# Curriculum Vitae


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## I. Research Areas

My research spans several areas in oceanography, including estuarine and coastal dynamics, sea level rise, storm surge, air-sea interaction, turbulent mixing processes and internal waves. I am also actively engaged in interdisciplinary research to address challenging environmental problems such as hypoxia, ocean acidification, and harmful algal blooms. A major focus of my current research is the regional impact of climate change and extreme weather events on estuaries and coastal oceans.

## II. Education

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| 1991 | Ph.D, University of Oxford, Geophysical Fluid Dynamics |
| 1983 | B.Eng., Hohai University, Fluid Mechanics |

## III. Professional Appointments

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| 2009- | Professor, Horn Point Lab., Univ. of Maryland Center for Environmental Science. |
| 2014-2018 | Adjunct Professor, Department of Atmospheric and Oceanic Science, Univ. of Maryland, College Park. |
| 2001-2009 | Associate Professor, Horn Point Lab., Univ. of Maryland Center for Environmental Science. |
| 1996-2001 | Research Scientist, Institute of Ocean Sciences, Canada. |
| 1991-1996 | Research Associate, University of Victoria, Canada. |

## IV. Editorial Board and Awards

- Specialty Chief Editor, Frontiers in Marine Science (2022-)

- Associate Editor, Frontiers in Marine Science (2020-2022)
- Academic Editor, PLOS Climate (2021-)
- Associate Editor, Continental Shelf Research (2019-)
- Fulbright U.S. Scholar (2024)
- President's Award for Excellence in Application of Science (2023)
- UMCES Nominee for the University System of Maryland's Board of Regents Faculty Award in Scholarship and Research (2021)

## V. Publications

[125] **Li, M.**, R. Najjar, S. Kaushal, A. Mejia, R. Chant, D. Ralston, H. Burchard, A. Hadjimichael, A. Lassiter, X. Wang. 2024. The emerging global threat of salt contamination of water supplies in tidal rivers. *Environmental Science and Technology Letters*, invited global perspective, acceptable after revision.

[124] **Li, M.**, Y. Chen, R. Doyle, J. M. Testa, W-J. Cai, A. Gagnon, and C. Bott. 2024. Wastewater alkalinity addition for carbon emission reduction and marine removal. *Environmental Research Letters*, invited contribution, acceptable after revision.

[123] Chen, Y., and **M. Li**. 2024. Impact of Hurricane Ian (2022) on *Karenia brevis* blooms on the West Florida Shelf. *Geophysical Research Letters*, acceptable after revision.

[122] **Li, M.**, R. Li, Y. Guo, J. M. Testa, W-J. Cai, C. Shen, Y. Chen, and S. S. Kaushal. 2024. Disentangling the effects of global and regional drivers on diverse long-term pH trends in coastal waters. *AGU Advances*, acceptable after revision.

[121] Kaushal, S. S. … R. G. Najjar, A. I. Mejia, A. Lassiter, **M. Li**, R. J. Chant et al. 2024. Freshwater faces a warmer, saltier, and alkaline future: 10 risks from climate change, saltwater intrusion, and chain reactions. *Biogeochemistry*, acceptable after minor revision.

[120] Weber, M. A., L. A. Wainger, J. M. Testa, G. Waldbusser, and **M. Li**. 2024. Climate Resilience and Profitability Thresholds in Chesapeake Bay Oyster Aquaculture. *J. Env. Manag.*, https://doi.org/10.1016/j.jenvman.2024.123202.

[119] Testa, J., W. Liu, W. Boynton, D. Breitburg, C. Friedrichs, **M. Li**, D. Parrish, M. Trice, D. Brady. 2024. Physical and biological controls on short-term variations in dissolved oxygen in shallow waters of a large temperate estuary. *Estuaries & Coasts,* doi: https://doi.org/10.1007/s12237-024-01372-5.

[118] *Li, R., **M. Li**. 2024. Generation and evolution of internal solitary waves in a coastal plain estuary. *Journal of Physical Oceanography*, doi: https://doi.org/10.1175/JPO-D-23-0151.1.

[117] Glibert, P.M., **M. Li**. 2024. Warming, wheezing, blooming waters: hypoxia and harmful algal blooms. In: Bairdm Daneil and Elliott, Michael (eds) *Treatise on Estuarine and Coastal Science*, 2nd Edition, Vol. 4, pp. 401-444. Oxford. Elsevier.

[116] Shen, C., J.M. Testa, **M. Li**, B. Chen, W-J. Cai. 2023. Interannual variability of air-sea $CO_2$ flux in a large eutrophic estuary. *Water Research*, doi: https://doi.org/10.1016/j.watres.2023.120523.

[115] *Chen, Y., **M. Li**, P. M. Glibert, C. Heil. 2023. Mu*r*ky waters: modelling the succession from r to K strategies (diatoms to dinoflagellates) following a nutrient spill from a mining facility in Florida. *Limnology and Oceanography*, doi: 10.1002/lno.12420.

[114] Hall, N., J.M. Testa, **M. Li**, H. Pearl. 2023. Assessing drivers of estuarine pH: A comparative analysis of the continental U.S.A.'s two largest estuaries. *Limnology and Oceanography*, doi:10.1002/lno.12418.

[113] **Li, M.,** Y. Guo, W-J. Cai, J.M. Testa, C. Shen, R. Li, J. Su. 2023. Projected increase in carbon dioxide drawdown and acidification in large estuaries under climate change. *Communications Earth & Environment*, 4:68, https://doi.org/10.1038/s43247-023-00733-5.

[112] *Ni, W., **M. Li**. 2023. What drove the nonlinear hypoxia response to nutrient loading in Chesapeake Bay during the 20th century? *Science of the Total Environment*, https://doi.org/10.1016/j.scitotenv.2022.160650.

[111] Testa, J.M., J. Carstensen, A. Laurent, **M. Li**. 2023. Hypoxia and climate change in estuaries. Chapter 8 in Climate Change and Estuaries edited by M. J. Kennish, H.W. Paerl, J. R. Crosswell. CRC Press. 143-169. doi: 10.1201/9781003126096-9.

[110] Valle-Levinson, A., **M. Li.** 2023. Climate change and saltwater intrusion in estuaries. Chapter 6 in Climate Change and Estuaries edited by M. J. Kennish, H.W. Paerl, J. R. Crosswell. CRC Press. 99-112. doi: 10.1201/9781003126096-7.

[109] *Li, R. and **M. Li**. 2022. A regime diagram for internal lee generation in coastal plain estuaries. *Journal of Physical Oceanography*, doi: https://doi.org/10.1175/JPO-D-21-0261.1

[108] Glibert, P.M., W.-J. Cai, E. Hall, **M. Li**, K.L. Main, K. Rose, J.M. Testa, N.K., Vidyarathna. 2022. Stressing over the complexities of multiple stressors in marine and estuarine systems. *Ocean-Land-Atmosphere Research*, https://doi.org/10.34133/2022/9787258.

[107] *Li, R., **M. Li**, P.M. Glibert. 2022. Coupled carbonate chemistry-harmful algae bloom model for *Prorocentrum minimum* blooms in an estuary. *Frontiers in Marine Science*, 9:889233. doi: 10.3389/fmars.2022.889233

[106] Palinkas, C., P. Orton, M. Hummel, W. Nardin, A. Sutton-Grier, L. Harris, M. Gray, **M. Li** et al. 2022. Innovations in coastline management with natural and nature-based features (NNBF): lessons learned from three case studies. *Frontiers in Built Environment*, 8:814180, doi: 10.3389/fbuil.2022.814180

[105] Heil, C.A., S.A. Amin, P.M. Glibert, K.A. Hubbard, **M. Li**, J.M. Martinez, R. Weisberg, Y. Liu and Y. Sun. 2022. Termination patterns of *Karenia brevis* blooms in the eastern Gulf of Mexico. *Proceedings of 19th International Conference on Harmful Algae (ICHA)*, DOI: 10.5281/zenodo.7034923.

[104] Sobrinho, B., P.M. Glibert, V. Lyubchich, C.A. Heil, and **M. Li**. 2022. Time series analysis of the *Karenia brevis* blooms on the West Florida Shelf: relationships with El Niño – Southern Oscillation (ENSO) and its rate of change. *Proceedings of 19th International Conference on Harmful Algae (ICHA)*, DOI: 10.5281/zenodo.7036227.

[103] **Li, M.**, Y. Chen, F. Zhang, Y. Song, P.M. Glibert, and D.K. Stoecker. 2022. A three-dimensional mixotrophic model of *Karlodinium veneficum* blooms in a eutrophic estuary. *Harmful Algae*, https://doi.org/10.1016/j.hal.2022.102203.

[102] Schlenger, A., North, E., Li, Y., **M. Li,** W.M. Kemp. 2021. Quantifying the spatial and temporal variability in the three-dimensional habitat of Chesapeake Bay living resources to Environmental Change: a Proof-of-Concept Exercise. *Estuaries and Coasts,* 1-20, doi: 10.1007/s12237-021-00967-6

[101] **Li, M**., F. Zhang, P.M. Glibert. 2021. Seasonal life strategy of *Prorocentrum minimum* in Chesapeake Bay, USA: validation of the role of physical transport using a coupled physical-biogeochemical-harmful algal bloom model. *Limnology and Oceanography*, doi: 10.1002/lno.11925.

