

John Patrick O'Brien

Curriculum Vitae

National Center for Atmospheric Research, Climate and Global Dynamics Division, Boulder, CO.
email: jprobrien@ucar.edu | work: 303.497.1305

RESEARCH INTERESTS My research focuses on understanding climate variability and the physical processes that control the probability of experiencing co-occurring extremes in a climate subject to both natural and anthropogenic forcings. With a focus on mid-latitude dynamics, using both observations and model output, this entails the study of tropical – extratropical interactions, coupled ocean – atmosphere interactions, and modes of variability that modulate the statistics of extratropical cyclones, anticyclones, and atmospheric rivers.

EDUCATION **University of California, Santa Cruz, Santa Cruz, CA.** 2014 – December, 2019
Ph.D. – Earth and Planetary Science – Climate and Atmospheric Sciences
Thesis: *The Quantification of Co-occurring Meteorological Extremes and the Anthropogenic Contribution to Hydrometeorological Variation*
Committee: Dr. Travis A. O'Brien Lawrence Berkeley National Lab
Members: Dr. Christina M. Patricola Lawrence Berkeley National Lab
Dr. Patrick Y. Chuang University of California, Santa Cruz
Dr. Nicole Feldl University of California, Santa Cruz

University of Alberta, Edmonton, AB. 2013
Citation in Applied Geostatistics
Final Report: *Geostatistical Characterization of the Hekla Data Set*
Advisor: Dr. Clayton V. Deutsch

Colorado School of Mines, Golden, CO. 2010
B.S. Engineering Physics, minor in Geophysics, ASI in Mathematics
Graduated *magna cum laude*
Senior Thesis: *Computation of Attenuated Synthetic Seismic Traces*
Advisor: Dr. Paul C. Sava

Monterey Peninsula College, Monterey, CA. 2007
A.A. University Studies with Physics and Mathematics Emphasis
Graduated with Honors GPA: 3.95/4.0

RESEARCH AND PROFESSIONAL EXPERIENCE **National Center for Atmospheric Research, Postdoctoral Research Fellow** 2020 –
Climate and Global Dynamics Division, Climate Analysis Section
Lawrence Berkeley National Laboratory, Research Affiliate 2020 –
Earth and Environmental Sciences Area – Climate Sciences
Lawrence Berkeley National Laboratory, GSRA 2014 – 2019
CASCADE Research Group – Climate Extremes and Atmospheric Processes Team

University of California, Santa Cruz, GSR 2014 – 2019
Ph.D. student, Climate and Atmospheric Sciences

University of California, Davis, Bodega Marine Laboratory, Lab Assistant 2013
Quantifying the Effects of Climate Change on Olympia Oysters

Cimarex Energy Company, Exploration Geophysicist 2010 – 2013
Lead Geophysicist, Mid-continent Region, Seismic Oil and Gas Exploration

Cimarex Energy Company, Geophysical Intern 2008 – 2010
Developer, Java Software for Seismic Interpretation

- PUBLICATIONS [6] Rhoades, A.M., Jones, A.D., O'Brien, T.A., **O'Brien, J.P.**, Ullrich, P.A., Zarzycki, C.M. (2020). *Influences of Pacific Ocean domain extent on the western US hydroclimatology in variable-resolution CESM*. Journal of Geophysical Research – Atmospheres, doi: <https://doi.org/10.1029/2019JD031977>. [[Link](#)]
- [5] O'Brien, T.A., Payne, A.E., Shields, C.A., and Coauthors (2020). *Detection Uncertainty Matters for Understanding Atmospheric Rivers*. Bull. Amer. Metero. Soc., doi: <https://doi.org/10.1175/BAMS-D-19-0348.1>. [[Link](#)]
- [4] O'Brien, T.A., Risser, M.D., Loring, B., and Coauthors. (2020). *Detection of Atmospheric Rivers with Inline Uncertainty Quantification: TECA-BARD v1.0*. Geosci. Model Dev. <https://doi.org/10.5194/gmd-2020-55>. [[Link](#)]
- [3] Patricola, C.M., **O'Brien, J.P.**, Risser, M.D., Rhodes, A.M., O'Brien, T.A., Ullrich, P.A., Stone, D.A., Collins, W.D. (2019). *Maximizing ENSO as a source of western US hydroclimate predictability*. Clim Dyn 54, 351-372 (2020). [[Link](#)]
- [2] **O'Brien, J.P.**, O'Brien, T.A., Patricola, C.M., Wang, S.Y. (2019). *Metrics for understanding large-scale controls of multivariate temperature and precipitation variability*. Clim Dyn 53, 3805-3823. [[Link](#)]
- [1] O'Brien, T.A., Kashinath, K., Cavanaugh, N.R., Collins, W.D., **O'Brien, J.P.** (2016). *A fast and objective multidimensional kernel density estimation method: fastKDE*. Comput. Stat. Data Anal. 101, 148-160. [[Link](#)]

