Jan A. Newton

Biographical sketch: Dr. Jan Newton has been the Executive Director of the Northwest Association of Networked Ocean Observing Systems (NANOOS) for 20 years overseeing all aspects of an ocean observing system for the Pacific Northwest as part of the U.S. Integrated Ocean Observing System (IOOS). She is a Senior Principal Oceanographer at the University of Washington Applied Physics Lab and an Affiliate Professor at the UW Schools of Oceanography and of Marine and Environmental Affairs. She has extensive experience leading research projects from federal and state sources, working with ocean observers, modelers, and working with stakeholders on data products. Addressing ocean acidification on local through global scales, she co-directs the Washington Ocean Acidification Center and co-chairs the Global Ocean Acidification Observing Network (GOA-ON). She is active in the UN Decade of Ocean Science for Sustainability.

Applied Physics Laboratory, University of Washington
1013 NE 40th St, Seattle, WA 98105 janewton@uw.edu 206 543 9152
URL: https://www.apl.washington.edu/people/profile.php?last_name=Newton&first_name=Jan

Professional preparation:

Western Washington University	Biology	B.S., 1981
University of Washington	Oceanography	M.S., 1984
University of Washington	Oceanography	Ph.D., 1989

Appointments:

2004-present Senior Principal Oceanographer, Applied Physics Lab, University of Washington

- 2019-present Affiliate Professor, University of Washington, School of Oceanography
- 2019-present Affiliate Professor, University of Washington, School of Marine Environmental Affairs
- 2013-present Co-Director, Washington Ocean Acidification Center, University of Washington
- 2004-present Executive Director, Northwest Association of Networked Ocean Observing System (NANOOS), the PNW Regional Association of U.S. Integrated Ocean Observing System
- 1991-present Instructor (2020-present) Mellon Fellow, UW Friday Harbor Laboratories (FHL)

2009-2019 Affiliate Assistant Professor, University of Washington, School of Marine Envir. Affairs
1998-2019 Affiliate Assistant Professor, University of Washington, School of Oceanography
1994-2004 Senior Oceanographer, Washington State Department of Ecology
1993-2005 Senior Research Scientist, Northeastern University, Marine Science Center
1991-1993 Research Associate, University of Washington, School of Oceanography, (B. Frost)
1989-1991 Postdoctoral Fellow, Monterey Bay Aquarium Research Institute, (R. Barber)

Publications in the last five years:

Norton, E.L., I.C. Kaplan, S. Siedlecki, A.J. Hermann, S.R. Alin, J. Newton, K. Corbett, D. Ayres, E.J. Schumacker, N.A. Bond, K. Richerson, and M.A. Alexander. 2023. Seasonal ocean forecasts to improve predictions of Dungeness crab catch rates, co-developed with state and tribal fishery managers, *ICES Journal of Marine Science*, fsad010, https://doi.org/10.1093/icesjms/fsad010

Koehlinger J.A., J. Newton, J. Mickett, L. Thompson, and T. Klinger. 2023. Large and transient positive temperature anomalies in Washington's coastal nearshore waters during the 2013–2015 northeast Pacific marine heatwave. PLoS ONE 18(2): e0280646. https://doi.org/10.1371/journal.pone.0280646.

Widdicombe, S., K. Isensee, Y. Artioli, J.D. Gaitán-Espitia, C. Hauri, J.A. Newton, M. Wells, and S/ Dupont. 2023. Unifying biological field observations to detect and compare ocean acidification impacts across marine species and ecosystems: what to monitor and why. Ocean Sci., 19, 101–119, https://doi.org/10.5194/os-19-101-2023.

Dobson, K. L., J.A. Newton, S. Widdicombe, K. L. Schoo, M.P. Acquafredda, G. Kitch, A. Bantelman, K. Lowder, A. Valauri-Orton, K. Soapi, K. Azetsu-Scott, and K. Isensee. 2022. Ocean acidification research for sustainability: Co-designing global action on local scales. ICES Journal of Marine Science, fsac158, https://doi.org/10.1093/icesjms/fsac158.

Sutton, A.J., R. Battisti, B. Carter, W. Evans, J. Newton, S. Alin, N. R. Bates, W.-J. Cai, K. Currie, R.A. Feely, C. Sabine, T. Tanhua, B. Tilbrook, and R. Wanninkhof, 2022. Advancing best practices for assessing trends of ocean acidification time series. Front. Mar. Sci., 9:1045667. https://doi:10.3389/fmars.2022.1045667.

Sunday, J.M., Howard, E., Siedlecki, S., Pilcher, D. J., Deutsch, C., MacCready, P., Newton, J., and Klinger, T. 2022. Biological sensitivities to high-resolution climate change projections in the California current marine ecosystem. Global Change Biology, 00, 1–15. https://doi.org/10.1111/gcb.16317

IOC-UNESCO. 2022. State of the Ocean Report, pilot edition. Paris, IOC-UNESCO. IOC Technical Series, 173. https://unesdoc.unesco.org/ark:/48223/pf0000381921.locale=en

Newton, J., P. MacCready, S. Siedlecki, D. Manalang, J. Mickett, S. Alin, E.J. Schumacker, J. Hagen, S. Moore, A. Sutton, and R. Carini. 2021. Multi-stressor observations and modeling to build understanding of and resilience to the coastal impacts of climate change. Oceanography 34(4), 86-87, https://doi.org/10.5670/oceanog.2021.supplement.02-31.

Berger, H., Siedlecki, S., Matassa, C., Alin, S.R., Kaplan, I.C., Hodgson, E.E., Pilcher, D.J., Norton, E.L., and Newton, J.A. 2021. Seasonality and life history complexity determine vulnerability of Dungeness Crab to multiple climate stressors. AGU Advances, 2, e2021AV000456, https://doi.org/10.1029/2021AV000456.

Bednaršek, N., J.A. Newton, M.W. Beck, S.A. Alin, R.A. Feely, N.R. Christman, and T. Klinger. 2021. Severe biological effects under present-day estuarine acidification in the seasonally variable Salish Sea. Science of the Total Environment, https://doi.org/10.1016/j.scitotenv.2020.142689.

Moore, S.K., J.B. Mickett, G.J. Doucette, N.G. Adams, C.M. Mikulski, J.M. Birch, B. Roman, N. Michel-Hart, J.A. Newton. 2021. An Autonomous Platform for Near Real-Time Surveillance of Harmful Algae and Their Toxins in Dynamic Coastal Shelf Environments. *J. Mar. Sci. Eng.* 2021, *9*, 336. https://doi.org/10.3390/jmse9030336.

Cai, W.-J. R.A. Feely, J.M. Testa, M. Li, W. Evans, S.R. Alin, Y.-Y. Xu, G. Pelletier, A. Ahmed, D.J. Greeley, J.A. Newton, and N. Bednaršek. 2021. Natural and Anthropogenic Drivers of Acidification in Large Estuaries. Annual Review of Marine Science 2021 13:1, 23-55. https://doi.org/10.1146/annurev-marine-010419-011004

Siedlecki, S. A., Pilcher, D., Howard, E. M., Deutsch, C., MacCready, P., Norton, E. L., Frenzel, H., Newton, J., Feely, R. A., Alin, S. R., and Klinger, T. 2021. Coastal processes modify projections of some climate-driven stressors in the California Current System. *Biogeosciences*, 18, 2871–2890, https://doi.org/10.5194/bg-18-2871-2021.

Chu, S. N., A. J. Sutton, S. R. Alin, N. Lawrence-Slavas, D. Atamanchuk, J. B. Mickett, J. A. Newton, C. Meinig, S. Stalin, and A. Tengberg. 2020. Field evaluation of a low-powered, profiling pCO2 system in coastal Washington. Limnology and Oceanography: Methods, 18(6), 280–296. https://doi.org/10.1002/lom3.10354.

Sutton, A., and J. A. Newton. 2020. Reaching consensus on assessments of ocean acidification trends, *Eos, 101,* https://doi.org/10.1029/2020EO150944.

Norton E.L., S. Siedlecki, I.C. Kaplan, A.J. Hermann, J.L. Fisher, C.A. Morgan, S. Officer, C. Saenger, S.R. Alin, J. Newton, N. Bednaršek, and R.A. Feely. 2020. The Importance of Environmental Exposure History in Forecasting Dungeness Crab Megalopae Occurrence Using J-SCOPE, a High-Resolution Model for the US Pacific Northwest. Front. Mar. Sci. 7:102. doi:

Anderson, C.R., E. Berdalet, R.M. Kudela, C.K. Cusack, J. Silke, E. O'Rourke, D. Dugan, M. McCammon, J. Newton, S.K. Moore, K. Paige, S. Ruber, J.R. Morrison, B. Kirkpatrick, K. Hubbard, and J. Morell.

2019. Scaling Up from Regional Case Studies to a Global Harmful Algal Bloom Observing System. Front. Mar. Sci. 6:250. doi: 10.3389/fmars.2019.00250

Bailey, K., C. Steinberg, C. Davies, G. Galibert, M. Hidas, M.A. McManus, T. Murphy, J. Newton, M. Roughan and A. Schaeffer. 2019. Coastal Mooring Observing Networks and Their Data Products: Recommendations for the Next Decade. Front. Mar. Sci. 6:180. doi: 10.3389/fmars.2019.00180

Barth, J.A., S.E. Allen, E.P. Dever, R.K. Dewey, W. Evans, R.A. Feely, J.L. Fisher, J.P. Fram, B. Hales, D. Ianson, J. Jackson, K. Juniper, O. Kawka, D. Kelley, J.M. Klymak, J. Konovsky, P.M. Kosro, A. Kurapov, E. Mayorga, P. MacCready, J. Newton, R.I. Perry, C.M. Risien, M. Robert, T. Ross, R.K. Shearman, J. Schumacker, S. Siedlecki, V.L. Trainer, S. Waterman and C.E. Wingard. 2019. Better Regional Ocean Observing Through Cross-National Cooperation: A Case Study from the Northeast Pacific. *Front. Mar. Sci.* 6:93, doi: 10.3389/fmars.2019.00093.

Canonico, G., P.L. Buttigieg, E. Montes, F.E. Muller-Karger, C. Stepien, D. Wright, A. Benson, B. Helmuth, M. Costello, I. Sousa-Pinto, H. Saeedi, J. Newton, W. Appeltans, N. Bednaršek, L. Bodrossy, B.D. Best, A. Brandt, K.D. Goodwin, K. Iken, A.C. Marques, P. Miloslavich, M. Ostrowski, W. Turner, E.P. Achterberg, T. Barry, O. Defeo, G. Bigatt, L-A. Henry, B. Ramiro-Sánchez, P. Durán, T. Morato, J.M. Roberts, A. García-Alegre, M.S. Cuadrado and B. Murton. 2019. Global Observational Needs and Resources for Marine Biodiversity. Front. Mar. Sci. 6:367. doi: 10.3389/fmars.2019.00367

Cross, J.N., J.A. Turner, S.R. Cooley, J.A. Newton, K. Azetsu-Scott, R.C. Chambers, D. Dugan, K. Goldsmith, H. Gurney-Smith, A.R. Harper, E.B. Jewett, D. Joy, T. King, T. Klinger, M. Kurz, J. Morrison, J. Motyka, E.H. Ombres, G. Saba, E.L. Silva, E. Smits, J. Vreeland-Dawson and L. Wickes. 2019. Building the Knowledge-to-Action Pipeline in North America: Connecting Ocean Acidification Research and Actionable Decision Support. Front. Mar. Sci. 6:356. doi: 10.3389/fmars.2019.00356

Iwamoto, M.M., J. Dorton, J. Newton, M. Yerta, J. Gibeaut, T. Shyka, B. Kirkpatrick and R. Currier R. 2019. Meeting Regional, Coastal and Ocean User Needs with Tailored Data Products: A Stakeholder-Driven Process. *Front. Mar. Sci.* 6:290, doi: 10.3389/fmars.2019.00290.

Tilbrook, B., E.B. Jewett, M.D. DeGrandpre, J.M. Hernandez-Ayon, R.A. Feely, D.K. Gledhill, L. Hansson, K. Isensee, M.L. Kurz, J.A. Newton, S.A. Siedlecki, F. Chai, S. Dupont, M. Graco, E. Calvo, D. Greeley, L. Kapsenberg, M. Lebrec, C. Pelejero, K.L. Schoo and M. Telszewski. 2019. An Enhanced Ocean Acidification Observing Network: From People to Technology to Data Synthesis and Information Exchange. Front. Mar. Sci. 6:337. doi: 10.3389/fmars.2019.00337

Li L., J.E. Keister, T.E. Essington, J.A. Newton. 2019. Vertical distributions and abundances of life stages of the euphausiid *Euphausia pacifica* in relation to oxygen and temperature in a seasonally hypoxic fjord. Journal of Plankton Research, 41(2) 188–202, doi.org/10.1093/plankt/fbz009.

Sutton, A.J., R.A. Feely, S. Maenner-Jones, S. Musielwicz, J. Osborne, C. Dietrich, N. Monacci, J. Cross, R. Bott, A. Kozyr, A.J. Andersson, N.R. Bates, W.-J. Cai, M.F. Cronin, E.H.D. Carlo, B. Hales, S.D. Howden, C.M. Lee, D.P. Manzello, M.J. McPhaden, M. Meléndez, J.B. Mickett, J.A. Newton, S.E. Noakes, J.H. Noh, S.R. Olafsdottir, J.E. Salisbury, U. Send, T.W. Trull, D.C. Vandemark, and R.A. Weller. 2019. Autonomous seawater pCO2 and pH time series from 40 surface buoys and the emergence of anthropogenic trends, Earth Syst. Sci. Data, 11, 421–439, https://doi.org/10.5194/essd-11-421-2019.

Miloslavich, P., S. Seeyave, F. Muller-Karger, N. Bax, E. Ali, C. Delgado, H. Evers-King, B. Loveday, V. Lutz, J. Newton, G. Nolan, A.C. Peralta Brichtova, C. Traeger-Chatterjee and E. Urban. 2018. Challenges for global ocean observation: the need for increased human capacity, *Journal of Operational Oceanography*, doi: 10.1080/1755876X.2018.1526463

Fassbender, A.J. and S.R. Alin, R.A. Feely, A.J. Sutton, J.A. Newton, C. Krembs, J. Bos, M. Keyzers, A. Devol, W. Ruef, and G. Pelletier. 2018. Seasonal carbonate chemistry variability in marine surface waters of the US Pacific Northwest. Earth System Science Data 10, 1367–1401, 2018, https://doi.org/10.5194/essd-10-1367-2018.

