₂ at 40 and 46 km and implications for the model "ozone deficit", *Geophysical Research Letters*, 23, 339-342, 1996.
- Dessler, A.E., S.R. Kawa, A.R. Douglass, D.B. Considine, J.B. Kumer, A.E. Roche, J.W. Waters, J.M. Russell, III, and J.C. Gille, A test of the partitioning between ClO and ClONO₂ using simultaneous UARS measurements of ClO, NO₂, and ClONO₂, *Journal of Geophysical Research*, 101, 12,515-12,521, 1996.
- Dessler, A.E., K. Minschwaner, E.M. Weinstock, E.J. Hints, J.G. Anderson, and J.M. Russell, III, The effects of tropical cirrus clouds on the abundance of lower stratospheric ozone, *Journal of Atmospheric Chemistry*, 23, 209-220, 1996.
- Minschwaner, K., A.E. Dessler, J.W. Elkins, C.M. Volk, D.W. Fahey, M. Loewenstein, J.R. Podolske, A.E. Roche, and K.R. Chan, Bulk properties of isentropic mixing into the tropics in the lower stratosphere, *Journal of Geophysical Research*, 101, 9433-9439, 1996.
- Schoeberl, M.R., A.R. Douglass, S.R. Kawa, A.E. Dessler, P.A. Newman, and R.S. Stolarski, The development of the Antarctic ozone hole, *Journal of Geophysical Research*, 101, 20,909-20,924, 1996.
- Boering, K.A., et al., Measurements of stratospheric carbon dioxide and water vapor at northern midlatitudes: Implications for troposphere-to-stratosphere transport, *Geophysical Research Letters*, 22, 2737-2740, 1995.
- Dessler, A.E., et al., Correlated observations of HCl and ClONO₂ from UARS and implications for stratospheric chlorine partitioning, *Geophysical Research Letters*, 22, 1721-1724, 1995.
- Dessler, A.E., E.J. Hints, E.M. Weinstock, J.G. Anderson, and K.R. Chan, Mechanisms controlling water vapor in the lower stratosphere: "A tale of two stratospheres", *Journal of Geophysical Research*, 100, 23,167-23,172, 1995.
- Dessler, A.E., W. Smith, and R. Lopez, The future employment of geophysicists, *EOS*, 76, 372, 1995.
- Fahey, D.W., et al., In situ observations in aircraft exhaust plumes in the lower stratosphere at midlatitudes, *Journal of Geophysical Research*, 100, 3065-3074, 1995.
- Weinstock, E.M., E.J. Hints, A.E. Dessler, and J.G. Anderson, Measurements of water vapor in the tropical lower stratosphere during the CEPEX campaign: Results and interpretation, *Geophysical Research Letters*, 22, 3231-3234, 1995.
- Dessler, A.E., E.M. Weinstock, E.J. Hints, J.G. Anderson, C.R. Webster, R.D. May, J.W. Elkins, and G.S. Dutton, An examination of the total hydrogen budget of the lower stratosphere, *Geophysical Research Letters*, 21, 2563-2566, 1994.

- Hints, E.J., E.M. Weinstock, A.E. Dessler, J.G. Anderson, M. Loewenstein, and J.R. Podolske, SPADE H₂O measurements and the seasonal cycle of stratospheric water vapor, *Geophysical Research Letters*, 21, 2559-2562, 1994.
- Salawitch, R.J., et al., The diurnal variation of hydrogen, nitrogen, and chlorine radicals: Implications for the heterogeneous production of HNO₂, *Geophysical Research Letters*, 21, 2551-2554, 1994.
- Salawitch, R.J., et al., The distribution of hydrogen, nitrogen, and chlorine radicals in the lower stratosphere: Implications for changes in O₃ due to emission of NO_y from supersonic aircraft, *Geophysical Research Letters*, 21, 2547-2550, 1994.
- Weinstock, E.M., E.J. Hints, A.E. Dessler, J.F. Oliver, N.L. Hazen, J.N. Demusz, N.T. Allen, L.B. Lapson, and J.G. Anderson, New fast response photofragment fluorescence hygrometer for use on the NASA ER-2 and the Perseus remotely piloted aircraft, *Review of Scientific Instruments*, 65, 3544-3554, 1994.
- Avallone, L.M., D.W. Toohey, W.H. Brune, R.J. Salawitch, A.E. Dessler, and J.G. Anderson, Balloon-borne in situ measurements of ClO and ozone: Implications for heterogeneous chemistry and mid-latitude ozone loss, *Geophysical Research Letters*, 20, 1795-1798, 1993.
- Dessler, A.E., et al., Balloon-borne measurements of ClO, NO, and O₃ in a volcanic cloud: An analysis of heterogeneous chemistry between 20 and 30 km, *Geophysical Research Letters*, 20, 2527-2530, 1993.
- Wennberg, P.O., R.M. Stimpfle, E.M. Weinstock, A.E. Dessler, S.A. Lloyd, L.B. Lapson, J.J. Schwab, and J.G. Anderson, A test of modeled stratospheric HO_x chemistry: Simultaneous measurements of OH, HO₂, O₃, and H₂O, *Geophysical Research Letters*, 17, 1909-1912, 1990.