

## **Benjamin A. Hodges**

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### **Work experience**

*Woods Hole Oceanographic Institution:*

Research Associate III, May 2008 – present  
Postdoctoral Scholar, Dec. 2006 – May 2008  
Supervisor: David M. Fratantoni, Ph.D.

*MRV Systems:*

Senior Research Engineer, Sept. 2010 – Aug. 2011 (on leave from WHOI)  
Supervisor: James Dufour

*Scripps Institution of Oceanography:*

Graduate Student Researcher, 2000-2006  
Supervisor: Daniel L. Rudnick, Ph.D.

*University of California at Berkeley:*

Research Assistant, 1998-2000  
Supervisor: Richard M. Packard, Ph.D.

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### **Education**

*Scripps Institution of Oceanography, UCSD*

Enrolled (Physical Oceanography) Sept. 2000 – Sept. 2006.  
Ph.D., Oceanography, Dec. 2006.  
Supervisor: Daniel L. Rudnick, Ph.D.

*University of California at Berkeley*

Enrolled Aug. 1996 – May 2000.  
B.A., Physics, May 2000.  
Supervisor: Richard M. Packard, Ph.D.

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## Research Interests

- Describing and explaining fine- and submeso-scale spatial structure of temperature, salinity, and plankton concentration in the upper ocean.
- Developing new observation capabilities and sampling strategies from autonomous platforms.

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## Awards

2005 Edward A. Frieman Prize, SIO

*Annual award for best graduate student research paper at SIO*

Fulsom Scholar, 2000-2001, SIO

*Scholarship offered annually to approximately 5 students at SIO*

National Merit Scholar, UC Berkeley

*College scholarship awarded to 0.5% of entrants*

Chancellor's Scholar, UC Berkeley

*UC Berkeley's most prestigious scholarship for incoming students*

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## Training courses

Ocean Optics: Observing ocean biogeochemistry with optics

28 June – 16 July, 2004, Darling Marine Center, Walpole, ME

Spray Glider Operator Training

17-19 Aug, 2009, Bluefin Robotics, Cambridge, MA

CODAR Training Course

3 – 7 May, 2010, CODAR Ocean Sensors, Mountain View, CA

Wave Glider Operator Training Course

15 – 17 November, 2011, Kamuela, HI

Slocum Glider Pilot Training

2 – 5 September, 2014, North Falmouth, MA

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## Refereed Publications

Hodges, B. A., Fratantoni, D. M., 2014. *AUV Observations of the Diurnal Surface Layer in the North Atlantic Salinity Maximum*. Journal of Physical Oceanography, 44(6), 1595-1604.

Hodges, B. A., Fratantoni, D. M., 2009. *A thin layer of phytoplankton observed in the Philippine Sea with a synthetic moored array of autonomous gliders*. Journal of Geophysical Research – Oceans, 114, C10020.

Hodges, B. A., Rudnick, D. L., 2006. *Horizontal variability in chlorophyll fluorescence and potential temperature*. Deep-Sea Research I, 53, 1460-1482.

Hodges, B. A., Rudnick, D. L., 2004. *Simple models of steady deep maxima in chlorophyll and biomass*. Deep-Sea Research I, 51, 999-1015.

Farrar, J. T., Raineville, L., Plueddemann, A. J., Kessler, W. S., Lee, C. M., Hodges, B. A., Schmitt, R. W., Edson, J. B., Riser, S. C., Eriksen, C. C., Fratantoni, D. M., 2015. *Salinity and temperature balances at the SPURS central mooring during fall and winter*. The Oceanography Society.

Schmitt, R. W., Asher, W., Bingham, F., Carton, J. A., Centurioni, L. R., Farrar, J. T., Gordon, A. L., Hodges, B. A., Jessup, A. T., Kessler, W. S., Rainville, L., Shcherbina, A. Y., 2015. *From salty to fresh—salinity processes in the Upper-ocean Regional Study-2 (SPURS-2): diagnosing the physics of a rainfall-dominated salinity minimum*. The Oceanography Society.

Fratantoni, D. M., Kwon, Y., Hodges, B. A., 2013. *Direct observation of subtropical mode water circulation in the western North Atlantic Ocean*. Deep-Sea Research Part II, Topical Studies in Oceanography.

Cole, S. T., Rudnick, D. L., Hodges, B. A., Martin, J. P., 2009. *Observations of Tidal Internal Wave Beams at Kauai Channel, Hawaii*. Journal of Physical Oceanography, 39, 421-436.

Davis, R. E., Ohman, M. D., Hodges, B. A., Rudnick, D. L., Sherman, J. T., 2008. *Glider surveillance of physics and biology in the southern California Current System*. Limnology and Oceanography, 53, 5, 2, 2151-2168.

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## Selected Technical Reports and Thesis

Hodges, B. A., Fratantoni, D. M., 2013. *EcoMapper Operations---KN209-1*. WHOI-2013-01.

