Gustavo Marques

CONTACT

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EMPLOYMENT

*** Project Scientist I** **Jun 2017 - present**
Oceanographic Section of the Climate & Global Dynamics division, National Center for Atmospheric Research

*** Postdoctoral Research Associate** **Jul 2015 - Jun 2017**
Program in Atmospheric and Oceanic Sciences, Princeton University / Geophysical Fluid Dynamics Laboratory

EDUCATION

*** PhD in Meteorology & Physical Oceanography** **Sep 2010 - May 2015**

Rosenstiel School of Marine & Atmospheric Science, University of Miami

Dissertation title: *On the processes controlling Antarctic dense shelf water outflows*

Advisor: Dr. Tamay M. Özgökmen

*** M.Sc. in Physical Oceanography** **Sep 2007 - May 2010**

School for Marine Science and Technology, University of Massachusetts Dartmouth

Thesis title: *Secondary Flow Associated with Transient Tidal Eddy Motion in the Western Gulf of Maine*

Advisor: Dr. Wendell S. Brown

*** B.Sc., Oceanography** **Jan 2002- Dec 2006**

Oceanographic Institute of the University of Sao Paulo (IOUSP), Sao Paulo, SP, Brazil

Thesis title: *Assessment of the Toxicity Field of Santos/Sao Vicente Sewage Outfall between Hydrodynamic Dispersion Models Coupled with an Empirical Ecotoxicological Model*

Advisor: Dr. Joseph Harari

PEER-REVIEWED PUBLICATIONS

- Stern, A., A. Adcroft, O. Sergienko, and **G. Marques¡**, (2017). Modeling tabular icebergs submerged in the ocean. *Journal of Advances in Modeling Earth Systems* (accepted).
- **Marques, G.**, M. G. Wells, L. Padman, and T.M. Özgökmen, (2017). Flow splitting in numerical simulations of oceanic dense-water outflows. *Ocean Modelling*, 113, 66-84, doi:10.1016/j.ocemod.2017.03.011.
- **Marques, G.** and T.M. Özgökmen, (2014). On Modeling Turbulent Exchange in Buoyancy-Driven Fronts. *Ocean Modelling*, 83, pp. 43-62, doi:10.1016/j.ocemod.2014.08.006.
- **Marques, G. M.**, L. Padman, S. R. Springer, S. L. Howard, and T. M. Özgökmen (2014). Topographic vorticity waves forced by Antarctic dense shelf water outflows, *Geophys. Res. Lett.*,

41, doi:10.1002/2013GL059153.

- Brown, W.S. and **Marques, G.**, (2012). Tidal eddy motions in the western Gulf of Maine, Part 1: Primary Structure. *Continental Shelf Research*, doi:10.1016/j.csr.2012.08.018.
- **Marques, G.** and Brown, W.S., (2012). Tidal eddy motions in the western Gulf of Maine, Part 2: Secondary Flow. *Continental Shelf Research*, doi:10.1016/j.csr.2012.02.008.

Teaching

- Lectured, Ocean Physics for Climate, GEO-425, Princeton University, Fall 2015.
- Workshop, Introduction to the Regional Ocean Modeling System (ROMS). University of Miami, Fall 2013.
- Lectured, Atmospheric and Oceanic Turbulence, RSMAS/MPO-664. University of Miami, Fall 2013.
- Lectured, Geophysical Fluid Dynamics I, RSMAS/MPO-511. University of Miami, Fall 2011, 2012 and 2013.
- Teaching Assistant, Survey of Oceanography, MSC-101. University of Miami, Fall 2012.
- Teaching Assistant, Numerical Methods in Fluid Dynamics, RSMAS/MPO-662. University of Miami, Fall 2011.

Honors and Awards

- Earned a scientific initiation scholarship from the Foundation for Research Support of the State of São Paulo (FAPESP), 2006.

Experience at sea (summary)

- Cruises around São Paulo and Rio de Janeiro, Brazil. Observation of physical, biological, geological and chemical properties.
- Coastal cruises around Massachusetts, USA. Observation of physical properties.
- Cruise around Florida, USA. Observation of physical properties.
- Instruments deployed: glider, CTD, ADCP, rosette, Niskin and Nansen bottles, fluorometer, plankton net, Van Veen grab, box-corer, fish net, moorings and side-scan sonar. Total of approximately 21 days at sea.

