# Cesar B. Rocha

*Curriculum Vitae*

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## Profile

I'm a physical oceanographer concerned with upper-ocean dynamics and the impact of fine-scale processes—such as eddies and fronts and internal waves—on climate. I have 8+ years of experience in data analysis, development of mathematical theories, implementation of computer models, and science writing. I'm also interested in education and open source/data/science.

## Profesional preparation

2018 **Ph.D.**, *Physical Oceanography*.
Scripps Institution of Oceanography, University of California San Diego.

2013 **M.S. (w/ honors)**, *Physical Oceanography*.
University of São Paulo, Brazil.

2011 **B.S. (w/ honors)**, *Oceanography*.
University of São Paulo, Brazil.

## Employment History

Current **Postdoctoral Scholar**.
Woods Hole Oceanographic Institution.

2016–2018 **Graduate Writing Consultant**.
Writing + Critical Expression Hub, University of California San Diego.
Supervisor: Matthew Nelson.

2013–2018 **Graduate Student Researcher**.
Scripps Institution of Oceanography, University of California San Diego.
Advisor: William R. Young.

## Achievements

### Fellowships

2018 WHOI Postdoctoral Fellowship, Woods Hole Oceanographic Institution.

2016 NASA Earth and Planetary Sciences Graduate Fellowship.

2015 Geophysical Fluid Dynamics Fellowship, Woods Hole Oceanographic Institution.

2011 Master's Research Fellowship, Fundação de Amparo à Pesquisa do Estado de São Paulo.

2010 Undergrad 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

## Publications

### Submitted

[1] D. C. Napolitano, I. C. A. da Silveira, **C. B. Rocha**, G. R. Flierl, P. H. R. Calil, and R. P. Martins. On the steadiness and instability of the Intermediate Western Boundary Current between 24°S and 18°S. Submitted, Jan. 2019.

[2] A. Paradise, **C. B. Rocha**, P. Barpanda, and N. Nakamura. Atmospheric blocking statistics in a varying climate: lessons from a 'traffic jam' model with pseudostochastic forcing. Submitted, Feb. 2019.

### Peer-reviewed papers

[1] T. K. Chereskin, **C. B. Rocha**, S. T. Gille, D. Menemenlis, and M. Passaro. Characterizing the transition from balanced to unbalanced motions in the southern California Current. *Journal of Geophysical Research: Oceans*, Accepted, 2019.

[2] **C. B. Rocha**, G. L. Wagner, and W. R. Young. Stimulated generation: Extraction of energy from balanced flow by near-inertial waves. *Journal of Fluid Mechanics*, 847:417–451, 2018.

[3] F. Ardhuin, S. T. Gille, D. Menemenlis, **C. B. Rocha**, N. Rascle, b. Chapron, J. Gula, and J. Molemaker. Small-scale open-ocean currents have large effects on wind-wave heights. *Journal of Geophysical Research: Oceans*, 2017.

[4] **C. B. Rocha**, W. R. Young, and I. Grooms. On Galerkin approximations of the surface active quasigeostrophic equations. *Journal of Physical Oceanography*, 46(1):125–139, 2016.

[5] **C. B. Rocha**, S. T. Gille, T. K. Chereskin, and D. Menemenlis. Seasonality of submesoscale dynamics in the Kuroshio Extension. *Geophysical Research Letters*, 43(21), 2016.

[6] **C. B. Rocha**, T. K. Chereskin, S. T. Gille, and D. Menemenlis. Mesoscale to submesoscale wavenumber spectra in Drake Passage. *Journal of Physical Oceanography*, 46(2):601–620, 2016.

[7] **C. B. Rocha**, I. C. A. da Silveira, B. M. Castro, and J. A. 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.

[8] **C. B. Rocha**, A. Tandon, I. C. A. da Silveira, and J. A. 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.

## 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".

## Select Conference 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".

## Select Poster Presenetations

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".

## Teaching, Mentorship, and Outreach

2018–2018 **Thomas Bossy**, *University of California San Diego*.
Intern from ENS Lyon (faculty advisor at SIO: William R. Young).
Mentorship: Co-advised the student on his research project, helping him to set up and run computational simulations of horizontal convection.

2015–2016 **Momme Hell**, *University of California San Diego*, Peer-mentoring program.
SIO Ph.D student.
Mentorship: Assisted the student in navigating through the first year of graduate school, helping him tailor his coursework and choose an advisor.

2012–2012 **Teaching Assistant for *Oceanografia Dinâmica II***, *University of São Paulo*.
Instructor: Professor Ilson Silveira.
Tasks: Assisted the instructor in preparing and grading problem sets, quizzes, and exams; taught review sessions and recitations; and held weekly office hours.

2010–2011 **Volunteer Physics Instructor**, *Rede Emancipa de Cursinhos Populares*.
Tasks: Taught standard lectures of classical mechanics to underprivileged high schoolers, preparing them for college entrance exams; and mentored students interested in STEM careers.

## Field work

2008-2010 **Célula de Recirculação da Corrente do Brasil na Bacia de Santos (CERES)**.
I participated in four Project CERES cruises in the Brazil Current region, in which I undertook CTD/LADCP watches, and worked on data processing and vizualization, and assisted adptive sampling decisions. During the CERES IV cruise, I oversaw the night shift.

2010 **South Atlantic Meridional Overturning Circulation (SAMOC)**.
I participated in the SAM03 SAMOC cruise at 34.5°S in the western Altantic (Chief scientist: Alberto Piola), and undertook CTD/LADCP watches and assisted with telemetry of C-PIES.

## Service

2019 **Ad hoc referee for scientific journals**.
*Geophysical Research Letters; Journal of Physical Oceanography; Deep-Sea Research I; Journal of Marine Systems.*

2018 **Ad hoc referee for scientific journals**.
*Journal of Geophysical Research–Oceans; Journal of Physical Oceanography; Journal of Atmospheric and Oceanic Technology; Geophysical Research Letters.*

2017 **Ad hoc referee for scientific journals**.
*Journal of Geophysical Research–Oceans; Journal of Physical Oceanography; Journal of Fluid Mechanics.*

2017 **Member of student committee**.
SIO teaching award.

2016 **Ad hoc referee for scientific journals**.
*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; SIO teaching award.

## Software

The codes are open source, written in Python, and 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`

## Languages

**Portuguese** Native fluency (written and spoken).

**English** Full fluency (written and spoken).

**Spanish** Working proficiency (written and spoken).