

Michael G. Jacox

NOAA Southwest Fisheries Science Center
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EDUCATION

- 2012 Ph.D. Ocean Sciences**, University of California - Santa Cruz
Advisors: Christopher Edwards and Raphael Kudela
Dissertation: Controls on Primary Productivity and its Measurement in Coastal Upwelling Systems
- 2005 B.S. Aerospace Engineering, Applied Mathematics Minor**, University of Colorado - Boulder

PROFESSIONAL APPOINTMENTS

- 2017- Research Oceanographer**, NOAA Southwest Fisheries Science Center, Monterey, CA
- 2014- Assistant Project Scientist**, CIMEC and NOAA/SWFSC, Monterey, CA
- 2012-2014 Post-doctoral Researcher**, University of California, Santa Cruz, CA
- 2008-2012 Graduate Researcher**, University of California, Santa Cruz, CA
- 2005-2008 Systems Engineer**, Atmospheric Observing Systems Inc., Boulder, CO
- 2003-2005 Biology Laboratory Assistant**, University of Colorado, Boulder, CO
- 2004 Structural Engineer**, Stress Analysis and Design Engineering, Malvern, England
- 2002 Structural Engineer**, L-3 Communications – Spar Aerospace, Edmonton, Canada

PUBLICATIONS (PEER-REVIEWED)

- Jacox, M. G.**, M. A. Alexander, N. J. Mantua, J. D. Scott, G. Hervieux, R. S. Webb, and F. E. Werner (2017), Multiyear extreme ocean temperatures with impacts on living marine resources off the US west coast during 2016, *Bulletin of the American Meteorological Society*, accepted.
- Tolimieri, N., M. Haltuch, Q. Lee, **M. G. Jacox**, and S. J. Bograd (2017), Oceanographic drivers of sablefish recruitment in the California Current, *Fisheries Oceanography*, accepted.
- Crawford, W., A. M. Moore, **M. G. Jacox**, J. Fiechter, E. Neveu, and C. A. Edwards (2017), A Resonant Response of the California Current Circulation to Forcing by Low Frequency Climate Variability, *Deep Sea Research Part II*, doi:10.1016/j.dsr2.2017.07.016.
- Scales, K., E. L. Hazen, S. Maxwell, H. Dewar, S. Kohin, **M. G. Jacox**, C. A. Edwards, D. Briscoe, L. Crowder, R. Lewiston, and S. J. Bograd (2017), Fit to predict? Ecoinformatics for modeling dynamic habitat suitability for highly migratory marine species, *Ecological Applications*, 27, 2313–2329, doi:10.1002/eap.1610
- Moore, A. M., **M. G. Jacox**, W. J. Crawford, B. Laughlin, C. A. Edwards, and J. Fiechter (2017), The impact of the ocean observing system on estimates of the California Current circulation spanning three decades, *Progress in Oceanography*, 156, 41–60, doi: 10.1016/j.pocean.2017.05.009
- Hervieux, G., M. A. Alexander, C. A. Stock, **M. G. Jacox**, K. Pegion, E. Becker, F. Castruccio, and D. Tommasi (2017), More reliable coastal SST forecasts from the North American Multimodel Ensemble, *Climate Dynamics*, doi:10.1007/s00382-017-3652-7.
- Jacox, M. G.**, M. A. Alexander, C. A. Stock, and G. Hervieux (2017), On the skill of seasonal sea surface temperature forecasts in the California Current System and its connection to ENSO variability, *Climate Dynamics*, doi:10.1007/s00382-017-3608-y.
- Scales, K. L., E. L. Hazen, **M. G. Jacox**, C. A. Edwards, M. J. Oliver, and S. J. Bograd (2017), Scales of inference: On the sensitivity of habitat models for wide-ranging marine predators to the spatial and temporal resolution of environmental data, *Ecography*, 40, 210-220, doi:10.1111/ecog.02272.

McClatchie, S., R. Goericke, A. Leising, T. D. Auth, E. Bjorkstedt, R. R. Robertson, R. D. Brodeur, X. Du, E. A. Daly, C. Morgan, F. P Chavez, A. J. Debich, J. Hildebrand, J. Field, K. Sakuma, **M. G. Jacox**, M. Kahru, R. Kudela, C. Anderson, B. E. Lavaniegos, J. Gomez-Valdes, S. P. A. Jiminez-Resenberg, R. McCabe, S. R. Melin, M. D. Ohman, L. M. Sala, B. Peterson, J. Fisher, I. D. Schroeder, S. J. Bograd, E. L. Hazen, S. R. Schneider, R. T. Golightly, R. M. Suryan, A. J. Gladics, S. Loreda, J. M. Porquez, A. R. Thompson, E. D. Weber, W. Watson, V. Trainer, P. Warzybok, R. Bradley, and J. Jahncke (2016), State of the California Current 2015-16: Comparisons with the 1997-98 El Niño, *CalCOFI Reports*, 57, 1-57.

