

Brett F. Taubman

Assistant Professor
Department of Chemistry
Appalachian State University
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Education

- University of Maryland, College Park, MD*
Ph.D. Chemistry 2001 – 2004
Dissertation: *Airborne Characterization of Regional Aerosol Origins and Optical Properties*
- Montana State University, Bozeman, MT*
B.S. Chemistry (Highest Honors, Departmental Honors) 1999 – 2001
- The Pennsylvania State University, University Park, PA*
B.S. Finance 1989 – 1993

Awards and Honors

- Atmospheric Chemistry Colloquium for Emerging Senior Scientists (ACCESS VIII) – *Invited Participant* 2005
- Editor's Choice: *Science* 2004
Atmospheric Science: Serendipitous Surcease
Science, 305, no. 5685, p. 755
- AGU Journal Highlight 2004
Geophys. Res. Lett., 31, GL019771
- Phi Kappa Phi National Honor Society 2004
- NCAR Advanced Study Program (*Invited Participant*) 2002
Interactions among aerosols, climate, and the hydrological cycle
- Distinguished T.A. Award, University of Maryland 2002
- Block Grant Fellowship, University of Maryland 2001
- Highest Honors, Montana State University 2001
- Departmental Honors, Montana State University 2001
- Outstanding Senior Chemistry Student, Montana State University 2001
- Gilbert Stork Research Scholarship, Montana State University 2001
- P. C. Gaines Scholarship, Montana State University 2000
- Fredrich A. Kekule Award, Montana State University 2000

Research Interests

Atmospheric chemistry and physics; Science education; Alternative energy; Regional and long-range pollutant transport; Air quality and climate feedbacks; Source apportionment; Biogeochemical response to climate change; Analytical instrument development; Economic analyses in physical science

Professional Experience

Appalachian State University, Department of Chemistry

Assistant Professor

2007 – present

My primary teaching responsibilities include:

- Analytical, Environmental, and General Chemistry courses

My research involves the investigation of:

- Aerosol chemical and optical properties and climatic impacts
- The organic fraction of aerosols and the role they play in the absorption of solar ultraviolet radiation

The Pennsylvania State University, Department of Meteorology

Research Associate

2004 – 2007

Designed and operated the Nittany Atmospheric Trailer and Integrated Validation Experiment (NATIVE), a mobile research facility used for:

- Air quality monitoring
- Satellite validation
- Climate studies
- Educational outreach

University of Maryland, Department of Meteorology

Graduate Research Assistant

2001 – 2004

Acted as mission scientist aboard instrumented light aircraft to investigate:

- Local and regional source apportionment
- Lower atmospheric physics and photochemistry
- Aerosol distribution, optical and microphysical properties
- Effects of air pollution on atmospheric radiation budget and climate

Montana State University, Department of Chemistry

Undergraduate Research Assistant

1999 – 2001

Developed biologically active phosphonate analogues of naturally occurring compounds for use as:

- Antimetabolites
- Enzyme active-site probes
- Antivirals
- Antibiotics
- Calcium regulators

Peer Reviewed Publications

Hains, J.C., **B.F. Taubman**, A. M. Thompson, L.T. Marufu, J.W. Stehr, B.G. Doddridge, and R.R. Dickerson, Origins of chemical pollution derived from Mid-Atlantic aircraft profiles using a clustering technique, *Atmos. Environ.*, in press, 2008.

Thompson, A.M., J.B. Stone, J.C. Witte, R.B. Pierce, S.J. Oltmans, O.R. Cooper, **B.F. Taubman**, R.B. Chatfield, G. Forbes, B.J. Johnson, E. Joseph, T.L. Kucsera, J.T. Merrill, G.A. Morris, S. Hersey, M.J. Newchurch, F.J. Schmidlin, D.W. Tarasick, V. Thouret, J.P. Cammas, INTEX Ozonesonde Network Study, 2004: 1. Perspective on Summertime Upper Troposphere/Lower Stratosphere Ozone over Northeastern North America, *J. Geophys. Res.*, 10.129/2006JD007441, 2007.

Hains, J.C., L-W.A.Chen, **B.F. Taubman**, B.G. Doddridge, and R.R. Dickerson, A side by side comparison of filter-based PM_{2.5} measurements at a suburban site: A closure study, *Atmos. Environ.*, 41(29), 6167-6184, 2007.

Taubman, B.F., J.C. Hains, A.M. Thompson, L.T. Marufu, B.G. Doddridge, J.W. Stehr, C.A. Piety, and R.R. Dickerson, Aircraft Vertical Profiles of Trace Gas and Aerosol Pollution over the Mid-Atlantic U.S.: Statistics and Meteorological Cluster Analysis, *J. Geophys. Res.*, 10.1029/2005JD006196, 2006.

