

## Curriculum Vitae

### **Dork L. Sahagian**

Environmental Initiative &  
Dept. of Earth & Environmental Sci.  
Lehigh University  
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#### **Education:**

B.S., Physics; Minor in The Human Dimensions of Science and Technology  
Rensselaer Polytechnic Institute, 1977

M.S., Geology, Rutgers University, 1980

Thesis, Sublithospheric Upwelling Distribution: Implications Regarding Mantle Convection

Ph.D., Geophysics, The University of Chicago, 1987

Thesis, Epeirogeny and Eustatic Sea Level as Inferred from Cretaceous Shoreline Deposits

#### **Present Position:**

2004-present Professor of Earth and Environmental Sciences

#### **Editorships:**

2004- present Associate Editor, J. Geophys. Res.- Biogeosciences

2001- 2006 Editorial Board, Journal of Geodynamics

1999- 2002 Editorial board, Geology

1993- 2001 Associate Editor, Journal of Geodynamics

1992-1993 Executive Editor, Geochimica et Cosmochimica Acta

Guest Editor for various journal Special Issues

#### **Awards:**

2007 Nobel Peace Prize as part of the International Panel on Climate Change (IPCC),  
shared with Al Gore

#### **Past Positions:**

2004-2010 Director, Lehigh Environmental Initiative

1994-2004 Research Professor and Executive Director, Global Analysis, Integration and  
Modelling Task Force of the International Geosphere Biosphere Program  
(IGBP/GAIM) website- <http://gaim.unh.edu>

- 1989-1994 Full Research Scientist, Byrd Polar Research Center, Ohio State University
- 1988-1989 Associate Research Scientist, Lamont-Doherty Geological Observatory, Columbia University
- 1987-1988 NORDA Research Scientist, Thayer School, Dartmouth College
- 1985-1986 Research Technologist, The University of Chicago, Paleogeographic Atlas Project
- 1981-1985 Research Assistant, The University of Chicago
- 1981 Research Associate, Univ. of Texas Marine Science Institute, Gulf of Mexico Tectonic Evolution Project Ocean Margin Drilling Project
- 1976-1977 Research Technician, Rensselaer Polytechnic Institute, Fusion Development Tokamak Project

**Teaching Experience:**

- 2004-present Lehigh University  
 Introduction to Environmental Sciences (EES/ES2)  
 Tsunami!  
 Earth System Science  
 Volcanology  
 Earth History  
 Scientific Foundations for Environmental Policy Design
- 1994-2004 University of New Hampshire  
 Human-Climate Interactions  
 Introductory Earth Science
- 1989-1994 The Ohio State University  
 Advanced Historical Geology  
 Basin Analysis & Passive Margin Development  
 Structural Geology  
 Geodynamics  
 Pleistocene Sea Level Variations (Field course-Bahamas)  
 Volcanology  
 Introductory Geology
- 1986-1987 Course Developer/Coordinator, University of Chicago  
 Physical Science 108, 110 (Intro. Geology)
- 1981-1984 Laboratory Instructor, The University of Chicago  
 Physical Science 108, 109  
 Mineralogy/Petrology  
 Physics of the Earth

1978-1980 Adjunct Professor, Seton Hall University; Upsala College; Middlesex Co. Coll.  
Physics II, 101, 121  
Basic Astronomy  
Physics PY3  
Introduction to Earth Science  
Physical Geology 151

**New Curricula Developed (in collaboration with colleagues):**

Natural Resources and Earth System Science Ph.D. program- Assisted in development of program across several departments in 4 colleges within UNH. Two departments relinquished their Ph.D.s to the integrated program, and it quickly became the largest Ph.D. program at UNH.

M.A. in Environmental Policy Design- This innovative degree is formulated to produce policy-makers who can design new policy that is environmentally effective while being economically feasible, socially palatable, politically expedient, and ethically justifiable. It is a major step forward from compliance-based approaches limited to cost-benefit analysis.

B.A. in Environmental Studies- This is the foundation of the undergraduate curriculum of the Environmental Initiative at Lehigh. An associated Minor includes a subset of courses.

**Elected Office:**

2002-2004 Secretary, AGU Biogeosciences Section

**Field and Sea Experience:**

- 1981 Gulf of Mexico, Multichannel Seismic Reflection Profiling, Participating Scientist aboard Research Vessel Fred Moore
- 1983 Western U. S. Cross Section, Salt Lake City to Tybo (Basin and Range), Grand Canyon to Chicago
- 1984 Mount Shasta, California, Collection and Measurement of Vesicular Basalts
- 1985 Canadian Rockies Structural Cross Section, Drumheller to Vancouver Island
- 1986 Australia, Great Barrier Reef- Responses to Sea Level Change
- 1986 Australia, Structural and Stratigraphic Evolution of Amadeus Basin and MacDonnell Range
- 1990 San Salvador, Bahamas, Pleistocene sea level variations as recorded in platform carbonates
- 1990 Mauna Loa, Hawaii, Collection of high and low elevation basalts for testing of atmospheric pressure sensitivity

- 1991 Russian Platform, Russia, Measurement and sampling of Mesozoic strata for construction of Calibrated Eustatic Sea Level Curve
- 1993 Northern Siberia, Russia, Sequence Stratigraphy and Biostratigraphy of Mesozoic Strata for Augmentation of Eustatic Sea Level Curve based on the Russian Platform
- 1999 Hawaii, Basalt sample collection for paleoelevation calibration
- 2000, 2002 Colorado Plateau (CO, UT, AZ, NM), Vesicular basalt collection for tectonic uplift analysis.
- 2007 Tibet, Fieldwork for tectonic uplift analysis
- 2013 Mongolia, Fieldwork for tectonic uplift analysis

**Professional Societies:**

- American Geophysical Union
- Geological Society of America
- Council of Environmental Deans and Directors, Nat'l Council for Science and the Environment

**Books Published:**

A User's Guide for Planet Earth: Fundamentals of Environmental Science, Cognella Academic Publishing, ISBN: 978-1-62131-913-9 Copyright 2015. (Textbook for introductory college courses)

**Refereed Publications:**

D. L. Sahagian, 1980. Sublithospheric upwelling distribution, Nature, 287, 217-218.

S. Locker and D. L. Sahagian, 1984. Tectonic features, in Gulf of Mexico, Ocean Margin Drilling Regional Atlas Series (R. Buffler, S. Locker, W. Bryant, S. Hall, R. Pilger, Eds.), 6, 26.

D. L. Sahagian, 1985. Bubble migration and coalescence during the solidification of basaltic lava flows, J. Geol., 93, 205-211.

A. M. Ziegler, D. B. Rowley, A. Lottes, D. L. Sahagian, M. Hulver, and T. Gierlowski, 1985. Paleogeographic interpretation: With an example from the mid-Cretaceous, Ann. Rev. Earth and Planet. Sci., 13, 385-425.