Plueddemann, A., Hodges B., Grosenbaugh, M., White, S., 2012. *CGSN Site Characterization: Pioneer Array*. OOI 3204-00007.

Fratantoni, D. M., McKee, T. K., Hodges, B. A., Furey, H. H., Lund, J. M., 2010. *CLIMODE Bobber Data Report: July 2005 - May 2009*. WHOI-2010-03.

Kirincich, A., Hodges, B., Fratantoni, D., Bahr, F., 2009. *OC449-09 Data Report: St. Thomas, USVI to Bermuda, December 1-10, 2008*. WHOI-KAUST-CTR-2009-03.

Hodges, B. A., 2006. *On the Distribution of Oceanic Chlorophyll*. Ph.D. dissertation, SIO, UCSD.

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## Selected Presentations

### ***Lead author and presenter:***

Hodges, B. A., Fratantoni, D. M.  
*Near-surface vertical structure in temperature and salinity in the SPURS study area*  
2014 Ocean Sciences Meeting, Honolulu, HI

Hodges, B. A., Fratantoni, D. M., Lund, J. M., Davis, C. S., Idrisi, N., Bahr, F., Kirincich, A. R., Petrik, C. M., Eaton, J. A., Woods, N. W.  
*High Resolution Physical-Biological Surveys in the Caribbean Sea*  
2008 AGU Fall Meeting, San Francisco, CA

Hodges, B. A., Fratantoni, D. M., Lund, J. M.  
*Propagation of a thin layer through a synthetic mooring array*  
2008 Ocean Sciences Meeting, Orlando, FL

Hodges, B. A., Rudnick, D. L., Davis, R. E.  
*Glider measurements along a CalCOFI line: hydrography and chlorophyll*  
EPOC 2006, Timberline Lodge, OR

Hodges, B. A., Rudnick, D. L.  
*Glider Observations Along CalCOFI Line 93*  
2006 Ocean Sciences Meeting, Honolulu, HI

Hodges, B.A., Rudnick, D. L.  
*Along-Isopycnal Variability in Temperature and Chlorophyll Fluorescence in the North Pacific*  
2004 AGU Fall Meeting, San Francisco, CA

Hodges, B. A., Rudnick, D. L.  
*Simple Models of Steady Deep Maxima in Chlorophyll and Biomass*  
2004 Ocean Sciences Meeting, Portland, OR

***Contributing author:***

Farrar, J. T., Plueddemann, A., Kessler, W. S., Rainville, L., Riser, S., Edson, J., Eriksen, C., Lee, C., Schmitt, R. W., Fratantoni, D. M., Hodges, B. A.

*A preliminary evaluation of the upper-ocean heat and salt budgets during the SPURS campaign*

2014 Ocean Sciences Meeting, Honolulu, HI

Fratantoni, D. M., Kwon, Y. O., Hodges, B. A.

*Direct Observation of Subtropical Mode Water Formation in the Western North Atlantic Ocean*

2012 AGU Ocean Sciences Meeting, Salt Lake City, UT

Fratantoni, D. M., Hodges, B. A., Lund, J. M.

*Autonomous Investigation of Thin Phytoplankton Layers and Their Physical Context*

2008 Ocean Sciences Meeting, Orlando, FL

Fratantoni, D. M., McKee, T. K., Lund, J. M., Hodges, B. A., Straneo, F.

*Direct Observations of Eighteen Degree Water Formation and Dispersal in the North Atlantic using Acoustically-Tracked Bobbing Floats and Subsurface Profiling Moorings.*

2008 AGU Fall Meet. Suppl., Abstract OS23F-03.

Lund, J. M., Fratantoni, P. S., Hodges, B. A., Fratantoni, D. M.

*Exploring the Feasibility of Glider-based Transport, Stratification, and Ecology Measurements on the New England Shelf Between MVCO and Line W*

2008 Ocean Sciences Meeting, Orlando, FL

Rudnick, D. L., Cole, S. T., Hodges, B. A., Martin, J. P.

*The Influence of Internal Tidal Beams on Mixing and Mean Flow*

2006 Ocean Sciences Meeting, Honolulu, HI

Rudnick, D. L., Klinke, J., Hodges, B. A.

*The Underway CTD*

2004 AGU Fall Meeting, San Francisco, CA

Schanze, J. J., Lagerloef, G., Schmitt, R. W., Hodges, B. A.

*Very-near surface salinity measurements during the SPURS field program*

2014 EGU General Assembly, Vienna, Austria

Schanze, J. J., Lagerloef, G., Schmitt, R. W., Hodges, B. A.

*Snakes on a Ship: Surface Salinity Observations during SPURS*

2014 Ocean Sciences Meeting, Honolulu, HI

Woods, N. W., Fratantoni, D. M., Hodges, B. A., Lund, J. M.

