

## CURRICULUM VITAE

### MAURICE A. TIVEY

Program Director  
Marine Geology and Geophysics  
Division of Ocean Sciences  
National Science Foundation  
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Senior Scientist  
Department of Geology and Geophysics  
Woods Hole Oceanographic Institution  
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### EDUCATION

- 1988 **Ph.D.**, Geological Oceanography, University of Washington, Seattle, WA, USA. -  
Dissertation: The Central Anomaly Magnetic High: Its Source and  
Implications for Ocean Crust Construction and Evolution
- 1981 **M.Sc.**, Geological Oceanography, University of Washington, Seattle, WA, USA.
- 1979 **B.Sc.(with Honours)**, Geology with minor in Physics, Dalhousie University, Halifax,  
Nova Scotia, Canada.

### PRIMARY RESEARCH INTERESTS

Marine geophysics. Analysis of marine magnetic anomalies, magnetization of ocean crust, fine-scale magnetic signals, rock magnetism, physical properties of ocean crust, midocean ridge crest processes including the formation and evolution of ocean crust, hydrothermal systems and their geophysical signal.

### EMPLOYMENT/PROFESSIONAL EXPERIENCE

- Aug. 2015 – present **Program Director (IPA)**, Marine Geology and Geophysics, Division of Ocean Sciences, National Science Foundation
- Mar. 2008 – present **Senior Scientist**, Woods Hole Oceanographic Institution
- Nov. 2008 – Feb. 2013 **Chair**, Dept. of Geology and Geophysics, WHOI
- Jul. 2004 – Dec. 2005 **Chief Scientist for Deep Submergence**, National Deep Submergence Facility, Woods Hole Oceanographic Institution
- Oct. 1998 **Associate Scientist w/tenure**, Woods Hole Oceanographic Institution
- Aug. 1994 **Associate Scientist**, Woods Hole Oceanographic Institution
- Sep. 1990 **Assistant Scientist**, Woods Hole Oceanographic Institution
- Dec. 1989 **Post-Doctoral Investigator**, Woods Hole Oceanographic Institution
- 1989 **Post-Doctoral Scholar**, Woods Hole Oceanographic Institution
- Oct.- Nov. 1988 **Post-Doctoral Investigator**, University of Washington, Seattle
- 1981 – 1984 **Exploration Geophysicist**, Texaco Canada Resources Ltd., Calgary, Canada
- May – Aug. 1979 **Junior Field Geologist**, Shell Canada Resources, Nova Scotia, Canada
- Jun. – Sep. 1978 **Field Assistant**, Wyoming Mineral Corp. (Westinghouse), Nova Scotia

## PROFESSIONAL AFFILIATION

American Geophysical Union  
Society of Exploration Geophysicists  
Society of Mining Engineers

## HONORS

2009 AGU Citation for excellence in reviewing  
2007-2010 Institute Fellow : WHOI Deep Ocean and Exploration Institute  
1999 Visiting Fellow : IPGP UMPC, Paris, France  
1989 Post Doctoral Scholar, Woods Hole Oceanographic Institution  
1978-1979 Dalhousie Scholarship for academic achievement, 1978-1979.

## SHIPBOARD EXPERIENCE

Chief/Co-chief Scientist (21), Scientist and participant in more than 40 cruises since 1980. Diver on 16 submersible cruises with more than 25 dives in ALVIN, SHINKAI 6500 and NAUTILUS