D. B. Rowley and D. L. Sahagian, 1986. Depth-dependent stretching: A different approach, Geology, 14, 32-35.

- D. L. Sahagian, 1987. Epeirogeny and eustatic sea level as inferred from Cretaceous shoreline deposits: Applications to the central and western United States, J. Geophys. Res., 92, 4895-4904.
- D. L. Sahagian, 1988. Ocean temperature-induced change in lithospheric thermal structure: A mechanism for long-term eustatic sea level change, J. Geol., 96, 254-261.
- D. L. Sahagian, 1988. Epeirogenic motions of Africa as inferred from Cretaceous shoreline deposits, Tectonics, 7, 125-138.
- D. L. Sahagian, 1989. The Epeirogeny of Europe and western Asia, Cret. Res., 10, 33-48.
- D. L. Sahagian, A. T. Anderson, and B. Ward, 1989. Bubble coalescence in basalt flows: Comparison of a numerical model with natural examples, Bull. Volcanology, 52, 49-56.
- D. L. Sahagian, 1990. Tectonic controls on sea level change, U.S.G.S. Open File Report, OF90-0309, 232-236.
- D. L. Sahagian & A.B. Watts, 1991. Introduction to the Special Section on Measurement, Causes and Consequences of Long-term Sea Level Changes, J. Geophys. Res., 96, 6585-6590.
- D.L. Sahagian and S.M. Holland, 1991. A eustatic curve based on a stable frame of reference, Preliminary Results, Geology, 19, 1209-1212.
- D.L. Sahagian and A.B. Watts, 1991. Structural Evolution of African Basins, in Basin Analysis of Africa, Sec. 2, (D. Fairhead, ed.), Leeds, U.K.
- D.L. Sahagian and A.A. Proussevitch, 1992. Bubbles in volcanic systems, Nature, 359, 485.
- H. Noltimier and D.L. Sahagian, 1992. Tectonic style of Venus: An analog to Arctic icepack tectonics, J. Geodynamics, 16, 65-79.
- D.L. Sahagian, 1993. More bubbles in volcanic systems, Nature, 361, 308.
- D.K. Jacobs and D.L. Sahagian, 1993. Climate-induced fluctuations in sea level during non-glacial times, Nature, 361, 710-712.
- D.L. Sahagian and J.W. Collinson, 1993. Gondwanan foreland basin along the Panthalassan margin of Antarctica, in Gondwana Eight, (Findlay, et al., eds.), Balkema, Rotterdam, 497-506.
- D.L. Sahagian and S.M. Holland, 1993. On the Thermo-Mechanical Evolution of Continental Lithosphere, J. Geophys. Res., 98, 8261-8274.
- D.L. Sahagian, 1993. Structural evolution of African basins: Stratigraphic synthesis, Basin Research, 5, 41-54.
- D.L. Sahagian and M. Jones, 1993. Quantified Mid-Jurassic through Paleogene eustatic variations based on Russian platform stratigraphy: Stage-level resolution, Geol. Soc. Am. Bull., 105, 1109-1118.

- A. Proussevitch, D. Sahagian, & V. Kutolin, 1993. Stability of foams in silicate melts, J. Volc. Geotherm. Res., 57, 161-178.
- A.A. Proussevitch, D.L. Sahagian, and A.T. Anderson, 1993. Dynamics of diffusive bubble growth in magmas: Isothermal case, J. Geophys. Res., 98, 22283-22307.
- D.L. Sahagian, F.W. Schwartz, and D.K. Jacobs, 1994. Direct anthropogenic contributions to sea level rise in the twentieth century, Nature, 367, 54-57.
- A.A. Proussevitch, D.L. Sahagian, and A.T. Anderson, 1994. Dynamics of diffusive bubble growth in magmas: Isothermal case - Reply to comment by S. Sparks, J. Geophys. Res., 99, 17829-17832.
- D.L. Sahagian, D.K. Jacobs, and F.W. Schwartz, 1994. Direct anthropogenic contributions to sea level rise in the twentieth century - Reply to comment by W. Greuell, Nature, 369, 616.
- D.L. Sahagian, D.K. Jacobs, and F.W. Schwartz, 1994. Direct anthropogenic contributions to sea level rise in the twentieth century - Reply to separate comments by B. Chao & E. Rodenberg, Nature, 370, 258.
- D.L. Sahagian, A.L. Beisel, and V.A. Zakharov, 1994. Sequence Stratigraphic Enhancement of Biostratigraphic Correlation with Application to the Upper Cretaceous of Northern Siberia: A Potential Tool for Petroleum Exploration, Int. Geol. Rev., 36, 359-372.
- D.L. Sahagian and J. Maus, 1994. Basalt vesicularity as a measure of atmospheric pressure, Nature, 372, 449-451.
- D.K. Jacobs & D.L. Sahagian, 1995. Milankovitch fluctuations in sea level and recent trends in sea level change: Ice may not always be the answer, in Sequence Stratigraphy and Depositional Response to Eustatic, Tectonic, and Climatic Forcing (B. Haq, ed.), Kluwer Academic Publ., The Netherlands, 329-366.
- A.A. Proussevitch and D.L. Sahagian, 1996. Dynamics of coupled diffusive and decompressive bubble growth prior to volcanic eruption, J. Geophys. Res., 101, 17447-17456.
- D.L. Sahagian, O. Pinous, A. Olferiev, V. Zakharov, and A. Beisel, 1996. Eustatic Curve for the Middle Jurassic through Cretaceous based on Russian Platform and Siberian Stratigraphy: Zonal Resolution, Amer. Assoc. Petrol. Geol. Bull., 80, 1433-1458.
- D.L. Sahagian and A.A. Proussevitch, 1996. Thermal effects of magma degassing, J. Volc. Geotherm. Res., 74, 19-38.
- D. Sahagian and B. Moore III, 1996. Introduction to Special Section: Global Analysis, Interpretation, and Modelling - Toward the integration of global biogeochemical systems, Global Biogeochem. Cycles, 10, 675.

- A.A. Proussevitch and D.L. Sahagian, 1998. Dynamics and Energetics of Bubble Growth in Magmas: Analytical Formulation and Numerical Modeling, J. Geophys. Res., 103, 18223-18251.
- V. Zakharov, B. Shurygin, M. Levchuk, O. Pinous, and D. Sahagian, 1998, Eustatic signals in the Jurassic and Lower Cretaceous (Neocomian) deposits of the West-Siberian sedimentary basin. Geologiya I Geofizika, 39, 1492-1504.
- D. Sahagian, and A.A. Proussevitch, 1998. 3D Particle Size Distributions from 2D Observations: Stereology for Natural Applications, J. Volc. Geotherm. Res., 84, 173-196.
- O. Pinous, M. Akhmetiev, and D. Sahagian, 1999, Sequence stratigraphy and sea-level history of Oligocene strata of the northern Aral Sea region (Kazakhstan): Implications for glacioeustatic reconstructions. Geol. Soc. Am. Bull., 111, 1-10.
- O. Pinous, Y. Karogodin, S. Ershov, and D. Sahagian, 1999, Sequence stratigraphy, facies, and sea-level change of the Hauterivian productive complex of the Priobskoe oil field (West Siberia), AAPG Bull., 83, 972-989.
- D. Sahagian, and A.A. Proussevitch, 1999, Reply to comment on "Dynamics and Energetics of Bubble Growth in Magmas: Analytical Formulation and Numerical Modeling", J. Geophys. Res., 104, 5129.
- O. Pinous, D. Sahagian, Boris Shurygin, and Victor Zakharov, 1999, High-resolution sequence stratigraphic analysis and sea-level interpretation of the Middle and Upper Jurassic strata of the Nyurolskaya Depression and vicinity (southeastern West Siberia, Russia), Marine & Petrol. Geol., 16, 245-257.
- D. Sahagian, 1999, Magma fragmentation in eruptions, Nature, 402, 589-591.
- D. Sahagian and S. Zerbini, Global and Regional Sea-Level Changes and the Hydrological Cycle, Eos, 81, 364, 2000
- D. Sahagian, 2000, Global Physical Effects of Anthropogenic Hydrological Alterations: Sea Level and Water Redistribution, Global & Planet. Change, 25, 39-48
- C. Vorosmarty and D. Sahagian, 2000, Anthropogenic disturbance of the terrestrial water cycle. Bioscience, 50, 753-765.
- O. V. Pinous, M. A. Levchuk, and D. L. Sahagian, 2001, Regional synthesis of the productive Neocomian complex of West Siberia: Sequence stratigraphic framework, AAPG Bull., 85, 1713-1730.
- A.A. Proussevitch, and D. L. Sahagian, 2001, Recognition and separation of discrete objects within complex 3D voxelized structures, Comput. Geosci. 27, 441-454.
- S.-R. Song, K. Jones, W.B. Lindquist, B. Dowd, and D. Sahagian, 2001, Synchrotron X-Ray Computed Microtomography: Studies on Vesiculated Basaltic Rocks, Bull. Volcanol. 63, 252-263.

