James Campbell Kinsey

Associate Scientist
Deep Submergence Laboratory
Applied Ocean Physics and Engineering
Woods Hole Oceanographic Institution
31 Challenger Drive, MS #7
Woods Hole, MA 02543 USA

Voice: 508 289 3470
Fax: 508 289 2191
E-mail: jkinsey@whoi.edu
URL: www.whoi.edu/people/jkinsey

Education

B.E.	**Mechanical Engineering, State University of New York at Stony Brook**
	Stony Brook, NY USA, 1998
M.S.	**Mechanical Engineering, The Johns Hopkins University**, Baltimore, MD USA, 2002
Ph.D.	**Mechanical Engineering, The Johns Hopkins University**, Baltimore, MD USA, 2006
	Thesis: *Advances in Precision Navigation of Oceanographic Submersibles*
	Adviser: Professor Louis L. Whitcomb

Professional Experience

Woods Hole Oceanographic Institution, Woods Hole, MA USA

Associate Scientist, Applied Ocean Physics and Engineering	October 2013 - present
Assistant Scientist, Applied Ocean Physics and Engineering	December 2009 - October 2013
Deep Ocean Exploration Institute Postdoctoral Scholar	August 2007 - December 2009
Advisers: Dr. Maurice A. Tivey and Dr. Dana R. Yoerger	
Engineer I, Applied Ocean Physics and Engineering	June 1999 - September 1999
Engineering Assistant I, Applied Ocean Physics and Engineering	May 1998 - September 1998
Summer Student Fellow, Applied Ocean Physics and Engineering	June 1997 - September 1997

Massachusetts Institute of Technology, Cambridge, MA USA

Affiliated Faculty, Department of Mechanical Engineering	November 2010 - present

The Johns Hopkins University, Baltimore, MD USA

Visiting Research Scientist, Department of Mechanical Engineering	July 2007 - present
Postdoctoral Fellow, Department of Mechanical Engineering	July 2006 - July 2007
Graduate Student, Department of Mechanical Engineering	June 1999 - June 2006
On family leave of absence: January 2000 - January 2001	

Integrated Coating Solutions, Huntington Beach, CA USA

Automation Consultant	January 2001 - August 2001

Center for Thermal Spray Research, Stony Brook, NY USA

Automation Engineer	June 2000 - January 2001

HD Systems, Inc., Hauppauge, NY USA

Design Engineer	January 1999 - June 1999

Awards

- Deep Ocean Exploration Institute Postdoctoral Scholar, Woods Hole Oceanographic Institution, 2007.
- Link Foundation Oceanographic Engineering Graduate Research Fellowship, 2004-2005.
- IMarEST Prize for Best Paper by Young Author, 1st IFAC Workshop on Guidance and Control of Underwater Vehicles, April 2003.
- 2003 Department of Mechanical Engineering Teaching Assistant Award, The Johns Hopkins University.

- Department Fellow, Department of Mechanical Engineering, The Johns Hopkins University, 1999-2000.
- Summer Student Fellow, Woods Hole Oceanographic Institution, Summer 1997.
- Member, Tau Beta Pi and Pi Tau Sigma Honor Societies, inducted 1996.

Professional Affiliations

- Member, American Geophysical Union;

- Member, IEEE Ocean Engineering Society, Robotics and Automation Society, Control Systems Technology, and Geoscience and Remote Sensing Society.

Research Objectives

My research focuses on dynamic systems and its application to robotics and oceanography. This research includes control systems, parameter identification, state estimation, autonomy, and sensor development. Of particular interest are technologies that enable marine robots to obtain previously unavailable measurements and increase the efficiency with which data are collected. My research employs the methodology of: *(i)* collaborating with the engineering and oceanographic community to identify relevant state estimation and parameter identification problems; *(ii)* applying my background in systems theory, sensors, field robotics, and oceanography to develop novel analytical solutions to these problems; and *(iii)* experimentally evaluating, in the laboratory and at sea, methodologies that advance the capabilities of underwater robots and improve our knowledge of oceanographic processes. Much of my research transitions to operational robotic systems, such as the *Sentry* autonomous underwater vehicle (AUV) and the *Nereus* hybrid remotely operated vehicle (HROV). Current projects include the development of *in-situ* calibration techniques for navigation sensor calibration, dynamic model-based nonlinear state estimators for underwater robot navigation, coordinated multi-robot operations, and developing new accelerometers for inertial navigation and gravity measurements.

Professional Activities

Internal

- Gender Equity Program Advisory Committee (GEPAC) department representative (April 2013 – present)
- AOP&E seminar coordinator (2010-2011)

External

- *Service*
  - Co-convener, 2013 Keck Institute for Space Studies (KISS) workshop — Serving as oceanographic lead and, in collaboration with the California Institute of Technology and the Jet Propulsion Laboratory, a co-convener for two workshops entitled "Satellites to the Seafloor: Autonomous Science to Forge a Breakthrough in Quantifying the Global Ocean Carbon Budget". The workshop brings together 24 robotics and earth science researchers from the oceanographic and space science communities to develop new methods for using a coordinated network of ocean robots and satellites to autonomously interpret data and communicate sampling strategies with a focus on using these technologies to understand the global carbon budget.
  - UNOLS Potential Fields Pool Equipment Facility (PFPE) — Oversee an NSF funded facility that supports the maintenance and upgrading of ship gravimeters in the UNOLS fleet and pool gravimeters. Activities include supervising technical staff and contractors, coordinating with

ship operators at 7 institutions and the Rolling Deck to Repository initiative to ensure high-quality marine gravimetry data, and working with the U.S. and Canadian governments to provide gravimeters for geohazards assessment in Puget Sound and the U.N. Convention on the Law of the Sea (UNCLOS).

– National Deep Submergence Facility (NDSF) Activities — Advise NDSF on issues related to realtime navigation, post-processing of navigation and science data, and AUV engineering and operations. Activities include participating in engineering development, transitioning research to operational capability, presenting materials at meetings, and participating in at-sea operations with the *Sentry* AUV and *Jason* ROV.

– Associate Editor, 2012 IEEE Conference on Robotics and Intelligent Systems

- *Reviews*
  – Funding Agencies — Agence Nationale de la Recherche (French National Agency for Research), National Science Foundation (ad-hoc and panel reviewer for GEO/OCE and CISE/IIS), National Aeronautics and Space Administration.

  – Publications and Conferences — *IEEE Transactions on Robotics*, *Autonomous Robots*, *Journal of Field Robotics*, *IEEE Geoscience and Remote Sensing Letters*, *IEEE Transactions on Control Systems Technology*, *International Journal of Robust and Nonlinear Control*, *Journal of Systems and Control Engineering*, *Oceanography Magazine*, *IEEE Journal of Oceanic Engineering*, Robotics Systems and Science Conference, IEEE Conference on Robotics and Intelligent Systems, IEEE Conference on Robotics and Automation, IEEE Oceans.

Educational Activities

Woods Hole Oceanographic Institution, Woods Hole, MA

Postdoctoral Adviser for:
- Lashika Medagoda, Postdoctoral Investigator, 2014-2015 (currently at the German Research Center for Artificial Intelligence in Bremen, Germany). Joint publications: [J17,CR9,CR11,A31].

Thesis Committee Member:
- Lashika Medagoda, Ph.D. 2012, Australian Centre for Field Robotics, University of Sydney
- M. Jordan Stanway, Ph.D. 2011, WHOI/MIT Joint Program. Also advised Jordan on a thesis chapter and this research resulted in publications [J16,CR5].

