



Journal of Geophysical Research Oceans

The *JGR* editors welcome original scientific contributions on the physics and chemistry of the Earth, its environment, and the solar system.

JGR-Oceans embraces the application of physics, chemistry, biology, and geology to the study of the oceans and their interaction with other components of the Earth system. To deepen the integrated knowledge of the sea, new observational, analytical, computational, and modeling capabilities are used to build upon established approaches in all areas of marine science. Please submit your manuscript electronically by logging to <http://jgr-oceans-submit.agu.org> and following the instructions. For the peer-review process you may submit text in Microsoft Word, LaTeX, or PDF; artwork should be submitted as encapsulated postscript (.eps), tagged information file format (.tif), .jpg, .pdf, or .png files. See <http://publications.agu.org/author-resource-center/author-guide/> for information about file preparation. For production, PDFs are not acceptable.

Editors

Eric Des Barton, Editor-in-Chief
Marine Investigations
e.d.barton@iim.csic.es

Thomas H. C. Herbers
Near-Shore and Continental Shelf Processes

S. Bradley Moran
Marine Geochemistry

Lie-Yauw Oey
Ocean and Air-Sea Dynamics

Andrey Proshutinsky
High Latitude Climate Change

Alejandro J. Souza
Estuarine and Coastal Processes

Chunzai Wang
Physical Oceanography

AGU Editorial Team

Senior Journal Program Manager Mary Bender
Editorial Assistant Phillip Cobb
jgr-oceans@agu.org

Associate Editors

Subrahmanyam Bulusu	Patrick Lynett
Mattias Green	Miguel Morales-Maqueda
Tian-Jian Hsu	Toshiaki Shinoda
Jenny Hutchings	Dongxiao Wang
Ryan Lowe	

Victoria Forlini, Assistant Director of Editor Support Services

Journal of Geophysical Research: Oceans (ISSN 2169-9275) is published monthly on behalf of the American Geophysical Union by Wiley Subscription Services, Inc., a Wiley Company, 111 River St., Hoboken, NJ 07030-5774. Periodical Postage Paid at Hoboken, NJ and additional offices. Postmaster: Send all address changes to JOURNAL OF GEOPHYSICAL RESEARCH: OCEANS, John Wiley & Sons Inc., c/o The Sheridan Press, PO Box 465, Hanover, PA 17331.

Manuscript Submission. Articles should be submitted to the journal using GEMS. There is a submission link on each journal homepage on the Wiley Online Library website.

Through electronic submissions, the corresponding author affirms that (1) all authors listed on manuscripts are aware of the submission to this journal and (2) this manuscript has not been published previously nor is under consideration by another journal. It is unethical for an author to publish manuscripts describing essentially the same research in more than one journal of primary publication. Submitting the same manuscript to more than one journal concurrently is unethical and unacceptable.

Final File Formats. For the final accepted article, you may submit text in Microsoft Word or LaTeX; final artwork should be submitted as encapsulated postscript (.eps), tagged information file format (.tif), .jpg, .pdf, or .png files. See <http://publications.agu.org/author-resource-center/author-guide/> for information about file preparation.

Publication Charges. The publication charge income received for *JGR-Oceans* helps support rapid publication, allows more articles per volume, makes possible the low subscription rates, and supports many of AGU's scientific and outreach activities. Publication charge information can be found here: <http://publications.agu.org/author-resource-center/author-guide/publication-fees/>.

Subscriptions. AGU members may subscribe to *JGR-Oceans* in print or online editions for their personal use. The annual rate for access to the online edition is \$102. Student members may subscribe at reduced rates. Contact AGU for individual section rates and for special rates for libraries and other multiple-use institutions. Individual issues are offered for sale based on availability; please contact Member Services with such requests.

Supporting Information. Supporting information may be in the form of data tables, figures, videos, or software applications. Please refer to <http://publications.agu.org/author-resource-center/author-guide/auxiliary-materials-guidelines/> for additional information about acceptable file formats and sizes. Such material will be subjected to the same peer-review procedures used for articles. For further information, contact the Editorial Team for this journal (see below).

