

- Curriculum Vitae -

Name:

Paul Bradley Voss

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Picker Engineering Program
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Education:

- 2000 Ph.D. Earth and Planetary Sciences
Harvard University
Thesis: *In situ* measurements and new modeling methods for understanding inorganic chlorine partitioning in the lower stratosphere. Thesis advisor: James G. Anderson
- 1990 B.S. Mechanical Engineering
B.A. Visual Arts
Brown University

Academic Appointments:

- 2005 – pres. Assistant Professor
Picker Engineering Program
Smith College
- 2001 - 2005 Research Assistant Professor
Department of Geosciences
University of Massachusetts, Amherst
- 2000 - 2002 Research Associate
Department of Chemistry and Chemical Biology
Harvard University

Awards and Grants:

- 2005 - 2008 NSF Atmospheric Chemistry Program
Evolution of meteorology and ozone in the Mexico City pollution outflow (\$300,000)
- 2007 - 2008 NSF, *In-situ Volcanic Plume Characterization with Controlled Meteorological Balloons* (\$33,189 subcontract)

- 2005 - 2008 NOAA Targeted Winds Program and the AIRMAP Program at the University of New Hampshire, Durham
Development of a long-term atmospheric research station in Western Massachusetts (\$250,000)
- 2007 - 2008 NILU, *International Polar Year Balloon Flights* (\$24,000 subcontract)
- 2005 Houston Advanced Research Center
The use of controlled meteorological balloons and aircraft to study the transport and evolution of atmospheric pollutants (\$100,000)
- 2002 - 2005 NSF Physical Meteorology Program
Lagrangian balloon for atmospheric research (\$332,000)
- 2004 NSF Physical Meteorology and Atmospheric Chemistry Programs
Supplemental funding for participation in ICARTT 2004 (\$31,000)
- 2003 NSF Physical Meteorology Program
Research Experience for Undergraduates supplement (\$15,000)
- 1993 - 1996 NASA Global Change Research Fellowship
- 1993 NSF Graduate Fellowship Award (accepted NASA award instead)
- 1993 Derek Bok Certificate for Excellence in Teaching
- 1990 - 1991 Arnold (Watson) Fellowship for study of ancient aqueducts in Italy
- 1990 Technical Analysis Corporation Award (Tau Beta Pi)
- 1989 Tau Beta Pi Society
- 1989 Sigma Xi Society

Professional Memberships:

- 2003 – pres. American Institute of Aeronautics and Astronautics (AIAA)
- 1997 – pres. American Geophysical Union (AGU)

Appointed Committees:

- 2003 – pres. AIAA Balloon Technical Committee (Senior Member since 2007)
- 2002 – pres. City of Northampton Planning Board (Associate Member)

Research Experience:

- 2008 Developed CMET balloon for tracking volcanic plumes. The new payload was designed for rapid response and included chemical sensors (carbon dioxide and sulfur dioxide) needed to follow the plume in real time. Two balloons were shipped to Hawaii and successfully operated remotely via the internet.
- 2007-2008 Developed remote operation capability for Controlled Meteorological (CMET) balloons during the International Polar Year 2007-8 campaign. Balloons shipped to Svalbard Norway were launched by collaborators and operated from Smith College. Project goal was to track European air pollution into the Arctic. Flights lasted up to 14 hours and reached 80°N latitude. Low cost of operation opens many new avenues for collaboration.

