

Curriculum Vitae

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I. Education

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

II. Professional Experience

2009-Now. Professor, Horn Point Lab., Univ. of Maryland Center for Environmental Science.
2014-Now. 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.

III. Research

A. Areas of professional expertise

Physical oceanography, estuarine and coastal dynamics, air-sea interaction, turbulent mixing processes and internal waves, numerical ocean modelling, regional impacts of climate change, sea-level rise, storm surge and coastal inundation, development of coupled hydrodynamic-biogeochemical models for investigating hypoxia, ocean acidification and harmful algal blooms.

B. Publications

1. Peer-reviewed publications

- [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*, in review.
- [72] 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*, acceptable after revision.
- [71] Xie, X. and **M. Li**. 2018. Effects of wind straining on estuarine stratification: A combined observational and modelling study. *Journal of Geophysical Research*, in press.
- [70] Glibert, P.M., G. Pitcher, S. Bernard and **M. Li**. 2018. Advancements and continuing challenges of emerging technologies and tools for detecting harmful algal blooms, their antecedent conditions and toxins, and applications in predictive models. Chapter 18 in *Global Ecology and Oceanography of Harmful Algal Blooms*, edited by P.M. Glibert, E. Berdalet, M.A. Burford and G.C Pitcher and M. Zhou. Springer. ISBN: 978-3-319-70068-7, in press.
- [69] Secor, D. H., F. Zhang, M.H. O'Brien, and **M. Li**. 2018. Ocean destratification and fish evacuation caused by a Mid-Atlantic tropical storm. *ICES-Journal of Marine Science*, doi:10.1093/icesjms/fsx241.
- [68] **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.
- [67] 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*, doi: 10.1002/2017jc012887.
- [66] Cai, W-J., W-J Huang, G. Luther, III, D. Pierrot, **M. Li**, J. Testa, M. Xue, A. Joesoef, R. Mann, J. Brodeur, Y-Y Xu, B. Chen, N. Hussain, G.G. Waldbusser, J. 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.
- [65] Zhang, F., **M. Li**, A.C. Ross, S.B. Lee, and D-L. Zhang. 2017. Sensitivity analysis of Hurricane Arthur (2014) storm surge forecasts to WRF physical parameterizations and model configurations. *Weather and Forecasting*, 32, 1745-1764, doi: 10.1175/WAF-D-16-01218.1.
- [64] Xie, X., **M. Li**, and W. C. Boicourt. 2017. Breaking of internal solitary waves generated by an estuarine gravity current. *Geophysical Research Letters*, 44, doi:10.1002/2017GL073824.

