

CURRICULUM VITAE

MAURICE A. TIVEY

Marine Geophysicist
Senior Scientist
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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

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

- 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 (19), 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

2014 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
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/Nautilus*. 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/Nautilus*. 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-present
- 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)
- 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 Hussenöeder (Ph.D. 1998)
- Ph. D. Thesis Committee: Helen Feng (PhD expected 2015)
- 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 Szitkar, 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-present)
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 (2012-2013),
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)

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 Magnetism
 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)

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)

Submitted

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, submitted to *GeoResJ*, Oct. 2014.

Embley, R.W., E.T. Baker, W.W. Chadwick, Jr., J.E. Lupton, J.A. Resing, D.A. Butterfield, S.G. Merle, B. Cousens, K.M. Gillis, A. William-Jones, **M. Tivey**, S.L. Walker, R. Greene and K. Nakamura, Hydrothermal Activity on Explorer Ridge, NE Pacific, submitted to *Deep Sea Research - Special volume on Peter Rona*, 2014.

Humphris, S.E., M.K. Tivey & **M.A. Tivey**, TAG The Trans-Atlantic Geotraverse Hydrothermal Field: A Hydrothermal System on an Active Detachment Fault, submitted to *Deep Sea Research - Special volume on Peter Rona*, 2014

Published

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.
- 66) **Tivey, M.A.**, and J. Dymant, The magnetic signature of hydrothermal systems in slow-spreading environments, *AGU Monograph on Diversity of hydrothermal systems on slow spreading ridges*, edited by P. Rona, C. Devey, J. Dymant and B. Murton, v. 188, pp. 43-66, 2010.
- 65) Zhu, J., J. Lin, Y.J. Chen, C. Tao, C.R. German, D.R. Yoerger, and **M.A. Tivey**, A reduced crustal magnetization zone near the first observed active hydrothermal vent field on the southwest Indian Ridge, *Geophys. Res. Lett.*, 37, doi:10.1029/2010GL043542, 2010.
- 64) Yoerger, D.R., A.M. Bradley M. Jakuba, **M.A. Tivey**, C.R. German, and R.W. Embley, Mid-ocean ridge exploration with an autonomous underwater vehicle, *Oceanography*, 20, 52-61, 2008.

