### DANIEL L. CODIGA, PH.D.

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## Curriculum Vitae – December, 2023

### **EDUCATION**

- *1996 Ph.D. Oceanography, University of Washington, Seattle.* Observations and physics of amplified subinertial tidal currents in stratification and mean shear flow at a seamount.
- *1991 M.S. Oceanography, University of Washington, Seattle.* Investigated stratified seamount-trapped wave dynamics using rotating-table experiments and numerical solutions.
- 1987 B.S. Applied Physics, Highest Honors, University of California Davis. Physical Oceanography Concentration.

### **EMPLOYMENT**

2023-Present: Ecosystem Services Senior Scientist, Running Tide Technologies Inc.

2014-Present: University Affiliate, University of Rhode Island, Graduate School of Oceanography.

2006-Present: Consulting, Sole Proprietor. Part time (10 hours/week).

2014-2023: Project Manager, Marine Information Analyst, Massachusetts Water Resource Authority.

2009-2014: Assoc. Marine Research Scientist, University of Rhode Island, Grad. Sch. of Oceanography. 2008-2014: Adjunct Professor, University of Rhode Island, Graduate School of Oceanography.

2007-2009: Asst. Marine Research Scientist, University of Rhode Island, Grad. Sch. of Oceanography.

2004-2007: Marine Research Associate, University of Rhode Island, Grad. Sch. of Oceanography.

1998-2004: Assistant Professor, University of Connecticut, Department of Marine Sciences.

1997-1998: Postdoctoral Research Scientist, University of Rhode Island, Grad. Sch. of Oceanography. 1996-1997: Postdoctoral Fellow, Université de Grenoble, France.

# ACADEMIC RESEARCH INTERESTS AND EXPERTISE

Estuarine, coastal, and shelf systems. Cross-disciplinary analyses of water quality including nutrient loads, eutrophication (chlorophyll and hypoxic events), indicator bacteria, and harmful algal blooms. Long-term trends and climate change effects. Application of water quality and hydrodynamic models. Statistics and metrics for model-observation comparision. Analysis of observations from moored instruments and vessel-based surveys. Tidal analysis: theory and software tools. Physical oceanography and fluid dynamics. Continuous density stratification and processes that determine vertical structure of currents, hydrographic properties, and water-borne materials. Novel field sampling technologies and methods: vessel of opportunity (ferry) sampling; moored profilers; autonomous surface craft.

JOURNAL ARTICLES (see also ResearchGate https://www.researchgate.net/profile/Daniel-Codiga)

Codiga, D.L., H.E. Stoffel, C.A. Oviatt, C. Schmidt, 2022. Managed nitrogen load decrease reduces chlorophyll and hypoxia in warming temperate urban estuary. Front. Mar. Sci. <u>https://www.frontiersin.org/articles/10.3389/fmars.2022.930347</u>

- Oviatt, C.A., H.E. Stoffel, K. Huizenga, L. Reed, D.L. Codiga, L. Fields, 2022. A tale of two spring blooms in a northeast estuary of the USA: how storms impact nutrients, multiple trophic levels and hypoxia. Hydrobiologia, 849, 1131-1148. <u>https://doi.org/10.1007/s10750-021-04768-7</u>
- Whitney, M.M., D.S. Ullman, and D.L. Codiga, 2016. Subtidal exchange in eastern Long Island Sound. J. Phys. Oceanogr. 46(8), 2351-2371. <u>Abstract.</u>
- Liu, Q., L.M. Rothstein, Y. Luo, D.S. Ullman, and D.L. Codiga, 2016. Dynamics of the periphery current in Rhode Island Sound. Ocean Modeling 105, 13-24. *Abstract.*
- Filimon, M.A. and D.L. Codiga, 2016. An AIS-based site planning method to help minimize collision risk during marine autonomous surface craft deployments. J. Atmos. Oceanic Tech. 33(6), 1251-1255. <u>Abstract.</u>
- Fields, L., J. Mercer, K.J.W. Hyde, M. Brush, S.W. Nixon, C. Oviatt, M.L. Schwartz, D. Ullman, D. Codiga, 2015. Comparison of surface chlorophyll, primary production, and satellite imagery in hydrographically different sounds off southern New England. Mar. Ecol. Prog. Ser. 535:29-45. Doi: 10.3354/meps11386. <u>Abstract.</u>
- Codiga, D.L., 2015. A marine autonomous surface craft for long duration, spatially explicit, multidisciplinary water column sampling in coastal and estuarine systems. J. Atmos. Oceanic Tech. doi: http://dx.doi.org/10.1175/JTECH-D-14-00171.1 <u>Abstract</u>.
- Ullman, D.S., D.L. Codiga, A. Pfeiffer-Herbert, and C.R. Kincaid, 2014. An anomolous near-bottom cross-shelf intrusion of slope water on the southern New England continental shelf. J. Geophys. Res. Oceans, 119, doi:10.1002/2013JC009259. <u>Abstract</u>.
- Codiga, D. L., 2012. Density stratification in an estuary with complex geometry: Driving processes and relationship to hypoxia on monthly to inter-annual timescales. J. Geophys. Res., doi:10.1029/2012JC008473. <u>Abstract.</u>
- Whitney, M.M., D.L. Codiga, D.S. Ullman, P.M. McManus, 2012. Tidal cycles in stratification and shear and their relationship to gradient Richardson number and eddy viscosity variations in estuaries. *J. Phys. Oceanogr.* 42, 1124–1133. doi: http://dx.doi.org/10.1175/JPO-D-11-0172.1 Abstract.
- Ullman, D.S., D.L. Codiga, D. Hebert, L.B. Decker, C.R. Kincaid, 2012. Structure and dynamics of the mid-shelf front in the New York Bight. J. Geophys. Res. 117, C01012, doi:10.1029/2011JC007553. <u>Abstract</u>.
- Whitney, M.M, and D.L. Codiga, 2011. Response of a large stratified estuary to wind events: Observations, simulations, and theory for Long Island Sound. J. Phys. Oceanogr., 41, 1308-1327, DOI: 10.1175/2011JPO4552.1. <u>Abstract.</u>
- Kremer, J.N., J. Vaudrey, D. Ullman, D. Bergondo, N. LaSota, C. Kincaid, D. Codiga, and M.J. Brush, 2010. Simulating property exchange in estuarine ecosystem models at ecologically appropriate scales. *Ecological Modelling* 221:1080-1088. <u>Abstract.</u>
- Codiga, D.L., H.E. Stoffel, C.F. Deacutis, S. Kiernan, and C.A. Oviatt, 2009. Narragansett Bay hypoxic event characteristics based on fixed-site monitoring network time series: Intermittency, geographic distribution, spatial synchronicity, and interannual variability. *Estuaries and Coasts*, 32:621-641, DOI 10.1007/s12237-009-9165-9. <u>Abstract.</u>
- Mau, J.-C., D.-P. Wang, D.S. Ullman, and D.L. Codiga, 2008. Model of the Long Island Sound outflow: Comparison with year-long HF radar and Doppler current observations. *Cont. Shelf Res.*, 28(14), 1791-1799, doi:10.1016/j.csr.2008.04.013. *Abstract.*
- Mau, J.-C., D.-P. Wang, D.S. Ullman, and D.L. Codiga, 2007. Characterizing Long Island Sound outflows from HF radar using self-organizing maps. *Est. Coast. Shelf Sci.*, 74, 155-165. *Abstract.*
- Mau, J.-C., D.-P. Wang, D.S. Ullman, and D.L. Codiga, 2007. Comparison of observed (HF radar, ADCP) and model barotropic tidal currents in the New York Bight and Block Island Sound. *Est. Coast. Shelf Sci.*, 72, 129-137. <u>Abstract.</u>

