CURRICULUM VITAE

LAWRENCE PAUL SANFORD
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I. EDUCATION

1984 Ph.D., Woods Hole Oceanographic Institution/Massachusetts Institute of Technology Joint Program in Oceanography and Oceanographic Engineering, Oceanographic Engineering.

1978 Sc.B., magna cum laude, Brown University, Mechanical Engineering.

II. PROFESSIONAL BACKGROUND

2026-present Professor Emeritus, University of Maryland Center for Environmental Science, Horn Point Laboratory, Cambridge, MD

2016-2025 Vice President for Education, University of Maryland Center for Environmental Science, Cambridge, MD

2001-present Professor, University of Maryland Center for Environmental Science, Horn Point Laboratory, Cambridge, MD

1993-2001 Associate Professor, University of Maryland Center for Environmental Science, Horn Point Environmental Laboratory, Cambridge, MD.

1987-1993 Assistant Professor, University of Maryland Center for Environmental and Estuarine Studies, Horn Point Environmental Laboratory, Cambridge, MD.

1984-1987 Postdoctoral Research Associate, University of Maryland System Center for Environmental and Estuarine Studies, Horn Point Environmental Laboratory, Cambridge, MD.

1981-1984 Graduate Research Assistant, Woods Hole Oceanographic Institution, Woods Hole, MA.

1978-1981 National Science Foundation Graduate Fellow, WHOI/MIT Joint Program in Oceanography and Oceanographic Engineering, Cambridge, MA and Woods Hole, MA.

III. RESEARCH

A. Areas of professional expertise

Graduate education in the environmental sciences, Coastal and estuarine physical oceanography: fine sediment transport dynamics, turbulence, geophysical boundary layers, surface and internal waves, nearshore estuarine processes. Special interest in interdisciplinary studies.

B. Publications

1. Full Papers in Refereed Journals, Book Chapters, and Books (published and in review)

Khademishamami, M., Sanford, L., Nardin, W., & North, E. (2025). Direct interception of particles by a vegetation stem with varying adhesive forces. Journal of Geophysical Research: Earth Surface. 130(6), pp. e2024JF007915, https://doi.org/10.1029/2024JF007915

Gurbisz, C., Testa, J., Hodgkins, C., Muir, S., & Sanford, L. (2025). Oyster aquaculture effects on submersed aquatic vegetation habitat are inconsistent across space and time. Marine Ecology Progress Series. 760, 17-37, DOI: 10.3354/meps14833

Biddle, M.M., Palinkas, C., and Sanford, L.P. (2021). Modeling impacts of submersed aquatic vegetation on sediment dynamics under storm conditions in upper Chesapeake Bay. Estuaries and Coasts. DOI: 10.1007/s12237-021-00941-2

Porter, E. T., Johnson, B. T., & Sanford, L. P. (2020). Effects of hard clam, Mercenaria mercenaria, density and bottom shear stress on cohesive sediment erodibility and implications for benthic-pelagic coupling. *Journal of Marine Research*. 70(2), 91-130, DOI: 10.1357/002224020834016664

Palinkas, C. M., Testa, J. M., Cornwell, J. C., Li, M., & Sanford, L. P. (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, 42*(8), 2072-2095. doi:10.1007/s12237-019-00634-x

Lera, S., Nardin, W., Sanford, L., Palinkas, C., and Guercio, R. (2019). The impact of submersed aquatic vegetation on the development of river mouth bars. Earth Surface Processes and Landforms. DOI: 10.1002/esp.4585

Fisher, A. W., Sanford, L.P., and Scully, M.E. (2018). Wind-Wave Effects on Estuarine Turbulence: a comparison of observations and second-moment closure predictions. Journal of Physical Oceanography. 48: 905-923. https://doi.org/10.1175/JPO-D-17-0133.1

Porter, E. T., Sanford, L. P., Porter, F. S., & Mason, R. P. (2018). STURM: Resuspension mesocosms with realistic bottom shear stress and water column turbulence for benthic-pelagic coupling studies: Design and applications. Journal of Experimental Marine Biology and Ecology, 499, 35-50. https://doi.org/10.1016/j.jembe.2017.11.001

Palinkas, C. M., Sanford, L. P., & Koch, E. W. (2017). Influence of Shoreline Stabilization Structures on the Nearshore Sedimentary Environment in Mesohaline Chesapeake Bay. Estuaries and Coasts. https://doi:10.1007/s12237-017-0339-6

Fisher, A. W., Sanford, L. P., Scully, M. E., & Suttles, S. E. (2017). Surface Wave Effects on the Translation of Wind Stress across the Air–Sea Interface in a Fetch-Limited, Coastal Embayment. Journal of Physical Oceanography, 47(8), 1921-1939. doi:10.1175/jpo-d-16-0146.1

Gurbisz, C., Kemp, W. M., Cornwell, J. C., Sanford, L. P., Owens, M. S., & Hinkle, D. C. (2017). Interactive Effects of Physical and Biogeochemical Feedback Processes in a Large Submersed Plant Bed. Estuaries and Coasts, 40(6), 1626-1641.

Sanford, L. P., & Gao, J. (2017). Influences of Wave Climate and Sea Level on Shoreline Erosion Rates in the Maryland Chesapeake Bay. Estuaries and Coasts. doi:/10.1007/s12237-017-0257-7

Gurbisz, C, Kemp, WM, Sanford, LP, and Orth, RJ, (2016), Mechanisms of storm-related loss and resilience in a large submersed plant bed, Estuaries and Coasts, 39(16), 951-966.

Fisher, A. W., L. P. Sanford, and S. E. Suttles (2015), Wind Stress Dynamics in Chesapeake Bay: Spatiotemporal Variability and Wave Dependence in a Fetch-Limited Environment, Journal of Physical Oceanography, 45(10), 2679-2696, doi:10.1175/JPO-D-15-0004.1.

Testa, J., D. Brady, J. Cornwell, M. Owens, L. Sanford, C. Newell, S. Suttles, and R. Newell (2015), Modeling the impact of floating oyster (Crassostrea virginica) aquaculture on sediment-water nutrient and oxygen fluxes, Aquaculture Environment Interactions, 7(3), 205-222, doi:10.3354/aei00151.

Scully, M. E., A. W. Fisher, S. E. Suttles, L. P. Sanford, and W. C. Boicourt (2015), Characterization and Modulation of Langmuir Circulation in Chesapeake Bay, Journal of Physical Oceanography, 45(10), 2621-2639, doi:10.1175/JPO-D-14-0239.1.

Zhu, W., J. Li, and L. P. Sanford (2015), Behavior of Suspended Sediment in the Changjiang Estuary in Response to Reduction in River Sediment Supply, Estuaries and Coasts, 38(6), 2185-2197, doi:10.1007/s12237-014-9929-8.

Palinkas, C.M., Halka, J.P., Li, M., Sanford, L.P., Cheng, P., 2014. Sediment deposition from tropical storms in the upper Chesapeake Bay: field observations and model simulations. Continential Shelf Research. 86:6-16. http://dx.doi.org/10.1016/j.csr.2013.09.012.

Malpezzi, M.A., Sanford, L.P., Crump, B.C., 2013. The abundance and distribution of transparent exopolymer particles in the turbidity maximum of Chesapeake Bay. Marine Ecology Progress Series, 486:23-35. UMCES Contribution No. 4801.

Porter, E.T., Mason, R.P., Sanford, L.P., 2013. Effects of shear stress and hard clams on seston, microphytobenthos, and nitrogen dynamics in mesocosms with tidal resuspension. Marine Ecology Progress Series, 479:25-46. UMCES Contribution No. 4744.

Dickhudt, P. J., C. T. Friedrichs and L. P. Sanford (2011). "Mud matrix solids fraction and bed erodibility in the York River, USA, and other muddy environments." Continental Shelf Research 31(10 SUPP 1): s3-s13. doi:10.1016/j.csr.2010.02.008. UMCES Contribution No. 4400.

Porter, E. T., R. P. Mason and L. P. Sanford (2010). "Effect of tidal resuspension on benthic–pelagic coupling in an experimental ecosystem study." Marine Ecology Progress Series 413: 33-53. UMCES Contribution No. 4445.

Chen, S.-N., L. P. Sanford, and D. K. Ralston (2009). "Lateral circulation and sediment transport driven by axial winds in an idealized, partially mixed estuary." J. Geophys. Res.. 114. UMCES Contribution No. 4343.

Dickhudt, P. J., C. T. Friedrichs, L. C. Schaffner and L. P. Sanford (2009). "Spatial and temporal variation in cohesive sediment erodibility in the York River estuary: a biologically-influenced equilibrium modified by seasonal deposition." Marine Geology 267: 128-140. UMCES Contribution No. 4350.

Chen, S.N. and Sanford, L.P., 2009. Axial wind effects on stratification and longitudinal salt transport in an idealized, partially mixed estuary. Journal of Physical Oceanography, in press. UMCES Contribution No. 4259.

Chen, S.N. and Sanford, L.P., 2009. Lateral Circulation Driven by Boundary Mixing and the Associated Transport of Sediments in Idealized Partially-Mixed Estuaries. Continental Shelf Research, Continental Shelf Research, 29 (1): 101-118. UMCES Contribution No. 4141

Rinehimer, J.P., Harris, C.K., Sherwood, C.R., and Sanford, L.P., 2008. Estimating Cohesive Sediment Erosion and Consolidation in a Muddy, Tidally-Dominated Environment: Model Behavior and Sensitivity. Estuarine and Coastal Modeling, 10:819-838.

Sanford, L.P., 2008. Modeling a dynamically varying mixed sediment bed with erosion, deposition, bioturbation, consolidation, and armoring. Computers and Geosciences, Computers & Geosciences, 34 (10): 1263-1283 , UMCES Contribution No. 4087.

Chen, S.N., Sanford, L.P., Koch, E.W., Shi, F. and North, E.W., 2007. A Nearshore Model to Investigate the Effects of Seagrass Bed Geometry on Wave Attenuation and Suspended Sediment Transport. Estuaries and Coasts, 30(2): 296-310, UMCES Contribution No. 4077.

Fugate, D.C., Friedrichs, C.T. and Sanford, L.P., 2007. Lateral dynamics and associated transport of sediment in the upper reaches of a partially mixed estuary, Chesapeake Bay, USA. Continental Shelf Research, 27(5): 679–698., UMCES Contribution No. 4137.

Maa, J.P.-Y., Sanford, L.P. and Schoellhamer, D. (Editors), 2006. Estuarine And Coastal Fine Sediment Dynamics. Elsevier, Amsterdam, 540 pp.

North, E. W., R. R. Hood, S.-Y. Chao, L. P. Sanford, 2006. Using a random displacement model to simulate turbulent particle motion in a baroclinic frontal zone: a new implementation scheme and model performance tests. J. Marine Systems, 60(3-4): 365-380. UMCES Contribution No. 3875.

Stoecker, D. K. Long, A., Suttles, S.E., Sanford, L.P., 2006. Effect of Small-Scale Shear on Grazing and Growth of *Pfiesteria piscicida*. Harmful Algae, 5(4): 407-418. UMCES Contribution No. 3958.

Sanford L.P., 2006. Uncertainties in Sediment Erodibility Estimates Due to a Lack of Standards for Experimental Protocols and Data Interpretation. Integrated Environmental Assessment and Management, 2(1):29-34. UMCES Contribution No. 3876.

