

## Linlin Cui

Virginia Institute of Marine Science | William & Mary  
1814 Farragut Ave, Norfolk VA 23509  
[lcui@vims.edu](mailto:lcui@vims.edu) | 225-333-775 | <https://github.com/cuill>

### Research Interests

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Numerical Modeling  
Dynamics of coastal and estuarine circulation  
Estuarine stratification and turbulence mixing  
Bio-physical interaction and ecosystem modeling  
Biogeochemical processes in estuaries and shelves  
Sediment transport modeling

### Education

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Ph.D. in *Physical Oceanography*, Louisiana State University, 2018  
Thesis: Tidal-, Wind-, and Buoyancy-Driven Dynamics in Barataria Estuary and Its Impact on Estuarine-Shelf Exchange Processes

M.S. in *Computer Science*, Louisiana State University, 2018

M.S. in *Fishery Resources*, Shanghai Ocean University, 2013  
Thesis: Numerical Simulation of Impact of Air-Sea Interaction on Cyclone over the East China Sea

B.S. in *Marine Science*, Nanjing University of Information Science and Technology, 2010  
Thesis: Simulation of Impact of Thermohaline Circulation on the East Asian Monsoons

### Professional Experience

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02/2019-present	<b>Postdoctoral Research Associate</b> Virginia Institute of Marine Science (VIMS), Gloucester Point, VA <ul style="list-style-type: none"><li>Developing three-dimensional coastal compound flooding prediction system with SCHISM (Python, Fortran)</li><li>Modified HydroBioSed model within COAWST to investigate the benthic fluxes of DIC and TA on ocean acidification in the northern Gulf of Mexico (Fortran)</li><li>Developed Oil-Particle-Aggregates (OPAs) module within COAWST to account for oil-sediment interaction (Fortran)</li></ul>
08/2013-12/2018	<b>Research Assistant</b> Louisiana State University, Baton Rouge, LA <ul style="list-style-type: none"><li>Created and configured a hydrodynamic model (FVCOM) covering the Barataria Estuary and Texas-Louisiana shelf</li><li>Studied the impact of river diversions on estuary salinity</li><li>Investigated the lateral circulation in a tidal inlet</li><li>Examined dynamics of river plumes in inner shelf of Louisiana shelf</li></ul>
09/2010-06/2013	<b>Research Assistant</b> Shanghai Ocean University, Shanghai, China <ul style="list-style-type: none"><li>Configured the Eastern China Sea Weather Research and Forecasting Model (WRFV3.2)</li><li>Implemented COARE3.0 algorithm into WRF to improve heat fluxes</li></ul>

### Honors/Awards

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2019	Committee on Sustainability Professional Development Award, William & Mary
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2019	Student/Early Career Travel Award, Coastal and Estuarine Research Federation (CERF)
2017-2018	Economic Development Assistantship, Louisiana State University
2016	Graduate School Dean's Travel Award, Louisiana State University
2011	First-class scholarship, Shanghai Ocean University
2010	Outstanding graduate student, Nanjing University of Information Science and Technology
2007-2009	National Encouragement Scholarship, Nanjing University of Information Science and Technology
2007-2010	Merit student, Nanjing University of Information Science and Technology
2008-2010	Excellence student leader, Nanjing University of Information Science and Technology
2007	First-class scholarship, Nanjing University of Information Science and Technology

## Publications

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- Cui, L.,** C.K. Harris, and D.R.N Tarpley. 2021. Formation of Oil-Particle-Aggregates: Numerical Model Formulation and Calibration. *Front. Mar. Sci.* 8:629476. <https://doi.org/10.3389/fmars.2021.629476>
- Cui, L.,** H. Huang, C. Li, and D. Justic. 2018. Lateral Circulation in a Partially Stratified Tidal Inlet. *J. Mar. Sci. Eng.*, 6, 159. <https://doi.org/10.3390/jmse6040159>
- Hu, S., **Cui, L.,** Liu, H., and Zhu, M. 2012. Sensitivity of Air-Sea Flux to Microphysical Schemes and Planetary Boundary Layer Parameterizations in WRF during the Cyclone Passage. *Journal of Shanghai Ocean University*.
- Cui, L.,** and Hu, S. 2012. Analysis on Difference of Sea Surface Wind Field between WRF and QuickSCAT over the East China Sea of 2008. *Marine Forecasts*.

## Manuscripts in preparation

- Cui, L.,** H. Huang, and D. Justic. Impact of River Diversions on Salinity Gradient and Residence Time in the Barataria Estuary, LA. (In preparation)
- Cui, L.,** and H. Huang. Tidal and Subtidal Induced Estuarine-Shelf Exchange through a Tidal Inlet: Implication for larval recruitment. (In preparation)
- Huang, H., **L. Cui,** D. Justic, K. Rose, and L. Di. Residual Circulation Dynamics in the Breton Sound Estuary and Breton-Chandeleur Sound: With Implication to the Effect of River Diversion on Oil Slick Movement. (In revision)
- Sorourian, S, H. Huang, **L. Cui,** D. Justic, and G. Mariotti. Unstructured grid spectral wave modeling during spring-summer time in a shallow estuary: the Barataria Basin. (Submitted)