- 2006 – pres. Developed new atmospheric research facility at Smith College's MacLeish Field Station in Whately, Massachusetts. As a part of the regional AIRMAP network, this station will provide real-time pollution and meteorological data to the public while serving as a resource for area scientists. Initial baseline measurements will include ozone, carbon monoxide, nitric oxide, winds, temperature, humidity, and barometric pressure.
- 2006 – pres. Principle Investigator for the CMET balloon operations during the MILAGRO campaign in Mexico City. Project aimed to study the long-range transport and dispersion of pollutants from a Megacity. Managed eight individuals, including a co-investigator from Pacific Northwest National Laboratories (PNNL, an electrical engineer and two undergraduate engineering students from Smith College, two undergraduate students from the Universidad de Morilo, an assistant from the Instituto Nacional de Ecologia, and a teacher from the Mohawk Regional school system. CMET balloons were successfully launched from within the Mexico City basin and used to guide research aircraft as far away as the Texas border. Analysis of the data is in progress.
- 2005 Collaborated with researchers at PNNL on the Southeast Texas Tetroon Study (SETTS). Our group's Controlled Meteorological (CMET) balloons tracked the Houston urban plume across Texas, making repeated soundings to measure both transport and dispersion. Coordinated flights with a Twin Otter research aircraft mapped ozone and chemical precursor fields in the advecting plume. The data will be used to test air pollution models and help Texas to develop its State Implementation Plan (SIP) for the EPA.
- 2004 Participation in the International Consortium for Atmospheric Research on Transport and Transformations (ICARTT) 2004 campaign. Flew altitude-controlled balloons in the New England air corridor, coordinating with mission planners, air traffic control, and local authorities. Balloon data was used to verify model trajectories during critical experiments and to guide flight planning for NOAA P3 and DC-3 research aircraft.
- 2002 – pres. Principle Investigator for the Atmospheric Research Laboratory at Smith College. Project aims to develop novel and low-cost balloons, airships, miniature aircraft, and sensor and employ them for atmospheric research. Objectives include tracking pollution plumes, conducting process studies, and making chemical and meteorological observations in remote regions (www.smith.edu/cmet).
- 1997 - 2002 Developed concise computer models of stratospheric chemistry that expose discrepancies in the understanding of inorganic chlorine partitioning.
- 1995 - 1997 Worked as part of a small team to develop a thermal dissociation / resonance fluorescence instrument for measuring ClONO₂ in the lower stratosphere. Instrument flew on NASA's high-altitude ER-2 aircraft during the POLARIS campaign in the summer of 1997 and made the first *in-situ* measurements of ClONO₂ in the lower stratosphere.
- 1992 - 1995 Developed remote computerized instruments to measure CO₂ concentrations at multiple locations in the Harvard Forest understory. Designed precision growth chambers and studied the response of seedlings to subtle diurnal cycles of light and CO₂.

- 1989 - 1990 Designed, built, and installed electronic heating control system for hybrid photovoltaic-thermal research building at Brown University.

Teaching Experience:

- 2006 – pres. Instructor for section of *Engineering for Everyone*, an introductory course at Smith College that is required for engineering majors and open to non-majors. Course focuses on energy and the environment, building quantitative skills, understanding the broader context, and doing hands-on design projects.
- 2006 - 2008 Instructor for *Continuum Mechanics II*, a required sophomore-level course in fluid mechanics in the Engineering Program at Smith College
- 2005 - 2006 Instructor for *Thermochemical Processes in the Atmosphere*, and upper level course in the Engineering Program at Smith College
- 2002 - 2005 Supervisor for 13 undergraduate students and one graduate student affiliated with the *Robotic Aerostat Research Lab* (see below)
- 2004 Instructor for *Physics and Chemistry of Clouds* (Seminar, University of Massachusetts, Amherst)
- 2004 Instructor for *Introduction to Atmospheric Chemistry* (Seminar, University of Massachusetts, Amherst)
- 2000 Teaching Assistant for *Introduction to the Chemistry and Climate of the Earth* (Harvard University).
- 1993 Teaching Assistant for *Introductory Biology* laboratory (Harvard University). See *Derek Bok* award above.