2016 Yellowstone Lake (YNP) magnetic survey (HD-YLAKE Project)  
2015/16 Shipboard scientist *Joides Resolution* ODP Leg 360, Indian Ocean  
2014/15 Co-Chief Scientist *ARRV Sikuliaq/Sentry* – Hawaiian Jurassic Quiet Zone  
2014 Scientist *ARRV Sikuliaq* – Science test cruise Puerto Rico  
2014 Co-Chief Scientist/diver *R/V Atlantis/Alvin* – CORK optical modem operations  
2014 Lake Rotomahana heat flow survey, New Zealand  
2013 Fieldwork, Glacier Bay, Alaska – acoustic and magnetic tracking of halibut  
2013 Chief Scientist *R/V Point Sur* – CORK optical modem operations  
2012 Co-Chief Scientist *R/V Langseth* – CORK optical modem operations  
2011 Co-Chief Scientist *R/V Thompson/Sentry/Seismics* – Hawaiian Jurassic Quiet Zone  
2011 Co-Chief Scientist *R/V Atlantis/ROV Jason* – CORK optical modem/Thermal GRID  
2010 Co-Chief Scientist/diver *R/V Atlantis/Alvin* – CORK optical modem operations  
2008 Co-Chief Scientist/diver on *R/V Atlantis/Alvin*, Juan de Fuca Ridge  
2008 Scientist on *RRS James Cook*, ROV *ISIS* and *TOBI* sidescan, Mid-Atlantic Ridge  
2006 Chief Scientist on *R/V Melville/Jason/ABE*. Hydrothermal vent mapping and sampling, East Manus Basin, Papua New Guinea  
2005 Scientist on *R/V Atlantis/Alvin*. Endeavour Ridge, Juan de Fuca Ridge  
2004 Co-Chief Scientist on *R/V Knorr/Jason/ABE*. Kane Megamullion  
2004 Co-Chief Scientist/diver on *R/V Atlantis/Alvin*. East Pacific Rise 9N  
2002/03 Co-Chief Scientist on *R/V Thompson/DSL120*. Deep-tow magnetics of Pacific Jurassic Quiet Zone.  
2002 Scientist on *R/V Western Flyer/ROV Tiburon* (MBARI). Cleft Ridge, Juan de Fuca  
2002 Scientist on *R/V Thompson/ABE*. Explorer Ridge mapping (NOAA-OE)  
2002 Co-Chief Scientist/diver on *R/V Atlantis/Alvin/ABE*. East Pacific Rise 9N  
2001 Co-Chief Scientist on *R/V Atlantis/DSL120/ABE*. East Pacific Rise 9N  
2000 Co-Chief Scientist on *R/V Atlantis/Jason*. Endeavour Ridge, Juan de Fuca Ridge  
2000 Scientist on *R/V Western Flyer/ROV Tiburon*. Cleft and Blanco fracture zone  
1998 Scientist on *RRS James Clark Ross*. Southwest Indian Ridge  
1997 Scientist/diver on *R/V Atlantis/Alvin*. Endeavour Ridge, Juan de Fuca Ridge  
1996 Co-Chief Scientist on *R/V Thompson/Jason/ABE*. Coaxial Ridge, Juan de Fuca Ridge  
1995 Chief Scientist/diver on *R/V Atlantis/Alvin*. Blanco fracture zone magnetics  
1995 Co-Chief Scientist/diver on *R/V Atlantis/Alvin*. Coaxial Ridge, Juan de Fuca Ridge.