Li M, Sanford L, Chao S-Y. 2005. Effects of time dependence in unstratified tidal boundary layers: results from large eddy simulations. Estuarine, Coastal and Shelf Science 62(1-2):193-204. UMCES Contribution No. 3799.

North EW, Hood RR, Chao S-Y, Sanford LP. 2005. The influence of episodic events on transport of striped bass eggs to the estuarine turbidity maximum nursery area. Estuaries 28(1):108-123. UMCES Contribution No. 3808.

Chang, M.-L. and Sanford, L.P., 2005. Modeling the effects of tidal resuspension and deposition on early diagenesis of contaminants. Aquatic Ecosystem Health and Management 8 (1): 41-51.

Sanford, L. P., P. Dickhudt, L. Rubiano-Gomez, M. Yates, S. Suttles, C. T. Friedrichs, D. D. Fugate, and H. Romine, 2005. Variability of suspended particle concentrations,

sizes and settling velocities in the Chesapeake Bay turbidity maximum. *in* Flocculation in Natural and Engineered Environmental Systems. I. G. Droppo, G. G. Leppard, P. Liss and T. Milligan, eds. Boca Raton, Florida, CRC Press, LLC: 211-236. UMCES Contribution No. 3597.

Porter, E.T., Cornwell, J.C., Sanford, L. P., Newell, R.I.E., 2004, Effect of Oysters Crassostrea virginica and Bottom Shear Velocity on Benthic-Pelagic Coupling and Estuarine Water Quality. Marine Ecology Progress Series 271:61-75. UMCES Contribution No. 3701.

Porter, E.T., Sanford, L.P., Gust, G. and Porter, F.C., 2004. Combined Water Column Mixing and Benthic Boundary Layer Flow in Mesocosms: Key for Realistic Benthic-Pelagic Coupling Studies. Marine Ecology Progress Series 271:43-60. UMCES Contribution No. 3700.

North, E.W., Chao, S.-Y., Sanford, L.P. and Hood, R.R., 2004. The influence of wind and river pulses on an estuarine turbidity maximum: numerical studies and field observations. Estuaries 27(1): 132-146. UMCES Contribution No. 3715.

Petersen, J.E., Kemp, W. M., Bartleson, R., Boynton, W. R., Chen, C., Cornwell, J. C., Gardner, R. H., Hinkle, D. C., Houde, E. D., Malone, T. C., Mowitt, W. P., Murray, L., Sanford, L. P., Stevenson, J. C., Sundberg, K. L., and Suttles, S. E., 2003. Multiscale Experiments in Coastal Ecology: Improving Realism and Advancing Theory. BioScience, 53, (12): 1181-1197. UMCES Contribution No. 3727.

Ko, F.-C., Sanford, L.P. and Baker, J.E., 2003. Internal recycling of particle reactive organic chemicals in the Chesapeake Bay water column. Marine Chemistry, 81 (3-4): 163-176. UMCES Contribution No. 3650.

Lin, W., Sanford, L.P., Suttles, S.E. and Valigura, R.A., 2002. Drag Coefficients with Fetch Limited Wind Waves. Journal of Physical Oceanography, 32: 3058-3074. UMCES Contribution No. 3577.

Lin, W., L.P. Sanford, and S.E. Suttles, 2002. Wave measurement and modeling in Chesapeake Bay. Continental Shelf Research, 22 (18-19): 2673-2686. UMCES Contribution No. 3487.

Sanford, L.P., Suttles, S.E. and Halka, J.P., 2001. Reconsidering the physics of the Chespeake Bay Estuarine Turbidity Maximum. Estuaries, 24(5): 655-669. UMCES Contribution No. 3469.

Sanford, L.P. and Maa, J.P.-Y., 2001. A unified erosion formulation for fine sediments. Marine Geology, 179(1-2): 9-23. UMCES Contribution No. 3466.

Scheurer, D.L., Schneider, D.C. and Sanford, L.P., 2001. Scaling Issues in Marine Experimental Ecosystems: the Role of Patchiness. In: R.H. Gardner, W.M. Kemp,

V.S. Kennedy and J.E. Petersen (Editors), Scaling Relations in Experimental Ecology. Columbia University Press, New York, pp. 331-360.

Roman, M.R., Holliday, D.V. and Sanford, L.P., 2001. Temporal and Spatial Patterns of Zooplankton in the Chesapeake Bay Turbidity Maximum. Marine Ecology Progress Series, 213: 215-227. UMCES Contribution No. 3411.

Crawford, S.M., and L.P. Sanford, 2001. Boundary shear velocities and fluxes in the MEERC experimental ecosystems. Marine Ecology Progress Series, 210:1-12. UMCES Contribution No. 3395.

Ward, J.E., L.P. Sanford, R.I.E. Newell, and B.A. MacDonald, 2000. The utility of in vivo observations for describing particle capture processes in suspension-feeding bivalve molluscs. Limnology and Oceanography, 45(5): 1203-1210. UMCES contribution no. 3278.

Hagy, J.D., L.P. Sanford, and W.R. Boynton, 2000. Estimation of Net Physical Transport and Hydraulic Residence Times For a Coastal Plain Estuary Using Box Models. Estuaries, 23(3):328-340. UMCES contribution no. 3292.

Sanford, L.P., and S.M. Crawford, 2000. Mass transfer versus kinetic control of uptake across solid-water boundaries. Limnology and Oceanography, 45(5):1180-1186. UMCES contribution no. 3311.

Porter, E.T., L.P. Sanford, and S.E. Suttles, 2000. Gypsum dissolution is *not* a universal integrator of >water motion=. Limnology and Oceanography, 45(1):145-158. UMCES contribution no. 3256.

Kennedy, V.S., and L.P. Sanford, 1999. Characteristics of relatively unexploited beds of the Eastern Oyster, Crassostrea virginica, and of early restoration programs. *in* Luckenbach, M., R. Mann and J. Wesson (eds), Oyster Reef Habitat Restoration. A Synopsis and Synthesis of Approaches, Virginia Institute of Marine Science Press, Gloucester Point, VA, 25-46. UMCES contribution no. 3001.

Petersen, J.E., Sanford, L.P. and Kemp, W.M., 1998. Coastal plankton responses to turbulent mixing in experimental ecosystems. Marine Ecology Progress Series, 171: 23-41. UMCES contribution no. 3205.

Ward, J.E., L.P. Sanford, R.I.E. Newell, and B.A. MacDonald, 1998. A new explanation of particle capture in suspension-feeding bivalve molluscs. Limnology and Oceanography, 43(5):741-752.

Maa, J. P.-Y., L. P. Sanford, and J. P. Halka, 1998. Sediment resuspension characteristics in the Baltimore Harbor. Marine Geology, 146:137-145.

Sanford, L.P., 1997. Turbulent Mixing in Experimental Ecosystem Studies. Marine Ecology Progress Series, 161:265-293, UMCES contribution no. 2796.

Fujiwara, T., Sanford, L.P., Nakatsuji, K., and Y. Sugiyama, 1997. Anticyclonic circulation driven by the estuarine circulation in a Gulf Type ROFI. Journal of Marine Systems, 12:83-99.

Sanford, L.P., and M.-L. Chang, 1997. The bottom boundary condition for suspended sediment deposition. J. Coastal Res., Special Issue 25:3-17. UMCEES contribution no. 2723.

Sanford, L.P., 1994 Wave forced resuspension of upper Chesapeake Bay muds. Estuaries, 17(1B):148-165. UMCEES contribution no. 2476.

Sanford, L.P., and J.P. Halka, 1993. Assessing the paradigm of mutually exclusive erosion and deposition of mud, with examples from upper Chesapeake Bay. Marine Geology, 114:37-57. UMCEES contribution no. 2429.

Sanford, L.P., 1992. New Sedimentation, Resuspension, and Burial. Limnology and Oceanography, 37(6):1164-1178, UMCEES contribution no. 2326.

Sanford, L.P., W.C. Boicourt, and S.R. Rives, 1992. Model for estimating tidal flushing of small embayments. ASCE, J. Waterway, Port, Coastal and Ocean Engineering, 118(6):635-654, UMCEES contribution no. 2277.

Halka, J.P., W. Panageotou, and L.P. Sanford, 1991. Consolidation and Erosion of Deposited Cohesive Sediments in Northern Chesapeake Bay, U.S.A. Geo-Marine Letters, 11(3/4):174-178.

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Sanford, L.P., K.G. Sellner and D.L. Breitburg, 1990. Covariability of dissolved oxygen with physical processes in the summertime Chesapeake Bay. J. Mar. Res., 48(3), 567-590. UMCEES Contribution No. 2140.

Sanford, L.P. and W.C. Boicourt, 1990. Wind forced salt intrusion into a tributary estuary. J. Geophys. Res., 95(C8), 13,357-13,371. UMCEES Contribution No. 2098.

Boicourt, W.C., S.-Y. Chao, H.W. Ducklow, P.M. Glibert, T.C. Malone, M.R. Roman, L.P. Sanford, J.A. Furman, C. Garside, and R.W. Garvine, 1987. Physics and Microbial Ecology of a Buoyant Estuarine Plume on the Continental Shelf. EOS, 68(31), 666-668.

Sanford, L.P. and W.D. Grant, 1987. Dissipation of Internal Wave Energy in the Bottom Boundary Layer on the Continental Shelf. Journal of Geophysical Research, 92 (C2), 1828-1844. UMCEES Contribution No. 1725.

Grant, W.D., L. Boyer, and L.P. Sanford, 1982. The Effects of Bioturbation on the Initiation of Motion of Intertidal Sands, Journal of Marine Research, 40, 659-677.

2. Published first author abstracts

Sanford, L.P. , Boundary layer fluxes over restored oyster reefs, Abstracts of the AGU/ASLO Ocean Sciences Meeting, San Diego, CA, February 2020.

Sanford, L.P. , Biological-Physical Interactions In Fine Sediment Environments, Abstracts of INTERCOH 2017, Montevideo, Uruguay, November 2017.

Sanford, L.P. , Biological-Physical Interactions In Fine Sediment Environments, Abstracts of the Coastal and Estuarine Research Federation Meeting, Providence, RI, November 2017.

Sanford, LP, Physical-Biological Interactions In Muddy Nearshore Environments, Abstracts of the ICOPMAS 2016 Meeting, Tehran, Iran, October, 2016.

Sanford, LP, C. Palinkas, C. Gurbisz, E. Russ, and A. Myrie, Sediment Transport Processes Over The Seasonally Vegetated Bayhead Delta Of The Susquehanna River, Upper Chesapeake Bay, Abstracts of the AGU/ASLO/TOS Ocean Sciences Meeting, New Orleans, LA, February 2016.

Sanford, L.P., and J. Gao, Influences Of Wave Climate And Sea Level On Shoreline Erosion Rates In The Maryland Chesapeake Bay, Abstracts of the Coastal and Estuarine Research Federation Meeting, Portland, OR, November 2015.

Sanford, L.P., Gurbisz, C., and Suttles, S.E., The Physical Environment of Susquehanna Flats, a Seasonally Vegetated River Delta in Upper Chesapeake Bay, USA. Abstracts of the Physics of Estuaries and Coastal Seas Meeting, Porto do Galinhas, Brazil, October 2014

Sanford, L.P., J. Magalen, E. Garland, J. Wands, E. Naranjo, Characterization of sediment erodibility in an urban harbor: Newark Bay, NJ, USA. Abstracts of the INTERCOH 2013 Meeting, Gainesville, FL, October 2013.

