

## CURRICULUM VITAE

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### EDUCATION:

B.S.: Geology, Stanford University (graduated with distinction, 1980).

M.S.: Geological Oceanography, University of Washington (1983).

Ph.D.: Geological Oceanography, University of Washington (1989).

Thesis title: Physical and Chemical Controls on the Growth of Hydrothermal Vent Structures: a Model of Transport and Chemical Reaction (R.E. McDuff, J.R. Delaney, Advisors).

### PROFESSIONAL EXPERIENCE:

Associate Dean, WHOI (2010-present).

Director, Deep Ocean Exploration Institute, WHOI (2008-2010).

Senior Scientist, Woods Hole Oceanographic Institution (2008-present).

Associate Scientist w/tenure, Woods Hole Oceanographic Institution (1999 to 2008).

Associate Scientist, Woods Hole Oceanographic Institution (1994 to 1998).

Assistant Scientist, Woods Hole Oceanographic Institution (1990 to 1994).

Post-Doctoral Investigator, Woods Hole Oceanographic Institution (1990).

Post-Doctoral Scholar, Woods Hole Oceanographic Institution (1989).

Research and teaching assistant, University of Washington (1982 to 1988).

Physical Science Technician/Geologic Field Asst, U.S.G.S., Office of Marine Geology (1979 to 1981).

### FELLOWSHIPS/AWARDS:

Arnold B. Arons Award for Excellence in Teaching, Advising, and Mentoring (2010).

Woods Hole Post-Doctoral Scholarship (1989).

Achievement Rewards for College Scientists Foundation (ARCS) Dissertation Fellowship (Fall 1987).

Graduate Opportunities Program for Women and Minorities in Science Fellowship (Spring 1983).

University of Washington EGTVEDT Scholarship for new graduate students (1981 to 1982).

### PROFESSIONAL AFFILIATIONS:

Member, Geochemical Society (1987 - present)

Member, American Geophysical Union (1983 - present)

### RESEARCH INTERESTS:

Aqueous geochemistry

Formation of seafloor massive sulfide deposits.

Quantification of heat and mass transfer in hydrothermal systems.

Field studies of active vent sites, including development and use of instrumentation at active vent sites.

Examination of mineral textures, trace element distributions, and mineral precipitation processes in seafloor massive sulfide deposits.

### EDUCATION ACTIVITIES:

Associate Dean (August 2010-present)

Attended Council of Graduate Schools Deans' Workshops 2016, 2014, 2012, 2011

Attended Consortium of Ocean Leadership Ocean Science Educators Retreats 2016, 2014, 2010

Chair, MIT-WHOI Joint Program Admissions Committee (2011-present)  
Invited Panelist, mentoring workshop of the Marine Biological Laboratory's SUCCESS (Shaping and Understanding Career Choices in Education, Science and Self) program: "THIS IS AN AUDITION: Your Resume and the Job Market" July 8, 2015  
Prepared materials for and participated in MIT-WHOI Joint Program 2014 External Review  
Attended NNOCCI meeting at New England Aquarium Oct 1, 2014  
Attended CIHE-NEASC Regional meeting, UMass Boston, to review accreditation standards, Oct 2, 2014  
Attended CIHE-NEASC Accreditation Workshop, October 17-18, 2013  
Invited Panelist, mentoring workshop of the Marine Biological Laboratory's SUCCESS (Shaping and Understanding Career Choices in Education, Science and Self) program: "What makes a good mentor: how to find one and how to keep one" July 30, 2014  
Education Coordinator, MC&G department (2004-2008)  
Education council (2000-2002, 2004-2008)  
Chair of JCCO (Sept 1, 1999 – Aug. 31, 2002)  
Joint Committee on Chemical Oceanography (JCCO) 1996-2002; 2004-2008

**Students:**

Advisor/Co-advisor: Carrie Friedman (M.S., JPMG&G 1998, w/S.E, Humphris), Linda Rasmussen (JPCO 1997-1999), Paul Craddock (PhD JPCO 2009, w/Wolfgang Bach), Guy Evans (PhD candidate JPMG&G, 2011-present)

Pre-generals committees/advising: Sarah Herbelin (1992-1993), Youngsuk Huh (1992-1993), Kirsten Laarkamp (1992-1993), Payal Parekh (1997-1999), Anna Cruse (1997-1999)

Reader: D. Andrew Trivett's Ph.D. defense (JPAOSE 1991)

Member: general exam committee for Anna Michel (JPAOSE candidate, 2004)

Thesis committee member: Kevin O'Grady (University of New Hampshire, defended 9/6/01), Anna Cruse (JPCO1999-2002), Rachel Gallant (University of New Hampshire, 2002-2003), Anna Michel (JPAOSE 2004-2007), Eoghan Reeves (JPCO 2007-2010), Claire Pontbriand (JPMG&G 2011-2013), Jill McDermott (JPCO 2011-2014), Lauren Kipp (JPCO 2016-present), Gabriela Farfan (JPCO 2016-present)

