

Curriculum Vitae – Barry Voight

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CONTACT DETAILS

503 Deike Building
Pennsylvania State University
University Park, PA 16802
Email: voight@ems.psu.edu
Tel: 814 238 4431 (H) Fax: 814 863 7791

EDUCATIONAL HISTORY

Columbia University	Ph.D.	1965
University of Notre Dame	M.S.C.E.	1961
University of Notre Dame	B.S.C.E.	1960
University of Notre Dame	B.S.	1959

UNIVERSITY EMPLOYMENT

2005-present	Emeritus Professor of Geol/Geol Engineering, Penn State University
1978-2005	Professor of Geol/Geol Engineering, Penn State University
1968-1982	Prof/Assoc Prof Mineral Engineering, Penn State University
1981	Visiting Professor, University of California, Santa Barbara
1973-1978	Assoc Prof Geol/Geol Engineering, Penn State University
1973	Visiting Professor, University of Toronto
1972	Guest Professor, Geol & Mining Laboratory, Technical Univ Delft
1964-1969	Assistant Professor, Penn State University

GOVERNMENT APPOINTMENTS

1980-present	Adjunct Researcher (WAE), USGS Volcano Hazards Program [32 yrs]
1996-2003	Senior Scientist, British Geol Survey, Montserrat; Risk Assessment Panel
2003-2013	Scientific Advisory Cmte for Montserrat Crisis, UK Government
Various	Consultant to US Army Corps Engineers; mining engineering US Bureau Mines

PROFESSIONAL REGISTRATION

Professional Engineer, Commonwealth of Pennsylvania, PE-015075
Professional Geologist, Commonwealth of Pennsylvania, PG-000496-G

HONORS AND AWARDS

National Academy of Engineering [elected 2017]
Thorarinsson Medal, International Assoc Volcanology and Chemistry of Earth's Interior, 2013
[highest honor of Association, awarded once each four years]
Research Faculty Selection, PSU Alumni Association honored Trading Card researcher, 2011
Honorary Member, Association of Engineering Geol, 2010 [highest honor of Association]
Distinguished Practice Award, Geol Society of America, Engineering Geol Division, 2009
Schuster Medal, Canadian Geotechnical Society, 2009
[for outstanding achievements in research on hazards in North America]
Elected Union Fellow, American Geophysical Union, 2007
[for contributions to the understanding of volcano deformation, hazards and forecasting]

Richard H. Jahns Distinguished Lecturer, Geol Soc America & Assoc Engineering Geol, 1993
Faculty Scholar Medal for Outstanding Achievement in Research and Engineering, 1992
 [highest academic honor at Penn State University]
Harry Glicken Memorial Lecture, University of California at Santa Barbara, 1992
US National Cmte Rock Mechanics (Nat Research Council) Award, 1990
 [for outstanding research in theoretical rock mechanics: failure-time forecasting in rock mechanics]
McKinnon Lecture, College of Engineering, University of Utah, 1990
Wilson Research Award, College of Earth & Mineral Sciences, Penn State University, 1990
Landslide News Award for best paper: landslide failure forecasting (Second Prize), 1990
Fellow, Geol Soc America
Macquarie University Scholar, Australia, 1989
George Stevenson Research Medal, Institution of Civil Engineers (London), 1984
 [for the outstanding research paper published in I_C_Engineering journals]
US National Cmte Rock Mechanics (Nat Research Council) Award, 1984
 [for outstanding research in rock mechanics practice: mechanics of mountain collapse]

SYNERGISTIC ACTIVITIES

[SEE ALSO LATER IN CV— HAZARD REPORTS]

- 2015 Scientific Committee, *12th International Symposium on Landslides (ISL 2016): Association Geotechnica Italiana*
- 2015-present Advisor to *Icelandic Meteorological Office* on volcanic hazards .
- 2014 (1991-) External Dam Safety Committee, ***Electricity Supply Board, Ireland***. Inspection and engineering improvement of all large dams in Ireland to meet modern standards (about 3/yr).
- 2014-present Advisor to ***INGV Italia*** (Govt Italy) for mitigation of slope instability; volcanic hazards.
- 2011 Keynote Lecturer, *International Workshop on Strategy of Volcano Disaster Mitigation 2011: Large Eruptions and Crisis Management*. Fuji and Tsukuba, Prof. S. Aramaki, Convener
- 2011 Keynote Lecturer, Engineering Volcanoes, *SHV 15 Years-On Conference*, Montserrat
- 2011 MIA-VITA Advisor to French Indonesia project **DOMERAPI**
- 2009-2011 **IODP Caribbean drill project Proposal Team** for 2012 cruise, A. le Friant, Project Leader (mechanics offshore slope movement)
- 2004-2010 **SEA-CALIPSO Project Co-Leader** (onshore-offshore seismic experiment)
- 2005 Keynote Lecture on *Landslide Risk Assessment and Mitigation, Japan-US Joint Symposium for Natural Disaster Reduction*. Kobe, Japan.
- 2003-2004 Convenor Session 2b, *Volcano Instability. IAVCEI Congress, Pucon Chile, Nov 2004*
- 2003 Advisor to ***Department of Civil Protection Italia*** (Govt Italy) for instability/tsunami risk
- 2004-present Organizing Committee, ***Ten-Year-On Anniversary Conference***, Montserrat.
 Keynote address, ***Fifteen-Years-On Anniversary Conference***, Montserrat, 2011
- 2003 ***Long Valley Caldera Workshop***. Mammoth CA, Oct 2003. Tilt and seismic monitoring