Summer Student Fellow (SSF) Adviser for:
- Qingjun Yang, 2012 SSF (currently a graduate student in the MIT Civil and Environmental Engineering Department). Results of her research contributed to [J15].
- A. Belani 2012 SSF (co-advised with M. Jakuba; currently an undergraduate at MIT). Results of his research contributed to [CA16].
- Jacob Izraelevitz, SSF 2010 (currently a graduate student at MIT Mechanical Engineering). Results of his research were published in [CA11].

Undergraduate Guest Student Adviser for:
- Mark Van Middlesworth, Guest Student 2010 (co-advised with D. Yoerger; currently a graduate student at MIT Mechanical Engineering). Results of his research were published in [CA10].
- Jonathon Salisbury, Guest Student 2009, (now an Information Systems Engineer at MITRE.)
- Fraser Novakowski, Guest Student 2008, (now a Management Consultant at Accenture.)

Guest Lecturer:
- 2.688 Principles of Oceanographic Instrument Systems – Sensors and Measurements, Fall 2009.
- Advanced Marine Geophysics, Fall 2008.

Outreach:

- Mentor for the Natick High School (NHS) ROVER program and their 2013 Lemelson-MIT Inven-Teams program. The ROVER program is a multi-disciplinary effort in which the environmental science and robotics classes collaborate to obtain measurements and samples from local ponds using robotic technology built by the students. For the 2013 Lemelson-MIT InvenTeams program, a nationally competition, I mentored a team of 12 students in the design, manufacture and testing of an remotely operated vehicle (ROV) for under-ice search and rescue.

The Johns Hopkins University, Baltimore, MD

Teaching Assistant:

- Design and Analysis of Dynamical Systems, Spring 2002. Awarded the 2003 Mechanical Engineering Department Teaching Assistant Award for my work in this class.
- Sensors and Actuators, Spring 2001.

Supervision at WHOI

- *Technical Staff*
  - Stefano Suman, Engineer II (2011 – present)

Cruise Participation

[E21] **Juan de Fuca Ridge, Pacific Ocean**, *R/V Atlantis*, July 2014 — Lead PI on two Sentry AUV programs that (1) quantified heat flux at the ASHES and Main Endeavor Hydrothermal Vent Sites; and (2) used ADCP measurements to estimate vehicle position. Conceived, led, and executed all research activities. Served as Sentry Expedition Leader overseeing all aspects of Sentry operations including robotics research on potential AUV applications for optical modems. Publications resulting from this work are [CR9,CR11,A31,J17].

[E20] **Dorado Outcrop, Pacific Ocean**, *R/V Atlantis*, December 2013 — Sentry AUV operations at the Dorado Outcrop in the Eastern Pacific. Served as Sentry Expedition Leader overseeing all aspects of AUV operations including coordination with ROV activities. Also tested methods for my July 2014 Sentry cruise. Publications resulting from this work are [J17].

[E19] **Mid-Cayman Rise, Caribbean Sea**, *R/V Falkor*, June 2013 — AUV and ROV operations with the Nereus HROV at the Piccard and Von Damm hydrothermal vent fields. Participated in mission planning, systems engineering, ship mapping, science data products, and vehicle operations.

[E18] **Buzzards Bay**, *R/V Tioga*, October 2012 — Engineering testing of coordinated operations between an autonomous surface vessel and an autonomous underwater vehicle to demonstrate a new paradigm for ocean exploration. Served as co-PI and lead AUV component of effort. Publications resulting from this work are [CA16,CA18].

[E17] **Mid-Cayman Rise, Caribbean Sea**, *R/V Atlantis*, January 2012 — ROV operations at the Piccard and Von Damm hydrothermal vent sites. Designed and executed ADCP measurements and ROV and ship mapping programs. Assisted in planning ROV science operations and oversaw data integration. Worked with engineering team to port my navigation software to the Jason ROV system. Publications resulting from this cruise are [J11,J13,J15,A19,A26].

[E16] **Western Pacific**, *R/V Thompson*, November-December 2011 — Magnetic mapping of the Jurassic Quiet Zone with the *Sentry* AUV and tow sleds. Served as expedition leader for the AUV operations team and contributed to the tow sled and ship gravity data acquisition efforts.

[E15] **Kermadec Arc, Pacific Ocean**, *R/V Tangaroa*, March 2011 — Mapping of the Kermadec Arc with the *Sentry* AUV. Assisted in the planning of *Sentry* operations and engineering tests of a novel AUV gravimeter. Publications resulting from this cruise are [J10,J16,CR8,A16,A17,A23,A30].

[E14] **Deepwater Horizon Blowout Site, Gulf of Mexico**, *R/V Atlantis*, December 2010 — Deployed Sentry to map and photograph deep coral sites with potential damage resulting from the April 2010 Deepwater Horizon disaster. Information from Sentry dives was used to plan subsequent *Alvin* dives focused on sampling. Planned AUV operations and worked with an undergraduate to develop tools for the rapid visualization of *Sentry* data for *Alvin* dive planning. Publications resulting from this cruise are [CR7,CA10].

[E13] **Barent Sea**, *R/V Merian*, September 2010 — Participated in the bathymetric mapping, photographing and water column surveys at Haakon Mosby Mud Volcano. Assisted in the planning of *Sentry* operations and processed AUV ADCP data. Publications resulting from this cruise are [J16,CA12,A11,A12,A13,A14,A15].

[E12] **Deepwater Horizon Blowout Site, Gulf of Mexico**, *R/V Endeavor*, June 2010 — Participated in the localization and mapping of a subsea hydrocarbon plume resulting from the April 2010 Deepwater Horizon disaster. In addition to assisting with *Sentry* operations, processed AUV and ship ADCP data. Publications resulting from this cruise are [J9,CR6,CR7,CR9,CR11,CA11,A21].

[E11] **Mid Cayman Rise, Caribbean Sea**, *R/V Cape Hatteras*, October-November 2009 — Using the *Nereus* HROV searched for hydrothermal vent activity along the Cayman Mid-Ocean Rise, the world's deepest ocean spreading center. On the AUV leg, assisted with the navigation, control and data processing; on the ROV leg served as the lead navigator and primary liaison between the engineering and science parties. [J8,A4,A5,A6,A8] are results of this expedition.

[E10] **Gulf of Mexico**, *R/V Brooks McCall*, June 2009 — Participated in using the *Sentry* AUV to map and photograph corals in the Gulf of Mexico.

[E9] **Challenger Deep**, *R/V Kilo Moana*, May 2009 — First full-ocean depth deployment of the *Nereus* hybrid ROV/AUV to the Challenger Deep. Served as the primary navigation software author and assisted in the systems engineering and control code development. Publications resulting from the expedition include [J7,CR4,CA9].

[E8] **Juan de Fuca Ridge**, *R/V Thompson*, Summer 2008 — First science cruise for the *Sentry* AUV. Contributions included control and navigation software development, systems engineering, and post-processing navigation data for use in high-resolution multi-beam maps of observatory sites.

[E7] **North Atlantic Ocean**, *R/V Oceanus*, April 2008 — *Sentry* AUV engineering cruise. Developed the navigation software used on Sentry. Also contributed to the vehicle control code and systems engineering.

[E6] **South Atlantic Ocean**, *R/V Knorr*, January 2008 — Engineering cruise investigating the use of multiple AUVs, employing acoustic modems for communication and navigation.

[E5] **Pacific Ocean**, *R/V Kilo Moana*, November 2007 — Participated in the engineering trials of *Nereus*, a hybrid ROV/AUV. Developed the navigation system used by *Nereus*. Publications resulting from the expedition include [CA7,CA6].