- [63] Basdurak, N.B., K. Huguenard, A. Valle-Levinson, **M. Li**, and R. Chant. 2017. Parameterization of mixing by secondary circulation in estuaries. *Journal of Geophysical Research*, 122, doi:10.1002/2016JC012328.
- [62] Xie, X., **M. Li**, M. Scully, and W.C. Boicourt. 2017. Generation of internal solitary waves by lateral circulation in a stratified estuary. *Journal of Physical Oceanography*, 47, 1789–1797.
- [61] Lee, S.N., **M. Li** and F. Zhang. 2017. Impact of sea-level rise on tidal ranges in Chesapeake and Delaware Bays. *Journal of Geophysical Research*, 122, doi:10.1002/2016JC012597.
- [60] Xie, X., **M. Li**, and W.C. Boicourt. 2017. Baroclinic effects on wind-driven lateral circulation in Chesapeake Bay. *Journal of Physical Oceanography*, 47, 433–445, doi:10.1175/JPO-D-15-0233.1.
- [59] Testa, J.M., Y. Li, Y.J. Lee, **M. Li**, D.C. Brady, D.M. DiToro, and W.M. Kemp. 2017. Modeling physical and biogeochemical controls on dissolved oxygen in Chesapeake Bay: lessons learned from simple and complex approaches. Chapter 6 in *Modeling Coastal Hypoxia - Numerical Simulations of Patterns, Controls and Effects of Dissolved Oxygen Dynamics*, edited by D. Justic, K. Rose, R. Hetland, and K. Fennel. Springer International Publishing AG, Switzerland, 95–118, doi: 10.1007/978-3-310-54571-4_5.
- [58] **Li, M.**, Y.J. Lee, J.M. Testa, Y. Li, W.M. Kemp and D.M. Di Toro. 2016. What drives interannual variability of hypoxia in Chesapeake Bay: Climate forcing versus nutrient loading? *Geophysical Research Letters*, 43, 2127–2134, doi:10.1002/2015GL067334.
- [57] Schulte, J.A., R.G. Najjar and **M. Li**. 2016. The influence of climate modes on streamflow in the Mid-Atlantic Region of the United States. *Journal of Hydrology-Regional Studies*, 5, 80–99.
- [56] Irby, I.D., M. A. M. Friedrichs, C. T. Friedrichs, A. J. Bever, R. R. Hood, L. W. J. Lanerolle, M. E. Scully, K. Sellner, J. Shen, J. Testa, **M. Li**, H. Wang, P. Wang, L. Linker, and M. Xia. 2016. Challenges associated with modeling low-oxygen waters in Chesapeake Bay: a multiple model comparison. 2016. *Biogeosciences*, 13, 2011–2028, doi:10.5194/bg-13-2011-2016.
- [55] Huguenard, K.D., A. Valle-Levinson, **M. Li**, R.J. Chant, and A.J. Souza. 2015. Linkage between lateral circulation and near-surface vertical mixing in the James River estuary. *Journal of Geophysical Research*, DOI:10.1002/2014JC010679.
- [54] Ross, A.C., R.G. Najjar, **M. Li**, M.E. Mann, S.E. Ford and B. Katz. 2015. Influences on decadal-scale variations of salinity in a coastal plain estuary. *Estuarine, Coastal and Shelf Science*, 157, 79–92.

- [53] Li, Y, **M. Li**, and W.M. Kemp. 2015. A budget analysis of bottom-water dissolved oxygen in Chesapeake Bay. *Estuaries and Coasts*, DOI 10.1007/s12237-014-9928-9.
- [52] **Li, M.**, P. Cheng, R. Chant, A. Valle-Levinson and K. Arnott. 2014. Vortex dynamics of lateral circulation in a straight estuary. *Journal of Physical Oceanography*, 44 (10), 2777-2793, doi: 10.1175/JPO-D-13-0212.1.
- [51] Testa, J.M., Y. Li, Y. Lee, **M. Li**, D.C. Brady, D.M. DiToro and W.M. Kemp. 2014. Quantifying the effects of nutrient loading and carbon production in dissolved O₂ in Chesapeake Bay using a coupled hydrodynamic-biogeochemical model, *Journal of Marine System*, 139, 139-158.
- [50] Palinkas, C., J. Halka, **M. Li**, L. Sanford and P. Cheng. 2014. Event-driven sedimentation in upper Chesapeake Bay: insights from integrated field and model techniques. *Continental Shelf Research*, 86, 6-16.
- [49] **Li, M.**, X. Wang and P. Jia. 2014. Predicting and visualizing storm surges and coastal inundations: A case study from Maryland, U.S.A. Book Chapter in "Remote Sensing of Typhoon Impacts and Crisis Management", edited by Dangling Tang and Guangjun Sui, Springer, ISBN, 978-3-642-40694-2, 131-147.
- [48] Li, S., **M. Li**, G. P. Gerbi, J. Song. 2013. Roles of break waves and Langmuir circulation in the surface boundary layer of a coastal ocean. *Journal of Geophysical Research*, 118, 1-15, doi:10.1002/jgrc.20387.
- [47] Cheng, P, **M. Li** and Y. Li. 2013. Generation of an estuarine sediment plume by a tropical storm. *Journal of Geophysical Research*, 118, 1–13, doi:10.1029/2012JC008225.
- [46] Lee, Y.J., W.R. Boyton, **M. Li** and Y. Li. 2013. Role of later winter-spring wind influencing summer hypoxia in Chesapeake Bay. *Estuaries and Coasts*, doi: 10.1007/s12237-013-9592-5.
- [45] Wang, D., H. Wang, **M. Li**, G. Liu and X. Wu. 2013. Role of Ekman transport versus Ekman pumping in driving summer upwelling in the South China Sea. *Journal of Ocean University of China*, 12, 355-365, doi: 10.1007/s11802-013-1904-7.
- [44] Yu, Q., Y. Wang, X. Tang, **M. Li**. 2013. River flow control on the phytoplankton dynamics of Chesapeake Bay. *Journal of Ocean University of China*, 12 (1), 103-114, doi: 10.1007/s11802-013-1976-4.
- [43] Boicourt, W.C., **M. Li**, N. Nidzieko, A.F Blumberg, N. Georgas, E J. Kelly, T.G. Updyke, W.D. Wilson. 2012. Observing the Urban Estuary: Review and Prospect. *Oceans*, 2012, doi:10.1109/Oceans.2012.6405120 (*Marine Technology Society Journal*)

