

## XINFENG LIANG

School of Marine Science and Policy, University of Delaware  
700 Pilottown Rd., Lewes, DE 19958

Phone: (302) 645-4036; Email: [xfliang@udel.edu](mailto:xfliang@udel.edu)

Website: [sites.udel.edu/xfliang/](http://sites.udel.edu/xfliang/)

### Education

Ph.D. Physical Oceanography, Columbia University, New York, 2012

M.A. Physical Oceanography, Columbia University, New York, 2009

B.S. Marine Sciences, Ocean University of China, Qingdao, 2003

### Professional Experience

2019/08–Current Assistant Professor, University of Delaware, Lewes, DE

2016/01–2019/07 Assistant Professor, University of South Florida, Tampa, FL

2012/12–2015/12 Postdoctoral Associate, MIT, Cambridge, MA

### Research Interests

Roles of Ocean in the Climate System, Changes and Variability in the Global Ocean, Exchange and Coupling of the Upper and Deep Oceans, Ocean Mixing and the Associated Dynamical Processes

### Honors and Awards

2018 Sloan Research Fellowship in Ocean Sciences

2017 NASA New (Early Career) Investigator Award in Earth Science

### Current Contracts and Grants

2018-2022 **Sloan Research Fellowship (Single PI).**

Total Amount: \$65k

2018-2021 **NASA/NIP: Using Satellite and Deep Ocean Measurements to Investigate the Influence of Mesoscale Eddies on Deep Ocean Internal Waves (Single PI).**

Total Amount: \$236k

2018-2021 **NASA/NESSF: Examining the Global Ocean Vertical Salt Transport with a Dynamically Consistent Ocean State Estimate (Lead-PI).**

Total Amount: \$150k (Student fellowship)

2017-2021 **NSF/OCE: The Evaluation of Ocean Reanalyses in Their Determining Trends in Global Ocean Heat Content with a Novel Method (Lead-PI).**

Total Amount: \$311k

2017-2021 **NOAA/OSTST: Analysis of Kinetic Energy and Structure Functions from Along-track and Crossover Altimeter Data (Co-PI; Lead-PI: Don Chambers, USF).**

Total Amount: \$597k

### Completed Contracts and Grants

2018-2020 **GOMRI: Effects of Mesoscale Eddies on Three-Dimensional Oil Dispersion: Data Integration, Interpretation and Implications for Oil Spill Models (Lead-PI).**

Total Amount: \$709k

## **Refereed Journal Articles (\*student or postdoc from the Liang Lab)**

### **- Under Review/Revision**

1. \*Liao, F., **X. Liang**, Y. Li and M. Spall: Intense Subsurface Upwelling Associated with Major Western Boundary Currents, *Nat. Commun.*, under review after revision
2. Wang, S., A. Cao, **X. Liang**, X. Chen, and J. Meng: Impact of Background Geostrophic Currents with Vorticity on Resonant Triad Interaction over Mid-Ocean Ridges, *J. Geophys. Res.*, under review after revision
3. **Liang, X.**, \*C. Liu, R. Ponte, and D. Chambers: Variability and Changes in Global Ocean Heat Content from Multiple Gridded Argo Products, *J. Climate*, under revision
4. \*Zhang, Y., D. Chambers and **X. Liang**: Regional Trends in Southern Ocean Eddy Kinetic Energy, *J. Geophys. Res.*, under revision
5. \*Zhu, Y., and **X. Liang**: Characteristics of Robust Mesoscale Eddies in the Gulf of Mexico, *J. Geophys. Res.*, under review
6. Ponte, R., Q. Sun, \*C. Liu and **X. Liang**: How salty is the global ocean: weighting it all or tasting it a sip at a time? *Geophys. Res. Lett.*, under review

### **- Published While at UD**

1. \*Huang, M., **X. Liang**, Y. Zhu, Y. Liu, and R. H. Weisberg, 2021: Eddies connect the tropical Atlantic Ocean and the Gulf of Mexico. *Geophys. Res. Lett.*, 48, doi:10.1029/2020GL091277
2. \*Zhu, Y., and **X. Liang**, 2020: Coupling of the Surface and Near-bottom Currents in the Gulf of Mexico. *J. Geophys. Res.*, doi: 10.1029/2020JC016488
3. \*Liu, C., **X. Liang**, D. P. Chambers, and R. M. Ponte, 2020: Global Patterns of Spatial and Temporal Variability in Salinity from Multiple Gridded Argo Products. *J. Climate*, doi: 10.1175/JCLI-D-20-0053.1.

