

# Cesar B. Rocha, PhD

## Curriculum Vitae

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*Last Updated: November 21, 2018*

**Research Interests:** observational and theoretical physical oceanography; geophysical fluid dynamics; mesoscale and submesoscale turbulence; internal waves.

**Other Interests:** long-form, literary journalism; science communication.

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## Professional Preparation

- 2018 **Ph.D., Physical Oceanography**, *Scripps Institution of Oceanography, University of California, San Diego*, La Jolla, CA.  
Dissertation: The turbulent and wavy upper ocean—transition from geostrophic flows to internal waves and stimulated generation of near-inertial waves. Doctoral committee: William R. Young (chair), Sarah T. Gille, Teresa K. Chereskin, Juan C. Del Álamo, and Stefan G. Llewellyn Smith
- 2013 **M.S. (w/ honors), Physical Oceanography**, *University of Sao Paulo*, Sao Paulo, Brazil.  
Thesis: Energetics, baroclinic instability and models of vertical structure in the Brazil Current region (22–28S). Advisor: Ilson C. A. da Silveira
- 2011 **B.S. (w/ honors), Oceanography**, *University of Sao Paulo*, Sao Paulo, Brazil.

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## Research Appointments

- Current **Postdoctoral Scholar**, *Woods Hole Oceanographic Institution*, Woods Hole, MA.
- 2013–2018 **Graduate Student Researcher**, *Scripps Institution of Oceanography, University of California San Diego*, La Jolla, CA, Advisor: William R. Young.  
Conducted research in geophysical fluid dynamics and physical oceanography.
- 2012 **Visiting Scholar**, *University of Massachusetts, Dartmouth*, North Dartmouth, MA, Supervisor: Amit Tandon.  
Conducted research on the mesoscale dynamics of the Brazil Current.

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## Other Appointments

- 2016–2018 **Graduate Writing Consultant**, *Writing + Critical Expression Hub, University of California, San Diego*, La Jolla, CA, Supervisor: Matthew Nelson.  
Worked with graduate students in their quest to communicate convoluted ideas using simple prose.

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## Awards

### Fellowships

- 2018 WHOI Postdoctoral Fellowship, Woods Hole Oceanographic Institution
- 2016 NASA Earth and Planetary Sciences Graduate Fellowship

- 2015 Geophysical Fluid Dynamics Fellowship, GFD Program, Woods Hole Oceanographic Institution
- 2011 FAPESP Masters Research Fellowship, Fundação de Amparo à Pesquisa do Estado de São Paulo
- 2010 FAPESP Undergraduate Research Fellowship, Fundação de Amparo à Pesquisa do Estado de São Paulo

#### Honors

- 2011 Best Honors Thesis, Oceanographic Institute, University of Sao Paulo

#### Other Awards

- 2017 French-American Doctoral Exchange Program Laureate, Embassy of France in the USA

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## Publications

### Journal Articles

- [1] **Cesar B Rocha**, Gregory L Wagner, and William R Young. Stimulated generation: extraction of energy from balanced flow by near-inertial waves. *Journal of Fluid Mechanics*, 847:417–451, 2018.
- [2] Fabrice Ardhuin, Sarah T Gille, Dimitris Menemenlis, **Cesar B Rocha**, Nicolas Rascle, Bertrand Chapron, Jonathan Gula, and Jeroen Molemaker. Small-scale open-ocean currents have large effects on wind-wave heights. *Journal of Geophysical Research: Oceans*, 2017.
- [3] **Cesar B Rocha**, William R Young, and Ian Grooms. On Galerkin approximations of the surface active quasigeostrophic equations. *Journal of Physical Oceanography*, 46(1):125–139, 2016.
- [4] **Cesar B Rocha**, Sarah T Gille, Teresa K Chereskin, and Dimitris Menemenlis. Seasonality of submesoscale dynamics in the Kuroshio Extension. *Geophysical Research Letters*, 43(21), 2016.
- [5] **Cesar B Rocha**, Teresa K Chereskin, Sarah T Gille, and Dimitris Menemenlis. Mesoscale to submesoscale wavenumber spectra in Drake Passage. *Journal of Physical Oceanography*, 46(2):601–620, 2016.
- [6] **Cesar B Rocha**, Ilson CA Silveira, Belmiro M Castro, and Jose Antonio M Lima. Vertical structure, energetics, and dynamics of the Brazil Current System at 22 S–28 S. *Journal of Geophysical Research: Oceans*, 119(1):52–69, 2014.
- [7] **Cesar B Rocha**, Amit Tandon, Ilson CA Silveira, and Jose Antonio M Lima. Traditional quasi-geostrophic modes and surface quasi-geostrophic solutions in the Southwestern Atlantic. *Journal of Geophysical Research: Oceans*, 118(5):2734–2745, 2013.