- 2003-2006 Advisor, **Multinational Andean Project**, Colombia and Chile. Slope stability and failure under seismic loading
- 2002-present Project Director, **CALIPSO Project** (CIW, Duke, Univ. Ark., PSU, Auckland, Bristol, MVO)
(deformation and seismic monitoring and analysis)
- 2002 Organizing Committee, **Mt Pelee Centenary Intl Congress**, Martinique
- 2000 **International Forum on “Living with Volcanoes”**, Tazawako, Japan (Nov 2000)
Keynote Lecture (televised March 2001). Audience 800 high school students.
Hazards and mitigation. Visits to evacuation village at Usu; Asama; Sakurajima.
- 1996-present Collaborations with **Montserrat Volcano Observatory**; **Risk Assessment Panel** and **Advisory Committee** for UK and Montserrat Governments; Co-Convener GRL *Special Section volumes on Soufriere Hills Eruption*, 1998 and 2010. Senior Scientist, BGS assigned to MVO.
- 1980-present **Member USGS Volcano Hazards Team**. Advised on volcano hazards and risk assessments and crises responses [36 years of service] (**Mount St Helens pre- and post-May 18 1980**; **Other Cascade volcanoes 1980-1986**; **Mt. Sanford 1981** and **Redoubt 1989-93, AK**; **Nevado del Ruiz 1986**, **Galeras 1989**, **Nevado del Huila 1991, Colombia**; **Cotopaxi, Ecuador 1991**; **Merapi, Indonesia 1988, 1995, 2006, 2010**; **Pinatubo, Philippines 1991**; **Popocateptl, Mexico 2003**; **Montserrat, WI 1995-present**).
- 1993-present Collaborations with scientists at **Institute Volcanology**, Russian Academy of Sciences (**Bezymianny, Sheveluch volcanoes**, with AB and M Belousova).
- 1991 Advisor, **International Early Warning System (UNESCO/WOVO)**. Emergency response mission to **Nevado del Huila** Volcano, Colombia, and hazard assessment, **Cotopaxi**, Ecuador.
- 1989 Advisor, **United Nations Disaster Relief Organization (UNDRO)**, Mission to Investigate unrest at **Galeras** Volcano, Colombia. Assessed volcanic flowage hazards and installed baseline deformation network (collab. USGS).
- 1988-2010 Collaborations with **Volcanological Survey of Indonesia** working at **Semeru and Merapi volcanoes**; co-organizer 1995 **Decade Volcano Workshop**; **Co-Editor Merapi Volume JVGR (2000)**.

OTHER PROFESSIONAL ACTIVITIES (*alphabetical order*)

American Academy of Mechanics

Charter Member

American Association of Avalanche Professionals

Committee to Organize Association

Charter Member

Board of Directors (1987 – 199x)

Research and Education Committee (1987-1988)
Education Committee (1988-1990)
Awards Committee (1988-present; Chair, 1991-199x)

American Geophysical Union
Elected Fellow, 2007

American Society of Civil Engineers
Committee on Slope Stability (1973-1980)

American Society for Testing and Materials
Committee C-18, Natural Building Stones (1967-1972)
Committee C-18, Soil and Rock for Engineering Purposes (1967-1972)

Association of Engineering Geologists
Organizing Committee for 1978 National Meeting
Associate Editor, Bulletin of AEG (1976-1980)
R. H. Jahns Distinguished Lecturer Committee (AEG/GSA; Chair, 1990)
R. H. Jahns Distinguished Lecturer (1992)
Shuster Medal (2009)
Honorary Member (2010)
Awards Cmte (2010-2012)

Atelier sur les Aleas Volcaniques. "Les volcans antillais, des processus aux signaux"
Institut National des Sciences de l'Univers/CHRS. Paris (Jan 2001)
Keynote. Lessons from Montserrat for risks in Antilles.

Austrian Commission on Large Dams
Studienreise to Austrian dam sites (1966)

Comite de Estudios Vulcanologicos Comunidad Caldense (1986)
(Volcanological Hazards, Nevado del Ruiz, Colombia)

Comité Francais de Géologie de l'Ingénieur
Foreign expert, Seminaire Movement de Versants de Grande Ampleur
(Nainville-les-Roches, 19-21 June 1991)

Commonwealth of Pennsylvania, State Registration Board for Professional Engineers
(Consultant: organized initial PE exams for Geological Engineering)

Continental Drilling For Scientific Purposes Workshop, Los Alamos (1978)

Continental Drilling Workshop, Ghost Ranch, New Mexico (1974)

Electric Power Research Institute
Research Project on Intraplate Eastern USA Earthquakes (1984-1986)

Electricity Supply Board, Ireland
External Dam Safety Committee (1991-present)

'Ettore Majorana' Centre for Scientific Culture, Erice, Sicily
Advances in Assessment of Earthquake & Volcanic Hazards (2001)

(Invited Lecturer on viscometry and episodicity of magma ascent)

European Geophysical Union

Member since 2010

Field Conference of Pennsylvania Geologists

Conference Committee, 50th Annual Meeting (1984-1985)

Geological Society of America (Fellow)

Penrose Conference on Landslides, 1978 (State-of-Art Reporter)

Penrose Conference on Heat Transport Processes, 1979 (State-of-Art Reporter)

R. H. Jahns, Distinguished Lecturer Committee (AEG/GSA; Chairman, 1990)

Associate Editor, Bulletin of GSA (1989-1992)

R.H. Jahns Distinguished Lecturer (1992)

Distinguished Practice Award (2008)

Geothermal Resources Council

State-of-art-Lecturer (1992)