Chair: Anna Cruse's thesis proposal defense (1999), Cara Santelli's General Exam (2003), Cara Santelli's thesis proposal defense (2003), Cara Santelli thesis defense (JPCO 2007), Diane Adams thesis defense (JPBO 2007), Naomi Levine thesis defense (JPCO 2009), Alysia Cox thesis defense (JPCO 2011), Jill McDermott thesis proposal defense (JPCO 2011), Dan Ohnemus thesis defense (JPCO 2013), Evan Howard thesis defense (JPCO 2016), Emily Estes thesis defense (JPCO 2017)

**Post-doctoral scholar sponsor/co-sponsor:**

Chen Zhu (w/G. Thompson, 1991-1992), Wenlu Zhu (w/ J.G. Hirth, R. Evans, 1997-1998), Thibaut Barreyre (w/ Rob Sohn, Dan Fornari, Adam Soule, 2014-2015)

**Summer Student Fellow sponsor/co-sponsor:**

Kathleen Ward (1990), Charles Labbe (w/J. Seewald, 1997), Rachel Stanley (1999), Hilary Gittings (w/W. Zhu, 2002), Alden Denny (2008), Niya Grozeva (2011)

**Teaching:**

Seminar in Marine Chemistry (jointly with B. Peucker-Ehrenbrink - Spring Semester 1999)  
Instructor, Aquatic Chemistry (1/3 course, Fall 2005), Lecturer for Marine Chemistry (1-3 lectures, 2004-2006)

**SUPERVISION AT WHOI:**

**Administrative personnel:** Julia Westwater, Registrar/Graduate & Undergraduate Administrator (August 2010-present); Lea Fraser, Graduate Administrator/Student Affairs Officer (December 2012-present); Tricia Gebbie, Graduate Administrator/Student Affairs Officer (December 2010 – October 2012); Marsha Armando, Graduate Administrator/Student Affairs Officer (August - November 2010); Andrew Daly, Administrative Associate II (Sept 2008-2010).

**Technicians:** Margaret Sulanowska, Senior Research Assistant II (1990-present, now casual); Scott McCue, Information Systems Associate II (part-time, 2006-2007); Steve Liberatore, Research engineer

(June/July and September 2000); Charles Labbe (part-time, w/J. Seewald, 1998); Sandipa Singh, Information System Associate II (part-time, 1995-1997)

**Post-doctoral Scholar:** Thibaut Barreyre (w/ Rob Sohn, Dan Fornari, Adam Soule, 2014-2015), Wenlu Zhu (w/J.G. Hirth and R. Evans, 1997-1998), Chen Zhu (w/G. Thompson, 1991-1992)

**Post-doctoral Investigator:** Jozee Sarrazin (1999-2000)

**Guest Students:** Jill Gribbin (August 2008), Rachel Stanley (June/July 2000), Damien Grelon (June/July 2000), Justus Hoffman (1992), Terri Cook (1992)

## **PROFESSIONAL ACTIVITIES**

### *WHOI (Non Education Related):*

Chair, WHOI self-study committee for the CIHE-NEASC reaccreditation of WHOI (2015-2016)

Member, Strategic Facilities Planning Steering Committee (2015 – 2016)

Member, Deep Submergence Advisory Committee (DSAC) (2013 – present)

Member, DOEI Proposal Review Panel for 2011 Fellow and Research Proposals

Chair, WHOI self-study committee for the CIHE-NEASC fifth-year interim report (followed 2006 Accreditation Review of WHOI) (August 2010- April 2011)

Member, Internal Oversight Committee of 6500m HOV (human occupied vehicle) Project (2009- 2013)

Member, Search committee For VP of Marine Ops and Facilities (2009)

Convened Ocean Ridge Initiative WHOI Workshop, February 25, 2009

Member, DOEI Advisory Committee (January 2008-August 2008)

Member, NENIMF internal advisory committee (2006-2009)

Member, MC&G Chair Search Committee (2006)

Member, NENIMF reorganization committee (2005)

Chair, Vehicles/NDSF sub-group of Access to the Sea Task Force (Spring 2004)

Member, Ad-hoc committees for promotion to Associate Scientist, K. Ruttenberg (1999), Wenlu Zhu (2003), Katrina Edwards (2003), Wolfgang Bach (2003)

Member, Search Committee for WHOI Ship Operations Manager (December 2002 – March 2003)

Member, Ad-hoc committee to review Marine Operations and NDSF (June – December 2002)

Helped edit handbook on “Navigating the Tenure Track” (2001)

Mentoring committees, Wenlu Zhu (2001-2007), Katrina Edwards (2001-2006), Wolfgang Bach (2001-2005), Karen Casciotti (2005-2008), Olivier Rouxel (2006-2009), Sheri White (2008-2009), Colleen Hansel (2014-2016), Scott Wankel (2014-present), Tristan Horner (2016-present)

