

**ROBERT A. SOHN**

Associate Scientist

Woods Hole Oceanographic Institution, Woods Hole, MA 02543

**Born:**

3 August, 1965; Indianapolis, Indiana      U.S. citizen

**Education:**

Ph.D. 1996, Scripps Institution of Oceanography, Oceanography

B.S. 1987, Purdue University, Mechanical Engineering

**Professional Appointments:**

2013            Visiting Scientist, Institut de Physique du Globe, Paris  
2007-present   Associate Scientist w/tenure, Woods Hole Oceanographic Institution  
2003-2007      Associate Scientist, Woods Hole Oceanographic Institution  
1999-2003      Assistant Scientist, Woods Hole Oceanographic Institution  
1998-1999      Assistant Project Scientist, Scripps Institution of Oceanography  
1996-1998      Post-graduate researcher, Scripps Institution of Oceanography  
1991-1996      Graduate Research Assistant, Scripps Institution of Oceanography  
1987-1991      Project Engineer, McDonnell Douglas Inc., Long Beach, CA

**Research Interests:**

Hydrothermal systems, volcanoes, stochastic analysis, seismology.

**Courses Taught:** Geodynamics Seminar – Dynamics of Continental and Submarine Hydrothermal Systems (2015), Active Source Marine Seismology (2006), Introduction to Marine Geology and Geophysics (2002-2005), Computational Data Analysis (2001), Geodynamics Seminar – Plume/Ridge Interactions (2001).

**Professional Panels and Committees:** WHOI-MIT Joint Programs Admissions Committee (2014-present), WHOI Marine Operations Committee (2006-2012), NSF R2K Distinguished Lecturer (2009), NSF R2K Steering Committee (2004-2007), ECOR Specialist Panel on Under-Ice AUV Operations (2006-2007), iODP Site Survey Panel (2001-2004), NSF Innovation in Graduate Education and Research Training Panel (2000).

**Professional Societies:** American Geophysical Union (93-present).

**Students advised:** Gregory Horning (Ph.D., exp. 2017), Claire Pontbriand (Ph.D, 2012), Andrea Llenos (Ph.D., 2010), Bhaskar Deo (summer intern, 2010), Brian deMartin (Ph.D., 2007), Sacha Wichers (M.Sc., 2005), Juliana Gay (summer intern, 2006), Don Pfitsch (summer intern, 2000), Shawn Sorenson (summer intern, 1998).

**Postdoctoral researchers advised:** Thibaut Barreyre (2014).

**Field Work:**

MARINER: Seismic Investigation of the Rainbow Hydrothermal Field (co-investigator)

- January, 2014, R/V Pelagia (chief scientist), active and passive seismic study of the Mid-Atlantic Ridge, 36°N (seismic refraction, seismic reflection, microearthquake study, bathymetric mapping, magnetics)

Lone Star Geyser, Yellowstone National Park (co-investigator)

- September, 2009 & September, 2010, geophysical surveys of the Lone Star geyser (tilt, broadband seismic, infrared cameras, LIDAR, gravity, magnetics)

Arctic Gakkel Vents Expedition (lead investigator)

- July 1 – August 10, 2007, *I/B Oden* (chief scientist), Hydrothermal and geological studies of the Gakkel ridge employing CTDs, AUVs, and a tethered imaging and sampling platform

Seismicity and fluid flow of TAG Experiment (lead investigator)

- October 25 – November 9, 2004, *R/V Knorr* (chief scientist), ROV Jason 2 dive program to recover seafloor instrumentation
- October 24 – November 9, 2003, *R/V Maurice Ewing*, Airgun refraction survey
- June 21 – July 8, 2003, *R/V Atlantis* (chief scientist), HOV Alvin dive program to deploy seafloor instrumentation

#### Autonomous Polar Geophysical Explorer Sea Trials (lead investigator)

- August 25 – 29, 2002, *R/V Weatherbird II* (chief scientist), AUV development
- July 26 – August 1, 2001, *R/V Weatherbird II* (chief scientist), AUV development
- May 24 – 27, 2001, *R/V Endeavor* (chief scientist), AUV development

#### Sonic Boom Penetration into the Ocean Experiment (lead investigator)

- May 12 - 13, 1999, *R/V New Horizon* (chief scientist), Deployment of hydrophone network with supersonic overflights.

