Cesar B. Rocha

Curriculum Vitae

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I'm an ocean dynamicist. I develop mathematical models of oceanographic phenomena, implement computer simulations of ocean circulation, and analyze data. I also occasionally make measurements at sea.

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] **C. B. Rocha**, T. Bossy, S. G. Llewellyn Smith, and W. R. Young. Improved bounds on horizontal convection. Submitted.

[2] 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.

Published

[1] Adiv Paradise, **Rocha, Cesar B**, Pragallva Barpanda, and Noboru Nakamura. Blocking statistics in a varying climate: lessons from a 'traffic jam'model with pseudostochastic forcing. *Journal of the Atmospheric Sciences*, 76(2019):3013–3027, 2019.

[2] 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*, 124:2088–2109, 2019.

[3] **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.

[4] 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.

[5] **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.

[6] **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.

[7] **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.

[8] **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.

[9] **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.

Teaching, Mentorship, and Outreach

2019–2019 **Roger Wu**, *Woods Hole Oceanographic Institution*.
Summer Student Fellow co-supervised with Tom Farrar.

2019–2019 **Falmouth Public Schools**, *Science & Engineering Fair*.
Served as a judge of K-6 and high-school projects.

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.

Service

2019 **Ad hoc referee for funding agency**.
National Science Foundation.

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

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).