

BRIAN M. EMERY

emery@engineering.ucsb.edu
805-967-3388
http://hfradar.msi.ucsb.edu/brian_emery.htm

RESEARCH INTERESTS

Improving HF radar ocean current measuring techniques: simplifying the operation of HF radar systems, developing methods for quantifying errors, improving the accuracy, and increasing the utility of the HF radar ocean current measurements.

EDUCATION

University of California, Santa Barbara
Mechanical Engineering Ph.D. Candidate, Enrolled Fall 2013.

University of California, Santa Barbara
M.S. Mechanical Engineering, 1996.

University of California, Santa Barbara
B.S. Physics, 1992

GRANTS

NOAA Fellowship, 2016, Automated Comparisons for IOOS HF Radar Quality Control

NOAA Fellowship, 2015, Automated Comparisons for IOOS HF Radar Quality Control

Ralph M. Parsons Foundation Fellowship, 2014. \$4,074. For graduate students in Sciences and Engineering

NOAA SBIR Phase II , 2011-2013, \$399,883. HF Radar Calibration with Automatic Identification System Ships of Opportunity.

NOAA SBIR Phase I , 2010, \$94,977. Ocean Current Radar Calibration with Ships of Opportunity and the Automatic Identification System.

JOURNAL PUBLICATIONS

Washburn, L., E. Romero, C. Johnson, B. M. Emery, B.M., and C. Gotschalk, 2017, Measurement of antenna patterns for oceanographic radars using aerial drones, *in press*, J. Atmos. Oceanic Technol.

Sally MacIntyre, Jose R. Romero, Gregory M. Silsbe, and Brian M. Emery, 2014, Stratification and horizontal exchange in Lake Victoria, East Africa, *Limnol. Oceanogr.*, 59(6), 1805-1838

Emery, B.M., L. Washburn, C. Whelan, D. Barrick, and J. Harlan, 2014, Measuring Antenna Patterns for Ocean Surface Current HF Radars with Ships of Opportunity, *J. Atmos. Oceanic Technol.*, 31, 1564–1582.

Ohlmann, J. C., J. H. LaCasce, L. Washburn, A. J. Mariano, and B. Emery, 2012, Relative dispersion observations and trajectory modeling in the Santa Barbara Channel, *J. Geophys. Res.*, 117, C05040, doi:10.1029/2011JC007810

Ohlmann, C., P. White, L. Washburn, E. Terrill, B. Emery, and M. Otero, 2007, Interpretation of Coastal HF Radar Derived Surface Currents with High-Resolution Drifter Data, *Journal of Atmospheric and Oceanic Technology*, 24, 666-680, doi:10.1175/JTECH1998.1

Emery, B.M., L. Washburn, M. Love, M.M. Nishimoto, and J. C. Ohlmann, 2006, Do oil and gas platforms off California reduce recruitment of bocaccio (*Sebastes paucispinis*) to natural habitat? An analysis based on trajectories derived from high frequency radar, *Fisheries Bulletin*, 104, 391-400

Emery B.M., L. Washburn, and J.A. Harlan, 2004, Evaluating Radial Current Measurements from CODAR High-Frequency Radars with Moored Current Meters, *Journal of Atmospheric and Oceanic Technology*, 21, 8, 1259-1271

Washburn, L, B. M. Emery, B. H. Jones, D. G. Ondercin, 1998, Eddy stirring and phytoplankton patchiness in the subarctic North Atlantic in late summer, *Deep Sea Research Part I: Oceanographic Research Papers*, 45, 9, 1411-1439

PROCEEDINGS AND REPORTS

Emery, B.M. and Washburn, L., 2016 Improved direction of arrival methods for oceanographic HF radars, In *Antenna Measurements & Applications (CAMA)*, 2016 IEEE Conference on (pp. 1-4). IEEE.

Washburn, L., Romero, E., Johnson, C., Gotschalk, C. and Emery, B., 2016, Antenna calibration for oceanographic radars using aerial drones, In *Antenna Measurements & Applications (CAMA)*, 2016 IEEE Conference on (pp. 1-4). IEEE.

Whelan, C., Emery, B., Teague, C., Barrick, D., Washburn, L., and J. Harlan, 2012, Automatic calibrations for improved quality assurance of coastal HF radar currents, *Oceans 2012 IEEE/MTS*, 14-19 Oct. 2012, doi: 10.1109/OCEANS.2012.6405104

Emery, B. M., and S. MacIntyre, Expanding observations of mixing in Toolik Lake with the North American Regional Reanalysis, NSF Arctic LTER final report contribution, 2011

Emery, B. M. and L. Washburn, Evaluation of SeaSonde Hardware Diagnostic Parameters as Performance Metrics, NOAA IOOS final report, October 2007

Emery B. M., K. E. Laws, L. Washburn, and J. D. Paduan, Error Characterization in High Frequency Radar Ocean Surface Current Observations, NOAA IOOS final report, January 2007

Emery, B.M., L. Washburn, and J.A. Harlan, 2003, Evaluating radial component current measurements from CODAR high frequency radars and moored in situ current meters, Proceedings of the First International Radiowave Oceanography Workshop, Timberline Lodge, OR, 9-12 April

Washburn, L., E. H. Beckenbach, B. M. Emery, and J.A. Harlan, 2003, HF radar observations of surface currents in the vicinity of Pt. Conception California, Proceedings of the First International Radiowave Oceanography Workshop, Timberline Lodge, OR, 9-12 April

