

Bingqing Liu, Ph.D.
Post-doctoral Researcher, The Water Institute of the Gulf

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Education

Ph.D. in Oceanography and Coastal Sciences, May 2020
Louisiana State University, Baton Rouge, Louisiana

M.S. in Oceanography, July 2015
Shanghai Ocean University, Shanghai, China

B.S. in Environmental Science, July 2012
Shanghai Ocean University, Shanghai, China

Research Interests

Ocean color remote sensing, optics, coastal biogeochemistry, harmful algal bloom, land-ocean interactions

Professional Experience:

The Water Institute of the Gulf **2020-Present**
• *Post-doctoral Researcher*

RESTORE Act Center of Excellence for Louisiana **2020-Present**
• *Deputy Director*

Training Courses and Internship

- 2017.07-2017.08: NASA Fellowship (support 20 students worldwide) to attend “Ocean Optics 2017” training program
- 2014.01-2014.06: Internship at the Applied Physics Laboratory, University of Washington, Seattle, USA
- Delft3D FM Environmental Modeling Course, December 02-06, 2020, virtual class
- Delft3D FM Hydrodynamics Course, September 06, 2020, virtual class

Recent Research Projects

Habitat suitability Index (HSI) Calculations for mid-Breton sediment diversion Environmental Impact Statement (EIS) (2020).

Role: developed script to preparing HSI input parameters and calculating HSI, analyzed the model results.

Evaluated and analyzed the impact of the Mid-Breton Sediment Diversion operation on habitat suitability index using output from the Basin-wide integrated biophysical Delft3D model, which is developed under the Mississippi River Hydro and Delta Management (MRHDM) and other related projects. The Coastal Protection Restoration Authority (CPRA) requested that the Water Institute of the Gulf (the Institute) calculate HSI scores for 10 aquatic species (blue crab, brown shrimp, white shrimp, Gulf menhaden, spotted seatrout, largemouth bass, bay anchovy, Atlantic croaker, southern flounder, and eastern oyster) and 4 terrestrial species (green wing teal, mottled duck, America alligator, and gadwall) under different diversion operations.

Partnership of our Working Coast Phase II, Port Fourchon, Louisiana (2020-current).

Role: tested and calibrated LAVegMod.PF and analyzed the model results.

In order to evaluate the co-benefits of the placement of dredged material for created wetlands, including carbon capture in wetland soils and water quality improvements, an integrated model framework is being developed using the Delft3D-Flexible Mesh suite that takes into account the interaction among hydro-, morpho-, water quality, and vegetation dynamics. In particular, vegetation dynamics model is being developed in collaboration with Deltares to assess water quality and carbon sequestration in wetlands built with dredged material.

Delft3D Basin-wide model 50-year Production Runs to support Mid-Breton Environmental Impact Statement (EIS) and for Evaluation of Diversion Operations (2020)

Role: postprocessed and analyzed the model results (water quality).

Evaluated and analyzed the impact of the Mid-Breton Sediment Diversion operation on water quality and vegetation in the receiving basin using the Basin-wide integrated biophysical Delft3D model developed under the Mississippi River Hydro and Delta Management (MRHDM) and other related projects.