*Thin Phytoplankton Layer Variability in Monterey Bay.*

2008 AGU Fall Meet. Suppl., Abstract OS43C-1302.

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## Research cruises

- Kuroshio, 14 – 27 Apr. 2002, R/V *Melville*, LADCP operations
- HOME Nearfield, 1 – 21 Oct. 2002, R/V *Revelle*, SeaSoar watch, deck ops
- CalCOFI, 23 March – 9 Apr. 2004, R/V *New Horizon*: UCTD/CTD operations
- NPAL SPICEX, 26 May – 18 June 2004, R/V *Revelle*, Mooring operations, UCTD watch
- NPAL, 20 Mar. – 10 Apr. 2005, R/V *New Horizon*, SeaSoar watch
- TMI test cruise, 25 – 27 Oct. 2005, R/V *Sproul*, SeaSoar watch
- CLIMODE 4, Leg 2, 2 – 22 Mar. 2007, R/V *Knorr*  
Drifter and float operations, SeaSoar watch
- CLIMODE OC442, 5 – 19 Nov. 2007, R/V *Oceanus*  
CTD watch leader, Mooring recovery operations
- KAUST OC449-9, 1 – 12 Dec. 2008, R/V *Oceanus*  
ScanFish operation and data acquisition, CTD watch leader
- Gulf of Maine, 14 – 19 Dec. 2009, R/V *Connecticut*  
Ecomapper AUV and Slocum glider operations
- PIPA Expedition, 31 May – 24 June 2012, *NAI'A*  
Temperature logger and surface drifter deployment
- SPURS KN209-1, 6 Sept. – 9 Oct. 2012, R/V *Knorr*  
Wave Glider and EcoMapper AUV operations, UCTD watch
- SPURS EN-522, 15 Mar. – 15 Apr. 2013, R/V *Endeavor*  
Wave Glider maintenance and operations, UCTD watch
- SPURS EN-533, 19 Sep. – 16 Oct. 2013, R/V *Endeavor*  
Ecomapper AUV and Wave Glider operations
- ASIRI, Legs 1-2, 10 Nov. – 15 Dec. 2013, R/V *Revelle*  
UCTD watch leader, Slocum glider operations
- ASIRI, 17 – 28 Jun. 2014, R/V *Revelle*  
UCTD watch leader, Slocum glider operations
- AirSWOT, 17 – 20 Apr. 2015, R/V *Shana Rae*  
Acting Chief Scientist, UCTD and EM-APEX operations
- SPURS RR-1620, 13 Aug. – 23 Sep. 2016, R/V *Revelle*  
PI, Wave Glider observations; UCTD watch leader

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## Other field work

Dozens of 1 and 2-day cruises on small vessels including:

*R/V Saikhon* (glider, REMUS, and UCTD operations in San Diego)

*Condor* (UCTD operations and glider recovery, southern California)

*R/V John Martin* and *R/V Shana Rae* (glider operations, Monterey, CA)

*R/V Tioga* (glider and MVCO tower operations, WHOI)

*R/V Mytilus*, *Patricia Lynn*, *R&R*, *Discovery*, *Auk*, and *Sea Holly*  
(glider operations, WHOI)

*Garoupa* and *Mako* (glider operations, UVI)

*Vordur II* (glider operations, Iceland)

AOSN II, July – Sept. 2003, Monterey, CA

*Spray* glider preparation, deployment, and recovery

NCEX, Sept. 2003, La Jolla, CA

REMUS operations

SCCOOS, Dec. 2005 – June 2006, Southern California

*Spray* glider mission planning, deployment, control, and recovery

CODAR installations, June-July 2010, Martha's Vineyard, MA

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## Engineering/Development

SOLO-II profiling float

Redesign of float internal chassis

Iver2 AUV

Design and fabrication of recovery system

Integration of backing tracking system

Spray glider

Integration of SeaPoint fluorometer

Slocum glider

Design and fabrication of recovery device

Design and fabrication of external O<sub>2</sub> sensor mount

Wave Glider

Umbilical mounting system for temperature loggers

ScanFish

Design/implementation of data logging and real-time display system

Other

Design and fabrication of AUV attitude sensor calibration system

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## Technical skills

### MATLAB

- Numerical modeling, physical and ecological
- Processing and analysis of data
- Expert programmer

### AutoCAD/Solidworks

- Design and technical drawing of mechanical parts

### Machine tools

- Lathe and milling machine
- Fabrication of AUV parts and lab equipment (fixtures/jigs)
- Completed 15-week machine shop training course at UC Berkeley, fall 1998
- Authorized user of UCB Physics Department machine shop

### Research vessel deck operations

- Mooring, towed platform, and AUV deployment and recovery
- CTD watch leader

### Small boat handling

- Trained to operate R/V Saikhon, 26-ft, 30-kt aluminum research vessel

### AUV mission control

- Experience operating *Spray* and *Slocum* gliders, Ecomapper AUVs, and Wave
- Glider autonomous surface vehicles

### Carpentry