Synergistic activities:

Regional applied research: As Northwest Association of Networked Ocean Observing Systems (NANOOS) Executive Director, my responsibilities include being lead PI for our recurring 5-year proposals involving multiple institutions, >20 PIs, and $6M/y proposed budgets. I direct NANOOS development and application of operational coastal observations to user-driven products. As the Washington Ocean Acidification Center Co-Director, I coordinate academic, state, federal, tribal and industry PIs on OA research of significance to Washington state waters and species.

Global ocean acidification observing: I am a Co-Chair of the Global OA Observing Network (GOA-ON) and a member of its Executive Council. I have co-chaired four GOA-ON workshops (US, UK, Australia, China) to build GOA-ON effort. I have represented GOA-ON at many events including WIOMSA in Tanzania, COP 23 in Germany, GEO Summit in Geneva, UNESCO Conference in Samoa, and a U.S. State Department Roundtable in Washington D.C. I now co-lead GOA-ON's UN Decade of Ocean Science for Sustainable Development endorsed programme OARS: Ocean Acidification Research for Sustainability.

Communication with elected officials: A Governor-appointee to the WA Blue Ribbon Panel on Ocean Acidification and a member of the West Coast Ocean Acidification and Hypoxia Science Panel, I am a Co-Director for the Washington OA Center, serving the Marine Resource Advisory Council and providing WA Legislature briefings. I was invited to brief the U.S. Senate Committee on Commerce, Science and Transportation, June 2013, on the ICOOS and FOARAM Acts. I have briefed the WA State Legislature on science needs at their request many times. I brief the U.S. Congressional delegation from Washington and Oregon annually about NANOOS progress and needs.

Service and Awards in last five years:

2022	Lockheed Martin Award for Ocean Science and Engineering
2022-present	UN Ocean Decade Collaborative Center for the Northeast Pacific Advisory Committee
2021-present	Canadian IOOS (CIOOS) Pacific Regional Oversight Committee
2021	UN Ocean Decade Programme Ocean Acidification Research for Sustainability (OARS) Co-Lead
2020-2022	Mellon Foundation Teaching Fellowship
2020	Olympic Coast National Marine Sanctuary Volunteer of the Year
2020-present	Marine Environmental Observation, Prediction, and Response Network, a Canadian Center of Excellence (MEOPAR) Chair
2020	National Academies of Science 'Sustaining Ocean Observations' Workshop Committee
2019-present	Global Ocean Acidification Observing Network (GOA-ON) Executive Council Co-Chair
2019-2022	NOAA Ecosystem Science and Management Working Group Co-Chair
2018-2019	OceanObs'19 Program Committee
2014-2023	Olympic Coast National Marine Sanctuary Advisory Council Primary Research Seat

Social Media and Videos:

Ocean Acidification Information Exchange interview article "Changing Waters with Jan Newton": https://express.adobe.com/page/IbggU45Xy8Erx/

UN Ocean Decade Programme "Ocean Acidification Research for Sustainability" video: https://www.youtube.com/watch?v=qos2kvYDzuc

NSF Convergence Accelerator project "Backyard Buoys" video: https://youtu.be/7rYTW_OSi-c

UN Ocean Conference session: "Ocean Acidification: Co-designing data connections to underserved communities for equitable outcomes" https://www.youtube.com/watch?v=ea7nOVrMvTM

AGU Thought Leadership Series: Washington Ocean Acidification Center video: https://www.youtube.com/watch?v=RHTYI-sknoA&t=2s; https://oceanacidification.uw.edu/

ROXANNE J CARINI

Seattle, WA 98118
206.941.5545 ⋄ rjcarini@uw.edu

EDUCATION

Ph.D., Civil and Environmental Engineering Jun 2014 - Jan 2019
University of Washington *Seattle, WA*
Geometry, Kinematics, and Energetics of Surf Zone Waves Near the Onset of Breaking Using Remote Sensing

M.S., Civil and Environmental Engineering Jul 2011 - Jun 2014
University of Washington *Seattle, WA*
Estimating Energy Dissipation Due to Wave Breaking in the Surf Zone Using Thermal Infrared Imagery

B.S., Applied Mathematics Sep 2007 - May 2011
Yale University *New Haven, CT*

PROFESSIONAL & RESEARCH EXPERIENCE

Deputy Director Mar 2023 - Present
Northwest Association of Networked Ocean Observing Systems (NANOOS) *Seattle, WA*

- Contribute to the Northwest Association of Networked Ocean Observing Systems' (NANOOS) mission to provide Pacific Northwest stakeholders with high quality ocean and coastal data, tools, and information they need to make responsive and responsible decisions about safety, livelihoods, and stewardship.
- Work collaboratively with the User Products Committee, Data Management Team, NANOOS Principal Investigators, and in consultation with NANOOS user communities, to improve and sustain NANOOS data products and tools.
- Perform administrative duties to support the NANOOS Executive Director, such as compiling the required six-month Progress Report, writing grant proposals, and participating in weekly meetings of the NANOOS Tri-Committee.

Senior Oceanographer Sep 2021 - Present
Applied Physics Laboratory (APL), University of Washington (UW) *Seattle, WA*

- Pursue funding for and conduct research at the intersection of physical oceanography and coastal engineering, with particular interest in nearshore wave dynamics and coastal hazards.
- Co-lead the Diverse and Inclusive Naval Oceanographic Summer Internship Program (DINO-SIP) to provide new experiences and professional development opportunities to undergraduate students who are historically underrepresented in STEM fields.

Research Associate Sep 2020 - Mar 2023
NANOOS *Seattle, WA*

- Served as liaison to NANOOS Principal Investigators (PIs) to ensure transfer of data to the NANOOS database for public access and to facilitate NANOOS PI synergies.
- Assisted in research cruises to recover and deploy NANOOS coastal moorings and seasonal water monitoring in Puget Sound for the Washington Ocean Acidification Center.
- Mentored new hire in Matlab skills for processing and visualizing CTD and glider data.

Postdoctoral Scholar Sep 2020 - Aug 2021
APL, UW *Seattle, WA*

- Led development of a pilot ocean acidification indicator for the West Coast Ocean Data Portal by engaging with scientific experts, resource managers, and state policy advisors.
- Synthesized and analyzed data for the Olympic Coast Ocean Acidification Regional Vulnerability Assessment.
- Participated in bi-monthly meetings of the Puget Sound Ecosystem Monitoring Program's (PSEMP) Marine Waters work group to share information, assess conditions, and coordinate monitoring across state, federal, tribal, and academic partners, and assisted in writing NANOOS' contributions to the PSEMP 2020 Marine Waters Overview.
- Co-taught the Pelagic Ecosystem Function Research Apprenticeship at Friday Harbor Laboratory during Fall Quarter.

Sea Grant Knauss Marine Policy Fellow / Contractor Mar 2019 - Sep 2020
U.S. Marine Mammal Commission *Bethesda, MD*

- Developed Congressional outreach materials, briefed legislative staffers, and attended subcommittee policy hearings.
- Wrote the science-based public comment letter regarding the National Marine Fisheries Service's revised critical habitat designation for the endangered Southern Resident killer whales.
- Assisted the Scientific Program Director on national and international advisory groups working to integrate marine mammal observations with established data networks to support research, conservation, and management needs.
- Crafted content for the MMC website and quarterly newsletter to engage the public and other stakeholders.

- Coordinated interagency working groups to revise the Survey of Federally Funded Marine Mammal Research.
- Designed a data visualization and analysis module for the survey to meet the needs of MMC and its federal agency partners.
- Performed quality control/assurance on the survey data, analyzed the results, and wrote a summary report for the MMC website.
- Conducted and analyzed a survey and literature review to assess attitudes and levels of involvement of marine mammal researchers on conservation, policy, and management issues.

Graduate Research Assistant Jul 2011 - Jan 2019

Applied Physics Laboratory, University of Washington *Seattle, WA*

- Designed and executed a field campaign to study wave forcing on the coast of North Carolina, deployed a suite of in-water and remote sensing instruments, and coordinated bathymetry surveys with the US Army Corps of Engineers' Field Research Facility.
- Developed an automated algorithm in Matlab to measure energy in breaking waves using images from a thermal infrared camera.
- Leveraged the high spatial and temporal resolution of a scanning laser to capture the key physics of waves at the onset of breaking.
- Assisted with studies of wave-current interactions at New River Inlet, NC, collected airborne data on estuarine fluid dynamics at the mouth of the Columbia River, and validated satellite products in the equatorial Pacific Ocean.
- Prepared curriculum for and taught a weekly graduate-level seminar that utilized the US Army Corps of Engineers' HEC-RAS modeling software to investigate river hydrodynamics and sediment transport.
- Led a weekly review of Open Channel Hydraulics and Sediment Transport lectures, graded assignments, and proctored exams.

Naval Research Enterprise Internship Program, Graduate Research Intern Jun 2016 - Aug 2016

US Naval Research Laboratory *Stennis, MS*

- Adapted recently published computer vision methods to improve reconstruction of the 3-D sea surface from stereo image pairs.
- Collaborated with a senior scientist to test the limitations of a commonly-used coastal bathymetry mapping tool.

Coastal and Estuarine Fluid Dynamics Summer Researcher Summer 2012

Friday Harbor Laboratories *San Juan Island, WA*

- Conducted a field experiment to measure tidally-driven flow between two islands and compared results with predictions from a regional model of coastal circulation to determine the time scale for nutrient replenishment.
- Co-authored a poster presentation of these results for the 2013 Gordon Research Conference on Coastal Ocean Circulation.

PUBLICATIONS

Newton, J., P. MacCready, S. Siedlecki, D. Manalang, J. Mickett, S. Alin, E. Schumacker, J. Hagen, S. Moore, A. Sutton, and **R. Carini**. 2021. *Multi-stressor observations and modeling to build understanding of and resilience to the coastal impacts of climate change*. Pp. 86–87 in Frontiers in Ocean Observing: Documenting Ecosystems, Understanding Environmental Changes, Forecasting Hazards. E.S. Kappel, S.K. Juniper, S. Seeyave, E. Smith, and M. Visbeck, eds, A Supplement to Oceanography 34(4), https://doi.org/10.5670/oceanog.2021.supplement.02-31.

Satterthwaite, E.V., N.J. Bax, P. Miloslavich, L. Ratnarajah, G. Canonico, D. Dunn, S.E. Simmons, **R.J. Carini**, K. Evans, V. Allain, W. Appeltans, S. Batten, L. Benedetti-Cecchi, A.T.F. Bernard, S. Bristol, A. Benson, P.L. Buttigieg, L.C. Gerhardinger, S. Chiba, T.E. Davies, J.E. Duffy, A. Giron-Nava, A.J. Hsu, A.C. Kraberg, R.M. Kudela, D. Lear, E. Montes, F.E. Muller-Karger, T.D. O'Brien, D. Obura, P. Provoost, S. Bruckner, L. Rebelo, E. Selig, O.S. Kjesbu, C. Starger, R.D. Stuart-Smith, M. Vierros, J. Waller, L.V. Weatherdon, T.P. Wellman, A. Zivian (2021), *Establishing the Foundation for the Global Observing System for Marine Life*, Frontiers in Marine Science.

Carini, R.J., C.C. Chickadel, A.T. Jessup (2021), *Surf Zone Waves at the Onset of Breaking: 2. Predicting Breaking and Breaker Type*, Journal of Geophysical Research: Oceans, 126, 4, https://doi.org/10.1029/2020JC016935.

Carini, R.J., C.C. Chickadel, A.T. Jessup (2021), *Surf Zone Waves at the Onset of Breaking: 1. LIDAR and IR Data Fusion Methods*, Journal of Geophysical Research: Oceans, 126, 4, https://doi.org/10.1029/2020JC016934.

Buscombe, D., **R.J. Carini**, S.R. Harrison, C.C. Chickadel, J.A. Warrick (2020), *Optical wave gauging using deep neural networks*, Coastal Engineering, 155, 103593, https://doi.org/10.1016/j.coastaleng.2019.103593.

Buscombe, D., and **R.J. Carini** (2019), *A Data-Driven Approach to Classifying Wave Breaking in Infrared Imagery*, Remote Sensing, 11, 859, https://doi.org/10.3390/rs11070859.

Carini, R. J., C. C. Chickadel, A. T. Jessup, and J. Thomson (2015), *Estimating wave energy dissipation in the surf zone using thermal infrared imagery*, Journal of Geophysical Research: Oceans, 120, 3937-3957, doi:10.1002/2014JC010561.

OUTREACH & VOLUNTEER SERVICE

Scientific Journal Peer Reviewer

- Nature Communications, Sep 2021
- Geoscience and Remote Sensing Letters, Mar 2020
- European Geophysical Union: Ocean Sciences, Feb 2017

· Coastal Management, Jan 2015

NANOOS Outreach Activities 2020 - Present
APL, UW *Seattle, WA*

· Coordinated and co-mentored a Louis Stokes Alliance for Minority Participation (LSAMP) undergraduate intern with NANOOS.

· Partnered with the Technology Access Foundation (Seattle non-profit), to bring STEM opportunities to students from traditionally underserved and underrepresented communities. Co-led three seventh grade classes through a primer on Marine Heatwaves, a demonstration of the NANOOS Tuna Fishers and Climatology apps, and student-led inquiry of data to identify and discuss Marine Heatwaves in the region.

The Light Collective 2021 - Present
Non-profit *Seattle, WA*

· The Light Collective (TLC) is a 501c3 non-profit organization whose mission is to create hope-oriented community where families who have a child with cancer build resilience, share delight, and connect with other families on a similar journey.

· Volunteered monthly as a family host for "Matchbox" events, developed a relationship with a family through virtual one-on-one and group meetings, shared in conversations, crafts, games, and general silliness.

National Ocean Science Bowl 2019-2021
Consortium for Ocean Leadership *Washington, DC*

· Served as a “Moderator” (2020, 2021) and “Science Judge”(2019) for the National Ocean Science Bowl competition finals.

Guest lecturer Nov 2019
Marine Ecology *George Washington University*

· Designed and presented an interactive lecture about critical habitat for killer whales, including a facilitated discussion on how ecological criteria relate to the policy definition of critical habitat.

Trout Unlimited Oct 2019
Savage Watershed *Garrett County, MD*

· Planted trees on private land along streams within the Savage Watershed to help restore habitat and improve water quality.

· Spoke with property owners about why they participate in the program and how it may impact their land management.

Public Speaking for Scientists: Workshop Presenter & Facilitator Jun 2016 - Jan 2019
Engage Science, University of Washington *Seattle, WA*

· Taught science communication skills and strategies for reaching a broad audience to 70 participants through a 90-minute lecture and workshop for the Institute of Translational Health Sciences.

· Facilitated small group exercises to practice communicating science to the general public for School of Social Work PhD students.