- D. Sahagian and S. Zerbini, 2001, Global and Regional Sea-Level Changes and the Hydrological Cycle, Global & Planetary Change, 32, vi-viii.
- D. Sahagian, A. Proussevitch, and W. Carlson, 2002, Analysis of vesicular basalts and lava emplacement processes for application as a paleobarometer/paleoaltimeter, J. Geol., 110, 671-685.
- D. Sahagian, A. Proussevitch, and W. Carlson, 2002, Timing of Colorado Plateau Uplift: Initial constraints from vesicular basalt-derived paleoelevations, Geology , 30, 807-810
- A. Frappier, D. Sahagian, L. Gonzales, and S. Carpenter, 2002, El Niño events recorded by stalagmite carbon isotopes, Science, 298, 565.
- D. Sahagian, A. Proussevitch, and W. Carlson, 2003, Timing of Colorado Plateau uplift: Initial constraints from vesicular basalt-derived paleoelevations: Reply, Geology , 31, 192.
- D. Sahagian, A. Proussevitch, and W. Carlson, 2003, Analysis of vesicular basalts and lava emplacement processes for application as a paleobarometer/paleoaltimeter: Reply, J. Geol., 111, 502-504.
- H. Shin, W. B. Lindquist, D. Sahagian, S. Song, 2004, Analysis of the vesicular structure of basalts, Comput. Geosci., 31, 473-487.
- A. Proussevitch, and D. Sahagian, 2005, Standardized model runs and sensitivity analysis using the "Bubbledrive" volcanic conduit flow model, J. Volc. Geotherm. Res., 143, 173-186.
- A. Proussevitch and D. Sahagian, 2005, Bubbledrive-1: A numerical model of volcanic eruption mechanisms driven by disequilibrium magma degassing, J. Volc. Geotherm. Res., 143, 89-111.
- D. Sahagian, 2005, Paleoelevation measurement: Combining proxies and approaches, EOS Trans. AGU, 86 (48), 500.
- D. Sahagian, Volcanic eruption mechanisms: Insights from intercomparison of models of conduit processes, J. Volc. Geotherm. Res., 143, 1-16, 2005.
- A. Frappier, D. Sahagian, S. Carpenter, L. Gonzalez, and B. Frappier, 2007, Stalagmite stable isotope record of recent tropical cyclone events, Geology, 35, 11-114.
- A. Proussevitch, D. Sahagian, and E. Tsentalovich, 2007, Statistical Analysis of Bubble and Crystal Size Distributions: Formulations and Procedures, J. Volc. Geotherm. Res., 164, 95-111.
- A. Proussevitch and D. Sahagian, W. Carlson, 2007, Statistical Analysis of Bubble and Crystal Size Distributions: Application to Colorado Plateau Basalts, J. Volc. Geotherm. Res., 164, 112-126.
- D. Sahagian and A. Proussevitch, 2007, Paleoelevation measurement on the basis of vesicular basalts, Rev. Min. Geochem., 66, 195-213.



- D. Sahagian, 2007, *Interactive comment on “Impact vesiculation – a new trigger for volcanic bubble growth and degassing” by D. A. Rothery et al.*, *eEarth Discuss.*, 2, S188-S121. [www.electronic-earth-discuss.net/2/S118/2007/](http://www.electronic-earth-discuss.net/2/S118/2007/)
- C. Kiely, D. Sahagian, S.R. Claves, W.Z. Misiolek and C.J. Kiely, 2007, X-ray Ultramicroscopy within an XL30 Environmental SEM, *Microsc Microanal* 13, DOI: 10.1017/S1431927607078701
- J. Johnson, J. Lees, A. Gerst, D. Sahagian & N. Varley, 2008, Long-period earthquakes and co-eruptive dome inflation seen with particle image velocimetry, *Nature*, 456, 377-381
- D.L. Sahagian, (Lead author) Geodetic observation to enhance security of a growing global society, in “The Global Geodetic Observing System (GGOS): Meeting the requirements of a global society on a changing planet in 2020”, H-P Plag and M. Pearlman (Eds.) 332 p., 2009.
- P. Milly, A. Cazenave, J. Famiglietti, V. Gornitz, K. Laval, D. Lettenmaier, D. Sahagian, J. Wahr and C. Wilson, Terrestrial water storage contributions to sea level rise and variability, in Understanding sea level rise and variability, J. J. Church, et al., eds. Blackwell Publishing, Inc., 2010
- Proussevitch, A. Mulukutla, G. and Sahagian, D. 2011. A New 3D Method of Measuring Bubble Size Distributions From Vesicle Fragments Preserved On Surfaces Of Volcanic Ash Particles Geosphere; February 2011; v. 7; no. 1; p. 1–8; doi: 10.1130/GES00559.1
- C. Dempsey, A. Bodzin, D. Anastasio, D. Sahagian, and L. Cirucci, Reconstructing environmental change using lake varves as a climate proxy, *Science Scope*, 35, 42-47, 2012.
- K. Genareau, G. Mulukutla, A. Proussevitch and D. Sahagian, Sizing up the bubbles that result in very fine ash production during explosive volcanic eruptions, *Geophys. Res. Lett.*, 39, DOI: 10.1029/2012GL052471, 2012
- C. Dempsey, A. Bodzin, D. Anastasio, D. Sahagian, and L. Cirucci, Investigating Future Climate Scenarios: Who will be affected by Sea Level Rise? *Science Scope*, 36, 77-85, Dec. 2012.
- V. Kulo, A Bodzin, R. McKeon, L. Cirucci, D. Anastasio, D. Sahagian, and T. Peffer, The Isle of Navitas: Planning for Energy Use with Web GIS, *Science Scope*, 36, 30-37, 2013.
- K. Genareau, G. Mulukutla, A Proussevitch, A. Durant, W. Rose, and D. Sahagian, The Size Range of Bubbles That Produce Ash During Explosive Volcanic Eruptions, *J. Applied Volcanology*, 2, 4, 2013. doi:10.1186/2191-5040-2-4
- B. Gillette, C. Dempsey, A. Bodzin, D. Anastasio, D. Sahagian, L. Cirucci. LETTERS. *Science Scope* [serial online]. March 2013; 36(7):6-7
- S. Na, D. Sahagian, P. Park, T. Chung, and T. Kang, Time series analysis of global/Korean earthquake occurrence and recent GPS crustal displacement recorded at Daejeon, Korea, *Science Discovery*, 1, 6-15, 2013. doi: 10.11648/j.sd.20130102.11

- J. Burrows, A. Bodzin, D. Anastasio, D. Sahagian, D. Bressler, L. Cirrucci, S. Rutzmoser, and A. Telezke, Using Web GIS to Enhance Tectonics Learning and Geospatial Thinking, Science Scope, 37, 29-37, 2013.
- A. Bodzin, D. Anastasio, D. Sahagian, T. Peffer, C. Dempsey, and R. Steelman-Couch, Investigating Climate Change Understandings of Urban Middle School Students, Jour. Environ. Education, 62, 417-430, 2014.
- B. Felzer and D. Sahagian, Climate Impacts on Regional Ecosystem Services in the United States from CMIP3-based Multimodel Comparisons, Climate Research, 61, 133-155, 2014. doi 10.3354/cr01249.
- S. Na, T. Chung, and D. Sahagian, Did the Little Ice Age Release Earthquakes? Science Discovery, 2, 47-50, 2014, doi: 10.11648/j.sd.20140204.11
- Bodzin, A., Anastasio, D., & Sahagian, D., Using Web GIS to promote geospatial thinking and reasoning skills. In K. Finson & J. Pedersen (Eds.) *Application of Visual Data in K-16 Science Classrooms*. pp. 263-284, Information Age Publishing, Charlotte, NC, 2015.
- Characterizing predictability of precipitation means and extremes over the conterminous United States, 1949-2010, J. Climate, in press.
- D. Sahagian, A. Proussevitch, L. Ancuta, B. Idleman, and P. Zeitler, Uplift of Central Mongolia Recorded in Vesicular Basalts, J. Geol., In press
- C. White, A. Proussevitch, M. Allard, A. Ebadi, J. Klewicki, D. Sahagian, Ash From Energetic Volcanic Eruptions: Evidence Of Influence Of Particle Shape On Aerodynamics And Transport, Geology, in review.
- Bodzin, A., Anastasio, D., Sahagian, D., & Henry, J., A curriculum-linked professional development approach to support teachers' adoption of Web GIS tectonics Investigations. *Contemporary Issues in Technology and Teacher Education.*, in review.