- Codiga, D.L. and D.A. Aurin, 2007. Residual circulation in eastern Long Island Sound: observed transverse-vertical structure and exchange transport. *Cont. Shelf Res.*, 27, 103-116. <u>*Abstract*</u>
- Park, K.-A., P. Cornillon, and D.L. Codiga, 2006. Modification of surface winds near ocean fronts: Effects of Gulf Stream Rings on scatterometer (QuikSCAT, NSCAT) wind observations. J. Geophys. Res. 111, C03021, doi:10.1029/2005JC003016. <u>Abstract</u>
- Codiga, D.L., 2005. Interplay of wind forcing and buoyant discharge off Montauk Point: Seasonal changes in velocity structure and a coastal front. J. Phys. Oceanogr. 35(6), 1068–1085. Abstract.
- Codiga, D.L., J.A. Rice, P.S. Baxley, and D. Hebert, 2005. Networked acoustic modems for real-time data telemetry from distributed subsurface instruments in the coastal ocean: Application to array of bottom-mounted ADCPs. *J. Atmos. Oceanic Tech.* 22, 704-720. *Abstract.*
- Edwards, C.A., T.A. Fake, D.L. Codiga and P.S. Bogden, 2004. Spring-summer frontogenesis at the mouth of Block Island Sound: 2. Combining acoustic Doppler current profiler records with a general circulation model to investigate the impact of subtidal forcing. *J. Geophys. Res.* 109, C12022, doi:10.1029/2003JC002133. <u>Abstract.</u>
- Codiga, D.L. and L.V. Rear, 2004. Observed tidal currents outside Block Island Sound: Offshore decay and effects of estuarine outflow. *J. Geophys. Res.*109, C07S05, doi:10.1029/2003JC001804. <u>Abstract.</u>
- Ullman, D.S. and D.L. Codiga, 2004. Seasonal variation of a coastal jet in the Long Island Sound outflow region based on HF radar and Doppler current observations. *J. Geophys. Res.* 109, C07S06, doi:10.1029/2002JC001660. <u>Abstract.</u>
- Codiga, D.L, J.A. Rice, and P.S. Baxley, 2004. Networked acoustic modems for real-time data delivery from distributed subsurface instruments in the coastal ocean: Initial system development and performance. *J. Atmos. Oceanic Tech.*, 21(2), 331-346. <u>*Abstract.*</u>
- Codiga, D.L., and P. Cornillon, 2003. Effects of geographic variation in vertical mode structure on sea surface topography, energy, and wind forcing of baroclinic Rossby waves. J. Phys. Oceanogr., 33, 1219-1230. <u>Abstract.</u>
- Codiga, D.L., D.P. Renouard, and A.M. Fincham, 1999. Experiments on waves trapped over the continental slope and shelf in a continuously stratified rotating ocean, and their incidence on a canyon. *J. Mar. Res.*, 57, 585-612. <u>*Abstract.*</u>
- Codiga, D.L., 1997. Trapped wave modification and critical surface formation by mean flow at a seamount with application at Fieberling Guyot. J. Geophys. Res., 102, 23025-23039. <u>Abstract.</u>
- Codiga, D.L., 1997. Physics and observational signatures of free, forced, and frictional stratified seamount-trapped waves. J. Geophys. Res., 102, 23009-23024. <u>Abstract.</u>
- Codiga, D.L. and C.C. Eriksen, 1997. Observations of low-frequency circulation and amplified subinertial tidal currents at Cobb Seamount. J. Geophys. Res., 102, 22993-23007. <u>Abstract.</u>
- Codiga, D.L., 1993. Laboratory realizations of stratified seamount-trapped waves. J. Phys. Oceanogr., 23, 2053-2071. <u>Abstract.</u>