[E4] **Sea of Crete and Black Sea**, *NRV Alliance*, August 2007 — Served as watch navigator for the *Hercules* ROV during science operations in the Sea of Crete and archaeological excavations in the Black Sea.

[E3] **Juan de Fuca Ridge, Pacific Ocean**, *R/V Atlantis*, July 2002 — Installation and testing of navigation upgrades to the DVLNAV underwater vehicle navigation system developed in collaboration with Louis Whitcomb on *DSV Alvin*.

[E2] **Juan de Fuca Ridge, Pacific Ocean**, *R/V Atlantis*, July 2002 — Deployed DVLNAV, a new underwater vehicle navigation system developed in collaboration with Louis Whitcomb, on the *Jason II* ROV.

[E1] **Bermuda Rise, Atlantic Ocean**, *R/V Atlantis*, June 2001 — Deployed DVLNAV, a new underwater vehicle navigation system developed in collaboration with Louis Whitcomb, on the *DSL120A* robot vehicle and on the *DSV Alvin* manned submersible.

Papers in Refereed Journals and Books (*indicates the author was a student I mentored; ‡indicates the author was a postdoc I advised. In electronic versions of this document, click on the blue text to access the cited reference.)

Manuscripts under review or in preparation

[J17] L. Medagoda‡, S.B. Williams, O. Pizzaro, **J.C. Kinsey**, and M.V. Jakuba. Mid-water Current Aided Localization for Autonomous Underwater Vehicles. *Autonomous Robots*. Submitted, under review.

Published

[J16] M.J. Stanway* and **J.C. Kinsey**. Rotation Identification Using Geometric Algebra with an Application in Underwater Navigation. *Journal of Field Robotics*. Accepted, to appear.

[J15] **J.C Kinsey**, Q. Yang*, and J.C. Howland. Nonlinear Dynamic Model-Based State Estimators for Underwater Navigation of Remotely Operated Vehicles. *IEEE Transactions on Control Systems Technology*. 22(5), pp.1845-1854, 2014.

[J14] F.C. Tontini, C.E.J. de Ronde, **J.C. Kinsey**, S.A. Soule, D.R. Yoerger, and L. Cocchi. Geophysical modeling of flank collapse and gravitational stability at Rumble III seamount, southern Pacific ocean, New Zealand. *Geochemistry, Geophysics, Geosystems*. 14, doi:10.1002/ggge.20278, 2013.

[J13] **J.C Kinsey** and C.R. German. Sustained volcanically-hosted venting at ultraslow ridges: Piccard Hydrothermal Field, Mid Cayman Rise. *Earth and Planetary Science Letters*. 380, 162-168, doi:10.1016/j.epsl.2013.08.001, 2013

[J12] **J.C. Kinsey**, M.A. Tivey and D.R Yoerger. Dynamics and Navigation of Autonomous Underwater Vehicles for Submarine Gravity Surveying. *Geophysics*. 78(3):G55-G68, 2013.

[J11] S.A. Bennett, M. Coleman, J. Huber, E. Reddington, **J.C Kinsey**, C. McIntyre, J. Seewald and C. R. German. Trophic regions of a hydrothermal plume dispersing away from an ultramafic-hosted vent-system: Von Damm vent-site, Mid-Cayman Rise. *Geochemistry, Geophysics, Geosystems*. 14(2):317-327, 2013.

[J10] F.C. Tontini, C.E.J. de Ronde, M.I. Leybourne, D.R. Yoerger, **J.C. Kinsey**, and M.A. Tivey. 3-D focused inversion of magnetic data with application to the submarine Brothers volcano hydrothermal system (Southern Pacific Ocean, New Zealand). *Journal of Geophysical Research*. Vol. 117, B10102, doi:10.1029/2012JB009349, 2012.

[J9] R. Camilli, C.M. Reddy, D.R. Yoerger, B. Van Mooy, M.V. Jakuba, **J.C. Kinsey**, C.P. McIntyre, S.P. Sylva, J. V. Maloney. Tracking Hydrocarbon Plume Transport and Biodegradation at Deepwater Horizon. *Science*, 330(6001):201-204, 2010.

[J8] C.R. German, A. Bowen, M.L. Coleman, D.L. Honig, J.A. Huber, M.V. Jakuba, **J.C. Kinsey**, M.D. Kurz, S. Leroy, J.M. McDermott, B. deLépinay, K. Nakamura, J.S. Seewald, J.L. Smith, S.P. Sylva, C.L. Van Dover, L.L. Whitcomb, and D.R. Yoerger. Diverse styles of submarine venting on the ultra-slow spreading Mid-Cayman Rise. *Proceedings of the National Academy of Sciences*, 107(32):14020-14025, 2010.

[J7] A.D. Bowen, D.R. Yoerger, C. Taylor, R. McCabe, J. Howland, D. Gomez-Ibanez, **J.C. Kinsey**, M. Heintz, G. McDonald, D.B. Peters, B. Fletcher, C. Young, J. Buescher, L.L. Whitcomb, S.C. Martin, S.E. Webster, and M.V. Jakuba. The Nereus Hybrid Underwater Robotic Vehicle. *International Journal of the Society for Underwater Technology*, 18(3):79-89, 2009.

[J6] D.R. Yoerger and **J.C. Kinsey**. Deep Ocean Surveying with Autonomous Underwater Vehicles. *Journal of Ocean Technology*. IV(1):50-65, 2009, Invited paper.

[J5] S.A. Soule, V.L. Ferrini, **J.C. Kinsey**, D.J. Fornari, C. Sellers, S.M. White, K. Von Damm, S.M. Carbotte. Navigational infrastructure at the East Pacific Rise 9° 50'N area following the 2005-06 eruption: seafloor benchmarks and high-resolution multibeam surveys. *Geochemisty, Geophysics, Geosystems*, 9, Q11T04, 2008.

[J4] **J.C. Kinsey** and L.L. Whitcomb. In-situ alignment calibration of attitude and Doppler sensors for precision underwater vehicle navigation: Theory and experiment. *IEEE Journal of Oceanic Engineering*. 32(2):286-299, 2007.

[J3] **J.C. Kinsey** and L.L. Whitcomb. Adaptive identification on the group of rigid body rotations and its application to precision underwater vehicle navigation. *IEEE Transactions on Robotics*, 23(1):124-136, 2007.

[J2] V.L. Ferrini, D.J. Fornari, T.M. Shank, **J.C. Kinsey**, S.A. Soule, S.M. Carbotte, M.A. Tivey, L.L. Whitcomb, D.R. Yoerger, and J. Howland. Sub-meter bathymetric mapping of the East Pacific Rise crest at 9°50'N linking volcanic and hydrothermal processes. *Geochemisty, Geophysics, Geosystems*, 8, Q01006, 2007.

[J1] **J. C. Kinsey** and L. L. Whitcomb. Preliminary field experience with the DVLNAV integrated navigation system for oceanographic submersibles. *Control Engineering Practice*, 12(12):1541-1548, 2004. Invited Paper.

Archival Peer Reviewed Conference Publications These publications have appeared in the proceedings of conferences in which the authors submit a full manuscript (typically 6-8 pages) for blind peer-review by 2-5 reviewers. *indicates the author was a student I mentored; ‡indicates the author was a postdoc I advised. In electronic versions of this document, click on the blue text to access the cited reference.

[CR11] L. Medagoda‡ and **J.C. Kinsey**. Water Current Field Estimation with an Autonomous Underwater Vehicle. *Proceedings of the 2015 IEEE International Conference on Intelligent Robots and Systems*. Submitted, under review.