### **Invited Review Articles:**

- D.L. Sahagian, 1987. Sea-level fluctuations, in McGraw-Hill Encyclopedia of Science and Technology, 1988 Yearbook, 395-399.
- D.L. Sahagian, 1989. Sea Surface Studies: A Global View, (R.J.N. Devoy, Ed.), Croom Helm, London, 649pp., for J. Geol., 97, 774-775.
- D.L. Sahagian, 1991. Sea Level, AGU Geophysics Report, U.S. Congress, Washington.
- D.L. Sahagian, 1993. Tectonic Evolution of the North Sea Rifts, (D. J. Blundell & A. D. Gibbs, eds.), Clarendon Press, Oxford, 1990, 272 pp., for Geochim. Cosmochim. Acta, 57, 5016.

- D.L. Sahagian, 1993. Construction of a Calibrated Sea-Level Curve: Mid-Cretaceous through Mid-Tertiary, in *Summaries of FY 1993 Geosciences Research*, Dept. of Energy, Washington D.C., p. 105.
- D.L. Sahagian, 1993. Continental Rift Formation and its Prehistory, (by A.V. Razvalyaev), A.A. Balkema, Rotterdam, 1991, 196 pp., *J. Geol.*, 101, 822.
- D.L. Sahagian, 1995. First GAIM Science Conference on Global Analysis, Interpretation, and Modelling, *Environmental Conservation*, 22, 88.
- D.L. Sahagian, 1996. Surface and ground water contributions to modern sea level rise, in *Climate Change, IPCC Scientific Assessment II*. Ch. 7.
- D. L. Sahagian, 2004, Sea level effect of anthropogenic water sequestration, in *Isaac Newton Symposium Monograph*, "Macroengineering Options for Climate Change Management and Mitigation.
- D. Sahagian, 2007, Anthropogenic changes in land water storage, in *Climate Change, IPCC Scientific Assessment IV*. Ch. 5.
- D. Sahagian, 2012, Sea level rise, *Earth Magazine*.
- Kulo, V., Bodzin, A., McKeon, R., Anastasio, D., Peffer, T., & Sahagian, D. The Isle of Navitas: Towards a better understanding of energy and decision-making using GIS. In Barnett, MaKinster, & Trautman (Eds.) *Learning Science through the innovative use of Geospatial Technologies: Designing Effective Learning Tools and Programs for K-16 settings*. Dordrecht, Netherlands: Springer. Invited book chapter, 2013.
- D. Sahagian, The Proof of our Science Lies in the Telling, *Eos Editor's Vox*, AGU, Feb. 8, 2016. <https://eos.org/editors-vox/the-proof-of-our-science-lies-in-the-telling>

### **Other Media:**

**Webinar.** "New Approaches to Environmental Education, and A User's Guide to Planet Earth" Invited by the National Council for Science and the Environment and the Council of Environmental Deans and Directors, Washington DC, Aired 10/9/2013 with 30 universities participating nationally.

### **Selected Articles and Reports:**

- B. Moore III and D. Sahagian, 1995. Global Analysis, Interpretation and Modelling, *IGBP Newsletter* 23, 2-3.
- W. Cramer, and Workshop Participants, 1995. Net Primary Productivity Model Intercomparison Activity (NPP). K. Hibbard and D. Sahagian (Editors), 1995 NPP Model Intercomparison Workshop. *IGBP/GAIM Report Series, Report #5*, Potsdam, 41 pp.

- D.L. Sahagian, 1996. Open Science Conference of Global Analysis, Interpretation and Modelling, IGBP Newsletter 25, 14-15.
- W. Cramer, B. Moore III, and D. Sahagian, 1996. Data needs for modelling global biospheric carbon fluxes - Lessons from a comparison of models, IGBP Newsletter 27, 13-15.
- I. Rasool and D. Sahagian, 1996. Wetlands Inter-element Workshop: The IGBP-DIS Perspective, IGBP Newsletter 27, 16.
- D. Sahagian, 1997. GAIM and IGBP, GAIM Newsletter 1.1, 1-2.
- D. Sahagian, John Melack and the participants in the IGBP Wetlands Workshop, 1997. Global wetlands distribution and classification: Trace gases and the hydrologic cycle, GAIM newsletter 1.1, 2-6.
- D. Sahagian and B. Moore III, 1997. GAIM Science Conference, GAIM Newsletter 1.1, 7.
- W. Cramer, B. Moore II and D. Sahagian, 1997. Global net primary productivity: A model intercomparison, GAIM Newsletter 1.1, 11-14.
- D. Sahagian and B. Moore III, 1997. African-GAIM Modelling Workshop, GAIM Newsletter 1.1, 17.
- D. Sahagian, 1997. On the relation between biogeochemical systems, agriculture, climate and society, GAIM Newsletter 1.1, 18-19.
- B. Moore III and D. Sahagian, 1997. GAIM Integration Program, GAIM Newsletter 1.1, 20.
- Sahagian, D. and K. Hibbard (Editors), 1998. GAIM 1993-1997. The First Five Years: Setting the Stage for Synthesis. IGBP/GAIM Report Series, Report #6, 44 pp.
- D.L. Sahagian & B. Moore III, African-GAIM Modelling Workshop, GAIM Report Ser. #1, 1997.
- D.L. Sahagian & J. Melack (eds.) Global Wetland Distribution and Functional Characterization: Trace Gases and the Hydrologic Cycle, GAIM Report Ser. #2; IGBP Report Ser. #46, Stockholm, 1998
- D.L. Sahagian (ed.) Atmospheric Tracer Transport Model Intercomparison Project (with A.S. Denning, P.J. Rayner, R.M. Law and K.R. Gurney), GAIM Report Ser. #3, 1998
- K. Hibbard and D.L. Sahagian (ed.) Net Primary Productivity Model Intercomparison Activity (with W. Cramer et al.) GAIM Report Ser. #5, 1998
- D.L. Sahagian, AGU to include Biogeosciences at Fall Meeting, GAIM Newsletter 3.1, 1, 1999
- I. Fung, P. Rayner, P. Friedlingstein, D. Sahagian Full form Earth system models: Coupled carbon-climate interaction experiment (the "Flying Leap") - IGBP Global Change News Letter, 2000

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- J. Johnson, Aster, Ruiz and D. Sahagian, Fragmentation dynamics from an integrated seismo-acoustic approach, Eos, (AGU, Spring, 2004)
- D. Sahagian, Volcanic Eruption Mechanisms: Insights from Intercomparison of Models of Conduit Processes, Eos (AGU, Spring, 2004)



- A. Frappier and D. Sahagian, An Oxygen-18 Proxy Record of Recent Hurricanes in Belize: Speleothems as a new Tool for Paleotempestology, *Eos*, (AGU, Spring, 2004)
- J. Johnson, D. Sahagian, and A. Proussevitch, Numerical simulation of episodic eruptive activity, IAVCEI General Assembly, Chile, Nov. 2004
- J. Johnson, Ruiz, Lees, Aster, Jones, Varley, Wolf, and D. Sahagian, Interpreting eruption seismicity, IAVCEI General Assembly, Chile, Nov. 2004, IAVCEI General Assembly, Chile, Nov. 2004
- C. Wake, G. Hurtt, L. Seidel, D. Sahagian, A. Frappier, & C. Girod, Advancing Earth System Science Education for the 21st Century: An Interdisciplinary Education Initiative for University Students, NASA Earth System Science Education ESSE-21 conference, Monterey, 2004.
- D. Sahagian (invited), Determining paleoelevation of the Rocky Mountains and Colorado Plateau: A challenge for paleogeography, *GSA Abs. Prog.*, Denver, 2004
- A. Frappier and D. Sahagian, A speleothem isotope proxy for paleotempestology, *GSA Abs. Prog.*, Denver, 2004
- D. Sahagian and I.C. Prentice, EARTH SYSTEM ATLAS: A platform for peer-reviewed information about process and change in the Earth system, *Eos* (AGU, Fall, 2004)
- A. Proussevitch and D. Sahagian, Quantifying the distribution of bubble sizes in volcanic rocks: Generalized statistical formulation and application to vesicular lavas, *Eos* (AGU, Fall, 2004)
- D. Sahagian, Paleoelevation recorded in vesicular basalts, Paleoelevation Workshop: Comparison, Integration, and Application of Contrasting Proxies and Approaches, Lehigh University, June, 2005.
- A. Proussevitch, and D. Sahagian, New acquisition techniques and statistical analysis of bubble size distributions, *Eos* (AGU, Fall 2005)
- A. Frappier, D. Sahagian, S. Carpenter, L. Gonzalez, and B. Frappier, High-Resolution Paleotempestology: Proxy Models for Reconstructing Interannual-Decadal Variations in Pre-Historic Tropical Cyclone Frequency and Intensity, *Eos* (AGU, Fall 2005)
- D. Sahagian, Paleoelevation measurement proxies: A combined approach, *Eos* (AGU, Fall 2005)
- N. Niemi, D. Sahagian, A. Proussevitch, and W. Carlson, Assessing the Practicality and Viability of Utilizing Basalt Vesicle Paleoaltimetry to Solving Regional Tectonic Problems in the Basin and Range, *Eos* (AGU, Fall 2005)
- B. Holland, S. Peters, J. Ramage, D. Sahagian, Can science better inform policy? Connecting scientific insights to social values for effective policy making in the wake of natural disasters, *Eos* (AGU, Fall 2005)
- J. Johnson, A. Proussevitch, and D. Sahagian, What drives the episodic nature of erupting volcanoes? Fourth Conference of Cities on Volcanoes, Quito, Ecuador, January 2006.