Claims and Changes of Address. Send address changes to the AGU Member Service Center with at least 5 weeks' advance notice. Claims for missing issues due to insufficient notice of address change or such reasons as "missing from files" cannot be serviced.

Copyright. Permission is granted for individuals to make single copies for personal use in research, study, or teaching and to use figures, tables, and short quotes from this journal for republication in scientific books and journals. There is no charge for any of these uses, but the material must be cited appropriately. The appearance of the code at the bottom of the first page of an article in this journal indicates the copyright owner's consent that copies of the article may be made for personal or internal use or for the personal or internal use of specific clients. This consent is given on the condition that the copier pay the stated per copy fee through the Copyright Clearance Center, Inc., for copying beyond that permitted by Section 107 or Section 108 of the U.S. Copyright Law. This consent does not extend to other kinds of copying, such as copying for general distribution, for advertising or promotional purposes, for creating new collective works, or for resale. Articles published prior to 1980 are subject to the same provisions. The reproduction of multiple copies, the use of full articles, or the use of extracts for commercial purposes requires special permission from AGU.

Address all correspondence to the appropriate department at AGU, 2000 Florida Avenue, N.W., Washington, DC 20009 USA.

AGU Headquarters. The AGU Member Service Center is open from 8:00 a.m. to 6:00 p.m. Eastern time to take calls of a general nature related to membership, subscriptions, and meetings: +1 202.462.6900, +1 800.966.2481; fax: +1 202.328.0566; email: service@agu.org.

Questions of a specific nature will be referred to appropriate staff. The following email addresses and direct dial lines to the publications department are provided to expedite information relative to article status, reprints, and publication fees.

For assistance with submitted manuscripts, file specifications, or AGU publication policy, please contact the journal home office: jgr-oceans@agu.org. For assistance with post-acceptance articles, reprints, or other production issues, please contact Wiley production: jgrprod@wiley.com.

Copyright 2014 by the American Geophysical Union.

The online article is the official version and may contain additional content not available in print. To access the full article, including multimedia, enhanced figures, supporting information, and other nonprinted content, go to <http://wileyonlinelibrary.com/journal/jgrc>.

Research Articles

- 7389** *Paula Camus, Melisa Menéndez, Fernando J. Méndez, Cristina Izaquiere, Antonio Espejo, Verónica Cánovas, Jorge Pérez, Ana Rueda, Inigo J. Losada, and Raúl Medina*
A weather-type statistical downscaling framework for ocean wave climate (doi 10.1002/2014JC010141)
- 7406** *Hitoshi Tamura, William M. Drennan, Erik Sahlée, and Hans C. Graber*
Spectral form and source term balance of short gravity wind waves (doi 10.1002/2014JC009869)
- 7420** *Rachel Eveleth, Mary-Louise Timmermans, and Nicolas Cassar*
Physical and biological controls on oxygen saturation variability in the upper Arctic Ocean (doi 10.1002/2014JC009816)
- 7433** *Jessica E. Anderson and Stephen C. Riser*
Near-surface variability of temperature and salinity in the near-tropical ocean: Observations from profiling floats* (doi 10.1002/2014JC010112)

***This article is part of a Special Section—Early scientific results from the salinity measuring satellites Aquarius/SAC-D and SMOS**