### **OTHER REVIEWED PUBLICATIONS**

- Codiga, D.L. 2021. Analysis and Synthesis of Eutrophication-Related Conditions in Narragansett Bay (RI/MA USA): Updated Through 2019. NBEP Technical Report. NBEP-21-243. DOI: 10.6084/m9.figshare.14830890. *Full text (PDF and supporting code/data files)*.
- Codiga, D.L. 2020. Daily-Resolution 2001-2017 Time Series of Total Nitrogen Load to Narragansett Bay (RI/MA USA) from Bay-Wide Treatment Facility and Watershed Sources. NBEP Technical Report. NBEP-20-231B. DOI: 10.6084/m9.figshare.12573851. *Full text (PDF and supporting code/data files).*

- Codiga, D.L. 2020. Further Analysis and Synthesis of Narragansett Bay (RI/MA USA) Oxygen, Chlorophyll, and Temperature. NBEP Technical Report. NBEP-20-231A. DOI: 10.6084/m9.figshare.12547676. *Full text (PDF and supporting code/data files)*.
- Narragansett Bay Estuary Program. 2017. State of Narragansett Bay and Its Watershed (Chapter 16, Chlorophyll, pages 297-327). Technical Report. Providence, RI. *Full text (PDF)*.
- Narragansett Bay Estuary Program. 2017. State of Narragansett Bay and Its Watershed (Chapter 15, Dissolved Oxygen, pages 276-296). Technical Report. Providence, RI. *Full text (PDF)*.
- O'Donnell, J., R.E. Wilson, K. Lwiza, M.M. Whitney, W.F. Bohlen, D.L. Codiga, D.C. Bennett, T. Fake, M. Bowman, and J. Varekamp, 2014. The Physical Oceanography of Long Island Sound. In "Long Island Sound: Prospects for the Urban Sea", Springer Series on Environmental Management 2014, pp 79-158. Doi: 10.1007/978-1-4614-6126-5\_3. *Full text (PDF)*.
- Codiga, D.L., W.M. Balch, S.M. Gallager, P.M. Holthus, H.W. Paerl, J.H. Sharp, and R.E. Wilson, 2012. Ferry-based sampling for cost-effective, long-term, repeat transect multidisciplinary observation products in coastal and estuarine ecosystems. Community White Paper, IOOS Summit, Herndon, VA. <u>Full text (PDF)</u>.
- Codiga, D.L., 2011. Physical Oceanography and Air-Sea Interaction. Chapter 7 (p255-260) in "Part II, Potential Impacts Of Alternative Energy Development Resources in the North and Central Atlantic Ocean". Kaplan, B., Ed. 2011. Literature Synthesis for the North and Central Atlantic Ocean. U.S. Dept. of the Interior, Bureau of Ocean Energy Management, Regulation and Enforcement, Gulf of Mexico OCS Region, New Orleans, LA. OCS Study BOEMRE 2011-012. 447 pp. *Full text (PDF)*.
- Codiga, D.L., 2011. Physical Oceanography and Air-Sea Interaction. Chapter 2 (p11-32) in "Part I, Resources in the North and Central Atlantic Ocean". Kaplan, B., ed. 2011. Literature Synthesis for the North and Central Atlantic Ocean. U.S. Dept. of the Interior, Bureau of Ocean Energy Management, Regulation and Enforcement, Gulf of Mexico OCS Region, New Orleans, LA. OCS Study BOEMRE 2011-012. 447 pp. *Full text (PDF)*.
- Ullman, D.S. and D.L. Codiga, 2010. Characterizing the Physical Oceanography of Coastal Waters Off Rhode Island, Part 2: New Observations of Water Properties, Currents, and Waves. Technical Report 3, Appendix to Rhode Island Ocean Special Area Management Plan, 108pp. <u>Full text (PDF)</u>.
- Codiga, D.L. and D.S. Ullman, 2010. Characterizing the Physical Oceanography of Coastal Waters Off Rhode Island, Part 1: Literature Review, Available Observations, and A Representative Model Simulation. Technical Report 2, Appendix to Rhode Island Ocean Special Area Management Plan, 169pp. *Full text (PDF)*.

#### **REPORTS AND OTHER PUBLICATIONS**

- Werme C, Codiga DL, Libby PS, Carroll SR, Charlestra L, Keay KE. 2021. 2020 Outfall monitoring overview. Boston: Massachusetts Water Resources Authority. Report 2021-10. 58 p. *Full text (PDF)*.
- Libby PS, Borkman DG, Geyer WR, Turner JT, Costa AS, Taylor DI, Wang J, Codiga DL. 2021. 2020 Water column monitoring results. Boston: Massachusetts Water Resources Authority. Report 2021-07. 57 p. *Full text (PDF)*.
- Werme C, Keay KE, Libby PS, Taylor DI, Codiga DL, Charlestra L, Carroll SR. 2020. 2019 Outfall monitoring overview. Boston: Massachusetts Water Resources Authority. Report 2020-11. 58 p. *Full* <u>text (PDF).</u>
- Libby PS, Borkman DG, Geyer WR, Turner JT, Costa AS, Taylor DI, Codiga DL. 2020. 2019 Water column monitoring results. Boston: Massachusetts Water Resources Authority. Report 2020-08. 60 p. *Full text (PDF)*.
- Rutecki DA, Nestler EC, Diaz RJ, Codiga DL. 2019. 2018 Boston Harbor benthic monitoring report. Boston: Massachusetts Water Resources Authority. Report 2019-09. 82 p. *Full text (PDF)*.