#### Seismicity of Axial Seamount Experiment (co-investigator)

- April 17 – May 3, 1999, *R/V Maurice Ewing*, Ocean bottom seismometer experiment

#### Temporal Observations of Eruption Seismicity at the EPR, 9°N

- March 6 - 30, 1995, *R/V New Horizon*, Geophysical studies of volcanic eruption site

#### Microseismicity of the Juan de Fuca Ridge Experiment

- June 25 – July 9, 1994, , *R/V New Horizon*, Geophysical studies of the CoAxial segment
- May 16 – June 9, 1994, *R/V New Horizon*, Geophysical studies of the CoAxial segment

#### Lau Basin Travel Time Tomography Experiment

- August 30 – September 30, 1994, *R/V Melville*, Ocean bottom seismometer experiment

#### Resistivity and Electromagnetics Experiment

- September 9 – October 6, 1993, *R/V Melville*, Geophysical studies of the Juan de Fuca Ridge

#### Noise on Basalt Surfaces Experiment

- August 26 – September 19, 1991, *R/P FLIP* and *R/V New Horizon*, Ocean bottom seismometer experiment

### **Geological Field Trips:**

#### Hawaiian Volcanoes

- July, 2012, WHOI Geodynamics Program

#### Fraser River Basin drainage

- July, 2011, WHOI Geodynamics Program

#### Costa Rica volcanoes

- June, 2008, WHOI Geodynamics Program

#### Alpine ophiolites, Italy

- September 2006, InterRIDGE Polar Ridges Field Trip

#### Mammoth Lakes volcanic system, California Sierra Nevada

- June 2006, RIDGE 2000 Theoretical Institute

#### Troodos ophiolite, Cyprus

- May 2005, RIDGE 2000 Field School

#### Scottish Highlands and Isle of Rum

- July 2002, WHOI Geodynamics Program

#### Yellowstone and Snake River Plain Volcanics

- July 2001, WHOI Geodynamics Program (organizer)

#### Samail ophiolite, Oman

- February 1998, RIDGE Winter Field School

#### Icelandic rift zones

- September 1996, European Seismological Commission

## Bibliography

ROBERT A. SOHN

Associate Scientist

Woods Hole Oceanographic Institution

### Peer-reviewed journal publications:

- Paulatto, M., J. P. Canales, R. Dunn, and R. Sohn, Heterogeneous and asymmetric crustal accretion: new constraints from multi-beam bathymetry and potential field data from the Rainbow area of the Mid-Atlantic Ridge (35°50'N – 36°35'N), *Geochem, Geophys. Geosyst.*, submitted.
- Small, C., and R. Sohn, Correlation Scales of Digital Elevation Models in Developed Coastal Environments, *Remote Sensing of the Environment*, 159, 80-85, doi:10.106/j.rse/2014.11/031, 2015.
- Vandemeulebrouck, J., R. A. Sohn, M. Rudolph, S. Hurwitz, M. Manga, M. J. S. Johnston, S. A. Soule, D. McPhee, J. M. G. Glen, L. Karlstrom, and F. Murphy, Eruptions at Lone Star Geysir, Yellowstone National Park, USA, Part 2: Constraints on Subsurface Dynamics, *J. Geophys. Res. Solid Earth*, 119, doi:10.1002/2014JB011526, 2014.
- Barreyre, T., J. Escartin, R. Sohn, and M. Cannat, Permeability of the Lucky Strike deep-sea hydrothermal system: constraints from the poroelastic response to tidal loading, *Earth Planet. Sci. Lett.*, 408, 146-154, doi:10.1016/j.epsl.2014.09.049, 2014.
- Barreyre, T., J. Escartin, R. A. Sohn, M. Cannat, V. Ballu, and W. Crawford, Temporal variability and tidal modulation of hydrothermal exit-fluid temperatures at the Lucky Strike deep-sea vent field, Mid-Atlantic Ridge, *J. Geophys. Res. Solid Earth*, 119, doi:10.1002/2013JB010478, 2014.
- Hurwitz, S., Sohn, R.A., Luttrell, K., Manga, M., Triggering and Modulation of Geysir Eruptions in Yellowstone National Park by Earthquakes, Earth Tides, and Weather, *J. Geophys. Res. Solid Earth*, 119, doi:10.1002/2013JB010803, 2014.
- Pontbriand, C. W., and R. A. Sohn, Microearthquake evidence for reaction-driven cracking within the Trans-Atlantic Geotraverse (TAG) active hydrothermal deposit, *J. Geophys. Res. Solid Earth*, 119, 822-839, doi:10.1002/2013JB010110, 2014.
- Karlstrom, L., S. Hurwitz, R. Sohn, J. Vandemeulebrouck, F. Murphy, M. R. Rudolph, M. Johnston, M. Manga, R. B. McCleskey, Eruptions at Lone Star Geysir, Yellowstone National Park, USA, Part 1: Energetics and Eruption Dynamics, *J. Geophys. Res. Solid Earth*, 118, 4048-4062, doi:10.1002/jgrb.50251, 2013.
- Sohn, R. A., A method for inverting ratio-ratio data to estimate end-member compositions in mixing problems, *Chemical Geology*, 352, 63-69, doi:10.1016/j.chemgeo.2013.06.002, 2013.
- Waters, C.L., Sims, K.W.W., Soule, S.A., Blichert-Toft, J., Dunbar, N.W., Plank, T., Sohn, R.A., Tivey, M.A., Recent Volcanic Accretion at 9-10°N East Pacific Rise as Resolved by Combined Geochemical and Geological Observations, *Geochem, Geophys. Geosyst.*, 13(10), Q10005, doi:10.1002/ggge.20134, 2013.
- Pontbriand, C. W., S. A. Soule, R. A. Sohn, S. E. Humphris, C. Kunz, H. Singh, K. Nakamura, M. Jakobsson, T. Shank, Effusive and explosive volcanism on the ultraslow-spreading Gakkel Ridge, 85°E,

