November 2024

Curriculum Vitae
Steven D. Meyers

Chief Scientist
Center for Maritime and Port Studies
College of Marine Science
140 Seventh Avenue South
University of South Florida
St. Petersburg, FL 33701-5001

Office Phone: 727.553.1188
FAX: 727.553.1189
E-mail: smeyers@usf.edu
Scopus *h*-factor: **20**
Google Scholar *h*-factor: **24**
ORCID #0000-0003-1592-9050

Education

Florida State University, Tallahassee, FL	Oceanography	postdoc, 1991-1993
University of Texas at Austin, Austin, TX	Physics	Ph.D., 1990
University of Rochester, Rochester, NY	Physics	B.S., 1984
University of Rochester, Rochester, NY	Mathematics	B.A., 1984

Appointments

Technical Member, Florida Flood Hub, 2022-present.
Handling Editor, Transportation Research Record, National Academy of Sciences, 2020-present.
Chief Scientist, Center for Maritime and Port Studies, USF, 2017-present.
Mentor, NSF Research Experience for Undergraduates, summer 2024
Senior Scientist, Ocean Modeling and Prediction Laboratory, USF, 2001-2017 (30 hr/wk, 0.75 FTE).
Visiting Assistant Professor, University of South Florida, 1998-2001.
Co-Assoc. Director, Center Ocean-Atmosphere Prediction Studies, Florida State University. 1994-1998.
Research Associate, Center Ocean-Atmosphere Prediction Studies, Florida State University. 1993-1994.
ONR Educator Postdoctoral Fellowship, Mesoscale Air-Sea Interaction Group, Florida State University. 1991-1993.

Recent and Current Research Topics and Achievements

- Lead Editor, "Advances in Ship Wake Studies", Frontiers in Marine Science special issue, 2022-present
- Using a genetic algorithm to select causeway cut-throughs that reduce HABs by optimizing hydrodynamic flushing while minimizing costs
- Assessing the methodologies used to create SLR projections in 2022 US federal assessment
- Monitoring wave strength before and after installation of a living shoreline in Pinellas County
- Applying artificial intelligence to improve vessel identification
- Modeling the impact of sea level rise on vessel navigation in coastal regions
- Machine learning to examine increased risk of coastal infrastructure failure due to sea level rise
- Address nitrogen pollution by empowering at risk communities to organize and co-develop culturally sensitive, science-based solutions. (Blue-gap.org)

Synergistic Activities

- Working with RESTORE Center of Excellence to examine data and metadata standards for oceanographic measurement on the West Florida shelf
- Developed prototype genetic algorithm to select causeway modifications in Old Tampa Bay in collaboration with Tampa Bay Estuary Program

- Collaborating with GCOOS and SECOORA on the application of AI to maritime navigation
- Working with the Tampa Bay Estuary Program to assess shoreline erosion from ship wakes
- Partner with international team modeling the impact of barrier island loss on tides and storm surge
- Member of Climate Science Advisory Panel, Tampa Bay
- Alternate member of Tampa Bay Regional Planning Association

Professional Organizations and Associations
American Geophysical Union, Florida Climate Institute, International Environmental Modeling and Software Society, Florida Academy of Sciences, Coastal and Estuarine Research Federation, American Meteorological Society West Central Florida, Tampa Bay Climate Science Advisory Panel, US Coastal Research Program

Reviewer (2018-2023)
Journals: J. Operational Oceanography, J. Coastal Research; J. of Waterway, Port, Coastal, and Ocean Engineering; Frontiers in Marine Science; Estuaries and Coasts; J. of Marine Science and Application; Geophysical Research Letters; IEEE Access; J. Geophysical Research: Oceans; Maritime Policy & Management; Marine Pollution Bulletin; Urban Climate; Maritime Transport Research, Geo-spatial Information Science
Programs: Canadian Strategic Science Fund ($100M)