[CR10] C.J. McFarland, M.V. Jakuba, S. Suman, **J.C. Kinsey**, and L.L. Whitcomb. Toward Ice-Relative Navigation of Underwater Robotic Vehicles Under Moving Sea Ice: Experimental Evaluation in the Arctic Sea. *Proceedings of the 2015 IEEE International Conference on Robotics and Automation*. Accepted, to appear.

[CR9] L. Medagoda‡, **J.C. Kinsey**, and M. Eilders. Autonomous Underwater Vehicle Navigation in a Spatiotemporally Varying Water Current Field. *Proceedings of the 2015 IEEE International Conference on Robotics and Automation*. Accepted, to appear.

[CR8] G. Troni, **J.C. Kinsey**, D.R. Yoerger, and L.L. Whitcomb. Field Performance Evaluation of New Methods for In-Situ Calibration of Attitude and Doppler Sensors for Underwater Vehicle Navigation. *Proceedings of the 2012 IEEE International Conference on Robotics and Automation*. May 2012, St Paul, Minnesota.

[CR7] **J.C. Kinsey**, D.R. Yoerger, M.V. Jakuba, R. Camilli, C. R. Fisher, and C.R. German. Assessing the Deepwater Horizon Oil Spill with the Sentry Autonomous Underwater Vehicle. *Proceedings of the 2011 IEEE International Conference on Intelligent Robots and Systems*. 261-267, September 2011, San Francisco, CA. doi:10.1109/IROS.2011.6095008

[CR6] M.V. Jakuba, D. Steinberg, **J.C. Kinsey**, D.R. Yoerger, R. Camilli, O. Pizarro, and S.B. Williams. Toward Automatic Classification of Chemical Sensor Data from Autonomous Underwater Vehicles. *Proceedings of the 2011 IEEE International Conference on Intelligent Robots and Systems*. 4722-4727, September 2011, San Francisco, CA. doi: 10.1109/IROS.2011.6095158

[CR5] M.J. Stanway* and **J.C. Kinsey**. Sensor alignment using rotors in Geometric Algebra. *Proceedings of the 2011 IEEE International Conference on Robotics and Automation*. May 2011, Shanghai, China.

[CR4] L.L. Whitcomb, M.V. Jakuba, **J.C. Kinsey**, S.C. Martin, S.E. Webster, J.C. Howland, C.L. Taylor, D. Gomez-Ibanez, and D.R. Yoerger. Navigation and Control of the Nereus Hybrid Underwater Vehicle for Global Ocean Science to 10,903 m Depth: Preliminary Results. *Proceedings of the 2010 IEEE International Conference on Robotics and Automation*. May 2010, Anchorage, AK.

[CR3] **J.C. Kinsey** and L.L. Whitcomb. Model-Based Nonlinear Observers for Underwater Vehicle Navigation: Theory and Preliminary Experiments. *Proceedings of the 2007 IEEE International Conference on Robotics and Automation*, pages 4251-4256, April 2007, Rome, Italy.

[CR2] **J.C. Kinsey** and L.L. Whitcomb. Adaptive Identification on the Group of Rigid Body Rotations. *Proceedings of the 2005 IEEE International Conference on Robotics and Automation*, pages 3256-3261, April 2005, Barcelona, Spain.

[CR1] **J.C. Kinsey** and L.L. Whitcomb. Towards In-Situ Calibration of Gyro and Doppler Navigation Sensors for Precision Underwater Vehicle Navigation. *Proceedings of the 2002 IEEE International Conference on Robotics and Automation*, pages 4016-4023, May 2002, Washington DC.

Full Length Conference Publications *indicates the author was a student I mentored; †indicates the author was a student I co-mentored. In electronic versions of this document, click on the blue text to access the cited reference.

[CA20] A.D. Bowen, D. R. Yoerger, C.R. German, **J.C. Kinsey**, M.V. Jakuba, D. Gomez-Ibanez, C.L. Taylor C. Machado, J.C. Howland, C.L. Kaiser, M. Heintz, C. Pontbriand, S. Suman, L. O'Hara, L.L. Whitcomb, C.J. McFarland, L. Mayer. Design and Preliminary Engineering Trials of Nereid-UI: A Remotely Operated Underwater Vehicle for Oceanographic Access Under Ice. *2014 IEEE Oceans Conference*. September 2014, St Johns, Newfoundland, Canada. To appear.

[CA19] C.L. Kaiser, A.D. Bowen, **J.C. Kinsey**, M.V. Jakuba, R. Camilli and D.R. Yoerger. Not Your Father's AUV: New Technologies That Will Transform Deep Sea Operations. *41st International Conference of the Underwater Mining Institute*. October 2013, Rio de Janeiro, Brazil. Invited.

[CA18] **J.C. Kinsey**, M.V. Jakuba and C.R. German. A long term vision for long-range ship-free deep ocean operations: persistent presence through coordination of Autonomous Surface Vehicles and Autonomous Underwater Vehicles. *Workshop on Marine Robotics and Applications. Looking into the Crystal Ball: 20 years hence in Marine Robotics*. February 2013, Canary Islands, Spain. Invited.

[CA17] A.D. Bowen, M.V. Jakuba, D.R. Yoerger, L.L. Whitcomb, **J.C. Kinsey**, L. Mayer, and C. R. German. Nereid UI: A Light-Tethered Remotely Operated Vehicle for Under-Ice Telepresence. *Arctic Technology Conference*. December 2012, Houston, TX.

[CA16] C.R. German, M.V. Jakuba, **J.C. Kinsey**, J. Partan, S. Suman, A. Belani†, and D.R. Yoerger. A long term vision for long-range ship-free deep ocean operations: persistent presence through coordination of Autonomous Surface Vehicles and Autonomous Underwater Vehicles. *2012 IEEE-AUV Conference*. September 2012, Southampton, England.

[CA15] C. Kaiser, W. Pinner, **J. C. Kinsey**, D.R Yoerger, C.R. German, and C. Van Dover. Satellite Based Remote Management and Operation of a 6000m AUV. *2012 IEEE Oceans Conference*. October 2012, Hampton Roads, VA.

[CA14] A.D. Bowen, M.V. Jakuba, D.R. Yoerger, C.R. German, **J.C. Kinsey**, L.L. Whitcomb, L. Mayer. Lightly Tethered Unmanned Underwater Vehicle for Under-Ice Exploration. *Proceedings of the 2012 IEEE Aerospace Conference*. March 2012, Big Sky, Montana.

[CA13] M.V. Jakuba, **J.C. Kinsey**, D.R. Yoerger, R. Camilli, C.A. Murphy, D. Steinberg, and A. Bender. Exploration of the Gulf of Mexico Oil Spill with the Sentry Autonomous Underwater Vehicle. *IROS 2011 Workshop on Robotics for Environmental Monitoring*. September 2011, San Francisco, CA.

[CA12] D. de Beer, A. Boetius, R. Camilli, T. Feseker, J. Foucher, C. German, **J. Kinsey**, J. Mienert, M. Schlüter, C. Waldmann, F.Wenzhöfer, D. Yoerger. One Year Direct Observations on Volcanic Activity of a Cold Seep, The Hakon Mosby Mud Volcano (HMMV)" *Proceedings of the 7th International Conference on Gas Hydrates (ICGH 2011)*, Edinburgh, Scotland, United Kingdom, July 17-21, 2011.

[CA11] J. Izraelevitz* and **J.C. Kinsey**. Optimal Trajectory Generation for Draped AUV Gravity Surveys. *2011 IEEE Oceans Conference*. June 2011, Santander, Spain.