- A. Proussevitch, and D. Sahagian, Statistical analysis of bubble size distributions in volcanic rocks: Formulation and application to vesicular basalts, Fourth Conference of Cities on Volcanoes, Quito, Ecuador, January 2006.
- D. Sahagian, S. Peters, and G. Yasko, Environmental remediation through sequestration of airfall-derived metals contamination by selective revegetation strategies, (AGU, Fall, 2006)
- A. Proussevitch, D. Sahagian, and W. Carlson, Bubble size distributions across some basaltic lava flows with simple vesiculation, (AGU, Fall, 2006)
- C. Briggs and D. Sahagian, Risk, scientific uncertainty, and policy implications of global climate change models, (AGU, Fall, 2006)
- C. Kiely, D. Sahagian, S.R. Claves, W.Z. Misiolek and C.J. Kiely, X-ray Ultramicroscopy within an XL30 Environmental SEM, Microscopy Conference, August 2007
- D. Sahagian and A. Proussevitch, Paleoelevation measurement on the basis of vesicular basalts, GSA/MSA short course on Paleoelevation, GSA National mtg., Denver, October, 2007.
- J. Johnson, Lees, J.M, Sanderson, R., Norman, J., and Sahagian, D., Dome surges, long period earthquake generation, and pyroclastic eruptions at Santiaguito Dome, Guatemala, (AGU, Fall, 2007)
- D. Sahagian, S. Peters, G. Yasko, Preliminary analysis of a metals-contaminated brownfield: Palmerton, PA, (AGU, Fall, 2007)
- A. Proussevitch, D. Sahagian, G. Mulukutla, C. Kiely, On 3D reconstruction of bubbles in volcanic ash particles, (AGU, Fall, 2007)
- S. Reid, A. Proussevitch, M. Chupa, C. Prentice, D. Sahagian, Earth System Atlas: citable publication and visualization of datasets, (AGU, Fall, 2007)
- A. Proussevitch, G. Mulukutla, and D. Sahagian, A New 3D Method of Measuring Bubble Size Distributions from Bubble Fragments in Volcanic Ashes, Cities on Volcanoes (COV5, Shimabara, Japan, 2007)
- C. Briggs and D. Sahagian, Risk and National Security Issues of Global Climate Change, (National Council for Science and the Environment, Jan., 2008)
- J. Johnson, Sanderson, R., Lees, Ruiz, M., J.M, Gerst, A., Hort, M. Scharff, L., Varley, N., Sahagian, D., Lava dome souffle: Long period earthquakes and co-eruptive volcano respirations captured with seismometers, video camera, and a Doppler radar. (IAVCEI, 2008)
- D. Sahagian, S. Peters, G. Yasko, J. Lofaro, J. Burrows, J. Blake, K. Smith, Airfall of metals from the Palmerton, PA, zinc plant: Distribution and preservation, (AGU, Fall, 2008)
- A. Proussevitch, G. Mulukutla, D. Sahagian, Determination of Bubble Sizes in Volcanic Melts by Confocal Microscopy and Subsequent 3D Image Analysis, (AGU, Fall, 2008)

- D. Sahagian, (keynote address) Global Climate Change: What we know, how well we know, and what it means to us, PA Climate Change Advisory Committee, Harrisburg, PA, October, 2008
- G. Mulukutla, A. Proussevitch, D. Sahagian, 3D Image Analysis of Geomaterials using Confocal Microscopy (AGU, Spring, 2009)
- Kulo, V., Bodzin, A., Peffer, T., Anastasio, D., & Sahagian, D., Using GIS in the classroom to investigate energy. "Bring Your Own Laptop" presentation at the 2009 National Educational Computing Conference (NECC) in Washington, DC, 2009
- A. Proussevitch, G. Mulukutla, D. Sahagian, and B. Bender, 3D Volumetric Analysis of Fluid Inclusions Using Confocal Microscopy, (AGU, Spring, 2009)
- D. Sahagian and A. Proussevitch (invited), The Evolution of 3D Microimaging Techniques in Geosciences, (AGU, Spring, 2009)
- McKeon, R., Kulo, V., Anastasio, D., Bodzin, A., Peffer, T. & Sahagian, D. The Isle of Navitas: Towards a better understanding of energy and decision-making using GIS. Poster presented at 2009 Geological Society of America Annual Meeting in Portland, OR. (2009, October).
- A. Proussevitch and D. Sahagian Textures from magmatic Vesiculation: Statistical Characterization from Monte Carlo Simulations of Brittle Fragmentation and Formation of Fine Ash, (AGU, Fall, 2009)
- D. Sahagian, S. Peters, G. Yasko, J. Blake, K. Smith, J. Lofaro, J. Burrows, Horizontal and Vertical Distributions of Metals in Soils in Southeastern PA: Impact of 20th Century Zinc Smelting Operations, (AGU, Fall, 2009)
- Peffer, T., Bodzin, A., Kulo, V., Sahagian, D., Anastasio, D., & Cirruci, L. The Personal Energy Audit activity: Analyzing personal energy use, resource availability, and conservation practices. National Science Teachers Association (NSTA) National Conference on Science Education in Philadelphia, PA., 2010.
- Kulo, V., Bodzin, A., Anastasio, D., Cirruci, L. Sahagian, D., & Peffer, T. Using Google Earth to Investigate Energy Resources. National Science Teachers Association (NSTA) National Conference on Science Education in Philadelphia, PA. (2010, March).
- Kulo, V., Bodzin, A., Anastasio, D., Peffer, T., Sahagian, D., & Cirucci, L. (2010, March). Examining the implementation of a Geospatial Information Technologies-supported energy unit in an urban middle school. Paper presented at the 2010 National Association for Research in Science Teaching (NARST) Annual Meeting in Philadelphia, PA.
- A. Proussevitch, D. Sahagian, and G. Mulukutla, Understanding the Relation between Pre-Eruptive Bubble Size Distribution and Observed Ash Particle Sizes: Prospects for Prediction of Volcanic Ash Hazards, Cities on Volcanoes Conference 6, Tenerife, Spain, June, 2010
- Peffer, T., A. Bodzin, V. Kulo, D. Sahagian, and D. Anastasio, The personal energy audit: Examine, analyze, and reduce your energy use, NAAEE National conference, Niagara/Buffalo, 2010.

