Andrew E. Dessler

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Research Areas: Climate change, climate feedbacks, 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

2007-present	Professor, Dept. of Atmospheric Sciences, Texas A&M University
2005-2007	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.

Awards

2012	AGU Atmospheric Sciences Ascent Award
2011	Google Science Communication Fellow
2011	Texas A&M College of Geosciences Distinguished Achievement Award for Faculty Research
2011	Texas A&M Sigma Xi Outstanding Communicator Award
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" [*Geophys. Res. Lett.*, 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

Notable invited presentations

2012 Woods Hole, H. Burr Steinbech at-large scholar
2012 NCAR ASP Thompson Lecturer

Leadership positions

2012-2014 Chair of AAAS Section W (atmospheric and hydrospheric sciences)

Teaching:

- GEOS 444: *The science and politics of global climate change: A guide to the debate*. Developed this course, which will be taught as part of the Enviromental Sciences curriculum.
- ATMO 685, *Climate modeling* (Fall 06)
- ATMO 201, *Atmospheric Science* (Fall 07)
- GEOS 210: *Climate change*. Developed this course with Prof. R. Saravanan. This course satisfies the University's tier 2 natural science requirement.

Graduate students:

Hyun Cheol Kim – Ph.D. (Univ. of Maryland), 2005
Joonsuk Lee – Ph.D, 2007, co-chair (with P. Yang)
Allison Cardona – M.A. 2008
Jeremy Solbrig – M.A. 2009
Sean Casey — Ph.D. 2009
A. Verma — M.A. 2011
Tao Wang — M.A. 2011
chaired 2 masters recipients while at the Univ. of Maryland (1998 and 1999)

Tao Wang — Ph.D. current

A. Christenberry — M.A. current
C. Zhou — M.A. current
J. Kummer — M.A. current

Postdoctoral Associates:

Christian Alcala (2001-2002), Sun Wong (2003-2005), Likun Wang (2004-2005), Wei Wu (2005-2006)

Research Scientist:

Sun Wong (2005-2009)

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, first edition 2006, second edition 2010.

A. E. Dessler, *Modern climate change*, Cambridge Univ. Press, 2011.

Refereed Publications

('*' indicates a graduate student or postdoc first author)

*Wang, T. and A.E. Dessler, Analysis of cirrus in the tropical tropopause layer from CALIPSO and MLS data – A water perspective, *J. Geophys. Res.*, 117, D04211, DOI: 10.1029/2011JD016442, 2012.

Schoeberl, M. R., and A. E. Dessler, Dehydration of the stratosphere, Atmos. Chem. Phys., 11, doi: 10.5194/acp-11-8433-2011, 8433-8446, 2011.

Dessler, A.E., Cloud variations and the Earth's energy budget, Geophys. Res. Lett., 38, L19701, DOI: 10.1029/2011GL049236, 2011.

Dessler, A. E., A determination of the cloud feedback from climate variations over the past decade, Science, 330, doi:10.1126/science.1192546, 1523-1527, 2010.

Dessler, A. E., and S. M. Davis, Trends in tropospheric humidity from reanalysis systems, J. Geophys. Res., 115, D19127, doi:10.1029/2010jd014192, 2010.

Yang, P., G. Hong, A.E. Dessler, S.S.C. Ou, K.-N. Liou, P. Minnis, Harshvardan, Contrails and induced cirrus: Optics and radiation, Bull. Am. Met. Soc., 91, DOI: 10.1175/2009BAMS2837.1, 2010.

*Lee, J., P. Yang, A.E. Dessler, B.-C. Gao, S. Platnick, Distribution and radiative forcing of tropical thin cirrus clouds, J. Atmos. Sci., 66, DOI: 10.1175/2009JAS3183.1, 3721-3731, 2009.

Dessler, A.E., Energy for air capture, Nature Geosci., 2, DOI: 10.1038/ngeo691, 811, 2009.

Dessler, A.E., Clouds and water vapor in the northern hemisphere summertime stratosphere, J. Geophys. Res., 114, D00H09, DOI: 10.1029/2009JD012075, 2009.

Dessler, A.E., and S. Wong, Estimates of the water vapor feedback during the El Nino Southern Oscillation, J. Climate, 22, 6404-6412, DOI: 10.1175/2009JCLI3052.1, 2009.

*Wong, S., A.E. Dessler, N.M. Mahowald, P. Yang, and Q. Feng, Maintenance of lower tropospheric temperature inversion in the Saharan Air Layer by dust and dry anomaly, J. Climate, 22, 5149-5162, DOI: 10.1175/2009JCLI2847.1, 2009.