[CA10] M. VanMiddlesworth[†], **J.C. Kinsey**, and D.R. Yoerger. A Heterogeneous Rapid-Turnaround Visualization Package for AUV Data. *2011 IEEE Oceans Conference*. June 2011, Santander, Spain.

[CA9] A.D. Bowen, D.R. Yoerger, C. Taylor, R. McCabe, J. Howland, D. Gomez-Ibanez, **J.C. Kinsey**, M. Heintz, G. McDonald, D.B. Peters, J. Bailey, E. Bors, T. Shank, L.L. Whitcomb, S.C. Martin, S.E. Webster, M.V. Jakuba, B. Fletcher, C.Young, J. Buescher, P. Fryer, S. Hulme. Field Trials of the Nereus Hybrid Underwater Robotic Vehicle in the Challenger Deep of the Mariana Trench. *Proceedings of the 2009 IEEE/MTS Oceans Conference*. October 2009, Biloxi, MS.

[CA8] **J.C. Kinsey**, M.A. Tivey and D.R. Yoerger. Toward High-Spatial Resolution Gravity Surveying of the Mid-Ocean Ridges with Autonomous Underwater Vehicles. *Proceedings of the 2008 IEEE/MTS Oceans Conference*, September 2008, Quebec City, Canada.

[CA7] A.D. Bowen, D.R. Yoerger, C. Taylor, R. McCabe, J. Howland, D. Gomez-Ibanez, **J.C. Kinsey**, M. Heintz, G. McDonald, D.B. Peters, B. Fletcher, C. Young, J. Buescher, L.L. Whitcomb, S.C. Martin, S.E. Webster, and M.V. Jakuba. The Nereus Hybrid Underwater Robotic Vehicle for Global Ocean Science Operations to 11,000m Depth. *Proceedings of the 2008 IEEE/MTS Oceans Conference*, September 2008, Quebec City, Canada.

[CA6] L.L. Whitcomb, M.V. Jakuba, **J.C. Kinsey**, S.C. Martin, S.E. Webster, J.C. Howland, C. Taylor, D. Gomez-Ibanez, and D.R. Yoerger. Navigation and Control of the Nereus Hybrid Underwater Vehicle for Global Ocean Science to 11,000m Depth. *The Fourteenth Yale Workshop on Adaptive and Learning Systems*. June 2008, New Haven, CT.

[CA5] **J.C. Kinsey**, R.M. Eustice, and L.L. Whitcomb. A survey of underwater vehicle navigation: Recent advances and new challenges. *In Proceedings of the IFAC Conference of Manoeuvring and Control of Marine Craft*, September 2006, Lisbon, Portugal. Invited paper.

[CA4] **J.C. Kinsey**, D.A. Smallwood and L.L. Whitcomb. A New Hydrodynamics Test Facility for UUV Dynamics and Control Research. *Proceedings of 2003 IEEE/MTS Oceans Conference*, pages 356-361, September 2003, San Diego, CA.

[CA3] **J.C. Kinsey** and L.L. Whitcomb. Preliminary Experiments with a Calibration Technique for Gyro and Doppler Navigation Sensors for Precision Underwater Navigation. *Proceedings of the 13th International Symposium on Unmanned Untethered Submersible Technology*, August 2003, Durham, NH.

[CA2] **J.C. Kinsey** and L.L. Whitcomb. Preliminary Field Experience with the DVLNAV Integrated Navigation System for Manned and Unmanned Submersibles. *Proceedings of the 1st IFAC Workshop on Guidance and Control of Underwater Vehicles*, April 2003. Paper received the IMarEST prize for Best Paper by a Young Author.

[CA1] **J.C. Kinsey**. Drag Characterization in the Autonomous Benthic Explorer. *Proceedings of 1998 IEEE/MTS Oceans Conference*, pages 1696-1700, September 1998, Nice, France.

Abstracts (*indicates the author was a student I mentored; [†]indicates the author was a student I co-mentored; [‡]indicates the author was a postdoc I advised.)

[A37] R.V. Sailor, E. Insanic, C.L. Medler, E.W. Zettergren, and **J.C. Kinsey**. Validation of Marine Gravity Survey Systems using Canal Lock Vertical Acceleration Signals. *Institute of Navigation Joint Navigation Conference*. Accepted, to appear.

[A36] C.L. Kaiser, D.R. Yoerger, C.L. Van Dover, E. Lobecker, **J.C. Kinsey**, C. Fisher, and T. Shank. Three Stage Autonomous Underwater Vehicle Based Location of Deepwater Corals and Methane Seeps. *2015 Oil Spill & Ecosystem Science Conference*. Feb 2015

[A35] **J.C. Kinsey**, S. Suman, R. Herr, T. Lanagan, S. Faluotico and D.J. Fornari. Exploring the Potential Fields: 8 Years of Potential Fields Pool Equipment Facility. *INMARTECH 2014*. Corvallis, OR. November 2014.

[A34] **J.C. Kinsey**, A.D. Bowen, C.R. German, M.V. Jakuba, C.L. Kaiser, L. Mayer, A.S. Soule, L.L. Whitcomb, and D.R. Yoerger. Recent Advances in Underwater Robots at the Deep Submergence Laboratory. *INMARTECH 2014*. Corvallis, OR. November 2014.

[A33] **J.C. Kinsey**. Rapid Field Responses using Autonomous Underwater Vehicles. *National Academy of Engineering 2014 Japan-America Frontiers of Engineering Meeting*. June 2014. Tokyo, Japan. Invited.

[A32] C.R. German, A. Boetius, L.L. Whitcomb, M.V. Jakuba, J. Bailey, C. Judge, C. McFarland, S. Suman, S. Elliott, C. Katlein, S. Arndt. A. Bowen, D. Yoerger, **J.C. Kinsey**, L. Mayer, M. Nicolaus, S. Laney, H. Singh, and T. Maksym. First scientific dives of the Nereid Under Ice hybrid ROV in the Arctic Ocean. *Fall 2014 AGU Meeting*.

[A31] **J.C. Kinsey**, T. Crone, E. Mittelsteadt, L. Medagoda[‡], D. Fourie[†], and K. Nakamura. Estimating the Heat and Mass Flux at the ASHES Hydrothermal Vent Field with the Sentry Autonomous Underwater Vehicle. *Fall 2014 AGU Meeting*.

[A30] F.C. Tontini, C.E.J. de Ronde, M.A. Tivey, **J.C. Kinsey**. Near-seafloor magnetic exploration of submarine hydrothermal systems in the Kermadec Arc. *Fall 2014 AGU Meeting*.

[A29] L.L Whitcomb, M.V. Jakuba, C.R. German, A. D. Bowen, D.R Yoerger, **J.C. Kinsey**, L.A. Mayer, C.J. McFarland, S. Suman, J. Bailey, C. Judge, S. Elliot, D. Gomez-Ibanez, C.L. Taylor, C. Machado, J.C. Howland, C.L. Kaiser, M. Heintz, C. Pontbriand, L. O'Hara, G. McDonald, and A. Boetius. Preliminary Polar Sea Trials of Nereid-UI: A Remotely Operated Underwater Vehicle for Oceanographic Access Under Ice. *Fall 2014 AGU Meeting*.

[A28] L.L Whitcomb, A. D. Bowen, D.R Yoerger, C.R. German, **J.C. Kinsey**, L.A. Mayer, M.V. Jakuba, D. Gomez-Ibanez, C.L. Taylor, C. Machado, J.C. Howland, C.L. Kaiser, M. Heintz, C. Pontbriand, S. Suman, L. O'Hara. Design and Fabrication of Nereid-UI: A Remotely Operated Underwater Vehicle for Oceanographic Access Under Ice. *Fall 2013 AGU Meeting*.