Under Review

O'Brien, T.A., Risser, M.D., **O'Brien, J.P.**, Patricola, C.M., Paciorek, C.J., Krishnan, H., Collins, W.D. (2019). *Chance rather than trends in the unusual 2017 California wet season*. Water Resources Research.

Risser, M.D., Wehner, M.F., **O'Brien, J.P.**, O'Brien, T.A., Patricola, C.M., Collins, W.D. (2020) *Detection and attribution for observed precipitation over the contiguous United States - Part I: quantifying the influence of natural climate variability on in situ measurements of seasonal total and extreme daily precipitation*. Climate Dynamics

In Preparation

O'Brien, J.P., O'Brien, T.A., Patricola, C.M., Risser, M.D., Stone, D.A. (2020). *The Anthropogenic Contribution to the Observed Hydrometeorology over the Continental U.S. from 1960-2018*.

Risser, M.D., Wehner, M.F., **O'Brien, J.P.**, O'Brien, T.A., Patricola, C.M., Collins, W.D. (2020) *Detection and attribution for observed precipitation over the contiguous United States - Part II: quantifying the influence of anthropogenic forcing on in situ measurements of seasonal total and extreme daily precipitation*

ACADEMIC
PRESENTATIONS

The Quantification of Co-occurring Meteorological Extremes and the Anthropogenic Contribution to Hydrometeorological Variation

Thesis Defense – University of California, Santa Cruz
Santa Cruz, CA.

December, 2019

Metrics for Understanding Large-scale Controls of Multivariate Temperature and Precipitation Variability:

Talk – U.S. Department of Energy, RGCM Climate Conference Call,
Berkeley, CA.

August, 2019

Talk – (Invited) Workshop on Risk Analysis for Extremes in the Earth System,
Berkeley, CA.

July, 2019

Poster – Workshop on Correlated Extremes,
New York, NY.

May, 2019

Poster – Pacific Climate Workshop 2019 – Extreme Events,
Pacific Grove, CA.

February, 2019

Poster – American Geophysical Union (AGU), Fall Meeting,
Washington, D.C.

December, 2018

Poster – U.S. Department of Energy, Principal Investigators Meeting,
Washington, D.C.

November, 2018

New Perspectives on ENSO, the Winter 2016/17, and California Hydroclimate Variability and Predictability

Poster – California Extreme Precipitation Symposium
Davis, CA.

June, 2019

An Event-based Framework for Understanding Precipitation Variability (Insights into the California Winter 2016/17):

Talk – University of California Santa Cruz, Department of Earth and Planetary
Sciences, Graduate Seminar, Santa Cruz, CA.

May, 2018

A Process Based Approach Toward Understanding Precipitation Variability:

Poster – Pacific Climate Workshop 2017 – Pacific meets Atlantic: Ocean-
Atmosphere Interactions, Pacific Grove, CA.