*Casey, S.P.F., A.E. Dessler, and C. Schumacher, Five-year climatology of midtroposphere dry air layers in warm tropical ocean regions as viewed by AIRS/Aqua, J. Appl. Met. Clim., 48, DOI: 10.1175/2009JAMC2099.1, 1831-1842, 2009.

Dessler, A.E., and S.C. Sherwood, A matter of humidity, Science, 323, 1020-1021, DOI: 10.1126/science.1171264, 2009.

Fueglistaler, S., A.E. Dessler, T. J. Dunkerton, I. Folkins, Q. Fu, and P.W. Mote, The tropical tropopause layer, Rev. Geophys., 47, RG1004, DOI: 10.1029/2008RG000267, 2009.

Dessler, A.E., Z. Zhang, and P. Yang, The water-vapor climate feedback inferred from climate fluctuations, 2003-2008, Geophys. Res. Lett., 35, L20704, DOI: 10.1029/2008GL035333, 2008.

Dessler, A.E., P. Yang, J. Lee, J. Solbrig, Z. Zhang, and K. Minschwaner, An analysis of the dependence of clear-sky top-of-atmosphere outgoing longwave radiation on atmospheric temperature and water vapor, J. Geophys. Res., 113, D17102, DOI: 10.1029/2008JD010137, 2008.

*Wong, S. A. E. Dessler, N. Mahowald, P. R. Colarco, A. da Silva, Long-term variability in Saharan dust transport and its link to the North Atlantic sea surface temperature, Geophys. Res. Lett., 35, L07812, DOI:10.1029/2007GL032297, 2008.

Dessler, A.E., and K. Minschwaner, An analysis of the regulation of tropical tropospheric water vapor, J. Geophys. Res., 112, DOI: 10.1029/2006JD007683, 2007.

Dessler, A.E., T.F. Hanisco, and S.A. Fueglistaler, Effects of convective ice lofting on H_2O and HDO in the tropical tropopause layer, J. Geophys. Res., 112, D18309, DOI: 10.1029/2007JD008609, 2007.

*Casey, S.P.F., A.E. Dessler, and C. Schumacher, Frequency of tropical precipitating clouds as observed by the Tropical Rainfall Measuring Mission Precipitation Radar and ICESat/Geoscience Laser Altimeter System, J. Geophys. Res., 112, D14215, DOI: 10.1029/2007JD008468, 2007.

*Wong, S., and A.E. Dessler, Regulation of H2O and CO in Tropical Tropopause Layer by the Madden-Julian Oscillation, J. Geophys. Res., 112, D14305, DOI: 10.1029/2006JD007940, 2007.

Hanisco, T. F., et al., Observations of deep convective influence on stratospheric water vapor and its isotopic composition, Geophys. Res. Lett., 34, L04814, doi:10.1029/2006GL027899, 2007.

Dessler, A.E., S.P. Palm, W.D. Hart, and J.D. Spinhirne, Tropopause-level thin cirrus coverage revealed by ICESat/Geoscience Laser Altimeter System, J. Geophys. Res., 111, D08203, DOI: 10.1029/2005JD006586, 2006.

Dessler, A.E., S.P. Palm, and J.D. Spinhirne, Tropical cloud-top height distributions revealed by the Ice, Cloud, and Land Elevation Satellite (ICESat)/Geoscience Laser Altimeter System (GLAS), J. Geophys. Res., 111, D12215, DOI: 10.1029/2005JD006705, 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 Trans. Geosci. Remote, 3, 287-291, 2006.

Minschwaner, K., A.E. Dessler, and P. Sawaengphokhai, Multi-model analysis of the water vapor feedback in the tropical upper troposphere, J. Climate, 19, 5455-5464, 2006.

*Wang, L.K., and A.E. Dessler, Instantaneous cloud overlap statistics in the tropical area revealed by ICESat/GLAS data, Geophys. Res. Lett., 33, L15804, DOI: 10.1029/2005GL024350, 2006.

*Wong, S., P.R. Colarco, and A.E. Dessler, Principal component analysis of the evolution of the Saharan Air Layer and dust transport: Comparisons between a model simulation and MODIS and AIRS retrievals, J. Geophys. Res., 111, D20109, DOI: 10.1029/2006JD007093, 2006.

*Wu, W., A.E. Dessler, and G.R. North, Analysis of the correlations between atmospheric boundary-layer and free-tropospheric temperatures in the Tropics, Geophys. Res. Lett., 33, L20707, DOI: 10.1029/2006GL026708, 2006.

*Wong, S., and A.E. Dessler, Suppression of deep convection over the Tropical North Atlantic by the Saharan air layer, Geophys. Res. Lett., 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, J. Atmos. Sci., 62, 518-530, 2005.