International Association of Engineering Geology

Commission on Rock Classification

U.S. National Committee (1992-present)

International Association of Volcanology and Geochemistry of Earth's Interior

Congresses:

(Santa Fe 1989, Puerta Vallerta 1997; Bali 2000; Pucon 2004; Iceland, 2008; Kagoshima, 2013)

Convenor, Pucon

Organizing Cmte, Mt Pelee Centenary Congress

Iceland (2008, Field Trip Leader)

Wager Citationist, 2010

Krafft Citationist, 2013

Thorarinsson Medalist, 2013

International Geological Congress

Convenor, Kyoto (1992)

Participant (Prague, 1968; Washington, 1990; Kyoto, 1992)

International Institute of Volcanology

Catania Slope instability hazard evaluation, in cooperation with John Murray, University College, U.K., (1987-1988)

International Seminar-Workshop on Lahars and Landslide, Philippines

(1986) (State-of-Art Lecturer)

International Society for Rock Mechanics

Panel on Stress Measurements, 1st International Congress (1966)

Commission on Classification of Rocks and Rock Masses (1970-1978)

Organizing Committee for 3rd International Congress (1972-1974)

Excursion Committee for 3rd International Congress (1972-1974)

Leader, Northwest USA Excursion, 3rd International Congress on Rock Mechanics (1974)

Congress contributions (1966, 1970, 1974, 1987, 1991)

International Symposium on Landslides (State-of-Art Lecturer) Toronto (1984)

International Union for Geodesy and Geophysics

Chairman, Session on Tectonic and Geochemical Evolution of Iceland, Hamburg (1983)

International Workshop on Decade Volcano Merapi, Yogyakarta, Indonesia (1995)

Organizing Committee

Scientific Committee

Publication Committee

SOA Lecturer

International Workshop on Volcanic Emergency Response, (ONAD, INGEOMINAS, USGS/VDAP), Pasto, Colombia (1989) (Invited Instructor)

Japanese-American Workshop on Erosion Control in Volcanic Areas, Seattle (1982)

Mount Rainier Decade Volcano Workshop, Seattle (1992, participant)

National Research Council (NAS-NAE)

Foreign Sciences Panel, U.S. National Committee on Rock Mechanics Awards Committee,

U.S. National Committee on Rock Mechanics (1985-1987)

Technical Expert, Committee on National Disasters (1982-present)

Member, Committee on Ground Failure Hazards (1983-present)

Chairman, Task Group on Subsidence (1984-1985)

Chairman, Task Group on Snow Avalanches (1985-1986)

Chairman, Panel on Snow Avalanches (1986-1991)

National Science Teachers Association, NYC

Theme Lecturer: Adventures in Volcano Prediction

Raymond C. Gutschick Symposium, Notre Dame, IN (1979)

Organizing Committee

Keynote Lecturer

Royal Society (London). Discussion Mtg on "Causes and Consequences of Eruptions of Andesite Volcanoes." Keynote Lecture on volcano edifice collapses. (1999)

Society of Sigma Xi

U.S. Symposia on Rock Mechanics

National Organizing Committee and Session Organizer, (1989, Morgantown)

National Organizing Committee and Session Organizer, (1992, Madison)

U.S.-Asia Conference on Engineering for Mitigating National Hazards Damage

(EMNHD-2), Yogyakarta, Indonesia (June 22-26, 1991)

U.S. Delegate and Theme Lecturer on Volcanic Monitoring

U.S.-Japan Science and Technology Cooperation in Natural Hazard Mitigation

Punalu'u, HI (March 27-30, 1990)

Mt. Hood, OR (Sept. 6-13, 1992)

Menlo Park, CA (March 8-12, 1993)

Utah Workshop on Landslide Research

Needs in Response to 1983 Mudslide Disaster
(Invited Expert) Salt Lake City, UT (November, 1983)

PUBLICATIONS

Published over four hundred papers or abstracts (>100 papers in peer-reviewed journals), and has edited or co-edited over 15 books. **Google Scholar** (Apr 2017) lists **9040 citations, h-index 55, i10-index 133**.
[\[http://goo.gl/kbw2VB\]](http://goo.gl/kbw2VB)

BOOKS AND MONOGRAPHS

- Wadge, G., Robertson, R.E.A., Voight, B. (eds) 2014. *The Eruption of Soufriere Hills Volcano, Montserrat from 2000 to 2010*. Geological Society, London, Memoirs, 39, 501 pp
- Voight, B., Sparks, S., (eds) 2010. *Eruption of Soufriere Hills Volcano, the CALIPSO Project, and the SEA-CALIPSO arc-crust imaging experiment*. *Geophys. Res. Lett.*, Special Section on Montserrat, v. 37. (25 papers)
- Voight, B., Sparks, S., (eds) 2010. *Eruption of Soufriere Hills Volcano, the CALIPSO Project, and the SEA-CALIPSO arc-crust imaging experiment*. Reprint Volume by Amer. Geophys. Union, with articles from *Geophys. Res. Lett.* V 37, *J Geophys Res*, *G-cubed*, and *EOS*.
- Voight, B., Sukhyar, R., and Wirakusumah, A.D. (eds), 2000. *Special Issue on Merapi Volcano, J. Volc. Geotherm. Res.*, v. 100 (1-4), 535 pp.
- Young, S.R., Voight, B. et al. (eds), 1998. *Eruption of Soufrière Hills Volcano, Montserrat, British West Indies: Geophys. Res. Lett.*, v. 25, no. 18, pp. 3387-3440; v. 25, no. 19, pp. 3651-3700.
- Ida, Y., Glicken, H.X., and Voight, B. (eds), 1995. *Models of magmatic processes and volcanic eruptions: Harry Glicken Memorial Volume: J. Volc. Geotherm. Res.*, v. 66, nos. 1-4, 426 pp.
- Oyagi, N., Sorriso-Valvo, M., and Voight, B. (eds), 1994. *Deep-seated landslides and large-scale rock avalanches: Engineering Geology, special issue*, v. 38, 299 pp.
- Voight, B., et al., 1990. *Snow avalanche problems in the United States*. National Research Council, National Academy Press, Washington, D.C., 84 pp.
- Barstow, N.L., Hinze, G.H., Talwani, P., and Voight, B., 1986. *Seismic hazard methodology for the Central and Eastern United States*. Electric Power Research Institute, Research Project No. P101-24, NP-4726, v. 10, 433 pp.
- Shoemaker, E. M., Bredehoeft, J.D., Christiansen, R. L., Gerlach, T. M., and Voight, B., 1986. *Review of the Volcano Hazards Program of the U.S. Geological Survey*. *Admin. Rep. U.S. Geol. Survey*, Oct. 1986, 28 pp.
- Meyer, W., Sabol, M. A., Glicken, H.X., and Voight, B., 1985. *The effects of South Fork Castle Creek blockage in the Mount St. Helens area, Washington*. *U.S. Geol. Survey Professional Paper* 1345, 72