[100] Su, J. W-J. Cai, J.M. Testa, J. Brodeur, N. Hussian, B. Chen, **M. Li**, C. Shen, K.M. Scaboo, M. Dolan et al. 2021. Supply-controlled calcium carbonate dissolution decouples the seasonal dissolved oxygen and pH minima in Chesapeake Bay. *Limnology and Oceanography*, doi: 10.1002/lno.11919.

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[98] Cai, W-J, R. Feely, J. Testa, **M. Li**, W. Evans, S. Alin, Y. Xu, G. Pelletier, A. Ahmed, D. Greeley, J. Netwon and N. Bednarksek. 2021. Natural and anthropogenic drivers of acidification in large estuaries. *Annual Review of Marine Science*, https://doi.org/10.1146/annurev-marine-010419-011004.

[97] Ross, A.C., R.G. Najjar, **M. Li**. 2021 A metamodel-based analysis of the sensitivity and uncertainty of the response of Chesapeake Bay salinity and circulation to

projected climate change. *Estuaries and Coasts*, 44, 70-87, https://doi.org/10.1007/s12237-020-00761-w.

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[95] **Li, M.**, R. Li, W-J. Cai, J.M. Testa, C. Shen. 2020. Effects of wind-driven lateral upwelling on estuarine carbonate chemistry. *Frontiers in Marine Science*, doi: 10.3389/fmars.2020.588465.

[94] Li, S., C. Chen, Z. Wu, R.C. Beardsley, **M. Li**. 2020. Impacts of ocean mixing layer on hurricanes: a simulation experiment with Hurricane Sandy. *Journal of Geophysical Research-Oceans,* 125, e2019JC015851. https:// doi.org/10.1029/2019JC015851.

[93] Wiernicki, C.J., M.H.P. O'Brien, F. Zhang, V. Lyubchich, **M. Li**, D.H. Secor. 2020. The recurring role of storm disturbance on black sea bass (Centropristic striata) movement behaviors in the Mid-Atlantic Bight. *PlosOne* 15(12): e0239919. https://doi.org/10.1371/journal.pone.0239919.

[92] Ross, A.C., C.A. Stock, K.W. Dixon, M.A.M. Frierichs, R.R. Hood, **M. Li**, K. Pehion, V. Saba, P. St-Laurent, G.A. Vechhi. 2020. Estuarine forecasts at weather to subseasonal time scales. *Earth and Space Science,* doi: 10.1029/2020EA001179.

[91] Boicourt, W.C., M. Licer, M. Li., M. Vodopivec and V. Malacic. 2020. Sea state: recent progress in the context of climate change. Chapter 3 in "Coastal Ecosystems in Transition: A comparative analysis of the Northern Adriatic and Chesapeake Bay", Geophysical Monograph 256. Edited by Malone, Malej and Faganeli. pp. 21-48. ISBN: 978-1-119-54358-9, doi: https://doi.org/10.1002/9781119543626.ch3**.**

[90] **Li**, **M.**, F. Zhang, Y. Guo and X. Wang. 2020. Probabilistic projections of high tide flooding for the State of Maryland in the 21st century. Chapter 4 in Evaluating Climate Change Impacts. Edited by Lyubchich, Gel, Kilbourne, Miller, Newlands and Smith. Chapman and Hall/CRC. ISBN 9780815392378. pp. 71-94. doi: https://doi.org/10.1201/9781351190831

[89] **Li, M.**, W. Ni, F. Zhang, P.M. Glibert and C-H. Lin. 2020. Climate-induced interannual variability and projected change of two harmful algal bloom taxa in Chesapeake Bay, U.S.A. *Science of the Total Environment*, doi: 10.1016/j.scitotenv.2020.140947.

[88] **Li**, **M.**, F. Zhang, S. Barnes and X. Wang. 2020. Assessing storm surge impacts on coastal inundation due to climate change: Case studies on Baltimore and Dorchester County in Maryland. *Natural Hazards,* 103, 2561–2588, doi: 10.1007/s11069-020-04096-4.

[87] *Ni, W., **M. Li**, J.M. Testa. 2020. Discerning effects of warming, sea level rise and nutrient management on long-term hypoxia trend in Chesapeake Bay. *Science of the Total Environment*, doi: 10.1016/j.scitotenv.2020.139717

[86] Su, J., W-J. Cai, J. Brodeur, B. Chen, N. Hussain, C. Ni, Y. Yao, J. Testa, **M. Li**, X. Xie, W. Ni, K.M. Scaboo, Y. Xu, J. Cornwall, C. Gurbisz, M.S. Owns, G.G. Waldbusser, M. F., W.M. Kemp. 2020. Chesapeake Bay acidification buffered by spatially decoupled carbonate mineral cycling. *Nature Geosciences,* 13, 441–447, doi: https://doi.org/10.1038/s41561-020-0584-3.

[85] Shen, C., J.M. Testa, **M. Li**, W-J Cai. 2020. Understanding anthropogenic impacts on pH and aragonite saturation in Chesapeake Bay: insights from a 30-year model study. *Journal of Geophysical Research–Biogeosciences*, 125, e2019JG005620. https://doi.org/10.1029/2019JG005620.

[84] *Ni, W., **M. Li**, A.C. Ross and R.G. Najjar. 2019. Large projected decline in dissolved oxygen in a eutrophic estuary due to climate change. *Journal of Geophysical Research-Oceans*, doi:10.1029/2019JC015274.

[83] Palinkas, C.M., J.M. Testa, J.C. Cornwall, **M. Li**, and L.P. Sanford. 2019. Influences of a River Dam on Delivery and Fate of Sediments and Particulate Nutrients to the Adjacent Estuary: Case Study of Conowingo Dam and Chesapeake Bay**.** *Estuaries and Coasts*, https://doi.org/10.1007/s12237-019-00634-x.

[82] Shen, C., J. Testa, W. Ni, W-J. Cai, **M. Li**, and W. Kemp. 2019. Ecosystem metabolism and carbon balance in Chesapeake Bay: A 30-year analysis using a coupled hydrodynamic-biogeochemical model. *Journal of Geophysical Research-Oceans,* 124, https://doi.org/10.1029/2019JC015296.

[81] Shen, C., J.M. Testa, **M. Li**, W-J Cai, G.G. Waldbusser, W. Ni, W.M. Kemp, J. Cornwall, B. Chen, J. Brodur, and J. Su. 2019. Controls on carbonate system dynamics in a coastal plain estuary: a modelling study. *Journal of Geophysical Research-Biogeosciences,* 124, https://doi.org/10.1029/2018JG004802.

[80] *Zhang, F. and **M. Li**. 2019. Impacts of ocean warming, sea level rise and coastline management on storm surge in a semi-enclosed Bay. *Journal of Geophysical Research-Oceans,* 124, https://doi.org/10.1029/2019JC015445.

[79] *Xie, X. and **M. Li**. 2019. Generation of internal lee waves by lateral circulation in a coastal plain estuary. *Journal of Physical Oceanography*, 49 (7): 1687-1697, doi: 10.1175/JPO-D-18-0142.1.

[78] Huang, W-J, W-J Cai, X, Xie and **M. Li**. 2019. Wind-driven lateral variations of partial pressure of carbon dioxide in a large estuary. *Journal of Marine Systems,* 195, doi: 10.1016/j.jmarsys.2019.03.002.

[77] Juarez, B., A. Valle-Levinson, R. Chant and **M. Li**. 2019. Observations of the lateral structure of wind-driven flow in a coastal plain estuary. *Estuarine, Coastal and Shelf Science,* doi: 10.1016/j.ecss.2018.11.018.

[76] Secor, D. H., F. Zhang, M.H. O'Brien, and **M. Li**. 2019. Ocean destratification and fish evacuation caused by a Mid-Atlantic tropical storm. *ICES-Journal of Marine Science*, 75 (2), 573-584, doi:10.1093/icesjms/fsx241.

[75] *Xie, X., **M. Li** and W. Ni. 2018. Roles of wind-driven currents and surface waves in sediment resuspension and transport during a tropical storm. *Journal of Geophysical Research-Oceans*, doi: 10.1029/2018JC014104.

[74] *Liu, W., **M. Li**, R. Chant, E. Hunter and A. Valle-Levinson. 2018. Time and scale dependence in estuarine longitudinal dispersion. *Journal of Geophysical Research-Oceans*, doi: 10.1029/2017JC013397.

[73] *Zhang, F., **M. Li**, and T. Miles. 2018. Generation of near-inertial currents on the Mid-Atlantic Bight by Hurricane Arthur. *Journal of Geophysical Research-Oceans*, 123, doi: 10.1029/2017JC013584.

[72] *Xie, X. and **M. Li.** 2018. Effects of wind straining on estuarine stratification: A combined observational and modelling study. *Journal of Geophysical Research-Oceans*, doi: 10.1002/2017JC013470.