- Peffer, T., A. Bodzin, V. Kulo, R. McKeon, D. Anastasio, and D. Sahagian, Innovative strategies of energy issues with instructional and geospatial technologies, NAAEE National conference, Niagara/Buffalo, 2010.
- Sahagian, D., A. Proussevitch, G. Mulukutla, and K. Genereau, Reconstructing Pre-Fragmentation Bubble Size Distributions from Volcanic Ash using Stereo SEM Analysis (AGU, Fall, 2010).
- Proussevitch, A., D. Sahagian, and M. Jutzeler, Functional Stereology for 3D Particle Size Distributions from 2D Observations: a Practical Approach, (AGU, Fall, 2010).
- Colucci, S., G. Mulukutla, A. Proussevitch, D. Sahagian, 3D reconstruction of volcanic ash particles using Stereo-SEM: two study cases from 200 Ky ash-rich eruptions, (AGU, Fall, 2010).
- Bodzin A., V. Kulo, L. Cirucci, D. Anastasio, D. Sahagian, and T. Peffer, Teaching “spatially” with geospatial learning technologies to investigate environmental issues, ISTE, June, 2011.
- Kulo, V., A. Bodzin, T. Peffer, D. Sahagian, L. Cirucci, and D. Anastasio, Integrating Geospatial Technologies with Inquiry-based Learning to Investigate Energy, ISTE, June, 2011
- Genereau, K., A. Prousevitch, G. Mulukutla, and D. Sahagian, Distinguishing bubbles that drive explosive eruptions from those that tag along for the ride: Extracting minimum bubble sizes from bubble wall fragments in ash, IUGG Annual meeting, Australia, June, 2011
- Genereau, K., Mulukutla, G., Proussevitch, A.A., and Sahagian, D.L. (2011), Characterizing Bubbles That Drive Explosive Eruptions: Measuring Syn-Eruptive Bubble Sizes in Fine Ash. IUGG 2011 General Assembly, Melbourne, Australia.
- Proussevitch, A.A., Mulukutla, G., Genereau, K., and Sahagian, D. (2011), Understanding The Relation Between Pre-eruptive Bubble Size Distribution and Observed Ash Particle Sizes: Prospects for Prediction of Volcanic Ash Hazards. 7th Biennial Workshop on Japan-Kamchatka-Alaska Subduction Processes, Petropavlovsk-Kamchatsky, Russia.
- Teletzke, A., V. Kulo, A. Bodzin, D. Anastasio, D. Sahagian, and R. Mckeon, Designing Learning Activities to Teach “Spatially” with Web GIS, Annual National GSA meeting October, 2011.
- Dempsey, C., A. Bodzin, D. Sahagian, D. Anastasio, T. Peffer, L. Cirucci, Investigating Climate Change Issues with Web-Bsed Geospatial Inquiry Activities, (AGU, Fall, 2011)
- D. Anastasio, A. Bodzin, T. Paffer, D. Sahagian, L. Cirucci, The Effectiveness of a Geospatial Technologies-Integrated Curriculum to Promote Climate Literacy, (AGU, Fall, 2011)
- Proussevitch, A., D. Sahagian, G. Mulukutla, Understanding the Relation between Pre-eruptive Bubble Size distribution and Observed Ash Particle Sizes, (AGU, Fall, 2011)
- Mulukutla, G., A. Proussevitch, D. Sahagian, K. Genereau, On the 3D Shape of Volcanic Ash, (AGU, Fall, 2011)
- Bodzin, A., L Cirucci, V. Klo, C. Dempsey, D. Anastasio, D. Sahagian, Teaching and learning

- about energy resources with Web GIS, ESRI EDUC conference, 2012.
- Bodzin, A., L. Cirucci, A. Teletzke, D. Anastasio, D. Sahagian, S. Rutzmoser, and D. Bressler, Enhancing Tectonics Learning with Web GIS, ESRI EDUC conference, 2012.
- Proussevitch, A., and D. Sahagian, The relation between pre-eruptive bubble size distribution and observed ash particle sizes, EGU General Assembly, Geneva, Switzerland, April, 2012.
- Cirucci, L., A. Bodzin, A. Teletzke, D. Anastasio, D. Sahagian, S. Rutzmoser, D. Bressler, Teaching tectonics with Web GIS, ESRI Education User Conference, San Diego, July, 2012.
- Bodzin, A., L. Cirucci, V. Kulo, C. Dempsey, D. Anastasio, D. Sahagian, Teaching Energy with Web GIS, ESRI Education User Conference, San Diego, July, 2012.
- Bodzin, A., D. Bressler, C. Dempsey, D. Sahagian, D. Anastasio, T. Peffer, L. Cirucci, A curriculum approach using Google Earth and web-based interactivities to promote climate change understandings, GSA Annual Meeting, November 2012.
- Bodzin, A., D. Sahagian, D. Anastasio, D. Bressler, V. Kulo, T. Peffer, C. Dempsey, L. Cirucci, Environmental literacy and inquiry: A geospatial curriculum to support middle school teachers and students, GSA Annual Meeting, November 2012.
- Proussevitch, A. D. Sahagian and M. Jutzler, Limitations of Discrete Stereology: Steps Toward a More Functional Approach, AGU, Fall, 2012
- Meltzer, A., L. Ancuta, R. Carlson, J. Caves, P. Chamberlain, J. Gosse, B. Idleman, D. Ionov, K. Mcdannel, T. Mendelson, H. Mix, U. Munkhuu, A. Proussevitch, R. Russo, M. Sabaj-Perez, D. Sahagian, D. Sjostrom, J. Stachnik, B. Tsagaan, K. Wegman, M. Winnick, P. Zeitler, Intracontinental Deformation and Surface Uplift - Geodynamic Evolution of the Hangay Dome, Mongolia Central Asia, AGU, Fall, 2012.
- Sahagian, D., D. Anastasio, A. Bodzin, L. Cirucci, D. Bressler, C. Dempsey, T. Peffer, Assessing Climate Misconceptions of Middle School Learners and Teachers, AGU, Fall, 2012.
- Felzer, B., and D. Sahagian, Multimodel Comparison of Projected Regional Climate Change-Induced Ecologic and Hydrologic Impacts in the U.S., AGU, Fall, 2012.
- Anastasio, D., D. Sahagian, A. Bodzin, A. Teletzke, S. Rutzmoser, L. Cirucci, D. Bressler, J. Burrows, Teaching And Learning Tectonics With Web-GIS, AGU, Fall, 2012.
- Cirucci, L., Bodzin, A., \*Teletzke, A., Anastasio, D., Sahagian, D., Rutzmoser, S., \*Bressler, D, and \*Burrows, J. (April, 2013). Investigating tectonics with Web GIS. Presentation presented at the 2013 National Science Teachers Association (NSTA) National Conference on Science Education in San Antonio, TX.
- Bodzin, A., Cirucci, L., \*Dempsey, D., Anastasio, D., Sahagian, D., and \*Bressler. D. (April, 2013). Investigating climate change issues with Google Earth and Web-based activities. Presentation presented at the 2013 National Science Teachers Association (NSTA) National Conference on Science Education in San Antonio, TX.

Bodzin, A., \*Telezke, A., Cirucci, L., Bressler, D., Anastasio, D., Sahagian, D., Rutzmoser, S., and \*Burrows, J. (January, 2013). Using Web GIS to support the teaching and learning of tectonics. Experiential session presented at the 2013 Association for Science Teacher Education (ASTE) Annual Meeting in Charleston, SC.

\*Dempsey, C., Bodzin, A., Peffer, T., Anastasio, D., Sahagian, D., Cirucci, L., and \*Bressler, D. (January, 2013). Environmental Literacy and Inquiry: The climate change curriculum. Experiential session presented at the 2013 Association for Science Teacher Education (ASTE) Annual Meeting in Charleston, SC.

White, C., M. Allard, J. Klewicki, A. Proussevitch, G. Mulukutla, K. Genareau, and D. Sahagian, Atmospheric fate and transport of fine volcanic ash: Does particle shape matter? AGU, Fall, 2013.

Anastasio, D., A. Bodzin, D. Sahagian, and S. Rutzmoser, Teaching tectonics to undergraduates with web GIS, AGU, Fall, 2013

Anastasio, D., L. Ancuta, S. Rutzmoser, D. Sahagian, and A Bodzin, Teaching and learning tectonics with Web GIS, GSA annual meeting, October, 2014.

Sahagian, D., A. Proussevitch, P Zietler, B. Idleman, and L. Ancuta, Mongolian Hangay Uplift Recorded in Vesicular Basalts, AGU Fall, 2014

Na, S., D. Sahagian, T. Kim, B. Jo, K. Ahn and Y. Shin, Glacier Melting Effect on the Earth's Rotation - Revisited, AGU, Fall., 2014

Sahagian, D., Science and Society: Symbiotic or Askew?, (Keynote Lecture) GEOSS Science and Technology Stakeholder Workshop, Global Earth Observation System of Systems, Norfolk, VA, 2015.