Chair, Ad Hoc Review Committees for promotion to Associate Scientist for Sonya Legg (2001), John “Chip” Breier (2012), Veronique Le Roux (2017)

Member, Tenured Scientist’s Executive Committee (TenSEC) (November 2000-October 2002)

Member, SciSEC (2009 - 2010)

MC&G Space committee, 2000, 2002-2004

MC&G Hiring committee, 1999-2000, 2010-2011, 2017

G&G geofluids hiring committee 2008; metamorphic petrologist hiring committee 2010

Gender Equity Review Committee, 1999- 2000

Consultant for BBH exhibit and Turnstone publication “Down to a Sunless Sea.” (1999)

### *Outside WHOI:*

Panelist at Society for Women in Marine Science Symposium, October 10, 2015

Attended EarthCube: Deep Seafloor Processes and Dynamics Community Workshop, June 5-7 2013 at University of Rhode Island Graduate School of Oceanography

Invited participant, IODP Arc Hydrothermal Drilling Workshop, Lisbon, Portugal, November 15-17, 2012

NSF Panel member for OCE-PRF and OCE-RIG programs (virtual panel 2012)

Member, InterRidge Working Group on Hydrothermal Energy and Ocean Carbon Cycles (2010-2011)

Member, NSF Ridge2000 Lau Integration and Synthesis Committee (June 2008- 2011)

Attended InterRidge Workshop on “Deep-Sea Mining of Seafloor Massive Sulfides: A Reality for Science and Society in the 21<sup>st</sup> Century” (2009)  
 Moderator of discussion group at Ridge2000 Workshop (2009): Developing a holistic view of oceanic spreading center processes  
 Attended Morss Colloquium on “Precious metals from Deep-Sea Vents” (2009)  
 Breakfast Meeting Oral Presentation at CERAWEEK in Houston - Woods Hole Oceanographic Institution: “What’s Ahead for Deep Ocean Discovery?” (w/Andy Bowen as co-presenter, February 11, 2008)  
 Co-convener, Lau ISS integration and synthesis workshop (Sept 7-9, 2008, Salt Lake City).  
 Panelist, eighth meeting of the United Nations Open-ended Informal Consultative Process on Oceans and the Law of the Sea (June 27, 2007)  
 Member, Ocean Exploration Proposal Review Panel, January 18-19, 2007 in Silver Spring, MD  
 Member, AGU Ocean Sciences Section Nominating Committee (2007)  
 Member, organizing committee, InterRidge Theoretical Institute ‘Biogeochemical interaction at deep-sea vents’ (2007)  
 Lecturer, Ridge 2000 Theoretical Institute 2006: Modeling Oceanic Spreading Center Hydrothermal Processes: Magma to Microbe (2006)  
 Lecturer, From Vent Chemistry to Biochemistry Workshop, Santa Fe Institute Workshop (2006)  
 Member, InterRidge Working Group on Biogeochemical Interactions at Deep-Sea Vents (2005- 2009)  
 AGU Ocean Sciences Section 2005 Rachel Carson Lecturer  
 AGU FM04 Planning Meeting Member, September 29-Oct 1, 2004 (stand-in for K. Ruttenger)  
 Ridge2000 Distinguished Lecturer, Spring 2004  
 Co-chair, The ORION Workshop, 4-8 January 2004, San Juan, Puerto Rico  
 Co-chair, ORION (Ocean Research Interactive Observatory Networks) Workshop Steering Committee (April 2003-December 2004)  
 Co-convener, special session at Fall 2001 AGU on Endeavour Ridge Observatory  
 Moderator, Dahlem Workshop on Energy and Mass Transfer in Marine Hydrothermal Systems, Berlin, Oct 15-19, 2001  
 Co-convener, Endeavour Ridge Observatory Workshop, September 24-26, 2001, Seattle, WA  
 Co-convener, oral and poster session at Fall 2000 AGU on 2000 observatory effort  
 Co-convener, RIDGE Workshop, In-situ sensors: their development and application for the study of chemical, physical and biologic systems at mid-ocean ridges, 22-24 Oct 2000, Aptos and Moss Landing, CA  
 Convened RIDGE Observatory meetings in Seattle in November, 1999 and May, 2000, at AGU Dec 2000  
 Chair, NEPTUNE (NorthEast Pacific Time-series Undersea Networked Experiment) Ridge Crest Processes Science Working Group (1999-2000)  
 NSF RIDGE Endeavour Observatory Coordinator (1996-2002)  
 Associate Editor, Journal of Geophysical Research - Solid Earth (January 1996 - December 1999)  
 Member, RIDGE Steering Committee (1992-1995)