- [42] Li, Y. and **M. Li**. 2012. Wind-driven lateral circulation in a stratified estuary and its effects on the along-channel flow. *Journal of Geophysical Research-Oceans.*, 117, C09005, doi:10.1029/2011JC007829.
- [41] **Li, M.** and Z. Rong. 2012. Effects of tides on freshwater and volume transports in Changjiang River plume. *Journal of Geophysical Research-Oceans.*, 117, C06027, doi:10.1029/2011JC007716.
- [40] Jia, P. and **M. Li**. 2012. Dynamics of wind-driven circulation in a shallow lagoon with strong horizontal density gradient. *Journal of Geophysical Research-Oceans.*, 117, C05013, doi:10.1029/2011JC007475.
- [39] Jia, P. and **M. Li**. 2012. Circulation dynamics and salt budget in a lagoonal estuary. *Journal of Geophysical Research*, 117, C01003, doi:10.1029/2011JC007124.
- [38] Rong, Z. and **M. Li**. 2012. Tidal effects on the bulge region of Changjiang River plume. *Estuarine, Coastal and Shelf Science*, 97, 149-160.
- [37] Wang, H., D. Wang, G. Liu, H. Wu and **M. Li**. 2012. Seasonal variation of eddy kinetic energy in the South China Sea. *Acta Oceanologica Sinica*, 31(1), 1-15.
- [36] Li, Y. and **M. Li**. 2011. Effects of winds on stratification and circulation in a partially mixed estuary. *Journal of Geophysical Research*, 116, C1202, doi:10.1029/2010JC006893.
- [35] **Li, M.**, S. Radhakrishnan, U. Piomelli and W. R. Geyer. 2010. Large-Eddy Simulation of the tidal-cycle variations of an estuarine boundary layer. *Journal of Geophysical Research*, 115, C08003, doi:10.1029/2009JC005702.
- [34] Zhong, L., **M. Li**, D.-L. Zhang and S. Zhang. 2010. Sensitivity of storm surge predictions to uncertainties in hurricane model forecasts. *Estuarine, Coastal and Shelf Science*, 90, 61-72.
- [33] **Li, M.**, L. Zhong and L. W. Harding. 2009. Sensitivity of plankton biomass and productivity to variations in physical forcing and biological parameters in Chesapeake Bay. *Journal of Marine Research*, 67, 667-700.
- [32] **Li, M.**, S. Vagle and D.M. Farmer. 2009. Large Eddy Simulations of upper-ocean response to a mid-latitude storm and comparison with observations. *Journal of Physical Oceanography*, 39, 2295-2309.
- [31] **Li, M.** and L. Zhong. 2009. Flood-ebb and spring-neap variations of stratification, mixing and circulation in Chesapeake Bay. *Continental Shelf Research*, 29, 4-14.
- [30] **Li, M.**, J. Trowbridge and W.R. Geyer. 2008. Asymmetric tidal mixing due to the horizontal density gradient. *Journal of Physical Oceanography*, 38, 418-434.