[A27] S. Suman, R.E. Herr, **J.C. Kinsey**, D.J. Fornari, A new integrated software for monitoring and testing BGM-3 gravimeters, *RVTEC*, Lamont-Doherty Earth Observatory, February 2013.

[A26] **J.C. Kinsey** and C.R. German, Mapping the Piccard Hydrothermal Field - The World's Deepest Known Vent Area. *Fall 2012 AGU Meeting*.

[A25] L.L. Whitcomb, A.D. Bowen, D.R. Yoerger, C.R. German, **J.C. Kinsey**, L. Mayer, M.V. Jakuba, D. Gomez-Ibanez, C. Taylor, C. Machado, J.C. Howland, C. Kaiser, M. Heintz. Development of Nereid-UI: A Remotely Operated Underwater Vehicle for Oceanographic Access Under Ice. *Fall 2012 AGU Meeting*.

[A24] K. Elliott, C.L. Van Dover, C.R. German, C. Kaiser, L. Brothers, D.R. Yoerger, **J.C. Kinsey**, D.F. Coleman, C. Martinez, W. Pinner, B. Kennedy. Integrating telepresence technologies with AUV operations for exploration of cold seep communities in the vicinity of Blake Ridge and Cape Fear Diapirs in the Western Atlantic. *Fall 2012 AGU Meeting*.

[A23] F. Caratori Tontini, C.E.J. de Ronde, **J.C. Kinsey**, D. Yoerger, D. Fornari. Potential-field modeling of flank collapse and gravitational stability at Rumble III seamount, southern Pacific ocean, New Zealand. *Fall 2012 AGU Meeting*.

[A22] **J.C. Kinsey**, D.R. Yoerger, M.V. Jakuba, R. Camilli, C.M. Reddy. Estimating mid-water hydrocarbon fluxes with an autonomous underwater vehicle and an in-situ mass spectrometer. *2012 Ocean Sciences Meeting*, 2012

[A21] D.R. Yoerger, **J.C. Kinsey**, O. Pizarro, C. Kaiser, R. Camilli. High resolution imaging, mapping, and chemical sensing from an autonomous underwater vehicle. *2012 Ocean Sciences Meeting*, 2012

[A20] A.D. Bowen, L. Mayer, D.R. Yoerger, C.R. German, and **J.C. Kinsey**. Lightly tethered unmanned underwater vehicle for under-ice exploration. *2012 Ocean Sciences Meeting*, 2012

[A19] S.A. Bennett., M. Coleman, J.A. Huber, **J.C. Kinsey**, C. McIntyre, E. Reddington, J.S Seewald, and C.R. German. The carbon biogeochemistry of a dispersing hydrothermal plume from an ultramafic influenced system on the Mid-Cayman Rise. *2012 Ocean Sciences Meeting*, 2012

[A18] D. Scheirer, **J.C. Kinsey**, and J. Childs. Exploring the Limits of Lateral Resolution and Anomaly Precision of Marine Gravimeter Data. *Eos Trans. AGU, Fall Meet. Suppl.*, 2011.

[A17] S.A. Soule, C.E.J. de Ronde, M.I. Laybourne, F.C. Tontini, D.R. Yoerger, C. Kaiser, and **J.C. Kinsey**. Volcanic construction of submarine Kermadec arc volcanoes from near-bottom sidescan sonar data collected by the Sentry AUV. *Eos Trans. AGU, Fall Meet. Suppl.*, 2011.

[A16] F.C. Tontini, C.E.J. de Ronde, M.I. Leybourne, D.R. Yoerger, **J.C. Kinsey** and M.A. Tivey. 3D Focused inversion of magnetic data with application to submarine hydrothermal venting in the Kermadec Arc (New Zealand). *Eos Trans. AGU, Fall Meet. Suppl.*, 2011.

[A15] D. de Beer, A. Boetius, J. Foucher, T. Feseker, C. German, D. Yoerger, R. Camilli, **J. Kinsey**. Observations on volcanic activity of a cold seep, the Hakon Mosby Mud Volcano, (HMMV). *European Geosciences Union General Assembly*, Vienna, Austria April 3-8, 2011.

[A14] D.R. Yoerger, C.R. German, R. Camilli, **J.C. Kinsey**, K. Nakamura, D. De Beer, A. Boetius. Systematic Exploration of Cold Seeps by AUV: New Results Using Sentry at the Haakon Mosby Mud Volcano, September-October 2010. *2011 ASLO Aquatic Sciences Meeting*.

[A13] R. Camilli, D.R. Yoerger, C.R. German, A. Boetius, **J.C. Kinsey**, D. de Beer, The Haakon Mosby Mud Volcano, a Carbon Dioxide Point Source. *2011 ASLO Aquatic Sciences Meeting*.

[A12] **J.C. Kinsey**, D.R. Yoerger, R. Camilli, and C.R. German. Developing Improved Water Velocity and Flux Estimation from AUVs Results From Recent ASTEP Field Programs. *Eos Trans. AGU, Fall Meet. Suppl.*, 2010.

[A11] D.R. Yoerger, **J.C. Kinsey**, M.V. Jakuba, R. Camilli, C.R. German, T. Shank, A. Bowen, K. Nakamura, SEEPS 2009 Scientific Party, OASES 2009 Scientific Party, GRUVEE 2010 Scientific Party, ENLIGHTEN 2010 Scientific Party, and HMMV 2010 Scientific Party. Searching for environments that could support life: Lessons learned from six deep sea cruises with the Sentry and Nereus Autonomous Underwater Vehicles. *Eos Trans. AGU, Fall Meet. Suppl.*, 2010.

[A10] C.R. German, A. Bowen, M.L. Coleman, D.L. Honig, J.A. Huber, M.V. Jakuba, **J.C. Kinsey**, M.D. Kurz, S. Leroy, J.M. McDermott, B. deLépinay, K. Nakamura, J.S. Seewald, J.L. Smith, S.P. Sylva, C.L. Van Dover, L.L. Whitcomb, and D.R. Yoerger. Diverse styles of submarine venting on the ultra-slow spreading Mid-Cayman Rise. *Eos Trans. AGU, Fall Meet. Suppl.*, 2010.

[A9] A. Bowen, C.R. German, L.L Whitcomb D.R. Yoerger, M.V. Jakuba, **J.C. Kinsey**, and OASES Science Team. OASES: Lessons learned from Oceanographic Exploration relevant to future Astrobiology expeditions *Eos Trans. AGU, Fall Meet. Suppl.*, 2010.

[A8] **J.C.Kinsey**, M.V. Jakuba, A. D. Bowen, D.R. Yoerger, L.L. Whitcomb, R. Camilli, C.R. German and D.L. Valentine. Employing Autonomous Underwater Vehicles to Develop New Techniques for Astrobiological Exploration: Recent Field Results and Future Opportunities. *Astrobiology Science Conference*, 2010.

[A7] R. Camilli, D. Yoerger, M. Jakuba, O. Pizarro, S. Williams, M. Johnson-Roberson, **J.C. Kinsey**, and T. Shank. Advancing autonomy for exploration, discovery, and characterization of astrobiology in aqueous environ- ments. *Astrobiology Science Conference*, 2010.

