Ted Conroy

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(he/him)
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Research Interests

Coastal physical oceanography, estuarine hydrodynamics and exchange flow, tracer transport and mixing, numerical ocean modeling, sediment transport, remote sensing.

Education

Ph.D. (***in progress***) Earth Science, University of Waikato (started March 2020, **To be completed October 31, 2023**)

Thesis: Sediment transport and river plume variability in a bay with multiple fluvial inputs
Advisor: Dr. Karin Bryan
Committee: Dr. Cedric Fichot (BU), Dr. Joe O'Callaghan (NIWA)

M.S. Earth Science, University of Oregon, 2016-2018

Thesis: The dynamics and exchange flow variability of the Coos Estuary
Advisor: Dr. David Sutherland
Committee: Dr. David Ralston (WHOI), Dr. Josh Roering (UO), Dr. Alan Rempel (UO)

B.S. Global Environmental Science, University of Hawaii at Manoa, 2012-2015

Thesis: Examining late twentieth century trends in the Central Tropical Pacific Ocean
Advisor: Dr. Brian Powell

Manuscripts in preparation

1. Length scales and cross-shelf transport of suspended sediment in river plumes derived from satellite ocean color data. **Conroy, T.**, Bryan, K.R., and Fichot, C.G., to be submitted to *Remote Sensing of the Environment*.
2. The relative influences of inner shelf processes on river plume dynamics and sediment transport from small mountainous rivers. **Conroy, T.** et al, to be submitted to *Continental Shelf Research*.
3. The influence of inner shelf processes and wave-current interaction on river plume vertical structure and cross-shore sediment flux. **Conroy, T.** et al, to be submitted to *Journal of Geophysical Research: Oceans*.

Publications

4. Lehmann, M.K., Gurlin, D., Pahlevan, N. et al. (including **Conroy, T.**) GLORIA - A globally representative hyperspectral in situ dataset for optical sensing of water quality. Sci Data 10, 100, 2023. https://doi.org/10.1038/s41597-023-01973-y.

3. Eidam, E.F., Sutherland, D.A., Ralston, D.K., **Conroy, T.** and Dye, B., 2021. Shifting sediment dynamics in the Coos Bay Estuary in response to 150 years of modification. *Journal of Geophysical Research: Oceans*, *126*(1), p.e2020JC016771.
2. Eidam, E.F., Sutherland, D.A., Ralston, D.K., Dye, B., **Conroy, T.**, Schmitt, J., Ruggiero, P. and Wood, J., 2020. Impacts of 150 years of shoreline and bathymetric change in the Coos Estuary, Oregon, USA. *Estuaries and Coasts*, pp.1-19.
3. **Conroy, T.**, Sutherland, D.A. and Ralston, D.K., 2020. Estuarine exchange flow variability in a seasonal, segmented estuary. *Journal of Physical Oceanography*, *50*(3), pp.595-613.

Presentations

Suspended sediment variability in small mountainous river plumes from 20-years of quasi-daily ocean color data. **T. Conroy**, K. Bryan, C. Fichot. Poster. Ocean Sciences Meeting 2022. Virtual.

Remote sensing of turbid river plume variability. **T. Conroy**, K. Bryan, C. Fichot. Poster. New Zealand Marine Science conference 2021. Tauranga, New Zealand.

Shifts in sediment routing and deposition associated with 150 years of estuary modification in Coos Bay, Oregon. E. Eidam (*presenter*), D. Sutherland, D. Ralston, B. Dye, **T. Conroy**. Talk. Ocean Sciences Meeting 2020. San Diego, California.

Estuarine exchange flow variability in a seasonal, segmented estuary. **T. Conroy**, D. Sutherland, D. Ralston (*presenter*). Poster. GRC Coastal Ocean Dynamics conference 2019. Manchester, New Hampshire.

Fine-sediment dynamics in the estuary of a small mountainous river. E. Eidam (*presenter*), **T. Conroy**, D. Sutherland, D. Ralston. Poster. AGU Fall meeting 2018. Washington D.C..