- [29] Zhong, L., **M. Li** and M.G. Foreman. 2008. Resonance and sea level variability in Chesapeake Bay. *Continental Shelf Research*, 28, 2565-2573.
- [28] Hilton, T. W., R. G. Najjar, L. Zhong and **M. Li**. 2008. Is there a signal of sea-level rise in Chesapeake Bay salinity? *Journal of Geophysical Research*, 113: C09002, doi:10.1029/2007JC004247.
- [27] North, E.W., Z. Schlag, R. R. Hood, **M. Li**, L. Zhong, T. Gross and V. S. Kennedy. 2008. Larval vertical swimming behavior may influence the dispersal of oysters in Chesapeake Bay. *Marine Ecology Progress Series*, 359: 99-115.
- [26] **Li, M.**, L. Zhong, W. C. Boicourt, S. Zhang and D. Zhang. 2007. Hurricane-induced destratification and destratification in a partially-mixed estuary. *Journal of Marine Research*, 65, 169-192.
- [25] Edson, J., T. Crawford, J. Crescenti, T. Farrar, N. Frew, G. Gerbi, C. Helmis, T. Hristov, D. Khelif, A. Jessup, H. Jonsson, **M. Li**, L. Mahrt, W. McGillis, A. Plueddemann, L. Shen, E. Skyllingstad, T. Stanton, P. Sullivan, J. Sun, J. Trowbridge, D. Vickers, S. Wang, Q. Wang, R. Weller, J. Wilkin, D. Yu, and C. Zappa. 2007. The Coupled Boundary Layers and Air-Sea Transfer Experiment in Low Winds (CBLAST-LOW), *Bulletin of the American Meteorological Society*, 88 (3), 341-356.
- [24] Piomelli, U., S. Radhakrishnan, L. Zhong and **M. Li**. 2007. Wall-layer models for large-eddy simulations of high reynolds number non-equilibrium flows. In Palma, J. M. L. M. and Silva Lopes, A., editors, *Advances in Turbulence XI*, pages 47–54, Berlin. Springer.
- [23] **Li, M.**, L. Zhong, W. C. Boicourt, S. Zhang and D. Zhang. 2006. Hurricane-induced storm surges, currents and destratification in a semi-enclosed bay. *Geophysical Research Letters*, 33, L02604, doi:10.1029/2005GL024992.
- [22] Zhong, L. and **M. Li**. 2006. Tidal energy fluxes and dissipation in the Chesapeake Bay. *Continental Shelf Research*, 26, 752-770.
- [21] **Li, M.**, L. Zhong, and W. C. Boicourt. 2005. Simulations of Chesapeake Bay estuary: Sensitivity to turbulence mixing parameterizations and comparison with observations, *Journal of Geophysical Research*, 110, C12004, doi:10.1029/2004JC002585.
- [20] **Li, M.**, C. Garrett and E. Skyllingstad. 2005. A regime diagram for classifying turbulent large eddies in the upper ocean. *Deep-Sea Research I*, 52, 259-278.

- [19] **Li, M.**, L. Sanford and S-Y Chao. 2005. Time-dependent effects in unstratified tidal flows: results from Large Eddy Simulations. *Estuarine, Coastal and Shelf Science*, 62, 193-204.
- [18] Gargett, A., **M. Li** and R. Brown. 2001. Testing mechanistic explanations of observed correlations between environmental factors and marine fisheries. *Canadian Journal of Fishery and Aquatic Science*, 58, 208-219.
- [17] Farmer, D.M., S. Vagle and **M. Li**. 2001. Bubble and temperature fields in Langmuir circulation. *Fluid Mechanics and the Environment: Dynamical Approaches*, Edited by John L. Lumley, 91-105. Springer.
- [16] **Li, M.** 2000. Estimating horizontal dispersion of floating particles in wind-driven upper ocean. *Spill Science and Technology*, 6(3), 255-261.
- [15] **Li, M.**, A. Gargett and K.L. Denman. 2000. What determines seasonal and interannual variability of phytoplankton and zooplankton in strongly estuarine system? *Estuarine, Coastal and Shelf Science*, 50, 467-488.
- [14] Garrett, C., **M. Li** and D.M. Farmer. 2000. The connection between bubble size spectra and energy dissipation rates in the upper ocean, *Journal of Physical Oceanography*, 30, 2163-2171.
- [13] **Li, M.**, A. Gargett and K.L. Denman. 1999. Seasonal and interannual variability of estuarine circulation in a box model of the Strait of Georgia and Juan de Fuca Strait. *Atmosphere-Ocean*, 37, 1-19.
- [12] Farmer, D.M., S. Vagle and **M. Li**. 1999. Wave breaking, turbulence and bubble distributions in the ocean surface layer. *The Wind-Driven Air-Sea Interface: Electromagnetic and Acoustic Sensing, Wave Dynamics, and Turbulent Fluxes*. Edited by M. L. Banner. University of New South Wales Press. 187-192. ISBN 0-7334-0586-X
- [11] Colbo, K. and **M. Li**. 1999. Parameterizing particle dispersion in Langmuir circulation. *Journal of Geophysical Research*, 104, 26059-26068.
- [10] **Li, M.** and C. Garrett. 1998. The relationship between oil droplet size and upper ocean turbulence. *Marine Pollution Bulletin*, 36, 961-970.
- [9] **Li, M.** and C. Garrett. 1998. Large eddies in the surface mixed layer and their effects on mixing, dispersion and biological cycling. In *Physical Processes in Lakes and Oceans* (AGU series on Coastal and Estuarine Studies), edited by J. Imberger, 61-86.
- [8] **Li, M.** and Cummins, P.F. 1998. A note on hydraulic theory of internal bores. *Dynamics of Atmosphere and Oceans*, 28, 1-7.