Engineering Discovery Days 2011 - 2018
University of Washington *Seattle, WA*

· Participated annually as organizer and facilitator to engage visiting K-12 students in food-dye-infused water density investigations, testing hypotheses about how salt and fresh water mix at a local landmark, the Ballard Locks.

Town Hall Seattle: UW Science Now Speaker Series May 2016
Town Hall Seattle *Seattle, WA*

· As a featured speaker at the cultural center in downtown Seattle, presented research about how breaking waves shape our coastlines to the general public.

Guest host, Voice of Vashon: Island Crossroads radio show Nov 2014
KVSH 101.9FM *Vashon, WA*

· Hosted expert panel to educate community on Marine Protected Areas, discuss the environmental risks of old septic systems on the island, and share funding opportunities to renovate home systems to be in compliance with WA Department of Ecology laws.

TRAININGS

Facilitation Basics for Coastal Managers, NOAA Office for Coastal Management, Instructed by Brooke Carney, Oct 2019

COMPASS Science Communication Workshop, Hosted by Consortium for Ocean Leadership, Apr 2019

CONFERENCES & EVENTS

Virtual Salish Sea Ecosystem Conference, Poster presentation, 2022

Coastal Solutions Workshop: Coastal Flood Modeling, Prediction and Observations for the U.S. West Coast, Event Planning Committee and Section Facilitator, 2021

World Marine Mammal Conference, Poster presentation, Barcelona, Spain, 2019

Alaska Beluga Whale Committee Meeting, Observer, Anchorage, AK, 2019

Arctic Futures 2050, Washington, DC, 2019

OceanObs'19, Honolulu, HI, 2019

Capitol Hill Oceans Week, Washington, DC, 2019

Marine Mammal Commission's Annual Meeting, Kona, HI, 2019

Puget Sound Day on the Hill with Salmon Days, Washington, DC, 2019

American Geophysical Union (AGU) Fall Meeting, e-Lightning presentation, Washington, DC, 2018

AGU Ocean Sciences Meeting, Oral presentation, Portland, OR, 2018

ComSciCon-PNW, Seattle, WA, 2017

SciTalk NW, Oral group presentation, Portland, OR, 2017

AGU Ocean Sciences Meeting, Poster presentation, New Orleans, LA, 2016

Young Coastal Scientists and Engineers Conference- North America, Oral presentation, Newark, DE, 2015

AGU Ocean Sciences Meeting, Oral presentation, Honolulu, HI, 2014

AGU Fall Meeting, Poster presentation, San Francisco, CA, 2012

AFFILIATIONS

Mentoring Physical Oceanography Women to Increase Retention (MPOWIR), Member, Mar 2021 - Present

The Coastal Society, Member, Jul 2019 - Present

Women's Aquatic Network, Member, Mar 2019 - Feb 2020

Society for Women in Marine Sciences, Seattle Chapter member, Oct 2017 - Present

American Association for the Advancement of Science, Member, Nov 2016 - Present

American Geophysical Union, Member, Jan 2011 - Present

Engage Science Board of Directors, UW, Member, Jun 2016 - Jan 2019

Curriculum Vitae

TROY TRAVIS TANNER

Software / Interface Engineer

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EDUCATION

B.A., University of Washington, Seattle, WA — 1997

WORK EXPERIENCE

Principal Software Engineer, Applied Physics Laboratory, UW	2017 - Present
Senior Software Engineer, Applied Physics Laboratory, UW	2011 - 2017
Software Engineer, Applied Physics Laboratory, UW	1997 - 2011
Undergraduate Software Engineer, Applied Physics Laboratory, UW	1993 - 1997

EXPERTISE

Interface design and development	Client-server architecture
Project management	Relational databases
Data visualization	Graphic design
Software development	3-D modeling
Usability testing	Animation

AWARDS & ACTIVITIES

Director's Award, Applied Physics Laboratory	2007
Winner of the American Physical Society fluid motion animation competition	1999
Innovative Technology Award	1997
Guest instructor for post-graduate oceanography and interface design classes	1997

PUBLICATIONS

Wartman J, Berman JW, Bostrom A, Mile S, Olsen M, Gurley K, Irish J, Lowes L, **Tanner T**, Dafni J, Grilliot M, Lyda A and Peltier J, "Research Needs, Challenges, and Strategic Approaches for Natural Hazards and Disaster Reconnaissance," Front. Built Environ. 6:573068. doi: 10.3389/fbuil.2020.573068 (2020)

Risien, C. M., **T. Tanner**, E. Mayorga, J. C. Allan, J. A. Newton, M. Kosro, R. Wold, and C. Seaton, "The NANOOS Visualization System (NVS): A decade of development and progress addressing stakeholder needs," OCEANS 2019 MTS/IEEE SEATTLE, Seattle, WA (2019).

Newton, J. A, J. Allan, and **T. Tanner**, "Recent NANOOS contributions to maritime operations and boater traffic," Sidelights 44(3): 28-29 (2014).

Martin, D. L., J. C. Allan, J. Newton, D. W. Jones, S. Mikulak, E. Mayorga, **T. Tanner**, N. Lederer, A. Sprenger, R. Blair, and S. A. Uczekaj, "Using web-based and social networking technologies to disseminate coastal hazard mitigation information within the Pacific Northwest component of the Integrated Ocean Observing System (IOOS)," OCEANS 2011 MTS/IEEE KONA, Waikoloa, HI (2011).

Mayorga, E., **T. Tanner**, R. Blair, A.V. Jaramillo, N. Lederer, C.M. Risien, and C. Seaton, "The NANOOS Visualization System (NVS): Lessons learned in data aggregation, management and reuse, for a user application," In Proceedings, MTS/IEEE OCEANS 2010, Seattle, 20-23 September, doi:10.1109/OCEANS.2010.5663792 (MTS/IEEE, 2010).

Risien, C.M., J.C. Allan, R. Blair, A.V. Jaramillo, D. Jones, P.M. Kosro, D. Martin, E. Mayorga, J.A. Newton, **T. Tanner**, and S.A. Uczekaj, "The NANOOS Visualization System: Aggregating, displaying, and serving data," In Proceedings, MTS/IEEE Oceans, Biloxi, MS, 26-29 October (MTS/IEEE, 2009).

Olsonbaker, J., **T. Tanner**, and D. Jones, "Improved decision making with Boater Information System," Proc., Georgia Basin Puget Sound Research Conference, 26-29 March, Vancouver, B.C. (2007).

N I C H O L A S R O M E

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2020-Present UNIVERSITY OF WASHINGTON Seattle, WA
Program Manager, Northwest Association of Networked Ocean Observing Systems

- Provides knowledge and strategic insight into the development of technical reports and communications materials on ocean observations in support of the NANOOS, as well as for goal- and agenda-setting associated with meetings, workshops, and conferences of regional, national, and international steering committees, governing councils, and working groups associated with NANOOS and its partners.
- Ensures successful program implementation by maintaining and growing regional stakeholder engagement and seeking new organizational and programmatic initiatives.
- Managing budgets, accomplishing project and program deliverables, drafting proposals for funding, and complying with awards.
- Recommends strategic action and supporting implementation to improve ocean observing related activities, including toward leveraging and maximizing collaboration across the NANOOS Governing Council, committees, and stakeholders.

2009-Present CONSORTIUM FOR OCEAN LEADERSHIP Washington, D.C.
Program Manager, Ocean Observing

- Coordinates activities across U.S. science and technology agencies and global intergovernmental organizations that collectively invest $7 billion in ocean observation programs
- Provides staff assistance on national and international organization policy issues associated with developing, operating, and maintaining ocean observing systems including data sharing and management
- Serves as primary interagency liaison between regional, national, and international stakeholders that includes both government and non-government officials
- Plans, formulates, initiates, and executes complex activities between U.S. federal agencies, including State Department, Office of Science and Technology Policy, Joint Chiefs of Staff, Department of Defense (Navy), National Aeronautics and Space Administration (NASA), National Science Foundation (NSF), National Oceanic and Atmospheric Administration (NOAA), on a variety of ocean science, technology, and policy activities
- Manages the planning, preparation, operation, and coordination of actions, communications, and reports for participating U.S. federal agencies and international bodies in developing the U.N. Global Ocean Observing System (GOOS) and U.S. Integrated Ocean Observing System (IOOS)
- Oversees all activities associated with the planning and execution of OceanObs'19 and its outcomes, recommendations, community white paper findings, and other relevant programs.

2007-2009 MONTEREY BAY AQUARIUM RESEARCH INSTITUTE Monterey, CA
Policy Analyst, National Ocean Economics Program

- Conducted economic analysis on national and state-level economic reports for ocean and coastal industries
- Worked with the private sector to acquire financial data sector for reporting national macroeconomic trends
- Contributed chapter report writing, economic analysis, and data illustration on specific ocean sectors
- Utilized federal agency databases for obtaining natural resource and economic data for analysis
- Provided regulatory assessments for science managers to guide a local $6,000,000 estuary restoration project

2006-2008 MONTEREY BAY UNIFIED AIR POLLUTION CONTROL DISTRICT Monterey, CA
Air Quality Researcher, Environmental Planning Division

- Developed air quality mitigation programs to reduce particulate emissions for meeting state standards
- Designed informational materials to promote best management practices for enhancing regional air quality
- Engaged with stakeholders to evaluate program effectiveness and presented findings at community workshops

2004-2006 UNITED STATES DEPARTMENT OF AGRICULTURE Phoenix, AZ
Hydrological Technician, U.S. Forest Service

- Collected hydrological field data and samples for an inventory of all water rights in the Tonto National Forest
- Measured stream discharge using instruments and technical devices for observing environmental conditions
- Developed and compiled observation data on water levels in designated wells, springs, and stock tanks
- Managed extensive water rights inventory database making corrections based on field observation notes
- Identified flora and fauna for reporting on the status of native and invasive species populations

EDUCATION

2008 MONTEREY INSTITUTE OF INTERNATIONAL STUDIES Monterey, CA
M.A. International Environmental Policy

2006 ARIZONA STATE UNIVERSITY Tempe, AZ
B.S. Applied Biological Sciences

PUBLICATIONS

- American Meteorological Society. State of Climate Report – OceanObs'19 Sidebar. 2020 (*anticipated*)
- Interagency Ocean Observation Committee. Measuring the Performance of Ocean Observing Systems: Pilot Metrics for Sea Level Rise, Ocean Acidification, and Harmful Algal Blooms. 2020.
- Frontiers in Marine Science. The Role of Stakeholders in Creating Societal Value from Coastal and Ocean Observations. OceanObs'19 Community White Paper. 2019.
- Interagency Ocean Observation Committee. U.S. Underwater Glider Workshop Proceedings. 2017.
- Interagency Ocean Observation Committee. Biological and Ecosystem Observations within United States Waters I: A Survey of Federal Agencies. 2016.
- Interagency Ocean Observation Committee. Biological and Ecosystem Observations within United States Waters II: A Workshop Report to Inform Priorities for the United States. 2016.
- National Ocean Council. Animal Telemetry Network Implementation Plan 2016-2021. 2016.
- Journal of Operational Oceanography. Advancing coastal ocean modelling, analysis, and prediction for the US Integrated Ocean Observing System. 2016.
- Interagency Ocean Observation Committee. Biological and Ecosystem Observations within United States Waters I: A Survey of Federal Agencies. 2016.
- Interagency Ocean Observation Committee. Biological and Ecosystem Observations within United States Waters II: A Workshop Report to Inform Priorities for the United States. 2016.
- Interagency Ocean Observation Committee. U.S. IOOS Summit Report: A New Decade for the Integrated Ocean Observing System. 2013
- Interagency Ocean Observation Committee. Measuring the Economic Impacts of Ocean Observations: Determining a Strategy for the Next Decade. 2012
- National Ocean Economics Program. State of the U.S. Ocean and Coastal Economies. 2009
- National Ocean Economics Program. Phase II Florida's Ocean and Coastal Economies Report. 2008

AFFILIATIONS

American Geophysical Union - Member
Marine Technology Society - Member
The Oceanography Society - Member

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A) PROFESSIONAL PREPARATION:

1997-2001 Ph.D. in Oceanography (biological), Oregon State University
1990-1993 M.S. in Oceanography (biological), Oregon State University
1986-1990 B.S. in Marine Science, University of South Carolina

B) PROFESSIONAL EXPERIENCE:

2022-present Associate Professor, College of Earth, Ocean and Atmospheric Sciences, Oregon State University
2021-present Governing Council Board Chair, Northwest Association of Networked Ocean Observing Systems (NANOOS)
2016-2022 Chief Technology Officer, Senior Research Scientist, Sea-Bird Scientific
2011-2016 Vice President Research & Development, Sea-Bird Scientific
2005-2011 Vice President Research & Development, Research Scientist, WET Labs
2003-2005 Senior Scientist, WET Labs
2003-2003 Research Technician, WET Labs
2001-2003 Post-Doctoral Research Scientist, Bigelow Laboratory for Ocean Sciences
1996-2000 Faculty Research Assistant, Oceanography, Oregon State University
1996-1997 Consultant, WET Labs, Inc.
1993-1996 Marine Research Specialist, Oceanography, University of Rhode Island
1990-1993 Graduate Research Assistant, Oceanography, Oregon State University

C) PUBLICATIONS:

Wu, S.-E., Shiller, A., Barnard, A., Azoulay, J. D., and Ng, T. N. 2022. Point-of-use printed nitrate sensor with desalination units. *Microchimica Acta*, *in press*. https://doi.org/10.1007/s00604-022-05314-5.

Bishop, J.B.B, Amaral, V.J, Lam, P.J., Wood, T.J., Lee, J., Laubach, A., Barnard, A., Derr, A., Orrico, C. 2022. Transmitted cross-polarized light detection of particulate inorganic carbon concentrations and fluxes in the ocean water column: Ships to ARGO floats. *Front. Remote Sens.*, (08); https://doi.org/10.3389/frsen.2022.837938.

Wu, S.-E., Yao, L., Shiller, A., Barnard, A. H., Azoulay, J. D., Ng, T. N. Dual-Gate Organic Electrochemical Transistors for Marine Sensing. Adv. Electron. Mater. 2021, 7, 2100223. https://doi.org/10.1002/aelm.202100223

Bialek, A., T. Goodman, Em Wooliams, J. F. S. Brachmann, J. Kuusk, I. Ansko, V. Vabson, I. Lau, C. MacLellan, S. Marty, M. Ondrusek, W. Servantes, S. Taylor, R. Van Dommelen, A. Barnard, V. Vellucci, G. Zibordi, A. Banks, N. Fox, R. Vendt, C. Donlon, T. Casal. 2020. Results from verification of reference irradiance and radiance sources laboratory calibration experiment campaign. *Remote Sens.*, 12(14); doi.org/10.3390/rs12142220.