- 7449** *Chengfeng Le, John C. Lehrter, Chuanmin Hu, Michael C. Murrell, and Lin Qi*
Spatiotemporal chlorophyll-*a* dynamics on the Louisiana continental shelf derived from a dual satellite imagery algorithm (doi 10.1002/2014JC010084)
- 7463** *A. H. Callaghan, M. D. Stokes, and G. B. Deane*
The effect of water temperature on air entrainment, bubble plumes, and surface foam in a laboratory breaking-wave analog (doi 10.1002/2014JC010351)
- 7483** *Krista Henrie and Arnoldo Valle-Levinson*
Subtidal variability in water levels inside a subtropical estuary (doi 10.1002/2014JC009829)
- 7493** *Manfred Wenzel and Jens Schröter*
Global and regional sea level change during the 20th century (doi 10.1002/2014JC009900)
- 7509** *Sarah G. Purkey, Gregory C. Johnson, and Don P. Chambers*
Relative contributions of ocean mass and deep steric changes to sea level rise between 1993 and 2013 (doi 10.1002/2014JC010180)
- 7523** *M.-L. Timmermans, A. Proshutinsky, E. Golubeva, J. M. Jackson, R. Krishfield, M. McCall, G. Platov, J. Toole, W. Williams, T. Kikuchi, and S. Nishino*
Mechanisms of Pacific Summer Water variability in the Arctic's Central Canada Basin (doi 10.1002/2014JC010273)
- 7549** *Peter Rogowski, Eric Terrill, and Jialin Chen*
Observations of the frontal region of a buoyant river plume using an autonomous underwater vehicle (doi 10.1002/2014JC010392)
- 7568** *V. Chugunov, S. Fomin, and R. Shankar*
Influence of underwater barriers on the distribution of tsunami waves (doi 10.1002/2014JC010296)
- 7592** *Jinfeng Ma, Hailong Liu, Pengfei Lin, and Haigang Zhan*
Seasonality of biological feedbacks on sea surface temperature variations in the Arabian Sea: The role of mixing and upwelling (doi 10.1002/2014JC010186)
- 7605** *Andrea Santos-Garcia, María Marta Jacob, W. Linwood Jones, William E. Asher, Yazan Hejazin, Hamideh Ebrahimi, and Monica Rabolli*
Investigation of rain effects on Aquarius Sea Surface Salinity measurements* (doi 10.1002/2014JC010137)

***This article is part of a Special Section—Early scientific results from the salinity measuring satellites Aquarius/SAC-D and SMOS**

- 7625** Lisan Yu
Coherent evidence from Aquarius and Argo for the existence of a shallow low-salinity convergence zone beneath the Pacific ITCZ* (doi 10.1002/2014JC010030)

***This article is part of a Special Section—Early scientific results from the salinity measuring satellites Aquarius/SAC-D and SMOS**
- 7645** Peter Hogarth
Preliminary analysis of acceleration of sea level rise through the twentieth century using extended tide gauge data sets (August 2014) (doi 10.1002/2014JC009976)
- 7660** A. Ganachaud, S. Cravatte, A. Melet, A. Schiller, N. J. Holbrook, B. M. Sloyan, M. J. Widlansky, M. Bowen, J. Verron, P. Wiles, K. Ridgway, P. Sutton, J. Sprintall, C. Steinberg, G. Brassington, W. Cai, R. Davis, F. Gasparin, L. Gourdeau, T. Hasegawa, W. Kessler, C. Maes, K. Takahashi, K. J. Richards, and U. Send
The Southwest Pacific Ocean circulation and climate experiment (SPICE)* (doi 10.1002/2013JC009678)

***This article is part of a Special Section—Western Pacific Ocean Circulation and Climate**
- 7687** Xiaomei Liao, Yan Du, Haigang Zhan, Ping Shi, and Jia Wang
Summertime phytoplankton blooms and surface cooling in the western south equatorial Indian Ocean (doi 10.1002/2014JC010195)
- 7705** Qian Yu, Yunwei Wang, Jianhua Gao, Shu Gao, and Burg Flemming
Turbidity maximum formation in a well-mixed macrotidal estuary: The role of tidal pumping (doi 10.1002/2014JC010228)
- 7725** P. E. Land, J. D. Shutler, T. G. Bell, and M. Yang
Exploiting satellite earth observation to quantify current global oceanic DMS flux and its future climate sensitivity (doi 10.1002/2014JC010104)
- 7741** Frederick M. Bingham, Julius Busecke, Arnold L. Gordon, Claudia F. Giulivi, and Zhijin Li
The North Atlantic subtropical surface salinity maximum as observed by Aquarius* (doi 10.1002/2014JC009825)