pp.

- Sangrey, D. A., et al., 1985. ***Reducing losses from landsliding in the United States***. National Research Council, National Academy Press, Washington, 41 pp.
- Barstow, N.L., Hinze, G.H., Talwani, P., and Voight, B., 1985. ***Tectonic framework & seismic source zones of the Eastern United States***. Electric Power Research Institute Research Project No. SOG 85-7, 423 pp.
- Meyer, W., Sabol, M. A., Glicken, H.X., and Voight, B., 1984. ***The effects of ground water, slope stability, and seismic hazard on the stability of the South Fork Castle Creek blockage in the Mount St. Helens area, Washington, U.S. Geol. Survey Open-File Report 84-0624***, 95 pp.
- U.S. Geodynamics Committee, 1979. ***Continental Scientific Drilling Program***, National Academy of Sciences, Washington, D.C. (contributor).
- Voight, B. (ed.), 1978/1979. ***Rockslides and Avalanches***, Elsevier, Amsterdam.
v. 1, ***Natural Phenomena***, 1978. 833 pp.
v. 2, ***Engineering Sites***, 1979. 850 pp.
- Voight, B. (ed), 1976. ***Mechanics of thrust faults and decollement***, Dowden, Hutchinson and Ross, Stroudsburg, PA, 471 pp.
- Shoemaker, E.M. (ed), 1975. ***Continental Drilling*** (Report Workshop on Continental Drilling, Ghost Ranch, Abiquiu, NM), Carnegie Inst. Washington, D.C., 56 pp. (contributor)
- Voight, B., and Voight, M.A. (eds), 1974. ***Rock Mechanics: the American Northwest***, Pennsylvania State University, University Park, PA, 292 pp.
- Gunther, W.D., Chase, R.T., and Voight, B., 1962. ***A Geologic Survey of the Washington, D.C. Area (for Subsurface Installations)***. U.S. Air Force Project 600, MITRE RP 67, 45 pp.
- Voight, B., 1961. ***Surficial geology of the South Bend, Indiana, to Lake Michigan area***. Nat. Assn. Geol. Teachers Guidebook, Department of Geology, University of Notre Dame, 21 pp.

PUBLISHED PAPERS

- Baxter, P. J., S. Jenkins, Dr Rosadi, J.-C. Komorowski, K. Dunn, D. Purser, B. Voight, I. Shelley. 2017. Human survival in volcanic eruptions: thermal injuries in pyroclastic surges, their causes, prognosis and emergency management. *Burns* (international medical journal). In Press.
- Voight B., Ewart, J., 2017. Memorial to Mark Douglas Jancin 2054-2013. Geol Soc America Memorials. <http://www.geosociety.org/documents/gsa/memorials/v46/Jancin-MD.pdf>
- Voight B., 2016. Der Fliegender Hollander: Affectionate memories of Rob Scholten. *Newsletter 2016-17, Penn State Geosciences*, Penn State University, pp. 11.
- Voight B., 2016. Gene Williams: Soldier-Moral Philosopher-Scientist-Athlete. *Newsletter 2016-17, Penn State Geosciences*, Penn State University, pp. 13-19.