PRESENTATIONS

Emery, B., and L. Washburn, Improved Direction of Arrival Methods for Oceanographic HF Radars, IEEE Conference on Antenna Measurements and Applications (CAMA), Syracuse NY, 23-27 Oct. 2016

Emery, B., Improved Methods for Oceanographic HF Radars, ME Grad Slam Event, 2016 Mechanical Engineering Annual Convocation, University of California, Santa Barbara, Oct. 12, 2016

Emery, B., L. Washburn, and K. Brown, Improving Uncertainty Estimates for Radial Current Observations, Radiowave Oceanography Workshop, Woods Hole Oceanographic Institution, 4 Nov. 2015

Emery, B., L. Washburn, C. Whelan and D. Barrick, Measuring Antenna Patterns from AIS Ships of Opportunity, ROWG 6, Nov. 2012, University of South Florida

Washburn, L., B. Emery, C. Johnson, and C. Ohlmann, Oceanographic applications and developments in hardware and software using an array of high frequency radars in the Southern California Coastal Ocean Observing System, Radiowave Oceanography Workshop 10, Sept. 26-29, 2010

Emery, B., M. Nishimoto, L. Washburn, and M. Love, Do oil and gas platforms off California reduce recruitment of Bocaccio (*Sebastes paucispinis*) to natural habitat? An analysis based on trajectories derived from high frequency radar, ROWG 4, Old Dominion University (Norfolk, VA) June 2-4, 2009

Emery, B., A Review of ROWG 2, ROWG 3, Sept, 2007, Scripps Institution of Oceanography, San Diego, CA

POSTER PRESENTATIONS

Emery, B., and L. Washburn, Oil Spill Trajectories from HF Radars: Investigating Alternatives to MUSIC for Oceanographic HF Radars, AGU Fall Meeting, Dec. 2016, San Francisco, CA

Emery, B., L. Washburn, L., I. Mezic, H. Arbabi, S. Loire, C. Ohlmann, and J. Harlan, Oil Spill Trajectories from HF Radars: Lagrangian Stochastic Model and Applied Dynamical Systems Methods, AGU Ocean Sciences, Feb. 2016, New Orleans, LA

Washburn, L., E. Romero, C. Johnson, B. Emery and C. Gotschalk, New Applications for Autonomous Aerial Vehicles (Drones) in Coastal Oceanographic Research, AGU Ocean Sciences, Feb. 2016, New Orleans, LA

MacIntyre, S., J. P. Fram, Paul J. Kushner, and B. Emery, Effects of Large Scale Forcing on Thermal Regime and Mixing Dynamics of Lakes in the Alaskan Arctic, LTER All Scientists Meeting, Estes Park, CO, September 2012

Emery, B., L. Washburn, D. Barrick, and C. Whelan, Antenna Patterns from AIS Ships of Opportunity, ROWG 5, April, 2011, Santa Barbara, CA

MacIntyre, S., A. Jonsson, M. Jansson, J. Aberg, D. Turney, B. Emery, and S. Miller, Buoyancy Flux, Turbulence, and the Gas Transfer Coefficient in a Stratified Lake, AGU Fall Meeting, San Francisco, CA, December, 2010

Reams, E., C. Johnson, B. Emery, and L. Washburn, Liquid Cooling for a SeaSonde Transmitter, ROWG 3, Sept, 2007, Scripps Institution of Oceanography, San Diego, CA

Johnson, C., B. Emery, and L. Washburn, Custom Transmit Antennas for SeaSondes, ROWG 3, Sept, 2007, Scripps Institution of Oceanography, San Diego, CA

Yu, G., B. Emery, and L. Washburn, Effects of Antenna Pattern Smoothing on SeaSonde Radial Data, ROWG 3, Sept, 2007, Scripps Institution of Oceanography, San Diego, CA

EMPLOYMENT AND EXPERIENCE

Scientific Programmer, Marine Science Institute, UCSB, 1996 – present (50% time)

Conceived of and implemented an algorithm to automate the calibration of ocean current measuring radars using backscatter from container ships. Led a team of scientists that obtained two rounds of funding to develop, test and deploy an operational software product that runs on radar site computers.

Developed MATLAB code and websites for automated, real-time processing of radar ocean current maps, drifting buoy temperature measurements, and lake dynamics data.

More than 10 years experience programming for scientific data analysis with MATLAB, emphasizing time series analysis, signal processing and data visualization.

Consultant, Codar Ocean Sensors, Ltd., Los Altos, CA, 2006 – 2009

Conducted validation studies of new ocean current data processing algorithms.

Wrote and published software tools for validating Bi-Static HF radar ocean current measurements.

Traveled to Japan and Nova Scotia to install and calibrate HF radar systems.

PROFESSIONAL SERVICE

Reviewer, Journal of Atmospheric and Oceanic Technology (4)

Reviewer, Marine Technology Society Journal (1)

Reviewer, IEEE Journal of Oceanic Engineering (1)

ACTIVITIES

Steering Committee Member, Radiowave Operators Working Group (ROWG), 2004-present

Participant, Learning From Data telecourse, California Institute of Technology, spring 2012

ROWG 5 Workshop Host, Santa Barbara, CA, 2011

PUBLISHED CODE

MATLAB code repository of data analysis tools:

https://github.com/rowg/hfrp_additions

OTHER

Citation data: <http://scholar.google.com/citations?user=n3JbRg0AAAAJ>