Sahagian, D., and A. Proussevitch, Quantifying internal properties of geologic materials by image analysis, AGU Joint Assembly, Montreal, Canada, 2015.

Bodzin, A., Anastasio, D., & Sahagian, D. Using Web GIS to promote geospatial thinking and reasoning skills, Association for Science Teacher Education (ASTE) Annual Meeting, Portland, OR, 2015

Meltzer, A. L. Ancuta, R. Carlson, J. Caves, C. P. Chamberlain, J. Gosse, B. Idleman, D. Ionov, K. McDannell, T. Mendelson, H. Mix, U. Munkhuu, R. Russo, M. Sabaj-Perez, D. Sahagian, D. Sjostrom, S. Smith, J. Stachnik, B. Tsagaan, K. Wegmann, M. Winnick, P. Zeitler, A. Proussevitch, Betwixt and Between: Structure and Evolution of Central Mongolia, AGU, Fall, 2015

Sahagian, D., P. Chatanantavet, C. Bradley, D. Friedgen-Veitch, P. Diplas, The origin of river meanders, AGU, Fall, 2015

## **Grant Funding:**

Vesicle distribution in basalt flows- Computation, fieldwork, and laboratory funds, \$2,000.,  
Division of Physical Sciences, University of Chicago, 1985.

AGU Chapman Conference on the Causes and Consequences of Long-Term Sea Level Change,  
\$5,000., Joint Oceanographic Institutions-U.S. Science Advisory Committee, 1988.

\$10,000., Department of Energy, 1989.

\$10,000., NSF, 1989.

\$1,500., Unocal, 1988.

\$1,500., Arco, 1989.

\$4,000., British Petroleum, 1989.

\$3,000., Chevron, 1989.

\$3,000., Exxon, 1989.

The movement of gas and crystals beneath Kilauea, \$24,600., NSF (EAR8915226), 1989.

An investigation of vesicle distributions in basalt as a tool for the determination of paleo-  
atmospheric pressure - Phase I: Calibration, \$31,700., NSF (EAR8916835), 1989.

Construction of a calibrated eustatic sea level curve: Mid-Jurassic through mid-Cretaceous,  
\$38,710., NSF (EAR9002728), 1990.

Collaborative Research: The Movement of Gas and Crystals Beneath Kilauea, NSF (EAR8915224)

A thermal model for chondrule formation in the solar nebula (with R. Hewins, Rutgers University),  
\$48,000., NASA, 1991.

Quantification of eustatic curves: Mid-Jurassic through mid-Tertiary, \$5,000., Exxon, 1991

Construction of a calibrated eustatic sea level curve: Mid-Cretaceous through mid-Tertiary,  
\$39,694., DOE, 1991.

Quantified eustatic sea level curve from Mid-Jurassic to Paleogene: Resolution refinement and  
application to selected subsiding basins, \$130,000., NSF (EAR9218945), 1992.

Human influence on global hydrology and 20th century sea level rise, \$10,000., Ohio State Seed  
Grant, 1993.

Dynamics of magma degassing by diffusive and decompressive bubble growth: Numerical  
modeling and application to volcanic systems, \$60,000., NSF (EAR-9496287), 1994.

Dynamics of magma degassing by diffusive and decompressive bubble growth: INT Supplement,  
\$26,000., NSF (EAR-9496287), 1995.

Global Analysis, Interpretation, and Modelling: Development of an Earth Systems Modelling  
Program, \$179,981., NASA, 1995.

Quantified eustatic sea level curve from Mid-Jurassic to Paleogene: Resolution refinement and application to selected subsiding basins: Supplement- Correlation, \$30,000., NSF (EAR9596093), 1995.

Global Analysis, Interpretation, and Modelling: First International Science Conference, \$88,885., U.S. Global Change Research Program, 1995.

Global Analysis, Interpretation, and Modelling: First International Science Conference, Participants from eastern European countries with Economies in transition, \$4860., International Science Foundation, 1995.

West Siberian sequence stratigraphy and Mesozoic eustasy: Testing a quantified sea-level curve, \$160,000., NSF, (EAR-9614752), 1996.

Global Analysis, Interpretation and Modelling: Developing an Earth Systems Modelling Program, NASA, \$197,368, 1996.

Magma dynamics and interactive degassing in volcanic conduits: Formulation and numerical modeling, Suppl., \$15,000., NSF, 1996.

Global Analysis, Interpretation, and Modelling, Year 3, EPA, \$305,000., EPA, 1996.

Global Analysis, Interpretation, and Modelling, (ATM 96-17082), **\$1,260,240.**, NSF, 1997.

African GAIM Modelling Workshop, March, 1997, Mombasa, Kenya.

NSF/INT (9605171)	\$20,000
NOAA	\$15,000
Assoc. African Univer.	\$ 4,000
MEDIAS	\$ 3,000
WMO	\$ 7,000
IGBP/START	\$ 6,500

Analysis of vesicular volcanic rocks using computed x-ray tomography: Technical development and testing, (EAR-9614747), \$110,000., NSF, 1997.

Special AGU session, "Incorporating Human Dimensions in Earth System Models" \$10,000, NSF, 1998.

IGBP/GAIM Workshop: TransCom, \$15,000, NSF, 1998

Understanding change in atmospheric composition and climate during the past 200,000 years: The PaleoTrace Gas and Aerosol Challenge workshop, (ATM 9904140) \$15,000, NSF, 1999

IGBP/GAIM Workshop: Earth System Models of Intermediate Complexity (EMIC), \$10,000., NSF, 1999

Analysis of vesicular volcanic rocks using computed x-ray tomography: Supplement, (EAR-9614747), \$44,064., NSF, 1999.



Global and Regional Sea-level Change and the Hydrological Cycle, (EAR-9910222) \$30,000., NSF, 1999

North Australian Tropical Transect, \$10,240., NSF, 1999

Lava flow vesicle distributions as a tool for determining paleo-elevations: Application to timing and extent of uplift of the Colorado Plateau and adjacent Rocky Mountains, \$165,813., NSF (EAR-9909293), 1999.

West Siberian sequence stratigraphy and Mesozoic eustasy: Testing a quantified sea-level curve, toward application to sedimentary basins, Supplement \$20,000., NSF, (EAR-9614752), 2000.

Large-Scale Biosphere-Atmosphere Interactions in Amazonia (LBA): LBA-GAIM Modelling Training Workshop, \$15,000., NSF, (INT-0073424), 2000

Speleothems: A new proxy record of individual Hurricanes and tropical storm events, \$19,782., NSF (ATM-0081293), 2000.

Global Analysis, Integration and Modelling, Supplement, \$49,000., NSF, 2000

Global Analysis, Integration and Modelling- Base Program Support, **\$620,717.**, NSF, (ATM-0089237), 2001

Ecosystem Model Data Intercomparison Workshop, \$41,939., NSF (DEB-0201771), 2002

Atmospheric CO<sub>2</sub> Inversion Intercomparison Project (TransCom 3+) Workshop, \$40,891., NSF (EAR-0203144), 2002

Uplift history of the Colorado Plateau since the Late Miocene: Analysis using vesicular basalts as a paleoaltimeter, \$192,114., NSF (EAR-0207818), 2002

Modeling magma dynamics and degassing in volcanic eruptions, \$204,045., NSF (EAR-0207821), 2002 (transferred to EAR-0513199, \$41,180)

Volcanic Eruption Mechanism Modeling Workshop, \$20,000., NSF, (EAR-0226392), 2002

SGER- Carbon cycle processes affected by ENSO and transitional SOI conditions: Development of a new geologic tool for using speleothems as a proxy for carbon cycle dynamics, \$16,000., NSF (EAR-0337836), 2003

Coupled Climate Carbon Cycle Model Intercomparison Project Workshop, \$10,000., NSF, (ATM-0335818), 2003

Fast-Track Nitrogen Workshop, \$20,000., USDA-ARS, 2003

Paleotopography of an Evolving Extensional Orogen, the Central Basin and Range, Western United States, w/ N. Neimi (UCSB), Sahagian portion- \$13,500., NSF, 2004.

Evaluation of paleo-hurricanes in the intra-American sea (IAS): A reconstruction and analysis based on proxy records, w/student Amy Frappier, \$3,000., IAI 03SGP211-224, 2004.