***This article is part of a Special Section—Early scientific results from the salinity measuring satellites Aquarius/SAC-D and SMOS**
- 7756** Sayaka Yasunaka, Yukihiro Nojiri, Shin-ichiro Nakaoka, Tsuneo Ono, Frank A. Whitney, and Maciej Telszewski
Mapping of sea surface nutrients in the North Pacific: Basin-wide distribution and seasonal to interannual variability (doi 10.1002/2014JC010318)
- 7772** Christian Mertens, Monika Rhein, Maren Walter, Claus W. Böning, Erik Behrens, Dagmar Kieke, Reiner Steinfeldt, and Uwe Stöber
Circulation and transports in the Newfoundland Basin, western subpolar North Atlantic (doi 10.1002/2014JC010019)
- 7794** Raul A. Guerrero, Alberto R. Piola, Harold Fenco, Ricardo P. Matano, Vincent Combes, Yi Chao, Corinne James, Elbio D. Palma, Martin Saraceno, and P. Ted Strub
The salinity signature of the cross-shelf exchanges in the Southwestern Atlantic Ocean: Satellite observations*[†] (doi 10.1002/2014JC010113)

***Companion to Matano et al. [2014] doi 10.1002/2014JC010116.**
†This article is part of a Special Section—Early scientific results from the salinity measuring satellites Aquarius/SAC-D and SMOS
- 7811** Xiaobin Yin, Jacqueline Boutin, Gilles Reverdin, Tong Lee, Sabine Arnault, and Nicolas Martin
SMOS Sea Surface Salinity signals of tropical instability waves* (doi 10.1002/2014JC009960)

***This article is part of a Special Section—Early scientific results from the salinity measuring satellites Aquarius/SAC-D and SMOS**
- 7827** G. W. Wilson, A. E. Hay, and A. J. Bowen
Observations of wave shear stress on a steep beach (doi 10.1002/2014JC010193)
- 7840** F. M. Calafat, E. Avgoustoglou, G. Jordà, H. Flocas, G. Zodiatis, M. N. Tsimplis, and J. Kouroutzoglou
The ability of a barotropic model to simulate sea level extremes of meteorological origin in the Mediterranean Sea, including those caused by explosive cyclones (doi 10.1002/2014JC010360)
- 7854** J. Mauro Vargas-Hernandez, Susan Wijffels, Gary Meyers, and Neil J. Holbrook
Evaluating SODA for Indo-Pacific Ocean decadal climate variability studies (doi 10.1002/2014JC010175)