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[70] **Li, M.,** W. Liu, R. Chant and A. Valle-Levinson. 2017. Flood-ebb and spring-neap variations of lateral circulation in the James River estuary. *Continental Shelf Research*, 148, 9-18, doi: https://doi.org/10.1016/j.csr.2017.09.007

[69] Ross, A.C., R.G. Najjar, **M. Li**, S.B. Lee, F. Zhang and W. Liu. 2017. Fingerprints of sea-level rise on changing tides in the Chesapeake and Delaware Bays. *Journal of Geophysical Research-Oceans*, doi: 10.1002/2017jc012887.

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Cornwell, and W.M. Kemp. 2017. Redox reactions and weak buffering capacity lead to acidification in the Chesapeake Bay. *Nature Communications*, doi: 10.1038/s41467-017-00417-7.

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*Conference proceedings and reports:*

[7] Boesch, D. F., Baecher, G. B., Boicourt, W. C., Cullather, R. I., Dangendorf, S., Henderson, G. R., Kilbourne, H. H., Kirwan, M. L., Kopp, R. E., Land, S., **Li, M**., McClure., K., Nardin, W., & Sweet, W. V. 2023. Sea-level Rise Projections for Maryland 2023. University of Maryland Center for Environmental Science, Cambridge, MD.

[6] Boesch, D.F., W.C. Boicourt, R.I. Cullather, T. Ezer, G.E. Galloway, Jr., Z.P. Johnson, K.H. Kilbourne, M.L. Kirwan, R.E. Kopp, S. Land, **M. Li**, W. Nardin, C.K. Sommerfield, W.V. Sweet. 2018. Sea-level Rise: Projections for Maryland 2018, 27 pp. University of Maryland Center for Environmental Science, Cambridge, MD.

[5] Boesch, D.F., L.P. Atkinson, W.C. Boicourt, J.D. Boon, D.R. Cahoon, R.A. Dalrymple, T. Ezer, B.P. Horton, Z.P. Johnson, R.E. Kopp, **M. Li**, R.H. Moss, A. Parris, C.K. Sommerfield. 2013. Updating Maryland's Sea-level Rise Projections. Special Report of the Scientific and Technical Working Group to the Maryland Climate Change Commission, 22 pp. University of Maryland Center for Environmental Science, Cambridge, MD.

[4] Zeidan, E., K. Zahariev**, M. Li** and C. Garrett. 1997. The breakup of oil spills in the marine environment. *Proceedings of the 20th Arctic and Marine Oilspill Program Technical Seminar*, 187-201.

[3] **Li, M.** 1996. Representing turbulent dispersion in oil spill models. *Proceedings of the 19th Arctic and Marine Oilspill Program Technical Seminar*, 185-198.

[2] **Li, M.** and C. Garrett. 1996. Breakup of oil droplets in turbulent flows. *Proceedings of the 19th Arctic and Marine Oilspill Program Technical Seminar*, 671-684.

[1] **Li, M.** 1995. Comparison between DNS and LES simulations of coherent structures in the ocean surface boundary layer. *Proc. Computational Fluid Dynamics*, 433-440.

** stands for papers whose first author is my student or postdoc.*

## VI. Grants

[35] Oceanic salt intrusion into tidal freshwater rivers (SALTWATER). 2024-2028.The International Science Council's Scientific Committee on Oceanic Research (SCOR) Working Group. Li and Burchard (PI). Total: $45,000

[34] Make Cambridge resilient flood mitigation project. 2024-2027. Federal Emergency Management Agency. Li, Palinkas, Staver, Nardin, Gray, Wang. UMCES Total: $1,185,524 (Project Total: $17.8 million) (UMCES PI).

[33] Prototyping decision support and monitoring tools for equitable management of salt contamination of water supplies in tidal rivers. 2024-2025. National Science Foundation. Li, Najjar, Kaushal, Lassiter, Mejia. Total: $650,000 (PI).

[32] mCDR 2023: Quantifying the efficacy of wastewater alkalinity enhancement on mCDR and acidification mitigation in a large estuary. 2023-2026. NOAA and National Oceanographic Partnership Program (NOPP). Testa, Cai, Li, Xu. Total: $1,864,561 (Co-PI).

[31] Emerging hypoxia on the oligotrophic West Florida Shelf and its potential impacts on marine ecosystem: discerning the roles of HABs, warming and extreme weather events. 2023-2027. National Oceanic and Atmospheric Administration. Li, Glibert, North, Heil. Total: $1,436,076 (PI).

[30] Conference: salt contamination of water supplies in tidal rivers. National Science Foundation. 2023-2026. Li, Chant, Kaushal, Ralston, Mejia. Total: $99,999 (PI).

[29] Collaborative Research: RAPID: Unprecedented Hurricane Ian nutrient and organic matter inputs to Southwest Florida coastal waters. National Science Foundation. 2022-2024. Heil, Glibert, Li and Hall. Total: $200,000 (Co-PI).

[28] Estuary plumes as driver of inner continental shelf benthic community structure and function. 2021-2026. National Science Foundation. Woodland, Li and Testa. Total: $946,572 (Co-PI).

[27] CoPe RCN (Research Coordination Network): Advancing Interdisciplinary Research to Build Resilient Communities and Infrastructure in the Nation's Estuaries and Bays.

2020-2026. National Science Foundation. Li, Stacey, Lubell, Orton and Reilly. Total: $500,000 (PI).

[26] ECOHAB19: Life and death of Karenia brevis blooms in the Eastern Gulf of Mexico. 2019-2026. National Oceanic and Atmospheric Administration. Glibert and Li. $1,1150,280. Total: $5,000,000 (Co-PI).

[25] How will sea level rise impact hypoxia in the Chesapeake Bay? A multiple model intercomparison project. 2018-2019. Environmental Protection Agency (thru VIMS). Li. $20,000 (PI).

[24] Identifying Thresholds in Coupled Biogeochemical-Biological-Economic Systems Under Multiple Stressors. 2018-2021. National Atmospheric and Oceanic Administration. Testa, Cai, Li, Wainger and Waldbusser. $1,035,411 (Co-PI).

[23] Simulating the Performance of Optical Techniques for Estimating Population Indices in Reef Fish Surveys. 2018-2020. National Atmospheric and Oceanic Administration (through CINAR). Rose and Li, $326,924 (Co-PI).

[22] Generation mechanisms of nonlinear internal waves in coastal plain estuaries. 2018-2022. National Science Foundation. Li, $341,057 (PI).

[21] ECOHAB 2017: Development of a Mechanistic ROMS-RCA-HAB Model for Predicting *Prorocentrum minimum* and *Karlodinium veneficum* Blooms in Chesapeake Bay. 2017-2021. National Atmospheric and Oceanic Administration. Li and Glibert, $598,888 (PI).

[20] OA2015: Interactions between ocean acidification and eutrophication in estuaries: Modeling opportunities and limitations for shellfish restoration. National Atmospheric and Oceanic Administration. 2015-2019. Testa, Li, Kemp, Cornwall, Cai and Waldbusser, $1,492,710 (Co-PI).

[19] Improving prediction and visualization of coastal inundation on the Eastern Shore of Maryland. Maryland Sea Grant. 2016-2019. Li and Wang, $147,911 (PI).
Plus two-year Maryland Sea Grant Fellowship for graduate student Fan Zhang.

[18] WSC-Category 1 Collaborative Proposal: Coupled multi-scale economic, hydrologic and estuarine modeling to assess impacts of climate change on water quality management. 2014-2017. National Science Foundation. Easton, Bosch, Sample, Li, Najjar. $599,828 (PI).

[17] Activity 1: Application and Analysis of a Coupled Hydrodynamic-Biogeochemical Model (ROMS-RCA) in Shallow-Water Habitats of the Chesapeake Bay. Environmental Protection Agency, 2014-2016. Testa, Brady and Li. $78,019 (Co-PI).

[16] UMCES Comprehensive Proposal to Address the Impacts of Conowingo Particulates on the Chesapeake Bay. Exelon. 2014-2016. Cornwall, Palinkas, Sanford, Li, Testa and Kemp. $1,214,477 (Co-PI).

[15] Integrated rapid-response observations and ocean ensemble optimization to improve storm intensity forecasts in the Northeast U.S. 2013-2016. National Atmospheric and Oceanic Administration. Li, Boicourt and Wang, $897,246 (PI).

[14] Collaborative Research: The role of wind in estuarine dynamics. 2011-2015, National Science Foundation, Boicourt, Li and Sanford, $1,440,217 (Co-PI).

[13] A super-regional testbed to improve models of environmental processes on the U.S. Atlantic and Gulf of Mexico coasts. 2010-2011. National Oceanic and Atmospheric Administration, $3,676,000 (Co-PI).

[12] Collaborative Research: Estuarine response to climate forcing. 2010-2015, National Science Foundation, Li and Najjar, $727,032 (PI).

[11] Collaborative Research: Regulation of phytoplankton dynamics in Mid-Atlantic estuaries subject to climatic perturbations. 2008-2013, National Science Foundation, Harding, Li and Paerl, $1,100,779 (Co-PI).

[10] Collaborative Research: Impact of secondary circulations and mixing on estuarine exchange flows. 2008-2012, National Science Foundation, Chant, Li and Valle-Levinson, $1,050,579 (PI).