Oral Presentations

- **Marques, G.**, Stern, A., Harrison, M., Sergienko, O., Adcroft A., and Hallberg, R., 2018. The impact of sub-ice-shelf melting on sea-ice formation under different atmospheric forcing. Ocean Science Meeting, Portland - OR, USA.
- **Marques, G.**, Stern, A., Harrison, M., Sergienko, O., Adcroft A., and Hallberg, R., 2017. Sensitivity of sub-ice-shelf melting to changes atmospheric forcing. Regional Sea Level Changes and Coastal Impacts, 2017, New York - NY, USA.
- **Marques, G.**, Stern, A., Harrison, M., Sergienko, O. and Hallberg, R., 2017. The effects of sub-ice-shelf melting on dense shelf water formation and export in idealized simulations of Antarctic margins. European Geosciences Union General Assembly, 2017, Vienna, Austria.
- **Marques, G.**, 2017. Processes controlling bottom water formation and sub-ice-shelf melting in idealized simulations of Antarctic margins. Center for Coastal Physical Oceanography, Old Dominion University, Norfolk - VA, USA (invited).
- **Marques, G.**, Harrison, M., Sergienko, O. and Hallberg, R., 2016. Changes in bottom water formation in the western Ross Sea due to the melting of ice shelves in West Antarctica. Rising Coastal Seas on a Warming Earth II, Abu Dhabi, United Arab Emirates.
- **Marques, G.**, L. Padman and Özgökmen, T.M., 2016. Flow Splitting in Numerical Simulations of Oceanic Dense-Water Outflows. Ocean Science Meeting, New Orleans - LA, USA.

- **Marques, G. M.**, L. Padman, S. R. Springer, S. L. Howard, and T. M. Özgökmen, 2014. Topographic vorticity waves forced by Antarctic dense shelf water outflows. Ocean Science Meeting, Honolulu - HI, USA.
- **Marques, G.** and Özgökmen, T.M., 2012. On modeling the turbulent exchange in buoyancy-driven fronts. ROMS/TOMS User Workshop at the Windsor Atlantica Hotel, Petropolis Conference Room, Rio de Janeiro, Brazil.
- **Marques, G.** and Özgökmen, T.M., 2012. Lagrangian Coherent Structures Introduced by Overflows. LAPCOD V, Miami Beach - FL, USA.
- **Marques, G.** and Brown, W.S., 2010. Transient Tidal Eddy Motion and Associated Secondary Flow in the Western Gulf of Maine. Graduate School of Oceanography, University of Rhode Island, USA.

Poster Presentations

- **Marques, G.**, L. Padman and Özgökmen, T.M., 2013. Idealized Numerical Model Simulations of AABW Production in the NW Ross Sea: Sensitivity to Grid Resolution, Mixing Models and Background Stratification. In: Gordon Research Conference on Coastal Ocean Circulation, Biddeford, ME, USA.
- **Marques, G.**, and Özgökmen, T.M. (2011). Comparing mixing and coherent turbulent features using an OGCM and a non-hydrostatic spectral element model. In: Coastal Modeling Summer School, University of Toulon in La Londe des Maures, France.
- **Marques, G.**, and Brown, W. S. (2010). Secondary Circulation Associated with Strong Tidal Flow in the Western Gulf of Maine. In: 2010 Ocean Sciences Meeting, Portland, Oregon, USA.
- **Marques, G.**, and Brown, W. S. (2009). Transient tidal eddy motion in the Western Gulf of Maine: preliminary dynamical results. In: Gordon Research Conference on Coastal Ocean Circulation, New London, NH, USA.
- **Marques, G.**, and Brown, W. S. (2008). Preliminary measurements of the water properties in the western Great South Channel. In: Mid-Atlantic Bight Physical Oceanography and Meteorology Meeting 2008, Woods Hole, Massachusetts, USA.
- **Marques, G.** and Harari, J. (2006). Assessment of the near field associated with the Santos sewage outfall using a non-hydrostatic model and fecal coliform analysis. In: III Brazilian Symposium of Oceanography, Brazil.

Courses and Workshops

- *Using Satellite Observations to Advance Climate Models*, Keck Institute for Space Studies, California Institute of Technology, Pasadena - CA , Aug 31-Sep 4, 2015.
- *Summer School in Fluid Dynamics of Sustainability and the Environment*, Department of Applied Mathematics and Theoretical Physics at the University of Cambridge, UK, Sep 1-12, 2014.
- *All Hands Meeting/Tutorials*, Consortium for Advanced Research on Transport of Hydrocarbon in the Environment, Miami - FL, May 29-31, 2013
- *ROMS/TOMS User Workshop*, Rio de Janeiro, Brazil, Oct 22-25, 2012.
- *Coastal Modeling Summer School* organized by the CNRS and University of Toulon in La Londe des Maures, France, Sep 18-23, 2011.
- *Glider training*, Coastal Ocean Observation Laboratory, Rutgers University - NJ, January 9-11, 2008.
- *Course on physical and biological ocean modeling: Biogeochemical (ROMS-NPZ-PISES) and individual based (IBM) modeling*, Universidad de Concepcion, Dichato, Chile, Jul 03-14, 2007, (SACC - CRN Scholarship).
- *Modeling the ocean in the climate system*, Dr. William George Large. III Brazilian Symposium of Oceanography, Brazil. Dec 04-08, 2006.

Professional Activities

Reviewer for Ocean Modeling, Deep Sea Research, Ocean Science and National Science Foundation.

Member of the American Geophysical Union, 2009-present.

LANGUAGES Portuguese: native; English: fluent; Spanish: conversational level.

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