- Geochem, Geophys. Geosyst.*, 13(10), Q10005, doi:10.1029/2012GC004187, 2012.
- Zhao, M., J. P. Canales, R. A. Sohn, Three-dimensional seismic structure of a Mid-Atlantic Ridge segment characterized by active detachment faulting (Trans-Atlantic Geotraverse, 25°55'N-26°20'N), *Geochem, Geophys. Geosyst.*, 13(1), Q0AG13, doi:10.1029/2012GC004454, 2012.
- Barreyre, T., S. Adam Soule, Robert A. Sohn, Dispersal of volcanoclasts during deep-sea eruptions: Settling velocities and entrainment in buoyant seawater plumes, *J. Volc. Geotherm. Res.*, 205, 84-93, doi:10.1016/j.jvolgeores.2011.05.006, 2011.
- Stranne, C., R. A. Sohn, B. Liljebladh, and K. Nakamura, Analysis and modeling of hydrothermal plume data acquired from the 85°E segment of the Gakkel Ridge, *J. Geophys. Res.*, 115, C06028, doi:10.1029/2009JC005776, 2010.
- Shaw, Alison M., Mark D. Behn, Susan E. Humphris, Robert A. Sohn, and Patricia M. Gregg, Deep pooling of low degree melts and volatile fluxes at the 85°E segment of the Gakkel Ridge: Evidence from olivine-hosted melt inclusions and glasses, *Earth Planet Sci. Lett.*, 289, 311-322, doi:10.1016/j.epsl.2009.11.018, 2010.
- Sohn, R. A., R. E. Thomson, A. B. Rabinovich, and S. F. Mihaly, Bottom pressure signals at the TAG deep-sea hydrothermal field: Evidence for short-period, flow-induced ground deformation, *Geophys. Res. Lett.*, 36, L19301, doi:1029/2009GL040006, 2009.
- Kunz, C., C. Murphy, H. Singh, C. Pontbriand, R. A. Sohn, S. Singh, T. Sato, C. Roman, K. Nakamura, M. Jakuba, R. Eustice, R. Camilli, and J. Bailey, Toward Extraplanetary Under-Ice Exploration: Robotic Steps in the Arctic, *J. Field Robotics*, 26(4), 411-429, 2009.
- Jakuba, M. V., C. N. Roman, H. Singh, C. Murphy, C. Kunz, C. Willis, T. Sato, and R. A. Sohn, Long-Baseline Acoustic Navigation for Under-Ice Autonomous Underwater Vehicle Operations, *J. Field Robotics*, 25(11-12), 861-879, 2008.
- Sohn, R. A., and the AGAVE science team, Explosive volcanism on the ultraslow-spreading Gakkel ridge, Arctic Ocean, *Nature*, 453, doi:10.1038/nature07075, 2008.
- Sims, K. W. W., S. R. Hart, M. K. Reagan, J. Blusztajn, H. Staudigel, R. A. Sohn, G. D. Layne, L. A. Ball and J. Andrews.  $^{238}\text{U}$ - $^{230}\text{Th}$ - $^{226}\text{Ra}$ - $^{210}\text{Pb}$ - $^{210}\text{Po}$ ,  $^{232}\text{Th}$ - $^{228}\text{Ra}$  and  $^{235}\text{U}$ - $^{231}\text{Pa}$  constraints on the ages and petrogenesis of Vailulu and Malumalu Lavas, Samoa, *Geochem, Geophys. Geosyst.*, 9(4), Q04003, doi:10.1029/2007GC001651, 2008.
- Canales, J. P., R. A. Sohn, and B. J. deMartin, Crustal structure of the TAG segment (Mid-Atlantic Ridge, 26°10'N): Implications for the nature of hydrothermal circulation and detachment faulting at slow-spreading ridges, *Geochem, Geophys. Geosyst.*, 8, Q08004, doi:1029/2007GC001629, 2007.
- Sohn, R.A., Stochastic analysis of exit-fluid temperature records from the active TAG hydrothermal mound (Mid-Atlantic Ridge, 26°N), 2. Hidden Markov Models of flow episodes, *J. Geophys. Res.*, 112, B09102, doi:10.1029/2007JB004961, 2007.
- Sohn, R. A., Stochastic analysis of exit-fluid temperature records from the active TAG hydrothermal mound (Mid-Atlantic Ridge, 26°N), 1. Modes of variability and implications for sub-surface flow, *J. Geophys. Res.*, 112, B07101, doi:10.1029/2006JB004435, 2007.