[9] Linking ASI to regional science and solutions for environmental management in Chesapeake Bay: A Subcontract to ESSIC, UMCP. 2008-2009. National Oceanic and Atmospheric Administration, Li, North and Cole, $103,586 (PI).

[8] CHRP07: Modeling hypoxia and ecological responses to climate and nutrients. 2007-2013, National Oceanic and Atmospheric Administration, Kemp, Li, North, Boynton, Secor, DiToro and Fennel, $1,857,842 (Co-PI).

[7] Chesapeake Inundation Prediction System (CIPS): A forecasting and visualization prototype for emergency management in coastal-bay-estuary systems. 2007-2010, National Oceanic Atmospheric Administration, Seller, Wang, Boicourt, Li, Titlow, Stamey, Smith, King and Koterba, $1,500,000 (Co-PI).

[6] Large Eddy Simulations of estuarine mixing. 2005-2009, National Science Foundation, Li, Piomelli and Geyer, $618,679 (PI).

[5] Development of an ecological forecasting model for Chesapeake Bay: A demonstration project for technology transfer to NOAA. 2006-2008. National Oceanic and Atmospheric Administration, Li and Harding, $68,066 (PI).

[4] Oceanic LES simulations to interpret and synthesize turbulence measurements obtained during CBLAST-Low. 2005-2007, Office of Naval Research, Li, $55,000 (PI).

[3] Parameterizing the effects of upper-ocean large eddies on air-sea interaction. 2002-2007, Office of Naval Research, Li and Garrett, $212,000 (PI).

[2] A community model for the Chesapeake Bay. 2002-2005, National Oceanic and Atmospheric Administration/CICEET, Li, Hood and Boicourt, $196,000 (PI).

[1] Modeling dispersal of oyster larvae in Chesapeake Bay. 2004-2006, Maryland Department of Natural Resources, North, Hood, Li and Gross, $99, 850 (Co-PI).

## VII. Teaching Experience

2002- Member, USM (University of Maryland) Inter-Institutional Graduate Faculty
2004 - 2016 Co-Chair, Oceanography AOS (Area of Speciality).

*A. University System of Maryland Courses Taught*

Physics of Marine and Estuarine Environments (MEES 661, 3 credit)
Spring 2021 – Team taught with Victoria Coles, 9 students enrolled and 2 audited.
Also taught in previous odd years (2019 backwards)

Climate Impacts on Estuaries and Ecosystems
Transport processes and plankton distributions

*B. Graduate Students Supervised as Major Advisor*

Yuren Chen, Ph.D, Physical Oceanography, MEES, coastal ocean dynamics and red tide on West Florida shelf, enrolled in fall of 2020 (current).

Renjian Li, Ph.D., Physical Oceanography, MEES, Internal waves, defended in summer of 2023.

Yijun Guo, M.Sc., Physical Oceanography, MEES, Ocean acidification, defended in spring of 2022.

Wenfei Ni, Ph.D., Physical Oceanography, MEES, Estuarine hypoxia, defended Ph.D thesis in December 2019 (Now at Pacific Northwest National Laboratory).

Yang Song, Ph.D., Joint US-China graduate program, Mixotrophic modeling of *Karlodinium veneficum*, defended thesis in summer 2020 (co-advise with Pat Glibert).

Fan Zhang, Ph.D., Physical Oceanography, MEES, Oceanic response to hurricanes and storm surges, defended thesis in spring of 2018 (Now Associate Professor at East China Normal University).

Wei Liu, Ph.D., Physical Oceanography, MEES, Dye dispersion in the James River estuary, defended thesis in Spring 2017 (Now Data Scientist).

Yun Li, Ph.D, Physical Oceanography, MEES, Impact of climate change and extreme weather events on hypoxia in Chesapeake Bay, defended in Summer 2012 (Now Assistant Professor at University of Delaware).

Peng Jia, M.Sc, Physical Oceanography, MEES, Circulation dynamics and salt balance in a lagoonal estuary, Defended in Summer 2011 (now Software Engineer at IBM, China).

Zengrui Rong, Ph.D, Physical Oceanography, Joint US-China graduate program, Dynamics of Changjiang River plume, Defended in Spring 2009 (now Associate Professor at Ocean University of China).

Lisa Li, Ph.D, Physical Oceanography, Joint US-China graduate program, Large Eddy Simulations of upper ocean turbulence, Defended in Spring 2010 (now Associate Professor at Zhejiang University).

Dakui Wang, Ph.D, Physical Oceanography, Joint US-China graduate program, Biophysical interactions in South China Sea, Defended in Fall 2011 (now Research Scientist at National Marine Environmental Forecasting Center in China).

Yahao Liu, Ph.D, Physical Oceanography, Joint US-China graduate program, Biophysical interactions in East China Sea, Defended in Spring 2011 (now Assistant Researcher at Institute of Oceanology, Chinese Academy of Sciences).

Qingyun Yu, Ph.D, Physical Oceanography, Joint US-China graduate program, Impact of climate variability on plankton productivity in Chesapeake Bay, Defended in Summer 2012 (now Research Engineer at North Sea Branch, China Oceanic Administration).

*C. Graduate Student Committee Memberships*

| | | | |
|---|---|---|---|
| Michael Zickel | M.Sc | MEES | UMCP |
| David Miller | Ph.D. | MEES | UMCP |
| Monica Salerno | M.Sc | MEES | UMCP |
| Shih-Nan Chen | Ph.D. | MEES | UMCP |
| Ed Davis | M.Sc. | MEES | UMCP |
| Yonghui Gao | Ph.D | MEES | UMCP |
| Ji Li | Ph.D | MEES | UMCP |
| Jeremy Testa | Ph.D | MEES | UMCP |
| Alex Fisher | Ph.D | MEES | UMCP |
| Justin Schulte | Ph.D | Meteorology | Penn State |
| Andrew Ross | Ph.D | Meteorology | Penn State |

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|---|---|---|---|
| Michelle Lin | Ph.D | MEES | UMCP |
| Emily Russ | Ph.D | MEES | UMCP |
| Samantha Gleich | Ph.D | MEES | UMCP/UMCES |
| Nicole Basenback | M.Sc | MEES | UMCP/UMCES |
| Caroline Wienicki | M.Sc | MEES | UMCP/UMCES |
| Sophia Ahn | Ph.D | MEES | UMCP/UMCES |
| Katie Lankowicz | Ph.D | MEES | UMCP/UMCES |
| Bruna Sobrinho | Ph.D | MEES | UMCP/UMCES |
| Allison Dreiss | Ph.D | MEES | UMCP/UMCES |

*D. Postdoctoral Fellows Supervised*

Ziyu Chen, hydrodynamic modelling and climate change, 2024-now.

Deshuai Wang, modelling of Chesapeake Bay river plume, 2022-2023.

Fan Zhang, modeling of harmful algal blooms, 2018-2019 (Now Associate Professor at East China Normal University).

Xiaohui Xie, estuarine response to winds, sediment modeling and effects of physical processes on ocean acidification, 2013-2018 (Now Senior Scientist at the Second Institute of Oceanology, China).

Serena Lee, inundation modelling, 2013-2015 (Now Research Scholar at Cal Poly).

Younjoo Lee, hypoxia research, 2009-2013 (Now Research Associate at Naval Postgraduate School).

Peng Cheng, estuarine modeling, 2011-2013 (Now Professor at Xiamen University).

Liejun Zhong, Numerical modelling of Chesapeake Bay (Now Research Scientist at CSIRO Institute of Oceanography, Australia.)

*E. Undergraduate Students Supervised*

William Lamuth, Salisbury University, 2024.

Spencer Presley, Salisbury University, 2024.

Nocholas Gammel, Salisbury University, 2024.

Samantha Roth, Leigh University, 2018.

Samuel Barnes, Salisbury University, 2018.

Cale Bowen, Salisbury University, 2013.

Wan Ren, Salisbury University, 2013.

Jeff Dandoy, John Hopkins University, 2011.

Andrea Abler, University of Maryland, Baltimore County, 2006.

Sergejs Melderis, Salisbury University, 2005.

Mitch Buck, John Hopkins University, 2004.