### **CRUISE PARTICIPATION:**

2009 – Scientist/diver, R/V Atlantis/HOV *Alvin* Guaymas Basin thermocouple arrays Nov 22 – Dec 6.  
 2009 – Scientist/diver, R/V Atlantis/HOV *Alvin* Guaymas Basin thermocouple arrays Nov 8-19.  
 2009 – Scientist, R/V Thompson/ROV *Jason2*, Lau Basin thermocouple arrays June 12- July 8.  
 2005 - Chief scientist, R/V Melville/ROV *Jason2*, Lau Basin Vent Characterization, Apr 5 – May 11.  
 2003 - Scientist, R/V Western Flyer/ROV *Tiburón*, Gulf of Calif. Expedition Leg 6, May 15-20.  
 2003 - Scientist, R/V Western Flyer/ROV *Tiburón*, Gulf of Calif. Expedition Leg 2, March 1-8.  
 2002 - Scientist, R/V Western Flyer/ROV *Tiburón*, testing isobaric gas-tight fluid samplers, Aug 5-10.  
 2000 - Co-chief scientist, Atlantis/HOV *Alvin* Endeavour Observatory cruise AT3-56, Sept 1 - Sept 19.  
 2000 - Co-chief scientist, Atlantis/*Alvin/Jason2* Endeavour Observatory cruise AT3-53, June 10 - July 12.  
 1999 – Scientist/ diver in Atlantis/HOV *Alvin* cruise to hydrothermal vent field w/Rita Colwell, Oct. 3 – 5.  
 1999 - Scientist/diver, R/V Atlantis/HOV *Alvin*, Juan de Fuca Ridge – sensor testing, Sept 12 - Oct 1.

1998 - Scientist/diver, Atlantis/HOVALvin, Southern EPR Hydrothermal Cruise, Oct. 10-Nov 18.  
 1998 – Scientist, R/V J.P. Tully Edifice Rex II, Mothra Field sulfide recovery, June 30 - July 12.  
 1995 - Scientist/diver, AtlantisII/HOVALvin Juan de Fuca Ridge cruise - instrument recovery (16 days).  
 1994 - Scientist, ODP Leg 158, Drilling the TAG active mound (56 days).  
 1994 - Scientist/diver, AtlantisII/HOVALvin instrument deployment cruise, Juan de Fuca Ridge.  
 1994 - Scientist/diver, R/V Nadir/HOV *Nautille* DIVANAUT 1 cruise, Mid-Atlantic Ridge (1994; 4 wks).  
 1993 - Scientist/diver, AtlantisII/HOVALvin Lucky Strike Expedition, Mid-Atlantic Ridge (10 days).  
 1993 - Scientist/diver, *JASON IV* Project with HOV *Turtle*, Guaymas Basin (8 days).  
 1991 - Scientist/diver, AtlantisII/HOVALvin chronology expedition, Juan de Fuca Ridge (11 days).  
 1990 - Scientist/diver, AtlantisII/HOVALvin hydrothermal processes cruise, Mid-Atlantic Ridge (34 days).  
 1984 - Scientist/diver, R/V AtlantisII/HOVALvin ridge crest processes cruise, Juan de Fuca Ridge.  
 1983 – Scientist, Juan de Fuca cruise, R/V T.G. Thompson.  
 1982 – Scientist, Juan de Fuca cruise, R/V T.G. Thompson.  
 1982 – Scientist, Bering Sea cruise, R/V S.P. Lee (USGS).  
 1981 – Scientist, Aleutian/Bering Sea cruise, R/V S.P. Lee.  
 1980 – Scientist, Bering Sea cruise, R/V S.P. Lee.

#### **PUBLICATIONS IN REFEREED JOURNALS AND BOOKS:**

Evans, G.N., M.K. Tivey, J.S. Seewald, C.G. Wheat, Influences of the Tonga Subduction Zone on Seafloor Massive Sulfide Deposits along the Eastern Lau Spreading Center, *Geochimica et Cosmochimica Acta*, (in revision).

Teske, A., D. de Beer, L.J. McKay, M.K. Tivey, J.F. Biddle, D. Hoer, K.G. Lloyd, M.A. Lever, H. Røy, D.B. Albert, H.P. Mendlovitz and B.J. MacGregor (2016) The Guaymas Basin Hiking Guide to Hydrothermal Mounds, Chimneys, and Microbial Mats: Complex Seafloor Expressions of Subsurface Hydrothermal Circulation. *Front. Microbiol.* **7**:75. doi: 10.3389/fmicb.2016.00075

Jamieson, J., M.D. Hannington, M.K. Tivey, T. Hansteen, N. Williamson, M. Stewart, J. Fietzke, D.A. Butterfield, M. Frische, L. Allen, and B. Cousens (2016) Precipitation and growth of barite within hydrothermal vent deposits from the Endeavour Segment, Juan de Fuca Ridge. *Geochimica et Cosmochimica Acta* **173**, 64–85.

Humphris, S.E., M.K. Tivey and M.A. Tivey (2015) The Trans-Atlantic Geotraverse Hydrothermal Field: A Hydrothermal System on an Active Detachment Fault. *Deep Sea Research II* **121** (2015) 8–16; DOI information: 10.1016/j.dsr2.2015.02.015

McDermott, J.M., S. Ono, M.K. Tivey, J.S. Seewald, W.C. Shanks III, and A. Solow (2015). Identification of sulfur sources and isotopic equilibria in submarine hot-springs using multiple sulfur isotopes *Geochim. Cosmochim. Acta* **160**, 169–187.