- 63) *Tominaga, M., W.W. Sager, **M.A. Tivey**, and S-M. Lee, Deep-tow Magnetic Profile Study of the Pacific Jurassic Quiet Zone and Inferences for the Geomagnetic Polarity Reversal Time Scale and Jurassic Geomagnetic Field Behavior, *J. Geophys. Res.*, 113, B07110, doi:10.1029/2007JB005527, 2008.
- 62) Dick, H.J.B., **M.A. Tivey** and B.E. Tucholke, Plutonic foundation of a slow spread ridge segment: The oceanic core complex at Kane Megamullion, 23°30'N, 45°20'W, *Geochem. Geophys. Geosyst.*, 9, 5, Q05014, doi:10.1029/2007GC001645, 2008.
- 61) *Williams, C., **M.A. Tivey**, H. Schouten, and D.J. Fornari, The Central Anomaly Magnetization High documents variations in crustal accretionary processes along the East Pacific Rise (9°55' – 9°25'N), *Geochem. Geophys. Geosyst.*, 9(4), Q04015, doi:10.1029/2007GC001611, 2008.
- 60) #Kinsey, J.C., **M.A. Tivey**, and D.R. Yoerger, Toward high-spatial resolution gravity surveying of the mid-ocean ridges with autonomous underwater vehicles, Proc. IEEE/MTS Oceans Conf. Sept. 2008, Quebec City, Canada.
- 59) **Tivey, M.A.**, Vine-Matthews-Morley Hypothesis, *Encyclopedia of Geomagnetism and Paleomagnetism*, edited by D. Gubbins and E. Herrero-Bervera, Springer, Dordrecht NL, 980-983, 2007.
- 58) **Tivey, M.A.**, Marine magnetic surveys, *Encyclopedia of Geomagnetism and Paleomagnetism*, edited by D. Gubbins and E. Herrero-Bervera, Springer, Dordrecht NL, 542-545, 2007.
- 57) Ferrini, V. L., D. J. Fornari, T. M. Shank, J. C. Kinsey, **M. A. Tivey**, S. A. Soule, S. M. Carbotte, L. L. Whitcomb, D. Yoerger, and J. Howland, Sub-meter bathymetric mapping of volcanic and hydrothermal features on the East Pacific Rise crest at 9°50'N, *Geochem. Geophys. Geosyst.*, 8, Q01006, doi:10.1029/2006GC001333, 2007.
- 56) Escartin, J., S.A. Soule, D.J. Fornari, **M.A. Tivey**, H. Schouten, M.R. Perfit, Interactions between faults and lava flows along the East Pacific Rise crest (9°10'-50'N): Implications for upper oceanic crust construction, *Geochem. Geophys. Geosyst.*, 8, Q06005, doi:10.1029/2006GC001339, 2007.
- 55) Yoerger, D., A.M. Bradley, M. Jakuba, C. German, T. Shank, and **M.A. Tivey**, Autonomous and remotely operated vehicle technology for hydrothermal vent discovery, exploration and sampling, *Oceanography*, 20, 86-97, 2007.
- 54) #Deschamps, A., **M. Tivey**, R.W. Embley, and W.W. Chadwick, Quantitative study of the deformation at Southern Explorer Ridge using high-resolution bathymetric data, *Earth Planet. Sci. Lett.*, doi:10.1016/j.epsl.2007.04.007, 2007.
- 53) **Tivey, M.A.**, W.W. Sager, S-M. Lee and M. Tominaga, Origin of the Pacific Jurassic Quiet Zone, *Geology*, 34, 789-792, 2006.
- 52) Stakes, D.S., M.R. Perfit, **M.A. Tivey**, D. Caress, T.M. Ramirez, and N. Maher, The Cleft revealed: Geologic, magnetic and morphologic evidence for construction of upper oceanic crust along the southern Juan de Fuca Ridge, *Geochem., Geophys., Geosyst.*, 7, Q04003, doi:10.1029/2005GC001038, 2006.
- 51) *Pollock, M.A., E.M. Klein, J.A. Karson, and **M.A. Tivey**, Temporal and spatial variability in the composition of lavas exposed along the Western Blanco Transform Fault, *Geochem., Geophys., Geosys.*, 6, Q11009, doi:10.1029/2005GC001026, 2005.
- 50) Soule, S.A., D.J. Fornari, M.P. Perfit, **M.A. Tivey**, W.I. Ridley, and H. Schouten, Channelized lava flows at the East Pacific Rise crest 9-10°N: the importance of off-axis lava transport in developing the architecture of young oceanic crust, *Geochem., Geophys., Geosys.*, 6, Q08005, doi:10.1029/2005GC000912, 2005
- 49) **Tivey, M. A.**, Roger Larson, Hans Schouten, Robert A. Pockalny, Downhole Magnetic Measurements of ODP Hole 801C: Implications for Pacific Oceanic Crust and Magnetic Field Behavior in the Middle Jurassic, *Geochem., Geophys., Geosys.*, 6, Q04008, doi:10.1029/2004GC000754, 2005.

- 48) Fornari, D.J., **M.A. Tivey**, H. Schouten, M. Perfit, K. Von Damm, D. Yoerger, A. Bradley, M. Edwards, R. Haymon, T. Shank, D. Scheirer, and P. Johnson, Submarine lava flow emplacement processes at the east pacific rise 9 50N Implications for hydrothermal fluid circulation in the upper ocean crust, AGU Monograph 148, Mid-Ocean Ridges: Hydrothermal interactions between the lithosphere and oceans, edited by C. German, J. Lin, and L.M. Parson, AGU, Washington DC, 187-218, 2004.
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