- Neri, A., Clarke, A., Voight, B. 2016. IAVCEI Wager Medal Citation 2015 for Mattia de' Michieli Vitturi. *IAVCEI News*, 2016 No. 1-2, *International Association of Volcanology and Chemistry of the Earth's Interior*, pp. 2.
- Neri, A., Voight, B. 2016. IAVCEI Wager Medal Citation 2015 for Tomaso Esposti Ongaro. *IAVCEI News*, 2016 No. 1-2, *International Association of Volcanology and Chemistry of the Earth's Interior*, pp. 3-4.
- Voight, B. 2015. Father Hesburgh and Engineering Geology. *Association of Engineering Geologists News*, 58(2), p.12.
- Friant, A., et al. 2015. Submarine record of volcanic island construction and collapse in the Lesser Antilles arc: First scientific drilling of submarine volcanic island landslides by IODP Expedition 340, *Geochem. Geophys. Geosyst.*, 16, doi:10.1002/2014GC005652
- Neri A., T. Esposti Ongaro, B. Voight, C. Widiwijayanti. 2014. Pyroclastic Density Current Hazards and Risk,. *In: Papale, P. (Ed.) Volcanic Hazards, Risks and Disasters*, Elsevier, 109-140
- Lafuerza S., A. Le Friant, M. Manga, G. Boudon, B. Villemant, N. Stroncik, B. Voight, M. Hornbach, O. Ishizuka and the Expedition 340 Scientific Party. 2014. Geomechanical characterizations of submarine volcano flank sediments, Martinique, Lesse Antilles Arc. S. Krastel et al., (Eds.), *Submarine mass movements and consequences*, Advances in Natural and Technological Hazards Research, Springer Inten. Publishing, Switzerland, 2014, 37, doi 10.1007/978-3-319-00972-8_7.
- Voight, B., et al. 2014. The SEA-CALIPSO volcano imaging experiment at Montserrat: plans, campaigns at sea and on land, scientific results, and lessons learned. *Geol Soc, London, Memoirs*, 39, 253-290
- Elsworth, D., et al., 2014. Geodetic Imaging of Magma Migration at Soufrière Hills Volcano 1995-2008. *Geol Soc, London, Memoirs*, 39, 219-228.
- Wadge, G., Voight, B., Sparks, R.S.J., Cole, P., and Loughlin, S.C. 2014. An Overview of the Eruption of Soufrière Hills Volcano from 2000-2010. *Geol Soc, London, Memoirs*, 39, 1-39.
- Husain, T., Elsworth, D., Voight, B., Mattioli, G., Jansma, P. 2014. Influence of extrusion rate and magma rheology on the growth of lava domes: insights from particle-dynamics modeling. *J Volcanol Geoth Res* 285: 100-117.
- Innocenti, S., S.Andreastuti, T. Furman, B. Voight, del Marmol, M.A. 2013. The pre-eruption conditions for effusive and explosive eruptions at Merapi volcano as revealed by crystal texture and mineralogy. *Journal of Volcanology and Geothermal Research* (Special Issue on 2010 Merapi Eruption). <http://dx.doi.org/10.1016/j.jvolgeores.2013.01>.
- Voight, B. 2013. IAVCEI Thorarinsson Medal Acceptance Speech. *IAVCEI News*, 2013 No. 2-3, *International Association of Volcanology and Chemistry of the Earth's Interior*, pp. 7-8.
- Voight, B. 2013. IAVCEI Krafft Medal Citation for Shigeo Aramaki. *IAVCEI News*, 2013 No. 2-3, *International Association of Volcanology and Chemistry of the Earth's Interior*, pp. 7-8.
- Innocenti S., del Marmol M.A., Voight B., Andreastuti S., Furman T. 2013. Textural and mineral chemistry constraints on evolution of Merapi Volcano, Indonesia. *Journal of Volcanology and Geothermal Research* (Special Issue on 2010 Merapi Eruption). <http://dx.doi.org/10.1016/j.jvolgeores.2013.01>.

- Voight, B., Marta L. Calvache V., Galeras Volcano, Colombia. 2013. In, Peter T. Bobrowsky (ed.), *Encyclopedia of Natural Hazards*, DOI 10.1007/978-1-4020-4399-4, Springer Science+Business Media B.V.
- Voight, B., Marta L. Calvache, Minard L. Hall, Maria Luisa Monsalve. 2013. Nevado del Ruiz Volcano., Colombia 1985. In, Peter T. Bobrowsky (ed.), *Encyclopedia of Natural Hazards*, DOI 10.1007/978-1-4020-4399-4, Springer Science+Business Media B.V.
- Investigating disequilibrium effects in magma ascent dynamics with a new multiphase flow model
de' Michieli Vitturi, Mattia; Clarke, Amanda B.; Neri, Augusto; Voight, Barry; La Spina, Giuseppe
. 2013. EGU General Assembly 2013, held 7-12 April, 2013 in Vienna, Austria, id. EGU2013-10536
- Voight, B., Anne Le Friant, Georges Boudon, Christine Deplus, J-C. Komorowski, Elodie Lebas, R.S.J. Sparks, Peter Talling, Jess Trofimovs. 2012. Undrained sediment loading key to long-runout submarine mass movements: Evidence from the Caribbean volcanic arc. pp. 417-428 in Y. Yamada et al. (eds.), *Submarine Mass Movements and Their Consequences*, 417 Advances in Natural and Technological Hazards Research 31, DOI 10.1007/978-94-007-2162-3_37, © Springer Science+Business Media B.V. 2012
- de' Michieli Vitturi, M., A.B. Clarke, A. Neri, & B. Voight 2013. Extrusion cycles during dome-building eruptions, *Earth and Planet Sci Lett*, 371–372, 37 – 48.
- Voight, B. 2012. Scientific and emergency management response to volcanic risk: Lessons from Montserrat and selected other volcanoes. pp 9-68 in Aramaki, S., Fujita, E. (Eds.) *Proceedings, International Workshop on Strategy of Volcano Disaster Mitigation 2011: Large Eruptions and Crisis Management*. Yamanashi Institute of Environmental Sciences (YIES) and National Research Institute for Earth Sciences and Disaster Prevention (NIED), 532 pp (in English and Japanese)
- Voight, B. 2012. Modeling pyroclastic flow and surge hazards: assumptions, capabilities, limitations and integration with civil defense strategies. pp 257-323 in Aramaki, S., Fujita, E. (Eds.) *Proceedings, International Workshop on Strategy of Volcano Disaster Mitigation 2011: Large Eruptions and Crisis Management*. Yamanashi Institute of Environmental Sciences (YIES) and National Research Institute for Earth Sciences and Disaster Prevention (NIED), 532 pp (in English and Japanese)
- Voight, B. 2012. Discussions on evacuation and decision issues. pp 61-68, 229-233, 241-245, 484-494 in Aramaki, S., Fujita, E. (Eds.) (2011) *Proceedings, International Workshop on Strategy of Volcano Disaster Mitigation 2011: Large Eruptions and Crisis Management*. Yamanashi Institute of Environmental Sciences (YIES) and National Research Institute for Earth Sciences and Disaster Prevention (NIED), 532 pp (in English and Japanese)
- Esposti Ongaro et al 2012 JGR
- Paulatto, M., Annen, C., Henstock, T.J., Kiddle, E., Minshull, T.A., Sparks, R.S.J., Voight, B. 2012. Magma chamber properties from integrated tomography and thermal modeling at Montserrat. *Geochemistry, Geophysics, Geosystems*, V. 13, no. 1, 18 pp, Q01014, doi:10.1029/2011GC003892 ISSN: 1525-2027
- Esposti-Ongaro, T., C. Widiwijayanti, A.B. Clarke, A. Neri, B. Voight. 2011. Multiphase-flow numerical modelling of the May 18, 1980 lateral blast at Mount St. Helens (USA). *Geology*, June 2011; v. 39; no. 6; p. 535–538; doi:10.1130/G31865.1.
See simulation videos: <http://www.pi.ingv.it/focus/shelensEV.html>.
- Voight, B., 2011. Wager Medal Citation for Amanda Clarke, IAVCEI General Assembly, IUGG Melbourne