Saba, G., E. K. Wright-Fairbanks, B. Chen, W-J. Cai, A. Barnard, C. Jones, C. W. Branham, K. Wang and T. Miles. 2019. The development and validation of a profiling glider deep ISFET-based pH sensor for high resolution observations of coastal and ocean acidification. *Frontiers in Marine Science*, 9:664. doi: 10.3389/mars.2019.00664.

Barnard, A., R. V. Dommelen, E. Boss, B. Plache, V. Simontov, C. Orrico, D. Walter, M. Lewis, D. Carlson. 2018. A new paradigm for ocean color satellite calibration and validation: accurate measurements of hyperspectral water leaving radiance from autonomous profiling floats (HYPERNAV). DOI: 10.10002/essoar.10500047.1.

Muller-Karger, F.E., E. Hestir, C. Ade, K. Turpie, D. A. Roberts, D. Siegel, R.J. Miller, D. Humm, N. Izenberg, M. Keller, F. Morgan, R. Frouin, A.G. Dekker, R. Gardner, J. Goodman, B. Schaffer, B. A. Franz, N. Pahlevan, A. G. Mannino, J.A. Concha, S. G. Ackleson, K.C. Cavanaugh, A. Romanou, M. Tzortziou, E. S. Boss, R. Pavlick, A. freeman, C.S. Rousseaux, J. Dunne, M.C. Long, E. Klein, G.A. McKinley, J. Goes, R. Leterlier, M. Kavanaugh, M. Rogger, A. Bracher, K.R. Arrigo, H. Dierssen, X. Xhang, F.W. Davis, B. Best, R. Guralnick, J. Moisan, H.M. Sosik, R. Kudela, C.B. Mouw, A.H. Barnard, S. Palacios, C. Roesler, E.G. Drakou, W. Appeltans, W. Jetz. 2018. Satellite sensor requirements for monitoring essential biodiversity variables of coastal ecosystems. *Ecol. Appl.,* 28(3): 749-760.

Saba, G. K., E. Wright-Fairbanks, T. N. Miles, B. Chen, W. Cai, K. Wang, A. H. Barnard, C. W. Branham, C. P. Jones. 2018. Developing a profiling glider pH sensor for high resolution coastal ocean acidification monitoring, in in *Proceeding of the MTS/IEEE Oceans 2010*, Charleston, SC. DOI: 10.1109/OCEANS.2018.8604918.

Gerbi, G.P., E. Boss, P.J. Werdell, C.W. Proctor, N. Haentjens, M.R. Lewis, K. Brown, D. Sorrentino, J.R.V. Zaneveld, A.H. Barnard, J. Koegler, H. Fargher, M. DeDonato, W. Wallace. 2016. Validation of ocean color remote sensing reflectance using autonomous floats. *J. Atmo. Oceanic Tech.,* 33: 2331-2352.

Chekalyuk, A., A. Barnard, A. Quigg, M. Hafez, Y. Zhao. 2014. Aquatic laser fluorescence analyzer: field evaluation in the norther Gulf of Mexico. *Optics Express*, 22: 21,641-21,656.

Roesler, C.S. and A. H. Barnard. 2013. Optical proxy for phytoplankton biomass in the absence of photophysiology: Rethinking the absorption line height. *Methods in Oceanography,* 7: 79-94. http://dx.doi.org/10.1016/j.mio.2013.12.003

Gilbert, M., J.A. Needoba, C. Koch, A. Barnard, A.M. Baptista. 2013. Nutrient loading and transformations in the Columbia River Estuary determined by high resolution in situ sensors. *Estuaries and Coasts*, 36(4): 708-727.

Sauer, M. J., C. S. Roesler, P. J. Werdell, A. Barnard. 2012. Under the hood of satellite empirical chlorophyll *a* algorithms: revealing the dependencies of maximum band ratio algorithms on inherent optical properties. *Optics Express,* 20(19): 20920-20933.

Barnard, A. H., J. A. Barth, M. D. Levine, B. K. Rhoades, J. M. Koegler III, A. R. Derr, et al. 2010. The coastal autonomous profiling and boundary layer system (CAPABLE), in *Proceeding of the MTS/IEEE Oceans 2010*, Seattle, WA. Doi: 10.1109/OCEANS.2010.5664447.

Moore, C., A. Barnard, P. Fietzek, M. R. Lewis, H. M. Sosik, S. White, and O. Zielinski. Optical tools for ocean monitoring and research, Ocean Sci. Discuss., 5, 659-717, 2008.

Orrico, C.M.**,** A.H. Barnard, C. Moore, M. Moline, I. Robbins, J. Morgan, C. Johnson, J.F. Case, J. Koegler, W. Strubhar. 2008. The underwater bioluminescence assessment tool (UBAT) a new

platform adaptable bioluminescence sensor for coastal and open ocean environments. *Proceedings of Ocean Optics XIX, Tuscany, Italy* .

Chang, G.C., A. Barnard, and J.R.V. Zaneveld. 2007. Optical closure in a complex coastal environment: particle effects. *Applied Optics*, 46(31): 7679-7692.

Sullivan, J.M., M.S. Twardowski, J.R.V. Zaneveld, C. Moore, A. Barnard, P. Donaghay, and B. Rhoades. 2007. The hyperspectral temperature and salinity dependencies of absorption by water and heavy water in the 400–750 nm spectral range. *Appl. Opt.*, 45:5294–5309.

Chang, G. C., A. H. Barnard, S. McLean, P. J. Egli, C. Moore, J. R. V. Zaneveld, T. D. Dickey, and A. Hanson, In situ optical variability and relationships in the Santa Barbara Channel: implications for remote sensing, *Applied Optics*, 45(15), 3593-3604, 2006.

Zaneveld, J.R.V., M.J. Twardowski, A.H. Barnard, and M.R. Lewis. Introduction to Radiative Transfer. In: *Remote Sensing of Coastal Aquatic Environments*, R.L. Miller, C.E. Del Castillo, and B.A. McKee, eds., Ch. 1, Springer, 2005.

Zaneveld, J.R.V., A.H. Barnard, E.S. Boss. 2005. Theoretical derivation of the depth average of remotely sensed optical parameters. *Optics Express,* 13(22): 9052-9061.

Twardowski, M.J., M.R. Lewis, A.H. Barnard, and J.R.V. Zaneveld. In-Water Instrumentation and Platforms for Ocean Color Remote Sensing Applications. In: *Remote Sensing of Coastal Aquatic Environments*, R.L. Miller, C.E. Del Castillo, and B.A. McKee, eds., Ch. 4, Springer, 2005.

Jahnke, R., J. Bane, A. Barnard, J. Barth, F. Chavez, H. Dam, E. Dever, P. DiGiacomo, J. Edson, R. Geyer, S. Glenn, K. Johnson, M. Moline, J. O'Donnell, J. Oltman-Shay, O. Persson, O. Schofield, H. Sosik, and E. Terrill. 2003. Coastal Observatory Research Arrays: A Framework for Implementation Planning, Skidaway Institute of Oceanography Technical Report TR-03-01.

Zaneveld, J.R.V., C. Moore, A.H. Barnard, M.S. Twardowski, and G.C. Chang. 2004. Correction and analysis of spectral absorption data taken with the WET Labs AC-S. *Proceedings of Ocean Optics XVII*, October 25-29, Freemantle, Australia.

Lee, Z., K. Carder, J.S. Patch, A.H. Barnard, D. Otis, C.C. Trees. 2003. Water properties derived from water color versus measured from water sample: Application of a new color-inversion algorithm. 2003. *Proceedings of SPIE – The International Society for Optical Engineering 7892.* DOI: 10.1117/12.466048.

McManus, M.A., A.L. Alldredge, A.H. Barnard, E. Boss, J.F. Case, T.J. Cowles, P.L. Donaghay, L.B. Eisner, D.J. Gifford, C.F. Greenlaw, C.M. Herren, D.V. Holliday, D. Johnson, S. MacIntyre, D.M. McGehee, T.R. Osborn, M.J. Perry, R.E. Pieper, J.E.B. Rines, D.C. Smith, J.M. Sullivan, M.K. Talbot, M.S. Twardowski, A. Weidemann, and J.R. Zaneveld. 2003. Characteristics, distribution and persistence of thin layers over a 48 hour period. Mar. Ecol. Prog. Ser., 261:1-19.

Mueller, J.L., G.S. Fargion, C.R. McClain, D.K. Clark, M. Yuen, V.S. Kuwahara, P.G. Strutton, F.P. Chavez, G. Lazin, S. McLean, M.R. Lewis, S.W. Brown, C. Johnson, K.R. Lykke, M.A. Yarbrough, M. Feinholz, S. Flora, W. Broenkow, Y.S. Kim, T.D. Dickey, D. Manov, X. Zheng, M.R. Abbott, R.M. Letelier, A. Barnard, J.R. Morrison, A. Subramaniam, L.W. Harding, R.A. Barnes. 2003. *Ocean Optics Protocols for Satellite Ocean Color Sensor Validation, Revision 4, Volume V: Special Topics in Ocean Optics Protocols and Appendices*. In NASA/ TM-2003-211621/Rev4-Vol.VI.

Stamnes, K., W. Li, B. Yen, H. Eide, A.H. Barnard, W.S. Pegau, and J.J. Stamnes. 2003. Accurate and self consistent ocean color algorithm: Simultaneous retrieval of aerosol optical properties and chlorophyll concentrations. Applied Optics, 42: 939-951.

Lee, Z., K.L. Carder, J.S. Patch, A.H. Barnard, D. Otis, and C. Trees. 2003. Water properties derived from water color versus measured from water sample: application of a new color-inversion algorithm. Proc. SPIE 4892, Ocean Remote Sensing and Applications, (8 May 2003); https://doi.org/10.1117/12.466048

Boss, E., W.S. Pegau, W.D. Gardner, J.R.V. Zaneveld, A.H. Barnard, M.S. Twardowski, G.C. Chang, and T.D. Dickey. 2001. Spectral particulate attenuation and particle size distribution in the bottom boundary layer of a continental shelf. J. Geophys. Res., 106, 9509-9516.

Boss, E., W.S. Pegau, A.H. Barnard, and J.R.V. Zaneveld. 2001. Spatial and temporal variability of absorption by dissolved material at a continental shelf. J. Geophys. Res., 106, 9499-9507.

Twardowski, M.S. and A. Barnard. 2001. Observing the Ocean: sensing technology and observation platforms. Maritimes, 43(4).

Twardowski, M.S., E. Boss, J.B. Macdonald, W.S. Pegau, A.H. Barnard, and J.R.V. Zaneveld. 2001. A model for estimating bulk refractive index from the optical backscattering ratio and the implications for understanding particle composition in case I and case II waters. J. Geophys. Res., 106, 14,129-14,142.

Yoder, J.A., J.E. O'Reilly, A.H. Barnard, T.S. Moore, C.M. Ruhsam. 2001. Variability in coastal zone color scanner (CZCS) Chlorophyll imagery of ocean margin waters off the US East Coast. *Cont. Shelf. Res.,* 21: 1191-1218.

Zaneveld, J.R.V, E. Boss, and A.H. Barnard. 2001. The influence of surface waves on measured and modeled irradiance profiles. Applied Optics, 40, 1442-1449.

Barnard, A.H., J.R.V. Zaneveld, and W.S. Pegau. 1999. Remotely sensed reflectance and the absorption coefficient: Closure and inversion. Applied Optics, 38, 5108-5117.

Barnard, A.H., J.R.V. Zaneveld, W.S. Pegau, J.L. Mueller, H. Maske, R. Lara-Lara, S. Alvarez-Borrego, R. Cervantes-Duarte, and E. Valdez-Holquin. 1999. The determination of PAR levels from absorption coefficient profiles at 490 nm. Ciencias Marinas, 25: 487–507.

Pegau, W.S., J.R.V. Zaneveld, A.H. Barnard, H. Maske, S. Alvarez-Borrego, R. Lara-Lara, R. Cervantes-Duarte. 1999. Inherent optical properties in the Gulf of California. Ciencias Marinas, 25: 469–485.

Barnard, A.H., W.S. Pegau, and J.R.V. Zaneveld. 1998. Global relationships in the inherent optical properties of the oceans. J. Geophys. Res., 103:24,955-24,968.

Petrenko, A.A., J.R.V Zaneveld, W.S. Pegau, A.H. Barnard, and C.D. Mobley. 1998. Effects of a thin layer on reflectance and remote-sensing reflectance. Oceanography, 11, 44-47.

Barnard, A.H., P.M. Stegmann, and J.A. Yoder. 1996. Seasonal surface ocean variability in the South Atlantic Bight derived from CZCS and AVHRR imagery. Cont. Shelf Res., 17, 1181–1206.

Bisagni, J., J. O'Reilly, A.H. Barnard, and C. Wolfteich. 1996. Determination of optimal aerosol thickness ratios over the Gulf of Maine. Cont. Shelf Res., 17, 635–654.

D) WORKSHOPS (past ~4 years)

The Fiducial Reference Measurement Network for Satellite Ocean Color. European Space Agency. National Physics Laboratory, Teddington, London, UK, 4-5 October, 2018.

6th Bio-Argo Workshop. Argo Data Management Team. Federal Maritime and Hydrographic Agency of Germany, Hamburg, Germany, 29-30 November, 2017.

Options for future European satellite OCR vicarious adjustment infrastructure for the Sentinel-3 OLCI and Sentinel-2 MSI series. European Space Agency. ESA/ESRIN, Frascati, Italy, 21-23 February, 2017.

E) KEY PRESENTATIONS (past 5 years)

Barnard, A., E. Boss. *A new paradigm for Ocean Color Satellite Calibration (and validation): HyperNAV.* International Ocean Colour Science Meeting, Busan, South Korea, April 2019.

Barnard, A., R. Van Dommelen, E. Boss, B. Plache, V. Simontov, C. Orrico, D. Walter, M. Lewis, D. Carlson. *A new paradigm for ocean color satellite calibration and validation: accurate measurements of hyperspectral water leaving radiance from autonomous profiling floats (HYPERNAV).* Ocean Optics XXIV, Dubrovnik, Croatia, October 2018.

Orrico, C., R. Van Dommelen, A. Barnard, R. Lamb, J. Foesenek, S. Muhammad, K. Brown, M. Dewey, A. Crisp, W. Strubhar, C. Moore. *Calibration uncertainty budget for Sea-Bird Scientific radiometers.* Ocean Optics XXIV, Dubrovnik, Croatia, October 2018.