[A6] C.R. German, A. Bowen, M.L. Coleman, D.P. Connelly, D. Honig, J. Huber, M. Jakuba, **J.C. Kinsey**, M.D. Kurz, J.M. McDermott, K. Nakamura, C.M. Sands, J.S. Seewald, J. Smith, S. Sylva, C.L. Van Dover, L.L. Whitcomb and D.R. Yoerger. Oases for Life and Pre-Biotic Chemistry: Hydrothermal Exploration of the Mid-Cayman Rise. *Astrobiology Science Conference*, 2010.

[A5]   J. L. Smith, J. A. Huber, M. L. Coleman, D. P. Connelly, D. Honig, C. R. German, **J.C. Kinsey**, M. D. Kurz, J.M. McDermott, K. Nakamura, C. M. Sands, J. Seewald, S. Sylva and C. L. Van Dover. Microbial and Biogeochemical Characterization of Hydrothermal Plumes on the Mid-Cayman Rise. *Astrobiology Science Conference*, 2010.

[A4]   C.R. German, A. Bowen, M.L. Coleman, J.A. Huber, J. Seewald, C.L. Van Dover, L.L. Whitcomb, D.R. Yoerger, D.P. Connelly, D. Honig, M. Jakuba, **J.C. Kinsey**, J. McDermott, K. Nakamura, C. Sands, J. Smith, and S. Sylva. Hydrothermal exploration of the Mid-Cayman Spreading Center: Isolated evolution on Earths deepest Mid-Ocean Ridge? *In Eos Trans. AGU, Fall Meet. Suppl.*, 2009.

[A3]   **J.C. Kinsey**, L.L. Whitcomb, D.R. Yoerger, J.C. Howland, V.L. Ferrini, and Ø. Hegrenæs. New navigation post-processing tools for oceanographic submersibles. *In Eos Trans. AGU, 87(52), Fall Meet. Suppl.*, 2006. Abstract OS33A-1678.

[A2]   L. Whitcomb, **J.C. Kinsey**, D. Yoerger, C. Taylor, A. Bowen, B. Walden, and D. Fornari. Navigation upgrades to the National Deep Submergence Facility vehicles D.S.V. Alvin, Jason 2, and the DSL-120A. *In Eos Trans. AGU 84(46), Fall Meet. Suppl.*, 2003. Abstract OS32A-0225.

[A1]   Y. Rzhanov, L. Mayer, D. Fornari, T. Shank, S. Humphris, D. Scheirer, **J.C. Kinsey**, and L. Whitcomb. High-resolution photo-mosaicing of the Rosebud hydrothermal vent site and surrounding lava flows, Galapagos Rift 86°W — Techniques and interpretations. *In Eos Trans. AGU 84(46), Fall Meet. Suppl.*, 2003. Abstract OS32A-0231.

Additional Publications (In electronic versions of this document, click on the blue text to access the cited reference.)

[P4]   A. Thompson; **J.C. Kinsey**, M., Coleman, R. Castano & study authors. *Satellites to the Seafloor: Autonomous Science to Form a Breakthrough in Quantifying the Global Ocean Carbon Budget*. Keck Institute for Space Studies, 2015.

[P3]   **J.C. Kinsey**. *Advances in Precision Navigation of Oceanographic Submersibles*. Ph.D. thesis, Johns Hopkins University, Baltimore, MD USA, June 2006.

[P2]   **J.C. Kinsey** and L.L. Whitcomb. *Adaptive Identification on the Group of Special Orthogonal Matrices*. Technical Report, Johns Hopkins University, October 2004.

[P1]   L.L. Whitcomb and **J.C. Kinsey**. *DVLNAV Installation and Configuration Manual*. Technical Report, Johns Hopkins University. April 2003.

Engineering Products

[P5]   *GravLog software* — Linux based logging software for BGM-3 marine gravimeters. Used on UNOLS vessels and on Arctic icebreakers for 2010 and 2011 UNCLOS surveys.

[P4]   *Sentry AUV* — Contributions include navigation lead (2007-present), systems engineer (2007-2010), hydrodynamic design and testing (1999), thruster testing (1999), integration of ultra-short-baseline (USBL) (2009), integration of acoustic telemetry (2009), participation in 7 cruises (2007-present), and data products (2007-present).

[P3]   *DSL post-processing software* — Matlab based software package for post-processing navigation software for the *Sentry* AUV, *Nereus* HROV, *Jason2* ROV, and *Alvin* manned submersible.

[P2]   *NavEst navigation software* — Linux based Doppler velocity log (DVL) navigation software designed for use on AUVs and expanded for use on manned submersibles and ROVs. Primary author with contributions from J. Howland, S. Suman, L. Whitcomb, and D. Yoerger. Serves as the navigation source for the *Sentry* AUV (200+ dives), *Nereus* HROV (50+ dives), *Hercules* ROV, and *Alvin* submersibles.

[P1]   *DVLNav navigation software* — Windows based navigation DVL software co-authored with Louis Whitcomb. Served as the navigation software for the *Alvin* submersible from 2001-2010 and used on the *Jason2*, *MARUM 6500*, and *Hercules* ROVs.

Invited Talks

- "Looking into the Deep Ocean: Robotics in Oceanography." New Bedford Ocean Exploratorium, January 2014.
- "Robots, Rotors, and Gravity: Dynamic Systems Research in Oceanography." AOP&E Department Seminar, Woods Hole Oceanographic Institution, July 2013.
- "Deepwater Horizon to the Mid-Cayman Rise: Recent Expeditions with the Jason, Nereus, and Sentry Underwater Robots." Department of Geology, Michigan State University, March 2013.
- "Robotic Exploration of the Mid-Cayman Rise and Recent Insights into Sustained Hydrothermal Venting at Ultraslow Mid-Ocean Ridges." Marum, Bremen, Germany. February 2013.
- "Deepwater Horizon to the Mid-Cayman Rise: Recent Adventures with Sentry, Nereus, and Jason." University of Rhode Island Marine Geology and Geophysics, May 2012.
- "DVL Navigation with the Sentry and Iver2 AUVs." ADCPs in Action, September 2011.
- "ADCP Measurements with AUVs." ADCPs in Action, September 2011.
- "Analogues for Astrobiological Exploration in the Earth's Deep Oceans with the National Deep Submergence Facility Vehicles: Current ASTEP Programs and Future Opportunities." NASA Astrobiology Science Graduate Student Conference, June 2011.
- "From the Challenger Deep to the Gulf of Mexico: Recent Operations with the Sentry AUV and the Nereus Hybrid Remotely Operated Vehicle." Ocean Technology Expo, May 2011.
- "Robotic Mapping of Underwater Oil Plumes." WHOI Oil Spill Forum, July 2010.
- "Recent Operations with Sentry and Nereus." Naval Oceanographic Office 2010 UUV Operators Summit, January 2010.
- "Underwater Vehicle Navigation: Present State and Future Challenges for Long Range Exploration." InterRidge Long Range Exploration Workshop, June 2010.
- Memorial University, St Johns, Newfoundland, January 2010.
- Marine Institute, St Johns, Newfoundland, January 2010.
- IEEE Oceanic Engineering Section, St Johns, Newfoundland January 2010.
- "Ocean Robotics at WHOI", Massachusetts Future of Robotics Summit, December 2009.
- Naval Oceanographic Office, Stennis Space Center, July 2009
- "Ocean Robotics: Engineering Innovations Advancing Scientific Observation." University of Guam, May 2009.
- "Dynamical Systems Research in Ocean Robotics: Engineering Innovation Advancing Scientific Observation." AOP&E Department Seminar, Woods Hole Oceanographic Institution, April 2009.
- "Dynamical Systems Research in Ocean Robotics: Engineering Innovation Advancing Scientific Observation." Computer Science and Artificial Intelligence Laboratory, MIT, March 2009.
- "Ocean Robotics: Engineering Innovations Advancing Scientific Observation." Mechanical Engineering Department, Worcester Polytechnic Institute, February 2009.
- "Underwater Vehicle Navigation: Classical Methods and Future Trends." European Network on Marine Robotics Navigation Workshop, Killaloe, Ireland. April 2008.
- "Underwater Vehicle Navigation: Recent Advances and New Challenges." Institute for Archeological Oceanography, University of Rhode Island. March 2007.