Jacox, M. G., E. L. Hazen, K. D. Zaba, D. L. Rudnick, C. A. Edwards, A. M. Moore, and S. J. Bograd (2016), Impacts of the 2015-2016 El Niño on the California Current System: Early assessment and comparison to past events, *Geophysical Research Letters*, 43, doi:10.1002/2016GL069716.

Jacox, M. G., E. L. Hazen, and S. J. Bograd (2016), Optimal environmental conditions and anomalous ecosystem responses: Constraining bottom-up controls of phytoplankton biomass in the California Current System, *Scientific Reports*, 6, 27612, doi:10.1038/srep27612.

Neveu, E., A. M. Moore, C. A. Edwards, J. Fiechter, P. Drake, **M. G. Jacox**, and E. Nuss (2016), A historical analysis of the California Current using ROMS 4D-Var. Part I: System configuration and diagnostics, *Ocean Modelling*, in press, doi:10.1016/j.ocemod.2015.11.012.

Jacox, M. G., S. J. Bograd, E. L. Hazen, and J. Fiechter (2015), Sensitivity of the California Current nutrient supply to wind, heat, and remote ocean forcing, *Geophysical Research Letters*, 42, 5950-5957, doi: 10.1002/2015GL065147.

Kahru, M., **M. G. Jacox**, Z. Lee, R. M. Kudela, M. Manzano-Sarabia, and B. G. Mitchell (2015), Optimized multi-satellite merger of primary production estimates in the California Current using inherent optical properties, *Journal of Marine Systems*, doi:10.1016/j.marsys.2014.06.003.

Jacox, M. G., J. Fiechter, A. M. Moore, and C. A. Edwards (2015), ENSO and the California Current coastal upwelling response, *Journal of Geophysical Research*, 120, 1691-1702, doi:10.1002/2014JC10650.

Jacox, M. G., C. A. Edwards, M. Kahru, D. Rudnick, and R. M. Kudela (2015), The potential for improving remote primary productivity estimates through subsurface chlorophyll and irradiance measurement, *Deep-Sea Research Part II*, 112, 107-116, doi:10.1016/j.dsr2.2013.12.008.

Jacox, M. G., A. M. Moore, C. A. Edwards, and J. Fiechter (2014), Spatially resolved upwelling in the California Current System and its connections to climate variability, *Geophysical Research Letters*, 41, 3189-3196, doi:10.1002/2014GL059589.

Jacox, M. G. and C. A. Edwards (2012), Upwelling source depth in the presence of nearshore wind stress curl, *Journal of Geophysical Research*, 117, C05008, doi:10.1029/2011JC007856.

Jacox, M. G. and C. A. Edwards (2011), Effects of stratification and shelf slope on nutrient supply in coastal upwelling regions, *Journal of Geophysical Research*, 116, C03019, doi:10.1029/2010JC006547.

PUBLICATIONS (SUBMITTED)

Turi, G., M. Alexander, N. Lovenduski, A. Capotondi, J. Scott, C. Stock, J. Dunne, J. John, and **M. Jacox**. Response of O₂ and pH to ENSO in the California Current System in a high resolution global climate model. Submitted to *Ocean Science*.

Siegelman-Charbit, L., J. A. Koslow, **M. G. Jacox**, E. L. Hazen, S. J. Bograd, E. F. Miller, and J. A. McGowan. Physical forcing on fish abundance in the southern California Current System.

ADDITIONAL PUBLICATIONS

Jacox, M. G., D. L. Rudnick, and C. A. Edwards (2017), Dominant physical mechanisms driving ecosystem response to ENSO in the California Current System, *US Clivar Variations*, 15(1), 22-26.

Tommasi, D., **M. G. Jacox**, M. A. Alexander, S. Siedlecki, F. E. Werner, C. A. Stock, and N. A. Bond

(2017), Seasonal forecasts of ocean conditions in the California Current Large Marine Ecosystem, *US Clivar Variations*, 15(1), 41-46.