- 1994 Scientist/diver on R/V *Yokosuka/Shinkai6500*. Western Kane Fracture Zone, Mid-Atlantic Ridge
- 1993 Scientist/diver on R/V *Atlantis II/Alvin*. Coaxial eruption, Juan de Fuca Ridge
- 1992 Co-Chief Scientist on R/V *Thomas Washington*. Deeptow magnetics Pacific Jurassic Quiet Zone.
- 1992 Scientist/diver on R/V *Nadir/Nautile*. Kane Transform Zone dives, Mid-Atlantic Ridge
- 1991 Scientist on NOAA *Discoverer*. Vents program, Southern Juan de Fuca Ridge
- 1991 Scientist/diver on R/V *Nadir/Nautile*. Blanco Transform Zone dives, Juan de Fuca Ridge
- 1990 Scientist on CSS *Tully/SeaMARC 1A*. Middle Valley surveys, Juan de Fuca Ridge
- 1990 Co-Chief Scientist/diver on R/V *Atlantis II/Alvin*. Endeavour Ridge flank, Juan de Fuca Ridge
- 1989 Scientist on CSS *Tully*. NOBEL seismic experiment, northern Juan de Fuca Ridge
- 1988 Co-Chief Scientist on R/V *Atlantis II SeaMARC 1A*. Northern Juan de Fuca Ridge
- 1988 Scientist on CSS *Tully*. Middle Valley hydrothermal vents, Juan de Fuca Ridge
- 1986 Scientist on NOAA *Discoverer*. Axial seamount, Juan de Fuca Ridge
- 1986 Scientist on R/V *Thomas Thompson*. Deep tow seismic profiler, Juan de Fuca Ridge
- 1985 Scientist/diver on R/V *Atlantis II/Alvin*. Galapagos Rift 86W
- 1984 Scientist/diver on R/V *Atlantis II/Alvin*. Endeavour Ridge hydrothermal vents, Juan de Fuca Ridge
- 1983 Scientist on R/V *Thomas Thompson*. TT175, Geophysical mapping and sampling, Juan de Fuca Ridge
- 1982 Scientist on R/V *Thomas Thompson*. TT170, Geophysical mapping and sampling, Juan de Fuca Ridge
- 1981 Scientist on CSS *Hudson*. Bedford remotely operated drill, Juan de Fuca Ridge
- 1980 Scientist on R/V *Thomas Thompson*. TT152, Geophysical mapping and sampling, Juan de Fuca Ridge

## PROFESSIONAL ACTIVITIES

- Member - Marcus Langseth Science Oversight Committee (MLSOC)  
(<http://www.unols.org/committees/mlsoc/index.html>) 2011-2015
- Member Canada Foundation for Innovation (CFI) review panel (2014)
- Chair: InterRidge Working Group on Seafloor Mineralization (2008-present) 2 terms
- Organizer – MORSS Workshop on deep sea mining (2009)
- Organizer – InterRidge Workshop on Deep Sea Mining (2009)
- Co-convenor Fall AGU sessions (2004, 2007, 2013, 2016)
- Acting Director for DOEI Proposal review process, May 2006
- Associate Editor Journal of Geophysical Research 1993-1995, 1999-2002
- Member NOAA Ocean Exploration review panel (2003)
- Member NURP review panel (2005)
- National Ocean Science Board review on deep submergence (2003 attendee)
- Hosted Dr, Margaret Kivelson for Distinguished Lecturer Series (2002)
- Chief Scientist for Deep Submergence (2004-2005)
- DESSC Meetings (2005/2006 presenter)
- NSF-Advanced Technology Education (ATE) grant with Mass. Maritime Academy and Bristol Community College.

## EDUCATION ACTIVITIES

### MIT-WHOI Joint Program Activities:

- Member: Joint Committee for Marine Geology and Geophysics (1999-2003)

Ph. D. Advisor: Clare Williams (Ph.D. 2007)  
Ph. D. Co-Advisor: Chris Waters (Ph.D. 2010)  
Allegra Hosford (Ph.D. 2001)  
Stefan Husseuoeder (Ph.D. 1998)  
Ph. D. Thesis Committee: Helen Feng (PhD 2016)  
Chris Waters (Ph.D. 2011)  
Javier Escartin (Ph.D. 1996)  
Sang-Mook Lee (Ph.D. 1995)  
Generals committee: Min Xu (2007, Generals Project advisor)  
Phil Lane (2007)  
Astri Kvassnes (2001)  
Sheri White (1996)  
Fernanda Hoefel (2001)  
Masters Committee: Amy McKnight (2001)  
Michael Horowitz  
Teaching: Invited lecturer for Marine Geophysics class 12.711 (1989-1991)  
Co-taught Marine Geophysics class 12.711 (1992) with R. Stephen  
Redesigned and taught Advanced Marine Geophysics 12.755 with Rob  
Evans and Jian Lin (1996, 1998, 2002, 2007).  
Postdoc Scholar Advisor: Masako Tominaga (2009-2012)  
James Kinsey (2007/2008 coadvisor with Dana Yoerger)  
Anne Deschamps (2003/2004)  
WHOI Summer Fellows: Nazli Nomanbhoy (1991), Cheryl Waters (1995, with Dan Fornari)  
Trish Gregg (1999, with Deb Smith), Amena Siddiqi (2000)  
Deniz Kazanci (2003), Jennifer Glass (2006 with Dan Fornari)  
WHOI Summer Fellows Selection Committee (2000/2001)  
Guest Student: Gaud Pouliquen, IPGP, Paris (1999)  
Laney Hart (Mich State Univ. (2014)  
Hosted Falmouth High School students in a tour of Alvin and Deep Submergence assets, Mar 2006

