

Thomas P. Connolly, Ph.D.

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Research interests

Dynamics and ecological impacts of physical processes in the coastal ocean. Inner shelf response to wind and surface waves, upwelling dynamics, coastal biogeochemistry, biophysical interactions in kelp forests, formation and transport of harmful algal blooms, and hypoxia.

Education

University of Washington	Oceanography	Ph.D., 2012
University of Washington	Oceanography	M.S., 2008
Stanford University	Environmental Engineering	B.S., 2002

Employment history

Assistant Professor, Moss Landing Marine Labs, San José State University	2015-present
Postdoctoral Investigator, Woods Hole Oceanographic Institution	2014–2015
USGS Postdoctoral Scholar, Woods Hole Oceanographic Institution	2012–2014
Graduate Assistant, University of Washington	2005–2012

Submitted manuscripts

Connolly, T. P. and S. J. Lentz, Observations of nonlinear momentum fluxes over the inner continental shelf. *Submitted to Journal of Marine Research*. Preprint available at <https://eartharxiv.org/repository/view/2038/>

Peer-reviewed publications

Reprints at SJSU ScholarWorks: <http://works.bepress.com/thomas-connolly>

* - graduate student author

Connolly, T. P., P. R. McGill, R. G. Henthorn, D. A. Burrier* and C. Michaud*, 2020. Near-bottom currents at Station M in the abyssal Northeast Pacific. *Deep Sea Research II: Topical Studies in Oceanography*, 173, 104743. doi:10.1016/j.dsr2.2020.104743

Smith, K. L., C. L. Huffard, P. R. McGill, A. D. Sherman, **T. P. Connolly**, S. Von Thun, L. A. Kuhnz. 2020. Gelatinous zooplankton abundance and benthic boundary layer currents in the abyssal northeast Pacific: a 3-yr time series study, *Deep Sea Research II: Topical Studies in Oceanography*, 173, 104654. doi:10.1016/j.dsr2.2019.104654

Manzer, C. R.*, **T. P. Connolly**, E. McPhee-Shaw, G. J. Smith, 2019. Physical factors influencing phytoplankton abundance in southern Monterey Bay, *Continental Shelf Research*, 180, 1-13. doi:10.1016/j.csr.2019.04.007

Connolly, T. P. and A. R. Kirincich, 2019. High-resolution observations of subsurface fronts and alongshore bottom temperature variability over the inner shelf, *J. Geophys. Res.* 124. doi:10.1029/2018JC014454

Hickey, B., S. Geier, N. Kachel, S. Ramp, P. M. Kosro and **T. P. Connolly**, 2016. Alongcoast structure and interannual variability of seasonal midshelf water properties and velocity in the Northern California Current System. *J. Geophys. Res.*, 121, 7408 - 7430, doi:10.1002/2015JC011424

Siedlecki, S. A., N. S. Banas, K. A. Davis, S. N. Giddings, B. M. Hickey, P. MacCready, **T. P. Connolly**, and S. L. Geier, 2015. Seasonal and interannual oxygen variability on the Washington and Oregon continental shelves. *J. Geophys. Res.*, 120, 608-633, doi:10.1002/2014JC010254

Connolly, T. P. and S. J. Lentz, 2014. Interannual variability of wintertime temperature on the inner continental shelf of the Middle Atlantic Bight. *J. Geophys. Res.*, 119, 6269-6285, doi:10.1002/2014JC010153

Connolly, T. P., B. M. Hickey, I. Shulman, and R. E. Thomson. 2014. Coastal trapped waves, alongshore pressure gradients, and the California Undercurrent. *J. Phys. Oceanogr.*, 44, 319–342, doi:10.1175/JPO-D-13-095.1

Connolly, T. P. and B. M. Hickey. 2014. Regional impact of submarine canyons during seasonal upwelling. *J. Geophys. Res.*, 119, 953–975, doi:10.1002/2013JC009452

Giddings, S. N., P. MacCready, B. M. Hickey, N. S. Banas, K. A. Davis, S. A. Siedlecki, V. L. Trainer, R. Kudela, N. Pelland, and **T. P. Connolly**, 2014. Hindcasts of potential harmful algal bloom transport on the Pacific Northwest coast. *J. Geophys. Res.*, 119, 2439–2461, doi:10.1002/2013JC009622

Hickey, B. M., V. L. Trainer, P. M. Kosro, N. G. Adams, **T. P. Connolly**, N. B. Kachel, and S. L. Geier. 2013. A springtime source of toxic *Pseudo-nitzschia* cells on razor clam beaches in the Pacific Northwest. *Harmful Algae*, 25, 1–14, doi:10.1016/j.hal.2013.01.006