Moore, A. M., C. A. Edwards, J. Fiechter, and **M. G. Jacox** (2015), Observing system impacts on estimates of California Current transport, in *Coastal Ocean Observing Systems*, edited by Liu, Kerker and Weisberg, pp. 351-372, Elsevier Inc.

Edwards, C. A., A. M. Moore, H. Song, J. P. Mattern, **M. G. Jacox**, and J. Fiechter (2015), Hindcasting and nowcasting the physical and biological state of the California Current System, *CalCOFI Rep.* 56.

Jacox, M.G. (2012), Controls on primary productivity and its measurement in the California Current System, PhD Dissertation, University of California, Santa Cruz.

Jacox, M. G. and M. L. Powers (2010), Science on Sunday: the prospective graduate student workshop in ocean science, in *Astronomical Society of the Pacific Conference Series 436, Learning from Inquiry in Practice*, pp. 247-257, edited by L. Hunter & A. J. Metevier, ASP, San Francisco, CA.

GRANTS RECEIVED

NOAA COCA (2017-2020): From physics to fisheries: A social-ecological management strategy evaluation for the California Current Large Marine Ecosystem. PIs: **M. Jacox (lead)**, M. Alexander, S. Bograd, E. Curchitser, C. Edwards, J. Fiechter, E. Hazen, A. Hires-Cornell, R. Rykaczewski, S. Stohs. Budget: \$1,991,674 (\$1,645,765 to UCSC).

NOAA MAPP (2017-2020): Downscaled seasonal forecasts for living marine resource management off the US west coast. PIs: **M. Jacox (lead)**, M. Alexander, S. Bograd, C. Edwards, J. Fiechter, E. Hazen, S. Siedlecki. Budget: \$538,194 (\$385,190 to UCSC).

Benioff Ocean Initiative (2017-2018): A Fine-Scale Dynamic Management Tool to Minimize Whale Ship Strike Risk in the Northeast Pacific. PIs: E. Hazen, S. Bograd, **M. Jacox**. Budget: \$106,750.

NOAA CIO (2017-2018): Biological Ocean Reanalyses for Fisheries Applications off the US West Coast. PIs: S. Bograd, **M. Jacox**, C. Edwards. Budget: \$149,946.

NOAA BREP (2016-2017): El Niño Watch revised - An improved index for reducing Loggerhead Turtle bycatch in the California Current. PIs: H. Bailey, L. Crowder, S. Bograd, E. Hazen, D. Robinson, C. Wilson, **M. Jacox**, K. Scales, D. Briscoe. Budget: \$134,262 (\$81,174 to CIMEC/ERD).

INVITED PRESENTATIONS

2018 International Symposium on Changes in Transitional Areas of the Pacific, La Paz, Mexico.

2018 Ocean Sciences Meeting (poster), Portland, OR.

2017 Gordon Research Conference, Biddeford, ME.

2017 Scripps Institution of Oceanography, La Jolla, CA.

2016 University of California, Santa Cruz, CA.

2016 US Clivar: Forecasting ENSO Impacts on Marine Ecosystems of the US West Coast, La Jolla, CA.

2016 PISCO Annual Meeting, Santa Cruz, CA.

2015 NOAA Southwest Fisheries Science Center, La Jolla, CA.

2015 University of Colorado, Boulder, CO.

2014 NOAA Geophysical Fluid Dynamics Laboratory, Princeton, NJ.

2014 University of California, Santa Cruz, CA.

2013 University of California, Berkeley, CA.

2013 San Francisco State University, San Francisco, CA.

CONTRIBUTED ORAL PRESENTATIONS

- 2018 Ocean Sciences Meeting, Portland, OR.
- 2017 PICES Annual Meeting, Vladivostok, Russia.
- 2016 Ocean Sciences Meeting, New Orleans, LA.
- 2015 Eastern Pacific Ocean Conference, Fallen Leaf Lake, CA.
- 2015 International Symposium on the Effects of Climate Change on the World's Oceans, Santos, Brazil.
- 2014 PICES Annual Meeting, Yeosu, South Korea.
- 2013 45th International Liège Colloquium on Ocean Dynamics, Liège, Belgium.
- 2010 International Meeting of Students in Physical Oceanography, Seattle, WA.