## VIII. Service

*A. Reviews*

I review 5-10 papers and proposals per year for various journals and funding agencies including

*National Science Foundation*
*National Academy of Sciences*
*National Oceanic and Atmospheric Administration*
*Department of Energy*
*Deep-Sea Research*
*Journal of Marine Research*
*Geophysical Research Letters*
*Journal of Physical Oceanography*
*Journal of Fluid Mechanics*
*Journal of Geophysical Research*
*Limnology and Oceanography*
*Estuarine, Coastal and Shelf Research*
*Marine Ecology Progress Series*
*Ocean Modelling*
*Physics of Fluids*
*Continental Shelf Research*
*Journal of Hydrology*
*Journal of Marine Systems*
*Estuaries and Coasts*

*B. UMCES and Horn Point Laboratory*

Tenure and Promotion Review Committee (2019, 2020, 2021, 2022, 2023)
Emeritus Professor Review Committee (2019)
Panelist on Coastal Resiliency, UMCES Environmental Summit (2018).
Chair of Physical Oceanography Faculty Search Committee (2016-2018)
HPL IT Committee (2018-2019)
UMCES MSCHE Self-Study 2020 – Working Group 6 (2019)
HPL Director Review Committee (2016)

Emeritus Professors Review Committee (2016, 2019)
Graduate Council (2013-2014)
UMCES Accreditation Readiness Working Group Member and Team Leader (2013)
HPL Education Committee Chair (2012-2014)
Faculty Senate (2003-2007)
HPL Computer Service Committee Chair (2008-2009, 2022-)

*C. University System of Maryland*

MEES Curriculum Committee (2013-2015)
Co-Chair, MEES Oceanography AOS (2004-2016)
Admission Committee, MEES Oceanography AOS (2003-2004)
Meeting with MEES Program Review Committee (2008)

*D. Public Service*

- Advised US Embassy in Portugal and met with scientific/economic officers on bilateral collaborations in ocean and climate change (2024).
- Interviewed with Diario de Noticais (National Newspaper in Portugal) on issues related to ocean and climate change including salt contamination of water supplies (2024)
- Served on the State of Maryland's sea-level rise expert group – member and co-chair (2023)
- Served on the advisory committee on Resilience Network with Maryland Department of Emergency Management (2022- present)
- Organized webinar series on salt contamination of water supplies in tidal rivers (2023-present)
- Served on the FEMA Flood Mitigation Steering Committee for the City of Cambridge, MD (2021- present).
- Served on Middle Branch Technical Advisory Committee, City of Baltimore (2020- present).
- Served on the Actionable Science Team for the Baltimore Urban Water Partnerships (2020-present).
- Gave an invited presentation on coastal inundation and coastline management strategies to Maryland Commission on Climate Change Science and Technical Group (2022).
- Interviews on sea level rise, storm surge, hypoxia and red tides with a number of newspapers, journals and TVs (2019-).
- Interview for a feature article on Texas Coastal Protection in Undark and Wire Magazine (2021). https://undark.org/2021/06/14/texas-sized-effort-to-fend-off-rising-seas/ and https://www.wired.com/story/a-dollar26-billion-plan-to-save-the-houston-area-from-rising-seas/
- Interview for a feature article on San Francisco Bay coastline management in Scientific America (2021).

https://www.scientificamerican.com/article/walling-off-one-coastal-area-can-flood-another/

- Interview for Maryland Matters on chronic flooding threatening Maryland's rural Eastern Shore (2021). https://www.marylandmatters.org/2021/10/11/chronic-flooding-threatens-sites-along-harriet-tubman-underground-railroad-byway/
- Interview for E&E news on flood-hit city heading to Supreme Court over climate change Flood-hit city heads to Supreme Court over climate damage (E&E News)
- Invited participant at the Lower Eastern Shore Climate Adaptation Network meeting (2019).
- Featured scientist in the article on "defending the shoreline" by Stormwater, the journal for surface water quality professionals (2019).
- Featured researcher in the Maryland Sea Grant film on "A Diminishing Smithville" (2018).
- Panelist on NOAA National Sea Grant Office four-year review of the Maryland Sea Grant program (2018).
- Invited speaker at the workshop of Maryland Chapter of the American Planning Association (2018).
- Developed a website on coastal inundation projections for Chesapeake Bay, Eastern Shore of Maryland and City of Baltimore (2018): http://geronimo.hpl.umces.edu/mingli/.
- Presented an outreach seminar on sea level rise, storm surge and coastal inundation at Chesapeake Biology Lab (2018).
- Advised Chesapeake Bay Foundation on sea level rise and infrastructure decisions (2017).
- Featured researcher in the film on "High Tide in Dorchester" by Tom Horton, Sandy Cannon-Brown and Dave Harp (2017).
- Featured researcher at the Washington Post, Claims Journal, the Republic (Indiana), the Cumberland Times-News, Daily Journal (IN), CBS Baltimore, My Eastern Shore, the Star Democrat, WBOC, Daily Times What is Up Magazine (2013-2020).
- Featured researcher in Baltimore Sun (2011) and Gazette Journal (2012).
- Appearance in Documentary on "Mega Disasters – GLACIER MELTDOWN" produced by History Channel (2007).
- Invited lectures for the NSF COSEE program for teachers (2003, 2005).

*E. Local/National /International*

- Co-Chair of International Science Council - Scientific Committee on Oceanic Research (SCOR) Working Group 172 on oceanic salt intrusion into tidal freshwater rivers (SALTWATER) (2024-2028)
- Member of UNESCO-Intergovernmental Oceanographic Commission Global Ocean Oxygen Network ($GO_2NE$) Working Group (2024-2027)
- Expert panel member of Global Ocean Oxygen Network ($GO_2NE$) workshop on ocean reoxygenation techniques by UNESCO-IOC (2024)

- AGU Fall Meeting Session Convenor on "Processes driving the salination of coastal freshwater supplies" – Co-convenor (2023)
- CERF Session Convenor on "Exploring the hydrodynamics, biogeochemistry and ecology of inshore-offshore coastal plumes: new knowledge and developing techniques" – Co-convenor (2023)
- Expert group member and Co-Leads on report on "sea-level rise projections for Maryland 2023" (2023)
- Keynote speaker at the China-Portugal Forum on coastal environmental and innovative technology for sustainable development. Macau (2023)
- Convenor of ASLO session on "disentangling complex long-term pH and $O_2$ trends in coastal and estuarine systems from global and regional drivers" (2023)
- Invited participant at Coastlines and People (CoPe) Awardees Conference, Alexandria, VA (2023).
- CERF Session Convenor on "Impact of climate change on harmful algal blooms" – Convener (2021)
- CERF Session Convenor on "Innovation in nature-based systems for coastal protection" –Co-convener (2021)
- IAHR panel on Climate Change and Coastal Resilience (2020).
- Department of Energy – proposal review panel (2020, 2022).
- National Science Foundation – proposal review panel (2019).
- CERF Session Convenor on "Impact of weather and extreme events: observations, analysis, and modeling" – Co-convener (2019).
- Invited participant and speaker at NASA workshop on Chesapeake Bay water quality modelling workshop (2019).
- Invited participant and speaker at the workshop on "use of dredged material to protect low-lying areas of the Chesapeake Bay" sponsored by Maryland Department of Transport and Maryland Port Administration (2019).
- American Geophysical Union Fall Meeting, Session Convenor on "Biogeochemical cycling in estuaries, coastal waters, and their watersheds: natural variability, response to land use and climate change, and management implications" (2018).
- Expert group member for updating sea level projections for the state of Maryland (2018).
- Invited participant at the STAC (Scientific and Technical Advisory Committee) meeting of Chesapeake Bay Program on climate change effects (2018).
- Invited participant and speaker at NSF workshop on the future in estuarine and coastal modelling (2018).
- National Academy of Sciences – proposal review panel (2018).
- CERF Session Convenor on "Impact of extreme weather on estuaries: innovative methods and modeling" – Co-convener (2017).
- Invited participant on coastal resiliency symposium on "Universities and Coastal Resilience: A Strategic Discussion" at Old Dominion University (2017).

- Expert group member for updating sea level projections for Maryland (2013).
- Annual MABPOM Meeting – Co-convener (2011).
- National Oceanic and Atmospheric Administration – proposal evaluation panel (2010).
- Office of Naval Research – Invited participant and speaker at ONR workshop to draft a white paper for a new Departmental Research Initiative (DRI) on the effects of surface waves on air-sea interaction, Scripps Institution of Oceanography (2010).
- Ocean Science Meeting, Session Convenor on "Impacts of eutrophication and climate change on marginal seas", Portland, Oregon (2010).
- American Geophysical Union Fall Meeting, Session Convenor on "Impact of climate variability and change on estuaries and coastal ocean", San Francisco (2008).
- American Geophysical Union Fall Meeting, Session Convenor on "Tidal processes in coastal oceans and estuaries", San Francisco (2008).
- International Symposium on "From millimetres to megametres: the interacting scales of ocean dynamics", Victoria, B.C., Canada, organizing committee (2008).
- Ocean Science Meeting, Session Convenor on "Dynamics of estuarine circulations and river plumes: from process studies to predictive models", Orlando, Florida (2008).
- Served on the National Science Foundation (NSF) proposal review panel in the Division of Ocean Sciences (2003, 2007).
- Invited participant in EPA STAC workshop, Annapolis, MD (2006).
- Invited participant in U.S. Army Corps of Engineer's workshop on storm surge and floodplain models, MD (2006).
- Invited participant in Maryland Sea Grant Research Planning workshop, College Park, MD (2005)
- Invited participant in EPA workshop on Ecological Forecasting, Annapolis, MD (2005).
- Invited participant at ONR Northeast Site Review workshop, New Brunswick, New Jersey (2005).