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- Copley, J. T. P., P. B. K. Jorgensen, and R. A. Sohn, Assessment of decadal-scale ecological change at a deep Mid-Atlantic hydrothermal vent and reproductive time-series in the shrimp *Rimicaris exoculata*, *J. Mar. Biol. Ass. U.K.*, 87, 859-867, 2007.
- Sims, Kenneth W. W., Robert P. Ackert, Jr., Frank Ramos, R. A. Sohn, Michael T. Murrell, Donald J. DePaolo, Determining eruption ages and erosion rates of Quaternary basaltic volcanism from combined U-series disequilibria and cosmogenic exposure ages, *Geology*, 35(5), 471-474, doi: 10.1130/G23381A.1, 2007.
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- Sohn, R. A., S. C. Webb, and J. A. Hildebrand, Fine-scale seismic structure of the shallow volcanic crust on the East Pacific Rise at 9°50'N, *J. Geophys. Res.*, 109, B12104, doi:10.1029/2004JB003152, 2004.
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- Braun, M. G., and R. A. Sohn, Melt Migration in Plume-Ridge Systems, *Earth Planet Sci Lett*, 213, 417-430, 2003.
- Golden, C. E., S. C. Webb, and R. A. Sohn, Hydrothermal Microearthquake Swarms Beneath Active Vents at Middle Valley, Northern Juan de Fuca Ridge, *J. Geophys. Res.*, 108(B1), 2003, doi:10.1029/2001JB000226.
- Sohn, R. A., and W. Menke, Application of maximum likelihood and bootstrap methods to nonlinear curve-fit problems in geochemistry, *Geochem. Geophys. Geosyst.*, 3(7), 10.1029GC000253, 2002.
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- Sohn, R. A., and J. A. Hildebrand, Hydroacoustic earthquake detection in the Arctic Basin with the Spinnaker Array, *Bull. Seis. Soc. Amer.*, 91(3), 572-579, 2001.
- Sohn, R. A., F. Vernon, J. A. Hildebrand, and S. C. Webb, Field measurements of sonic boom penetration into the ocean, *J. Acous. Soc. Amer.*, 107, 3073-3083, 2000.
- Sohn, R. A., W. C. Crawford, and S. C. Webb, Local seismicity following the 1998 eruption of Axial Volcano, *Geophys. Res. Lett.*, 26, 3433-3436, 1999.

- Sohn, R. A., J. A. Hildebrand, and S. C. Webb, A microearthquake survey of the high-temperature vent fields on the volcanically active East Pacific Rise, *J. Geophys. Res.*, *104(11)*, 25,367-25,378, 1999.
- Sohn, R. A., Fornari, D. J., Von Damm, K. L., Hildebrand, J. A., and Webb, S. C., Seismic and hydrothermal evidence for a cracking event on the East Pacific Rise crest at 9°50'N, *Nature*, *396*, 159-161, 1998.
- Sohn, R. A., J. A. Hildebrand, and S. C. Webb, Post-rifting seismicity and a model for the 1993 diking event on the CoAxial segment, Juan de Fuca Ridge, *J. Geophys. Res.*, *103(5)*, 9867-9877, 1998.
- Sohn, R. A., S. C. Webb, J. A. Hildebrand, and B. D. Cornuelle, Three-dimensional tomographic velocity structure of the upper crust, CoAxial segment, Juan de Fuca Ridge: Implications for on-axis evolution and hydrothermal circulation, *J. Geophys. Res.*, *102(8)*, 17,679-17,695, 1997.
- Sohn, R. A., J. A. Hildebrand, S. C. Webb, and C. G. Fox, Hydrothermal Microseismicity at the Megaplume Site on the Southern Juan de Fuca Ridge, *Bull. Seis. Soc. Amer.*, *85(3)*, 775-786, 1995.
- May, D. N., and R. A. Sohn, Simple Response Metrics for Minimized and Conventional Sonic Booms, *Journal of Sound and Vibration*, *145(2)*, 225-238, 1991.

### **Miscellaneous publications:**

Sohn, R. A., R. Evans, S. Webb, N. Edwards, J. Hildebrand, W. Crawford, E. Canuteson, and M. Zumberge, Geophysical Experiments During the MUSE Experiment, *InterRidge News*, v4, n1, 24-28, 1995.

Sohn, R. A., and J. W. Stroup, Procedure for generating global atmospheric engine emissions data from future supersonic transport aircraft, *NAS1-18378*, 1990.