Dessler, A.E., and S.C. Sherwood, The effect of convection on the summertime extratropical lower stratosphere, J. Geophys. Res., 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, J. 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., J. Geophys. Res., 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, J. Climate, 16, 1241-1248, 2003.

Sherwood, S.C., and A.E. Dessler, Convective mixing near the tropical tropopause: Insights from seasonal variations, J. Atmos. Sci., 60, 2674-2685, 2003.

*Alcala, C.M., and A.E. Dessler, Observations of deep convection in the tropics using the TRMM precipitation radar, J. Geophys. Res., 107, 4792, DOI: 10.129/2002JD002457, 2002.

Dessler, A.E., The effect of deep, tropical convection on the tropical tropopause layer, J. Geophys. Res., 107, 4033, DOI: 10.1029/2001JD000511, 2002.

Sherwood, S.C., and A.E. Dessler, A model for transport across the tropical tropopause, J. Atmos. Sci., 58, 765-779, 2001.

*Wu, J., and A.E. Dessler, Comparisons between modeled and measured polar ozone loss, J. Geophys. Res., 106, 3195-3201, 2001.

Dessler, A.E., and S.C. Sherwood, Simulations of tropical upper tropospheric humidity, J. Geophys. Res., 105, 20,155-20,163, 2000.

Sherwood, S.C., and A.E. Dessler, On the control of stratospheric humidity, Geophys. Res. Lett., 27, 2513-2516, 2000.

Dessler, A.E., Reply to a comment on “A reexamination of the ‘stratospheric fountain’ hypothesis” by Vömel and Oltmans, Geophys. Res. Lett., 26, 2739, 1999.

Dessler, A.E., and H. Kim, Determination of the amount of water vapor entering the stratosphere based on HALOE data, J. Geophys. Res., 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, J. Geophys. Res., 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 O_3 trend: An analysis using an interactive zonal mean model and UARS data, J. Geophys. Res., 103, 1607-1618, 1998.

Dessler, A.E., A reexamination of the "stratospheric fountain" hypothesis, Geophys. Res. Lett., 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, Rev. Geophys., 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, Geophys. Res. Lett., 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, J. Geophys. Res., 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 NO_2 at 40 and 46 km and implications for the model "ozone deficit", Geophys. Res. Lett., 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 $ClONO_2$ using simultaneous UARS measurements of ClO, NO_2, and $ClONO_2$, J. Geophys. Res., 101, 12,515-12,521, 1996.

Dessler, A.E., K. Minschwaner, E.M. Weinstock, E.J. Hintsa, 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, J. Geophys. Res., 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, J. Geophys. Res., 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, Geophys. Res. Lett., 22, 2737-2740, 1995.

Dessler, A.E., et al., Correlated observations of HCl and $ClONO_2$ from UARS and implications for stratospheric chlorine partitioning, Geophys. Res. Lett., 22, 1721-1724, 1995.

Dessler, A.E., E.J. Hintsa, E.M. Weinstock, J.G. Anderson, and K.R. Chan, Mechanisms controlling water vapor in the lower stratosphere: "A tale of two stratospheres", J. Geophys. Res., 100, 23,167-23,172, 1995.

Fahey, D.W., et al., In situ observations in aircraft exhaust plumes in the lower stratosphere at midlatitudes, J. Geophys. Res., 100, 3065-3074, 1995.

Weinstock, E.M., E.J. Hintsa, A.E. Dessler, and J.G. Anderson, Measurements of water vapor in the tropical lower stratosphere during the CEPEX campaign: Results and interpretation, Geophys. Res. Lett., 22, 3231-3234, 1995.

Dessler, A.E., E.M. Weinstock, E.J. Hintsa, 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, Geophys. Res. Lett., 21, 2563-2566, 1994.

Hintsa, E.J., E.M. Weinstock, A.E. Dessler, J.G. Anderson, M. Loewenstein, and J.R. Podolske, SPADE H_2O measurements and the seasonal cycle of stratospheric water vapor, Geophys. Res. Lett., 21, 2559-2562, 1994.

Salawitch, R.J., et al., The diurnal variation of hydrogen, nitrogen, and chlorine radicals: Implications for the heterogeneous production of HNO_2, Geophys. Res. Lett., 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 O_3 due to emission of NO_y from supersonic aircraft, Geophys. Res. Lett., 21, 2547-2550, 1994.

Weinstock, E.M., E.J. Hintsa, 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, Rev. Sci. Inst., 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, Geophys. Res. Lett., 20, 1795-1798, 1993.

Dessler, A.E., et al., Balloon-borne measurements of ClO, NO, and O_3 in a volcanic cloud: An analysis of heterogeneous chemistry between 20 and 30 km, Geophys. Res. Lett., 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, HO_2, O_3, and H_2O, Geophys. Res. Lett., 17, 1909-1912, 1990.