Sanford, L.P., R.I.E. Newell, J.E. Richardson, S.E. Suttles, S.A. Haghshenas, and S.R. Kwon, 2012. Sediment Transport Processes And Dispersion Of Biodeposits From A Shallow Oyster Aquaculture Site. Abstracts of the AGU/ASLO/TOS Ocean Sciences Meeting, Salt Lake City, Utah, February 2012.

Sanford, L.P., J.P. Halka, and L. Bell, 2011. Estimating short-term shore erosion rates and associated fine sediment inputs in northern Chesapeake Bay. Abstracts of the INTERCOH 2011 Meeting, Shanghai, China, October 2011.

Sanford, L.P., 2008. Modeling Bedload Transport as a Bed Mixing Process: an Alternative to the Active Layer Approach, abstracts of the 2008 AGU/ASLO Ocean Sciences Meeting, Orlando, FL 2008.

Sanford, L.P., Y.H. Kim, S.E.Suttles, 2007. High Frequency Physical Variability in the Chesapeake Bay Estuarine Turbidity Maximum, abstract of ERF2007 Meeting, Providence, Rhode Island, November 2007.

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Sanford, L.P. and J.P. Halka, 2006. Short-term sediment dynamics and long-term shoreline erosion rates in Chesapeake Bay. Abstracts of the Geological Society of America Meeting, Philadelphia, PA, October 2006.

Sanford, L.P. and E.W. North, 2006. "Interactions between suspended sediment, salt stratification, turbulence, and flocculation in the Chesapeake Bay Turbidity Maximum", abstracts of the Coastal Oceanography Symposium honoring John Simpson, Bangor, Wales, April 2006.

Sanford, L.P. and A. Blumberg, 2005. Modeling resuspension and deposition with a dynamically varying mixed sediment bed. Abstracts of the Biennial ERF Meeting, Norfolk, VA, October, 2005.

Sanford, L.P., 2005. Uncertainties in Sediment Erodibility Estimates Due to a Lack of Standards for Experimental Protocols and Data Interpretation. Proceedings of the Third International Conference on Remediation of Contaminated Sediments, New Orleans, LA, January, 2005.

Sanford, L.P., 2004. Linking Erosion Measurements and Erosion Models. Abstracts of the Physics of Estuaries and Coastal Seas Meeting, Merida, Mexico, October 2004.

Sanford, L.P. and J.H. Churchill, 2003. Limited Bottom Sediment Erodibility as a Control on Storm-Induced Sediment Resuspension in Lake Superior. Abstracts of the annual IAGLR Great Lakes Research Conference, Chicago, IL, June 2003.

Sanford, L. P., 2003. Particle Dynamics in Estuaries: An Overview (and some examples). Abstracts of the Biennial ERF Meeting, Seattle, WA, September, 2003.

Sanford, L. P., 2003. A Simplified, Time- and Stress-Dependent Model of the Muddy Sediment-Water Interface. Abstracts of the INTERCOH 2003 Meeting, Williamsburg, VA, October 2003.

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Sanford, L.P., 2001. A New Method For Characterizing And Modeling Erosion Of Muddy Estuarine Sediments. Abstracts of the Biennial ERF meeting, St. Petersburg, FL, November, 2001.

Sanford, L.P., and S.R. Werner, 2001. Cohesive sediment transport modeling of Baltimore Harbor. Abstracts of the 7th Estuarine and Coastal Modeling Meeting, St. Petersburg, FL, November, 2001.

Sanford, L.P., Chang, M.-L., and E.T. Porter, 2001. Influences of Resuspension-Deposition Cycling and Boundary Layer Diffusion on Benthic-pelagic Fluxes in Muddy Environments. Abstracts of the ASLO 2001 Aquatic Sciences Meeting, Albuquerque, NM, February 2001.

Sanford, L.P., 2000. Processes controlling variability of suspended sediment transport in Northern Chesapeake Bay, MD, USA. Abstracts of the 10th Physics of Estuaries and Coastal Seas meeting, Norfolk, VA, October, 2000.

Sanford, L.P., S.-Y. Chao, M.-L. Chang, J.E. Baker, J.C. Cornwell, J.P. Halka, and Y. Nakagawa, 2000. Modeling Contaminated Sediment Transport in Baltimore Harbor, MD, USA. Abstracts of the INTERCOH 2000 meeting, Delft, the Netherlands, September 2000.

Sanford, L., J. Baker, M.-L. Chang, S.-Y. Chao, J. Cornwell, J. Halka, and Y. Nakagawa, 1999. Modeling fluid, sediment and contaminant transport in Baltimore Harbor, MD. Abstracts of the Biennial ERF meeting, New Orleans, LA, September, 1999.

Sanford, L.P. and J. P.-Y. Maa, 1999. A unified erosion formulation for cohesive sediments. In ACoastal Ocean Processes: A Tribute to William D. Grant@, Abstracts of a Symposium held in Woods Hole, MA, September 27-30, 1998. WHOI Technical Rept. WHOI-99-04: 199-203.

Sanford, L.P. and S.M. Crawford, 1999. Diffusional versus kinetic control of uptake across solid-water boundaries. Abstracts of the ASLO Aquatic Sciences meeting, Santa Fe, NM, February, 1999.

Sanford, L.P., Suttles, S.E., and Crawford, S.M., 1998. Turbulence measurements in laboratory tanks stirred by two different mechanisms. Abstracts of The Oceanography Society meeting, Paris, France, June, 1998. p. 9.

Sanford, L.P., Suttles, S.E., and Crawford, S.M., 1997. Generating and quantifying turbulence in experimental ecosystem tanks. Abstracts of the Biennial ERF meeting, Providence, R.I., October, 1997, p. 162.

Sanford, L.P. and Boicourt, W.C., 1997. Physics of the Chesapeake Bay turbidity maximum. Abstracts of the ASLO Aquatic Sciences meeting, Santa Fe, NM, February, 1997.

Sanford, L., Suttles, S., Halka, J., Ortt, R., Maa, J. P.-Y., and Conley, D., 1995. Field Studies of Suspended Sediment Transport in Baltimore Harbor, MD. Abstracts of the Biennial ERF meeting, Corpus Christi, TX, November, 1995.

Sanford, L.P., S.E. Suttles, E.T. Porter, and R.V. Calabrese, 1995. Generating and Scaling Turbulent Mixing in Laboratory Mesocosms. Abstracts of the ASLO Spring meeting, Reno, NV, June, 1995.

Sanford, L.P., 1995. Scaling Turbulent Mixing in Aquatic Mesocosms Abstracts of the ESA annual meeting, Snow Bird, UT, August, 1995.

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3. Technical reports and non-refereed publications

Jeremy M. Testa, William C. Dennison, William P. Ball, Kathleen Boomer, Deidre M. Gibson, Lewis Linker, Michael C. Runge, and Lawrence Sanford. 2023. Knowledge Gaps, Uncertainties, and Opportunities Regarding the Response of the Chesapeake Bay Estuary to Restoration Efforts. CBP STAC Publication 23-004, 61 pp.

Cornwell, JC, Sanford, LP, and Owens, M. 2022. Cost Effective Denitrification in Oyster Reefs. Final Report to the Chesapeake Bay Trust, August 2022, UMCES Contribution TS-784-22, 46 pp.

Sanford, L.P., Massey, G., Barletta, S., and Fall, K. 2017. The Impacts of Conowingo Particulates on the Chesapeake Bay: Suspended Particle Size, Settling, and

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C. Grants and Contracts

1. Awarded

a. active

"2035 climate change risk and water quality challenges to the Choptank River. 2023-2028. U.S. Environmental Protection Agency. Jian Zhao, William Nardin, Elizabeth North, Lawrence Sanford, Jeremy Testa, Jiabi Du (Texas A&M University). Total to UMCES: $265,539.

b. expired

"Aquaculture Nitrogen Removal Via Microbial Denitrification: Experimental Measurements with Realistic Resuspension of Bivalve Biodeposits". E. Porter, J. Cornwell, and L. Sanford. Maryland Sea Grant College, 2/1/2022-1/31/2024, $23,266 total UMCES budget.

"Quantifying nitrogen removal potential in oyster reefs versus aquaculture in response to hydrodynamic setting and water quality", J. Testa, L. Harris, and L. Sanford, Maryland Sea Grant College, 2/1/2020-1/31/2023, $139,675 total UMCES budget.
"Cost Effective Denitrification Measurement in Oyster Reefs", J. Cornwell, L. Sanford, M. Owens. Chesapeake Bay Trust, 3/2021-4/2022, $80,000 total UMCES budget.

"Effects of Bivalve Biodeposits and Bottom Shear Stress on Sediment Erodibility with Implications for Biodeposit Export from Aquaculture Areas and Sediment Biogeochemistry". E. Porter, J. Cornwell, and L. Sanford, Maryland Sea Grant College, 2/1/2020-1/31/2022, $47,076 total UMCES budget.

"Effects of Oyster Biodeposit Resuspension on Nutrient Release and Ecosystem Dynamics in Chesapeake Bay". E. Porter, L. Sanford, Maryland Sea Grant College, 2/1/18-1/31/21, $12,026 total UMCES budget.

"Natural Engineers in Ecosystem Restoration: Modeling Oyster Reef Impacts on Particle Removal and Nutrient Cycling", L. Harris, J. Testa, E. North, L. Sanford, US Department of Commerce, NOAA-NMFS-NCBO, 10/1/14-9/30/18, $403,757 total budget.

"The Impacts of Conowingo Particulates on the Chesapeake Bay", J. Cornwell, L. Sanford, C. Palinkas, W.M. Kemp, J. Testa, Exelon Corp., 12/5/2014 - 12/31/2017, $1,214,477 total UMCES budget.

"Role of a resilient submersed plant bed in mitigating the effects of increasing river-borne particulate inputs to Chesapeake Bay: Sediment dynamics". L.P. Sanford and C. Palinkas, Maryland Sea Grant College, 2/1/2014-1/31/2017, $143,392 total budget.

"Predicting Impacts of Stressors at the Land-Water Interface", E.W. Koch and L.P. Sanford, US Department of Commerce, NOAA, 9/1/2009 – 2/31/2016, $246,728 UMCES budget.

"The Role of Wind in Estuarine Dynamics", W.C. Boicourt, L.P. Sanford, M. Li, M. Scully, and C. Friedrichs, NSF Ocean Sciences, 6/1/2011-5/31/2015, $353,667 individual budget.

"Long-term Impacts of Different Techniques for Shoreline Stabilization in the Maryland Chesapeake Bay", MD Sea Grant College, L.P. Sanford and 4 others, 2/1/12-1/31/15, $25,425 individual budget.

"Improving Understanding and Simulation of Shallow Water Processes in Chesapeake Bay", L.P. Sanford, USACE, ERDC, 3/1/2013-1/31/2015, $100,000 total budget.

"Predicting Spatial Impacts of Bivalve Aquaculture on Nutrient Cycling and Benthic Habitat Quality", R.Newell, J. Cornwell, and L. Sanford, NOAA, National Sea Grant Office, 10/1/10-9/30/13, $78,905 individual budget.