- [7] Cummins, P.F. and **M. Li**. 1998. Comment on "Energetics of borelike internal waves" by F.S. Henyey and A. Hoering. *Journal of Geophysical Research*, 103 (C2), 3339-3341.
- [6] **Li, M.** and C. Garrett. 1997. Mixed-layer deepening due to Langmuir circulation. *Journal of Physical Oceanography*, 27, 121-132.
- [5] **Li, M.**, K. Zahariev and C. Garrett. 1995. Role of Langmuir circulation in the deepening of the ocean surface mixed layer. *Science*, 270, 1955-1957.
- [4] **Li, M.** and C. Garrett. 1995. Is Langmuir circulation driven by surface waves or surface cooling? *Journal of Physical Oceanography*, 25, 64-76.
- [3] Farmer, D.M. and **M. Li**. 1995. Patterns of bubble clouds organized by Langmuir circulation. *Journal of Physical Oceanography*, 25, 1426-1440.
- [2] Farmer, D.M. and **M. Li**. 1994. Oil dispersion in turbulence and coherent circulations. *Ocean Engineering*, 21(6), 575-586.
- [1] **Li, M.** and C. Garrett. 1993. Cell merging and jet/downwelling ratio in Langmuir circulation. *Journal of Marine Research*, 51, 737-769.

2. Books and conference proceedings

- [8] 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.
- [7] North, E. W., R. R. Hood, L. Zhong, **M. Li**, and T. F. Gross. 2004. The influence of mixing processes and behavior on larval transport and mortality estimates in a stratified wind- and tidally-forced system. ICES CM/J:10/P:24.
- [6] **Li, M.**, 2004. Deepening of the ocean mixed layer by Langmuir and shear turbulence. Proceedings of American Meteorological Society 16th Symposium on Boundary Layer Turbulence. 11.10, 5 pp.
- [5] Gargett, A.E., **M. Li** and R. Brown. 1998. Testing the concept of an optimal stability "window". In: Biotic Impacts of Extratropical Climate Change in the Pacific, Proceedings of 'Aha Huliko'a Hawaiian Winter Workshop, Edited by G. Holloway, P. Muller and D. Henderson. 133-140.

- [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.

C. Research grants

- [22] Generation mechanisms of nonlinear internal waves in coastal plain estuaries. 2018-2021. National Science Foundation. Li and Xie, \$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. 2017-2020. 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. 2015-2018. 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. 2016-2018. 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 and Boicourt, \$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).

D. Selected Invited Talks and Contributed Presentations

- 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. 9th 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. 24th 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-21st century. 24th 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, 13th 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 Change, Baltimore.
- Li, M. 2009. Impact of climate change and extreme weather events on estuaries and coastal oceans. Invited seminar at Institute of Oceanology, Chinese Academy of Science.
- Li, M. 2009. Modeling biological-physical interactions in coastal oceans. Invited seminar at Ocean University of China.
- 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 11th European Turbulence Conference, Porto, Portugal.
- Li, M. 2007. How does turbulence affect circulation and biological production in an estuary? Invited seminar at Beijing University.
- Li, M. 2007. How do hurricanes affect coastal oceans? Invited seminar at First Institute of Oceanography, China.
- Li, M. 2007. Development of coupled hydrodynamic-biogeochemical models to investigate water quality in coastal oceans. Invited seminar at Yantai Institute of Coastal Zone Research for Sustainable Development, Chinese Academy of Science.
- Li, M. 2007. Coupled hydrodynamic-biogeochemical models. Invited seminar at Nanjing University of Information Science and Technology, Nanjing, China.
- 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.