Peer-reviewed Publications

Google scholar link: <https://scholar.google.com/citations?user=YGQFJHUA AAAAJ>

- Clementson, L.A., Richardson, A. J., Rochester, W.A., Oubelkheir, K., **Liu, B.**, D'Sa, E.J., Luiz, F., Ajani, A.P., Schroeder, T., Ford, P. W., Burford, M., Saeck, E., Andrew D.L. Steven, D.L. 2021. 100-year flood on a subtropical coastal phytoplankton community, *Frontiers in Marine Science* (accepted)
- **Liu, B.**, D'Sa, E. J., Maiti, K., Rivera-Monroy, V. H., and Xue, Z. G. 2021. Biogeographical trends in phytoplankton community size structure using adaptive sentinel 3-OLCI chlorophyll a and spectral empirical orthogonal functions in the estuarine-shelf waters of the northern Gulf of Mexico, *Remote Sensing of Environment*, 252, 112-154, doi.org/10.1016/j.rse.2020.112154
- **Liu, B.**, D'Sa, E. J., and Joshi, I. 2019. Multi-decadal trends and influences on dissolved organic carbon distribution in the Barataria Basin, Louisiana from in-situ and Landsat/MODIS observations, *Remote Sensing of Environment*, 228, 183-202, [doi:10.1016/j.rse.2019.04.023](https://doi.org/10.1016/j.rse.2019.04.023)
- **Liu, B.**, D'Sa, E. J., and Joshi, I. 2019. Floodwater impact on Galveston Bay phytoplankton taxonomy, pigment composition and photo-physiological state following Hurricane Harvey from field and ocean color (Sentinel-3A OLCI) observations, *Biogeosciences*, 16, 1975–2001, [doi:10.5194/bg-16-1975-2019](https://doi.org/10.5194/bg-16-1975-2019)
- **Liu, B.**, and D'Sa, E. J. 2019. Oceanic Internal Waves in the Sulu–Celebes Sea Under Sun glint and Moon glint, *IEEE Transactions on Geoscience and Remote Sensing*, 57, 6119-6129, [doi:10.1109/TGRS.2019.2904402](https://doi.org/10.1109/TGRS.2019.2904402)
- D'Sa, E. J., Joshi, I., **Liu, B.**, Ko, D. S., Osburn, C., and Bianchi, T. S. 2019. Biogeochemical Response of Apalachicola Bay and the Shelf Waters to Hurricane Michael using Ocean Color Semi-analytic/Inversion and Hydrodynamic Models, *Frontiers in Marine Science*, 6, 523, [doi:10.3389/fmars.2019.00523](https://doi.org/10.3389/fmars.2019.00523)
- D'Sa, E. J., Joshi, I. and **Liu, B.** 2018. Galveston Bay and Coastal Ocean Optical-Geochemical Response to Hurricane Harvey from VIIRS Ocean Color, *Geophysical Research Letters*, 45, 10,579-10,589, doi.org/10.1029/2018GL079954
- **Liu, B.**, Yang, H., Zhao, Z., and Li, X. 2014. Internal solitary wave propagation observed by tandem satellites, *Geophysical Research Letters*, 41, 2077-2085, [doi:10.1002/2014GL059281](https://doi.org/10.1002/2014GL059281)
- **Liu, B.**, Yang, H., Ding, X., and Li, X. 2014. Tracking the internal waves in the South China Sea with environment satellite sun glint images, *Remote Sensing Letters*, 5(4), 609-618, [doi: 10.1080/2150704X.2014.949365](https://doi.org/10.1080/2150704X.2014.949365)
- Cover Image, 2014. *International Journal of Remote Sensing*, 35:11-12, vii-vii, [doi: 10.1080/01431161.2014.920605](https://doi.org/10.1080/01431161.2014.920605).
- Cheng, Y., **Liu, B.**, Li, X., Nunziata, F., Xu, Q., Ding, X., Migliaccio, M., and Pichel, W. 2014. Monitoring of oil spill trajectories with COSMO-SkyMed X-band SAR images and model simulation, *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, [doi: 10.1109/JSTARS.2014.2341574](https://doi.org/10.1109/JSTARS.2014.2341574)
- Xu, Q., Cheng, Y., **Liu, B.**, and Wei, Y. 2015. Modeling of oil spill landing along the coast of the Bohai Sea, China, *Frontiers in Earth Science*, 9(11), 631–647, [doi: 10.1007/s11707-015-0515-6](https://doi.org/10.1007/s11707-015-0515-6)

Presentations and Awards:

- **Liu, B.**, and D'Sa, E. J., oral presentation of “Multi-decadal trends and influences on dissolved organic carbon distribution in the Barataria Basin, Louisiana from in-situ and Landsat/MODIS observations”. State of Coast 2020, New Orleans, LA, USA, 26-28 May, 2020
- **Liu, B.**, D'Sa, E. J., Maiti, K., Rivera-Monroy, V. H., and Xue, Z. G., oral presentation of “Phytoplankton community (size fraction and pigment composition) response to environmental drivers in the river-dominated estuarine-coastal systems of the northern Gulf of Mexico from Sentinel-3 OLCI ocean color observation”. Ocean Sciences Meeting 2020, San Diego, CA, USA, 16-21 February, 2020
- **Liu, B.**, and D'Sa, E. J., “Multi-decadal trends and influences on dissolved organic carbon distribution in the Barataria Basin, Louisiana from in-situ and Landsat/MODIS observations”. 34th Annual Remote Sensing and GIS Workshop, 2018, Covington, LA, USA, 2018, awarded **Poster competition 1st Place**
- **Liu, B.**, oral presentation of “Investigate the effect of tides on the internal wave morphology and generation sites in the Sulu Sea using satellite images”. IEEE Geoscience and Remote Sensing Symposium (IGARSS), Beijing, China, July 10-15, 2016, received **IGARSS 2016 Travel Award**
- **Liu, B.**, and Li, X., oral presentation of “Atmospheric and oceanic Internal wave multi-satellite observations”, International Symposium on Remote Sensing of Environment (ISRSE), Berlin, Germany, May 10-15, 2015, received **ISRSE 2015 Travel Award**
- **Liu, B.**, Yang, H., Zhao, Z., and Li, X., oral presentation of “Inferring internal wave phase speed from multi-satellite observations”, IEEE Geoscience and Remote Sensing Symposium (IGARSS), Québec City, Canada, July 13-18, 2014, received **IGARSS 2014 Travel Award**
- Li, X., Z. Zhao, Z., **Liu, B.**, Zhang, B., Yang, X., Pichel, W., and DeMaria, M., poster presentation of “Analysis of hurricane morphology, internal waves and boundary layer rolls observed from satellite SAR images”, American Meteorological Society 31st Conference on Hurricanes and Tropical Meteorology held in San Diego, CA, USA, March 31- April 4, 2014

Teaching Experience

- Introduction to Oceanography
- Remote Sensing of Environment

Science Service and Outreach

- Peer-Reviewer for institutions: USGS
- Peer-Reviewer for journals: Geophysical Research Letters, Journal of Atmospheric and Oceanic Technology, International Journal of Remote Sensing, Journal of Satellite Oceanography and Meteorology, The IEEE Journal of Oceanic Engineering
- Guest speaker, Remote Sensing Application in Biogeochemistry, Naval Research Lab, 11/20/19.
- Guest expert scientist for Louisiana Universities Marine Consortium's (LUMCON) Science Talks, Remote Sensing Application in Monitoring Coastal Water Quality, 09/03/2020