July 2011, *IAVCEI News*, 2011 No. 1-3, p. 7

- Foroozan, R., D. Elsworth, B. Voight, G.S. Mattioli, 2011. Magmatic-metering controls the stopping and restarting of eruptions, *Geophys. Res. Letters*, v. 38, L05306, doi:10.1029/2010GL046591, 2011.
- Tomaso Esposti Ongaro, Augusto Neri, Sara Barsotti, Barry Voight, Simone Orsucci. 2011. 3D simulation of a blast scenario at MontagnePelée, Martinique. CASAVA Project Délivérable: D2.2.1 Titre délivrable: Responsable du délivrable et contact email: Tomaso Esposti Ongaro (ongaro@pi.ingv.it) . Work package titre: Task 2.2. *Mathematical modelling and simulation of pyroclastic density current dynamics at La Soufrière of Guadeloupe and MontagnePelée*. CASAVA. 30/06/2011
- de' Michieli Vitturi, M., A.B. Clarke, A. Neri and B. Voight, 2010. Transient effects of magma ascent dynamics along a geometrically variable dome-feeding conduit, *Earth and Planetary Science Letters* 295, 541 – 553, 2010.
- de' Michieli Vitturi, M., A.B. Clarke, A. Neri, B. Voight, 2010. DOMEFLOW Source Guide, *Istituto Nazionale di Geofisica e Vulcanologia, Sezione di Pisa*, published online on *Volcano modelling and simulation Gateway* (<http://vmsg.pi.ingv.it>), 2010.
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[NOTE: FROM 2003 ONWARD, THIS WORK WAS CONTINUED BY THE “SCIENTIFIC ADVISORY COMMITTEE,” A FORMAL UK GOVERNMENT STRUCTURE]

Scientific Advisory Committee (SAC) (Wadge, G., Aspinall, W., Voight, B. et al.), **Assessment of the Hazards and Risks associated with Soufriere Hills Volcano, Montserrat. Part 1. Main Report.** *FCO, UK Government*; published online at Montserrat Volcano Observatory. (2003 – 2012)

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[NOTE: REPORTS OF SAC 1 THROUGH SAC 17, HAVE BEEN PRODUCED BETWEEN 2003 and 2012, WITH BOTH “MAIN” AND “TECHNICAL” REPORT TYPES GENERATED; A TOTAL OF 34 REPORTS WERE PRODUCED; THE LATEST, SAC 17, MET OCTOBER 2013]

CAREER NARRATIVE

Barry Voight is Emeritus Professor of Geology and Geological Engineering at Penn State University, where he has been a member of the faculty since 1964, retiring from teaching (but nothing else!) in 2005. He attended the University of Notre Dame and received three degrees in Geology, and Civil Engineering (BS Geol., 1959; BS CE, 1960; MS CE (Soil Mech.), 1961). He began research there as an undergrad under the generous tutelage of Profs. Ray Gutschick and engineering geologist Erhard Winkler, catching permanently the researcher’s disease of ‘exhilaration from discovery’. After a one-year stint at Cornell, he joined Fred Donath’s rock mechanics-structural geology group at Columbia University, was a President’s Fellow and was

the course lecturer in Engineering Geology, and earned a PhD in 1965. He has been at Penn State since, apart from stints as a Visiting Professor at the University of Toronto, the Technological University at Delft, Netherlands (in the service of Jacques Dozy) and the University of California at Santa Barbara, and as MacQuarie Research Scholar (Australia) (with Russ Blong). Professional interests have included engineering geology and geotechnics, rock mechanics, tectonics, volcanology, and hazards and risk assessment/hazards mitigation.

In the USA, he conducted geological and geotechnical field studies in the Appalachians, Rocky Mountains, and Cascade Range. Abroad he has worked on all continents apart from Antarctica. He originated the anelastic strain recovery (ASR) method for deep rock stress measurements employed worldwide. He has developed new methods to anticipate material failure (e.g., Failure Forecast Method, FFM), adapted these methods using geodetic and seismic data for the time prediction of landslides and eruptions, and employed them (when suitable) in resolving practical emergency problems.