Barnard, A.H., R. Van Dommelen, E. Boss, K. Brown, M. Lewis, B. Plache, J. Reiter, D. Carlson, J. Hutchins, S. Adams, J. Hochstein, S. Feener, A. Derr, D. Walter. *Hyperspectral radiometric device for accurate measurements of water leaving radiance from autonomous platforms for satellite vicarious calibrations.* Ocean Sciences Meeting, New Orleans, LA, USA, February 2016.

Dewey, M., E. Fry, E. Figueroa, M. Twardowski, A. Prosvirin, C. Orrico, A. Barnard. *Development of major new instrumentation for high accuracy measurement of backscattering-B_b and total scattering-b in natural waters.* Ocean Optics XXIII, Victoria, BC, Canada, October 2016.

F) COLLABORATORS & OTHER AFFILIATIONS:

(i) List of all collaborators during past 48 months (Last name, First, Affiliation):

Boss, Emmanuel, University of Maine; Bishop, James, University of California-Berkeley; Chao, Yi, SeaTREC; Roesler, Collin, Bowdoin College; Twardowski, Michael, Florida Atlantic University; Lewis, Marlon, Dalhousie University; Morrison, Ru, NERACOOS; Townsend, David, University of Maine; Saba, Grace, Rutgers University; Salisbury, Joseph, University of New Hampshire; O'Donnell, James, University of Connecticut; Fry, Edward, Texas A&M University; Haentjens, Nils, University of Maine; Werdell, Jeremy, NASA GSFC; Craig, Susanne, NASA GSFC; Muller-Karger, Frank, University of South Florida; Newton, Jan, NANOOS; Frouin, Robert, SIO UCSD; Mazloff, Matthew, SIO UCSD; Azoulay, Jason, Univ. S. Miss.; Ng, Tina N., UCSD; Shiller, Alan, Univ. S. Miss.

(ii) Graduate and Postdoctoral Advisors (affiliations):

Dr. Dudley Chelton, Oregon State Univ., Corvallis, OR; *Dr. Timothy Cowles*, Oregon State Univ., Corvallis, OR; *Dr. Collin Roelser*, Bowdoin College, Brunswick, ME.

G) PATENTS:

Barnard, Andrew H., Bruce K. Rhoades, John N. Koegler III, Alex R. Derr, Casey Moore, Daniel R. Whiteman, Percy L. Donaghay, James M. Sullivan. *Method and apparatus for controlling the motion of an autonomous moored profiler.* U.S. Patent 8,382,540 B2, February 2013.

Van Dommelen, Ronnie, Burkhard Plache, Keith Brown, Wesley D. Strubhar, Andrew H. Barnard, Scott Feener. *Aqueous solution constituent analyzer.* U.S. Patent 9,983,122 B1, May 2018.

H) AWARDS:

National Oceanographic Partnership Program Excellence in Partnering, 2013, for work on "Long-term in Situ Chemical Sensors for Monitoring Nutrients: Phosphate Sensor Commercialization and Ammonium Sensor Development", Lead PI Dr. Andrew Barnard.

I) APPOINTMENTS:

Governing Council Board Chair, Northwest Association of Networked Ocean Observing Systems (NANOOS)

Governing Council Representative for Industry, Northwest Association of Networked Ocean Observing Systems (NANOOS), 2014-present.

Adjunct Research Scientist, Bigelow Laboratory for Ocean Sciences, 2003-2014.

J**) MENTORING:**

Ph.D. Thesis Committee member, Michael J. Sauer, University of Maine, Oceanography, 2010-2011.

Summer Intern Program Program, WET Labs/Sea-Bird Scientific. Mentoring of 3 undergraduate students as the Intern Program Director, 2011-2013.

P. MICHAEL KOSRO Mar 27, 2023

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A. EDUCATION AND EMPLOYMENT

B.A.	Physics	University of Calif., Santa Cruz	1973	
M.S.	Petr. Engr.	Stanford University		1977
Ph.D.	Oceanography	University of Calif., San Diego	1985	

PROFESSIONAL BACKGROUND

Research Associate (Postdoctoral), Oregon State University	1984-1986
Assistant Professor (Senior Research), OSU	1986-1992
Associate Professor (Senior Research), OSU	1992-2001
Associate Professor, OSU	2001-2007
Professor, OSU	2007-present
Member, Outer Continental Shelf Scientific Committee, MMS	2003-2011
Vice Chair, NANOOS regional association of IOOS	2012-present

C. SCHOLARSHIP AND CREATIVE ACTIVITY

***Publication Statistics**:*

Google Scholar: https://scholar.google.com/citations?user=h7XLmiIAAAAJ&hl=en, h-index: 47, 112 pubs analyzed, avg 52 citations per pub, 5,793 citations.

Web of Science: h-index: 36; 68 pubs analyzed, avg. 49 citations per pub, 3326 citations in 2228 papers.

1. Publications (refereed, recent)

Risien, Craig, Brandy Cervantes, Melanie Fewings, John Barth, P. Michael Kosro (2023). A Stitch in Time: Combining More than Two Decades of Mooring Data from the Central Oregon Shelf. Submitted to *Data in Brief*, DIB-D-23-00151.

Yamada, Sylvia Behrens, Jennifer L. Fisher, P. Michael Kosro (2021), Relationship between ocean ecosystem indicators and year class strength of the invasive European green crab (Carcinus maenas) in Oregon estuaries. *Progress in Oceanography*, **196**, doi:10.1016/j.pocean.2021.102618.

Pasmans, I., A. L. Kurapov, J. A. Barth, P. M. Kosro, R.K. Shearman (2020). Ensemble of 4DVARs (En4DVar) data assimilation in a coastal ocean circulation model, Part II: Implementation offshore Oregon-Washington, USA, *Ocean Modelling*, **154**. Doi: 10.1016/j.ocemod.2020.101681.

Risien, C. M., J. A. Newton, T. Tanner, P. M. Kosro, E. Mayorga, R. Wold, J. C. Allan, and C. Seaton (2020), The NANOOS Visualization System (NVS): A Decade of Development and Progress Addressing Stakeholder Needs, Oceans 2019/IEEE, Seattle, 27-31 Oct 2019.

Barth, J.A., S. Allen, E.P. Dever, R. Dewey, W. Evans, R.A. Feely, J. Fisher, J.P. Fram, B. Hales, D. Ianson, J. Jackson, K. Juniper, O. Kawka, D. Kelly, J.M. Klymak, J. Konovsky, P.M. Kosro, A. Kurapov, E. Mayorga, P. McCready, J. Newton, I. Perry, C.M. Risien, M. Robert, T. Ross, R.K. Shearman, J. Schumacker, S. Siedliecki, V.L. Trainer S. Waterman, C.E. Wingard, (2019). "Better Regional Ocean Observing through Cross-Nation Cooperation: A case study from the Northeast Pacific", Frontiers in Marine Science, doi://10.3389/fmars.2019.00093.

Pasmans, I., A. L. Kurapov, J. A. Barth, A. Ignatov, P. M. Kosro, R. K. Shearman (2019). Why gliders appreciate good company: Glider assimilation in the Oregon-Washington coastal ocean 4DVAR system with and without surface observations. *Journal of Geophysical Research*, **124**(1): 750-772. doi: 10.1029/2018JC014230.

Soh, Hyun Sup, Sung Yong Kim, P. Michael Kosro, and Alexander Kurapov (2018). Do nonorthogonally and irregularly sampled scalar velocities contain sufficient information to reconstruct an orthogonal vector current field? *Journal of Atmospheric and Oceanic Technology*, **35** (4): 763-795. 10.1175/JTECH-D-17-0062.

Yoo, Jang Gon, Kim, Sung Yong, Cornuelle, Bruce D., Kosro, P. Michael, & Kurapov, Alexander L. (2017). A Noninterpolated Estimate of Horizontal Spatial Covariance from Nonorthogonally and Irregularly Sampled Scalar Velocities. *Journal of Atmospheric and Oceanic Technology*, 34(11), 2407–2430. doi: 10.1175/JTECH-D-17-0100.1

Hickey, B., S. Geier, N. Kachel, S. Ramp, P.M. Kosro, and T. Connolly, 2016. Alongcoast structure and interannual variability of seasonal midshelf water properties and velocity in the northern Californinia Current System. *Journal of Geophysical Research*, 121(10): 2408-7430. doi: 10.1002/2015JC011424

Sherman, Kate, Jack Barth, Flaxen Conway, Craig Risien, Mike Kosro, 2016. The Oregon Nearshore Research Inventory project: the importance of science and the scientific community as stakeholders in marine spatial planning. *Ocean & Coastal Management*, 130:290-298, doi: 10.1016/j.ocecoaman.2016.04.003.

Major Seagoing Expeditions

At-sea participant in more than 60 research cruises, many as chief scientist, since 1979 (FRONTS) to present, including CODE, CTZ, WOCE, TOGA/COARE, EBC, Coastal Mixing and Optics, NOPP, COAST and GLOBEC, in N. Pacific, S. Pacific, N. Atlantic and Indian Oceans. Mapping of hydrography and currents, with fixed station (CTD) and underway mapping (ADCP, SeaSoar) tools, and time-series measurements from fixed moorings. In last 25 years, have added remote-sensing of time-series maps of ocean surface currents from shore, using HF radiowaves (CODAR/SeaSonde).

JOHN B. MICKETT

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EXECUTIVE SUMMARY

Mickett is a seagoing physical oceanographer with a focus on coastal/estuarine dynamics, Arctic processes, finescale/microscale processes, mooring technology, and instrument development. He has more than three decades of sea-going experience. He was a founder of APL's Northwest Environmental Moorings lab (NWEM) and led the lab from 2014-2018. During his tenure he led the design, fabrication and maintenance of 9 real-time moorings deployed in the Salish Sea and on the Washington Coast, providing research-quality, publicly available data to stakeholders and researchers. He has been the lead on two NOAA Ocean Technology Transition (OTT) awards within the last 5 years. From 2015-2017 he co-led the successful OTT project to design, build and deploy a mooring that supported the Environmental Sample Processor (ESP), an instrument that allows the near real-time detection of harmful algal blooms (HABs). This work continues through the NOAA MERHAB program. From 2020-present he has led the integration of a water sampling system into an Ocean Aero Triton autonomous vehicle for use in offshore HAB sampling.

PROFESSIONAL PREPARATION

- PhD Physical Oceanography, August 2007, University of Washington, *Turbulent Entrainment Fluxes in the Eastern Pacific Warm Pool*, Prof. M. Gregg, advisor
- MSc Physical Oceanography, 2002, University of Washington, *Direct measurements of diapycnal mixing in a fjord reach—Puget Sound's Main Basin*, Prof. M. Gregg, advisor
- BSc Marine Science, 1994, U.S. Coast Guard Academy (High Honors)

APPOINTMENTS

- 2010–present: Senior Oceanographer, Applied Physics Laboratory, University of Washington (APL-UW)
- 2008–2010: Oceanographer III, APL-UW
- 2007–2008: Postdoctoral Researcher, APL-UW
- 1999–2007: Research Assistant, APL-UW
- 1994–2002: Commissioned Officer, United States Coast Guard

SELECT ACCOMPLISHMENTS & PRODUCTS

1. 2020-present: with N. Bond (WA State Climatologist), and two APL colleagues developed a set of five new metrics and a website that displays them to track environmental changes in Puget Sound in real time. This effort informs regional stakeholders, helping them interpret water mass changes and ecosystem or population shifts in Puget Sound. http://www.nanoos.org/products/ps_metrics/home.php
2. 2020-present: Collaborating with the Quileute Nation designed, built and deployed two advanced lander systems to track near-bottom hypoxic conditions on the Washington Shelf. These lander systems expanded the envelope oceanographic technology by enabling real-time, near-bottom measurements on the shelf along with some predictive capability based on observed velocities. http://www.nanoos.org/news/index.php?item=QuileuteLanders210708

3. 2014-2018: Founded and led the APL Northwest Environmental Moorings (NWEM), nwem.ocean.washington.edu, a Puget Sound and Washington Coast observational mooring program with 9 moorings, providing valuable near real-time observations to resource managers and the public and carrying out critical long-term climate monitoring. Following the 2015 Pacific marine heat wave, mooring observations proved invaluable to understanding the impact of the heat wave on Puget Sound. As part of this work, regularly provided freely available observations to a broad range of stakeholders to support monitoring and research of OA (Ocean Acidification), hypoxia, ecosystem function, and species health.
4. 2015-2017: Co-led an IOOS Ocean Technology Transition project to design, build and deploy a mooring system that could support remote, long-term deployments of the Environmental Sample Processor, an electromechanical, fluidics instrument developed by the Monterey Bay Research Institute (MBARI) to collect and analyze water samples *in situ* in near real-time. Mickett and team had six successful deployments of this system on the Washington shelf, providing valuable early warning of HABs to resource managers and to the public. These successes significantly expanded the application scope of the ESP, leading to at least three other remote-ESP deployment projects to date.

SELECT PUBLICATIONS

1) Fine, E. C., MacKinnon, J. A., Alford, M. H., Middleton, L., Taylor, J., Mickett, J. B., ... & Peacock, T. (2022). Double diffusion, shear instabilities, and heat impacts of a Pacific Summer Water intrusion in the Beaufort Sea. *Journal of Physical Oceanography*, *52*(2), 189-203.
2) Kunze, E., Mickett, J. B., & Girton, J. B. (2021). Destratification and Restratification of the Spring Surface Boundary Layer in a Subtropical Front. *Journal of Physical Oceanography*, *51*(9), 2861-2882.
3) Fine, E. C., Alford, M. H., MacKinnon, J. A., & Mickett, J. B. (2021). Microstructure mixing observations and finescale parameterizations in the Beaufort Sea. *Journal of Physical Oceanography*, *51*(1), 19-35.
4) Couto, N., Alford, M. H., MacKinnon, J., & Mickett, J. B. (2020). Mixing rates and bottom drag in Bering Strait. *Journal of Physical Oceanography*, *50*(3), 809-825.
5) Carter, G. S., Voet, G., Alford, M. H., Girton, J. B., Mickett, J. B., Klymak, J. M., ... & Tan, S. (2019). A spatial geography of abyssal turbulent mixing in the samoan passage. *Oceanography*, *32*(4), 194-203.
6) Fine, E. C., MacKinnon, J. A., Alford, M. H., & Mickett, J. B. (2018). Microstructure observations of turbulent heat fluxes in a warm-core Canada Basin eddy. *Journal of Physical Oceanography*, *48*(10), 2397-2418.
7) Hamann, M. M., Alford, M. H., & Mickett, J. B. (2018). Generation and propagation of nonlinear internal waves in sheared currents over the Washington continental shelf. *Journal of Geophysical Research: Oceans*, *123*(4), 2381-2400.
8) MacKinnon, J. A., Nash, J. D., Alford, M. H., Lucas, A. J., Mickett, J. B., Shroyer, E. L., ... & Wagner, G. L. (2016). A tale of two spicy seas. *Oceanography*, *29*(2), 50-61.
9) Voet, G., Girton, J. B., Alford, M. H., Carter, G. S., Klymak, J. M., & Mickett, J. B. (2015). Pathways, volume transport, and mixing of abyssal water in the Samoan Passage. *Journal of Physical Oceanography*, *45*(2), 562-588.
10) Alford, M. H., Girton, J. B., Voet, G., Carter, G. S., Mickett, J. B., & Klymak, J. M. (2013). Turbulent mixing and hydraulic control of abyssal water in the Samoan Passage. *Geophysical Research Letters*, *40*(17), 4668-4674.
11) Mickett, J. B., Serra, Y. L., Cronin, M. F., & Alford, M. H. (2010). Resonant forcing of mixed layer inertial motions by atmospheric easterly waves in the northeast tropical Pacific. *Journal of physical oceanography*, *40*(2), 401-416.
12) Mickett, J. B., Gregg, M. C., & Seim, H. E. (2004). Direct measurements of diapycnal mixing in a fjord reach—Puget Sound's Main Basin. *Estuarine, Coastal and Shelf Science*, *59*(4), 539-558.