- Ullman, D.S., C. Kincaid, C. Balt, D.L. Codiga, 2019. Hydrodynamic modeling of Narragansett Bay in support of the EcoGEM ecological model. University of Rhode Island, Graduate School of Oceanography. GSO Technical Report No. 2019-01. *Full text (PDF)*.
- Werme C, Keay KE, Libby PS, Codiga DL, Charlestra L, Carroll SR. 2019. 2018 Outfall monitoring overview. Boston: Massachusetts Water Resources Authority. Report 2019-07. 53 p. *Full text (PDF)*.
- Libby PS, Borkman DG, Geyer WR, Turner JT, Costa AS, Wang J, Codiga DL. 2019. 2018 Water column monitoring results. Boston: Massachusetts Water Resources Authority. Report 2019-08. 52 p. <u>Full text</u> (<u>PDF</u>).
- Rutecki DA, Diaz RJ, Nestler EC, Codiga DL, Madray ME. 2019. 2018 Outfall benthic monitoring results. Boston: Massachusetts Water Resources Authority. Report 2019-06. 59 p. *Full text (PDF)*
- Reilley, B., L. Charlestra, D.L. Codiga, K. Keay, D. I. Taylor, 2018. 25 years of monitoring, what have we learned? Nutrient levels in Massachusetts Bay and Boston Harbor. Proceedings of the Water Environment Federation. 2018(7):5808-5818. DOI: 10.2175/193864718825138600. *Full text (PDF)*.
- Werme C, Keay KE, Libby PS, Codiga DL, Taylor DI, Charlestra L, Carroll SR. 2018. 2017 Outfall monitoring overview. Boston: Massachusetts Water Resources Authority. Report 2018-07. 53 p. *Full* <u>text (PDF).</u>
- Libby PS, Borkman DG, Geyer WR, Turner JT, Costa AS, Wang J, Codiga DL. 2018. 2017 Water column monitoring results. Boston: Massachusetts Water Resources Authority. Report 2018-04. 59 p. <u>Full text</u> (<u>PDF</u>).
- Zhao L, Beardsley RC, Chen C, Codiga DL, Wang L. 2017. Simulations of 2016 Hydrodynamics and Water Quality in the Massachusetts Bay System using the Bays Eutrophication Model. Boston: Massachusetts Water Resources Authority. Report 2017-13. 111p. <u>Full text (PDF)</u>.
- Werme C, Keay KE, Libby PS, Codiga DL, Taylor DI, Wu DC, Charlestra L. 2017. 2016 Outfall monitoring overview. Boston: Massachusetts Water Resources Authority. Report 2017-12. 49 p. <u>Full</u> <u>text (PDF).</u>
- Libby PS, Borkman DG, Geyer WR, Turner JT, Costa AS, Wang J, Codiga DL, Taylor DI. 2017. 2016 Water column monitoring results. Boston: Massachusetts Water Resources Authority. Report 2017-11. 56 p. <u>Full text (PDF)</u>.
- Zhao L, Chen C, Beardsley RC, Codiga DL, Leo W. 2017. Simulations of Hydrodynamics and Water Quality in the Massachusetts Bay System during 2015 using the Bays Eutrophication Model. Boston: Massachusetts Water Resources Authority. Report 2016-16. 112p. *Full text (PDF)*.
- Werme C, Keay KE, Libby PS, Wu DC, Taylor DI, Codiga DL. 2016. 2015 Outfall monitoring overview. Boston: Massachusetts Water Resources Authority. Report 2016-11. 64 p. *Full text (PDF)*.
- Libby PS, Borkman DG, Geyer WR, Turner JT, Costa AS, Taylor DI, Codiga DL. 2016. 2015 Water column monitoring results. Boston: Massachusetts Water Resources Authority. Report 2016-12. 45 p. <u>Full text (PDF).</u>
- Zhao L, Chen C, Beardsley RC, Codiga DL, Leo W. 2016. Simulations of Hydrodynamics and Water Quality in the Massachusetts Bay System during 2014 using the Bays Eutrophication Model. Boston: Massachusetts Water Resources Authority. Report 2016-03. 105p. *Full text (PDF)*.
- Codiga DL, Rex AC, Coughlin K. 2016. Indicator bacteria in Massachusetts Bay 1999-2014: Water quality monitoring in receiving waters of the Massachusetts Water Resources Authority outfall. Boston: Massachusetts Water Resources Authority. Report 2016-01. 20 p. *Full text (PDF)*.
- Zhao L, Chen C, Beardsley RC, Codiga DL, Leo WS, Mickelson MJ, 2015. Modeling 2013 in Massachusetts Bay using the unstructured-grid Bays Eutrophication Model. Boston: Massachusetts Water Resources Authority. Report 2015-03. 102 p. *Full text (PDF)*.
- Zhao L, Chen C, Beardsley RC, Codiga DL, Leo WS, Mickelson MJ, 2015. Modeling 2012 in Massachusetts Bay using the unstructured-grid Bays Eutrophication Model. Boston: Massachusetts Water Resources Authority. Report 2015-02. 102 p. *Full text (PDF)*.