"Beyond light: defining sediment and water flow SAV habitat requirements", E. Koch and L.P. Sanford, USACE ERDC, 6/2/10-6/1/11, $34,144 individual budget.

"Recovery of the UMCES MUDBED Surface Buoy", L.P. Sanford, NSF Geosciences RAPID Program, 9/1/2010-8/31/11, $8,678.

"Refining site-selection criteria for restoration of SAV in mesohaline Chesapeake Bay: Responses to variable salinity and light conditions associated with runoff and wind events", M. Kemp and L.P. Sanford, USACE ERDC, 6/1/10-5/30/11, $18,277 individual budget.

"Nearshore Sediment Inputs due to Shore Erosion in the Maryland Chesapeake Bay", L.P. Sanford, Maryland Water Resources Research Center, 3/1/09-2/28/10, $19,392.

"Community Sediment Transport Model", W.R.Geyer, C.Sherwood, L.P. Sanford, et al., ONR-NOPP, 6/06-9/09, $130,000 individual budget.

"Collaborative Research: A Real-Time and Rapid Response Observing System for the Study of Physical and Biological Controls on Muddy Seabed Deposition, Reworking, and Resuspension: Request for Supplemental Funding", L. P. Sanford with colleagues from VIMS, NSF Orion Program,1/09 to 12/10. $64,712 individual budget.

"Dynamic stability and particle transformations: tracing pathways of production in Estuarine Turbidity Maxima", E. Houde, L.P. Sanford, et al., NSF Ocean Sciences, 10/05-9/09, $465,220 individual budget.
"Interactions between Shoreline Erosion, Suspended Solids, and Submerged Aquatic Vegetation in the Little Choptank River", L.P. Sanford, E. Koch and J. Halka, Maryland Sea Grant College, 2/05 – 1/08, $74,143 individual budget.

"Planning for the ONR Tidal Flats Directed Research Initiative: Measuring and Modeling Particle Settling and Erosion on Tidal Mud Flats". L.P. Sanford and Y.H. Kim. Office of Naval Research, 4/07-1/08, $39,747.

"Contributions of Shoreline Erosion and Resuspension to Nearshore Turbidity in the Choptank River" J.P. Halka and L.P. Sanford. USEPA Chesapeake Bay Program, 7/02-6/07, $151,896 individual budget.

"Development of a Sediment Transport Model for the Chesapeake Bay: Supporting Physical Data", L.P. Sanford, C. Friedrichs and J. Maa, USACE, 10/03-3/07, $173,625 individual budget.

"Seasonal Measurements of Sediment Erodibility in Lynnhaven River Basin", US Army Corps of Engineers, subcontract through the Virginia Institute of Marine Science, 3/05-1/07, $28,512 individual budget.

"Chesapeake Bay Observing System (CBOS) Cooperative Expansion And Integration Demonstration", Drs. W. Boicourt and L. Sanford. NOAA CBO, 9/04-8/06, $180,000 total budget.

"Do Oyster Filtration and Wave Attenuation Associated With Oyster Reefs and Breakwaters Improve Seagrass Habitat", Dr. R. Hood, E. Koch, R. Newell, L. P. Sanford, E. North, NOAA, Sea Grant, 2/03-1/06, $8,000 individual budget.

"Hydrodynamic Measurements in the Southern Coastal Bays of Maryland", L. Sanford. MD DNR, 3/04-2/05, $26,177.

The role of resuspension in enhancing the remobilization and bioaccumulation of Mercury and Methymercury into bivalves and other benthic organisms." R. Mason, E.T. Porter, and L.P. Sanford, Hudson River Foundation, 7/1/02 – 6/30/04, $23,981 individual budget.

"How do estuarine turbidity maxima entrap particles, retain zooplankton, and promote recruitment of fish?", E. Houde, M. Roman, L. Sanford, R. Hood, S-Y Chao, and C. Friedrichs. NSF Biological Oceanography, 11/00 - 10/04. $299,927 individual budget.

"Toward a mechanistic understanding of outbreaks of Pfisteria and related dinoflagellates", P. Glibert, L. Sanford, et al., ECOHAB Interagency Research Program, 10/98 - 8/04, $204,316 individual budget.

"Calibration of the Operational Baltimore Harbor Model Derived from CHARM", Dr. S.Y. Chao, L. P. Sanford, Maryland Department of Environment, 7/03-12/03, $53,846, total budget.

"Examining sediment transport and dynamics as part of the Lake Superior KITES project", J. Churchill, A.J. Williams, and L.P. Sanford, NSF Ocean Sciences through WHOI, 3/98 - 12/03. $199,220 individual budget.

"Turbulence and mixing studies in experimental ecosystems." L.P. Sanford. USEPA, Multiscale Experimental Ecosystem Research Center, UMCEES. 8/96-7/03, $246,820 individual budget.

"Bottom Sediment Erodibility in Northern Chesapeake Bay" L.P. Sanford, J.P.-Y. Maa, J.C. Cornwell, G.R. Gust, Maryland Sea Grant, 2/02-7/03, approx $35,000 individual budget.

"Comprehensive Harbor Assessment and Regional Modeling (CHARM) Study". J.E. Baker, L.P. Sanford, and S-Y Chao. Maryland Department of the Environment, 7/99 - 12/02. $181,959 individual budget.

"CHARM analysis funds". L.P. Sanford. Maryland Department of the Environment. 1/02-6/02. $20,000.

“Coastal Marine Demonstration of Forecast Information to Mariners for the US East Coast”. L. Walstad and 21 co-PIs. Broad Agency Announcement National Ocean Partnership Program, 8/98 - 12/00. $40,000 individual budget.

“Surface Waves and Air-Sea Fluxes in Chesapeake Bay”, L.P. Sanford, R. Valigura, and J. McQueen, National Sea Grant, 2/98-8/00, $73,823.

“Technical Support for Draft EIS Review on Site 104". L.P. Sanford. Maryland Geological Survey, 9/1/99-5/30/00. $5,317.

“Development of a contaminant transport model for Baltimore Harbor”. L.P. Sanford, S-Y Chao and J. Baker, MDE, 12/97-6/99, $94,500 individual budget.

“SGER: Laboratory Studies on the Influence of Small-Scale Turbulence on Encounter and Feeding of Aquatic Predators”. T. Miller, L. Sanford and V. Kennedy. NSF, 10/97-3/99, $32,998 individual budget.

“Physical Characterization of Upper Bay Island Placement Sites”, L.P. Sanford, Maryland Geological Survey, 7/97-10/98, $25,814.

“TIES: Trophic Interactions in Estuarine Systems.” W. Boynton and 5 Co-PIs, 5 participating scientists (incl. L. Sanford). Individual budget 9/94-1/99, $99,371 individual budget.

"Measurement and Modeling of Surface Waves in Northern Chesapeake Bay". L.P. Sanford. Maryland Sea Grant, 2/95 - 1/98, $115,346.

"Sediment Transport Studies in Baltimore Harbor". L.P. Sanford, D. Conley, J. Halka, and J. Maa. Maryland Department of the Environment, 7/94 - 12/96. $204,500.

"Resuspension studies associated with the Pooles Island unconfined placement study." L.P. Sanford. Maryland Geological Survey. 9/92-3/95, $110,360.

"Responses of a major land-margin ecosystem to changes in terrestrial nutrient inputs: internal nutrient cycling, production, and export". L.P. Sanford, (plus 13 others, separate budgets). NSF Division of Biotic Systems and Resources. 9/88 - 11/94. Approximately $205,000 individual budget.

"Mesocosm Design, Construction, and Operations". J. Cornwell, L.Sanford, T. Kana, and P. Sampou. USEPA, Multiscale Experimental Ecosystem Research Center, UMCEES. 7/93-9/94, $45,023 individual budget.

"Measurement and Modeling of Surface Waves in Northern Chesapeake Bay". L.P. Sanford. Maryland Sea Grant, 5/94-6/94, $5,000.

"Controlled Turbulence Generation and Mixing in Laboratory Microcosms". L.P. Sanford. USEPA, Multiscale Experimental Ecosystem Research Center, UMCEES, 8/92 - 3/93, $9,980.

"Resuspension and Transport of Particulate Associated Toxics in the Northern Chesapeake Bay". L.P. Sanford, J.P. Halka, and J.M. Hill. Chesapeake Bay Environmental Effects/Toxics Research Program through Md. Sea Grant. 9/90 - 12/92. $83,025.

"Design, Monitoring, and Evaluation of Dredge Disposal Programs: Sediment Resuspension Component". L.P. Sanford. Maryland Department of Natural Resources, 7/91 - 6/93, $25,000.

"Sediment Fate Study". L.P. Sanford. Maryland Geological Survey, 10/91 - 9/92, $10,000.

"Sediment Resuspension in the Northern Chesapeake Bay". L.P. Sanford. Maryland Geological Survey, 3/91 - 8/92, $8,000.

"Sediment Resuspension in the Northern Chesapeake Bay", L.P. Sanford. Maryland Geological Survey, 2/90 - 12/90, $7,225.

"Sediment resuspension in the northern Chesapeake Bay". L.P.Sanford. Maryland Geological Survey. 12/1/88 - 11/30/89. $5,090.

"The dynamics of the Chesapeake Bay estuarine plume: MECCAS Physical Program". W.C. Boicourt, L.P. Sanford. NSF Phys. Ocean., 2/88 - 7/89, $97,886.

"Summertime Interaction Between the Chesapeake Bay and the Lower Choptank River Estuary, Year 2". L.P. Sanford, W.C. Boicourt. Maryland DNR, Tidewater Administration, 5/87 to 5/88. $98,686.

"Summertime Variability of Dissolved Oxygen Concentrations in the Mesohaline Chesapeake Bay." K.G. Sellner, L.P. Sanford. Maryland Sea Grant College, 9/87 to 8/88. $14,500.

"Summertime Interaction Between the Chesapeake Bay and the Lower Choptank River Estuary". L.P. Sanford, W.C. Boicourt. Contract with the State of Maryland Department of Natural Resources, Tidewater Administration, 4/86 to 4/87. $44,160.

"A Hydrodynamic Study of the Patuxent River Estuary." W.C. Boicourt, L.P. Sanford. Contract with the State of Maryland Department of Health and Mental Hygiene, Office of Environmental Programs, 6/85 to 6/87. $235,379.

2. <u>Pending</u>

D. Presentations and Invited Seminars

CBP Modeling Workgroup, January 11, 2023, Annapolis, MD (Zoom), "Proposal: The Phase 7 MBM and MTM implementations should include explicit time-variable wave-induced shoreline erosion"

Ad Hoc CRC/NSF Workshop to Inform Modeling of Engineered Aeration in Estuarine Ecosystems, March 4-5, 2020, Annapolis, MD, "How might aeration affect Chesapeake Bay mixing and circulation?"

CBP STAC Workshop on Revisiting Coastal Land-Water Interactions: The Triblet Connection, May 23-24, 2018, Frederick, MD, "A segmented tidal prism flushing model for triblets"

CBP STAC Workshop on Water Clarity Trends in Chesapeake Bay, February 6-7, 2017, Solomons, MD, "Processes and feedbacks especially important to shallow water clarity"

ICOPMAS 2016 Meeting, Tehran, Iran, November 2, 2016, "Physical-Biological Interactions In Muddy Nearshore Environments", Invited Keynote Speaker

CBP-STAC Workshop on Conowingo Infill Influence on Chesapeake Water Quality, January 13-14, 2016, Annapolis, MD. "How Does the Bay Respond to Large Freshwater Events?"