- "Deep Submergence Technology: Engineering Innovations Enabling Scientific Advances." Interdisciplinary Science Seminar Series, Loyola College of Maryland. January 2007.
- "In-Situ Alignment Calibration of Attitude and Doppler Sensors for Precision Underwater Vehicle Navigation: Theory and Experiment" AOP&E Department Seminar, Woods Hole Oceanographic Institution, November 2006.
- "Underwater Robotics for Deep Oceanographic Exploration." 2006 New Horizons in Science Briefing, The Johns Hopkins University, October 2006.

Grants (All Co-PIs are from WHOI unless otherwise noted.)

[G17]	Title:	Comparative analysis and assessment of low-cost inertial navigation sensors for long-range AUV navigation
	PI:	**J. Kinsey**
	Agency:	Woods Hole Oceanographic Institution
	Dates:	April 1, 2015 to September 1, 2014
	Amount:	$83,376
	Status:	Awarded
[G16]	Title:	Water Current Field, Flux, and Plume Dynamics Estimation for AUVs in the Absence of DVL bottom-lock using ADCP-aided State Estimation
	PI:	L. Medagoda and **J. Kinsey**
	Agency:	Woods Hole Oceanographic Institution
	Dates:	July 1, 2014 to June 30, 2016
	Amount:	$61,000
	Status:	Awarded
	Products:	[CR11]
[G15]	Title:	Stochastic Based Methods for Geo-referenced Navigation of Marine Vehicles in GPS Denied Environments
	PI:	**J. Kinsey**
	Agency:	Air Force Research Laboratories
	Dates:	September 16, 2013 to March 15, 2015
	Amount:	$104,798
	Status:	Awarded
	Products:	[CR9]
[G14]	Title:	Developing Strategies to Quantify the Ocean Carbon Budget
	PI:	**J. Kinsey**
	Agency:	The Jewitt Foundation
	Dates:	September 1, 2013 to March 1, 2014
	Amount:	$50,000
	Status:	Awarded
	Products:	[P4]
[G13]	Title:	Satellites to the Seafloor: Autonomous Science to Forge a Breakthrough in Quantifying the Global Ocean Carbon Budget
	PI:	**J. Kinsey**, A. Thompson (CalTech), M. Coleman (NASA-JPL), B. Castano (NASA-JPL)
	Agency:	Keck Institute for Space Studies
	Dates:	March 1, 2013 to April 1, 2014
	Status:	Awarded
	Products:	[P4]
[G12]	Title:	EAGER: Collaborative Research: Using Available Sentry AUV aboard R/V Atlantis to Measure Hydrothermal Heat Flux at Axial and Main Endeavour Fields

	PI:	**J. Kinsey**, T. Crone (Columbia-LDEO), and E. Mittelsteadt (Univ of Idaho)
	Agency:	National Science Foundation; Division of Ocean Sciences
	Dates:	April 15, 2013 to March 31, 2014
	Amount:	$43,001
	Status:	Active
	Products:	[CR9,A31,J17]
[G11]	Title:	Using Available Sentry AUV aboard R/V Atlantis to Measure Hydrothermal Heat Flux at Axial and Main Endeavour Fields
	PI:	**J. Kinsey**
	Agency:	Woods Hole Oceanographic Institution
	Dates:	April 15, 2013 to March 31, 2014
	Amount:	$40,094
	Status:	Active
	Products:	[CR9,A31]
[G10]	Title:	Initial Installation of New DSL Navigation Software on the Hercules ROV
	PI:	**J. Kinsey** and J. Howland
	Agency:	The Institute for Exploration
	Dates:	May 10, 2012 to December 31, 2012
	Amount:	$29,248
	Status:	Completed
[G9]	Title:	Toward Untended Basin Scale Robotic Surveys
	PI:	M. Jakuba, **J. Kinsey**, D. Yoerger, L. Freitag, and C. German
	Agency:	Woods Hole Oceanographic Institution
	Dates:	October 1, 2011 to September 30, 2013.
	Amount:	$70,095
	Status:	Completed
	Products:	[CA16,CA18,A34]
[G8]	Title:	MRI: Development of a Light-Tethered Undersea Robotic Vehicle for Seafloor Intervention in Ice-Covered Environments and Ship of Opportunity Deployment
	PI:	A. Bowen, D. Yoerger, C. German, **J. Kinsey**, L. Whitcomb (JHU), L. Mayer (UNH)
	Agency:	National Science Foundation
	Dates:	September 1, 2011 to August 31, 2013
	Amount:	$1,996,965
	Status:	Active
	Products:	[CA20,CA17,CA14,A29,A28,A29,A32,A34,CR10]
[G7]	Title:	BGM-3 Gravimeter Usage and Mobilization and Demobiliation Costs for Use on the Canadian Ice Breaker Louis St. Laurent and Karluk
	PI:	**J. Kinsey**
	Agency:	United States Geological Survey
	Dates:	July 2, 2011 to November 1, 2011
	Amount:	$65,000
	Status:	Completed
[G6]	Title:	BGM-3 Gravimeter Usage and Mobilization and Demobiliation Costs for Use on the Canadian Ice Breaker Louis St. Laurent
	PI:	D. Fornari and **J.C. Kinsey**
	Agency:	United States Geological Survey
	Dates:	July 1, 2010 to October 31, 2010
	Amount:	$46,000

	Status:	Completed
[G5]	Title:	Development and Field Deployment of a Novel AUV Gravimeter.
	PI:	**J.C. Kinsey**
	Agency:	Woods Hole Oceanographic Institution
	Dates:	September 1, 2010 to December 31, 2013
	Amount:	$71,257
	Status:	Completed
[G4]	Title:	Potential Fields Pool Equipment Facility: A 5-Year Proposal to Support BGM-3 Gravity Data Acquisition Systems on UNOLS Vessels
	PI:	**J.C. Kinsey** and D.J. Fornari
	Agency:	National Science Foundation
	Dates:	June 1, 2011 to May 31, 2016
	Amount:	$968,261
	Status:	Active
	Products:	[A35,A37]
[G3]	Title:	Potential Fields Pool Equipment (PFPE): A proposal to provide shipboard geophysical equipment and spares to UNOLS vessel operators.
	PI:	D.J. Fornari and **J.C. Kinsey**
	Agency:	National Science Foundation
	Dates:	August 1, 2009 to July 31, 2010
	Amount:	$200,000
	Status:	Completed
[G2]	Title:	Development of Precision AUV Gravimeter to Enable Near-Bottom Gravity Surveys of Mid-Ocean Ridges
	PI:	D.R. Yoerger, **J.C. Kinsey**, and M.A. Tivey
	Agency:	Woods Hole Oceanographic Institution
	Dates:	December 1, 2007 to November 30, 2009
	Amount:	$51,658
	Status:	Completed
[G1]	Title:	Improved Navigation Techniques for Deep Oceanographic Submersibles
	PI:	**J.C. Kinsey**
	Agency:	Edwin Link Foundation
	Dates:	September 1, 2004 to September 1, 2005
	Amount:	$25,000
	Status:	Completed