**Non WHOI Education Activities:**

Ph. D. Thesis Committee: Mitsuko Kitazawa, IPGP, Paris (Ph.D. 2006)  
Masako Tominaga, Texas A&M (Ph.D. 2009)  
Florent Sztikar, IPGP, Paris (Ph.D. 2013)

**Thesis Advisor** : H. Paul Johnson University of Washington

**Post-Doctoral Advisor** : Hans Schouten, WHOI

**WHOI COMMITTEES**

Chair and member, Scientific Staff Executive Committee, SciSEC (2014-2015)  
Member, Search Committee – Director of Center for Marine Robotics (2014)  
Member, Advisory Committee – Center for Marine Robotics (2012 – present)  
Member, Marine Operations Committee (2012-present)  
Management Oversight : Ocean Bottom Seismology Instrument Pool (OBSIP) 2010-2012  
Ad-Hoc Mentoring Committees: Mark Behn, Dan Lizarralde (2007), James Kinsey (2012-2015),  
Kevin Anchukaitis (2013-2014)  
Co-chair, Friends of Vents Revival series (2007 – present) with Stefan Sievert  
Member, Office of Applied Oceanography Oversight Committee Nov 2007 - 2009  
Chair, Deep Submergence Advisory Committee: Mar. 2005 – 2009  
Member, Scientific Staff Executive Committee (SciSEC) 2005- 2006

Member, Deep Ocean and Exploration Institute Oversight/Review Committee 2004-2006  
 Ex Officio member of Replacement HOV Committee (CSDS responsibilities (2004-2005)  
 Chf. Scientist Deep Submergence July 1st 2004 – Dec 31 2005  
 Member, Tenured Staff Executive Committee (TenSEC) 2003- 2005  
 Marine Operations Committee: 2003-2004  
 Member, Information and Technology Advisory Committee 2001-2003  
 Member, JCMG&G 1999-2003  
 Review Committee, Mellon awards 1997, 2004  
 Member, Advisory Committee for Computing (G&G rep.) 1997-2001 (1996-1997 alternate rep.)  
 Member, DIAL (Digital Image Analysis Lab) committee 1991-1994  
 Member, Friends of Vents seminar series 1989-1994  
 Member, Hot Topics seminar series committee 1989-1991

### **Invited Professional Talks (Post-Tenure)**

Dec 2016	Deep Submergence New Users Workshop, San Francisco
Feb 2016	Seminar given to the Mauritius Oceanography Institute, Albion, Mauritius on IODP research.
May 2015	Atlantis Bank Magnetics – USSSP Drilling workshop, Woods Hole
May 2015	TAG Magnetics – USSSP Drilling workshop, Woods Hole
Aug 2014	Science Made Public – “Alvin and the wet WIFI”
June 2014	Rona Symposium, Rutgers Univ. – TAG magnetism
Dec 2013	AGU talk - Jurassic Quiet Zone
May 2013	IPGP Presentation on Jurassic Magnetics
May 2013	DOEI presentation to WHOI Trustee Committee - CORK optical communications
Dec 2012	AGU talk
Sep 2011	MTS/IEEE Oceans 2011– Waikaloa, Hawaii. Public lecture : Geophysics of hydrothermal systems.
Feb 2010	Geological Association of Canada-Mineralogical Association of Canada – Spring meeting – St Johns, Newfoundland, Canada. Workshop talk and Public lecture.
Apr 2009	Deep-Sea Mining of Seafloor Massive Sulfides - A Reality for Science and Society in the 21st Century, Morss Colloquium keynote speaker, Woods Hole.
Mar 2009	Geophysical Signatures of Seafloor Massive Sulfide Deposits, InterRidge Deep Sea Mining Workshop keynote speaker, Woods Hole.
Dec 2008	The New Gold Rush: Seafloor Hydrothermal Research and Marine Mining, Harvard Club, Boston.
Nov 2008	Optical Communications: Ocean Technology Expo, Providence, RI
Oct 2008	InterRidge Meeting : Presentation to Steering Committee on Working Group on Seafloor Mineralization.
Jan 2008	Mass. Tech. Transfer Consortium (MTTC) Presentation on Optical Underwater Communications, Boston.
Jan. 25 2007	Marine mineral resources in the Red Sea, Saudi Arabian KAUST Presentation, Woods Hole
Jun. 6 2006	High resolution mapping using ABE, Workshop on AUVs for Scientific Applications (AUVSA), Woods Hole
Nov. 18 2005	High resolution magnetic studies of the seafloor, Univ. Rhode Island Seminar
Nov. 14 2005	Magnetism of the seafloor, Teachers Workshop, Woods Hole
Sep. 5 2005	Presentation to Placer-Dome Corp., Vancouver