## IX. Leadership Positions

- Co-Chair of International Science Council - Scientific Committee on Oceanic Research (SCOR) Working Group 172 on oceanic salt intrusion into tidal freshwater rivers (SALTWATER) (2024-2028)
- Member of UNESCO-Intergovernmental Oceanographic Commission Global Ocean Oxygen Network ($GO_2NE$) Working Group (2024-2027)

- Associate Editor, Continental Shelf Research (2019-)
- Associate Editor, Frontiers in Marine Science (2020-2022)
- Speciality Chief Editor, Frontiers in Marine Science (2022-)

- Academic Editor, PLOS Climate (2021-)
- Editorial Board member, MDPI Journal of Marine Science and Engineering (2021-)

- Principal Investigator, NSF funded Research Coordination Network (RCN) (2020-)

- Convenor of ASLO session on "disentangling complex long-term pH and O2 trends in coastal and estuarine systems from global and regional drivers" (2023)
- Convenor of CERF Session on "Impact of climate change on harmful algal blooms" (2021)
- Co-convenor of CERF Session on "Innovation in nature-based systems for coastal protection" (2021)
- Co-convenor of CERF Session on "Impact of weather and extreme events: observations, analysis, and modeling" (2019).
- Convenor of AGU Fall Meeting Session on "Biogeochemical cycling in estuaries, coastal waters, and their watersheds: natural variability, response to land use and climate change, and management implications" (2018).
- Co-convenor of CERF Session on "Impact of extreme weather on estuaries: innovative methods and modeling" (2017).

- Expert panel member of Global Ocean Oxygen Network ($GO_2NE$) workshop on ocean reoxygenation techniques by UNESCO-IOC (2024)
- Panelist on the IAHR panel on Climate Change and Coastal Resilience (2020).
- Panelist on the Department of Energy's proposal review panel (2020, 2022).
- Panelist on the National Science Foundation's proposal review panel (2019).
- Panelist on the National Academy of Sciences' proposal review panel (2018).
- Panelist on the NOAA National Sea Grant Office four-year review of the Maryland Sea Grant program (2018).
- Expert group member on updating sea level projections for the state of Maryland (2018).

- Featured scientist in an article on Texas Coastal Protection in Undark and Wire Magazine (2021).
- Featured scientist in an article on San Francisco Bay coastline management in Scientific America (2021).
- Featured scientist in an article on "defending the shoreline" by Stormwater, the journal for surface water quality professionals (2019).
- Featured researcher in the Maryland Sea Grant film on "A Diminishing Smithville" (2018).
- Featured researcher in the film on "High Tide in Dorchester" by Tom Horton, Sandy Cannon-Brown and Dave Harp (2017).

## X. Selected Invited Talks and Contributed Presentations

Li, M., M. Hummel, S. A. Talke, S. B. Lee, P. M. Orton, K. Rose, A. Mejia, and A. Sutton-Grier. 2024. Regional teleconnection in flood risks in bays, estuaries and rivers warrants regional approach to climate change adaptation. Presentation at American Geophysical Union 2024 Fall Meeting.

Li, M., Y. Chen, R. Doyle, C. Bott, J. Testa and W-J. Cai. 2024. Integrating waster and ocean biogeochemical models to evaluate the potential of alkalinity addition in reducing carbon emission from wastewater treatment plants and enhancing marine $CO_2$ capture. Presentation at American Geophysical Union 2024 Fall Meeting.

Cai, W-J., M. Li, R. He, E. Liao and J. Testa. 2024. Evaluating ideas and efficacy of adding alkalinity to wastewater treatment plants and estuarine systems for marine carbon dioxide removal. Invited talk at American Geophysical Union 2024 Fall Meeting.

Talke, S. A., P. M. Talke, S. B. Lee, M. Hummel, and M. Li. 2024. Teleconnections in estuaries: insights from an analytical model. Presentation at American Geophysical Union 2024 Fall Meeting.

Najjar, R. G., D. Tillman, A. Mejia, A.Izabayo, V. Pham, and M. Li, 2024. Identification and characterization of surface water intakes on the Chesapeake Bay. American Geophysical Union Annual Meeting, Washington, DC, December 9–13, 2024.

Ji, Z., W-J. Cai, J.testa, W. Burt, C. Bott and M. Li. 2024. Chesapeake Bay wastewater alkalinity injection – Ocean Alkalinity Enhancement (OAE) based marine Carbon Dioxide Removal (mCDR). Presentation at American Geophysical Union 2024 Fall Meeting.

Li, M., Z. Chen, A. Mejia, R. Chant, R. Najjar, A. Hadjimichael, S. S. Kaushal, S. Keitzer, A. Lassiter, S. Puckett, A N Rohith, A. Spangler, S. Wang and X. Wang. 2024. Coupled hydrological-hydrodynamic modeling of watershed, tidal rivers and estuaries: Assessing the impacts of drought, sea-level rise and human-accelerated chemical weathering on salt intrusion and freshwater salinization. Presentation at PECS conference, Bordeaux, France.

Li, M. 2024. Drinking water, waste water and climate change. Invited talk at the 6$^{th}$ Conference of the Fulbrighters Portugal 2024 Conference Cycle.

Li, M. 2024. Coastal water quality decline at the nexus of eutrophication and climate change. A case study of Chesapeake Bay, the largest estuary in the U.S. Invited seminar at Portuguese Institute for Sea and Atmosphere (IPMA).

Li, M. 2024. Coastal water quality decline due to eutrophication and climate change. Invited seminar at University of Algarve, Portugal.

Li, M. 2024. Mechanistic mathematical models of harmful algal species. Invited seminar at Nova University, Portugal.

Najjar, R. G., M. Li, S. Kaushal, A. Lassiter, and A. Mejia. 2024. Prototyping decision support and monitoring tools for equitable management of salt contamination of water supplies in tidal rivers. Quarterly Meeting of the Chesapeake Bay Program Climate Resiliency Workgroup, August 15, 2024.

Najjar, R. G., D. Tillman, A. Mejia, A.Izabayo, V. Pham, and M. Li, 2024. Identification and characterization of surface water intakes on the Chesapeake Bay. Chesapeake Bay Program Modeling Workgroup Quarterly Meeting, October 9, 2024.

Li, M., R. Li, Y. Chen, J.M. Testa, W-J. Cai, C. Shen. 2024. A modelling evaluation of the efficacy of wastewater alkalinity enhancement on mCDR and acidification mitigation in a large estuary. Presentation at 2024 Ocean Science Meeting. New Orleans.

Li, R., M. Li, M. Scaboo, J.M. Testa, W-J. Cai, T. DeVries. 2024. Short-term variability and ventilation of bottom pH in a stratified estuary. Presentation at 2024 Ocean Science Meeting. New Orleans.

Chen, Y., M. Li, P. M. Glibert and C. Heil. 2024. Plankton response to Hurricane Ian (2022) on the West Florida Shelf. Presentation at 2024 Ocean Science Meeting. New Orleans.

Stefanak, M., M. Li, T.E. Murphy, J.M. Testa, R.J. Woodland. 2023. The Chesapeake Bay plume as a driver of coastal benthic productivity and community structure. Presentation at 2023 CERF biennial conference.

Li, M. 2023. Impacts of climate change on coastal flooding in the Dorchester County, Maryland. Summer Talks with the Horn Point Lab – a public seminar series at High Spot, Cambridge, MD.

Li, M., Y. Guo, R. Li, J.M. Testa, W-J. Cai, C. Shen, S. Kaushal. 2023. River alkalinization counters ocean acidification in driving estuarine pH trends. Talk at 2023 ASLO Aquatic Sciences Meeting, Palma de Mallorca, Spain.

Li, M. 2023. Coastal water quality decline at the nexus of climate change and eutrophication. Invited keynote speech at the China-Portugal Forum on Coastal Environment and Innovative Technology for Sustainable Develop (CPCET 2023). Macau University of Science and Technology, Macau.

Li, M., Y. Guo, J.M. Testa, W-J. Cai, R. Li and C. Shen. 2023 Discerning the roles of ocean acidification, eutrophication and river alkalinization in driving long-term pH trends in Chesapeake Bay. Talk at NOAA Ocean Acidification Community Meeting and Mini Symposium. Scripps Seaside Forum, La Jolla, C.A.

Li, M. 2022. Climate change, coastal inundation and coastline management strategies. Invited talk at Maryland Commission on Climate Change Science and Technical Group Meeting.

Chen, Y., M. Li, P.M. Glibert and C. Heil. 2022. A coupled hydrodynamic-biogeocgemical model for Karenia brevis blooms on the West Florida Shelf. Talk at US HAB 11th Symposium.

Li, M., Y. Chen, F. Zhang, Y. Song, P.M. Glibert and D. Stoecker. 2022. A three-dimensional mixotrophic model of *Karlodinium veneficum* blooms in a eutrophic estuary. Talk at 2022 Ocean Science Meeting.

Li., R. and M. Li. 2022. Non-hydrostatic simulation of internal solitary waves in an idealized coastal plain estuary. Talk at Ocean Science Meeting 2022.

Li, M., P.M. Glibert. 2021. A mixotrophic model for toxigenic *Karlodinium veneficum* Blooms in Chesapeake Bay. Invited seminar at the NOAA Seminar Series.

Li, M., Y. Chen, F. Zhang, Y. Song, P.M. Glibert. 2021. Development of a three-dimensional mixotrophic model for *Karlodinium veneficum* in Chesapeake Bay. Talk at 2021 CERF biennial conference.

Glibert, P.M., C. Heil, B. Sobrinho, M. Li, C.J. Madden. 2021. Oceanic climate variability and algal blooms in Florida. Talk at 2021 CERF biennial conference.