Advised Masters Theses

- 2005 Emily Riddle, Geosciences, UMass, Amherst
Meteorological sensor development and ICARTT data analysis

Advised Undergraduate Honors Theses

- 2005 Dan Holcomb, Electrical and Computer Engineering, UMass Amherst
Next generation flight hardware and control algorithms
- 2004 Mike Waud, Electrical and Computer Engineering, UMass Amherst
High efficiency photovoltaic-battery power system
- 2003 Robert Aquadro, Geosciences, UMass Amherst
Orbiting sensor for accurate ambient temperature measurements

Advised Independent Study Courses

- 2008 Katherine Mackenzie and Alexandra Deahl
Energy-efficient library for the town of Westhampton
- 2008 Taylor Buono, Johanna Pfeiffer, and Nisha Jordi
Energy-efficient library for the town of Westhampton
- 2007 Taylor Buono, Johanna Pfeiffer, and Stephanie Ericson
Energy-efficient library for the town of Westhampton
- 2006 Katherine Sheffield, Smith College Picker Engineering Program
Energy-efficient home design for the southeast United States

- 2006 Pam D'Amicis, Smith College Picker Engineering Program
Design of a high-altitude balloon envelope and participation in the MILAGRO atmospheric research campaign in Mexico City
- 2006 Indira Deonandan, Smith College Picker Engineering Program
Development of real-time mapping software for balloon flights and participation in the MILAGRO campaign in Mexico City
- 2005 Keith Washburh, Mechanical and Industrial Engineering
Lightweight diaphragm pump for the upper atmosphere
- 2004 Darren Maczka, Electrical and Computer Engineering
Flight electronics and software for ICARTT balloons

Advised Summer Internships

- 2007 Najia Ahmed, Smith College Picker Engineering Program
Study of efficient propulsion methods for Unmanned Aerial Systems
- 2007 Joyce Cheung, Smith College Picker Engineering Program
Development of a high efficiency turbine pump for air sampling
- 2006 Indira Deonandan, Smith College Picker Engineering Program
Development of a small and low-cost autonomous aircraft
- 2006 Jennifer Kirk, Smith College Picker Engineering Program
Development of a high-efficiency blower for a miniature airship
- 2006 Joyce Cheung, Smith College Picker Engineering Program
Design of a low-cost ozone instrument for school outreach programs
- 2004/5 Dan Holcomb, Electrical and Computer Engineering
Hardware and software for an altitude-controlled balloons
- 2004 Keith Washburh, Mechanical and Industrial Engineering
Gas handling system for an altitude-controlled balloon
- 2003 Liz Koenig, Smith College Engineering
High-pressure balloon for altitude control system
- 2003 Randy Leiter, Physics
Parachute design
- 2002 Jacob Braun, Physics
Satellite modem communications system development
- 2002 Jie Zheng, Smith College Engineering
Lightweight winch for altitude regulation of superpressure balloons

Advised Group Design Projects

- 2004 Rob Vice, Vanessa Dube, Chathan Srinivasa, and Mike Jao
Co-advisor: Prof. Robert Jackson
Electrical and Computer Engineering
Acoustic anemometer for high accuracy measurement of air motion

Refereed Publications

Shinozuka, T.L. Campos, C.G. Heizer, B.B. Stephens, B. de Foy, **P.B. Voss** and R.A. Zaveri, Black carbon over Mexico: The effect of atmospheric transport on mixing state, mass absorption cross-section, and BC/CO ratios, Submitted to *Atmospheric Chemistry and Physics*, Sept., 2009

Riddle, E.E, **P.B. Voss**, A Stohl, D. Holcomb, D. Maczka, K. Washburn, and R.W. Talbot, Trajectory model validation during ICARTT-2004 using newly developed altitude-controlled balloons, *J. Geophys. Res.*, 111, 2006.