### **Abstracts (incomplete listing):**

Hurwitz, S., Vandemeulebrouck, Sohn, R.A., Rudolph, M., Johnston, M.J., Karlstrom, L., 2012, Geodetic, Seismic and Acoustic Measurements of Eruptions at Lone Star Geyser, Yellowstone National Park, USA, *Geological Society of America Cordilleran Section Meeting*, Queretaro, Mexico.

Hurwitz, S., Vandemeulebrouck, J., Johnston, M., Sohn, R.A., Karlstrom, L., Rudolph, M., Murphy, F., McPhee, D., Glen, J., Soule, S.A., Meertens, C., Pontbriand, C., 2011, A Multi-Method Experiment to Investigate Geyser Dynamics: Lone Star Geyser, Yellowstone National Park, *Amer. Geophys. Union Fall Meeting*, San Francisco.

Vandemeulebrouck, J., Hurwitz, S., Johnston, M.J.S, Rudolph, M., Karlstrom, L., Sohn, R.A., Murphy, F., McPhee, D., Glen, J.M, Soule, S.A., Meertens, C.M, 2011, Periodic flow instabilities during Lone Star Geyser (YNP) eruptions, as deduced from acoustic measurements. *Amer. Geophys. Union Fall Meeting*, San Francisco.

Sohn, R.A., Vandemeulebrouck, J., Hurwitz, S., Johnston, M., Karlstrom, L., Rudolph, M., Murphy, F., Pontbriand, C., Horning, G., 2011, On the relationship between Very-Long-Period events, bubble collapse, and eruption processes at the Lone Star Geyser, Yellowstone National Park, *Amer. Geophys. Union Fall Meeting*, San Francisco.

Johnston, M.J.S., Hurwitz, S., Sohn, R.A., Vandemeulebrouck, J., 2011, Self-potential, Ground-tilt and Infra-Red Emission Associated with Geyser Eruptions: Implications for Volcanic Monitoring, *Amer. Geophys. Union Fall Meeting*, San Francisco.

Rudolph, M.L., Vandemeulebrouck, J., Hurwitz, S., Karlstrom, L., Johnston, M.J.S., Manga, M., Sohn, R.A, 2011, Interpretation of seismic signals at Lone Star Geyser in the context of surface activity using visible and infrared video (*Invited*) *Amer. Geophys. Union Fall Meeting*, San Francisco.

Karlstrom, L., Rudolph, M.L., Vandemeulebrouck, J., Murphy, F., Hurwitz, S., Manga, M., Sohn, R.A., Johnston, M.J., 2011, Jet dynamics at Lone Star Geyser, Yellowstone National Park, *Amer. Geophys. Union Fall Meeting*, San Francisco.

Murphy, F., Hurwitz, S., Pontbriand, C., Vandemeulebrouck, J., Johnston, M., Sohn, R.A., Karlstrom, L., Rudolph, M., McPhee, D., Glen, J., Soule, S.A., Meertens, C., 2011, Direct Measurements of Water Volume During Geyser Eruptions: Lone Star Geyser, Yellowstone National Park, *Amer. Geophys. Union Fall Meeting*, San Francisco.

Johnston, M.J.S., Hurwitz, S., Sohn, R.A., 2010, Self-potential, Ground-tilt and Infra-Red Emission Associated with Geyser Eruptions: Implications for Volcanic Monitoring, *Electromagnetic Signals Associated with Earthquakes and Volcanoes (EMSEV) workshop*, Orange, CA.

Sohn, R.A., Hurwitz, S., Johnston, M.J., Vandemeulebrouck, J., 2010, New evidence for hydrothermal-