F. Professional memberships

American Geophysical Union
American Meteorological Society
Oceanographic Society
Estuarine Research Foundation

IV. Teaching and Training

2002- Member, USM Inter-Institutional Graduate Faculty

2004 - 2016 Co-Chair, Oceanography AOS.

A. University System of Maryland Courses Taught

Physics of Marine and Estuarine Environments
Climate Impacts on Estuaries and Ecosystems
Transport processes and plankton distributions

B. Graduate Students Supervised as Major Advisor

Wenfei Ni, Ph.D., Physical Oceanography, MEES, Physical-biological interactions, passed comprehensive exam in 2015.

Fan Zhang, Ph.D., Physical Oceanography, MEES, Oceanic Response to hurricanes and storm surges, passed thesis proposal defense in 2015.

Wei Liu, Ph.D., Physical Oceanography, MEES, Dye dispersion in the James River estuary, defended thesis in Spring 2017 (Now Postdoctoral Researcher at University of Maine).

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 a Research Assistant Professor at University of South Florida).

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
Michelle Lin	Ph.D	MEES	UMCP
Alex Fisher	Ph.D	MEES	UMCP
Andrew Ross	Ph.D	Meteorology	Penn State
Emily Russ	Ph.D	MEES	UMCP
Justin Schulte	Ph.D	Meteorology	Penn State
Samantha Gleich	Ph.D	MEES	UMCP/UMCES
Nicole Basenback	M.Sc	MEES	UMCP/UMCES

D. Postdoctoral Fellows Supervised

Xiaohui Xie, estuarine response to winds, sediment modeling and effects of physical processes on ocean acidification, 2013-now.

Serena Lee, inundation modelling, 2013-2015. Now Research Fellow at Griffith University.

Younjoo Lee, hypoxia research, 2009-2013, Now Research Associate at Bigelow Laboratory for Ocean Sciences.

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

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.

V. Outreach and Service

A. Reviews

I review 15-30 papers and proposals per year for various journals and funding agencies including

National Science Foundation

National Oceanic and Atmospheric Administration

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

Chair of Physical Oceanography Faculty Search Committee (2016-)
HPL Director Review Committee (2016)
Emeritus Professor Review Committee (Drs. Boicourt, Stoecker, Stevenson) (2016)
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).

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 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 (2013-2017).
- Featured researcher in Baltimore Sun (2011) and Gazette Journal (2012).
- Appearance in Documentary on “Mega Disasters – GLACIER MELTDOWN” produced by History Channel (2007).
- Meeting with Senator Barbara Mikulski’s staff on storm surges (2007).
- Board member, Chinese-American Oceanic and Atmospheric Association (2007-2009).
- Invited lectures for the NSF COSEE program for teachers (2003, 2005).

E. Local/National /International

- CERF Session Convenor on “Impact of extreme weather on estuaries: innovative methods and modeling” – Co-convenor (2017).

- Invited participant on coastal resiliency symposium on “Universities and Coastal Resilience: A Strategic Discussion” at Old Dominion University (2017)
- Participated in group discussions on water quality and coastal conservation with Shenzhen delegation (2017)
- Annual MABPOM Meeting – Co-convenor (2011).
- National Atmospheric and Oceanic 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).
- Visiting Professor at College of Atmospheric Science, Nanjing University of Information Science and Technology and advised on the emerging research program in coastal and estuarine research (2007).
- Advised newly established Yantai Institute of Coastal Zone Research for Sustainable Development, Chinese Academy of Science on interdisciplinary research across land-sea boundary, Yantai, China (2007).
- Advised Institute of Oceanology, Chinese Academy of Science on interdisciplinary research in air-sea interaction, Qingdao, China (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).