Recent Presentations:
2024: Steven Meyers, Laura Azevedo, Linden Cheek, Mauricio Arias, Megan Kramer, Mark Luther, Stacey Day, Robert Burns, Alexandra Rieman, Zach Westfall, Ed Sherwood and Marcus Beck, Wave Monitoring at Philippe Park in Support of Living Shorelines, Gulf of Mexico Conference (GOMCOM), February 19-24, Tampa, FL.
2024: Steven Meyers, Marcus W. Beck, Ed T. Sherwood, and Mark E. Luther, Reducing Choice Paralysis Using a Genetic Algorithm with Application to Infrastructure Modification in Old Tampa Bay (poster), Gulf of Mexico Conference (GOMCOM) , February 19-24, Tampa, FL.
2024: Steven Meyers, Laura Azevedo, and Mark Luther, Wave Monitoring at Philippe Park in Support of Living Shorelines, Tampa Bay Estuary Program Technical Advisory Committee, Pinellas Park, FL (INVITED).
2023: Steven Meyers, Laura Azevedo, and Mark Luther, Wave Monitoring at Philippe Park in Support of Living Shorelines, Tampa Bay Habitat Restoration Consortium, Pinellas Park, FL (INVITED).
2023: Steven Meyers, Laura Azevedo, and Mark Luther, Prototyping New Machine Learning Tools for Maritime Operations, and US Leadership in a Critical Field, Radio Technical Commission for Maritime Services, Annual Assembly, June 13-15, 2023, Jacksonville, FL (INVITED).
2023: Steven Meyers, Ed Sherwood, Marcus Beck, Stacey Day, Robert Burns, Laura Carvalho, Linden Cheek, Alexandra Rieman, Zach Westfall, and Mark Luther, Assessing the Wave Environment Near Safety Harbor, FL, Gulf of Mexico Climate and Resilience Community of Practice annual meeting coming to Florida, May 15-17, Sarasota, FL.
2022: Steven Meyers, Frank Muller-Karger, Ibrahim Demir, David Cwiertny, Marcus Beck, BlueGAP Platform: Purpose, Content, and Design, NSF BlueGAP Workshop, Tampa, FL, Oct 20-21.
2022: Steven Meyers and Mark Luther, Designing a Genetic Algorithm for the Selection of Causeway Cut-Throughs in Old Tampa Bay: Planning and Prototyping, Old Tampa Bay Working Group, virtual, June 2.
2022: Steven Meyers and Mark Luther, Extreme Vessels Meet Extreme Values, Creating Hazards Near the Coast, Extreme Value Analysis and Application to Natural Hazards, May 18, Orlando, FL
2022: Steven Meyers, Andrew Kramer, and Mark Luther, Florida at Risk: Maritime Connectivity During the COVID-19 Pandemic, Florida Academy of Sciences, virtual, March 11.

2022: Steven Meyers, Shawn Landry, and Mark Luther, A Simple Machine Learning Approach to Modeling Sanitary Sewer Overflows in Southern Pinellas County, FL, BASIS 7, St. Petersburg, FL, February 28.
2022: Steven Meyers and Mark Luther, Predicting High Cross-Currents Near South Florida Ports Using Machine Learning: Initial Result, SECOORA Coastal Observing in Your Community Webinar, January 25.
2021: Andrew M. Kramer, Steven Meyers, and Mark Luther, Estimating risk for epidemic spread via maritime shipping networks in the context of SARS-CoV-2, Epidemics, Bologna, Italy, Dec. 2.
2021: Steven Meyers, Shawn Landry, and Mark Luther, Using Logistic Regression to Model the Risk of Sewer Overflows Triggered by Compound Flooding with Application to Sea Level Rise, Florida Water & Climate Alliance Webinar, Sep 2.
2021: Steven Meyers and Mark Luther, A Bibliometric Analysis of Research on Maritime Traffic Data from the Automatic Identification System, Sixth Biennial Marine Transportation System Innovative Science and Technology Conference: Advancing the Marine Transportation System through Automation and Autonomous Technologies: Trends, Applications and Challenges, March 15.
2021: Steven Meyers and Mark Luther, Predicting High Cross-Currents Near South Florida Ports Using Machine Learning: Initial Results, NOAA Ocean and Coastal Community Modeling Workshop, Oct. 20.
2021: Steven Meyers and Mark Luther, Developing a Machine Learning Tool for the Prediction of High-Speed Cross-Currents Near South Florida Ports, NOAA Coastal Ocean Modeling Seminar, Dec. 14.
2020: Steven Meyers, Shawn Landry, and Mark Luther, Machine Learning Applied to Sewer Overflows and Sea Level Rise, Florida Stormwater Association, Jul 15.
2020: Steven Meyers and Mark Luther, Evaluating the Maritime Response to Puerto Rico Following Hurricane Maria using AIS Data (poster), AGU Ocean Sciences, Feb 18.