Voss, P.B., E.E. Riddle, and M.S. Smith, Altitude Control of Planetary Balloons, American Institute of Aeronautics and Astronautics (AIAA) *Journal of Aircraft*, 43 (2), 478-482, 2005

Voss, P.B., R.M. Stimpfle, R.C. Cohen, R.J. Salawitch, T.F. Hanisco, G.P. Bonne, K.K. Perkins, E.J. Lanzendorf, J.G. Anderson, C.R. Webster, D.C. Scott, R.D. May, J.J. Margitan, P.O. Wennberg, P.A. Newman, L.R. Lait, J.W. Elkins, T.P. Bui, Chlorine Partitioning in the summer lower stratosphere: A comparison of modeled and measured [HCl]/[ClONO₂] during POLARIS, *J. Geophys. Res.*, 106, 1543-1553, 2001.

K.K. Perkins, T.F. Haisco, R.C. Cohen, L.C. Koch, R.M. Stimpfle, **P.B. Voss**, G.P. Bonne, E.J. Lanzendorf, J.G. Anderson, P.O. Wennberg, R.S. Gao, L.A. DelNegro, R.J. Salawitch, C.T. McElroy, E.J. Hints, M. Lowenstein, and T.P. Bui, The NO_x-HNO₃ system in the lower stratosphere: Insights from in situ measurements and implications for the J(HNO₃)-[OH] relationship, *J. Phys. Chem A*, 105, 1521-1534, 2001.

Hanisco, T.F., E.J. Lanzendorf, P.O. Wennberg, K.K. Perkins, R.M. Stimpfle, **P.B. Voss**, J.G. Anderson, R.C. Cohen, D.W. Fahey, R.S. Gao, E.J. Hints, R.J. Salawitch, J.J. Margitan, C.T. McElroy, C. Midwinter, Sources, sinks, and the distribution of OH in the lower stratosphere, *J. Phys. Chem A*, 105, 1543-1553, 2001.

Cohen, R.C., K.K. Perkins, L.C. Koch, R.M. Stimpfle, P.O. Wennberg, T.F. Hanisco, E.J. Lanzendorf, G.P. Bonne, **P.B. Voss**, R.J. Salawitch, L.A. DelNegro, J.C. Wilson, C.T. McElroy, T.P. Bui, Quantitative constraints on the atmospheric chemistry of nitrogen dioxides, An analysis along chemical coordinates, *J. Geophys. Res.*, 105, 24,283-24,304, 2000.

Bonne, G.P., R.M. Stimpfle, R.C. Cohen, **P.B. Voss**, K.K. Perkins, J.G. Anderson, C.R. Webster, D.C. Scott, R.D. May, R.J. Salawitch, J.W. Elkins, K.W. Jucks, G.C. Toon, and B. Sen, An examination of the inorganic chlorine budget in the lower stratosphere, *J. Geophys. Res.*, 1957-1971, 2000.

Sen, B., B.B. Osterman, R.J. Salawitch, G.C. Toon, J.J. Margitan, J.-F. Blavier, A.Y. Chang, R.D. May, C.R. Webster, R.M. Stimpfle, G.P. Bonne, **P.B. Voss**, K.K. Perkins, J.G. Anderson, R.C. Cohen, J.W. Elkins, G.S. Dutton, D.F. Hurst, P.A. Romashkin, E.L. Atlas, S.M. Schauffler, and M. Lowenstein, The budget and partitioning of stratospheric chlorine during POLARIS, *J. Geophys. Res.*, 104, 26,653-26,665, 1999.

Del Negro, L.A., D.W. Fahey, R.S. Gao, S.G. Donnelly, E.R. Keim, J.A. Neuman, R.C. Cohen, K.K. Perkins, L.C. Koch, R.J. Salawitch, S.A. Lloyd, M.H. Proffitt, J.J. Margitan, R.M. Stimpfle, G.P. Bonne, **P.B. Voss**, P.O. Wennberg, C.T. McElroy, W.H. Swartz, T.L. Kusterer, D.E. Anderson, L.R. Lait, and T.P. Bui, Comparison of modeled and observed values of NO₂ and J_{NO2} during the Photochemistry of Ozone Loss in the Arctic Region in Summer (POLARIS) mission, *J. Geophys. Res.*, 104, 26,687-26,704, 1999.

