

JINLIANG LIU

Department of Earth System Science
Stanford University
Stanford, CA 94305

Office: Y2E2 M19
Email: jinliang.liu@stanford.edu
Web: <https://jliuocan.github.io>

RESEARCH INTERESTS

- Multiscale (submesoscale to small-scale) physical processes in the upper ocean and their impacts on biogeochemistry; Interactions between submesoscale and near-inertial oscillations
- Climate change impacts on coastal oceans
- Oceanic boundary layer turbulence and its effect on the dispersion and transportation of sediments, nutrients, and pollutants in coastal oceans
- Machine learning for turbulence modeling
- Renewable energy including offshore wave, wind, and tidal energy

EDUCATION

<i>Ph.D.</i> in Physical Oceanography <i>Minor</i> in Civil Engineering Louisiana State University	2015-2019
<i>M.S.</i> in Environmental Science Ocean University of China	2011-2014
<i>B.S.</i> in Environmental Science Ocean University of China	2007-2011

PROFESSIONAL APPOINTMENTS

- 10/2023-present: Postdoctoral Scholar, Department of Earth System Science, Stanford University, US (mentor: Leif Thomas)
- 01/2022-09/2023: Postdoctoral Research Associate, Coastal Science Division, Pacific Northwest National Laboratory, US (mentor: Zhaoqing Yang and Robert Hetland)
- 01/2020-12/2021: Postdoctoral Research Associate, Department of Applied Mathematics and Theoretical Physics, University of Cambridge, UK (mentor: John Taylor)
- 06/2019-12/2019: Graduate Student Research Assistant, Louisiana State University, US
- 01/2019-05/2019: Graduate Student Teaching Assistant, Louisiana State University, US
- 01/2015-12/2018: Graduate Student Research Assistant, Louisiana State University, US

PUBLICATIONS

- J. Liu**, R. Hetland, Z. Yang, T. Wang, and N. Sun. Response of Salt Intrusion in a Tidal Estuary to Regional Climatic Forcing. 2024. *Environmental Research Letters*. *Accepted*.
- G. G. Medina, L. M. Sheridan, **J. Liu**, and Z. Yang. Wave and Wind Climate and Energy Resources in the Pacific Minor Islands from a 42-year High-resolution Hindcast. *Submitted*.
- J. Liu**, J. R. Taylor, L. N. Thomas, and R. Hetland. Simulation of an idealized coastal front forced by resonant diurnal winds. *In prep*.
- J. Liu** and J. R. Taylor. Towards an improved anisotropic minimum-dissipation model: applications for buoyancy and wind-driven turbulence in the upper ocean. *In prep*.
- F. Hsu, B. Zheng, A. Sanchez-Rios, and **J. Liu**. Biophysical Processes in the Inertial Front. *In prep*.
- R. Krishnamurthy, G. García Medina, B. Gaudet, W. I. Gustafson Jr, E. I. Kassianov, **J. Liu**, R. K. Newsom, L. M. Sheridan, and A. M. Mahon, 2023. [Year-long Buoy-Based Observations of the Air–Sea Transition Zone off the US West Coast](#). *Earth System Science Data Discussions*, 2023, 1–53
- J. Liu**, J. Yuan, and J.-H. Liang, 2022. [An evaluation of vertical mixing parameterization of ocean boundary layer turbulence for cohesive sediments](#). *Deep Sea Research Part II: Topical Studies in Oceanography*, 204, 105168.
- J.-H. Liang, J. Yuan, X. Wan, **J. Liu**, B. Liu, H. Jang, and M. Tyagi, 2022. [Exploring the use of machine learning to parameterize vertical mixing in the ocean surface boundary layer](#). *Ocean Modelling*, page 102059.
- J.-H. Liang, **J. Liu**, M. Benfield, D. Justic, D. Holstein, B. Liu, R. Hetland, D. Kobashi, C. Dong, and W. Dong, 2021. [Including the effects of subsurface currents on buoyant particles in Lagrangian particle tracking models: Model development and its application to the study of riverborne plastics over the Louisiana/Texas shelf](#). *Ocean Modelling*, 167, 101879
- E. Abolfazli, J.-H. Liang, Y. Fan, Q. J. Chen, N. D. Walker, and **J. Liu**, 2020. [Surface Gravity Waves and Their Role in Ocean-Atmosphere Coupling in the Gulf of Mexico](#). *Journal of Geophysical Research: Oceans*, 125(7).
- J. Liu**, J.-H. Liang, K. Xu, Q. Chen, and C. E. Ozdemir, 2019. [Modeling sediment flocculation in Langmuir turbulence](#). *Journal of Geophysical Research: Oceans*, 124(11), 7883–7907.
- J. Liu**, J.-H. Liang, J. C. McWilliams, P. P. Sullivan, Y. Fan, and Q. Chen, 2018. [Effect of planetary rotation on oceanic surface boundary layer turbulence](#). *Journal of Physical Oceanography*, 48(9), 2057–2080.
- S. Sun and **J. Liu**, 2017. [Sensitivity of the Antarctic Circumpolar Current transport to surface buoyancy conditions in the North Atlantic](#). *Ocean Modelling*, 118, 118–129.
- J. Yu, X. Zhang, **J. Liu**, R. Liu, and X. Wang, 2016. [Numerical study on the influences of Nanliu River runoff and tides on water age in Lianzhou Bay](#). *Chinese journal of oceanology and limnology*, 34(5), 1106–1113.