Recent Peer-Reviewed Publications

2024: Meyers, S.D., S. Day, and M.E. Luther, Measurements of High-Froude Number Boat Wakes Near a Seawall, Frontiers in Marine Science (submitted).
2024: Shrestha, S., J. Mount, G. Vald, Y. Sermet, D.J. Samuel, C. Bryant, A.C. Peralta, M.W. Beck, S.D. Meyers, F.E. Muller-Karger[7], D.Cwiertny, I. Demir, A Community-Centric Intelligent Cyberinfrastructure for Addressing Nitrogen Pollution using Web Systems and Conversational AI, Environmental Modelling and Software, submitted.
2024: Meyers, S.D., M.W. Beck, E.T. Sherwood, and M.E. Luther, Prototyping A Genetic Algorithm for Selecting Infrastructure Modifications that Optimize Hydrodynamic Flushing in Tampa Bay, Estuaries and Coasts, doi:10.1007/s12237-024-01387-y.
2022: Meyers, S.D., A. Kramer, M.E. Luther, Florida at Risk: Maritime Connectivity During the COVID-19 Pandemic, Florida Scientist, 85(3/4), 118-136.
2022: Meyers, S.D., Y. Yilmaz, M.E. Luther, Some Methods for Addressing Errors in Static AIS Data Records, Ocean Engineering, doi:10.1016/j.oceaneng.2022.112367.
2022: Azevedo, L., S. Meyers, A. Pleskachevsky, H.P.P. Pereira, and M.E. Luther, Characterizing Rogue Waves in the Entrance of Tampa Bay (Florida, USA), J. Mar. Sci. Eng., 10(4), 507; doi.org/10.3390/jmse10040507.
2021: Meyers, S.D., M.E. Luther, S. Ringuet, G. Raulerson, E. Sherwood, K. Conrad and G. Basili, Ship Wakes in Tampa Bay, Ocean and Coastal Management, 211, doi.org/10.1016/j.ocecoaman.2021.105749.
2021: Meyers, S.D., L. Azadevo, M.E. Luther, A Scopus-based Bibliometric Study on the Use of Maritime Automatic Identification System Data in Artificial Intelligence and Related Research, Transportation Research Interdisciplinary Perspectives, doi.org/10.1016/j.trip.2021.100387.

2021: Meyers, S.D., S.M Landry, M. Beck, M.E. Luther, Using Logistic Regression to Model the Risk of Sewer Overflows Triggered by Compound Flooding with Application to Sea Level Rise, Urban Climate, doi.org/10.1016/j.uclim.2020.100752.

2020: Meyers, S.D., M.E. Luther, S. Ringuet, G. Raulerson, E. Sherwood, K. Conrad and G. Basili, Characterizing Vessel Traffic using the AIS: a Case Study in Florida's Largest Estuary, Journal of Waterway, Port, Coastal, and Ocean Engineering, 10.1061/(ASCE)WW.1943-5460.0000592.

2020: Meyers, S.D. and M.E. Luther, Simulating the Impact of Sea Level Rise on Maritime Navigation within a Large, Channelized Estuary, Maritime Policy & Management, doi.org/10.1080/03088839.2020.1723810.

2017: Meyers, S. D., A. Linville, and M. E. Luther, Changes in Residence Time Due to Large-Scale Infrastructure in a Coastal Plain Estuary. Journal of Coastal Research**,** 33(4), 815-828.

2017: Arnold, B., S. D. Meyers, M. E. Luther, S. Geiger, D. Narvaez, E. Hoffman, and M. E. Luther, Salinity and Larval Dispersal in Pensacola Bay and Its Implications for Restoration of Oyster Reefs, Journal of Shellfish Research**,** 36(1), 101-118.