Submitted:

13) Boury, S., Supekar R, Fine, E. C., Musgrave, R., Mickett, J. B., Voet, G., Odier, P., Peacock, T., Mackinnon, J. A. and Alford, M.H., "Observations of Double Diffusive Staircase Edges in the Arctic Ocean", submitted to Geophysical Res. Lett, April 2022.

Charles Seaton
Columbia River Inter-Tribal Fish Commission
700 NE Multnomah St, Portland, OR 97232
(503) 238-0667, cseaton@critfc.org

RESEARCH INTERESTS

- Numerical watershed-to-ocean modeling; long-term observation systems; data management; estuary dynamics; climate change; salmon conservation

EDUCATION

University of Massachusetts – Amherst, Amherst, MA:
- B.S., Botany 1995

Oregon Graduate Institute, Hillsboro, Oregon
- M.S., Environmental Science and Engineering 2000

PROFESSIONAL APPOINTMENTS

- **CMOP Program Coordinator**, Columbia River Inter-Tribal Fish Commission (CRITFC) 2020-present
  - Coordinate operations for Coastal Margin Observation and Prediction (CMOP) program
  - Conduct strategic planning to integrate CMOP capabilities into CRITFC
  - Lead CMOP numerical modeling development for Columbia River estuary and Pacific Ocean basin
- **Research Associate**, Oregon Health & Sciences University (OHSU) 2001-2020
  - Led data management and data visualization at NSF STC-CMOP at OHSU
  - Supported and developed Columbia River estuary modeling within CMOP

HONORS & AWARDS

- NOS Team Member of the Year (for external collaborators) 2022

SYNERGISTIC ACTIVITIES

- Transition of CMOP from OHSU to CRITF: Coordinated daily operations, budgeting and strategic planning for Coastal Margin Observation and Prediction program during and after the transition of the program from an academic institution to a tribally-led governmental agency 2020
- Pacific ocean model: Calibrated, validated, and analyzed SCHISM simulations integrating the existing Columbia River model into a first-of-its-kind 3-d baroclinic tidal ocean model of the Pacific basin, with funding from NOAA-NOS. 2020-2022
- Northwest Association of Networked Ocean Observing Systems (NANOOS) Data Management and Cyberinfrastructure (DMAC): Participated in the development of NANOOS DMAC methods over more than a decade, developed pilot methods for archiving observational data with NCEI, and helping to serve observational data and modeling to the regional and national community, in order to benefit the economy, the environment, and public safety. 2003-2023

SELECT PUBLICATIONS (3 OF 11)

- Herfort L, **Seaton C**, Wilkin M, Roman B, Preston C, Marin R, Seitz K, Smith M, Haynes V, Scholin C, Baptista A, Simon H. Use of continuous, real-time observations and model simulations to achieve autonomous, adaptive sampling of microbial processes with a robotic sampler. Limnology and Oceanography: Methods. 2015; 14(1):50-67.
- Baptista A, **Seaton C**, Wilkin M, Riseman S, Needoba J, Maier D, Turner P, Kärnä T, Lopez J, Herfort L, Megler V, McNeil C, Crump B, Peterson T, Spitz Y, Simon H. Infrastructure for collaborative science and societal applications in the Columbia River estuary. Frontiers of Earth Science. 2015; 9(4):659-682.
- Roegner G, **Seaton C**, Baptista A. Climatic and Tidal Forcing of Hydrography and Chlorophyll Concentrations in the Columbia River Estuary. Estuaries and Coasts. 2010; 34(2):281-296.

NSF BIOGRAPHICAL SKETCH

Provide the following information for the Senior personnel.
Follow this format for each person. **DO NOT EXCEED 3 PAGES.**

IDENTIFYING INFORMATION:

NAME: Manalang, Dana

ORCID: 0000-0002-8189-6704

POSITION TITLE: Research Scientist/Engineer

ORGANIZATION AND LOCATION: University of Washington - Applied Physics Lab, Seattle, WA, United States

Professional Preparation:

ORGANIZATION AND LOCATION	DEGREE (if applicable)	DATE RECEIVED	FIELD OF STUDY
University of California, Berkeley, Berkeley, CA	MENG	06/2000	Electrical Engineering
Florida Tech, Melbourne, FL	BENG	05/1998	Ocean Engineering

Appointments and Positions

2009 - present	Research Scientist/Engineer, University of Washington - Applied Physics Lab, Principal Engineer (2018-present), Seattle, WA, United States
2007 - 2009	Lead AUV Systems Engineer, Fugro Seafloor Surveys, Seattle, WA, United States
2003 - 2007	Account Manager, Dust Network, Hayward, CA, United States
2000 - 2003	Systems Engineer, ASML, Scotts Valley, CA, United States
1998 - 2000	Graduate Student Researcher, University of California, Berkeley, Berkeley, CA, United States
1995 - 1998	Intern, Office of Naval Intelligence, Suitland, MD, United States
1993 - 1994	Intern - Parasitology Lab, USDA, ARS, Beltsville, MD, United States

Products

Products Most Closely Related to the Proposed Project

1. Wilcock WS. D., Manalang DA, Fredrickson EK, Harrington MJ, Cram G, Tilley J, Burnett J, Martin D, Kobayashi T, Paros JM. A Thirty-Month Seafloor Test of the A-0-A Method for Calibrating Pressure Gauges. Frontiers in Earth Science. 2021 January 15; 8. Available from: https://www.frontiersin.org/article/10.3389/feart.2020.600671
2. Leveque R, Bodin P, Cram G, Crowell B, Gonzalez F, Harrington M, Manalang D, Melgar D, Schmidt D, Vidale J, Vogl C, Wilcock W. Developing a Warning System for Inbound Tsunamis from the Cascadia Subduction Zone. 2018/10/01. 1-10p. DOI: 10.1109/OCEANS.2018.8604709
3. Denny G, Harrington M, Manalang D, Kelley D. Overview of OOI/RSN cabled ocean observatory. The Journal of the Acoustical Society of America. 2018 September 01; 144:1955-1955. DOI: 10.1121/1.5068548

4. Manalang D, Delaney J. Axial seamount - restless, wired and occupied: A conceptual overview of resident AUV operations and technologies. 2016/09/01. 1-7p. DOI: 10.1109/OCEANS.2016.7761305
5. Marcon Y, Kelley D, Thornton B, Manalang D, Bohrmann G. Variability of Natural Methane Bubble Release at Southern Hydrate Ridge. Geochemistry, Geophysics, Geosystems. 2021 October 05; 22(10):-. Available from: https://onlinelibrary.wiley.com/doi/10.1029/2021GC009894 DOI: 10.1029/2021GC009894

Other Significant Products, Whether or Not Related to the Proposed Project

1. Delaney JR, Manalang DA. "Capturing" Transient Oceanographic Phenomena With "Resident" AUVs. MTS Journal. 2020 September; 54(5):8.
2. Song Z, Marburg A, Manalang D. Resident Seabed Robotic Systems: A Review. MTS Journal. 2020 September; 54(5):21.
3. Manalang D, Delaney J, Marburg A, Nawaz A. Resident AUV Workshop 2018: Applications and a Path Forward. 2018/11/01. 1-6p. DOI: 10.1109/AUV.2018.8729720
4. Manalang D, Daly K, Wilcock W. Persistent Mobile Ocean Observing: Marine Vehicle Highways. Marine Technology Society Journal. 2021 May 01; 55(3):86-87. Available from: https://www.ingentaconnect.com/content/10.4031/MTSJ.55.3.29 DOI: 10.4031/MTSJ.55.3.29
5. Manalang D, Waters B, Smith C, LaMothe P, Carlson M, Yan K. Adaptive Wireless Power for Subsea Vehicles. Marine Technology Society Journal. 2022 October 14; 56(5):36-44. Available from: https://www.ingentaconnect.com/content/10.4031/MTSJ.56.5.9 DOI: 10.4031/MTSJ.56.5.9

Synergistic Activities

1. Children's Book Author - "ROPOS and the Underwater Volcano"
2. Marine Technology Society member and ROV competition judge
3. Invited speaker on Ocean Observing Science and Engineering in multiple community and educational forums, including "Ignite Seattle," Mensa chapter meeting, Senior Computer club (Bowie, MD), Association of Filipino-American Engineers of Washington, and numerous K-12 schools.
4. Panel speaker at professional meetings (Blue Tech Week, DOE WPTO Peer Review, Ocean Obs, others)
5. Reviewer for NOAA OER, DOE Ocean Observing Prize, and MTS Oceans conferences

Certification:

When the individual signs the certification on behalf of themselves, they are certifying that the information is current, accurate, and complete. This includes, but is not limited to, information related to domestic and foreign appointments and positions. Misrepresentations and/or omissions may be subject to prosecution and liability pursuant to, but not limited to, 18 U.S.C. §§ 287, 1001, 1031 and 31 U.S.C. §§ 3729-3733 and 3802.

Certified by Manalang, Dana in SciENcv on 2023-03-27 20:14:48

BIOGRAPHICAL SKETCH

John (Jack) A. Barth
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Corvallis, OR 97331-5503 www.jackbarth.net ceoas.oregonstate.edu/profile/barth

A. PROFESSIONAL PREPARATION

University of Colorado, Physics (Cum Laude), B.A., 1982
Mass. Inst. of Technology Woods Hole Oceanographic Inst. Joint Program, Oceanography, Ph.D., 1988

B. APPOINTMENTS

Executive Director, Marine Studies Initiative, OSU (2016-present); Co-Lead (2014-2016)
Associate Dean for Research, College of Earth, Ocean, and Atmospheric Sciences, OSU (2011-2016)
Professor, College of Oceanic and Atmospheric Sciences, OSU (2001-present); Associate Professor, (1996-2001); Associate Professor (Senior Research), (1995-1996); Assistant Professor (Senior Research), (1989-1995); Research Associate (Postdoctoral), (1987-1989)

C. AWARDS

Carl-Gustav Rossby Award, Center for Meteorology and Physical Oceanography, MIT, 1988.
Best Presentation, Science Board Symposium, North Pacific Marine Science Organization (PICES), 2006.
Pattullo Award for Excellence in Teaching, College of Oceanic and Atmospheric Sciences, OSU, 2010.
Fellow, The Oceanography Society, 2013.
Fellow, The American Meteorological Society, 2017.

D. SELECTED PUBLICATIONS (of 137 total, *graduate student; **postdoc)

Most closely related to project:

Checkley, D. and J. A. **Barth**, 2009. Patterns and processes in the California Current System. *Progress in Oceanography*, **83**, 49-64, https://doi.org/10.1016/j.pocean.2009.07.028.

Pierce, S. D., J. A. **Barth, R. K. Shearman and A. Y. Erofeev, 2012. Declining oxygen in the Northeast Pacific. *Journal of Physical Oceanography*, **42**, 495-501, https://doi.org/10.1175/JPO-D-11-0170.1.

*Adams, K. A., J. A. Barth and F. Chan, 2013. Temporal variability of near-bottom dissolved oxygen during upwelling off central Oregon. *J. Geophys. Res*, **118**, https://doi:10.1002/jgrc.20361.

Durski, S. M., J. A. **Barth**, J. C. McWilliams, H. Frenzel and C. Deutsch, 2017. The influence of variable slope-water characteristics on dissolved oxygen levels in the northern California Current System. *J. Geophys. Res*., **122**, https://doi.org/10.1002/2017JC013089.

Barth, J. A., J. Fram, E. P. Dever, C. Risien, C. Wingard, R. W. Collier, and T. Kearney, 2018. Warm blobs, low-oxygen events and an eclipse: The Ocean Observatories Initiative Endurance Array captures them all. *Oceanography*, **31(1)**, 90-97, https://doi.org/10.5670/oceanog.2018.114.

Barth, J. A. and 30 co-authors, 2019. Better regional ocean observing through cross-nation cooperation: A case study from the Northeast Pacific. *Frontiers in Marine Science*, **6:93**, https://doi.org/10.3389/fmars.2019.00093.

Other significant

Barth, J. A., S. D. Pierce and T. J. Cowles, 2005. Mesoscale structure and its seasonal evolution in the northern California Current System. *Deep-Sea Research II*, **52**, 5-28.

*Adams, K., J. A. **Barth** and R. K. Shearman, 2016. Intraseasonal cross-shelf variability of hypoxia along the Newport, Oregon, Hydrographic line. *Journal of Physical Oceanography*, **46**, 2219-2238, https://doi.org/10.1175/JPO-D-15-0119.1.

Keller, A. A., L. Cianelli, W. W. Wakefield, V. Simon, J. A. **Barth** and S. D. Pierce, 2017. Species-specific responses of demersal fishes to near-bottom oxygen levels within the California Current large marine ecosystem. *Marine Ecology Progress Series*, **568**, 151-173, https://doi.org/10.3354/meps12066.

Sato, M., J. A. **Barth**, K. J. Benoit-Bird, S. D. Pierce, T. J. Cowles, R. D. Brodeur, and W. T. Peterson, 2018. Coastal upwelling fronts as a boundary for planktivorous fish distributions. *Mar. Ecol. Prog. Ser*., **595**, 171-186, https://doi.org/10.3354/meps12553.

Chan, F., J. A. **Barth**, K. J. Kroeker, J. Lubchenco, and B. A. Menge, 2019. The dynamics and impact of ocean acidification and hypoxia: Insights from sustained investigations in the northern California Current Large Marine Ecosystem. *Oceanography*, **32(3)**, 62-71, https://doi.org/10.5670/oceanog.2019.312.