- flow induced ground deformation at deep-sea vent fields and terrestrial geysers, *Amer. Geophys. Union Ocean Science*, Portland, OR.
- Hurwitz, S., Johnston, M.J., Sohn, R.A., 2009, Ground-surface displacements associated with geyser eruptions: Implications for volcano deformation, *Amer. Geophys. Union Fall Meeting*, San Francisco.
- Hurwitz, S., Johnston, M.J.S., Sohn, R. A. (2011) Ground-tilt and Self-potential Transients Associated with Geyser Eruptions: Implications for Volcano Deformation Monitoring, IUGG General Assembly, Melbourne, AU.
- Reves-Sohn, R. A., Thomson, R., and A. Rabinovich, Tidal Dynamics in the Axial Valley of the Mid-Atlantic Ridge, *Eos Trans. AGU*, 87(52), Fall Meet. Suppl., Abstract B31B-1101, 2006.
- Akin, D. L., B. J. Roberts, W. Smith, S. Roderick, R. Reves-Sohn, and H. Singh, SAMURAI: Polar AUV-Based Autonomous Dexterous Sampling, *Eos Trans. AGU*, 87(52), Fall Meet. Suppl., Abstract C41B-0332, 2006.
- Edmonds, H. N., R. Reves-Sohn, H. Singh, T. M. Shank, S. Humphris, J. Seewald, D. Akin, W. Bach, Y. Nogi, and R. Pedersen, New Frontiers in Arctic Exploration: Autonomous Location and Sampling of Hydrothermal Vents Under the Ice at Earth's Slowest Spreading Ridge (IPY Project 173), *Eos Trans. AGU*, 87(52), Fall Meet. Suppl., Abstract U14C-05, 2006.
- Singh, H., D. Akin, R. Reves-Sohn, S. Humphris, T. Shank, and H. Edmonds, Autonomous Underwater Vehicle (AUV) and Towed Vehicle Technologies for Hydrothermal Vent Studies at the Gakkel Ridge, *Eos Trans. AGU*, 87(52), Fall Meet. Suppl., Abstract C41B-0329, 2006.
- Reves-Sohn, R., Humphris, S. E. & Canales, J. P. Stochastic Analysis of Exit-Fluid Temperature Time-Series Data from the TAG Hydrothermal Mound: Events, States, and Hidden Markov Models. *Eos Trans. AGU* 86, Fall Meet. Suppl., Abstract OS22A-06, 2005.
- Wichers, S., Reves-Sohn, R. & Terray, G. New Constraints on the Thermal Power of the TAG Hydrothermal System and the Dynamics of the Water Column Plume. *Eos Trans. AGU* 86, Fall Meet. Suppl., Abstract OS33A-1466, 2005.
- Roman, C. N., Reves-Sohn, R., Singh, H. & Humphris, S. E. Self Consistent Bathymetric Mapping Using Sub-maps: Survey Results From the TAG Hydrothermal Structure. *Eos Trans. AGU* 86, Fall Meet. Suppl., Abstract OS33A-1465, 2005.
- deMartin, B., Reves-Sohn, R., Canales, J. P. & Humphris, S. E. Microearthquake Survey of the TAG Segment, Mid-Atlantic Ridge (26°N): The Early Stages of Deformation on a Detachment Fault Revealed. *Eos Trans. AGU* 86, Fall Meet. Suppl., Abstract T33G-03, 2005.
- Canales, J. P., Reves-Sohn, R. & Humphris, S. E. Tectonism and Long-Lived Hydrothermal Systems: the TAG Segment, Mid-Atlantic Ridge 26°N. *Eos Trans. AGU* 86, Fall Meet., Suppl., Abstract OS33A-1467, 2005.
- Reves-Sohn, R. A., S. C. Webb, High-Frequency Seismic Tomography of the EPR 9-50N Hydrothermal System, *Eos*, 84, 223, 2003.
- Sohn, R. A., S. C. Webb, A. H. Barclay, Microearthquakes, Magma Movement, and Hydrothermal Circulation Following the 1998 Eruption of Axial Volcano, Juan de Fuca Ridge, *Eos*, 83, 1326, 2002.



- Sohn, R. A., M. West, W. Menke, J. Chadwick, M. Perfit, A. Barclay, S. Webb, and M. Tolstoy, The Cobb/Juan de Fuca Hotspot-Ridge Interaction; Weak Plumes and Return Flow, *Eos*, 82, 1168, 2001.
- Braun, M. G., R. A. Sohn, and N. M. Ribe, Do Plumes Suck?, *Eos*, 82, 1168, 2001.
- Sohn, R. A., J. A. Hildebrand, and S. Sorenson, Arctic Basin Seismology: Adding the Marine Component, *Eos*, 80, 998, 1999.
- Golden, C. E., S. C. Webb, and R. A. Sohn, Hydrothermal Processes Induce Seismicity at Middle Valley, Juan de Fuca Ridge, *Eos*, 80, 931, 1999.
- Sohn, R. A., S. C. Webb, and J. A. Hildebrand, Seismic tomography of the shallowmost crust on the East Pacific Rise at 9-50°N, *EOS*, 79, 798, 1998.
- Crawford, W. C., S. C. Webb, and R. A. Sohn, Axial Volcano Seismicity after the January 1998 Seismic Swarm, *EOS*, 79, 921, 1998.
- Latychev, K., N. Edwards, and R. A. Sohn, Three-dimensional Numerical Modeling of Hydrothermal circulation at the CoAxial Segment of the Juan de Fuca Ridge, *EOS*, 79, 858, 1998.
- Golden, C. E., S. C. Webb, and R. A. Sohn, Hydrothermal Microearthquakes at Middle Valley, Juan de Fuca Ridge, *EOS*, 79, 857, 1998.
- Sohn, R. A., and J. A. Hildebrand, Earthquake studies using under-ice hydrophone data ("Spinnaker"), ASA, San Diego, CA, 1997.
- Sohn, R. A., S. C. Webb, and J. A. Hildebrand, Detailed studies of crustal accretion and structure at an intermediate spreading-rate ridge, 9<sup>th</sup> IRIS Workshop, Breckenridge, CO, 1997.
- Sohn, R. A., J. A. Hildebrand, and S. C. Webb, Post-eruption seismicity on the CoAxial segment, Juan de Fuca Ridge, GAESC, Reykjavik, Iceland, 1996.
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- Hildebrand, J. A., S. C. Webb, M. A. McDonald, and R. A. Sohn, Microearthquake Temporal Variability Following Ridge Crest Volcanic Eruptions, *EOS*, 75, 617, 1994.
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- Sohn, R. A., J. A. Hildebrand, S. C. Webb, M. A. McDonald and C. G. Fox, Microearthquake studies at the megaplume site on the southern Juan de Fuca Ridge, *EOS*, 73: 530. 1992