2016: Ulm, M., Arns, A., Wahl, T., Meyers, S.D., Luther, M.E. and J. Jensen, The Impact of Barrier Island Loss on Extreme Events in Tampa Bay. Frontiers in Environmental Science, doi: 10.3389/fmars.2016.00056.

2015: Wahl, T., S. Jain, J. Bender, S.D. Meyers and M.E. Luther, Increased Risk of Compound Flooding from Storm Surge and Rainfall for Major US Cities, Nature Climate Change, doi:10.1038/nclimate2736.

2015: Meyers, S.D., Wilson, M., Luther, M.E., 2015. Observations of hysteresis in the annual exchange circulation of a large microtidal estuary. Journal of Geophysical Research, Oceans 120, 2904-2919.

Recent Non-Reviewed Publications

2024: Meyers S.D., R.H. Weisberg, S. Beckwith, J.C. Donovan, J.A. Law, C. Lembke, M.E. Luther, C.R. Merz, & Y. Liu Chapter 7: Physics & Oceanography Data. In: Lecours, V. & Braswell, A. (Eds.), A Meta-Analysis of Marine Benthic Data and Metadata Standards: A Florida Perspective. To appear.

2024: Mitchum, G., Benedict, D., Chambers, D., Dahl, K., Kirtman, B., Merrifield, M., Meyers, S., Nerem, R. S., Obeysekera, J., Thompson, P., (2024). *Sea Level Rise Scenarios for Florida* (Florida Flood Hub Technical Report Series – 001). doi: 10.5038/XAIU7152.

2023: Meyers, S.D. and M.E. Luther, Philippe Park SeaWall Wave Monitoring, TBEP Technical Report #07-23. https://drive.google.com/file/d/1uLkEvKfx89qf5lcRlS9C3huDAfPHOqWi/view

2023: Luther, M.E., S.D. Meyers, S. Ringuet, G. Raulerson, E. Sherwood, K. Conrad and G. Basili, Ship Wakes in Tampa Bay and Their Potential Shoreline Impacts, Ocean and Coastal Management, BASIS 7 Proceedings, St. Petersburg, FL, March 03, 2022, accepted.

2023: Meyers, S.D., S.M Landry, M. Beck, M.E. Luther, A Simple Machine Learning Approach to Modeling Sanitary Sewer Overflows in Southern Pinellas County, FL, BASIS 7 Proceedings, St. Petersburg, FL, March 03, 2022, accepted.

2022: Meyers, S.D. and M.E. Luther, Designing a Genetic Algorithm for the Selection of Causeway Cut-Throughs in Old Tampa Bay: Planning and Prototyping, TBEP Technical Report #08-22.

2022: Meyers, S.D. and M.E. Luther, Improving the Management of Maritime Traffic in Southeast US Waters Using Machine Learning, SECOORA Technical Report, link.

2019: Meyers, S.D., M.E. Luther, S. Ringuet, G. Raulerson, E. Sherwood, K. Conrad and G. Basili, Meyers, S.D. and M.E. Luther. 2019. Ship Wakes in Tampa Bay. Tampa Bay Estuary Program, St. Petersburg, FL. TBEP Technical Report #06-19. 68 pp.

2019: Meyers, S.D and M.E. Luther, Potential Changes in Salinity Associated with Port Tampa Bay New Berth Construction in East Bay, Port Tampa Bay, 22 pp.

2018: Meyers, S.D., M.E. Luther, S. Ringuet, G. Raulerson, E. Sherwood, K. Conrad and G. Basili, Wakes from Large Vessels and the Risk to the Shoreline Environment in Tampa Bay, Proceedings OCEANS 2018, Charleston, SC.

2018: Luther, M.E., S.D. Meyers, and J. Scudder. Real Time Observations of Oceanographic and Meteorological Parameters for Maritime Transportation: Origins and Novel Applications, Proceedings OCEANS 2018, Charleston, SC.
2016: Meyers, S.D., M.E. Luther, M. Ulm, A. Arns, T. Wahl, and J. Jensen, How Losing Egmont Key Will Impact Tides and Storm Surge in Tampa Bay, Proceedings of the Bay Area Scientific Information Symposium, 221-225.
2016: Meyers, S.D., M.E. Luther and A.M. Moss, Changes in Residence Time Due to Large-Scale Infrastructure in a Coastal Plain Estuary, Proceedings of the Bay Area Scientific Information Symposium, 10-18.