Stimpfle, R.M., R.C. Cohen, G.P. Bonne, **P.B. Voss**, K.P. Perkins, L.C. Koch, J.G. Anderson, R.J. Salawitch, S.A. Lloyd, R.S. Gao, L.A. Del Negro, E.R. Keim, and T.P. Bui, The coupling

of ClONO₂, ClO, and NO₂ in the lower stratosphere from *in situ* observations using the NASA ER-2 aircraft, *J. Geophys. Res.*, 104, 26,705-26,715, 1999.

Cavender-Bares, J., **P. B. Voss**, and F. A. Bazzaz, Consequences of incongruity in diurnally-varying resources for *Rumex crispus* (polygonaceae), *Am. J. Bot.*, 85(9), 1998.

Voss, P.B. and F.A. Bazzaz, Improved gas sampling system for plant research, *Bul. Ecol. Soc. Am.*, June, 1994.

Proceeding of Meetings

Voss, P.B., Advances in Controlled Meteorological (CMET) balloon systems, *Proceedings of the 20th AIAA Aerodynamic Decelerator Systems Technology Conference and Seminar and 18th AIAA Lighter-Than-Air Systems Technology conference and AIAA Balloons Systems conference*, Seattle, Washington, May 4-7, 2009. (AIAA-2009-164928)

Voss, P.B., D.E. Holcomb, R.A. Zaveri, and C.M. Berkowitz, Integrated system optimization of Controlled Meteorological (CMET) balloons, *Proceedings of AIAA's 5th Annual Aviation Technology, Integration, and Operations (ATIO) Conference and AIAA 16th Lighter-Than-Air Systems Technology conference and AIAA Balloons Systems conference*, Arlington, Virginia, Sept 26-28, 2005. (AIAA-2005-7387)

Science Team Meetings (Posters Presentations)

Voss, P.B., R. A. Zaveri, T. Hartley, P. DeAmicis, I. Deonandan, O. Martinez-Antonio, G. Contreras-Jiménez, D. Greenberg, M. Estrada, F. Flocke, S. Madronich, L. Kleinman, S. Springston, J. Hubbe, B. de Foy, Evidence of long-range transport of Mexico City outflow based on CMET balloon trajectories during the MILAGRO 2006 campaign, MILAGRO Science Team Meeting, Boulder, CO, October 23-25, 2006

Voss, P.B., E.E. Riddle, D. Mazka, D. Holcomb, K. Washburn, R.W. Talbot, A. Stohl, CMET Balloon Observations of Urban Plumes during ICARTT-2004, ICARTT Study Workshop, Durham, NH, Aug 9-12, 2005

Riddle, E.E., **P.B. Voss**, D. Mazka, D. Holcomb, K. Washburn, R.W. Talbot, A. Stohl, Trajectory Model Validation Using CMET Balloons during ICARTT-2004, ICARTT Study Workshop, Durham, NH, Aug 9-12, 2005

Conference Abstracts

Voss, P.B., Measurements by mail: Satellite-controlled balloons for making real-time atmospheric observations anywhere on Earth, American Geophysical Union Fall Meeting, San Francisco, CA, Dec. 15-19, 2008

Voss, P.B., Zaveri, R., Hartley, T., Deonandan, I., DeAmicis, P., Martinez Antonio, O., Contreras Jiménez, G., Greenberg, D., Estrada, M., Flocke, F., Madronich, S., Kleinman, L., Springston, S., Hubbe, J., de Foy, B., and Mao, H. Reconstruction of trajectories, mixing, and dispersion of a Mexico City pollution outflow event using in-situ observations from free-floating altitude-controlled balloons. *American Geophysical Union Fall Meeting*, San Francisco, CA, Dec. 10-14, 2007

Zaveri, R. A., Chapman, E. G., Easter, R. C., Fast, J. D., Flocke, F., Kleinman, L. I., Madronich, S., Springston, S. R., **Voss, P. B.**, and Weinheimer, A. Modeling gas-aerosol processes during MILAGRO 2006. *American Geophysical Union Fall Meeting*, San Francisco, CA, Dec. 10-14, 2007