Heil, C.A., S. Amin, P.M. Glibert, K. Hubbard, M. Li, J. Martinez, R. Weisberg. 2021. Examination of the factors driving *Karenia brevis* bloom expansion and termination: The ECOHAB: Life and Death of K. brevis Blooms Program. Talk at 2021 ICHA (19th International Conference on Harmful Alage).

Sobrinho, B., P.M. Glibert, V. Lyubchich, C.A. Heil, M. Li. 2021. Time series analysis of the *Karenia brevis* blooms on the West Florida Shelf: relationships with El Niño – Southern Oscillation (ENSO) and its rate of change. Presentation at 2021 ICHA.

Li, M. 2021. Impacts of sea level rise and storm surge on Maryland – Opportunities for nature based solutions for coastal protection. Invited talk at Cecil County Green Infrastructure Planning Nature Based Solutions Workshop.

Hall, N.A., J.M. Testa, M. Li and H.W. Paerl. 2021. Assessing global versus local drivers of estuarine pH using long term records from U.S.A. two largest estuaries. ASLO summer Aquatic Sciences Meeting.

Li, M. 2020. Opportunities and challenges in building coastal resiliency in estuaries and bays under a changing climate. Invited talk at IAHR (International Association for Hydro-Environment Engineering and Research) 85th Anniversary Summit.

Li, M. 2020. Fighting surging seas in a changing climate: defending coastlines at all costs or strategic retreat to high ground? Talk at the virtual seminar series on Assessing Coastal Risks and Enhancing Resilience, HPL.

Li, M. 2020. Impacts of climate change on coastal inundation, hypoxia, acidification and harmful algal blooms in Chesapeake Bay. Invited seminar at IMET.

Li, M. 2020. Impacts of climate change and coastline management on inundation in Baltimore and Chesapeake Bay. Invited talk at Baltimore Urban Waters Flood Workshop: Bridging the gaps between science and regulation.

Li, M., Y, Guo, W-J Cai, J, Testa, C. Shen, W. Ni and G.G. Waldbusser. 2020. Climate downscaling projections of estuarine acidification and hypoxia in Chesapeake Bay in the 21s century. Oral presentation at 2020 Ocean Science Meeting, San Diego.

Li, R. and M. Li. 2020. Modeling the generation of internal waves by lateral circulation in an idealized estuary with channel-shoal bathymetry. Poster presentation at 2020 Ocean Science Meeting, San Diego.

Ni, W., M. Li and J. Testa. 2020. Discerning effects of warming, sea level rise and nutrient reduction on long-term hypoxia trend in Chesapeake Bay. Poster presentation at 2020 Ocean Science Meeting, San Diego.

St-Laurent, P., M.A.M. Friedrichs, M. Li and W. Ni. 2020. Effects of sea level rise on the seasonal hypoxia of Chesapeake Bay. Oral presentation at 2020 Ocean Science Meeting, San Diego.

Glibert, P.M., M. Li, F. Zhang, Y. Song and M. Lin. 2020. Modeling mixotrophic *Karlodinium veneficum* in Chesapeake Bay. Poster presentation at 2020 Ocean Science Meeting, San Diego.

Zhang, F., M. Li, P.M. Glibert, S-H. Ahn. 2020. A mechanistic model to predict seasonal timing and spatial distribution of Prorocentrum minimum blooms in Chesapeake Bay. Poster presentation at 2020 Ocean Science Meeting, San Diego.

Gimenez Calvo, I., G.G. Waldbusser, J.M. Testa, M. Li, W-J. Cai, W.M. Kemp, J. Cornwell. 2020. Alkalinity fluxes on a Chesapeake Bay restored oyster reef: Results from intact core incubations under normal and moderately acidified experimental conditions. Poster presentation at 2020 Ocean Science Meeting, San Diego.

Ross, A., C.A. Stock, K.W. Dixon, M.A.M. Friedrichs, R.R. Hood, M. Li. L. Pegion, V.S. Saba, G.A. Vecchi. 2020. Estuarine forecasts at weather to subseasonal scales. Poster presentation at 2020 Ocean Science Meeting, San Diego.

Li, M. 2019. Coastline management in low-lying areas affect tidal range and storm surge throughout Chesapeake Bay. Invited talk at the workshop on Use of dredged material to protect low-lying areas of the Chesapeake Bay.

Li, M. 2019. Predicting seasonal timing and spatial distribution of *Prorocentrum minimum* and *Karlodinium veneficum* blooms in Chesapeake Bay. Invited talk at NASA Chesapeake Bay water quality modelling workshop.

Zhao, J. and M. Li. 2019. The atmospheric and oceanic patterns linked to the recent sea level changes along Mid-Atlantic Bight and northeast coast. Poster presentation at CLIVAR workshop on sea level hotspots from Florida to Maine: drivers, impacts, and adaptation.

Glibert, P.M., M. Li, F. Zhang, W. Ni and C-H Lin. 2019. Climate-induced interannual variability and long-term change in several common HABs of Chesapeake Bay. Talk at 2019 CERF biennial conference.

Testa, J.M., C. Shen, W.J. Cai, M.Li and M. Kemp. 2019. Ecosystem metabolism and carbon balance in Chesapeake Bay: a 20-year modelling study. Talk at 2019 CERF biennial conference.

Ross, A., C. Stock, K. Dixon, M. Friedrichs, R. Hood, M. Li, K. Pegion, G. Vecchi, V. Saba. 2019. Drivers and predictability of subseasonal variations of dissolved oxygen in Chesapeake Bay. Talk at 2019 CERF biennial conference.

St. Laurent, P., M. Friedrichs, M. Li, W. Ni. 2019, Impacts of sea level rise on Chesapeake Bay and its seasonal hypoxia. Talk at 2019 CERF biennial conference.

Glibert, P.M., M. Li, F. Zhang, W. Ni and C-H Lin. 2019. Climate-induced interannual variability and long-term change in several common HABs of Chesapeake Bay. Talk at the 10$^{th}$ US Symposium on harmful algae.

Rose, K.A., M. Li, J. Zhao, E. Curchitser and J. Fiechter. 2019. Predicting climate change effects on marine and coastal fish using coupled bio-physical models: challenges and opportunities. Invited talk at 2019 ASLO meeting.

Li, M., F. Zhang, S. Barnes and X. Wang. 2018. Impacts of sea level rise and ocean warming on storm surge and coastal inundation in the mid and late 21$^{st}$ century. Presentation at 2018 American Geophysical Union Fall Meeting.

Ni, W. and M. Li. 2018. Modeling study of the physical and biogeochemical controls on long-term change of Chesapeake Bay hypoxia during 1985-2016. Presentation at 2018 American Geophysical Union Fall Meeting.

Li, M. 2018. Climate downscaling projections for estuarine hypoxia and acidification using coupled hydrodynamic-biogeochemical models. Invited talk at NSF workshop on the future of coastal and estuarine modeling.

Li, M., X. Xie, C. Shen, B. Chen, W. Ni, W-J Cai, and J. Testa. 2018. Physically driven temporal and spatial variabilities in carbonate chemistry dynamics. 2018 Chesapeake Research and Modeling Symposium.

Ni, W., M. Li, A. Ross, R. Najjar, M. Wagena, and Z. Easton. 2018. Climate downscaling projections of Chesapeake Bay hypoxia in the 21st century. 2018 Chesapeake Research and Modeling Symposium.

Li. M. and X. Xie. 2018. Generation of internal solitary waves in a coastal plain estuary. 2018 Ocean Science Meeting.

Zhang, F. and M. Li. 2018. Surface cooling on the continental shelf induced by near-inertial currents during Hurricane Arthur (2014). 2018 Ocean Science Meeting.

Ross, A., R. Najjar, M. Li, S. Lee, F. Zhang and W. Liu. 2018. Evidence of changing tides in response to sea-level rise in Chesapeake and Delaware Bays. 2018 Ocean Science Meeting.

Palinkas, C., J. Cornwall, L. Sanford, M. Li and J. Testa. 2018. Processes and management of altered estuaries in the era of Anthropocene. 2018 Ocean Science Meeting.

Ni, W., M. Li, A. Ross and R. Najjar. 2018. Projections of Chesapeake Bay hypoxia under regional climate change in the twenty-first century. 2018 Ocean Science Meeting.

Glibert, P.M., M. Li, M.C. Lin and W. Ni. 2017. Development of a Mechanistic ROMS-RCA-HAB Model for Predicting *Prorocentrum minimum* and *Karlodinium veneficum* Blooms in Chesapeake Bay. 9$^{th}$ U.S. symposium on harmful algal blooms.

Li, M., F. Zhang and X. Wang. 2017. Development of a regional atmosphere-ocean modeling system for predicting and visualizing storm surge and coastal inundation in a changing climate. 24$^{th}$ Biennial Conference of Coastal and Estuarine Research Foundation.

Ni, W., Li, M., A. Ross and R. Najjar. 2017. Downscaling climate projections for Chesapeake Bay hypoxia in the mid-21$^{st}$ century. 24$^{th}$ Biennial Conference of Coastal and Estuarine Research Foundation.