Moser, M. L., D. Erickson, S. Corbett, J. A. Barth, A. Erofeev, and S. D. Pierce, 2022. Detecting acoustically-tagged green sturgeon in the northeast Pacific ocean. *Environmental Biology of Fishes*, https://doi.org/10.1007/s10641-022-01353-2.

E. SYNERGISTIC ACTIVITIES

- *Science planning activities*: Global Ocean Ecosystems Dynamics Eastern Boundary Current Program Implementation Team, 1993-1994; NSF Coastal Ocean Processes (CoOP) Wind-Driven Transport Experiment Planning, 1993; NSF Advances and Primary Research Opportunities in Physical Oceanography Steering Committee, 1997-1998; NSF CoOP Observatory Science Workshop Organizing Committee, 2002; NSF CoOP Synthesis Committee, 2005-2008; NSF Regional Class Research Vessel Scientific Oversight Committee, 2012-present.
- *Public science lectures/videos*: Operation Pathfinder Teacher Education Program, OSU Hatfield Marine Science Center, Newport, OR; Oregon Field Guide, Oregon Public Broadcasting, "Ocean Circulation" (2005), "Dead Zone Update" (2010); National Public Radio "Oregon's Dead Zone and Underwater Gliders" (2007); "Hypoxia: Dead Zone" video, https://www.youtube.com/watch?v=yh5Ev8VEbZ0&t=3s; "Ocean Acidification and Hypoxia" video, https://www.youtube.com/watch?v=7h08ok3hFSs&t=4s
- *Input to ocean policy*: Coastal Processes and Ballast Water Workshop, Pacific States Marine Fisheries Commission, 2002; Review Panel Member Huntington State Beach, CA, Shoreline Contamination Study, 2002-03; Oregon Ocean Policy Advisory Council Science & Technical Advisory Committee, 2006-present. West Coast Ocean Acidification & Hypoxia Science Panel, 2013-16. Oregon Ocean Acidification & Hypoxia Coordinating Council, Co-Chair, 2018-2022.
- *Leadership of national programs*: Global Ocean Ecosystems Dynamics Northeast Pacific Program Exec. Comm., 2000-2002; NSF Coastal Ocean Processes (CoOP) Steering Comm., 2000-2004; Northwest Association of Networked Ocean Observing Systems (NANOOS) Steering Committee, 2003-2008; NSF ORION Observatory Steering Committee, 2004-2007.
- *Leadership of international programs*: North Pacific Marine Science Organization (PICES) MONITOR Committee, 2004-present; International Symposium on Eastern Boundary Upwelling Ecosystems, June 2008, Canary Islands, Spain, Scientific Steering Committee, 2007-2008; OceanObs'09, September 2009, Venice, Italy, Program Committee, 2009; PICES Governing Council (2020-present) and Advisory Panel on North Pacific Coastal Ocean Observing Systems, 2015-present.

F. ADVISORS AND STUDENTS

ii) Advisors: **Post-doctoral:** J. S. Allen, Oregon State University; **Doctoral:** K. H. Brink, WHOI

(iii) Thesis Advisor (13) and Postgraduate-Scholar (9) Sponsor: **Masters:** Bassirou Diaw (1997), Senegal Hydro. Off.; Glenn May (1997); Maria Jose Juan Jorda (2006), AZTI, Spain; Jennifer Simeon (2000), NOAA GFDL; Ata Suanda (2009); Kate Sherman (2012); Otavio Mendes. **Doctoral:** R. Kipp Shearman (1999), OSU; Renato Castelao (2006), U. Georgia; Anthony Kirincich (2007), WHOI; Ata Suanda (2014), UNCW; Kate Adams (2014), Naval Info. War. Ctr Pacific; Piero Mazzini (2014), VIMS. **Postgraduate-Scholars:** Jay Austin (1998–2000), UMinn.; Darek Bogucki (1997–99), Texas A&M-CC; Andrew C. Dale (1997–99), Scottish Assoc. Mar. Sci.; Michael W. Ott (2001–04), Paul Smith's Coll.; Stephen D. Pierce (1995–98), OSU; Sangil Kim (2009-2011), Korea Inst. Atmos. Pred. Systems; Scott Durski (2015-17), OSU; Mei Sato (2016-17), WHOI; Jacqueline McSweeney (2017-2020), Stony Brook U.

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1. EDUCATION

Ph.D.	University of Canterbury, Department of Geography.	**1998**
M.Sc (Hons).	University of Canterbury, Department of Geography.	**1992**
B.S.	University of Canterbury, Department of Geography.	**1990**

2. CURRENT POSITION

Coastal Geomorphologist, Oregon Department of Geology and Mineral Industries, 2000 – present.

3. PREVIOUS POSITIONS

Courtesy Faculty Staff, Marine Resource Management Program, College of Earth, Ocean & Atmospheric Sciences, Oregon State University, 2000 - 2016

Post-Doctoral Research Associate working with Professor Paul Komar in the College of Oceanic & Atmospheric Sciences, Oregon State University, Jul 1999 - Jan 2001.

Research Fellow in the Department of Geography, University of Canterbury, Christchurch, New Zealand, Apr 1998 - Jun 1999.

Coastal consultant for Land and Water Studies (International) Ltd, Apr 1998 - Jun 1999.

4. MEMBERSHIPS, PROFESSIONAL SOCIETIES AND AWARDS

Member of the American Geophysical Union (1999-present)
2015 GSA Environmental and Engineering Geology Division (EEGD) E.B. Burwell, Jr. Award
Registered Geologist, State of Oregon.

5. RESEARCH INTEREST

Major research interest in understanding the role of: *coastal hazards, equilibrium beach forms, sediment dynamics, wave climates, shoreline management, El Niño/La Niña Southern Oscillation, coastal and ocean observing systems, climate change, tsunami.*

6. PUBLICATIONS

6.1 Refereed Papers

Leshchinsky, B., Olsen, M.J., Mohney, C., O'Banion, M., Bunn, M., **Allan, J.**, and McClung, R., 2019, Quantifying the Sensitivity of Progressive Landslide Movements to Failure Geometry, Undercutting Processes and Hydrological Changes: Journal of Geophysical Research: Earth Surface.

Allan, J.C., Priest, G.R., Zhang, J., and Gabel, L., 2018, Maritime Tsunami Evacuation Guidelines for the Pacific Northwest Coast of Oregon: *Natural hazards*, v. 94, no. 1, p. 21-52.

Barnard, P.L., Hoover, D., Hubbard, D.M., Snyder, A., Ludka, B.C., **Allan, J.**, Kaminsky, G.M., Ruggiero, P., Gallien, T.W., Gabel, L., McCandless, D., Weiner, H.M., Cohn, N., Anderson, D.L., and Serafin, K.A., *2017*, Extreme oceanographic forcing and coastal response due to the 2015-16 El Niño. *Nature Communications, doi:10.1038/ncomms14365.*

Priest, G.R., Witter, R., Zhang, Y.J., Goldfinger, C., Wang, K., and **Allan, J.C.**, 2017, New constraints on coseismic slip during southern Cascadia subduction zone earthquakes over the past 4600 years implied by tsunami deposits and marine turbidites: Natural Hazards, p. 1-29.

Zhang Y.J, Priest G.R, **Allan J.C**, Gabel L (2016) Benchmarking an unstructured-grid model for tsunami current modelling. *Pure and Applied Geophysics* 173 (12):4075–4087

Barnard, P.L., Short, A.D., Harley, M.D., Splinter, K.D., Vitousek, S., Turner, I.L., **Allan, J.**, Banno, M., Bryan, K. R., Doria, A., Hansen, J.E., Kato, S., Kuriyama, Y., Randall-Goodwin, E., Ruggiero, P., Walker, I.J., and Heathfield, D.K., 2015, Coastal vulnerability across the Pacific dominated by El Niño/Southern Oscillation: *Nature Geoscience*, 21 September 2015, 10.1038/NGEO2539

Baron, H., Ruggiero, P.; Wood, N.J.; Harris, E.L.; **Allan, J.**; Komar, P.D., and P. Corcoran (2014), Incorporating climate change and morphological uncertainty into coastal change hazard assessments, Natural hazards (DOI: 10.1007/s11069-014-1417-8).

Hapke, C.J.; Adams, P.N.; **Allan, J.**; Ashton, A.; Griggs, G.B.; Hampton, M.A.; Kelly, J., and Young, A.P., 2014. *Rocky Coast Geomorphology: A Global Synthesis – The USA*. In: Kennedy, D.M.; Stephenson, W.J., and Naylor, L. (ed.), Rock Coast Geomorphology: A Global Synthesis. London, Geological Society Publishing House, The Geological Society of London, Memoirs, 40. pp. 135-152.

Olsen, M.J.; **Allan, J.C.**, and Priest, G.R., 2012. Johnson Creek landslide movement and erosion quantification through 3D laser scanning. *Geo-Congress: State of the Art and Practice in Geotechnical Engineering*, Oakland, California: USACE, 10p.

Komar, P.D., **Allan, J.C.** and Ruggiero, P., 2012. U.S. Pacific Northwest Coastal Hazards: Tectonic and Climate Controls. In: C.W. Finkl (Editor), Coastal Hazards. Springer.

Allan, J.C.; Komar, P.D.; Ruggiero, P., and Witter, R.C., 2012. The March 2011 Tōhoku Tsunami and Its Impacts Along the U.S. West Coast. *Journal of Coastal Research*, 28(5), 1142-1153.

Witter, R.C.; Zhang, Y.; Wang, K.; Goldfinger, C.; Priest, G.R., and **Allan, J.C**., 2012. Coseismic slip on the southern Cascadia megathrust implied by tsunami deposits in an Oregon lake and earthquake-triggered marine turbidites. Journal of Geophysical Research, 117(B10303).

Priest, G.R., Schulz, W.L., Ellis, W.L, **Allan, J.C.**, Niem, A.R, Niem, W.A., 2011. Landslide stability: Role of rainfall-induced, laterally propagating, pore-pressure waves. Environmental & Engineering Geoscience, 17: 315-335.

Martin, D.L., **Allan, J.C.**, Newton, J., Jones, D.W., Mikulak, S., Mayorga, E., Tanner, T., Lederer, N., Sprenger, A., Blair, R., Uczekaj, S.A., *2011*: Using Web-based and social networking technologies to disseminate coastal hazard mitigation information within the Pacific Northwest component of the Integrated Ocean Observing System (IOOS). *Proc. Oceans'11, Oceans of Opportunity: International cooperation and partnership across the Pacific, Marine Technology Society,* Kona, Hawaii.

Komar, P.D., **Allan, J.C.** and Ruggiero, P., 2011. Sea Level Variations along the U.S. Pacific Northwest Coast: Tectonic and Climate Controls Journal of Coastal Research, 27(5): 808-823.

Barnard, P., **Allan, J.**, Hansen, J, Kaminsky, G., Ruggiero, P. and Doria, A., 2011. The impact of the 2009-10 El Niño on U.S. West Coast beaches, *Geophysical Research Letters*, 38, L13604, doi:10.1029/2011GL047707.

Allan, J.C., P.D. Komar, P. Ruggiero, *2011*: Storm surge magnitudes and frequency on the central Oregon coast. *Proc. Solutions to Coastal Disasters Conf., Amer. Soc. Civil Engrs,* Anchorage, Alaska: 53-64.

Komar, P.D., **Allan, J.C.**, Ruggiero, P., *2011*: Earth's changing climate and enhanced erosion of the U.S. Pacific Northwest coast. *Proc. Solutions to Coastal Disasters Conf., Amer. Soc. Civil Engrs,* Anchorage, Alaska: 209-220.

Ruggiero, P., Baron, H., Harris, E., **Allan, J.C.**, Komar, P.D, and Corcoran, P., *2011*: Incorporating uncertainty associated with climate change into coastal vulnerability assessments. *Proc. Solutions to Coastal Disasters Conf., Amer. Soc. Civil Engrs,* Anchorage, Alaska: 602-613.

Allan, J.C., P.D. Komar, P. Ruggiero, 2010, U.S. Pacific Northwest Sea Levels: Interdecadal Trends, El Niño Cycles and Storm Surge Elevations. *Eos Trans. AGU, 91(26), Ocean Sci. Meet. Suppl., Abstract IT51C-07*

Komar, P.D., **Allan, J.C.**, and Ruggiero, P., *2011*. Sea Level Variations along the U.S. Pacific Northwest Coast: Tectonic and Climate Controls. *Journal of Coastal Research*.

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Komar, P.D., **Allan, J.C.** and Ruggiero, P., 2009, Ocean wave climates: trend and variations due to earth's changing climate: In: Young, K. C. (Editor), *Handbook of Coastal and Ocean Engineering*.

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Dalon, M. M., Haller, M. and **Allan, J.C.**, 2007, Morphological characteristics of rip current embayments on the Oregon coast., Coastal Sediments' 07, Coastal Engineering and Science in Cascading Spatial and Temporal Scales, New Orleans, Louisiana.

Allan, J.C. and Hart, R., 2007, Profile dynamics and particle tracer mobility of a cobble berm constructed on the Oregon Coast, Coastal Sediments' 07, Coastal Engineering and Science in Cascading Spatial and Temporal Scales, New Orleans, Louisiana, pp. 449-462.

Allan, J.C., Hart, R. and Tranquilli, V., 2006. The use of Passive Integrated Transponder tags (PIT-tags) to trace cobble transport in a mixed sand-and-gravel beach on the high-energy Oregon coast, USA. *Marine Geology*, 232(1-2), p 63-86.

Allan, J.C., and P.D. Komar, *2006*: Climate controls on US West Coast erosion processes. *Journal of Coastal Research*, *22(3*): 511-529.

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Allan, J.C. and Komar, P.D. 2004. Environmentally compatible cobble berm and artificial dune for shore protection. Shore & Beach, 72(1): 9-18.

Allan, J.C., Komar, P.D., and R. Hart, 2003. A dynamic revetment and reinforced dune as "natural" forms of shore protection in an Oregon state park. Coastal Structures 2003 Conference, Portland, Oregon, ASCE, pp. 1048-1060.

Allan, J.C., P.D. Komar, G.R. Priest, 2003: Shoreline variability on the high-energy Oregon coast and its usefulness in erosion-hazard assessments. In: Byrnes, M.R.; Crowell, M. and Fowler, C., (eds.), Shoreline mapping and change analysis: Technical considerations and management implications. *Journal of Coastal Research Special Issue No. 38, pp. 83-105*.