UMCES Board of Visitors, June 12, 2015, Cambridge, MD. "The Sediments Behind Conowingo Dam: A Perfect Storm".

Chesapeake Biological Laboratory, November 19, 2014. Annapolis, MD. "The Physical Environment of Susquehanna Flats"

Chesapeake Modeling Symposium, May 28-29, 2014. Annapolis, MD. "The Physical Environment of Susquehanna Flats"

UMCES Horn Point Laboratory Faculty Seminar, Feb 12, 2014. "Investigations of bivalve biodeposit dispersal from aquaculture farms"

Virginia Institute of Marine Sciences Faculty Seminar, April 12, 2013. "Where does oyster poop go? Investigations of bivalve biodeposit dispersal from aquaculture farms".

Dorchester Shore Erosion Group, November 17, 2012, Cambridge, MD, "Sea Level and the Chesapeake Bays".

Chesapeake Modeling Symposium, May 21-22, 2012, Annapolis, MD. "Physical characteristics of nearshore environments in Chesapeake Bay"

Somerset County Garden Club, March 5, 2012, Princess Anne, MD, "Sea Level and the Chesapeake Bays".

St. Michaels Women's Brunch Bunch, Jan 19, 2012, St. Michaels, MD, "Sea Level and the Chesapeake Bays".

Manhattan College 55th Institute in Water Pollution Control, June 7-11, 2010, Yonkers, NY. Lecture entitled "Sediment Transport in Rivers and Estuaries".

INTERCOH 09 meeting, May 2009, Parati, Brazil. "Variability of floc properties in Chesapeake Bay: observation and modeling", with Y. Kim

Isaac Walton League, October 2008, "Causes and consequences of shore erosion in Chesapeake Bay (with a focus on the Choptank River)"; with J. Halka

Dalhousie University Department of Oceanography, March 2008, "Perspectives on Measuring and Modeling Fine Sediment Erosion".

Chesapeake Modeling Symposium, May 2008, "An overview of sediment transport model applications in the Chesapeake Bay system"

USACE Environmental Research and Development Center, March 2008, "Shore Erosion and Nearshore Sediment Transport in Chesapeake Bay", with Jeff Halka

Coastal Inlets Research Program Technology Transfer Workshop, January 2008, "Shore erosion, nearshore habitat quality and (the other) vegetation", with Eva Koch and Jeff Halka

Chesapeake Bay Program Modeling Subcommittee, January 2008, "Choptank Shore Erosion Study: Sediment Transport Processes".

Dorchester Shoreline Erosion Group, October 2007, "Shore Erosion in Chesapeake Bay - Causes and Consequences"; with Jeff Halka

CBP-STAC SedimentSheds Workshop, January 2007, "Fine-Grained Sediment Transport Processes in Chesapeake Bay", with Carl Friedrichs.

Community Sediment Transport Modeling Meeting, May 2007, "Modeling Cohesive Sediments: Erosion, Deposition, and Bed Processes".

Pan-American Studies Institute Course on Physics of Estuaries, August 2007, "An Introduction to Sediment Transport in Estuaries", with Gail Kineke.

Fall AERS Meeting, October 2006, "Recent Advances In Estuarine Sediment Transport Research"

University of Delaware Geology Department, March 2006, "Measuring and modeling fine sediment erosion"

Horn Point Laboratory, March 2006, “Measuring and modeling fine sediment erosion”

Virginia Institute of Marine Sciences, April 2006, “Measuring and modeling fine sediment erosion”

Geological Society of America Meeting, Philadelphia, October 2006, “Short-term sediment dynamics and long-term shoreline erosion rates in Chesapeake Bay”

Estuarine Research Federation Physics Symposium, October 2005, “Sediment/Particle Transport Dynamics in Coastal and Estuarine Waters: Research Challenges”.

University of Wales Bangor School of Ocean Sciences, August 2005, “A simplified model for supply-limited erosion and consolidation of muddy sediments”.

Proudman Oceanographic Laboratory, Liverpool, UK, July 2005, “Measuring and modeling fine sediment erosion”.

University of Wales Bangor School of Ocean Sciences, June 2005, “Fine Sediment/Particle Transport Dynamics in Coastal Waters: A Personal Perspective on the State of the Art”.

Rutgers University Center for Marine Science, March 2005, “Particle transport dynamics in Chesapeake Bay”.

Johns Hopkins University Center for Environmental and Applied Fluid Mechanics, February 2005, “Particle transport dynamics in Chesapeake Bay”.

USEPA Chesapeake Bay Program Nutrient Subcommittee, May 2004. “Choptank Erosion Study: Sediment Transport Processes”.

Hydroqual, Inc., Mahwah, NJ, February 2004. “The State of the Art in Fine Sediment Transport Research and Modeling”.

Flocculation in Natural and Engineered Environmental Systems, CCIW, Burlington, Ontario, Canada, September 2003. “Variability of Suspended Particle Concentrations, Sizes, and Settling Velocities in the Chesapeake Bay Turbidity Maximum”.

ERF 2003, September 2003, “Particle Dynamics in Estuaries: An Overview (and some examples)”

Talbot Chapter of the Ornithological Society of America, September 2002. The “Turbidity Maximum”, or Why We Need to Know How and Where Freshwater and Saltwater Meet in Chesapeake Bay

St. Michaels Men’s Breakfast Club, June 2002. Interactions between Water Flow, Sediments, and Biology in Upper Chesapeake Bay.

USEPA Chesapeake Bay Program Sediment Workgroup, June 2002. Suspended Sediment Processes in Upper Chesapeake Bay.

AGU/ASLO Ocean Sciences Meeting, Honolulu, HI, February 2002. A Comparison of Different Approaches to Modeling Erosion and Deposition of Fine Sediments.

USFWS et al. Workshop - Information Exchange: Sediment and the Chesapeake Bay Watershed From Top to Bottom, January, 2002. Processes Controlling Suspended Sediment Transport in Northern Chesapeake Bay.

University of Delaware College of Marine Studies and Stevens Institute of Technology, September 2001. A New Method For Characterizing And Modeling Erosion Of Muddy Sediments.

US Army Corps of Engineers workshop on Fine Sediment Engineering Research Needs Of The Corps Of Engineers, July 2001. Perspectives on the State of the Art in Fine Sediment Engineering: Field Measuring Techniques

UMCES, Appalachian Laboratory, November 2000. Processes controlling variability of suspended sediment transport in Northern Chesapeake Bay.

UMCES, Chesapeake Biological Laboratory, September 2000. Transport of Contaminated Sediments in Baltimore Harbor, MD.

UMCES, Horn Point Laboratory, April 1999. Modeling Erosion of Muddy Sediments.

USEPA Chesapeake Bay Program/USACE Chesapeake Bay Modeling Workshop "Sediment Transport Modeling", Annapolis, MD, June 1999. Sediment Transport Measurement and Modeling in Northern Chesapeake Bay.

Woods Hole Oceanographic Institution, Coastal Ocean Processes Symposium, September, 1998. " unified erosion formulation for cohesive sediments.

Stevens Institute of Technology, Davidson Laboratory, October, 1998. Generating and Quantifying Turbulence in Laboratory Tanks.

Port and Harbor Research Institute, Yokosuka, Japan, and CNIRI, Kure, Japan, February, 1998. Sediment Transport Processes in Baltimore Harbor, MD.

Rutgers University Center for Marine and Coastal Science, December, 1997. Cohesive sediment transport processes in upper Chesapeake Bay.

Virginia Institute of Marine Science, November, 1997 and March, 1998. Physical-Biological Interactions in the Chesapeake Bay turbidity maximum.

Waves in Shallow Environments International Meeting, San Francisco, CA, April 1997. Surface wind-wave measurements in Northern Chesapeake Bay.

UMCP Geology Department, February, 1997. Revisiting the Chesapeake Bay Turbidity Maximum: 30 Years Post-Schubel.

Woods Hole Oceanographic Institution, Applied Ocean Physics and Engineering Department, November 20, 1996. Turbulent mixing in aquatic mesocosms.

Old Dominion University Center for Coastal Physical Oceanography, September, 1995. Fine Sediment Resuspension in Northern Chesapeake Bay: Observations, Modeling, and Biogeochemical Consequences.

Hiroshima, Japan, February, 1994. Environmental Problems in Chesapeake Bay, U.S.A.

Chugoku National Industrial Research Institute, Hiroshima, Japan, February, 1994. Sediment resuspension in Chesapeake Bay and its Consequences.

Department of Geography and Environmental Engineering, Johns Hopkins University, September, 1993. Sediment Resuspension and its Consequences: Chesapeake Bay.

USEPA/USACE Workshop on Suspended Sediments and Light Attentuation Modeling, August, 1993. Modeling Sedimentation, Resuspension, and Burial Processes.

Cooperative Oxford Laboratory, July, 1993. Sediment resuspension in northern Chesapeake Bay.

NOAA, National Ocean Service, Ocean Science Seminar, July, 1993. Sediment resuspension in northern Chesapeake Bay and its consequences.

Toxics Research Program Workshop, Solomons, MD, May, 1993. Sediment Associated Resuspension and Transport.

UMCEES, HPEL, December, 1992. Fine sediment resuspension and its consequences.

Maryland Geological Survey, April, 1992. Hydrodynamics of Small Boat Basins. Lecture delivered as part of a short course for Maryland Boating Administration personnel.

UMCEES, Chesapeake Biological Laboratory, May, 1991. Sediment Resuspension in the Northern Chesapeake Bay.

Washington College, Chestertown, MD, February, 1991. Physical Oceanography of the Chesapeake Bay.

UMCEES, HPEL, September, 1989. Summertime interaction between the Choptank River and the Chesapeake Bay.

University of Connecticut, Marine Sciences Department, Avery Point, CT., April, 1988. Estuarine Dissolved Oxygen Variability.

Fall Meeting of the Atlantic Estuarine Research Society, Solomons, MD, Oct., 1988. Dynamics of water, salt, and oxygen exchange between the Choptank River and the Chesapeake mainstem. (part of a mini-symposium on the Choptank River)

University of Delaware, Civil Engineering Department, Newark, DE., Nov., 1984. High Frequency Internal Waves and the Bottom Boundary Layer on the Continental Shelf

UMCEES, HPEL, May, 1984. Interaction of Internal Waves and the Bottom Boundary Layer on the Continental Shelf

Massachusetts Institute of Technology, Ralph M. Parsons Laboratory, Cambridge, MA, April 1980. Measurements of Biological Influences on Initiation of Sediment Motion.

D. Symposia Organized/Chaired for Professional Meetings

"Chesapeake Bay Aquaculture and Habitat Restoration Activities: Science, Challenges, and Opportunities". Chesapeake Community Research Symposium 2020, Zoom Webinar, Session Co-organizer with C. Steppe.

"Sediment Dynamics in Coastal Settings: Observations and Modeling of Sediment Transport, Morphology, and Change on Event to Decadal Timescales", AGU/ASLO/TOS Ocean Sciences Meeting, New Orleans, LA, February 2016. Session Co-organizer with C. Harris, P. Hill, J. Walsh, P. Barnard, J. Long, N. Plant, and P. Ruggiero

"Modeling the Shallows in Chesapeake Bay", Chesapeake Modeling Symposium, Annapolis, MD May 28-29, 2014. Session Co-chair with Carl Cerco, M. Friedrichs, L. Lanerolle

Co-organized the INTERCOH 2013 Meeting on Cohesive Sediment Transport, Gainesville, FL, Oct 21-24, 2013, with A Mehta and C Harris.