- Werme C, Keay KE, Libby PS, Wu D, Taylor DI, Codiga DL, Coughlin K. 2015. 2014 Outfall monitoring overview. Boston: Massachusetts Water Resources Authority. Report 2015-11. 70 p. *Full text (PDF)*.
- Codiga, D.L. and A. Nehra, 2012. FOSTER-LIS gridded data products: Updated methods and appended 2010-2011 observations. Technical Report 2012-01. Graduate School of Oceanography, University of Rhode Island, Narragansett, RI. 16pp. *Full text (PDF)*.
- Codiga, D.L., 2011. Unified tidal analysis and prediction using the UTide Matlab functions. Technical Report 2011-01. Graduate School of Oceanography, University of Rhode Island, Narragansett, RI. 59pp. <u>Full text (PDF).</u>
- Codiga, D. L., 2009. Circulation in Block Island Sound, Rhode Island Sound, and adjacent waters, with emphasis on subsurface flows. In: Sound Connections: The Science of Rhode Island and Block Island Sounds. Proceedings of the 7th Annual Ronald C. Baird Sea Grant Science Symposium. <u>Full text</u> (<u>PDF</u>).
- Codiga, D.L., 2008. A moving window trigger algorithm to identify and characterize hypoxic events using time series observations, with application to Narragansett Bay. Technical Report 2008-01. Graduate School of Oceanography, University of Rhode Island, Narragansett, RI, 101pp. <u>Full text (PDF)</u>.
- Ullman, D.S., D.L. Codiga, L. Decker, S. Stachelhaus, B. Moran, D. Hebert, C. Kincaid, M. Aleszczyk, J. Kohut, 2008. Observations of the structure and dynamics of wintertime mid-shelf fronts. Extended abstract, Physics of Estuaries and Coastal Seas Conference, Liverpool, England UK. <u>Full text (PDF)</u>.
- Codiga, D.L., 2007. Moored ADCP records from the Winter/Spring 2007 Mid-Shelf Fronts Experiment: Data report and preliminary description of tidal and subtidal flow. Technical Report 2007-05. Graduate School of Oceanography, University of Rhode Island. Narragansett, RI. 19pp. *Full text (PDF)*.
- Codiga, D.L., J.R. Fontaine, D.S. Ullman, and D.L. Hebert, 2007. Final report on moored wirewalker deployments off New Jersey in winter for Mid-Shelf Fronts project. Technical Report 2007-04. Graduate School of Oceanography, University of Rhode Island, Narragansett, RI. 11pp. *Full text (PDF)*.
- Codiga, D.L., 2007. FOSTER-LIS Gridded Data Products: Observed Current Profiles and Near-Surface Water Properties from Ferry-based Oceanographic Sampling in Eastern Long Island Sound. Graduate School of Oceanography, University of Rhode Island, Report 2007-01, Narragansett, RI, 14pp. <u>Full</u> <u>text (PDF)</u>.
- Codiga, D.L., 2006. Interim Report: Bay Window Synthesis, Assessing links between fish and water quality in Narragansett Bay. Prepared for Bay Window Cooperative Bay Program.
- Codiga, D.L., 2004. Quality Assurance Project Plan for FOSTER-LIS. Prepared for EPA Region One, Long Island Sound Study Office.
- Codiga, D.L. and A.E. Houk, 2002. Current profile timeseries from the FRONT moored array. Technical Report, Dept of Marine Sciences, University of Connecticut, 19 pp. *Full text (PDF)*.
- Codiga, D.L., D.S. Waliser, and R.E. Wilson, 2002. Observed evolution of vertical profiles of stratification and dissolved Oxygen in Long Island Sound. Proc. New England Estuarine Research Society / Long Island Sound Research Conf., Groton CT, pp 7-12. *Full text (PDF)*.
- Fletcher, C.L., J.A. Rice, R.K. Creber, and D.L. Codiga, 2001. Undersea acoustic network operations through a database-oriented server/client interface. OCEANS MTS/IEEE Conference Proceedings, Volume 4, 2071-2075.
- Codiga, D.L., J.A. Rice, and P.S. Bogden, 2000. Real-time delivery of subsurface coastal circulation measurements from distributed instruments using networked acoustic modems. Proc. MTS/IEEE Oceans 2000, 1, 575-582.
- Codiga, D.L., 2000. Environmental Impact Assessment, Front-Resolving Observation Network with Telemetry (FRONT) Study. Prepared for NOAA Office of Protected Resources, Marine Mammal Permits.
- Codiga, D.L., 1991. Fitting Fieberling Guyot. TopoNews, Newsletter of ONR Flow Over Abrupt Topography Accelerated Research Initiative, 4, 14-15.

### **PROFESSIONAL SERVICE (SELECTED)**

Massachusetts Institute of Technology Sea Grant, Advisory Committee, Member, 2017-present.