Komar, P.D., **J.C. Allan**, and R. Winz, 2003: Cobble beaches - The "design with nature" approach for shore protection. *Proc. 5th International Symposium on Coastal Engineering and Science of Coastal Sediment Processes, Clearwater Beach, Florida*.

Allan, J.C., and P.D. Komar, 2002: A dynamic revetment and artificial dune for shore protection at Cape Lookout State Park, Oregon. *Proc. 28th International Conference on Coastal Engineering, Cardiff, Wales*.

Komar, P.D., **J.C. Allan**, 2002: Assessments of nearshore-process climates related to their potential for producing beach and property erosion. *Shore and Beach, Vol. 70(3)*: *31-40*.

Allan, J.C., P.D. Komar, 2002: Extreme Storms on the Pacific Northwest Coast during the 1997-98 El Niño and 1998-99 La Niña. *Journal of Coastal Research, Vol. 18(1), 175-193*.

Allan, J.C., W.J. Stephenson, R.M. Kirk, A. Taylor, 2002: Lacustrine shore platforms, Lake Waikaremoana, New Zealand. *Earth Surfaces Processes and Landforms, Vol. 27(2): 207-220.*

Komar, P.D., J.J. Marra, and **J.C. Allan**, 2002: Coastal-erosion processes and assessments of setback distances. *Proc. of Solutions to Coastal Disasters'02, Sand Diego, California, Amer. Soc. Civil Engrs, 808-822*.

Allan, J.C., and P.D. Komar, 2001: Wave climate change and coastal erosion in the US Pacific Northwest. *Proc. 4th International Symposium on Ocean Wave Measurement and Analysis, WAVES 2001, San Francisco, California, Amer. Soc. Civ. Engrs., 680-690*.

Allan, J.C., P.D. Komar, 2000: Are ocean wave heights increasing in the eastern North Pacific? *Eos, Transactions, American Geophysical Union*, 47: 561-567.

Marra, J.J., P.D. Komar, G. Diaz-Mendez, **J.C. Allan**, and P. Ruggiero, 2000: El Nino versus La Nina along the Oregon coast. *Proc. 17th International Conference of the Coastal Society, Portland, Oregon, 776-787.*

Komar, P.D., **J.C. Allan**, G. Diaz-Mendez, J.J. Marra, P. Ruggiero, 2000: El Nino and La Nina – Erosion processes and impacts. *Proc. 27th International Conference on Coastal Engineering, Sydney, Australia, 2414-2427.*

Allan, J.C., R.M. Kirk, 2000: Wind wave characteristics at Lake Dunstan, South Island, New Zealand, *New Zealand Journal of Marine and Freshwater Research, Vol. 34(4), 573-591.*

Kirk, R.M., P.D. Komar, **J.C. Allan**, W.J. Stephenson, 2000: Shoreline erosion on Lake Hawea, New Zealand, caused by high lake levels and storm-wave runup, *Journal of Coastal Research, Vol. 16(2), 346-356.*

6.2 Conference Abstracts and Magazine Articles

Allan, J.C., Gabel, L. and O'Brien, F., 2023. Monitoring the response and efficacy of a dynamic revetment constructed adjacent to the Columbia River South Jetty, Clatsop County, Oregon: 2013-2022, Coastal Sediments' 23, Inclusive coastal science and engineering for resilient communities., New Orleans, Louisiana.

Taherkhani, M., Leung, M., Ruggieror, P., Vitousek, S. and **Allan, J.**, 2023. Multiscale assessment of shoreline evolution in the US Pacific Northwest via a process-based model, Coastal Sediments' 23, Inclusive coastal science and engineering for resilient communities., New Orleans, Louisiana.

Risien, C.M., Tanner, T., Mayorga, E., Allan, J.C., Newton, J.A., Kosro, M., Wold, R. and Seaton, C., 2019. The NANOOS Visualization System (NVS): A Decade of Development and Progress Addressing Stakeholder Needs, Oceans'19, Seattle, Washington, pp. 8.

Newton, J., **Allan, J.C**. and Tanner, T., 2014. Recent NANOOS contributions to maritime operations and boater traffic, Sidelights. The Council of American Master Mariners, Inc., pp. 28-29.

Olsen, M.J., **Allan, J.C.**, and Priest, G.R., (2012), Johnson Creek landslide movement and erosion quantification through 3D laser scanning, paper presented at Geo-Congress: State of the Art and Practice in Geotechnical Engineering, USACE, Oakland, California.

Allan, J.C. and Ozkan-Haller, T., 2012. Mapping the wave climate in the nearshore offshore the Pacific Northwest coast, Sidelights. The Council of American Master Mariners, Inc, Vancouver, WA, pp. 18-19.

Allan, J.C., Martin, D.L. and Newton, J., 2012. Using social networking, mobile apps to distribute tsunami hazard information, Sea Technology. Compass Publications, Arlington, Virginia, pp. 61-64.

Barnard, P.L., G.M. Kaminsky, J.E. Hansen, **J.C. Allan**, P. Ruggiero, and D. Hoover, 2010: The impact of the 2009-10 El Nino on West Coast Beaches. *Abstract, EOS, Transactions,* AGU Fall Meeting, San Francisco, December 13-17.

Allan, J.C., P.D. Komar, P. Ruggiero, 2010: U.S. Pacific Northwest Sea Levels: Interdecadal Trends, El Niño Cycles and Storm Surge Elevations. *Eos Trans. AGU, 91(26), Ocean Sci. Meet. Suppl., Abstract IT51C-07*

Harris, E.L., P.Ruggiero, **J.C. Allan**, 2010: An integrated approach for evaluating coastal vulnerability in a changing climate. *The Coastal Society's 22nd International Conference, Wilmington, North Carolina.*

Baron, H.M, N.J. Wood, P.Ruggiero, **J.C. Allan**, P.Corcoran, 2010: Assessing societal vulnerability of U.S. Pacific Northwest communities to storm-induced coastal change. *The Coastal Society's 22nd International Conference, Wilmington, North Carolina.*

Risien, C.M., **J.C. Allan**, R. Blair, A.V. Jaramillo, D. Jones, P.M. Kosro, D. Martin, E. Mayorga, J.A. Newton, T. Tanner, and S.A. Uczekaj, 2009. The NANOOS Visualization System: Aggregating, displaying and serving data. *OCEANS 2009, MTS/IEEE Biloxi - Marine Technology for Our Future: Global and Local Challenges*, 9 p., v. 26-29, Oct. 2009.

Baptista, A., Zhang, Y., Turner, P., Zulauf, M., Kaminsky, G., Grantham, B., **Allan, J.**, Newton, J., Devol, A., MacCready, P., Rumrill, S., Haller, M., Ozkan-Haller, T., Gelfenbaum, G. and Ruggiero, P., 2006, NANOOS-Pilot technologies: a national role ?, Eos Trans. AGU,Ocean Sci. Meet. Suppl. Abstract OS14F-03, vol. 87, Honolulu, Hawaii.

Allan, J.C., 2006: Assessing the temporal and spatial variability of coastal change on the northern Oregon Coast. *Shoreline Change Conference 2, Charleston, USA*.

Allan, J.C., E. Gibney, R. Jackson, and P. Klarin, 2005: A quasi real-time storm hazard tool for assessing total water levels (wave runup plus tides) on the Oregon coast as part of NOAA's Pacific Northwest Coastal Storms Initiative. *Solutions to Coastal Disasters 2005, Charleston, South Carolina.*

Komar, P.D., and **J.C. Allan**, 2004: Climate controls on US west coast wave heights and tide levels, and ramifications to coastal management and engineering design. *29th International Conference on Coastal Engineering, Lisbon, Spain*.

Komar, P.D., and **J.C. Allan**, 2003: The earth's changing climate - ramifications for coastal management strategies and shore protection design. *Coastal Engineering Today Conference in honour of Prof. Robert Dean, Gainesville, Florida*.

Allan, J.C., and P.D. Komar, 2003: A dynamic revetment and reinforced dune as "natural" forms of shore protection in an Oregon state park. *Presenting at the Coastal Structures 2003 Conference, Portland, Oregon*.

Komar, P.D., **J.C. Allan**, and R. Winz, 2003: Cobble Beaches - The "design with nature" approach for shore protection. *Coastal Sediments 2003 Conference, Clearwater Beach, Florida*.

Allan, J.C., and P.D. Komar, 2002: A dynamic revetment and artificial dune for shore protection at Cape Lookout State Park, Oregon. *American Shore and Beach Preservation Authority Conference, Portland, Oregon*.

Allan, J.C., and P.D. Komar, 2002: A dynamic revetment and artificial dune for shore protection at Cape Lookout State Park, Oregon. *Proc. 28th International Conference on Coastal Engineering, Cardiff, Wales*.

Allan, J.C., and G.R. Priest, 2002: Evaluation of shoreline changes and coastal erosion hazards along the Oregon Coast. *Shoreline Change Conference, Charleston, USA*.

Allan, J.C., and P.D. Komar, 2001: Implications of changing deepwater wave climate to nearshore processes and coastal change. *Proc. 4th International Symposium on Ocean Wave Measurement and Analysis, San Francisco, USA*.

Allan, J.C., and P.D. Komar, 2000: The wave climate of the eastern North Pacific: Inter-annual variability and long-term trends in wave energies and storm frequency. *Abstract, EOS, Transactions,* AGU Fall Meeting, San Francisco, December 15-19.

Allan, J.C., 1999: Shoreline Development at Lake Dunstan, South Island, New Zealand. *Abstract, EOS, Transactions*, AGU Fall Meeting, San Francisco, December 13-17.

Allan, J.C., 1995: Nearshore shelf development, Lake Dunstan, New Zealand. *Abstract, 50th Anniversary New Zealand Geographical Society Conference*, Christchurch, September 1995.

6.3 Published Technical Papers

Allan, J.C., Zhang, J., O'Brien, F. and Gabel, L., 2022. Umpqua River tsunami modeling: Toward improved maritime planning response. Open-File Report O-22-07, Portland, Oregon, 76 pp.

Allan, J.C. and O'Brien, F.E., 2022. Earthquake and tsunami impact analysis for coastal Lane, Douglas and Coos County, Oregon. Open-File Report O-22-06, Portland, Oregon, 124 pp.

Allan, J. C., and O'Brien, F. E., 2021, Earthquake and tsunami impact analysis for coastal Lincoln County, Oregon, Open-File Report O-21-02.

Allan, J. C., O'Brien, F. E., Bauer, J. M., and Williams, M. C., 2020, Earthquake and tsunami impact analysis for coastal Tillamook County, Oregon, Open-File Report O-20-14.

Allan, J. C., O'Brien, F. E., Bauer, J. M., and Williams, M. C., 2020, Earthquake and tsunami impact analysis for coastal Clatsop County, Oregon, Open-File Report O-20-10.

Allan, J. C., Zhang, J., O'Brien, F., and Gabel, L., 2020, Coos Bay tsunami modeling: Toward improved maritime planning response, Open-File Report O-20-08, Oregon Department of Geology and Mineral Industries, Portland, Oregon.

Allan, J. C., 2020, Temporal and spatial changes in coastal morphology, Tillamook County, Oregon: Oregon Department of Geology and Mineral Industries, Open-File Report O-20-04.

Gabel, L.L., O'Brien, F. and **Allan, J.C.**, 2020. Local tsunami evacuation analysis of Nehalem Bay, Tillamook County, Oregon: Oregon Department of Geology and Mineral Industries Open File Report O-20-07, Portland, Oregon, 53 pp.

Gabel, L.L., O'Brien, F., **Allan, J.C.**, 2020, Tsunami Evacuation Analysis of Port Orford, Curry County, Oregon: Oregon Department of Geology and Mineral Industries Open file report O-20-05, 34 p.

Bauer, J.M., **Allan, J.C.**, Gabel, L.S., O'Brien, F.E. and Roberts, J.T., 2020. Analysis of earthquake and tsunami impacts for people and structures inside the tsunami zone for five Oregon coastal communities: Gearhart, Rockaway Beach, Lincoln City, Newport, and Port Orford. Open-File Report O-20-03, Portland, Oregon.

Allan, J.C., 2020. Temporal and spatial changes in coastal morphology, Tillamook County, Oregon. Open-File Report O-20-04, Oregon Department of Geology and Mineral Industries, Portland, Oregon.

Priest, G.R. and **Allan, J.C.**, 2019. Comparison of Oregon tsunami hazard scenarios to a probabilistic tsunami hazard analysis (PTHA). Open-File Report O-19-04, Oregon Department of Geology and Mineral Industries, Portland, Oregon.

Allan, J.C., and O'Brien, F., 2019, Columbia River Simulated Tsunami Scenarios. Oregon Department of Geology and Mineral Industries Open file report O-19-03, 12 p.

Allan, J.C., Zhang, J., O'Brien, F., and Gabel, L., 2018, Columbia River Tsunami Modeling: Towards Improved Maritime Planning Response, Oregon Department of Geology and Mineral Industries Special Paper 51, 83 p.

Allan, J.C., 2018, Maritime Guidance for Distant Source Tsunami Events: Port of Astoria, Clatsop County, Oregon and Lower Columbia River Estuary MTRG-2018-OR-01_Astoria, 25 p.

Gabel, L.L., O'Brien, F., **Allan, J.C.**, 2018, Tsunami Evacuation Analysis of Florence and Reedsport, Lane and Douglas Counties, Oregon: Oregon Department of Geology and Mineral Industries Open file report O-18-05, 95 p.

Gabel, L.L., O'Brien, F., and **Allan, J.C.**, 2018, Local tsunami evacuation analysis of Pacific City, Tillamook County, Oregon: Oregon Department of Geology and Mineral Industries Open file report O-18-06, 59 p.

Allan, J.C., Ruggiero, P., Cohn, N., O'Brien, F., Stimely, L., and Roberts, J.T., 2017. Coastal Flood Hazard Study, Lane and Douglas County, Oregon, Oregon Department of Geology and Mineral Industries, Portland, Oregon.

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Scientific Advisory Team Member for the West Coast Governors Agreement West Coast Hazards Map

Lower Columbia River Nearshore Beneficial Use Partners Group (Associated with the Lower Columbia Solutions Group)

Mouth of the Columbia River – Ocean Disposal Taskforce

Oregon Coastal Hazards Processes Working Group

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2007-present	WA Department of Ecology, Senior Coastal Engineer (Environmental Engineer 5)
1997-2007	WA Department of Ecology, Coastal Engineer (Environmental Engineer 4)
1995-1997	WA Department of Ecology, Coastal Engineer (Environmental Engineer 3)
1991-1995	WA Department of Ecology, Shoreline Engineer (Environmental Engineer 2)
1989-1991	U.S. Army Corps of Engineers, Civil Engineer

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