- 7869** *Li Ren, Eric Hackert, Phillip Arkin, and Antonio J. Busalacchi*
Estimating the global oceanic net freshwater flux from Argo and comparing it with satellite-based freshwater flux products (doi 10.1002/2013JC009620)
- 7882** *Michael Schlundt, Peter Brandt, Marcus Dengler, Rebecca Hummels, Tim Fischer, Karl Bumke, Gerd Krahmann, and Johannes Karstensen*
Mixed layer heat and salinity budgets during the onset of the 2011 Atlantic cold tongue
(doi 10.1002/2014JC010021)
- 7911** *Luisa Galgani, Christian Stolle, Sonja Endres, Kai G. Schulz, and Anja Engel*
Effects of ocean acidification on the biogenic composition of the sea-surface microlayer: Results from a meso-cosm study (doi 10.1002/2014JC010188)
- 7925** *Usama Kadri*
Deep ocean water transport by acoustic-gravity waves (doi 10.1002/2014JC010234)
- 7931** *F. Desbiolles, B. Blanke, A. Bentamy, and N. Grima*
Origin of fine-scale wind stress curl structures in the Benguela and Canary upwelling systems
(doi 10.1002/2014JC010015)
- 7949** *Ricardo P. Matano, Vincent Combes, Alberto R. Piola, Raul Guerrero, Elbio D. Palma, P. Ted Strub, Corinne James, Harold Fenco, Yi Chao, and Martin Saraceno*
The salinity signature of the cross-shelf exchanges in the Southwestern Atlantic Ocean: Numerical simulations^{*,†}
(doi 10.1002/2014JC010116)
- *Companion to Guerrero et al. [2014] doi 10.1002/2014JC010113.**
†This article is part of a Special Section—Early scientific results from the salinity measuring satellites Aquarius/SAC-D and SMOS
- 7969** *Ebenezer S. Nyadjro and Michael J. McPhaden*
Variability of zonal currents in the eastern equatorial Indian Ocean on seasonal to interannual time scales
(doi 10.1002/2014JC010380)
- 7987** *Dafydd Gwyn Evans, Jan D. Zika, Alberto C. Naveira Garabato, and A. J. George Nurser*
The imprint of Southern Ocean overturning on seasonal water mass variability in Drake Passage
(doi 10.1002/2014JC010097)
- 8011** *B. Peña-Molino, S. R. Rintoul, and M. R. Mazloff*
Barotropic and baroclinic contributions to along-stream and across-stream transport in the Antarctic Circumpolar Current (doi 10.1002/2014JC010020)
- 8029** *Guglielmo Lacorata, Luigi Palatella, and Rosalia Santoleri*
Lagrangian predictability characteristics of an Ocean Model (doi 10.1002/2014JC010313)
- 8039** *Xiao-Hua Zhu, Yun-Long Ma, Xinyu Guo, Xiaopeng Fan, Yu Long, Yaochu Yuan, Ji-Liang Xuan, and Daji Huang*
Tidal and residual currents in the Qiongzhou Strait estimated from shipboard ADCP data using a modified tidal harmonic analysis method* (doi 10.1002/2014JC009855)
- *This article is part of a Special Section—Pacific-Asian Marginal Seas**
- 8061** *François Dufois, Nick J. Hardman-Mountford, Jim Greenwood, Anthony J. Richardson, Ming Feng, Steven Herbette, and Richard Matear*
Impact of eddies on surface chlorophyll in the South Indian Ocean (doi 10.1002/2014JC010164)
- 8078** *HongLi Fu, Xidong Wang, Peter C. Chu, Xuefeng Zhang, Guijun Han, and Wei Li*
Tropical cyclone footprint in the ocean mixed layer observed by Argo in the Northwest Pacific
(doi 10.1002/2014JC010316)
- 8093** *M. C. Gregg and Jody M. Klymak*
Mode-2 hydraulic control of flow over a small ridge on a continental shelf (doi 10.1002/2014JC010043)
- 8109** *Hiroto Abe and Naoto Ebuchi*
Evaluation of sea-surface salinity observed by Aquarius* (doi 10.1002/2014JC010094)
- *This article is part of a Special Section—Early scientific results from the salinity measuring satellites Aquarius/SAC-D and SMOS**
- 8122** *James Reagan, Tim Boyer, John Antonov, and Melissa Zweng*
Comparison analysis between Aquarius sea surface salinity and World Ocean Database in situ analyzed sea surface salinity* (doi 10.1002/2014JC009961)
- *This article is part of a Special Section—Early scientific results from the salinity measuring satellites Aquarius/SAC-D and SMOS**

- 8141** *Xiao Yu, Tian-Jian Hsu, and S. Balachandar*
Convective instability in sedimentation: 3-D numerical study (doi 10.1002/2014JC010123)
- 8162** *James Holte, Fiammetta Straneo, J. Thomas Farrar, and Robert A. Weller*
Heat and salinity budgets at the Stratus mooring in the southeast Pacific (doi 10.1002/2014JC010256)
- 8177** *I. I. Rypina, S. R. Jayne, S. Yoshida, A. M. Macdonald, and K. Buesseler*
Drifter-based estimate of the 5 year dispersal of Fukushima-derived radionuclides (doi 10.1002/2014JC010306)

Cover. In Anderson and Riser [DOI: 10.1002/2014JC010112], 3 July 2009 rainfall event observed by float 6117 deployed in the tropical western pacific. Air temperature, wind speed, and wind direction from TAO mooring location located at 2°N, 147°E. Collocated, 3 h rainfall data from TRMM. Temperature and Salinity from the STS CTD. See pp. 7433–7448.