Earlier Peer-Reviewed Publications:

2014: Burghart, S., L. D. VanWoundenberg, C., S. D. Meyers, R. P. Kitzmiller, E., and M. Breitbart, DNA Barcoding of Individual Fish Eggs to Assess Spawning Aggregations. *Marine Ecology Progress Series*, 503**:** 195-204
2014: Meyers, S. D. and M. E. Luther, Real-Time Oceanographic Data : From Safety to Science. *Eos, Transactions American Geophysical Union*, 95**:** 305-306
2014: Wilson, M., S. D. Meyers, and M. E. Luther, Synoptic Volumetric Variations and Flushing of the Tampa Bay Estuary. *Climate Dynamics*, 29**:** 914-918.
2013: Meyers, S. D., A. Linville, and M. E. Luther, Alteration of Residual Circulation Due to Large-Scale Infrastructure in a Coastal Plain Estuary. *Estuaries and Coasts***:** 1-15.10.1007/s12237-013-9691-3
2010: Havens, H., M. E. Luther, S. D. Meyers, and C. A. Heil, Lagrangian Particle Tracking of a Toxic Dinoflagellate Bloom within the Tampa Bay Estuary. *Marine Pollution Bulletin*, 60**:** 2233-2241
2009: Havens, H., M. E. Luther, and S. D. Meyers, A Coastal Prediction System as an Event Response Tool: Particle Tracking Simulation of an Anhydrous Ammonia Spill in Tampa Bay. *Marine Pollution Bulletin*, 58**:** 1202-1209
2008: Meyers, S. D. and M. E. Luther, A Numerical Simulation of Residual Circulation in Tampa Bay. Part Ii: Lagrangian Residence Time. *Estuaries and Coasts*, 31**:** 815-827.10.1007/s12237-008-9085-0
2007: Meyers, S. D., M. E. Luther, M. Wilson, H. E. Holm, A. Linville, and K. Sopkin, A Numerical Simulation of Residual Circulation in Tampa Bay. Part I: Low-Frequency Temporal Variations. *Estuaries and Coasts*, 30**:** 679-697
2006: Shi, J. Z., M. E. Luther, and S. Meyers, Modelling of Wind Wave-Induced Bottom Processes During the Slack Water Periods in Tampa Bay, Florida. *International Journal for Numerical Methods in Fluids*, 52**:** 1277-1292
2006: Wilson, M., S. D. Meyers, and M. E. Luther, Changes in the Circulation of Tampa Bay Due to Hurricane Frances as Recorded by Adcp Measurements and Reproduced with a Numerical Ocean Model. *Estuaries and Coasts*, 29**:** 914-918
2005: Luther, M. E. and S. D. Meyers, Hydrodynamic Simulations of Circulation and Dependent Physical Parameters in the Palm River and Mckay Bay, 253 pp.
2005: Meyers, S. D., Luther, M.E., Circulation Modeling in the Vicinity of the H.L. Culbreath Bayside Power Station, Hillsborough Bay, Florida.
2001: Meyers, S. D., E. M. Siegel, and R. H. Weisberg, Observations of Currents on the West Florida Shelf Break. *Geophysical Research Letters*, 28**:** 2037-2040
2001: Zamudio, L., A. P. Leonardi, S. D. Meyers, and J. J. O'Brien, Enso and Eddies on the Southwest Coast of Mexico. *Geophysical Research Letters*, 28**:** 13-16.10.1029/2000gl011814
2000: Basu, S., S. D. Meyers, and J. J. O'Brien, Annual and Interannual Sea Level Variations in the Indian Ocean from Topex/Poseidon Observations and Ocean Model Simulations. *Journal of Geophysical Research: Oceans*, 105**:** 975-994.10.1029/1999jc900231
1999: Melsom, A., S. D. Meyers, J. J. O'Brien, H. E. Hurlburt, and J. E. Metzger, Enso Effects on Gulf of Alaska Eddies. *Earth Interactions*, 3**:** 1-30