Jamieson, J.W., M.D. Hannington, D.A. Clague, D.S. Kelley, J.R. Delaney, J.F. Holden, M.K. Tivey, L.E. Kimpe (2013) Sulfide geochronology along the Endeavour Segment of the Juan de Fuca Ridge, *Geochem. Geophys. Geosyst.* doi: 10.1002/ggge.20133.

Gribbin, J. L., W. Zhu, and M. K. Tivey (2012) Anisotropy in seafloor flange, slab, and crust samples from measurements of permeability and porosity: Implications for fluid flow and deposit evolution, *Geochem. Geophys. Geosyst.* **13**, Q03018, doi:10.1029/2011GC003840.

Tivey, M.K., E. Becker, R. Beinart, C.R. Fisher, P.R. Girguis, C.H. Langmuir, P.J. Michael, and A.-L. Reysenbach (2012) Links from mantle to microbe at the Lau Integrated Study Site: Insights from a back-arc spreading center. *Oceanography* **25**(1):62–77, <http://dx.doi.org/10.5670/oceanog.2012.04>.

Flores, G.E., J. H. Campbell, J. D. Kirshtein, J. Meneghin, M. Podar, J. I. Steinberg, J. S. Seewald, M. K. Tivey, M. A. Voytek, Z. K. Yang and A.-L. Reysenbach (2011), Microbial Community Structure of Hydrothermal Deposits from Geochemically Different Vent Fields Along the Mid-Atlantic Ridge, *Environmental Microbiology*, doi:10.1111/j.1462-2920.2011.02463.x.

- Mottl, M., J. Seewald, C.G. Wheat, M.K. Tivey, P.J. Michael, G. Proskurowski, T. M. McCollom, E. Reeves, J. Sharkey, C-F. You, L.H. Chan, T. Pichler (2011) Chemistry of hot springs along the Eastern Lau Spreading Center, *Geochimica et Cosmochimica Acta* **75**, 1013-1038.
- Craddock, P.R., W. Bach, J.S. Seewald, O. Rouxel, E. Reeves, and M.K. Tivey (2010) Rare Earth Element Abundances in Hydrothermal Fluids from the Manus Basin, Papua New Guinea: Indicators of Sub-seafloor Hydrothermal Processes in Back-Arc Basins, *Geochimica et Cosmochimica Acta*, **74**, 5494-5513.
- Sarrazin, J., P. Rodier, M.K. Tivey, H. Singh, A. Schultz, P.M. Sarradin (2009) A dual sensor device to estimate fluid flow velocity at diffuse hydrothermal vents, *Deep-Sea Research I*, **56**, 2065-2074.
- Ferrini, V. L., M. K. Tivey, S. M. Carbotte, F. Martinez, and C. Roman (2008) Variable morphologic expression of volcanic, tectonic, and hydrothermal processes at six hydrothermal vent fields in the Lau back-arc basin, *Geochem. Geophys. Geosyst.*, **9**, Q07022, doi:10.1029/2008GC002047.
- Pagé, A., M.K. Tivey, D.S. Stakes, and A-L. Reysenbach (2008) Temporal and spatial archaeal colonization of hydrothermal vent deposits, *Environmental Microbiology*, doi:10.1111/j.1462-2920.2007.01505.x
- Tivey, M.K. (2007) Generation of Seafloor Hydrothermal Vent Fluids and Associated Mineral Deposits, *Oceanography* **20**, No. 1, 50-65.
- Zhu, W., M.K. Tivey, H. Gittings, and P.R. Craddock (2007) Permeability-porosity relationships in seafloor vent deposits: Dependence on pore evolution processes, *J. Geophys. Res.*, **112**, B05208, doi:10.1029/2006JB004716.
- Reysenbach, A-L., Y. Liu, A. Banta, T.J. Beveridge, J.D. Kirshtein, S. Schouten, M.K. Tivey, K.L. Von Damm, and M.A. Voytek (2006) A ubiquitous thermoacidophilic archaeon from deep-sea hydrothermal vents, *Nature* **442**, 444-447.
- Kormas, K., M.K. Tivey, K.L. Von Damm, and A. Teske (2006) Bacterial and archaeal phylotypes associated with distinct mineralogical layers of a white smoker spire from a deep-sea hydrothermal vent site (9°N, East Pacific Rise), *Environmental microbiology*, **8**(5), 909-920.
- Ding, K., W. E. Seyfried, Jr., Z. Zhang, M. K. Tivey, K. L. Von Damm and A. M. Bradley (2005) The in situ pH of hydrothermal fluids at mid-ocean ridges, *Earth Planet. Sci. Lett.*, **237**, 167-174.
- Daly, K.L., R.H. Byrne, A.G. Dickson, S.M. Gallagher, M.J. Perry, and M.K. Tivey (2004) Chemical and biological sensors for time-series research: current status and new directions, *Marine Tech. Soc. Journal*, **38**, no. 2, 121-143.
- Tivey, M.K. (2004) Environmental conditions within active seafloor vent structures: sensitivity to vent fluid composition and fluid flow. In Wilcock, W., Cary, C., DeLong, E., Kelley, D., Baross, J. (Eds.) Subseafloor Biosphere at Mid-Ocean Ridges, Geophysical Monograph Series, No. 144. American Geophysical Union, Washington, DC, pp. 137-152.
- Von Damm, K.L., M.D. Lilley, W.C. Shanks III et al. (2003) Extraordinary phase separation and segregation in vent fluids from the southern East Pacific Rise, *Earth and Planet. Sci. Lett.* **206**, 365-378.
- Sarrazin, J., Levesque, C., Juniper, S. K. and Tivey, M.K. (2002) Mosaic community dynamics on Juan de Fuca Ridge sulfide edifices : Substratum, temperature and implications for trophic structure. *Cahiers de Biologie Marine*, **43**, 275-279.
- Tivey, M.K., A.M. Bradley, T.M. Joyce, and D. Kadko (2002) Insights into tide-related variability at seafloor hydrothermal vents from time-series temperature measurements. *Earth and Planet. Sci. Lett.* **202**, 693-707.
- Ding, K., W.E. Seyfried Jr., M.K. Tivey and A.M. Bradley (2001) In-situ measurement of dissolved H<sub>2</sub> and H<sub>2</sub>S in high temperature hydrothermal fluids at the Main Endeavour Field, Juan de Fuca Ridge, *Earth Planet. Sci. Lett.*, **186**, 417-425.