Connolly, T. P., B. M. Hickey, S. L. Geier, and W. P. Cochlan, 2010. Processes influencing seasonal hypoxia in the northern California Current System, *J. Geophys. Res.*, 115, C03021, doi:10.1029/2009JC005283

Other publications

Connolly, T. P., 2013. Increasing occurrence of coastal hypoxia and anoxia. In: Miller, I.M., Shishido, C., Antrim, L, and Bowlby, E.C. Climate Change and the Olympic Coast National Marine Sanctuary: Interpreting Potential Futures. Marine Sanctuaries Conservation Series ONMS-13-01. U.S. Department of Commerce, National Oceanic and Atmospheric

Administration, Office of National Marine Sanctuaries, Silver Spring, MD, 50–60.
sanctuaries.noaa.gov/science/conservation/cc_ocnms.html

Pending Research Funding

The Central and Northern California Ocean Observing System: Information solutions to power healthy and prosperous oceanic, coastal and estuarine communities, T. Connolly, H. Bowers, M. Grand, National Oceanic and Atmospheric Administration – U.S. Integrated Ocean Observing System, sub-contract with Monterey Bay Aquarium Research Institute, June 2021–May 2026, \$421,875.

Collaborative Research: Dynamics of a coastal upwelling shadow front, T. Connolly, R. Walter, P. Mazzini, C. Edwards, National Science Foundation – Physical Oceanography, September 2021–August 2024, \$401,638.

Commercial-scale integration of land-based seaweed and shellfish aquaculture: transforming the efficiency, resiliency, and stewardship of US seafood production systems, M. Graham, S. Hamilton, A. Kahn, T. Connolly, M. Grand, S. Smith, M. DeVries, B. Ruttenberg, E. Bockmon, M. La Frano, M. Edwards, C. Colgan, L. Gardner, K. Johnson, D. Chartrand, USDA Sustainable Agriculture Systems Program, September 2021-August 2026, \$9,998,996.

Awarded Research Funding

CeNCOOS Partnership: Ocean Information for Decision Makers, T. Connolly, J. Harvey, G. J. Smith, M. Grand, National Oceanic and Atmospheric Administration – U.S. Integrated Ocean Observing System, sub-contract with Monterey Bay Aquarium Research Institute, June 2016–May 2021, \$306,720.

Effects of hypoxia on nursery function for fishes in coastal estuaries: investigating mechanisms and developing indicators. S. Hamilton, T. Connolly, C. Logan. Council on Ocean Affairs, Science and Technology (COAST) Grant Development Program, May 2019-April 2021, \$19,820.

High-resolution sensing of nitrate in Monterey Bay and surrounding waters, T. Connolly, K. Coale, G. J. Smith, J. Harvey, National Science Foundation – Improvements in Facilities, Communications, and Equipment at Biological Field Stations and Marine Laboratories (FSML), July 2017-June 2019, \$140,299.

Remote forcing of seasonal currents in the California Current System, T. Connolly, Council on Ocean Affairs, Science and Technology (COAST) Grant Development Program, July 2017-June 2019, \$19,752.

Along-shelf transport and cross-shelf exchange driven by surface waves on the inner continental shelf, T. P. Connolly and S. J. Lentz, National Science Foundation – Physical Oceanography, September 2014–January 2019, \$247,440.

Field observations of wave-induced bottom streaming over the inner continental shelf, T. P. Connolly, J. H. Trowbridge and S. J. Lentz, WHOI Coastal Ocean Institute, Four-month extension of postdoctoral scholarship. May–September 2014.

Data sets

Connolly, T. P., McGill, P. R., Henthorn, R. G., Burrier, D. A., Michaud, C. (2020). Data: Near-bottom currents at Station M in the abyssal Northeast Pacific [Data set]. Zenodo.
<http://doi.org/10.5281/zenodo.3612575>

Connolly, T. P., G. J. Smith, J. Adelaars, J. Harvey (2018) Historical shore station data: Moss Landing Marine Laboratories [Data set]. MLML Digital Commons.
<http://islandora.mlml.calstate.edu/islandora/object/islandora%3A74e1788c-d915-4cc1-9efa-f980e0edb0c9>

Connolly, T. P., & Kirincich, A. (2018). Distributed temperature sensing and associated data - Martha's Vineyard Coastal Observatory 2014 [Data set]. Zenodo.
<http://doi.org/10.5281/zenodo.1136113>