"Observations and Physical-Biogeochemical Modeling at the Fringes: Land-Water and Air-Water Interactions", Chesapeake Modeling Symposium, Annapolis, MD May 21, 2012. Session Co-chair with Maria Tzortziou, Carl Cerco, Raleigh R. Hood , Patrick J. Neale and Kevin Rose

"Sediment Transport and Deposition in Lakes, Estuaries, and Shallow Shelves, AGU/ASLO/TOS Ocean Sciences Meeting, Salt Lake City, UT, February 2012. Session Co-chair with N. Hawley and C. Harris.

"Sediment processes I: transport and deposition in lakes, estuaries, coastal bays, and continental shelves", AGU/ASLO/TOS Ocean Sciences Meeting, Portland, OR, March 2010. Session Co-chair with N. Hawley and C. Harris.

"Sediment Transport in Lakes, Estuaries, and Shallow Shelves", AGU/ASLO/TOS Ocean Sciences Meeting, Orlando, FL, March 2008. Session Co-chair with N. Hawley, B. Lescht, and C. Harris.

"Physical Dynamics and Pathways for Production in River-Estuary Transition Zones", 19th Biennial Estuarine Research Federation Conference, Providence, RI, November 2007. Session Co-chair with Ed Houde.

"Estuarine Sediment Dynamics and Morphodynamics". 18th Biennial Estuarine Research Federation Conference, Norfolk, VA, October 2005. Session Co-chair with Carl Friedichs.

Co-Organizer of INTERCOH 2003: the 7th International Conference on Nearshore and Estuarine Cohesive Sediment Transport Processes, October 1-4 2003, Gloucester Point, VA, with Jerome Maa and David Schollhamer.

"Dynamics of Estuarine Particles". Symposium Organized for the 17th Biennial Estuarine Research Federation Conference, Seattle, WA, September 2003. Session Co-Chair with C. Friedrichs.

"Particle Dynamics in Estuaries". 12th Biennial International Estuarine Research Federation Conference, Hilton Head, SC, November, 1993, Session co-chair with G. Gelfenbaum and D. Reed.

"Coastal and Estuarine Circulation". 1988 AGU Fall Meeting, San Francisco, CA, 12/88. Session chairman.

"Coastal land-sea interfaces: transformations and transport". 1988 AGU Spring Meeting, Baltimore, MD, 5/88. Session chairman.

E. Memberships in Professional Societies

Active - American Geophysical Union, Coastal and Estuarine Research Federation
Presently Inactive - Association for the Sciences of Limnology and Oceanography, The Oceanography Society, Tau Beta Pi, Sigma Xi

F. Other Professional Recognition

1. Awards and National/International Committee Memberships

INTERCOH Steering Committee Member, 2009-2023; Chair, 2011-2017
UMCES President's Award for Excellence in Application of Science, 2011
Member of Limnology and Oceanography: Fluids and Environments Editorial Advisory Board, 2008 - 2010
Estuarine Research Federation Reviewing Award, 2007
Kirby Laing Fellowship for Visiting Scholars, School of Ocean Sciences, Univ. of Wales, Bangor, June-August 2005

MEES Teaching Award, 1996
NSF Graduate Fellowship, 1978-1981

2. Peer Review Activities

a. Proposals reviewed

NSF Oceanography (50)
NSF Other (12)
NSERC Canada (2)
City University of New York (1)
NOAA Coastal Ocean Program (8)
NOAA Sea Grant (CA, MA, ME, NY, NH, DE, FL, National Office, TX) (27)
NOAA National Undersea Research Center, CT and NY/NJ (8)
Hudson River Foundation (19)
San Francisco Bay-Delta Research Enhancement Program (1)
National Environment Research Council, UK (4)
Louisiana DEPSCoR Program (6)
Elkhorn Slough Research Foundation (3)
MITACS Canada (1)
Maine Tech Asset Fund (4)
NWO/Dutch Research Council (2)
National Park Service (1)

b. Articles reviewed

Book Chapters (10)

American Society of Civil Engineers Journals (8)
Aquaculture Environment Interactions (2)
CBP/STAC (1)
Coastal Engineering (3)
Computers and Geosciences (3)
Continental Shelf Research (8)
Environmental Science and Technology (1)
Estuaries & Coasts (29)
Estuarine, Coastal, and Shelf Science (20)
Frontiers in Marine Science (2)
Geophysical Research Letters (1)
Harmful Algae (1)
Integrated Environmental Assessment and Management (1)
Journal of Atmospheric and Oceanic Technology (1)
Journal of Coastal Research (2)
Journal of Environmental Quality (2)
Journal of Experimental Marine Biology and Ecology (1)
Journal of Geophysical Research (Oceans, Earth Surface) (44)
Journal of Great Lakes Research (2)

Journal of Hydraulic Research (4)
Journal of Marine Research (5)
Journal of Marine Systems (9)
Journal of Oceanic Engineering (2)
Journal of Physical Oceanography (1)
Journal of Sea Research (2)
Journal of Sedimentary Research (4)
Journal of the American Water Resources Association (1)
Limnology and Oceanography (22)
Marine Ecology Progress Series (5)
Marine Geology (3)
Methods in Oceanography (2)
Nature Scientific Reports (1)
Ocean Dynamics (12)
Ocean Modeling (5)
PeerJ (2)
Progress in Oceanography (2)
Regional Studies in Marine Science (1)
River Research and Applications (1)
San Francisco Estuary and Watershed Science (2)
Science of the Total Environment (1)
Scientia Marina (1)
Sedimentology (2)

c. External promotion and tenure reviews

1 in 1990; 1 in 1997; 1 in 1998; 1 in 1999; 1 in 2001; 1 in 2003; 1 in 2005; 1 in 2006; 1 in 2007, 1 in 2009; 2 in 2011; 1 in 2012; 1 in 2015; 1 in 2021; 1 in 2022; 2 in 2023

d. External Review Panels

William and Mary School of Marine Science External Review Team, VIMS, Glouchester Pt., VA, January 2017
USEPA Review of Optical Monitoring in Berry's Creek, NJ, Fall 2016.
USACE ERDC Coastal and Hydraulics Laboratory Strategic Plan Review, Summer 2012
Maine Technology Asset Fund Panel, March 2009
HRF Proposal Panel, June 2007
EPA STAR Fellowship Panel, February 2004
NJ NOAA NURP Panel, December 2001
NOAA Coastal Ocean Program ECOHAB Proposal Review Panel, July, 1999
New York Sea Grant Proposal Review Panel, Stony Brook, NY, July, 1995
Contaminated Sediments in Boston Harbor Review Panel, Boston, MA, May, 1995

3. Invited Participation in Workshops

CBP STAC Workshop on “Leveraging Artificial Intelligence and Machine Learning to Advance Chesapeake Bay Research and Management: A review of status, challenges, and opportunities”, February 24-25, 2025, Edgewater, MD

CBP STAC Workshop on “CBP Climate Change Modeling III: Post-2025 Decisions”, May 7-9, 2024, Arlington, VA.

CBP Beyond 2025 Symposium, Harrisburg, PA, February 28-March 1, 2024

Ad Hoc CRC/NSF Workshop to Inform Modeling of Engineered Aeration in Estuarine Ecosystems, March 4-5, 2020, Annapolis, MD,

MES/UMCES Workshop on “Use of Sediments to Protect Low-Lying Areas of the Chesapeake Bay”, January 23-24, 2019, Annapolis, MD

CBP STAC Workshop on “Revisiting Coastal Land-Water Interactions: The Triblet Connection”, May 23-24, 2018, Frederick, MD

MDE/UMCES Workshop on “Considerations Regarding Fish and Flow at the Conowingo Dam”, Annapolis, MD, April 2, 2018

CBP STAC Workshop “Integrating Recent Findings to Explain Water Quality Change: Support for the Mid-Point Assessment and Beyond”, December 12-13, 2017, Annapolis, MD

CBP STAC Workshop, “Water Clarity Trends in Chesapeake Bay”, February 6-7, 2017, Solomons, MD and May 2, 2017, Annapolis, MD

CBP-STAC Workshop, “Conowingo Infill Influence on Chesapeake Water Quality”, January 13-14, 2016, Annapolis, MD.

Hudson River Foundation Workshop, “Planning for CARP II”, September 2014, New York, NY

CBP STAC Workshop, “Multiple Models for Management in the Chesapeake Bay (M3.2)”, February 2013, Annapolis, MD

CBP STAC Workshop, “Using Multiple Management Models in the Chesapeake Bay: A Shallow Water Pilot Project”, April 2012, Gloucester Point, VA

CBP STAC Tidal Sediments Workshop, May 2009, Presenter and Steering Committee Chair

Coastal Inlets Research Program Technology Transfer Workshop, January 2008, Sarasota, FL

Chapman Conference on Waves and Mud, November 2008, Amelia Island, FL

CBP STAC Workshop, “An Introduction to Sedimentsheds: Sediment and its Relationship to Chesapeake Bay Water Clarity”, January 2007, Annapolis, MD, Steering Committee Member and Presenter

ACT Workshop on Seabed Sensor Technology, Savannah, GA, February 2006

CBP STAC Workshop on Modeling in the Chesapeake Bay Program: 2010 and Beyond, January 2006, Annapolis MD, Steering Committee Chair

CBP STAC Shallow Water Monitoring Workshop, December 2004, Steering Committee Member and Co-chair

Steering Committee Member, NSF CoOP Coastal Benthic Exchange Dynamics Workshop, St. Petersburg, FL, April 2004

Hudson River Foundation Workshop on Sediment Transport in the Hudson River, New York, New York, November 2003.

Workshop on Flocculation in Natural and Engineered Environmental Systems, CCIW, Burlington, Ontario, Canada, September 2003.

USEPA Chesapeake Bay Program STAC workshop on Shoreline Erosion and Chesapeake Bay water quality, Annapolis, MD, January 2003.

USGS-Sponsored Workshop on Development of a Community Sediment Transport Model, Williamsburg, VA, October 2002.

USFWS et al. Workshop - Information Exchange: Sediment and the Chesapeake Bay Watershed From Top to Bottom, January, 2002.

US Army Corps of Engineers workshop on Fine Sediment Engineering Research Needs Of The Corps Of Engineers, July 2001.

USGS-sponsored National Community Sediment Transport Model Workshop, Woods Hole, MA, June 2000.

USEPA Chesapeake Bay Program Workshop on Modeling Sediment Transport in Chesapeake Bay, June 1999.

Chesapeake Bay Program sponsored workshop on A Contaminant Mass Balance for Chesapeake Bay, Solomons, MD, May 1998

Maryland Department of the Environment/Maryland Port Authority workshops assessing contaminant problems in Baltimore Harbor, March and October, 1997.

USEPA/USACE Workshop on Suspended Sediments and Light Attentuation Modeling in Chesapeake Bay, August, 1993

CBEEC sponsored Toxics Research Program Workshop, May, 1993

UNOLS workshop on Future Vessel and Facility Needs for Coastal Marine Science, February, 1993

New York Bight NOAA/NURP Scientific Mission Workshop, May, 1992

Chesapeake Research Consortium workshop on research needs in toxics fate and transport, December, 1990

USEPA Workshop on Derivation of National Saltwater Dissolved Oxygen Criteria, November, 1990

H. Consulting activities

Berry's Creek Optical Monitoring Peer Review, for USEPA via Louis Berger Consulting, 2016.