### **Lectures and Invited Conferences (incomplete listing):**

- “Hidden Markov Models and Markov Random Fields in the Analysis of Space-Time Data”, Lamont Doherty Earth Observatory, October, 2014.
- “The Anatomy of a Fountaining Geyser: New Results from Geophysical and Statistical Studies in Yellowstone National Park”, WHOI Geophysics seminar, June, 2014.
- “Geophysical Imaging of Hydrothermal Processes: From Deep-sea Vents to Yellowstone’s Geysers”, WHOI Summer Student Fellows Program, June, 2014.
- “Reaction-driven cracking in the TAG deep-sea hydrothermal field: Implications for serpentinization and carbonation of peridotite”, American Geophysical Union Fall Meeting, San Francisco, CA, December, 2013.
- “Dynamics of Yellowstone Lake (DYLAKE): The Response of Continental Hydrothermal Systems to Multi-Scale Perturbations”, special presentation to Yellowstone National Park Resources Office, Yellowstone, WY, August, 2013.
- “Seismogenesis from ultra-mafic rocks in the Samail ophiolite: Implications for carbon sequestration”, Gulf Seismic Forum, Muscat, Oman, March, 2013.
- “Microearthquake evidence for reaction-driven cracking within the TAG hydrothermal deposit”, Institut de Physique du Globe, Paris, France, February, 2013.
- “Seismicity and Hydrothermal Alteration”, International Continental Drilling Program (ICDP) – Sloan Foundation Deep Carbon Observatory (DCO) Workshop on the Oman Drilling Project, Palisades, NY, September 2012 (*invited*).
- “Understanding Geysers Requires Sideways Thinking”, WHOI Geophysics Seminar, May, 2012.
- “A New Statistical Method for Modeling Mixing of Mantle End-Members for Global MORB and OIB Isotopic Data”. Goldschmidt Conference, Prague, Czech Republic, August, 2011.
- “The Importance of Being Detached”. University of Wyoming Earth Science Lecture Series, Laramie, Wyoming, February, 2010.
- “How do geysers work?”, Yellowstone Park Rangers Educational Seminars, Yellowstone National Park, September, 2009.
- “The Importance of Being Detached”, Ridge 2000 Distinguished Lecturer Series – given at the University of Houston, The University of Western Washington, U. C. Santa Cruz, and Lamont Doherty Earth Observatory, 2009 (*invited*).
- “Geophysical Constraints on Detachment Fault Structure: Hot Rocks, Big Hits, and Fazed Cookies”, AGU Chapman Conference on *Detachments in Oceanic Lithosphere: Deformation, Magmatism, Fluid Flow, and Ecosystems*, Agros, Cyprus, May, 2009 (*keynote*).
- “Hydrothermal circulation on oceanic detachment faults: New perspectives from the TAG field on the Mid-Atlantic Ridge”, USGS Hubbert Quorum, Menlo Park, CA, December, 2008 (*invited*).