1999: Meyers, S. D. and S. Basu, Eddies in the Eastern Gulf of Alaska from Topex/Poseidon Altimetry. *Journal of Geophysical Research: Oceans*, 104**:** 13333-13343
1999: Meyers, S. D., J. J. O'Brien, and E. Thelin, Reconstruction of Monthly SST in the Tropical Pacific Ocean During 1868–1993: Using Adaptive Climate Basis Functions. *Monthly Weather Review*, 127**:** 1599-1612
1999: Mizoguchi, K.-i., S. D. Meyers, S. Basu, and J. J. O'Brien, Multi- and Quasi-Decadal Variations of Sea Surface Temperature in the North Atlantic. *Journal of Physical Oceanography*, 29**:** 3133-3144
1999: Spiesberger, J. L., H. E. Hurlburt, M. Johnson, M. Keller, S. Meyers, and J. J. O'Brien, Acoustic Thermometry Data Compared with Ocean Models: The Importance of Enso in Modifying the Ocean Interior. *J. Acoust. Soc. Ameri.*, 106**:** 2120-2120
1998: Meyers, S. D., A. Melsom, G. T. Mitchum, and J. J. O'Brien, Detection of the Fast Kelvin Wave Teleconnection Due to El Niño-Southern Oscillation. *Journal of Geophysical Research: Oceans*, 103**:** 27655-27663
1998: Spiesberger, J. L., H. E. Hurlburt, M. Johnson, M. Keller, S. Meyers, and J. O'Brien, Acoustic Thermometry Data Compared with Two Ocean Models: The Importance of Rossby Waves and Enso in Modifying the Ocean Interior. *Dynamics of Atmospheres and Oceans*, 26**:** 209-240
1996: Meyers, S. D., M. A. Johnson, J. L. Spiesberger, M. Liu, and J. J. O'Brien, Interdecadal Variability in a Numerical Model of the Northeast Pacific Ocean: 1970-89. *J. Phys. Oceanogr.*, 26**:** 2635-2652
1995: Kelly, B. G., S. D. Meyers, and J. J. O'Brien, On a Generating Mechanism for Yanai Waves and the 25-Day Oscillation. *Journal of Geophysical Research: Oceans*, 100**:** 10589-10612
1995: Meyers, S. D. and J. J. O'Brien, Pacific Ocean Influences Atmospheric Carbon Dioxide. *Eos, Transactions American Geophysical Union*, 76**:** 533-533
1994: Meyers, S. D., Cross-Frontal Mixing in a Meandering Jet. *Journal of Physical Oceanography*, 24**:** 1641-1646
1994: Meyers, S. D., J. F. Magnan, and J. J. O'Brien, Fractal Trajectories in a Numerical Model of the Upper Indian Ocean. *Nonlin. Proc, Geophy.*, 1**:** 45-50
1994: Meyers, S. D., C. S. Jones, D. M. Legler, K. F. Miles, and J. J. O'Brien, The Sensitivity to Parametric Variation in Direct Minimization Techniques. *Monthly Weather Review*, 122**:** 1632-1639
1993: Meyers, S. D., B. G. Kelly, and J. J. O'Brien, An Introduction to Wavelet Analysis in Oceanography and Meteorology: With Application to the Dispersion of Yanai Waves. *Monthly Weather Review*, 121**:** 2858-2866
1991: Behringer, R. P., S. D. Meyers, and H. L. Swinney, Chaos and Mixing in a Geostrophic Flow. *Physics of Fluids*, 3**:** 1243-1249
1989: Meyers, S. D., J. Sommeria, and H. L. Swinney, Laboratory Study of the Dynamics of Jovian-Type Vortices. *Physica D: Nonlinear Phenomena*, 37**:** 515-530
1989: Sommeria, J., S. D. Meyers, and H. L. Swinney, Laboratory Model of a Planetary Eastward Jet. *Nature*, 337**:** 58-61
1988: Sommeria, J., S. D. Meyers, and H. L. Swinney, Laboratory Simulation of Jupiter's Great Red Spot. *Nature*, 331**:** 689-693