Circulation and Flushing of Spesutie Narrows, Field and Modeling Studies at APG, Aberdeen, MD, for Morris & Ritchie Associates, Georgetown, DE, 2012.

Part-time Consultant/Employee with HDR/Hydroqual, Inc., Mahwah, NJ. 2004-2017.

Review of Environmental Impact Report on Breakwater Construction in Rockhold Creek, MD, for Community and Environmental Defense Services, Owings Mills, MD, 2003.

Testimony for private dredging permit application, for Andrews, Miller, and Associates, 2001

ADCP measurements at Site 104 in Chesapeake Bay, for SAIC, Newport, R.I., 1999.

Review of EA Engineering Report on the stability of lead shot buried in sediments at the NY Athletic Club Trap Range, February, 1997.

Review of Poplar Island Test Dike Monitoring Report, for EA Engineering, Science, and Technology at the request of the USACE; independent review of a controversial monitoring report, 1996.

"Tygart Lake Selective Withdrawal Water Quality Analysis", proposed hydroelectric power plant design evaluation for National Renewalable Resources, Inc., 1993.

"Transport, Dispersion, and Flushing Characteristics of the Bay Farm Marina", technical analysis for environmental impact assessment statement, with W.C. Boicourt, 1988-91.

Technical consultant for National Research Council report on "Physical Oceanography of Georges Bank". 1989.

Technical editor of National Research Council report on "Physical Oceanography in the Outer Continental Shelf Environmental Studies Program". 1988.

"Wave/Current Environment and Sediment Transport Patterns in the Vicinity of South Ferry Point on the Magothy River," expert testimony prepared and delivered before the Anne Arundel County Board of Appeals, April, 1986.

IV. EDUCATION AND TRAINING CONTRIBUTIONS

Full Member, UMCES Graduate Faculty
Full Member, MEES Graduate Faculty

A. USM courses taught

MEES 607 – Quantitative Methods in the Environmental Sciences, 3 credit course with E. North, J. Baker, T. Miller, L. Harris, or H. Bi, Fall 2002, 2003, 2004, 2006, 2007, 2008, 2010, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2020; sole instructor 2022, 2024. 3-14 students per year.

MEES708V: River-Estuary Transitions in the Anthropocene, 1 credit seminar with Cindy Palinkas, Spring 2017, 10 students

MEES 708D/E Stratified Turbulence, 2 credit seminar with N. Nidzieko, Spring 2015, 9 students

MEES 608A/B – Topics in Boundary Layers and Sediment Transport, 1 credit seminar with C. Palinkas, Spring 2013, 7 students

MEES 608K – Fluid Dynamics in Ecology, 2 credit seminar with E. Koch, Fall 2011, 11 students

MEES 608F – Bio-physical coupling in upper estuaries; 1 credit seminar with other HPL faculty, lead by E. North, Fall 2006, 10 students

MEES 608G – Bottom Boundary Layer and Sediment Transport Processes, 2 credit reading course, Spring 2004, 3 students.

MEES 608J - Fluid Dynamics in Ecology, 1 credit seminar with E. Koch, Spring 1997 (11 students), Spring 2002 (3 students)
MEES 698T - Field and Laboratory Methods for Marine and Estuarine Sciences, Field Methods in Physical Oceanography Module, HPL, Spring, 1996, 1997, and 1998 with W. Boicourt. 5-8 students.

MEES 661 - Physics of Marine and Estuarine Environments, College Park, MD, Fall 1985, 1986, 1987, 1988, 1989 (1 lecture), 1990, 1991, 1992, 1993, 1994, 1995, 1997, 1998, 1999 (2 lectures), 2000, 2014 (2 lectures). 3 credit course team taught with other HPL Physical Oceanographers, usually 10 lectures. 10-30 students.

MEES 699 - Readings in Boundary Layers and Sediment Transport Processes, HPL, Fall 1998, 1 credit seminar, 6 students.

MEES 608G - Analysis of Scale in Experimental Ecosystems, Spring, 1995, 1 credit seminar with M. Kemp. 10 students.

MEES 608D - Seminar entitled "Fluid Dynamics in Ecology", HPEL, Spring 1994. 15 students.

MEES 608D - Ecological Aspects of Boundary Layer Flow, HPEL, Fall 1988. 1 credit seminar, 8 students.

B. Education committees

USM Academic Affairs Advisory Council, 2016 - 2025

MEES Program Committee, 1993-1996, 2016 - 2025, Chair (2017)

UMCES Graduate Faculty Council, 1994-1996, 2016 – 2025, Chair

MEES Learning Outcomes Assessment Committee, 2019-2020

UMCES Program, Courses, and Curriculum Committee, 2017-2025

UMCES Accreditation Self-Study Report 2014-2015, 2020-2021

HPL Education Committee, 1990, 1991, 1993-96, 2016 - 2018, Chair 1994-95 and 2015

UMCES Accreditation Readiness Report Committee 2013

Oceanography AOS Admissions Committee, Oct 2009 – 2010

Member of UMCES Academic Forum Committee, 2001-2004

Co-Chair, MEES Oceanography Area of Specialization Committee, 1993-1996

Chair, MEES in CEES Review Committee, 1995

Committee to formulate CEES and MEES Oceanography curriculum, 1990-93

Chair, Organizing committee for 4th CEES Graduate Colloquium, 1991

Committee to formulate UMES-UMCEES Joint Masters Program, 1991

C. Student training

1. Degrees conferred

Mahdi Khademishamami Ph.D., MEES, December 2024, co-Advisor with William Nardin, “Particle Attachment and Entrainment in Marine Substrates Using Numerical Modeling and Laboratory Experiments”

Lynda Bell, MS, MEES, August 2020. “Dynamic Equilibrium Beach Profiles: Forces of Offshore Sediment Transport in Maryland's Chesapeake Bay”

Stephanie Barletta, MS, MEES, May 2020, “Spatial And Temporal Variability In Suspended Sediment Characteristics In The Surface Layer Of The Upper Chesapeake Bay”

Mathew Biddle, MS, MEES, December 2019, part-time student co-advised with C Palinkas, “Modeling Impacts Of Submersed Aquatic Vegetation On Sediment Dynamics Under Storm Conditions In Upper Chesapeake Bay”

Alexander Fisher, PhD, MEES, December 2016, “The Effects Of Surface Gravity Waves On Air-Sea Momentum Transfer And Vertical Mixing In A Fetch-Limited, Estuarine Environment”

Jia Gao, MS, MEES, May 2015, (co-advised with W Boicourt), “Influences Of Wave Climate And Sea Level On Shoreline Erosion Rates In The Maryland Chesapeake Bay”

Rebecca Swerida, MS, MEES, May 2013, (co-advised with Evamaria Koch) “Water Flow And Sediment Grain Size As Co-Varying Sav Habitat Requirements”

Shih-Nan Chen, Ph.D., MEES, “Density- and wind-driven lateral circulation and the associated transport of sediments in idealized, partially mixed estuaries”, June 2008

Weiqi Lin, Ph.D., MEES, ”Modeling Surface Wind Waves and Their Effects on Air-sea Fluxes in Chesapeake Bay”, December 2000

Miao-Li Chang Ph.D., MEES, "Influences of Resuspension and Deposition on Early Diagenesis of Nutrients and Contaminants", November, 1999

Elka T. Porter Ph.D., MEES (co-advisor with J. Cornwell), “Physical and Biological Scaling of Benthic-Pelagic Coupling in Experimental Ecosystem Studies”, March 1999

Sean Crawford M.S., MEES, Dec. 1998
"Effects of turbulence on boundary layer fluxes in experimental ecosystems"

Brian Alleva M.S., MEES, Dec. 1994
"A System for Predicting Wave-Induced Sediment Resuspension Potential and Wave Energy Flux in an Enclosed Sea"

Keith Ruffin M.S., MEES, Dec. 1995 (Co-Advisor with Dr. Karen Prestegaard, UMCP)
"The Effects of Hydraulic Clam Dredging on Nearshore Turbidity and Light Attenuation in Chesapeake Bay"

2. Graduate students currently supervised

3. Graduate student committees

MEES doctoral candidates

Luis Alves, Robert Doyle, Marilyn Mayer, Cathy Wigand, Louise Wooten, Judith Stribling, Fung-Chi Ko, Kim Warner, Ken Moore, Karla Heidelberg, Juanita Urban-Rich, John Petersen, Zhen Li, Clark Freise, James Hagy, Gary Smith, Jeff Ashley, Xiping Ma, Brian Badgley, Rick Bartleson, Eun-Hee Kim, Matt Johnson, Scott Lloyd, Abby Schneider, Chih-Wei Chang, Rebecca Holyoke, Dave Scheurer, Daniel Lee, Cassie Gurbisz, Qianru Niu, Dale Booth, Wei Liu, Hao Wang, Emily Russ, Sarah Laperierre, Melanie Jackson, Anna Windle, Brendan Campbell**,** Amir Azarnivand

MEES Masters candidates

Janet Neundorfer, David Nemazie, Kathy Gloersen, Beth Bettendorf, Jonathan Johnston, Kelly Jones, Christine Baier, Peggy Derrick, James Hagy, Kelly Merrell, Koichiro Nakanishi, Carina Chiscano, Kim Benson, Chih-Wei Chang, Abby Cohen/Schneider, Teresa Coley, Jeremy Testa, Ed Davis, Zhenghua Jin, Melissa Grant, Katie McKone. Mike Malpezzi, Renee Gruber, Mindy Forsyth, Kevin Kahover, Hannah Morrisette, Archi Howlader, Katie Lecorchick, Stefenie Shenoy

External Graduate Student Committees –

Tim Cook, MS candidate, University of Delaware, Lewes, DE
Kathy Ketteridge, Ph.D. candidate, Stevens Institute of Technology, Hoboken, NJ
Lora McGuinness, Ph.D. candidate, Rutgers University, New Brunswick, NJ
Jing Lin, Ph.D. candidate, Virginia Institute of Marine Sciences, Gloucester Pt., VA
Jarrell Smith, Ph.D. candidate, Virginia Institute of Marine Sciences, Gloucester Pt., VA
Grace Cartwright, PhD candidate, VIMS, Gloucester Pt, VA
Patrick Dickhudt, MS candidate, VIMS, Gloucester Pt, VA
James Dioro, MS candidate, UMCP Mechanical Engineering
Brent Law, MS candidate, Dalhousie University
S. Abbas Haghshenas, PhD Candidate, (unofficial, hosted 3 month visit in 2011), K. N. Toosi University of Technology, Tehran, Iran

W. Zhu, PhD Candidate, (hosted 16 month visit 9/2012-1/2014), East China Normal University, Shanghai, China
Kelsey Fall, PhD Candidate, VIMS, Gloucester Pt., VA
Jessica Turner, PhD Candidate, VIMS, Gloucester Pt., VA
Rooni Matthew, PhD Candidate, TU Delft, the Netherlands

4. Undergraduate advising

HPEL Summer Student Program -

Nicholas Wolfe, 1986; Joseph Ortiz, 1987; Shane Forsythe, 1992.