March, 2017

Poster – University of California Berkeley Atmospheric Sciences Symposium,

Berkeley, CA. February, 2017

Identifying and Understanding Regional Differences in Temperature and Precipitation in California Under the Influence of PDO:

Talk – American Meteorological Society (AMS), Annual Conference, Seattle, WA. January, 2017

Understanding Processes that Control Extremes:

Poster – U.S. Department of Energy, CASCADE Renewal Proposal, Washington, DC. August, 2016

The Conditional Dependence of California Temperature and Precipitation on Large-scale Climate Forcing:

Poster – DCMIP poster session – National Center for Atmospheric Research (NCAR), Boulder, CO. June, 2016

Talk – University of California Santa Cruz, Department of Earth and Planetary Sciences, Graduate Seminar, Santa Cruz, CA. May, 2016

Poster – University of California Berkeley Atmospheric Sciences Symposium, Berkeley, CA. February, 2016

Talk – American Geophysical Union (AGU), Fall Meeting, San Francisco, CA. December, 2015

TEACHING

University of California, Santa Cruz, Department of Earth and Planetary Sciences

Teaching Assistant, Earth 111: Mathematics in the Earth Sciences Fall, 2015 – 2018

Teaching Assistant, Earth 81B: Fundamentals of Environmental Sci. Winter, 2015

Colorado School of Mines, Department of Physics

Teaching Assistant, Physics 200: Electricity and Magnetism 2008 – 2009

Monterey Peninsula College, Department of Mathematics

Teaching Assistant, Math 20A: Calculus with Analytic Geometry I 2005 – 2007

Teaching Assistant, Math 20B: Calculus with Analytic Geometry II 2006 – 2007

Teaching Assistant, Math 20C: Calculus with Analytic Geometry III 2007

Monterey Peninsula College, Department of Physical Sciences

Teaching Assistant, Astronomy 10: Introduction to Astronomy 2005 – 2007

Monterey Peninsula College, TRiO Educational Opportunity Outreach Program

Instructional Specialist: Physics, Chemistry, and Mathematics 2006 – 2007

HONORS AND AWARDS

Honorable Mention, NSF Graduate Research Fellowship Program 2016

Colorado School of Mines Presidents Scholarship 2009

Colorado School of Mines Dept. of Geophysics AGU Travel Grant 2008

Colorado School of Mines Presidents Scholarship 2008

	Alpha Gamma Sigma Robert Mantovani Scholarship	2007
	Dan Searle Memorial Scholarship	2007
	Boyd Huff Memorial Scholarship	2007
	Floyd Richards Memorial Scholarship	2007
	Ruth R. Young Memorial Scholarship	2007
	Rotary Club of Monterey Scholarship	2007
	California Mathematics Council Community Colleges Foundation Scholarship	2007
	Gentrain Society Scholarship	2007
	Jack Sedan Memorial Scholarship	2007
PROFESSIONAL DEVELOPMENT	3 rd ARTMIP Workshop Lawrence Berkeley National Lab, Berkeley, CA.	October, 2019
	Deep Learning for Science School Lawrence Berkeley National Lab, Berkeley, CA.	July, 2019
	Workshop on Risk Analysis for Extremes in the Earth System Lawrence Berkeley National Lab, Berkeley, CA.	July, 2019
	Workshop on Correlated Extremes Columbia University, New York, NY.	May, 2019
	Berkeley Fire Research Consortium Workshop U.C. Berkeley, Berkeley, CA.	May, 2019
	Dynamical Core Model Intercomparison Project (DCMIP) Summer School National Center for Atmospheric Research (NCAR), Boulder, CO.	June, 2016
	Community Earth System Model (CESM) Tutorial National Center for Atmospheric Research (NCAR), Boulder, CO.	August, 2015
	National Energy Research Scientific Computing Center (NERSC) New User Training, Oakland Scientific Facility, Oakland, CA.	October, 2014
OUTREACH AND SERVICE	Climate Music Project, Global Climate Action Summit– Science Liaison to the Public San Francisco, CA.	September, 2018
	Women in Engineering and Science (WiSE), Winter Mushroom Foray Trip Leader Santa Cruz, CA.	January, 2016
	Women in Engineering and Science (WiSE), Spring Mushroom Foray Trip Leader Santa Cruz, CA.	April, 2015
	President of the MPC Alpha Gamma Sigma Honor Society Monterey, CA.	2006 / 2007
AVOCATIONS	Backpacking, Fishing, Rafting, Hiking, Nature Photography, Running, Astronomy, Mycology, Carpentry/Woodworking	