Flocke, F., Weinheimer, A., Hodzic, A., Emmons, L., McKenna, D., Tie, X., Madronich, S., Zheng, W., Montzka, D., Knapp, D., Campos, T., Apel, E., Hills, A., Mauldin, L., Cantrell, C., Anderson, R., Kosciuch, E., Jimenez, J., DeCarlo, P., Dunlea, E., Aiken, A., Atlas, E., Blake, D., Meinardi, S., Baker, A., Beyersdorf, A., Karl, T., Clarke, T., Shinozuka, Y., McNaughton, C., Zhou, J., Springston, S., Skamarock, W., Fast, J., **Voss, P.**, Zaveri, R., Wennberg, P., Crounse, J., and McCabe, D. Reactive nitrogen chemistry in Mexico City outflow - A unique case, *American Geophysical Union Fall Meeting*, San Francisco, CA, Dec. 10-14, 2007

Voss, P.B. R.A. Zaveri, C.M. Berkowitz, E.E. Riddle, R. W. Talbot, and A. Stohl, Improved techniques for measuring physical and chemical transformations in the atmosphere: observations of pollution transport, wind shear, and profile evolution using controlled meteorological balloons, *AGU Fall Meeting Program and Abstracts*, San Francisco, 2004.

Voss, P.B. E.E. Riddle, D. Maczka, D. Holcomb, K Washburn, M. Waud, R.W. Talbot, and A. Stohl, Long-range urban plume transport during the ICARTT campaign: an analysis of Lagrangian balloon observations, *AGU Fall Meeting Program and Abstracts*, San Francisco, 2004.

Voss, P.B. E.E. Riddle, D. Maczka, D. Holcomb, K Washburn, and M. Waud, A small altitude-controlled balloon for making in situ meteorological observations, *First THORPEX International Science Symposium*, Montreal, 2004.

Voss, P.B. E.E. Riddle, M.S. Smith, R.J. Aquadro, M. Waud, and D. Maczka, Altitude controlled balloons for atmospheric research, *AGU Fall Meeting Program and Abstracts*, San Francisco, 2003.

Voss, P.B. and J.G. Anderson, Lagrangian balloons for the stratospheric research, *Arctic Ozone Loss Workshop*, Alfred-Wegener-Institut für Polar- und Meeresforschung, Potsdam, 2002.

Voss, P.B., R.M. Stimpfle, D.M. Wilmouth, K.K. Perkins, T.F. Hanisco, E.J. Lanzendorf, J.R. Spackman, J.B. Smith, and J.G. Anderson, C.R. Webster, R.J. Salawitch, B.W. Ganrud, E.C. Richard, P.O. Wennberg, and P.A. Newman, Inorganic chlorine partitioning along trajectories in the northern hemisphere polar vortex, *Gordon Conference on Atmospheric Chemistry*, Newport, 2001

Voss, P.B., R.M. Stimpfle, D.M. Wilmouth, K.K. Perkins, T.F. Hanisco, E.J. Lanzendorf, J.R. Spackman, J.B. Smith, and J.G. Anderson, Chlorine partitioning during the SOLVE campaign: understanding the recovery of ClONO₂ and HCl following heterogeneous processing events, *AGU Fall Meeting Program and Abstracts*, San Francisco, 2000.

Voss, P.B., R.M. Stimpfle, D.M. Wilmouth, K.K. Perkins, T.F. Hanisco, E.J. Lanzendorf, J.R. Spackman, J. B. Smith, and J.G. Anderson, Constrained models of chlorine partitioning during the SOLVE campaign: understanding the recovery of ClONO₂ and HCl following heterogeneous processing events, *SOLVE-Theseo Science Meeting, Palermo, 2000*.

