



Steven E. Lohrenz

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Research Interests

My focus of research is the study of biological distributions and productivity as well as cycling of carbon and nutrients in coastal and ocean waters using ship-based measurements and optical and remotely sensed observations. Recent research includes characterization of land-ocean interactions using coupled ecosystem models to assess impacts of climate and land use change, optical assessment of air-sea carbon fluxes in river-dominated margins, optical detection and assessment of harmful algal blooms, and application of remote sensing and in situ optical measurements and models for description of primary production and phytoplankton distributions. Dr. Lohrenz has authored or co-authored more than 65 peer-reviewed articles in scientific journals.

Current Research

PI, "An Integrated Terrestrial-Coastal Ocean Observation and Modeling Framework for Carbon Management Decision Support" (collaborative project with Auburn University, University of Delaware, and North Carolina State University) NASA, \$1.2M over three years (\$228K to UMass Dartmouth).

PI, "Research and Education in Quantitative Fisheries and Ecosystem Science," NOAA (subaward through the Woods Hole Oceanographic Institution), \$360K over three years.

Selected Recent Publications

- Fichot, C. G., **S. E. Lohrenz**, and R. Benner (2014). Pulsed, cross-shelf export of terrigenous dissolved organic carbon to the Gulf of Mexico. *Journal of Geophysical Research: Oceans*, 10.1002/2013JC009424.
- Xue, Z., R. He, K. Fennel, W.-J. Cai, **S. Lohrenz**, and C. Hopkinson (2013). Modeling ocean circulation and biogeochemical variability in the Gulf of Mexico. *Biogeosciences* 10(11), 7219-7234.
- Lohrenz, S. E.**, W.-J. Cai, S. Chakraborty, K. Gundersen, and M. C. Murrell (2013). Nutrient and carbon dynamics in a large river-dominated coastal ecosystem: the Mississippi-Atchafalaya River system. In *Biogeochemical Dynamics at Major River-Coastal Interfaces: Linkages with Global Change*, edited by T. S. Bianchi, M. A. Allison and W.-J. Cai, pp. 448-472, Cambridge University Press.
- Huang, W.-J., W.-J. Cai, R. M. Castelao, Y. Wang, and **S. E. Lohrenz** (2013). Effects of a wind-driven cross-shelf large river plume on biological production and CO₂ uptake on the Gulf of Mexico during spring, *Limnol. Oceanogr.*, 58(5), 1727-1735.
- Cai, Y., L. Guo, X. Wang, **S. E. Lohrenz**, and A. Mozjiz (2013). Effects of tropical cyclones on river chemistry: A case study of the lower Pearl River during Hurricanes Gustav and Ike. *Estuarine, Coastal and Shelf Science*, 129, 180-188.
- Zhou, Z., L. Guo, A. M. Shiller, **S. E. Lohrenz**, V. L. Asper, and C. L. Osburn (2013). Characterization of oil components from the Deepwater Horizon oil spill in the Gulf of Mexico using fluorescence EEM and PARAFAC techniques. *Marine Chemistry* 148:10-21.
- Liu, M., H. Tian, Q. Yang, J. Yang, X. Song, **S. E. Lohrenz**, and W.-J. Cai (2013). Long-term trends in evapotranspiration and runoff over the drainage basins of the Gulf of Mexico during 1901-2008. *Water Resources Research* 49:1-25.
- Cai, Wei-Jun, Xiping Hu, Wei-Jen Huang, Michael C. Murrell, John C. Lehrter, **Steven E. Lohrenz**, and nine others (2012). Acidification of subsurface coastal waters enhanced by eutrophication. *Nat. Geo.* 4, 766-770; DOI:10.1038/ngeo1297.
- Lohrenz, S. E.**, W.-J. Cai, F. Chen, X. Chen, and M. Tuel (2011). Seasonal variability in air-sea fluxes of CO₂ in a river-influenced coastal margin. *Journal of Geophysical Research-Oceans* 115(C10), C10034.
- Cai, W.J., and **S. E. Lohrenz** (2010). The Mississippi River plume and adjacent margin in the Gulf of Mexico. In: *Carbon and Nutrient Fluxes in Continental Margins: A Global Synthesis* (K. K. Liu, L. Atkinson, R. Quiñones and L. Talaue-McManus, Eds.), Springer-Verlag, NY.
- Lohrenz, S. E.**, G. L. Fahnenstiel, O. Schofield, and D. F. Millie (2008). Coastal sediment dynamics and river discharge as key factors influencing coastal ecosystem productivity in southeastern Lake Michigan. *Oceanography* 21: 60-69.
- Lohrenz, Steven E.**, W. J. Cai, X. Chen, and M. Tuel (2008). Satellite assessment of bio-optical properties of northern Gulf of Mexico coastal waters following hurricanes Katrina and Rita, *Sensors* 8: 4135-4150; DOI: 10.3390/28074135.
- Lohrenz, Steven E.**, W. J. Cai, M. Dagg, D. Redalje, and J. Acker (2008). A retrospective analysis of nutrients and phytoplankton productivity in the Mississippi River plume. *Cont. Shelf Res.*; DOI: 10.1016/j.csr.2007.06.019.