Jun. 23 2005 Jurassic Magnetism, WHOI Summer Student Fellow Seminar series, Woods Hole  
 May 2005 Magnetism - Supreme mystery of science, G&G Dept. Talk, Woods Hole  
 Sep. 28 2004 Presentation to Kathy Sullivan on replacement HOV project, Woods Hole  
 Jun. 22 2004 Two presentations on deep submergence science to COMRA, Beijing, China  
 Oct. 22 2003 Jurassic Magnetism, Geophysics Seminar, Woods Hole  
 Jun. 24 2003 Magnetism of the ocean basins, WHOI Summer Lecture Series, Woods Hole  
 Jan. 24 2002 Magnetism of the East Pacific Rise at 9N: Deconvolution for crustal accretion, MBARI, Monterey, CA  
 Jun. 15 2001 Magnetism of the East Pacific Rise at 9N: Deconvolution for crustal accretion, IFREMER, Brest, France  
 Jun. 6 2001 Magnetism of the East Pacific Rise at 9N: Deconvolution for crustal accretion, Institut de Physique du Globe Paris (IPGP), Paris, France  
 May 23 2001 CalTech Alumni presentation, Woods Hole  
 Spring 2001 Measuring magnetic fields at the seafloor, ALVIN Operations Group, Woods Hole.  
 Jun. 4 2000 Imaging the ocean floor using magnetic sensors, Center for Subsurface Sensing and Imaging Systems (CenSSIS) Retreat, Woods Hole  
 Nov. 7 1999 Keynote Speaker - Regional geophysical results of the Juan de Fuca Ridge. RIDGE Symposium on results of the Juan de Fuca Ridge, Seattle, WA