Voss, P.B., R.M. Stimpfle, G.P. Bonne, K.K. Perkins, T.F. Hanisco, E.J. Lanzendorf, J.G. Anderson, R.C. Cohen, C.R. Webster, D.C. Scott, R.D. May, J.J. Margitan, P.O. Wennberg, R.S. Gao, T.P. Bui, P.A. Newman, and L.R. Lait, Chlorine partitioning in the summer lower stratosphere: POLARIS observations support known gas-phase chemistry, *AGU Fall Meeting Program and Abstracts, 2000*.

Voss, P.B. and F.A. Bazzaz, Heterogeneity of carbon dioxide on the forest floor: a study of three forest types, *Abstracts of the Ecological Society of America Annual Meeting*, 1994.

Invited Presentations

- 2009 Invited talk for the Joint Colloquium Series at the Department of Earth and Atmospheric Sciences and the Atmospheric Sciences Research Center. State University of New York in Albany, "Teaching an old dog some new tricks: satellite-controlled balloons for making in-situ atmospheric observations"
- 2003 Invited talk at the University of New Hampshire, Durham, "Development of a high-altitude balloon for atmospheric research"
- 1992 Invited talk at the Brown University Department of Visual Arts, "The fountains and gardens of ancient Rome"

Other Lectures, Presentations, and Panels

- 2009 *WGBY Watercooler with Susan Kaplan*, Feb. 11, 2009
Panelist on *Going Green*
- 2008 *WGBY Watercooler with Susan Kaplan*, Oct. 29, 2008
Panelist on *Presidential Candidates' Proposals on Energy and Environment*
- 2007 Landscape Architecture Lecture Series, Smith College
Energy, Atmosphere, and Landscape: An Introduction to Sustainable Engineering using Models, Mortar, Microcontrollers, and Mayhem
- 2005 Sigma Xi Lecture, Smith College
Long-Range Transport of Urban Air Pollution: New Observations using the World's Smallest Controllable Balloons
- 2005 Architecture Studio Class, Smith College
Air Pollution and Megacities: Mexico City
- 2003 Climate System Research Center, University of Massachusetts, Amherst
Development of a Small Autonomous Platform Atmospheric Research
- 2002 Lecture for Electrical Engineering course at Smith College
Principles and Applications of Photovoltaic Power
- 2001 Professional Seminar at the University of Massachusetts, Amherst.
Balloons for Baboons: A New Lagrangian Platform for Studying Stratospheric Ozone and Climate Change

Manuscript Reviews

Journal of Geophysical Research - Atmospheres

Proposal Reviews

Proposal reviewer for NSF Atmospheric Chemistry Program

Session Chair and Co-Chair

Transport and Transformation of Air Pollution From Regional to Global Scales VI (A51E), *American Geophysical Union Fall Meeting Fall Meeting*, San Francisco, CA, Dec. 10-14, 2007

Flight and Flight Support Session, *AIAA's 5th Annual Aviation Technology, Integration, and Operations (ATIO) Conference and AIAA 16th Lighter-than-air systems technology conference and balloons systems conference*, Arlington, VA, Sept 26-28, 2005

Art Installations

- 1997 – pres. Created *Grotto*, a site-specific photovoltaic fountain and wetland installation commissioned by the DeCordova Museum and Sculpture Park in Lincoln, Massachusetts
- 1998 - 1999 Selected as a finalist for the Artery Arts Program Fort Point Channel surface restoration (verbal notification only). Project cancelled prior to final selection due to state-level budget cuts

Patents

- 2004 Voss, P.B., "System and method for altitude control", U.S. Pat. No. 7,469,857B2, Issued 30 Dec., 2008.
- 2004 Voss, P.B., and M.S. Smith, "Superpressure disk balloon and method of making the same", U.S. Prov. Pat. (not maintained)
- 1999 Voss, P.B., "Shadowing timer for a photovoltaic solar cell array" U.S. Pat. No. 6,031,177, Issued 29 Feb., 2000 (not maintained)