Past, present, and potential future hydrodynamics and sediment transport in the Coos Estuary. **T. Conroy**, E. Eidam, D. Sutherland, K. Bartlett, D. Ralston, B. Dye. Poster. State of the Oregon Coast 2018. Coos Bay, Oregon.

The Influence of Smaller Connecting Channels on Estuarine Exchange Flow. **T. Conroy**, D. Sutherland, D. Ralston. Poster. Ocean Sciences Meeting 2018. Portland, Oregon.

Natural and human-induced interaction between two small, seasonal PNW estuaries. D. Sutherland (*presenter*), **T. Conroy**, M. Jarrin, D. Ralston. Poster. Coastal and Estuarine Research Federation Conference 2017. Providence, Rhode Island.

Seasonal Exchange Flow Variability in a Pacific Northwest Estuary. **T. Conroy**, D. Sutherland. Poster. Eastern Pacific Ocean Conference 2017. Lake Tahoe, California.

The effects of anthropogenic perturbations and climactic change on a tropical coastal system: A comparative study. C. Tognacchini (*presenter*), M. McManus, K. Ruttenberg, **T. Conroy**, J. Horley-Feitosa. Poster. ASLO Meeting 2017, Honolulu, Hawaii.

The influence of mangrove removal on sediment characteristics at the He'eia Fishpond. **T. Conroy**, K. Ruttenburg, J. Horley-Feitosa. Talk. He'eia Fishpond Science Night, 2015. Kaneohe, Hawaii.

Experience

Ph.D. student at the University of Waikato 2020-Present
Hydrographic technician (seafloor mapping) at Cardinal Point Captains 2019
Graduate Employee at University of Oregon 2016-2018
Watershed Worker at the City of San Francisco 2015-2016
Volunteer at USGS Pacific Marine Science Center 2015-2016
Lab technician at University of Hawaii at Manoa Analytical Geochemistry Lab 2014-2015

Skills

Programming: MATLAB (used primarily), Python, BASH, FORTRAN
Numerical ocean models used: FVCOM, COAWST (including ROMS, SWAN, CSTM)
Oceanographic instruments used: CTD, ADCP, OBS, multibeam and side scan sonar, sediment corers, water samplers, hyperspectral radiometer
General topics of knowledge: numerical modeling, scientific coding, data analysis and processing, statistics, high performance computing

Coursework Completed

at the University of Oregon and Oregon State University:
Fluid Dynamics, Geophysical Fluid Dynamics, Nearshore Sediment Transport, Physical Oceanography, Numerical Methods, Geochemical Modeling, Environmental Data Analysis

at the University of Hawaii at Manoa:
Ocean ecosystem modeling, Geo-Mathematics (linear algebra, differential equations), Geological oceanography, Aquatic pollution, Beaches & reefs & climate change, Ocean biogeochemistry

Teaching Assistant Positions

at the Department of Earth Sciences, University of Oregon:
Introduction to Oceanography, Geology of the Pacific Northwest, Volcanoes and Earthquakes, Introduction to Geology

Oceanographic Fieldwork Experience

- Mooring design, construction, deployment, and recovery offshore of the Tukituki River in Hawke Bay, NZ (lead)
- CTD, hyperspectral radiometer, and suspended sediment measurements in Hawke Bay, NZ (lead)
- Sediment lab work, including total suspended solids, particle size analysis, optical backscatter sensor calibration
- Multibeam and side scan sonar in the Gulf of Mexico (with Cardinal Point Captains).
- Mooring construction and deployment in Coos Bay, Oregon (with Dr. Emily Eidam)
- CTD, ADCP, and suspended sediment measurements in the Coos Estuary, Oregon (with Dr. David Sutherland)
- CTD and ADCP measurements in Leconte Bay, Alaska (with Dr. David Sutherland)

- GPS beach surveys in California (volunteer for USGS)
- CTD and Microstructure measurements in West Oahu, Hawaii (volunteer on RV Falkor)

Professional Memberships

The Oceanography Society, New Zealand Coastal Society