- Humphris, S.E. and M.K. Tivey (2000) A synthesis of geological and geochemical investigations of the TAG Hydrothermal Field: Insights into fluid flow and mixing processes in a hydrothermal system, In: Y. Dilek, E. Moores, D. Elthon, A. Nicholas (eds.), *Ophiolites and Oceanic Crust: New Insights from Field Studies and the Ocean Drilling Program*: Boulder, Colorado, GSA Special Paper 349, p. 213-235.
- Tivey, M.K., D.S. Stakes, T.L. Cook, M.D. Hannington, and S. Petersen (1999) A model for growth of steep-sided vent structures on the Endeavour Segment of the Juan de Fuca Ridge: results of a petrologic and geochemical study. *J. Geophys. Res.*, **104**, 22,859-22,883.
- Mills, R.A., and M.K. Tivey (1999) "Seawater entrainment and fluid evolution within the TAG hydrothermal mound: Evidence from analyses of anhydrite." In: Cann, J. H. Elderfield, and A. Laughton (eds.), *Dynamics of Processes Associated with New Ocean Crust*, Cambridge University Press, Cambridge, U.K., pp. 225-248.
- Mills, R.A., D.A.H. Teagle, and M.K. Tivey (1998) Fluid mixing and anhydrite precipitation within the TAG mound. In: Herzig, P.M., S.E. Humphris, D.J. Miller, and R.A. Zierenberg (Eds.), *Proc. ODP, Sci. Results*, **158**: College Station, TX (Ocean Drilling Program), 119-127.
- Tivey, M.K., R.A. Mills and D.A.H. Teagle (1998) Temperature and salinity of fluid inclusions in anhydrite as indicators of seawater entrainment and heating in the TAG active mound. In: Herzig, P.M., S.E. Humphris, D.J. Miller, and R.A. Zierenberg (Eds.), *Proc. ODP, Sci. Results*, **158**: College Station, TX (Ocean Drilling Program), 179-190.
- Tivey, M.K. (1998) Documenting textures and mineral abundances in minicores from the TAG active hydrothermal mound using x-ray computed tomography. In: Herzig, P.M., S.E. Humphris, D.J. Miller, and R.A. Zierenberg (Eds.), *Proc. ODP, Sci. Results*, **158**: College Station, TX (Ocean Drilling Program), 201-210.
- Tivey, M.K., and S. Singh (1997) Nondestructive imaging of fragile sea-floor vent deposit samples. *Geology*, **25**, 931-934.
- Langmuir, C., S. Humphris, D. Fornari, C. Van Dover, K. Von Damm, M.K. Tivey, D. Colodner, J.-L. Charlou, D. Desonie, C. Wilson, Y. Fouquet, G. Klinkhammer, and H. Bougault (1997) Hydrothermal vents near a mantle hot spot: the Lucky Strike vent field at 37°N on the Mid-Atlantic Ridge. *Earth Planet. Sci. Lett.*, **148**, 69-91.
- Humphris, S.E., P.M. Herzig, D.J. Miller, J.C. Alt, K. Becker, D. Brown, G. Burgmann, H. Chiba, Y. Fouquet, J.B. Gemell, G. Guerin, M.D. Hannington, N.G. Holm, J.J. Honnorez, G.J. Iturrino, R. Knott, R. Ludwig, K. Nakamura, S. Petersen, A-L. Reysenbach, P.A. Rona, S. Smith, A.A. Sturz, M.K. Tivey, and X. Zhao (1995) The internal structure of an active sea-floor massive sulphide deposit. *Nature*, **377**, 713-716.
- Fouquet, Y., H. Ondreas, J-L. Charlou, J-P. Donval, J. Radford-Knoery, I. Costa, N. Lourenco, and M.K. Tivey (1995) Atlantic lava lakes and hot vents. *Nature*, **377**, 201.
- Hannington, M.D., M.K. Tivey, A.C.L. Larocque, S. Petersen, and P.A. Rona (1995) The occurrence of gold in sulfide deposits of the TAG hydrothermal field, Mid-Atlantic Ridge. *Can. Mineralogist*, **33**, 1285-1310.
- Tivey, M.K., S.E. Humphris, G. Thompson, M.D. Hannington, and P.A. Rona (1995) Deducing patterns of fluid flow and mixing within the TAG active hydrothermal mound using mineralogical and geochemical data. *Journal of Geophysical Research*, **100**, 12,527-12,555.
- Tivey, M.K. (1995a) The influence of hydrothermal fluid composition and advection rates on black smoker chimney mineralogy: Insights from modeling transport and reaction. *Geochim. Cosmochim. Acta*, **59**, 1933-1949.
- Tivey, M.K. (1995b) Modeling Chimney Growth and Associated Fluid Flow at Seafloor Hydrothermal Vent Sites. In: *Seafloor Hydrothermal Systems: Physical, Chemical, Biological, and Geological*