#### **WORKSHOPS ATTENDED (POST-TENURE)**

Sep 2015 Subduction Zone Observatory, Boise, ID.  
 Sep 2015 OOI workshop, Portland OR.  
 May 2015 USSSP-COMRA Workshop on Drilling Indian Ocean, Woods Hole  
 Nov 2012 IODP Workshop on Brothers Volcano hydrothermal drilling, Lisbon  
 Apr. 2012 GEOMAR workshop on Segment scale hydrothermalism, Kiel, Germany  
 Sep. 2011 Underwater Minerals and Mining Institute (UMI) Conference, Hilo, Hawaii.  
 Sep. 2011 MTS/IEEE Oceans 2011 Workshop – Waikaloa, Hawaii.  
 Oct. 2010 Ridge 2000 Community workshop, Portland Oregon  
 Jun. 2009 JC-24 Post-cruise meeting (Iceland)  
 May 2010 AGU Chapman Conference on Ocean Core Complexes, Agros, Cyprus  
 Apr. 2009 InterRidge Working Group post-workshop meeting  
 Mar. 2009 InterRidge Deep Sea Mining workshop, Woods Hole  
 Mar 2009 Morss colloquium, Deep Sea Mining, Woods Hole  
 Jan. 2009 InterRidge Steering Group meeting, Woods Hole  
 Nov 2008 Underwater Minerals and Mining Institute Conference, Oxford, MS  
 Oct 2008 InterRidge Meeting Working Group on Seafloor Mineralization.  
 Mar 2008 Environmental Impact Workshop Marine Mining - Nautilus Minerals, San Diego, CA.  
 Jan 2008 InterRidge Meeting: New Working Group on Seafloor Mineralization.  
 Oct. 2007 Underwater Mining Institute Conference, Tokyo, Japan  
 Mar. 2007 Environmental Impact of Marine Mining Workshop, Nautilus Minerals, Port Moresby, Papua New Guinea  
 Sep. 2006 IODP Mission Moho Workshop, Portland, OR  
 Jun. 2006 AUVs for Scientific Applications, Woods Hole, MA  
 Feb. 2004 RIDGE Mid-Atlantic Ridge Workshop, Providence, RI  
 Oct. 2002 Advance Technology Education (ATE) Conference, Washington DC  
 Sep. 2001 RIDGE Endeavour Observatory Results, Seattle, WA  
 May 2001 NSF-MGG Database workshop, San Diego, CA

Jan. 2001	RIDGE Endeavour Observatory Data management Meeting, Seattle, WA
Nov. 2000	ODP Remotely Operated Drilling Workshop College Station, TX
Nov. 1999	RIDGE Symposium on results from Juan de Fuca, Seattle WA
Sep. 1999	UNOLS DESCEND Workshop, Washington DC
May 1999	ODP Complex Meeting, Vancouver BC

## PUBLICATIONS

(\* student author, # postdoc author)

### In Prep.

Embley, R.W., E.T. Baker, W.W. Chadwick, Jr., J.E. Lupton, J.A. Resing, **M. A. Tivey**, B. Cousens, D.A. Butterfield, S.G. Merle, K.M. Gillis, A. William-Jones, S.L. Walker, R. Greene and K. Nakamura, Hydrothermal Activity on Explorer Ridge, NE Pacific, in prep for Deep Sea Research 2016.

\*Feng, Helen, M. Tominaga, D. Lizarralde, **M. Tivey**, J. A. Greene, S. Swift, J. Zhang, and W. W. Sager, Modes of late stage magmatism in the western Pacific seafloor in prep for G-cubed.

Tominaga Tivey Sager JQZ magnetics.

### Submitted

Tominaga, M., A. Beinlich, E. Lima, **M.A. Tivey**, B. Hampton, B. Weiss, and Y. Harigane, Multi-scale magnetic mapping of serpentinite carbonation, Nature Geoscience submitted, 2016.

### Published

92) Sztikar, F., **M. Tivey**, D.S. Kelley, J.A. Karson, G. Fruh-Green, and A. Denny, Magnetic exploration of a low-temperature ultramafic-hosted hydrothermal site (Lost City, 30°N, MAR), *Earth Planet. Sci. Lett.*, 461, 40-45, 2017.

91) Caratori Tontini, F., T. Crone, C.E.J. de Ronde, D.J. Fornari, J. Kinsey, E. Mittelstaedt, and **M. Tivey**, Crustal magnetization and the subseafloor structure of the ASHES vent field (Axial Seamount, Juan de Fuca Ridge): Implications for the exploration of hydrothermal sites, *Geophys. Res. Lett.*, 43, doi:10.1002/2016GL069430, 2016.

90) Tominaga, M., **M.A. Tivey**, C.J. MacLeod, A. Morris, C.J. Lissenberg and D.J. Shillington, Characterization of the in situ magnetic architecture of Hess Deep crust using near-source vector magnetic data acquired by the Remotely Operated Vehicle (ROV) Isis, *Jour. Geophys. Res.*, 121, doi:10.1002/2015JB012783, 2016.

89) Xu, M. and **M.A. Tivey**, Investigation of a marine magnetic polarity reversal boundary in cross-section at the northern boundary of the Kane Megamullion, Mid-Atlantic Ridge 23°40'N, *Jour. Geophys. Res.*, 121, 3161–3176, doi:10.1002/2016JB012928, 2016.