He has an active international consulting practice in engineering geology and geotechnics, hazards management, and forensic work, in particular specializing in slope failures and foundation problems. He has served as consultant for the *USA Corps of Engineers (COE)*, the *US Bureau of Mines*, the *US Geological Survey*, the Governments of France and Italy, among others. He holds a long-term appointment (1991-present) on the *External Dams Safety Cmte* of the Republic of Ireland, performing annual inspections and advising on rehabilitation work. He participated in the *SOG/EPRI* development of seismic hazard methodology for central and eastern USA, and has performed field studies for projects as far afield as Papua New Guinea, the Himalayas, and Somalia. He performed in early 2000s hazards assessments for the Caspian oil/gas pipelines crossing Azarbaijan toward Georgia and Turkey. He served in the 1980s on the *National Research Council* Committee on Ground Failure Hazards, was chair of a *National Research Council* committee addressing snow avalanche hazards, and was instrumental in 1986 in founding the *American Association of Avalanche Professionals*. He served as member of a key panel to review the *USGS Volcano Hazards Program* in 1986 (w/Gene Shoemaker), giving strong support for the VDAC (Crisis Assistance) Program, and for an Alaskan Volcano Observatory; and served on a similar panel in 1989.

His current work largely emphasizes engineering geology applied to volcanoes, quantitative volcanology, and disaster prevention. He holds an adjunct appointment (since 1980) with the *USGS Cascades Volcano Observatory* as a member of the *Volcano Hazards Team*, and has worked with the USGS, the *United Nations*, *WOVO*, and several host nations on volcano emergencies. He participated in the *USGS* pre-eruption hazards assessment at **Mount St. Helens** (MSH) in 1980, and recognized the potential for a large-scale north-flank edifice failure. After the failure actually occurred and triggered the great May 1980 eruption, he continued work in the MSH post-eruption disaster response, directed the USGS investigation of the ~3-billion cubic meter volcanic debris avalanche, and worked on other issues involving volcanic processes and hazards. He originated the lake-tap mitigation solution for Spirit Lake when it threatened to overtop the avalanche debris dam and cause a severe lake-breakout flood; the engineering solution was contracted through COE and utilized a tunnel-boring machine (completed 1985). He worked on various other MSH problems, including the March 1982 explosive eruption, and was fortunate during this period to rub shoulders with men and women like Dick Janda and a host of other first-class people, whose prodigious scientific capabilities were matched by impressive strength of character. He also conducted research and assessments at other volcanoes in the Cascade Range and Alaska.

BV worked in Iceland in the late 1970s and 1980s, notably at **Krafla** volcano and on stratigraphic-structural studies on older lava sequences and the Tjornes Fracture Zone, mapping an unstudied peninsula with students and Kristjan Saemundsson of the *National Energy Authority*. With USGS as a member of *Cmte de Estudios Vulcanologicos*, he worked with Marta Calvache on post-disaster monitoring and hazards assessments at **Nevedo del Ruiz** (Colombia), the most lethal eruption of the Century apart from Pelee, demonstrated through EDM monitoring that a feared crater flank collapse was unlikely there, and published a detailed post-mortem on why the disaster prevention measures had failed. He was sent to the awakening

Galeras Volcano in 1989 with Dick Janda and Dave Harlow of USGS, and co-produced with Janda the first detailed (and realistic) hazards map of Galeras. Also with Janda (then Chief of *USGS VDAP*), in 1991 he made an assessment of **Nevado del Huila**, another Colombian assignment complicated by sinister guerrilla factions and cartel concerns, and contributed to an assessment at **Cotopaxi** with Pete Hall and Patty Motthes. In the early 1990s he contributed in a modest way to studies at **Redoubt** (AK) and **Pinatubo** volcanoes, conducted small investigations involving **Bandai-san**, **Ontake-san** (with Norio Oyagi), and **Unzen** in Japan, worked with the Belousovs on **Shiveluch** and **Bezymianny** volcanoes in Kamchatka (where a previously unknown large surge deposit was discovered); and since 1988 made a series of contributions at **Merapi** in Java, in collaboration with the *Volcanological Survey of Indonesia*. The Merapi work involved an initial USGS mission in 1988 and another following the November 1994 disaster, coupled with years of NSF-supported research. He constructed a network of benchmarks around the summit rim to be used for EDM, GPS, and gravity surveys, monitored deformation and seismic precursors to several eruptive events, studied eruption deposits, interviewed injured citizens. He continues to contribute to hazard mitigation measures, and provided strong support to VSI and USGS (C. Newhall) for the 2006 and 2010 Merapi eruption crises.

At **Soufriere Hills** volcano, West Indies, he was a Senior Scientist since 1996 with the *British Geological Survey* assigned to *Montserrat Volcano Observatory*, worked on a variety of monitoring and research issues, and was active to 2013 (volcanic activity declined after 2010) on the *UK Scientific Advisory Cmte* providing guidance to UK and Montserrat governments. He was involved in crater wall stability crises, eruption forecasting using tilt and seismic data (recognizing the “~10 hour” and “~7 week” cycles), vulcanian explosions, a debris avalanche/blast (St Helens mimicked on a small scale), rain-triggered and gas-pressurized major lava dome collapses, and risk boundaries and evacuations. Several of his students used Montserrat data in PhD theses.