- “A Summer \_\_\_\_ the Arctic Ice Pack”, Falmouth Academy Distinguished Lecturer Series, Falmouth, MA, May, 2008 (*invited*).
- “Hydrothermal circulation on oceanic detachment faults: New perspectives from the TAG field on the Mid-Atlantic Ridge”, European Geophysical Union, Vienna, April, 2008 (*invited*).
- “Explosive volcanism on the ultraslow-spreading Gakkel Ridge, Arctic Ocean”, European Geophysical Union, Vienna, April, 2008.
- “What happens when you have AGAVE after AMORE? The Arctic Gakkel Vents Expedition”, WHOI Geology and Geophysics Seminar, November, 2007.
- “Autonomous Exploration for Hydrothermal Venting on the Gakkel Ridge”, InterRidge Polar Ridges Workshop, Sestri Levante, Italy, September, 2006.
- “Autonomous Exploration for Deep-Sea Vent Fields Under-Ice in the Arctic Basin”, Neptune Days, Toulon, France, September, 2006 (*invited*).
- “Autonomous Exploration for Deep-Sea Vent Fields in the Arctic Basin”, John Hunt Symposium, Woods Hole Oceanographic Institution, August, 2006 (*invited*).
- “Stochastic analysis of exit-fluid temperature time-series data from the TAG hydrothermal mound: Events and episodes with some initial results regarding tidal forcing”, WHOI Geophysics Seminar, July, 2006.
- “The Seismicity and Fluid Flow of TAG Experiment... and an emerging new paradigm for hydrothermal processes at slow-spreading ridges”, National Oceanography Center, Southampton, England, April 2006.
- “A general inversion for end-member ratios in binary mixing systems,” WHOI Geochemistry Seminar, April, 2005.
- “High-Frequency Seismic Tomography of the EPR 9-50N Hydrothermal System,” WHOI Geophysics Seminar, May, 2004.
- “Interaction of Ice-Tethered Platforms with Mobile Underwater Assets”, NSF workshop on Ice-Tethered Platform Design and Implementation in a Basin Scale Observing Network, June 2004.
- “Wiggle, Wiggle, on the Wall, What’s the Meaning of it All? Four Years in the Desert With Microearthquake Data from Axial Volcano”, WHOI Geophysics Seminar, February, 2003.
- “Field Measurements of Sonic Boom Penetration into the Ocean”, WHOI AOPE Seminar, July 2003.
- “Melt Migration in Plume-Ridge Systems”, InterRidge Hotspot-Ridge Interaction Workshop, Brest, France, September, 2003.
- “Some Recent Developments Using High-Frequency Seismology to Study the Nature of Subsurface Circulation in Deep-Sea Hydrothermal Systems”, Oregon State University, September, 2003.
- “Autonomous Strategies for Studying Hydrothermal Systems in the Arctic Ocean”, Oregon State University, September, 2003.

Convened (with J. Bellingham) NSF-sponsored “Workshop to promote the development of Instrumentation for Accessing the Arctic Ocean”, Moss Landing, CA, October 16-18, 2002.

“Outstanding mid-ocean ridge problems that would benefit from seafloor geodesy”, Seafloor Geodesy: Prospects and Challenges Workshop, Woods Hole, MA, October 10-11, 2002 (*invited*).

“The East Pacific Rise Unbent”, Geophysics Seminar, Woods Hole, MA, May 2002.

“Robust non-linear regression”, Geochemistry Seminar, Woods Hole, MA, 2001.

“Arctic AUV Sea Trials in Bermuda – Some Assembly Required” Geophysics Seminar, Woods Hole, MA, 2000.

“Too New Seafloor Geophysical Instruments”, Marine Geology Lecture, Lamont Doherty Earth Observatory, Palisades, NY, 2000 (*invited*).

“Probability, Uncertainty, and Correlation in the Regression of Double Error Data”, Geochemistry Seminar, Woods Hole, MA, 2000.

“Vent field tectonics and crustal structure”, Juan de Fuca Results Symposium (NSF), Seattle, WA, November, 1999, (*invited*).

“The first measurement of the penetration of sonic booms into the ocean”, Southern California Sonic Boom Forum, Los Angeles, CA, July, 1999, (*invited*).

Convened and hosted “The Underwater Acoustics of Sonic Booms, Whales, and Background Noise”, Southern California Sonic Boom Forum, La Jolla, CA, Oct. 1998.

“Seismicity, Strain, and Deformation of on the East Pacific Rise (9°50’N): Local Earthquake Studies”, 9°-10° Results symposium, Santa Barbara, CA, Sept, 1998.

“Snap, Crackle, Pop: Microearthquakes and Hydrothermalism on the East Pacific Rise (9°50’N), 9°-10° Results symposium, Santa Barbara, CA, Sept, 1998.

“Pilot Study of Sonic Boom Penetration into the Ocean”, Southern California Sonic Boom Forum, Los Angeles, CA, June, 1998.

“Seismic, Thermal, and Chemical Evidence for a Propagating Hydrothermal Cracking Event on the East Pacific Rise (9° 50’N)”, RIDGE Winter School, Muscat, Oman, Feb. 1998.

“Deep Sea Geophysics”, West Coast Operation Pathfinder (outreach course for K-12 teachers), La Jolla, CA, 1997.

“Detailed studies of crustal accretion and structure at an intermediate spreading-rate ridge”, 9<sup>th</sup> Annual IRIS Workshop, Breckenridge, CO, June 1997.

NSF/RIDGE Event Detection and Response Workshop, Lynwood, WA, March 1997.

“Post-eruption seismicity on the CoAxial segment, Juan de Fuca Ridge”, XXV General Assembly of the European Seismological Commission, Reykjavik, Iceland, 1996.

Convened AGU Special Session (w/ Dawn Wright), "Geology and Geophysics of the Juan de Fuca Ridge",  
San Francisco, CA, Fall 1995.