Vant-Hull, B.L., Z. Li, **B.F. Taubman**, R. Levy, L.T. Marufu, B.G. Doddridge, and R.R. Dickerson, Smoke over Haze: Comparison of Satellite, Surface and In-situ Measurements of Aerosol Optical Properties and Radiative Forcing of Forest Fire Smoke over the Eastern U.S., *J. Geophys. Res.*, 110(D10), 10.1029/2004JD004518, 2005.

Marufu L. T., **B. F. Taubman**, B. Bloomer, C. A. Piety, B. G. Doddridge, J. W. Stehr, R. R. Dickerson, Reply to comment by D. A. Hansen et al. on "The 2003 North American electrical blackout: An accidental experiment in atmospheric chemistry", *Geophys. Res. Lett.*, 32, L10813, doi:10.1029/2005GL022385, 2005.

Taubman, B.F., L.T. Marufu, B.L. Vant-Hull, C.A. Piety, B.G. Doddridge, R.R. Dickerson, and Z. Li, Smoke Over Haze: Aircraft Observations of Chemical and Optical Properties and the Effects on Heating Rates and Stability, *J. Geophys. Res.*, 109(D2), 10.1029/2003JD003898, 2004.

Taubman, B.F., L.T. Marufu, C.A. Piety, B.G. Doddridge, J.W. Stehr, and R.R. Dickerson, Airborne Characterization of the Chemical, Optical, and Meteorological Properties, and Origins of a Combined Ozone/Haze Episode over the Eastern U.S., *J. Atmos. Sci.*, 61(14), 1781-1793, 2004.

Marufu, L.T., **B.F. Taubman**, B. Bloomer, C.A. Piety, B.G. Doddridge, and R.R. Dickerson, The 2003 North American Electrical Blackout: An Accidental Experiment in Atmospheric Chemistry, *Geophys. Res. Lett.*, 31, 10.1029/2004GL019771, 2004.

Manuscripts Submitted and In Preparation

Taubman, B.F., A.M. Thompson, J.D. Fuentes, E. Joseph, S.M. Michaels, M. Robjhon, and C.A. Piety, The Mid-Atlantic Low-Level Jet and its Implications for Air Quality, *J. Geophys. Res.*, submitted, 2008JD009798.

Taubman, B.F., A. Prados, A.M. Thompson, B.G. Doddridge, and R.R. Dickerson, Aircraft Observations over the Mid-Atlantic U.S. and North Atlantic Ocean during the 1996 Atmosphere/Ocean Chemistry Experiment: Contributions from natural and anthropogenic sources to tropospheric chemistry, *J. Geophys. Res.*, manuscript in revision, 2007.

Taubman, B.F., S.M. Michaels, A.M. Thompson, J.C. Hains, and C.A. Piety, Summer Hot, Summer Not: Emissions, Transport, and Trends of Pollutants over the Mid-Atlantic U.S., manuscript in preparation, 2007.

Other Publications

Contributing author, Chapter 2 - Physics And Chemistry Of Ozone In The Atmosphere: U.S. EPA Air Quality Criteria for Ozone and Related Photochemical Oxidants (Final). U.S. Environmental Protection Agency, Washington, DC, EPA/600/R-05/004aF-cF, 2006.

Selected Presentations

Taubman B.F., W.C.J Hui, A.M Thompson, E.Clothiaux, G.Labow, and N. Krotkov, NATIVE Column Ozone Measurements Over Richland, WA During INTEX-B, *AGU 2006 Fall Conference*, San Francisco, CA, December 10-14, 2007.

Taubman, B.F., A.M. Thompson, S.M Michaels, D. Miller, R. Long, J. Yorks, J. Walker, D. Karschner, D. Stucker, D. Whiteman, and E. Joseph, NATIVE Catches Some WAVES in Beltsville, MD: Apportioning Sources from a Suburban Forest during WAVES, July 2006, *AGU 2006 Fall Conference*, San Francisco, CA, December 11-15, 2006. *Talk*

Taubman, B.F., S.M. Michaels, A.M. Thompson, D. Miller, T. Kane, G. Labow, and N. Krotkov, NATIVE (Nittany Atmospheric Trailer and Integrated Validation Experiment) Remotely Sensed Aerosol Optical Properties: Examples from INTEX-B and WAVES 2006, *NASA Aura Science Team Meeting*, Boulder, CO, September 11-15. *Talk*

Taubman, B.F., S.M. Michaels, A.M. Thompson, J.C. Hains, and C.A. Piety, Summer Hot, Summer Not: Emissions, Transport, and Trends of Pollutants over the Mid-Atlantic U.S., *AGU 2006 Spring Conference*, Baltimore, MD, May 23-26, 2006. *Talk*