The terrestrial carbon cycle and ENSO: Evaluating ecosystem processes that amplify the effects of El Niño on carbon isotope dynamics in a tropical forest, renewal, (for A. Frappier), \$24,000., NASA, (ESSF 0081), 2004.

Toward understanding the relation between volcanic eruptions, seismicity, and infrasound, w/J. Johnson, \$291,521., NSF, 2004

Workshop Proposal: Comparison and Integration of Paleoelevation Measurement Approaches, \$25,052., NSF EAR-0515450, 2005

Collaborative Proposal: Bubble size distributions as a diagnostic tool for volcanic processes, \$31,401, NSF, EAR-0509856, 2005.

SGER: Earth System Atlas, (co-PI w/Stephen Reid) \$100,000., NSF (ATM-0726016), 2007.

Assessment of contamination and ecologic restoration efforts in the Palmerton, PA region, (w/ Borough of Palmerton), EPA, \$167,153., 2006.

Development of the Sangay volcano observatory, (w/ post-doc lead J. Johnson), \$232,726., NSF, 2006.

Web-enhanced Environmental Literacy and Inquiry Modules, (w/A. Bodzin and D. Anastasio), \$317,778, Toyota USA Foundation, 2008

Collaborative Research: Ash particles and the bubbles that make them: Measuring bubble size from ash fragments for new insights regarding eruption dynamics (w/ Alex Proussevitch, UNH. Lehigh part: \$299,748), NSF (EAR-0838314), 2009

EAGER: Towards Elucidating the Transport Mechanisms of Fine Volcanic Ash (w/ Kim Genereau), Collaborative with UNH, (Lehigh Part: \$14,418.00), NSF (EAR- 1160381)

**\* Collaborative Research - Intracontinental Deformation and Surface Uplift: Geodynamic Evolution of the Hangay Dome, Mongolia, Central Asia (Lehigh part: \$1,533,072), NSF (EAR-1009680), 2010**

**\* Promoting spatial thinking with web-based geospatial technologies (w/A. Bodzin and D. Anastasio), NSF, \$449,818., 2011.**

**\*The Fundamental Cause of River Meanders (w/ Panos Diplas, Lehigh), \$6,000, 2015.**

\* Active grants in **bold**

**Student Theses Advised:**

Megan Clark, Volcanic ash and energy of eruptions, Lehigh M.S., In progress.

Sarabeth Brockley, Environmental policy Design, Lehigh, M.A., 2015

Kevin Smith, Effects of a mixture of Bicarbonate, Silica and Nitrate on the Removal of Arsenic and Chromium by a Hybrid Polymer-Iron, Anion Exchanger, Lehigh, M.S., 2010.

Amy Frappier, Recent extreme events in a tropical stalagmite: Multi-proxy records and analysis of ecosystem  $\delta^{13}\text{C}$  value sensitivity to weak climate forcing, UNH, Ph.D., 2006.

David Howland, Impact of globalization on global change policy, UNH, Ph.D., 2006 (Co-advised)

Amy Frappier, High-resolution stable isotope dynamics recorded by speleothem calcite: New opportunities for paleotemperature, paleometeorology, and paleoecology, UNH, M.S., 2002.

Ben Sherman, Disturbance indicators for time series reconstruction and marine ecosystem health impact assessment, UNH, Ph.D., 2000

Oleg Pinous, Sequence and biostratigraphy of West Siberia and the Russian Platform: Relation to global sea level quantification, UNH, Ph.D., 1997

Michelle Jones, Eustatic sea level calibration using Russian Platform stratigraphic data, Ohio State University, B.S., 1993.

Joseph Maus, Laboratory analysis of vesicle size distributions in basaltic lava flows: Application to atmospheric pressure measurement, Ohio State University, B.S., 1993.

Adam Usadi, A topographic correction for heat flow anomalies on the ocean floor, Dartmouth College, B.S., 1988.

Brian Ward, Bubble coalescence in basalt flows: Laboratory analysis, University of Chicago, B.S., 1987.

**Post-Doctoral Researchers Supported and Directed:**

Steven M. Holland, Structure, Stratigraphy, Basin Analysis, & Sea Level, OSU, 1989-1990.

Alexander A. Proussevitch, Bubble Evolution in Silicate Melts; Geodynamics of the Colorado Plateau, OSU, 1991-1992; UNH, 1994-present.

Kathy Hibbard, Ecosystems, Carbon and Global Change, UNH, 1997-2002

Jeff Johnson, Volcanology, UNH, 2003-2005

Kim Genareau, Volcanology, Lehigh, 2009-2013

**International Visiting Scholars Hosted:**

Victor Zakharov, Institute for Geology & Geophysics, Russian Academy of Sciences, Siberian Branch, 1993-1994.

Alexander Beisel, Institute for Geology & Geophysics, Russian Academy of Sciences, Siberian Branch, 1993.

Akin Adewale, Faculty of Environmental Sciences, University of Lagos, Nigeria, 1998-1999

Wandera Ogana, Dean of Sciences, University of Nairobi, Kenya, 2015

**Workshops Convened:**

Convener, Workshop on Explosive Ash-forming Eruptions: Mechanisms, Ash Morphology, and Transport, 2012

Co-Convener, Lehigh Energy and Environment Workshop, October-November, 2007

Convener, Comparison and Integration of Paleoelevation Measurement Approaches Workshop, 2005

Co-Convener, Nitrogen in the Earth System Workshop, 2003

Convener, Coupled Climate Carbon Cycle Model Intercomparison Project Workshop, 2003

Convener, Volcanic Eruption Mechanism Modeling Workshop, 2002

Atmospheric CO<sub>2</sub> Inversion Intercomparison Project (TransCom 3+) Workshop, 2002

Co-Convener, Ecosystem Model Data Intercomparison Workshop, 2002

Convener, Large-Scale Biosphere-Atmosphere Interactions in Amazonia (LBA): LBA-GAIM Modelling Training Workshop, 2000

Convener, Earth System Models of Intermediate Complexity (EMIC) Workshop, 1999

Co-convener, Vening Meinesz Conference on Global and Regional Sea-Level Changes and the Hydrological Cycle, October 4-7, 1999 - Loiri-Porto San Paolo, Sardinia, Italy

Convener, African GAIM Modelling Workshop, Kenya, 1997

Convener, Global Analysis, Interpretation, and Modelling: First International Science Conference, 1995

Convener, AGU Chapman Conference on the Causes and Consequences of Long-Term Sea Level Change, 1989.

Convener, various AGU Special Sessions, 1985-present

Convener, various university symposia, workshop, and panels, 1984-present

**Assorted Additional Professional Activities:**

Science Advisor, Nurture Nature Center, Easton, PA, 2008-present

Review Editor, National Climate Assessment Report- Melillo, Jerry M., Terese (T.C.) Richmond, and Gary W. Yohe, Eds., 2014: Climate Change Impacts in the United States: The Third National Climate Assessment. U.S. Global Change Research Program, 841 pp. doi:10.7930/J0Z31WJ2

Earth & Sky Science Advisor (NSF-sponsored science radio program), 1996-2013

Principal Scientific Reviewer, Global Environmental Outlook (GEO-5), United Nations Environment Programme (UNEP), 2011

Durham Town Council Energy Committee, 2011-2012

Board of Directors, Lehigh Valley Green Builders Association, 2008-2013

Advisory Board, Consortium of Universities for the Advancement of Hydrologic Science, Inc. (CUAHSI), 2002-2008

National Academy of Sciences, Committee on Geophysical and Environmental Data, World Data Center site evaluator, 2001-2002

Founder, UNH Earth System Special Interdisciplinary Seminar Series, 2001

K-12 Science Curriculum forum panelist, Oyster River S.D., 2001

Co-Founder (with Diane McKnight), AGU Biogeosciences Section, 2000

AGU Biogeosciences Meetings Chair, 1999-2011

NSF Science & Technology Center panelist

Chair, UNH Transportation Policy Committee (1998-2000)

Outreach and Education Speaker and Panelist, United Nations, Foreign Policy Association, and numerous other venues and topics.

Panelist and reviewer, various journals (articles), publishers (K-12 texts) and agencies (proposals)