88) Thal, J., **M.A. Tivey**, , D.R. Yoerger, D. Niedermeyer and W. Bach, Subaqueous cryptodome eruption, hydrothermal activity and related seafloor morphologies on the andesitic North Su volcano, *Jour. Volc. Geoth. Res.*, doi:10.1016/j.jvolgeores.2016.04.041, 2016.

87) Dick, H.J.B., MacLeod, C.J., Blum, P., and the Expedition 360 Scientists, Expedition 360 Preliminary Report: Southwest Indian Ridge lower crust and Moho. *International Ocean Discovery Program*. <http://dx.doi.org/10.14379/iodp.pr.360.2016>, 2016.

- 86) deRonde, C.E.J., S.L. Walker, C. LeBlanc, B.W. Davy, D.J. Fornari, F. Caratori-Tontini, B.J. Scott, F.H. Seebeck, T. Stewart, A. Mazot, A. Nichol and **M.A. Tivey**, Reconstruction of the geology and structure of Lake Rotomahana and its hydrothermal systems from high-resolution multibeam mapping and seismic surveys: Effects of the 1886 Mt. Tarawera eruption, *Jour. Volc. Geoth. Res.*, doi: 10.1016/j.jvolgeores.2016.02.002, 2016.
- 85) Tominaga, M., **M.A. Tivey**, and W.W. Sager, Nature of the Jurassic Magnetic Quiet Zone, *Geophys. Res. Lett.*, 42, 8367-8372, doi:10.1002/2015GL065394, 2015.
- 84) Caratori Tontini, F., C. de Ronde, B. Scott, S. Soengkono, V. Stagpoole, C. Timm, and **M. Tivey**, Interpretation of gravity and magnetic anomalies at Lake Rotomahana: geological and hydrothermal implications, *Jour. Volc. Geoth. Res.*, doi:10.1016/j.jvolgeores.2015.07.002, 2015.
- 83) Walker, S.L., C.E.J. de Ronde, D. Fornari, **M. A Tivey**, and V. K. Stucker, High-resolution water column survey to identify active sublacustrine hydrothermal discharge zones within Lake Rotomahana, North Island, New Zealand, *Jour. Volc. Geoth. Res.*, doi:10.1016/j.jvolgeores.2015.07.037, 2015.
- 82) **Tivey, M.A.**, C.E.J. Ronde, F. Caratori-Tontini, S.L. Walker and D. Fornari, A novel heat flux study of a geothermal active lake -Lake Rotomahana, New Zealand, *Jour. Volc. Geoth. Res.*, doi:10.1016/j.jvolgeores.2015.06.006, 2015.
- 81) Hsu, L., R. Arko, S. Carbotte, J. Delano, V. Ferrini, J. Gill, A. Goodwillie, K. Lehnert, **M.A. Tivey**, Rescue of long-tail data from the ocean bottom to the Moon: IEDA Data Rescue Mini-Awards, *GeoResJ*, 6, 108-114, doi:10.1016/j.grj.2015.02.012, 2015.
- 80) Humphris, S.E., M.K. Tivey & **M.A. Tivey**, TAG The Trans-Atlantic Geotraverse Hydrothermal Field: A Hydrothermal System on an Active Detachment Fault, "Special volume on Peter Rona," *Deep Sea Research II*, 121, 8-16, 2015.
- 79) **Tivey, M.A.**, H. P. Johnson, M.S. Salmi and M. Hutnak High-resolution near-bottom vector magnetic anomalies over Raven Hydrothermal Field, Endeavour Segment, Juan de Fuca Ridge, *J. Geophys. Res.*, 119, doi:10.1002/2014JB011223, 2014.
- 78) \*Salmi, M. S., H. P. Johnson, **M.A. Tivey** and M. Hutnak, Quantitative estimate of heat flow from a midocean ridge axial valley, Raven Field, Juan de Fuca Ridge, *J. Geophys. Res.*, 119, doi:10.1002/2014JB011086, 2014.
- 77) \*Thal, J., W. Bach, **M. Tivey** and D. Yoerger, Geologic setting of PACManus hydrothermal area – High resolution mapping and in situ observations, *Marine Geology*, 355, 98-114, 2014.
- 76) Hansen, L.N., M.J. Cheadle, B.E. John, S.M. Swapp, H.J.B. Dick, B.E. Tucholke, and **M.A. Tivey**, Mylonitic deformation at the Kane oceanic core complex: Implications for the rheological behavior of oceanic detachment faults, *Geochem. Geophys. Geosyst.*, 14(8), 3085-3108, doi:10.1002/ggge.20184, 2013.
- 75) \*Waters, C.L., Sims, K.W.W., Soule, S.A., Blichert-Toft, J., Dunbar, N.W., Plank, T.A., Prytulak, J. Sohn, R.A., and **M.A. Tivey**, Recent Volcanic Accretion at 9-10°N East Pacific Rise as Resolved by Combined Geochemical and Geological Observations, *Geochem. Geophys. Geosyst.*, 13, doi:10.1002/ggge.20134, 2013.
- 74) Deschamps, A., **M. A. Tivey**, W. W. Chadwick, and R. W. Embley, Waning magmatic activity along the Southern Explorer Ridge revealed through fault restoration of rift topography. *Geochem. Geophys. Geosyst.*, 14, 1609-1625, doi:10.1002/ggge.20110, 2013
- 73) Kinsey, J.C., **M.A. Tivey**, and D.R. Yoerger, Dynamics and Navigation of Autonomous Underwater Vehicles for Submarine Gravity Surveying, *Geophysics*, 78(3), G55-G68, doi:10.1190/GEO2012-0181.1, 2013.