- Scientific and Technical Advisory Committee, Massachusetts Bays (MassBays) National Estuary Partnership. Chair. 2021-present.
- Presenter and panelist, "Scientific Forum on Hypoxia in Cape Cod Bay", Oct 2021.
- Scientific and Technical Advisory Committee, Massachusetts Bays (MassBays) National Estuary Partnership. Vice Chair. 2016-2021.
- Expert Panel, Region-wide Monitoring Strategy, EPA Southern New England Program, 2020-2021. Panelist, NSF EPSCoR Reverse Site Visit, Online, March 2020.
- Panelist, EPA Southern New England Partnership, Monitoring Workshop, April 2019.
- Moderator, Panel Discussion, Watershed Associations Water Quality Monitoring Priorities and Challenges, Boston Harbor Ecosystem Network, May, 2019.
- Co-convener, with D. Ammerman, C. Schmidt, and D.I. Taylor, Special session "Nutrient input declines and the restoration of urban coastal systems", Coastal and Estuarine Research Federation Biennial Conference, Providence 2017.
- Moderator, Panel "Data Management From Collection to Dissemination", Citizen Monitoring Coordinators' Summit, MassBays, Westborough, MA. September 2016.
- Moderator, Breakout Session "Intersystem and system comparison using models", Long Island Sound Water Quality Workshop, Groton, CT, July 2015.
- Strategic Planning and Implementation Team, NERACOOS (Northeast Regional Association for Coastal Ocean Observing Systems): MRWA Representative, 2015-2018 (Alternate URI/GSO Representative, 2009-2014).
- Organizing Committee, MABPOM (Mid-Atlantic Bight Physical Oceanography and Meteorology) Conference 2013.
- Panelist, NSF Coastal SEES (Science, Engineering, and Education for Sustainability), Virtual panel, March 2013.
- Invited participant, Integrated Ocean Observing System Summit, Herndon, VA, November 2012.
- Coordinated workshop "Narragansett Bay Hypoxia", for management and regulatory decision makers, Narragansett, May 2012. NOAA Coastal Hypoxia Research Program.
- Co-convener, Special Session, "Contemporary Issues in Estuarine Physics", TOS/ASLO/AGU Ocean Sciences, Salt Lake City, 2012.
- Scientific Judge, Student Poster Competition, TOS/ASLO/AGU Ocean Sciences, Salt Lake City, 2012. Panelist, NSF Physical Oceanography, Washington DC, November 2009.
- Project Advisor, Manchester Street Station Permit Reissuance, RI DEM RIPDES, 2009.
- Senior Fellow, URI Coastal Institute, since 2009.
- Scientific Judge, Student Poster Competition, Estuarine Research Federation Biennial Conference, Providence, RI, November 2007.
- Coordinated workshop "Narragansett Bay Hypoxia", for management and regulatory decision makers, Narragansett, October 2006. NOAA Coastal Hypoxia Research Program.
- Co-convener, Special Session "Stratified Coastal and Estuarine Circulation", AGU/ASLO Ocean Sciences Meeting, Honolulu, 2002.
- Organizing Committee, MABPOM (Mid-Atlantic Bight Physical Oceanography and Meteorology) Conference 2001.

#### **INVITED PRESENTATIONS (SELECTED)**

"Massachusetts Bay long-term trends: Temperature, stratification, oxygen, and wind and river events", Regional Association for Research on the Gulf of Maine Annual Meeting, Online, November 2021.

- "Massachusetts Bay Alexandrium and associated coastal toxicity: Models to better understand 19 years of observations", Coastal and Estuarine Research Federation Conference, Online, November 2021.
- "A changing Narragansett Bay: Synthesis of bay-wide eutrophication-related conditions and influences using multiple datasets and metrics". Narragansett Bay Estuary Program. Online, September 2021
- "The textbooks were right: lower nitrogen loads reduce chlorophyll and hypoxia... but now what?", EPA National Estuary Program, 2021 Virtual Spring NEP Workshop, Session 2 (Nutrients NEPs Making a National Impact on Nutrient Pollution), Online, April 2021.
- "Integrated wind and wave stresses reveal long-term increases in Gulf of Maine Storminess", co-authored by P.S. Dalyander and K.E. Keay, Gulf of Maine 2050 International Symposium, Portland, Maine, November 2019.
- "Inter-annual variability and long-term trends in water column ecology of the Massachusetts Bay system", co-authored by K.E. Keay and D.I. Taylor, Regional Association for Research on the Gulf of Maine, Annual Science Meeting, Portland, Maine, October 2018.
- "Seasonality, inter-annual variability, and long-term changes in water column ecology of the Massachusetts Bay system", co-authored by K.E. Keay and D.I. Taylor, Coastal and Estuarine Research Federation Biennial Conference, Providence, November 2017.
- "Disinfection and dilution prevent influence of Deer Island treatment plan effluent on indicator bacteria levels in Massachusetts Bay outfall receiving waters", with D. Wu, New England Water Environment Association Annual Conference, Boston, January 2017.
- "An autonomous surface craft for long-duration, multi-disciplinary sampling in coastal and estuarine systems (SCOAP)", Innovation in Oceanography, Ocean Engineering, Defense and Marine Trades, University of Rhode Island, Narragansett, RI. November, 2013.
- "Climatic Influences on Coastal/Estuarine Physical Oceanography... and Possible Interdisciplinary Implications", Climate Change Symposium, RI Sea Grant, Narragansett, RI. May, 2011.
- "Circulation in Block Island Sound, Rhode Island Sound, and adjacent waters, with emphasis on subsurface flows", 7th Annual Ronald C. Baird Sea Grant Science Symposium: Sound Connections, The Science of Rhode Island and Block Island Sounds, Block Island, RI. October, 2008.
- "Comparing factors (mostly physical) that impact oxygen dynamics in Long Island Sound and Chesapeake Bay", MD Sea Grant Workshop, Oxygen Dynamics in Chesapeake Bay, Adelphi, MD. August, 2004.

#### REVIEWER

- Journal of Physical Oceanography, Journal of Geophysical Research Oceans, Estuaries and Coasts, Continental Shelf Research, Estuarine, Coastal, and Shelf Science, Journal of Atmospheric and Oceanic Technology, Deep-Sea Research, Journal of Marine Research, Journal of Marine Systems, Physics of Fluids, Ocean Dynamics, Marine Technology Society Journal, Applied Ocean Research, Environmental Monitoring and Assessment, Journal of Oceanography, Journal of Ocean Engineering and Marine Energy.
- National Science Foundation (NSF) Physical Oceanography, Ocean Technology and Interdisciplinary Coordination, Coastal SEES (Science, Engineering, and Education for Sustainability), Major Research Instrumentation; National Oceanic and Atmospheric Administration – Coastal Hypoxia Research Program; National Ocean Partnership Program; National Environment Research Council UK; Sea Grant College Program – Massachusetts Institute of Technology, Maine/New Hampshire, Delaware, Mississippi Alabama Consortium.