## Presentations/Conferences

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- Cui, L.,** C.K. Harris, W.J. Cai, K. Maiti. Numerical modeling of sediment biogeochemical processes over Louisiana continental shelf. Seminar at Virginia Institute of Marine Science. February, 2020.
- Cui, L.,** C.K. Harris, W.J. Cai, K. Maiti. Numerical modeling of the impact of sediment driven processes on bottom water chemistry over Louisiana continental shelf. Oral presentation at the 2020 Ocean Sciences Meeting. San Diego, CA. February, 2020.
- Harris, C.K., L. Cui, and D. S. Dukhovskoy. Oil particle aggregation model for the Gulf of Mexico continental shelf: scenario testing. Poster presented at the 2020 Ocean Sciences Meeting. San Diego, CA. February, 2020.
- Cui, L.,** C.K. Harris, K. Maiti, and W.J. Cai. Impact of Sediment Resuspension on Near Bed Dissolved Inorganic Carbon and Acidification in the northern Gulf of Mexico. Oral presentation at the 2019 Biennial Coastal and Estuarine Research Federation (CERF) Conference. Mobile, AL. November, 2019.
- Cui, L.,** C.K. Harris, and D.R. Tarpley. Estimating the Impact of Oil on Flocculation Processes with a New Parameterized Sediment Model. Poster presented at the 2019 Biennial Coastal and Estuarine Research Federation (CERF) Conference. Mobile, AL. November, 2019.
- Cui, L.,** C.K. Harris, and D.R. Tarpley. Estimating the Impact of Oil on Flocculation Processes with a New Parameterized Sediment Model. Poster presented at 2019 Gordon Research Conference on Coastal Research Dynamics. Manchester, NH. June, 2019.
- Cui, L.,** C.K. Harris, and D.R. Tarpley. Estimating the Impact of Oil on Flocculation Processes with a New Parameterized Sediment Model. Poster presented at the Community Surface Dynamics Modeling System (CSDMS) 2019 Annual Meeting. Boulder, CO. May, 2019.

Huang, H., **L. Cui**, and D. Justic. A modeling Study of Tidal- and Wind-Driven Estuary-Shelf Exchange through a Narrow Tidal Inlet: the Barataria Pass, Louisiana. Poster presented at the 2019 Gulf of Mexico Oil Spill and Ecosystem Science Conference. New Orleans, LA. February, 2019.

**Cui, L.**, guest lecture. Virginia Institute of Marine Science, Gloucester Point, VA. November, 2018.

**Cui, L.**, H. Huang, C. Li, and D. Justic. Investigating Controlling Factors of Estuarine Stratification in a Tidal Inlet. Oral presentation at the 15<sup>th</sup> Estuarine and Coastal Modeling Conference, Seattle, WA. June, 2018.

Huang, H., **L. Cui**, and D. Justic. Assessing the Effects of River Diversions on Estuarine Dynamics and Oil Transport in the Barataria Bay. 2017 Gulf of Mexico Oil Spill and Ecosystem Science Conference. New Orleans, LA. February, 2017.

Huang, H., **L. Cui**, S. Sorourian, and D. Justic. Assessing the Effects of River Diversions on Salinity Gradient, Residence Time, and Sediment Transport in the Barataria Bay. Presented at the 2017 Estuarine Coastal Sciences Association Conference. Shanghai, China. October, 2017.

**Cui, L.** Graduate Student Symposium, Ocean Springs, MS. March, 2016.

**Cui L.**, and H. Huang. Impact of Mississippi River Diversions on Salinity Gradients and Estuarine Residence Time in Coastal Louisiana: A Numerical Modeling Study. Oral presentation at the 2016 State of the Coast. New Orleans, LA. June, 2016.

**Cui L.**, and H. Huang. Impact of Mississippi River Diversions on Salinity Gradients and Estuarine Residence Time in Coastal Louisiana: A Numerical Modeling Study. 14<sup>th</sup> Estuarine and Coastal Modeling Conference, Kingston, RI. June, 2016.

Huang, H., **L. Cui**, S. Sorourian, and D. Justic. A Coupled Ocean-Wave Model for the Barataria Bay, Louisiana. Poster presented at the 2016 Gulf of Mexico Oil Spill and Ecosystem Science Conference. Tampa, FL. February, 2016.

**Cui, L.**, and H. Huang. Hurricane IKE (2008) Simulation Experiment Using WRF. Poster presented at the 2014 State of the Coast. New Orleans, LA. March, 2014.

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### **Workshop**

Artificial Intelligence for Earth System Science Summer School 2020. Held virtually by the National Center for Atmospheric Research. June 22-26, 2020.

The Coupled-Ocean-Atmosphere-Waves-Sediment-Transport (COAWST) Workshop. Raleigh, NC. Feb. 2019.

The 16<sup>th</sup> WRF Users' Workshop, 06/2015. Boulder, CO. June, 2015.

Annual LONI Parallel Programming Workshop. Louisiana State University, Baton Rouge, LA. June, 2014.

NVIDIA GPU Programming Workshop. Louisiana State University, Baton Rouge, LA. June, 2014.

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### **Mentoring**

Co-Advisor for Jacob Wacht, the College of William and Mary SMS/VIMS Summer Internship Program 2019.

Mentored two undergraduates thesis, 2012

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### **Journal Article Reviews**

Water, Water Resources Research, Journal of Marine Science and Engineering

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### **Outreach**

2019 Ocean Science Day at Virginia Institute of Marine Science

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### **Professional Affiliations**

American Geophysical Union  
The Oceanography Society  
Coastal and Estuarine Research Federation  
Community Surface Dynamics Modeling System

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### **Skills**

- Numerical Models: FVCOM, ROMS, SCHISM, WRF
- Computer Languages/Software: Fortran, Python, NCL, Shell scripting, Java, Open MPI parallel programming, MySQL