Fellowships and Awards

- Ocean Observatories Initiative Data Labs Fellow, 2020
- USGS Postdoctoral Scholarship, Woods Hole Oceanographic Institution, 2012-14
- Sarchin Graduate Fellowship in Oceanography, University of Washington, 2007
- American Meteorological Society/Office of Naval Research Graduate Fellowship, 2005–2006
- Summer Student Fellow, Woods Hole Oceanographic Institution, 2002
- Tau Beta Pi National Engineering Honor Society, 2001

Teaching Experience

Lead Instructor:

- Physical Oceanography, Moss Landing Marine Labs, Fall 2015-20 (4 units)
- Data Analysis Methods in Marine Science, Moss Landing Marine Labs, Spring 2016-20 (4 units)
- Oceanographic Instrumentation, Moss Landing Marine Labs, Fall 2019 (3 units)
- Interdisciplinary Topics in Monterey Bay, Moss Landing Marine Labs, Spring 2019 (2 units)
- Modeling Marine Systems, Moss Landing Marine Labs, Fall 2016 and 2018 (2-3 units)
- Oceanography of the California Coast and Estuaries, Moss Landing Marine Labs, Spring 2018 (4 units)
- Biophysical Interactions, Moss Landing Marine Labs, Spring 2016 (2 units)

Teaching Assistant:

- Advanced Field Oceanography, University of Washington, Spring 2009
- Design of Oceanographic Field Experiments, University of Washington, Winter 2009
- Geophysical Fluid Dynamics, University of Washington, Winter 2007

Advising

- Master's thesis advisor, 4 graduated, 5 ongoing
- Master's thesis co-advisor (with research faculty or affiliates), 1 graduated, 2 ongoing
- Master's thesis committee member, 9 graduated, 8 ongoing
- Ocean Data Labs Virtual REU program, Summer 2020
- Monterey Bay Regional Ocean Science REU program, Summer 2016
- University of Washington Ocean and Human Health Fellow program, Summer 2009

Field Experience

Summer 2016-present, Stillwater Cove and Elkhorn Slough (MLML small boats), Provide guidance to students on measurement of waves, currents and vertical profiles of water properties.

Fall 2015-present, Monterey Bay (R/V John H. Martin, day trips), Instrument testing and deployments. Development of class cruise plans with input from students and captain. Coordination of task rotation among students. Processing of shipboard ADCP data.

November-December 2014, Martha's Vineyard Coastal Observatory (R/V Tioga, day trips), Recovery of fiber-optic distributed temperature sensing system, tripods and surface moorings.

June-July 2014, Martha's Vineyard Coastal Observatory (small boat, R/Vs Tioga and Discovery, day trips), Deployment and installation of fiber-optic distributed temperature sensing system.

July 2013, MIT/WHOI Joint Program Orientation, New England shelf break (SSV Corwith Cramer, 8 days), Assisted with cruise planning. Participated in science operations and sailing.

November 2009, Oceans and Human Health, Puget Sound, WA (R/V Thompson, 3 days). Assisted with cruise planning and trained students.

March 2009, student cruise, Kermadec Volcanic Arc, NZ (R/V Thompson, 10 days). Assisted with cruise planning and trained students.

January 2009, mooring cruise, WA shelf (R/V Centennial, 3 days). Mooring recovery and dissolved oxygen calibration.

July 2007, NOAA BIOTOX, WA and BC shelf (R/V MacArthur, 10 days). Assisted with cruise planning. Collected dissolved oxygen samples. Operated CTD. Tracked, deployed and recovered surface drifters.

September 2006, ECOHAB-PNW, WA and BC shelf (R/V Thompson, 21 days). Collected dissolved oxygen samples. Tracked, deployed and recovered surface drifters. Operated CTD.

August 2006, San Juan Islands, WA (R/V Centennial and small boats). Designed, assembled, deployed and recovered moorings with other students. Organized daily small boat CTD surveys.

September 2005, ECOHAB-PNW, WA and BC shelf (R/V Melville, 21 days). Tracked, deployed and recovered surface drifters. Operated CTD.