#### SOFTWARE TOOLS DEVELOPED

<u>UTide</u>: Unified tidal analysis and prediction, m-files for Matlab (2011). Used by researchers and government agences in 13+ countries around the world.

<u>Moving window trigger</u>: Identification and quantitative characterization of hypoxic events using time series observations, m-files for Matlab (2008).

#### PROJECT WEBSITES RELEVANT TO OCEAN OBSERVING SYSTEMS

Surveying Coastal Ocean Autonomous Profiler:

http://www.po.gso.uri.edu/~codiga/scoap/SCOAP.htm

- *FOSTER-LIS: Ferry-based observations for science targeting estuarine research in Long Island Sound:* <u>http://www.po.gso.uri.edu/~codiga/foster/main.htm</u>
- Networked acoustic modems for real-time data telemetry from distributed subsurface instruments in the coastal ocean, application to array of bottom-mounted ADCPs: http://nopp.uconn.edu/ADCP/index.html

### **GRANT FUNDING**

- Grant, 2011-2015: CHRP: Observations and modeling of Narragansett Bay hypoxia and its response to nutrient management. PI, with 5 others from URI/GSO, Brown Univ., UConn, and VIMS. NOAA Coastal Hypoxia Research Program. Total \$766,004.
- Grant, 2011-2013: The surveying coastal ocean autonomous profiler (SCOAP): development and demonstration. PI, NSF Ocean Technology and Interdisciplinary Coordination. \$639,647.
- Grant, 2008-2010: Collaborative research: Tidal and subtidal processes governing exchange between a broad estuary and the coastal ocean: An observational and modeling approach. PI, with D. Ullman and M. Whitney. NSF Physical Oceanography. Total \$880,062.
- Grant, 2008-2010: Characterizing the physical oceanography of Rhode Island coastal waters. PI, with D. Ullman. Subcontract from Coastal Resources Management Council, for Ocean/Offshore Renewable Energy Special Area Management Plan (SAMP), funded by Rhode Island Office of Energy Resources. \$327,300.
- Grant, 2006–2008: Collaborative Research: Observations of the structure and dynamics of mid-shelf fronts. Co-PI with 4 others (PI Ullman). NSF Physical Oceanography. Total \$702,542.
- Grant, 2005–2010: Modeling tools to understand and manage hypoxia: Application to Narragansett Bay. Co-PI with 8 others (PI Oviatt). NOAA Coastal Hypoxia Research Program 2005. Total \$2,488,115.
- Grant, 2004–2006: Ferry-based Observations for Science Targeting Estuarine Research in Long Island Sound (FOSTER-LIS). PI. EPA, Long Island Sound Study, Base Program. \$103,810.
- Grant, 2002–2004: A ferry-based observing system for Long Island Sound: application to physical influences on hypoxia. PI. Connecticut Sea Grant College Program. \$198,594.
- Grant, 2001–2002: Laboratory experiments on tidally-driven estuarine residual circulation: effects of mixing and density stratification. PI. University of Connecticut Research Foundation, Large Grant Competition. \$19,000. Funds awarded; declined.
- Grant, 1999–2002: Suspended Matter Analysis Laboratory for Education and Research. Co-PI with six others (PI Whitlatch). Equipment grant funded by NSF Biological Infrastructure, Field Stations and Marine Laboratories. \$239,616 total.
- Grant, 1999–2002: Front-Resolving Observation Network with Telemetry. Funded by National Oceanographic Partnership Program. Co-PI with two UConn colleagues (PI Bogden, then O'Donnell), and others from several academic, government, & private institutions. UConn budget: \$1,401,239; \$2,395,921 total.
- Grant, 1999–2000: Video-based demonstrations of rotating fluid dynamics for Coastal Studies. PI. Funded by UConn Institute for Teaching and Learning Small Grant, and by Connecticut Sea Grant. \$500 ITL; \$1,300 CTSG.

- Grant, 1999–2000: SeaBird CTD, Deck Unit, and Carousel Water Sampler. PI, with seven Co-PIs. Funded by University of Connecticut Research Foundation, Annual Equipment Competition. \$52,500.
- Fellowship, 1996–1997: Rotating-table experiments on stratified ocean circulation influenced by bottom topography. PI. Funded by Chateaubriand Postdoctoral Fellowship Program, French Ministry of Science.

#### **HONORS & AWARDS**

2003 Teaching Excellence Award Nomination, AAUP University of Connecticut.

- 1996-1997 Chateaubriand Postdoctoral Scholarship, France.
- 1988-1991 Graduate Student Fellowship, Office of Naval Research.
- 1987 UC Davis Applied Physics Citation, to graduates with strongest academic record.

### **OCEANOGRAPHIC FIELDWORK**

- 2012-2014, Maritime skiff with marine autonomous surface craft SCOAP, multiple one day trips, Allen Harbor (North Kingstown, RI) and Upper West Passage, Narragansett Bay.
- 2009-2010, R/V Cap'n Bert, two deployments & two recoveries, one day each; moored ADCPs and CTD strings in Rhode Island Sound.
- 2009-2010, R/V Hope Hudner, four three-day daytime CTD surveys of Rhode Island and Block Island Sounds.
- 2009-2010, R/V Weicker, ~3 weeks of one-day cruises to collect underway ADCP and towed Acrobat/TOMASI transects in eastern Long Island Sound.
- 2007, R/V Endeavor, co-PI, three 10-day cruises for deployment/recovery of moored CTD profilers and ADCPs on Mid-Atlantic Bight continental shelf.
- 2002-2003, R/V Connecticut, Chief scientist, eight one-day cruises for deployment/recovery of moored CTD profilers in Long Island Sound.
- 1999-2002, R/V Connecticut, Chief Scientist on several 1-3 day cruises per year outside Block Island Sound: deploy bottom-mounted ADCPs, moored CTD profilers, communications buoy, acoustic modems; ship-based CTD and ADCP surveys.
- 1991, R/V Thompson, research assistant, two weeks: ADCP and CTD surveys at Cobb Seamount and current meter mooring recovery at Fieberling Guyot.
- 1990, R/V Washington, research assistant, two weeks: Current meter mooring deployment and CTD survey at Fieberling Guyot.