In volcanology his research interests include edifice and dome deformation and collapse, explosive volcanism, volcano monitoring and forecasting, and pyroclastic currents. He was Project Director 2002-2015 for **CALIPSO** (*Caribbean Andesite Lava Island Precision Seismo-geodetic Observatory*), which is an international NSF/NERC-supported consortium project focused on magma reservoir and eruption dynamics on Montserrat. Remarkable results have been obtained in strain and GPS data, notably from the world-record lava-dome collapse in July 2003, from explosions, and from multi-year cyclic inflations and deflations. A successful major offshore/onshore tomographic imaging study of Montserrat and its magma system was conducted in 2007 (**SEA-CALIPSO**) with data analysis through 2012, defining the magma chamber and melt properties at depths 5-8 km; results appeared in the special issue of *Geophysical Research Letters* in 2010, *AGU G-cubed* in 2012, and *Geological Society (London) Memoir 39* (2014).

In 2003 he assisted *Dipartimento Protezione Civile*, Italia, in evaluating the volcano landslide-tsunami crisis at **Stromboli**, and with M. Marsella installed EDM reflector stations on the Sciarra del Fuoco to check stability. He aided INGV also on Etna and other volcano issues.

He worked on the Andes project (MAP: GAC) for the *Geological Survey of Canada* (2005-2007), giving a short course on seismicity and slope stability in Bogota, and worked in Chile at **Villarica** and **Osorno**. He was advisor to INGV Italy in the 2014 Etna crisis and advised the Iceland Meteorological Agency in 2015 on the Bardarbunga lava eruption.

Recent work also includes multiphase thermoviscous computational modeling of volcanic blasts with Augusto Neri and colleagues at Pisa, focused on the 1997 Boxing Day volcanic blast on Montserrat and the St Helens 1980 blast, verified by detailed field comparisons, and in mitigating the 2007 threatened blast on Montserrat directed toward populated areas. Modeling made in 2007 accurately forecast the area of impact reached by pyroclastic flows and surges in the 2010 eruption.

He helped write the successful research proposal for IODP drilling in the Caribbean, and participated in research for the first scientific drilling of submarine volcanic island landslides in IODP Expedition 340. The

work is summarized in a 2015 article in G-cubed (AGU).

As university professor he has had the pleasure of guiding a number of bright students at undergrad and grad levels, including several from other institutions. The most unfortunate of them was Harry Glicken (co-advised by the late R.V. Fisher, UCSB), whose PhD thesis on the deposits at Mount St Helens was at the forefront of research on debris avalanches in the 1980s that led to their recognition at hundreds of volcanoes worldwide. Curiosity leads to understanding, but volcanologists who are curious can get themselves into trouble and sometimes die because of it: Harry narrowly escaped death at MSH in 1980, but died too young in 1991 at Unzen, Japan, from a hot pyroclastic current, falling beside the famous Maurice and Katja Krafft. This sad incident was a principal motivation in BV's focus on pyroclastic current research, including successful development with C. Widiwidjayanti of a new objective GIS procedure for mapping pyroclastic current hazards (published 2008/9).

He has published over four hundred papers or abstracts (>100 papers in peer-reviewed journals), and has edited or co-edited several books, including *Rock Mechanics: the American Northwest (1974)*; *Mechanics of Thrust Faults and Decollement (1976)*; *Rockslides and Avalanches (1978, 1979, in two 800+pp Elsevier volumes)*; *Deep-seated Landslides and Large-scale Rock Avalanches (1994)*; and *Models of Magmatic Processes and Volcanic Eruptions (1995)*, and volumes on landslides and snow avalanches for the *National Research Council, National Academy Press*. He was Editor of the *Special Issue on Merapi Volcano (JVGR, 2000)*, was Co-Convener of the 1998 Special Section of *Geophysical Research Letters* on the *Eruption of Soufriere Hills Volcano*, and contributed substantially to the 2002 *Geological Society of London Memoir 21* on the Soufriere Hills eruption. He was Convener of the 2010 special GRL issue on *Imaging the Soufriere Hills Volcano*, and co-Editor in 2014 of *Memoir 39, Geological Society of London, on The Eruption of Soufriere Hills Volcano: 2000-2010*.

He received research awards from the National Cmte Rock Mechanics/National Research Council (Applied Research Award 1984 for work at Mount St Helens; Basic Research Award 1990 for failure-prediction theory), the George Stephenson Medal from the Institution of Civil Engineers (London) for a Geotechnique article on Mount St Helens collapse mechanics, the Wilson Award for research in Earth and Mineral Sciences at Penn State, and Penn State's highest research honor, the Faculty Scholar Medal for Outstanding Achievement in the Physical Sciences and Engineering. He was Richard Jahns Distinguished Lecturer for 1992 of the Geological Society of America and Association of Engineering Geologists, and was happy to receive this because it was Jahns who had hired him to teach at Penn State in 1964. He was elected Union Fellow of American Geophysical Union in 2008 for "fundamental contributions to the understanding of volcano deformation, assessment of volcano hazards, and forecasting." In 2009 he received the Distinguished Practice Award from the Geological Society of America, Engineering Geology Division. Also in 2009 he received the Schuster Medal from the Canadian Geotechnical Society and Association Engineering Geologists, for outstanding achievements in research on geologic hazards in North America. In 2010 he was elected Honorary Member of the Association of Engineering Geologists, their highest honor. In 2013 he was awarded the Thorarinsson Medal of the International Association of Volcanology (IAVCEI), their highest honor, awarded once every four years. He was elected to National Academy of Engineering in 2017, for understanding, management, and mitigation of geologic hazards.

He has helped to establish the 'Barry Voight Endowment for Volcanic Hazards' at Penn State, which aims to support education for volcano hazards specialists from developing countries.