- 72) Caratori-Tontini, F., B. Davy, C. de Ronde, R.W. Embley, M. Leybourne, and **M.A. Tivey**, Crustal magnetization of Brothers volcano New Zealand measured by autonomous vehicles: geophysical expression of a submarine hydrothermal system, *Econ. Geol.*, 107, 1571-1581, 2012.
- 71) Caratori-Tontini, F., C. de Ronde, M. Leybourne, D. Yoerger, J. Kinsey, and **M. Tivey**, 3-D focused inversion of near-seafloor magnetic data with application to the submarine Brothers volcano hydrothermal system, Southern Pacific Ocean, New Zealand, *J. Geophys. Res.*, 117, B10102, 2012JB009349, 2012.
- 70) Mittelstaedt, E., S. Soule; K. Harpp; D. Fornari; C. McKee; **M. Tivey**; D. Geist; M. D. Kurz; C. Sinton; C. Mello; and Scientific Party, Multiple expressions of plume-ridge interaction in the Galápagos: Volcanic lineaments and ridge jumps, *Geochem. Geophys. Geosyst.*, 13, doi:10.1029/2012GC004093, 2012.
- 69) Searle, R.C., B.J. Murton, K. Achenbach, T. LeBas, **M. Tivey**, I. Yeo, M.H. Cormier, J. Carlut, P. Ferreira, C. Mallovs, K. Morris, N. Schroth, P. van Calsteren, and C. Waters, Structure and development of an Axial Volcanic Ridge: Mid-Atlantic Ridge, 45°N, *Earth Planet. Sci. Lett.*, 299, 228-241, doi:10.1016/j.epsl.2010.09.003, 2010.
- 68) Johnson, H.P., **M.A. Tivey**, T.A. Bjorkland and M.S. Salmi, Hydrothermal circulation within the Endeavour Segment; Juan de Fuca Ridge, *Geochem. Geophys. Geosyst.*, 11(5), Q05002, doi:10.1029/2009GC002957, 2010.
- 67) Hoagland, P., S.E. Beaulieu, **M.A. Tivey**, R.G. Eggert, C.R. German, L. Glowka and J. Lin, Deep sea mining of seafloor massive sulfides, *Marine Policy*, 34, 728-732, doi:10.1016/j.marpol. 2009.12.001, 2010.
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