#### **TEACHING, GRADUATE**

Department of Marine Sciences, University of Connecticut

Descriptive Physical Oceanography, 3 credits, 5-15 students; 2000-2004.

Dynamic Physical Oceanography, 3 credits, 2 students; 2001.

Graduate School of Oceanography, University of Rhode Island

Guest lecturer (Dr. P. Cornillon), Geophysical Fluid Dynamics, 1997.

School of Oceanography, University of Washington

Teaching Assistant (Dr. P. Rhines), Fluid Dynamics, 1990, 1992.

#### **TEACHING, UNDERGRADUATE**

Guest Lecturer, URI Ocean Engineering 495, Senior Design Project, Plum Gut Site Evaluation for Tidal Hydrokinetic Potential, 2007. "Current profiles observed on a transect spanning eastern Long Island Sound, including Plum Gut"

Department of Marine Sciences, University of Connecticut Coastal Systems Science I (33%), 3 credits, 10-25 students; 1998-2004.
Introduction to Oceanography, 3 credits, 15-30 students; 1999-2004.
Oceanography Laboratory (50%), 1 credit, 10-20 students; 1999-2004.
Physics Department, University of California Davis Teaching Assistant (Dr. P. Yager), Continuum Mechanics, 1987.

#### **PROFESSIONAL SOCIETIES**

American Meteorological Society, Member American Geophysical Union, Member Coastal and Estuarine Research Foundation, Member

#### STUDENT ADVISEMENT AND RESEARCH

#### Graduate

Amit Nehra, M.S. Oceanography candidate, 2013-2015. Major Advisor.

- Qianqian Li, PhD Oceanography 2015, URI. Associate advisor.
- Michael Filimon, M.S. Ocean Engineering 2013, URI. Co-Major Advisor. Thesis: "<u>Site Planning</u> and On-Board Collision Avoidance Software to Optimize Autonomous Surface Craft Surveys". (<u>Resulting peer-review publication.</u>)
- Justin Rogers, M.S. Oceanography 2008, URI. Associate advisor. Thesis: "Circulation and transport in upper Narragansett Bay", 95pp.
- Dirk Aurin, PhD Marine Science 2010, UConn. Advisor, 2004-2005. Research on ferry-based observations of Long Island Sound tidal and residual currents. (*Resulting peer-review publication.*)
- Jenq-Chi Mau, PhD Marine Science 2006, Stonybrook University. Associate advisor. Dissertation: "Characteristic patterns of buoyant flows in the Block Island Sound: data analysis and numerical simulation", 102pp. (*Resulting peer-review publications:* <u>1</u> <u>2</u> <u>3</u>)
- Laura Rear, M.S. Oceanography 2002, UConn Marine Sciences. Advisor. Thesis: "Observations of tidal current and stratification profiles on the continental shelf outside Block Island Sound", 64pp. (*Resulting peer-review publication.*)
- Dane Frank, M.S. Oceanography 2003, UConn Marine Sciences. Associate advisor. Thesis: "Development of a technique for continuous monitoring of pallial cavity pressure and valve gape using the eastern oyster, Crassostrea virginica," 81pp.

Undergraduate

- Amit Nehra, Summer Research Assistant, University of Rhode Island, 2011. Process and interpret ferry-based observations, currents and water properties. <u>GSO Technical Report</u>.
- Christopher M. Bryan, Ocean Engineering major, 3<sup>rd</sup> & 4<sup>th</sup> year, University of Rhode Island. Research Assistant, 2008-2010. Analysis presented as poster at 2009 Gordon Conference on Coastal Ocean Circulation: "Relating Tidal Cycles in Shear and Turbulent Overturns to Residual Flow: Observations from Eastern Long Island Sound".
- Callie Megargle, Coastal Studies major, 3<sup>rd</sup> year. UConn Honors Program for Summer Research, 2002. Co-advisor. Poster presented at 2002 New England Estuarine Research Society / Long Island Sound Research Conference: "Flushing time of the Pawcatuck River estuary".
- John Bean, Coastal Studies major, 3<sup>rd</sup> year. Instructor (Indep. Study, 3 cr., Fall 1999). Report, "Interactions between commercial fishers and scientists on the inner continental shelf outside Block Island Sound", 21pp. *Full text (PDF)*.

### **OUTREACH (SELECTED)**

- "An Autonomous Surface Craft (Robotic Boat) for Oceanographic Sampling", Greenwich Bay Power and Sail Squadron, Warwick, RI, October 2013.
- "Fresher over saltier: stratification and hypoxia in Narragansett Bay", Rhode Island Coastweeks public lecture, October 2007.
- "Ferry-based Observations for Science Targeting Estuarine Research" website with educational content (www.gso.uri.edu/foster) for general public on physical oceanography of estuaries and measurement technologies, established 2006.
- Sessions "Oceanographic Observations" and "Coriolis and Ocean Currents", Science and Technology Day, Johns Hopkins University Center for Talented Youth, University of Connecticut, 2002.
- Panel member, "Careers in Marine Sciences", Bridgeport Aquaculture High School, 2001.
- Annual presentation "The Many Waves of Coastal Waters", with rotating table demonstrations; UConn Avery Point Campus, Open House for undergraduate recruitment, 1999-2003.