Outreach and Scientific Service

- Technical Advisory Committee, Moro Cojo Slough, 2017-present
- Stakeholder Advisory Group, Elkhorn Slough Biostimulatory Substances Total Maximum Daily Load, California Water Boards, 2019-present
- Lectures, Oceanography of Monterey Bay and Elkhorn Slough, Stevenson High School, October 30, 2018.
- Guest Speaker, Oceanography of Monterey Bay, Salinas Founders Day Festival, May 18, 2019.
- Volunteer and organizer of Physical Oceanography lab activities, Moss Landing Marine Labs Open House, 2016-2018.
- Guest Speaker, Waves and Their Impacts, Santa Cruz Museum of Natural History, December 14, 2017.
- Member, Moro Cojo Slough Technical Advisory Council.
- Reviewer, Continental Shelf Research, Journal of Geophysical Research, Journal of Physical Oceanography, Geophysical Research Letters, Fisheries Oceanography, Progress in Oceanography, Deep Sea Research, Ocean Modelling, Journal of Marine Research, Ocean Dynamics, Aquaculture Research, Weather and Forecasting
- Proposal Reviewer, NSF, NOAA, Woods Hole Sea Grant, Oregon Sea Grant, California Sea Grant, CSU Council on Ocean Affairs, Science and Technology (COAST)
- Volunteer, Geophysical Fluid Dynamics Laboratory Open House, Woods Hole Oceanographic Institution, May 2013, 2014.
- Scientific Contributor, Physical summary and forecast. Pacific Northwest Harmful Algal Bloom Bulletin, 2009-2011.
- Reviewer, Sea Grant, *West Coast Regional Marine Research and Information Needs*. Sea Grant, 2009.
- Posters, Low oxygen and coastal upwelling in the Pacific Northwest, Centers for Ocean Sciences Education Excellence (COSEE), Communicating Ocean Sciences event, November 2008; University of Washington Science and Policy Summit, May 2011.
- Guest Speaker, Coastal Upwelling and Dead Zones - The Study of Hypoxia on Washington's Pacific Coast, WSU Beach Watchers Program, Anacortes, WA, May 2008
- Guest Speaker, Coastal upwelling in the Pacific Northwest, Ballard High School, Seattle, WA, February 2007

Selected Invited Seminar presentations

Physical dynamics and biogeochemical impacts of poleward flow in the California Current System, UC Santa Cruz Ocean Sciences Department, May 10, 2019.

Physical dynamics and biological impacts of circulation over the inner continental shelf, Scripps Institute of Oceanography, Climate, Atmospheric Science and Physical Oceanography, April 17, 2019.

Poleward flow in the California Current System: Physical dynamics and biogeochemical impacts, San Francisco State University Estuary and Ocean Science Center, November 14, 2018.

Exchange across the inner shelf: the role of surface gravity waves and internal bores, Naval Postgraduate School, March 23, 2016

New perspectives on inner-shelf circulation from a coastal ocean observatory. Monterey Bay Aquarium Research Institute (MBARI), January 20, 2016.

Surface waves and exchange across the inner shelf, Woods Hole Oceanographic Institution, Physical Oceanography Department, June 16, 2015.

Distributed temperature sensing (DTS) with fiber optics on the Martha's Vineyard inner shelf. Woods Hole Oceanographic Institution, Coastal Ocean Fluid Dynamics Laboratory seminar, May 1, 2015.

Selected Conference Presentations

Connolly, T. P. and S. J. Lentz (2020) Observations of nonlinear momentum fluxes over the inner shelf, Oral presentation, Ocean Sciences Meeting, San Diego, CA.

Connolly, T. P. (2017) Cross-shelf advection of along-shelf momentum over the inner shelf, Poster presentation, Gordon Research Conference – Coastal Ocean Dynamics, Biddeford, ME.

Connolly, T. P., K. H. Coale, G. J. Smith, J. Adelaars (2017), Physical and biogeochemical variability at the head of Monterey submarine canyon, Poster presentation, Eastern Pacific Ocean Conference, South Lake Tahoe, CA.

Connolly, T. P. (2017), The California Undercurrent and along-slope gradients of dynamic height, Poster presentation, Eastern Pacific Ocean Conference, South Lake Tahoe, CA.

Connolly, T. and S. Lentz (2016), Effects of wave-induced stresses on inner shelf circulation, Poster presentation, Eastern Pacific Ocean Conference, Mt. Hood, OR.

Connolly, T. and S. Lentz (2016), Stratification and the vertical structure of wave-driven cross-shelf circulation over the inner shelf, Oral presentation, Ocean Sciences Meeting, New Orleans, LA.

Connolly, T. and A. Kirincich (2015), Fine-scale alongshore variability over the inner continental shelf revealed by fiber-optic distributed temperature sensing, Poster presentation, American Geophysical Union Fall Meeting, San Francisco, CA.