- Interactions (S. E. Humphris, R. A. Zierenberg, L. S. Mullineaux, and R. E. Thomson, eds.). *AGU Monograph Series*, No. **91**. American Geophysical Union, Washington, DC, pp. 158-177.
- Zhu, C., H. Xu, E.S. Ilton, D.R. Veblen, D.J. Henry, M.K. Tivey, and G. Thompson (1994) TEM-AEM observations of Cl-rich amphibole and biotite and possible petrologic implications. *American Mineralogist*, **79**, 909-920.
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- Tivey, M.K., G.N. Evans, and V.L. Ferrini (2014) Influence of Geologic Setting on the Morphology, Mineralogy, and Geochemistry of Vent Deposits Along the Eastern Lau Spreading Center and Valu Fa Ridge. *AGU Fall Meeting Abstracts*. Vol. 1, p.06.
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- Pagé, A., Tivey, M. K., Stakes, D. S., Bradley, A. M., Seewald, J. S., Wheat, C. G., Reysenbach, A. (2004) Investigating Microbial Habitats in Hydrothermal Chimneys using Ti-Thermocouple Arrays: Microbial Diversity, *Eos Trans. AGU*, 85(47), Fall Meet. Suppl., Abstract B13A-0215.
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Tivey, M.K. and Y2K Observatory PIs (2000) The RIDGE Endeavour Segment seafloor observatory: Y2K coordinated experiments, *Eos, Trans. AGU* 81, 628 [abstract].

Tivey, M.K. (2000) Insights into seafloor hydrothermal systems from monitoring responses to natural perturbations, Symposium on Seafloor Observatories: Challenges and Opportunities (convened by the Ocean Studies Board, National Research Council), Key Largo, FLA.[abstract].

Tivey, M.K. (1999) Factors controlling growth of hydrothermal vent deposits on the Juan de Fuca Ridge, RIDGE Juan de Fuca Results Symposium [abstract].

**INVITED LECTURES (SINCE 1999):**

April 21, 2014 University of Wyoming Department of Geology & Geophysics “Controls on the formation and composition of Seafloor Massive Sulfide (SMS) deposits.”

May 13, 2013 "Seafloor hydrothermal vents, mineral deposits, and unusual biological communities in the deep sea." Brookhaven retirement community, Lexington, MA.

August 30, 2012 Summer school lecture: “Geochemical modeling of vent environments” at GEOCEAN Geodynamic processes and biochemical interactions at seafloor spreading ridges Symposium Jean Francheteau and Summer School in Brest, France, in August 2012

October 26, 2011 Anna-Louise Reysenbach with Meg Tivey, RIDGE2000 Distinguished Lecture Series talk at Rhode Island College: "Symbiotic relationships in research and at deep-sea hydrothermal vents."