Sea Grant NSF REU Program -

Becky Zavistoski 1990; Linda Hastings 1991, Eric Luft 1994, Dieu Ngu,1997, Amy Long 2001, Marissa Yates 2002, Laura Rubiano-Gomez 2003, Khiem Nguyen 2010, Sarah Kwon 2011 (also on Senior Thesis Committee at Eckerd College, 2012); Angela Cole 2013; Alex Myrie 2015, Kiera Givens 2016, Ella Kaplan 2018

UMCP Atmospheric and Oceanic Sciences Capstone Program –

Nick Hawkins 2019-20

D. Postdoctoral Training

Yong Hoon Kim, September 2006-February 2009
Weiqi Lin, January-July, 2001
Sandra Werner, October 2000 – September 2001
Miao-Li Chang, December 1999 – March 2000
Elka Porter, March 1999 – July 2000

V. SERVICE

A. Popular Articles

Sanford, L.P., "Science is important, but people must be at the center", Op Ed in the Bay Journal, December 2024

Worked with Jeff Brainard, Maryland Sea Grant, on article in December 2011 Chesapeake Quarterly, "Big Year for Bay Storms, Bad Year for Bay Sediment?"

Worked with Jack Greer, Maryland Sea Grant, on article in Summer 2008 Chesapeake Quarterly, "Shadow on the Chesapeake"

Sanford, L. P., 2003. "Voyage to the bottom of the sea: one researcher's sedimental journey". Bay Journal, May 2003.

Worked with Karl Blankenship on article for the Bay Journal, July 2002: Sediment Happens: The question is what are we going to do about it?

Worked with Maryland Sea Grant on article in March-April 2001 Marine Notes: Taking on Toxics in Baltimore Harbor.

Sanford, L.P., 1993. Physical Processes in Chesapeake Bay. Article in UMCEES 1991-1992 Annual Report.

Worked with Maryland Sea Grant on article in October 1993 "Marine Notes", entitled "Toxics in the Bay: the Bottom Line"

Sanford, L.P., 1988. Studies of Estuarine Circulation: The Case of the Choptank River. Article in UMCEES 1987 Annual Report.

Worked with Maryland Sea Grant on article in Dec. 1989 "Marine Notes", entitled Bay Hypoxia - The Circulation Factor.

B. Public Service

Member of USEPA Chesapeake Bay Program Scientific and Technical Advisory Committee, January 2002 – 2010 and September 2018-present, Executive Board 2008 – 2010 and 2021 – present, Vice Chair 2021-2023, Chair 2023-2025, Past Chair 2025-2027

Participated on discussion panel about the CBP Beyond 2025 efforts, sponsored by Shore Rivers, Temple B'nai israel, Easton, MD November 14, 2024

Presented public seminar entitled "The University of Maryland Center for Environmental Science (UMCES), Horn Point Laboratory (HPL): an Introduction, to the St Michaels Mens Breakfast Club, St. Michaels Harbor Inn, July 14, 2022.

Presented public seminar entitled "Sea Level Rise in the Chesapeake Bay", 14 West Hamilton Street Club of Baltimore, June 10, 2020, Zoom.

Presented public seminar entitled "An Overview of Climate Change: Causes, Impacts, and Actions", Bayleigh Chase Retirement Community, May 29, 2019, Easton, MD.

Presented public seminar entitled "The Conowingo Dam Controversy – An Update", Chesapeake Bay Maritime Museum Volunteers, October 17, 2018, St. Michaels, MD

Presented public seminar entitled "The Sediments Behind Conowingo Dam: A Perfect Storm", Sherwood Seminar Group, January 16, 2018, Sherwood, MD

Steering Committee member for CBP STAC Workshop on "Water Clarity Trends in Chesapeake Bay", February and May 2017, Solomons, MD.

* Ad Hoc member of CBP Modeling Workgroup, 2010-present

Ad Hoc member of CBP Shallow Water Modeling Inter-comparison Evaluation Group, 2015-2018

Member of CBP Expert Panel on the use of Oyster Aquaculture and Restoration Activities as Best Management Practices, 2015-present

Presented "Bay 101" public seminar on Sea Level and the Chesapeake Bays, Horn Point Laboratory, April 2016.

Steering Committee member for CBP STAC Workshop on "Conowingo Infill Influence on Chesapeake Water Quality", January 13-14, 2016, Annapolis, MD.

Presented public seminar on "The Sediments Behind Conowingo Dam: A Perfect Storm". Chesapeake Bay Maritime Museum, November 18, 2015, St. Michaels, MD.

Presented public seminar on Sea Level and the Chesapeake Bays, Christ Church, St. Michaels, February 2013

Member of External Review Panel for USACE Engineer Research and Development Center (ERDC) Coastal and Hydraulics Laboratory (CHL) Strategic Planning, Vicksburg, MS, May-September 2012

Presented public seminar on Sea Level and the Chesapeake Bays, Dorchester Shoreline Erosion Group, November, 2012

Presentation to Saints Peter and Paul Middle School 7th Grade on Sea Level and the Chesapeake Bays, December 2011

Presented public seminar on Sustainable Oyster Aquaculture, Christ Church, St. Michaels, November 2011

HPL representative on Dorchester Citizen's Advisory Committee for the Mid-Atlantic Power Pathway Proposal, 2009-2010

Chaired STAC Review of the Water Clarity and SAV components of the Chesapeake Bay Program Water Quality and Sediment Transport Model, March 2010

Ad Hoc member of CBP Modeling Subcommittee Science Advisory Committee for Development of the new Water Quality Sediment Transport Model, 2008 -

Co-organized CBP STAC Workshop on "An Introduction to Sedimentsheds: Sediment and its Relationship to Chesapeake Bay Water Clarity", January 2007, Annapolis, MD

Presentation to Saints Peter and Paul Elementary School 3rd Grade on estuarine circulation, September 2007

Presented 2 public seminars on Global Warming, Christ Church, St. Michaels, November 2006

Organized CBP STAC workshop on CBP STAC Workshop on Modeling in the Chesapeake Bay Program: 2010 and Beyond, January 2006, Annapolis MD

Co-organized CBP STAC Shallow Water Monitoring Workshop, December 2004, Annapolis, MD

Co-organized (with S. Phillips) USEPA STAC 1-day workshop on Shoreline Erosion and Chesapeake Bay Water Quality: A Scientific Evaluation of Prediction Uncertainty, Potential for Improvement, and Management Implications, January, 2003

Member of the USEPA Chesapeake Bay Program Sediment Workgroup, June 2002-2011

Member of NY/NJ Harbor Estuary Program Contaminant Assessment and Reduction Project Modeling Evaluation Group, October 2000-2004

Member of USEPA Chesapeake Bay Program Modeling Subcommittee, Hydrodynamic Model Evaluation Team, Jan. 2000 – Jan. 2002

Member of State of Maryland working group assessing the environmental suitability of plans for creation of island sites for dredged sediment disposal in upper Chesapeake Bay, Fall 1997-Spring 2001

Member of State of Maryland working group assessing the environmental suitability of plans for reusing previously discontinued Site 104 for dredged sediment disposal in upper Chesapeake Bay, 1998-2000

Helped coordinate and participated in meeting between citizens advisory panel and UMCES scientists on issues related to Deepening the Chesapeake and Delaware Canal and Baltimore Harbor Connecting Channels, 1997, and participated in multi-institution Science Workshop on the same issue, February, 1998.

Reviewed USACE Draft Environmental Assessment - Open Water Dredged Material Placement Areas G-East and Site 92, Chesapeake Bay, MD, May, 1997.

Maces Lane Middle School, Cambridge, MD., Feb., 1985, January, 1986, December 1986, and February, 1989. Career Day - spoke to 8th graders about oceanography

C. Laboratory and Center

Laboratory and Center Committees –

UMCES Representative to the RISE UPP PROMISE Academy Postdoc to Faculty program, 2023-present
Co-Chair, UMCES Diversity, Equity, and Inclusion Collaborative, 2020-present

Member of HPL Diversity, Equity, and Inclusion Committee, 2020-present
UMCES Administrative Council 2016-present
UMCES Executive Council 2016-present
Co-Chair, UMCES Program, Curriculum, and Course Committee, 2017-2021
Chair, UMCES Graduate Faculty Council, 2016 - present
Chair, MEES Program Committee, 2016-2018
Ad-Hoc Scientific Oversight Committee for Horn Point Campus Shoreline Restoration Plan, 2012-2014
Chair, UMCES Environmental Sustainability Council, 2008 - 2012
Chair, HPL Environmental Sustainability Committee, 2007- 2012, 2018-2020
Member, HPL Environmental Sustainability Committee 2014-2016
Chair, HPL Library Committee, 2000-2004; Member 1996-97, 2004-2006
Chair, HPL Computer Committee, 1997-99 and 2012 - 2016; Member 1986, 1988-1994, 1999-2002, 2004-2008, 2011-2012
Chairman, Diving Control Board, 1986-1994, Member, 1994 - 1997
Facilities Committee, 1987
HPL Education Committee, 1990, 1991, 1993-1996 (Chair 1995), 2014, 2016-2018
Ad Hoc Program Committee for Experimental Ecosystem and Seafood Products Laboratory, 1993-1994

Faculty Search Committees -

Geochemist Search Committee, CBL, 1994
Physical Oceanographer Search Committee, HPL, 1993, 2000, 2001, 2016, 2017, 2018
UNIX System Administrator searches, 1997, 1998, 1999, 2003, 2007
HPL Director of Information and Electronic Services search, 1998, 1999
Bio-Physical Search Committee, 2004
Coastal Sedimentologist Search Committee, Chair, 2005
Coastal Physical Oceanographer Search Committee, Chair, 2009
IT Director Search Committee, Chair, 2012
CBL Food Web Ecologist Search, 2014
HPL Faculty Cluster Hire Search, 2015

UMCES Faculty Senate 2012 – 2016

Chair of UMCES Presidential Review Committee 2012-2013
Planning Committee for UMCES Convocation 2014
Co-chair of UMCES Computing Capacity Committee 2015-2016

UMCES Promotion and Performance Review Committees

1 in 1995, 1 in 1996, 1 in 2000, 1 in 2001, 1 in 2009, 1 in 2010, 4 in 2011, 1 in 2015, 7 in 2017, 1 in 2018, 1 in 2020, 1 in 2022, 1 in 2023, 1 in 2024, 1 in 2025

Participated in and helped with logistics for Chesapeake Champion Event, Sept 2014, 2015, 2016

Participated in Christening of New UMCES Research Vessel Rachel Carson, November 2008

Participated in preparation of 1st UMCES Integration and Application Network report on "Science and Site 104", September 1999

Participated as a lead debater in the UMCES Colloquium debate "Is it the responsibility of scientists to communicate science to decision makers and the public", October 1999

Participant in 1992 UMS President's Club meeting and demonstration at UMCEES and HPEL

Regular Participant in HPL Open Houses

Participant in a 1991 AT&T Equipment Proposal for the CEES-lead Chesapeake Bay Observing System Initiative, resulting in a substantial computer equipment award

Participant in filming of HPEL Video, 1990

Consulted for design of new HPEL seawater system, re. estimates of sediment resuspension and design of seawater system intake structure, 1989.

Organized and conducted bathymetric survey of HPEL dock area for installation of new seawater system, March, 1988