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## Select Invited Seminars

- 2017 **Laboratoire Météorologie Dynamique Seminar Series**, *École Normale Supérieure*, Paris, France, “Stimulated generation of near-inertial waves”.
- 2017 **Physical Oceanography Seminar Series**, *CICESE*, Ensenada, Mexico, “Stimulated generation of near-inertial waves”.

- 2015 **Oceans and Cryosphere Seminar Series**, *JPL/CalTech*, Pasadena, CA, “Drake Passage wavenumber spectra”.

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## Select Talks

- 2018 **Ocean Sciences Meeting**, Portland, OR, “Stimulated generation: extraction of energy from balanced flow by near-inertial waves”.
- 2017 **French-American Doctoral Exchange Program, European Institute for Marine Studies**, Brest and Villefranche-sur-Mer, France, “Macroturbulence and internal waves in the upper ocean”.
- 2014 **AGU Fall Meeting**, San Francisco, CA, “Drake Passage upper-ocean spectra”.

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## Select Posters

- 2017 **French–American Doctoral Exchange Program, Mediterranean Institute of Oceanography**, Marseille, France, “Stimulated generation of near-inertial waves”.
- 2017 **Munk Symposium on Turbulence, Internal Waves, and the Overturning Circulation of the Ocean**, La Jolla, CA, “Near-inertial waves extract energy from barotropic quasi-geostrophic flow”.

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## Service

- 2018 **Ad hoc referee of journal articles**, *Journal of Geophysical Research–Oceans*; *Journal of Physical Oceanography*; *Journal of Atmospheric and Oceanic Technology*; *Geophysical Research Letters*.
- 2017 **Ad hoc referee of journal articles**, *Journal of Geophysical Research–Oceans*; *Journal of Physical Oceanography*; *Journal of Fluid Mechanics*.
- 2017 **Member student committee**, SIO teaching award.
- 2016 **Ad hoc referee of journal articles**, *Deep-Sea Research–I*; *Journal of Fluid Mechanics*; *Nature Communications*; *Journal of Geophysical Research–Oceans*; *Ocean Modelling*; *Geophysical Research Letters*.
- 2016 **Member of student committee**, SIO faculty search in large-scale observational physical oceanography; Teaching award.

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## Software

All software is written in Python and open source, distributed under the MIT license.

- niwqg QG-NIW coupled model in Python, <https://github.com/crocha700/niwqg>
- pyqg Python Quasigeostrophic Model, <http://pyqg.readthedocs.io>
- pyspec Spectral Analysis in Python, <https://github.com/pyspec/pyspec>

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## Mentees

- 2018–2018 **Thomas Bossy**, *University of California San Diego*.  
Intern from ENS Lyon (faculty advisor at SIO: William R. Young).  
Comments: co-advised the student on his research project, particularly setting up computational simulations of horizontal convection.

2015–2016 **Momme Hell**, *University of California San Diego*, Peer-mentoring program.

SIO Ph.D student.

Comments: assisted the student navigate the first year of graduate school, particularly helping him tailor his coursework and choosing an advisor.