PRESENTATIONS

- J. Liu**, Response of Salt Intrusion in the Delaware Bay to Regional Climatic Forcing. ESScapades Seminar, Stanford University, 2024. (talk)
- J. Liu**, J. Taylor, L. N. Thomas, and R. Hetland. Simulation of an idealized coastal front forced by resonant diurnal winds. Ocean Science Meeting, New Orleans, 2024. (talk)
- J. Liu**, J. Yuan, and J.-H. Liang. An Evaluation of Vertical Mixing Parameterization of Ocean Boundary Layer Turbulence for Cohesive Sediments. AGU Fall Meeting, San Francisco, 2023. (poster)

J. Liu. Sediment Flocculation in Langmuir Supercells: A Numerical Perspective. The Bob and Norma Street Environmental Fluid Mechanics Laboratory Seminar, Stanford University, 2023. (talk)

R. Krishnamurthy, G. G. Medina, B. Gaudet, B. Gustafson, E. Kassianov, **J. Liu**, R. Newson, L. Sheridan, A. Mahon, T. Martin, R. Newsom, M. Pekour, L. Sheridan, C. Sivaraman, and Z. Yang. Offshore wind resource characterization over California wind energy areas. Offshore Windpower, 2022. (Poster)

J. Liu. Submesoscale in the Texas-Louisiana shelf and its implications on the biogeochemistry, Geophysical and Environmental Processes Seminar, University of Cambridge, 2021. (Invited talk)

J. Liu, J.-H. Liang, K. Xu, Q. Chen, and C. E. Ozdemir. Modelling sediment flocculation in Langmuir turbulence. Postdoc Talk in Applied Mathematics, University of Cambridge, 2020. (talk)

J. Liu, J.-H. Liang, J. C. McWilliams, P. P. Sullivan, Y. Fan, and Q. Chen. Effect of planetary rotation on oceanic surface boundary layer turbulence. Fluid Lab Seminar, University of Cambridge, 2020. (talk)

J. Liu, J.-H. Liang, K. Xu, C. E. Ozdemir, and Q. Chen. Effect of flocculation processes on suspended cohesive sediment in Langmuir turbulence. Gulf of Mexico Oil Spill & Ecosystem Science Conference, 2019. (Poster)

J. Liu, J.-H. Liang, K. Xu, and Q. Chen. Sediment flocculation modulated by turbulent water flows. Louisiana Coastal Geology Symposium, 2018. (Poster)

J. Liu, J.-H. Liang, J. C. McWilliams, P. P. Sullivan, Y. Fan, and Q. Chen. Effect of planetary rotation on oceanic surface boundary layer turbulence. Ocean Science Meeting, 2018. (Talk)

J. Liu. The Coriolis force not discussed in OCS4170 and its effect on upper ocean mixing. LSU College of the Coast and Environment CEGO Seminar Series, 2017. (Talk)

J. Liu and J.-H. Liang. Effect of planetary rotation on wind and wave driven turbulence — a numerical study. Gulf of Mexico Graduate Student Symposium, 2017. (Talk)

J. Liu, J.-H. Liang, and Q. Chen. Large eddy simulation of suspended sediments in shallow water. South-Central GSA Section Meeting, 2016. (Talk)

PROFESSIONAL DEVELOPMENT

Simons Summer School on Wave Turbulence, July 2023, MIT.

Climatematch Academy, July 2023. Online.

Copernicus Marine Service Training Workshop for the Arctic Ocean, organised by Mercator Ocean international, Noveltis and KEPLER, December 01, 2020.

1st LBRN-LONI Scientific Computing Bootcamp, Louisiana State University, May 28-29 2018.

Thermohaline and abyssal circulation in the world ocean, hosted by Dr. Rui Xin Huang from WHOI, Guangzhou, November 10-22, 2013.

Air-sea interaction and modeling, hosted by UNESCO/IOC, Qingdao, August 12-23, 2013.

SERVICE

Journal Reviewer for *Journal of Geophysical Research: Oceans, Ocean Modelling, Frontiers in Marine Science, Ocean Engineering, Renewable Energy, Earth & Space Science, and Estuarine, Coastal and Shelf Science.*

Proposal Reviewer for *National Science Foundation - Physical Oceanography*