POSTER PRESENTATIONS

- 2015 Application of Seasonal to Decadal Climate Predictions for Marine Resource Management, Princeton, NJ.
- 2014 Ocean Sciences Meeting, Honolulu, HI.
- 2012 American Geophysical Union Annual Fall Meeting, San Francisco, CA.
- 2011 Gordon Research Conference – Coastal Ocean Modeling, South Hadley, MA.
- 2010 Learning from Inquiry in Practice, Santa Cruz, CA.
- 2009 Eastern Pacific Ocean Conference, Victoria, BC, Canada.

TEACHING AND MENTORING

- 2015-2018 Instructor, Inquiry Institute, UCSC Institute for Scientist and Engineer Educators
Four-day workshops for graduate students, post-docs, and early career faculty to improve teaching in STEM fields
- 2013 Guest Lecturer, METR/OCN 450 - Air-Sea Interactions, San Francisco State University
Upper division undergraduate course for Atmospheric Science and Earth Science majors
- 2011 Course Designer/Lead Instructor, Workshop for Engineering and Science Transfers, UCSC
Two-day inquiry activity based on digital image transmission from satellites
- 2011 Teaching Assistant, OCEA80A - Life in the Sea, UCSC
Introductory level marine biology course
- 2010 Course Designer/Instructor, Akamai Maui Short Course, Maui Community College, HI
One-week optics course consisting of five separate inquiry activities
- 2009 Course Designer/Instructor, Ocean Sciences Laboratory, UC Diversity Forum, UCSC
One-day oceanography inquiry activity based on thermohaline circulation

AWARDS

- 2017 National Marine Fisheries Service Team Member of the Year
- 2014 Best Talk, Physical Oceanography and Climate Committee, PICES Annual Meeting
- 2011 Dr. Earl H. Myers and Ethel M. Myers Oceanographic and Marine Biology Trust Research Grant
- 2009 Friends of Long Marine Lab Student Research Award
- 2008 University of California Regents Fellowship
- 2005 People's Choice Award, University of Colorado Engineering Design Expo
- 2004 Tony Tisone Engineering Scholarship
- 2003 J. Ranald Fox Memorial Scholarship

- 2001 James H. Cole Engineering Scholarship
- 1999 British Columbia Aviation Council Private Pilot Award
- 1999 Recreational Pilot of the Year, Pacific Flying Club, British Columbia, Canada

SERVICE AND OUTREACH

- 2017-2020 Co-chair, *PICES Working Group 40 – Climate and Ecosystem Predictability.*
 - 2017-2020 Co-chair, *NOAA MAPP Marine Prediction Task Force*
 - 2018 Session co-chair, *International Symposium on the Effects of Climate Change on the World's Oceans*, Washington D.C.
 - 2018 Session co-chair, *Ocean Sciences Meeting*, Portland, OR.
 - 2016 Conference co-chair, *Eastern Pacific Ocean Conference*, Mt. Hood, OR.
 - 2016 Session co-chair, *Ocean Sciences Meeting*, New Orleans, LA.
 - 2015 Session co-chair, *Eastern Pacific Ocean Conference*, Fallen Leaf Lake, CA.
 - 2011 Point-of-contact for undergraduate STEM transfer students and research-oriented campus groups at UCSC, including CalTEACH, CBSE, SEED, SACNAS, MARC, IMSD, CAMP, and UC LEADS.
 - 2010 Facilitation of undergraduate student exposure to scientific research in industry, including tours at observatories and meetings between students and top-level industry professionals.
- Journal Reviewer: *Environmental Science and Technology, Geophysical Research Letters, Journal of Geophysical Research - Oceans, Nature Geoscience, Ocean Science, Oceanography, PLOS ONE, Progress in Oceanography, Remote Sensing, Scientific Reports*
- Proposal Reviewer: *NERC (UK), Swiss National Supercomputing Center*

FIELD EXPERIENCE

- 2011 Monterey Bay 2011 (3 cruises; UCSC; R/V John Martin)
- 2010 Monterey Bay 2010 (UCSC; R/V John Martin)
- 2009 Monterey Bay 2009 (4 cruises; UCSC; R/V John Martin)
- 2008 Monterey Bay 2008 (6 cruises; UCSC; R/V John Martin)
- 2005-2008 Monthly Cruises (MBARI, R/V Point Lobos; collaboration with F. Chavez)
- 2007 Unmanned surface vehicle development, Palmetto, FL
- 2006-2007 Chief scientist, robotic instrument deployments, Monterey Bay (12 cruises, R/V Sheila B)
- 2006 Airborne CO₂ flux measurement (Purdue University, collaboration with P. Shepson)
- 2006 Unmanned airborne CO₂ monitor deployment, Quincy, WA