Boesch, D., Z. Johnson and M. Li. 2017. Scientific Guidance for Rehabilitation of the Chesapeake Bay Ecosystem under the Changing Climate. AGU Fall Meeting.

Li, M., W. Liu, R. Chant and A. Valle-Levinson. 2016. Flood-ebb and spring-neap variations of lateral circulation in the James River estuary. 2016 Ocean Science Meeting.

Lee, S.B., M. Li and F. Zhang. 2016. The effect of sea level rise on tidal dynamics in Chesapeake and Delaware Bays. 2016 Ocean Science Meeting.

Zhang, F., T. Miles, M. Li and X. Xie. 2016 Near inertial waves generated by Hurricane Arthur on the Mid-Atlantic-Bight shelf. 2016 Ocean Science Meeting.

Xie, X., T. Miles, M. Li and X. Xie. 2016 Near inertial waves generated by Hurricane Arthur on the Mid-Atlantic-Bight shelf. 2016 Ocean Science Meeting.

Huguenard, K., A. Valle-Levinson, M. Li, R. Chant, A. Souza. 2015. Influence of tidal mixing asymmetries on residual exchange flow in the James River estuary. Presentation at CERF Biennial Conference, Portland, Oregon.

Liu, W., M. Li and A. Ross. 2015. Study of climatic impacts on Chesapeake Bay and Delaware Bay by the approach of numerical models and statistical methods. Presentation at the Gordon Research Conference on Coastal Ocean Modeling, Biddeford, ME.

Zhang, F., M. Li, S. Lee and Andrew Ross. 2015. Numerical simulation of storm surge generated by Hurricane Arthur with an air-sea coupled model. American Meteorological Society Annual Meeting, 13$^{th}$ Symposium on the Coastal Environment, Phoenix, AZ.

Xie, X., M., Li, and W. C. Boicourt. 2014. Observations and simulations of wind-driven lateral circulation in Chesapeake Bay. Presentation at American Geophysical Union Fall Meeting, San Francisco, California.

Li, M., J. Testa, Y. Lee, Y. Li and W.M. Kemp. 2014. Impacts of climate variability and extreme weather events on hypoxia in Chesapeake Bay. Talk at Symposium on Low Oxygen Environments in Marine, Estuarine and Fresh Waters, Liege, Belgium.

Testa, J., Y. Lee, M. Li and W.M. Kemp. 2014. Quantifying biological and physical controls on dissolved oxygen in Chesapeake Bay using a coupled hydrodynamic-biogeochemical model. Talk at Symposium on Low Oxygen Environments in Marine, Estuarine and Fresh Waters, Liege, Belgium.

Li, M. 2014. Impacts of climate change and extreme weather events on Mid-Atlantic Estuaries. Invited seminar at Department of Atmospheric and Oceanic Science, University of Maryland, College Park.

Cheng, P., M. Li, A. Ross and R. Najjar. 2014. Modeling Chesapeake and Delaware Bays by downscaling from Mid-Atlantic Ocean into estuaries. Ocean Science Meeting, Honolulu, Hawaii.

Ross, A., M. Li, R. Najjar and M. Herrmann. 2014. High-resolution simulations of Chesapeake and Delaware Bays under past and future climates. Ocean Science Meeting, Honolulu, Hawaii.

Li, M. 2014. Impacts of extreme weather events on plankton productivity and hypoxia in Chesapeake Bay. Ocean Science Meeting, Honolulu, Hawaii.

Li, M. 2013. Impacts of climate change and extreme weather events on coastal oceans. Invited seminar at Department of Atmospheric Science, University of California, Los Angeles.

Li, M. 2013. Issues in inundation modeling. Invited talk at CINAR workshop. Woods Hole Oceanographic Institution.

Cheng, P., M. Li, and R. Chant. 2012. The role of lateral advection in residual dynamics of tidal estuaries. 2012 PECS (Physics of Estuaries and Coastal Seas) Symposium, New York City, New York.

Li, M., Y. Li, P. Cheng, W. Liu, R. Chant, and A. Valle-Levinson. 2012. Vorticity dynamics of secondary circulations in idealized and realistic estuaries. 2012 PECS (Physics of Estuaries and Coastal Seas) Symposium, New York City, New York.

Li, Y. and M. Li. 2012. Dynamics of wind-induced lateral circulation and its effects on estuarine exchange flow and stratification. Presentation at 2012 Ocean Science Meeting, Salt Lake City, Utah.

Cheng, P., M. Li and R. Najjar. 2012. Estuarine response to sea-level rise: a numerical study of Chesapeake and Delaware Bays. Presentation at 2012 Ocean Science Meeting, Salt Lake City, Utah.

Li, M. 2011. Dynamics of Changjiang River plume in the East China and Yellow Seas. Talk at 2011 MABPOM meeting, Cambridge, Maryland.

Li, M., Y. Li and R. Najjar. 2010. Response of Chesapeake Bay to climatic forcing. Invited Talk at Ocean Science Meeting, Portland, Oregon.

Valle-Levinson, A., R. Chant and M. Li. 2010. Relative role of Coriolis and advective accelerations on the dynamics of a coastal plain estuary. Invited talk at Ocean Science Meeting, Portland, Oregon.

Li, Y. and M. Li. 2010. Modeling hypoxia response to river flow and wind forcing in Chesapeake Bay. Talk at Ocean Science Meeting, Portland, Oregon.

Peng, J. and M. Li. 2010. Effects of wind on a shallow lagoonal estuary. Talk at Ocean Science Meeting, Portland, Oregon.

Wang, D. and M. Li. 2010. Dynamics of seasonal circulation pattern off Vietnam coast in South China Sea. Talk at Ocean Science Meeting, Portland, Oregon.

Li, M. 2009. Impact of climate change and extreme weather events on estuaries and coastal oceans - The Chesapeake Bay example. Invited Talk at Second NSF-NSFC US-China Exchange to Explore Research Cooperation on Climate Chang, Baltimore.

Harding, L.W. Jr., M. Li and H. Paerl. 2008. Climatic perturbations of phytoplankton dynamics in Mid-Atlantic estuaries. Invited Talk at American Geophysical Union Fall Meeting, San Francisco.

Li, M., Y. Li and R. Najjar. 2008. How does sea-level rise affect stratification and circulation in Chesapeake Bay? Talk at American Geophysical Union Fall Meeting, San Francisco.

Li, M., L. Zhong, Senthil Radhakrishnan, Ugo Piomelli and Rocky Geyer. 2008. Large Eddy Simulations of estuarine mixing processes. Talk at Ocean Science Meeting, Orlando, Florida.

Rong, Z., M. Li and Y. Liu. 2008. How Does Changjiang River Plume Spread in East China and Yellow Sea? Presentation at Ocean Science Meeting, Orlando, Florida.

Li, M. 2008. How will climate change and extreme weather events affect Chesapeake Bay? Invited talk at Chesapeake Bay Modeling Symposium, Annapolis, Maryland.

Piomelli, U., S. Radhakrishnan, L. Zhong and M. Li . 2007. Wall-layer models for large-eddy simulations of high-Reynolds number non-equilibrium flows. Invited talk at the 11$^{th}$ European Turbulence Conference, Porto, Portugal.

Li, M. 2007. How does turbulent mixing affect circulation in Chesapeake Bay? Invited seminar at Johns Hopkins University.

Li, M. 2007. Large Eddy Simulations of turbulent oceanic flows. Invited seminar at Fluid Dynamics Reviews Seminars of the Burgers Program, University of Maryland at College Park.

Li, M. 2006. How do surface waves affect dynamics of the ocean surface mixed layer? Invited seminar at University of Delaware, Newark, Delaware.

Li, M. 2006. Hurricane-induced storm surges, destratification and restratification in Chesapeake Bay. Invited seminar at University of Delaware, Newark, Delaware.

Li, M. 2006. Which is more important in driving/mixing Chesapeake Bay? Tide or wind? Invited seminar at Woods Hole Oceanographic Institution.

Li, M. 2005. Development of a coupled hydrodynamic-biogeochemical model for Chesapeake Bay. Invited seminar at University of Maryland, College Park, Maryland.

Li, M. 2005. Modeling turbulent large eddies in the upper ocean. Invited talk at ONR Northeast Site Review workshop, New Brunswick, New Jersey.

Li, M. 2005. Development of a new coupled hydrodynamic-biogeochemical model for ecological forecasting in Chesapeake Bay. Invited talk at EPA workshop on Ecological forecasting for Chesapeake Bay, Annapolis, Maryland.

## XI. Awards and Honours

Fulbright U.S. Scholar (2024)

President's Award for Excellence in Application of Science (2023)

UMCES Nominee for the University System of Maryland's Board of Regents Faculty Award in Scholarship and Research (2021)

Honorable mention for R.E. FOERSTER Award for the Best Paper in the Department of Fisheries and Oceans of Canada (2000)

Scholarship Award from K.C. Wong Education Foundation (1987-1990)

## XII. Professional memberships

American Geophysical Union
American Meteorological Society
Oceanographic Society
American Association for the Advancement of Science
Association for the Sciences of Limnology and Oceanography
Coastal and Estuarine Research Federation