September 21, 2011 American (U.S.) activities in marine mineral deposits, at Proceedings of the OCEANS 2011 MTS/IEEE KONA Conference & Exhibition

April 26, 2010 Determining conditions within and on surfaces of seafloor hydrothermal vent deposits, and insights they provide into faunal diversity, at Harvard Earth and Planetary Sciences Colloquium

April 19, 2010 How do you study microbial colonization at very hot deep sea vents? at Linden Ponds Hot Topics in Oceanography Lecture Series

March 5, 2010 An update on the Ocean Observatories Initiative (OOI): Final design network, and how to get involved, at The University of Texas, Institute for Geophysics (UTIG) Seminar Series

October 1, 2009 “Lau-Endeavour ISS Comparison,” at Ridge2000 Workshop: Developing a holistic view of oceanic spreading center processes

April 1, 2009, “Lau and Manus Basin Back-Arc Hydrothermal Systems,” at InterRidge Workshop on “Deep-Sea Mining of Seafloor Massive Sulfides: A Reality for Science and Society in the 21st Century” held at WHOI

November 13-14, 2008 University of Minnesota Department of Geology and Geophysics and I.T. Distinguished Women Scientists and Engineers Program invited speaker

- November 13, 2008 “Back-Arc Hydrothermal Systems in the Lau and Manus Basins”
- November 14, 2008 “pH as a controlling variable in seafloor hydrothermal deposits: effects on minerals, microbes, and megafauna”
- November 14, 2008 Pizza lunch and discussion with women in I.T. – I.T. Distinguished Lecture series

Sept 10, 2007, “Geochemical modeling of vent fluid – seawater interactions,” lecture for InterRidge Theoretical Institute ‘Biogeochemical interaction at deep-sea vents,’ Sept.10-14, 2007.

August 22, 2007, Goldschmidt (keynote talk), Trace element sulfide geochemistry as an indicator of vent fluid pH

June 27, 2007, United Nations, NY - "Responsible Research of Deep-Sea Hydrothermal Vents Promoted by the InterRidge Program," Panel presentation for the eighth meeting of the UN Open-ended Informal Consultative Process on Oceans and the Law of the Sea

March 23, 2007, MBL Woods Hole, MA “Research at seafloor hydrothermal vents, necessarily interdisciplinary,” presentation to ISIS (S. Conn. State Univ.) fellows (high school teachers)

June 26, 2006 “Generation of vent fluids, and interactions of these vent fluids with seawater in plumes, at the seafloor, and within the ocean crust,” Ridge 2000 Theoretical Institute 2006: Modeling Oceanic Spreading Center Hydrothermal Processes: Magma to Microbe June 25-30, 2006, The Village at Mammoth Lakes; Mammoth Lakes, California, United States

June 24, 2006, “Results of hydrothermal studies, Lau Basin,” Lau ISS Science and Planning Workshop, Reno Nevada, June 24-25, 2006

May 29, 2006, “The Range of Physical and Chemical Environments Within Active Seafloor Hydrothermal Systems,” From Vent Chemistry to Biochemistry, Santa Fe Institute Workshop, 29 May - 1 June, 2006.

May 2005 - AGU Ocean Sciences Rachel Carson Lecture, presented at The 2005 Joint Assembly, New Orleans: Seafloor hydrothermal vents and their impact on the composition of the ocean crust, ocean chemistry, and biological activity in the deep sea

May 9, 2005 - Presentation to Ministry of Lands, Survey and Natural Resources of the Government of Tonga: Results from Lau Basin Vent Characterization Cruise TUIM05MV

March through June, 2004 - RIDGE2000 Distinguished Lecture series (Two lectures presented at 4 different undergraduate institutions): “The interplay of geology, physics, chemistry, and biology in seafloor hydrothermal vent systems” and “Using in situ measurements and geochemical models to identify the range of environmental conditions present within seafloor vent deposits”

- March 8-9, 2004, University of Wisconsin River Falls
- April 6, 2004, Montana Tech
- April 15-16, 2004, University of Massachusetts, Amherst
- May 6-7, 2004, Portland State University, Portland, OR,

March 14, 2002, “Microhabitats within active seafloor vent structures: sensitivity to vent fluid composition and fluid flow,” UC Santa Barbara, Santa Barbara, CA

May 11, 2001, Sea Education Association, “Hydrothermal Vent Systems”

July 31, 2000, RIDGE Theoretical Institute 2000: The Subsurface Biosphere at Mid-Ocean Ridges. “Modeling fluid flow and microhabitats (chemical and thermal environments) within active seafloor vent structures”

May 18, 2000, RIDGE 2000 Integrated Studies Planning Workshop, “Mid-ocean ridge hydrothermal systems: hydrology and fluid chemistry”

January 10, 2000, Keynote speaker, Symposium on Seafloor Observatories: Challenges and Opportunities (convened by the Ocean Studies Board, National Research Council), Key Largo, FLA, “Insights into seafloor hydrothermal systems from monitoring responses to natural perturbations”

November 8, 1999, Keynote speaker, RIDGE Juan de Fuca Results Symposium, “Factors controlling growth of hydrothermal vent deposits on the Juan de Fuca Ridge.”

November 8, 1999, Keynote speaker, RIDGE Juan de Fuca Results Symposium, “Growth and Evolution of Sulfide Structures.”

February 4, 1999, Bridgewater State College, “Physics, geology, and chemistry of seafloor hydrothermal systems.”

January 19, 1999, American Museum of Natural History, “Factors controlling growth of hydrothermal deposits at seafloor vent sites.”

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