Taubman, B.F., A.M. Thompson, E. Joseph, S.M. Michaels, S. Zhang, C.A. Piety, Nocturnal Secondary Ozone Maxima over the Mid-Atlantic U.S. from Shear Induced Turbulence in the Low Level Jet, *AGU 2005 Fall Conference*, San Francisco, CA, December 5-9, 2005. *Talk*

Taubman, B.F., A.M. Thompson, J.C. Hains, L.T. Marufu, B.G. Doddridge, J.W. Stehr, C.A. Piety, and R.R. Dickerson, Summer Hot, Summer Not: Emissions, Transport, and Trends of Pollutants over the Mid-Atlantic U.S., *Atmospheric Chemistry Colloquium for Emerging Senior Scientists (ACCESS VIII)*, Yellowstone National Park, WY, September 4-9, 2005. *Invited Talk*

Taubman, B.F., J.C. Hains, L.T. Marufu, B.G. Doddridge, J.W. Stehr, C.A. Piety, A.M. Thompson, and R.R. Dickerson, Trans-Boundary Air Pollution Source Apportionment over Eastern North America from Measurements during the Regional Atmospheric Measurement Modeling and Prediction Program (RAMMPP), *IAMAS 2005*, Beijing, China, August 2-11, 2005. *Talk*

Taubman, B.F., J.C. Hains, L.T. Marufu, J.B. Stone, A.M. Thompson, Clustering our Way to a Climatology of Airborne Measurements, *Code 613.3 Branch Lunch*, NASA Goddard Space Flight Center, Greenbelt, MD, March 17, 2005. *Invited Talk*

Taubman, B.F., J.C. Hains, J.B. Stone, A.M. Thompson, The Development of a Multivariate Receptor Model for Vertical Profile Data Based on Nonparametric Regression Techniques, *2005 AAAR PM Supersites Conference*, Atlanta, GA, February, 2005. *Talk*

Taubman, B.F., L.T. Marufu, B. Bloomer, C.A. Piety, B.G. Doddridge, and R.R. Dickerson, The 2003 Blackout: An Accidental Experiment in Atmospheric Chemistry, *Pennsylvania State University Weekly Meteorology Colloquia*, University Park, PA, December 2, 2004. *Talk*

Taubman, B.F., L.T. Marufu, B.L. Vant-Hull, C.A. Piety, B.G. Doddridge, and R.R. Dickerson, Airborne Characterization of the Smoke Plume from Canadian Forest Fires, *A&WMA 96th Annual Conference*, San Diego, CA, June, 2003. *Talk*

Taubman, B.F. and B.L. Vant-Hull, Smoke Plumes and Temperature Inversions: a Case Study of the July 2002 Quebec Wildfire Smoke over Maryland and Virginia, *Aerocenter Seminar*, Climate and Radiation Branch, NASA Goddard Space Flight Center, Beltsville, MD, April 16, 2003. *Talk*

Teaching Experience

Spring 2008: **Instructor**, CHE 2211: Quantitative Analysis Lab (ASU)
Spring 2008: **Instructor**, CHE 2210: Quantitative Analysis (ASU)
Fall 2007: **Instructor**, CHE 1101: Introductory Chemistry (ASU)
Fall 2007: **Instructor**, CHE 1110: Introductory Chemistry Lab (ASU)
Spring 2007: **Instructor**, *Meteo 003: Introductory Meteorology* (PSU)
Fall 2006: **Instructor**, *Meteo 003: Introductory Meteorology* (PSU)
Fall 2006: **Guest Lecturer**, *Meteo 440: Principles of Atmos. Measurement* (PSU)
Fall 2006: **Guest Lecturer**, *Meteo 532: Atmospheric Chemistry* (PSU)
Spring 2006: **Guest Lecturer**, *Meteo 431: Atmospheric Thermodynamics* (PSU)
Fall 2005: **Instructor**, *Meteo 003: Introductory Meteorology* (PSU)
Fall 2005: **Guest Lecturer**, *Meteo 532: Atmospheric Chemistry* (PSU)
Fall 2005: **Faculty**, *Meteo 581: Atmospheric Chemistry Seminar* (PSU)
Spring 2005: **Guest Lecturer**, *Meteo 565: Middle Atmospheric Physics* (PSU)
Spring 2005: **Faculty**, *Meteo 581: Atmospheric Chemistry Seminar* (PSU)
Spring 2002: **Teaching Assistant**, *Chem 113: General Chemistry II* (UMD)
Fall 2001: **Teaching Assistant**, *Chem 103: General Chemistry I* (UMD)

Professional Activities

Session Chair

Variability of the Gaseous Composition of the Troposphere I, *AGU Spring Conference*, Baltimore, MD, May 25, 2006

Memberships

American Chemical Society
American Geophysical Union
American Meteorological Society
American Association for the Advancement of Science
Union of Concerned Scientists

Reviewer

Journal of Geophysical Research
Atmospheric Chemistry and Physics
Atmospheric Environment
National Science Foundation