### **- Published While At-Rank at USF**

1. \*Liu, C., **X. Liang**, R. M. Ponte, N. Vinogradova and O. Wang, 2019: Vertical redistribution of the global oceanic salt content. *Nat. Commun.*, 10:3445, doi: 10.1038/s41467-019-11436-x
2. Sun, H., Q. Yang, S. Cai, **X. Liang** and J. Tian, 2019: Estimating four-dimensional internal wave spectrum in the northern South China Sea. *J. Atmospheric Ocean. Technol.*, 36, 1199-1216.
3. **Liang, X.**, M. Spall, and C. Wunsch, 2017: Global ocean vertical velocity from a dynamically consistent ocean state estimate. *J. Geophys. Res.*, doi: 10.1002/2017JC012985
4. **Liang, X.**, C. Piecuch, R. Ponte, G. Forget, C. Wunsch and P. Heimbach, 2017: Change of the global ocean vertical heat transport over 1993-2010. *J. Clim.*, 30, 5319-5327, doi: 10.1175/JCLI-D-16-0569.1
5. Yang, Q., W. Zhao, **X. Liang**, J. Dong, J. Tian, 2017: Elevated mixing in the periphery of mesoscale eddies in the South China Sea, *J. Phys. Oceanogr.*, 47, 895-907, doi: 10.1175/JPO-D-16-0256.1
6. **Liang, X.**, and L. Yu, 2016: Variations of the global net air-sea heat flux during the “Hiatus” period (2001–10). *J. Clim.*, 29, 3647–3660, doi:10.1175/JCLI-D-15-0626.1.
7. Sun, H., Q. Yang, W. Zhao, **X. Liang** and J. Tian, 2016: Temporal variability of diapycnal mixing in the northern South China Sea. *J. Geophys. Res.*, doi: 10.1002/2016JC012044

8. Yang, Q., W. Zhao, **X. Liang**, and J. Tian, 2016: Three-dimensional distribution of turbulent mixing in the South China Sea\*. *J. Phys. Oceanogr*, 46, 769–788, doi:10.1175/JPO-D-14-0220.1.

### **- Published Before Being An Assistant Professor**

1. **Liang, X.**, and C. Wunsch, 2015: Note on the redistribution and dissipation of tidal energy over mid-ocean ridges. *Tellus A*, 67, doi:10.3402/tellusa.v67.27385.
2. Zhang, Y., Z. Liu, Y. Zhao, J. Li, and **X. Liang**, 2015: Effect of surface mesoscale eddies on deep-sea currents and mixing in the northeastern South China Sea. *Deep Sea Res II*, 122, 6–14.
3. **Liang, X.**, C. Wunsch, P. Heimbach, and G. Forget, 2015: Vertical redistribution of oceanic heat content. *J. Clim*, 28, 3821–3833, doi:10.1175/JCLI-D-14-00550.1.
4. Forget, G., D. Ferreira, and **X. Liang**, 2015: On the observability of turbulent transport rates by Argo: supporting evidence from an inversion experiment. *Ocean Sci*, 11, 839–853.
5. **Liang, X.**, 2014: Semidiurnal tidal currents in the deep ocean near the East Pacific Rise between 9° and 10° N. *J. Geophys. Res*, doi:10.1002/2013jc009522.
6. Yang, Q., J. Tian, W. Zhao, **X. Liang**, and L. Zhou, 2014: Observations of turbulence on the shelf and slope of northern South China Sea. *Deep Sea Res. I*, 87, 43–52, doi:10.1016/j.dsr.2014.02.006.
7. Zhang, Z., W. Zhao, J. Tian, and **X. Liang**, 2013: A mesoscale eddy pair southwest of Taiwan and its influence on deep circulation. *J. Geophys. Res*, 118, 6479–6494, doi:10.1002/2013JC008994.
8. **Liang, X.**, and A. M. Thurnherr, 2012: Eddy-modulated internal waves and mixing on a midocean ridge. *J. Phys. Oceanogr*, 42, 1242–1248, doi:10.1175/JPO-D-11-0126.1.
9. **Liang, X.**, and A. M. Thurnherr, 2011: Subinertial variability in the deep ocean near the East Pacific Rise between 9 and 10N. *Geophys. Res. Lett*, 38, doi:10.1029/2011GL046675.
10. Adams, D. K., D. J. J. McGillicuddy, L. Zamudio, A. M. Thurnherr, **X. Liang**, O. Rouxel, C. R. German, and L. S. Mullineaux, 2011: Surface-generated mesoscale eddies transport deep-sea products from hydrothermal vents. *Science*, 332, 580–583, doi:10.1126/science.1201066.
11. Tian, J., Q. X. Yang, **X. Liang**, L. L. Xie, D. X. Hu, F. Wang, and T. D. Qu, 2006: Observation of Luzon Strait transport. *Geophys. Res. Lett*, 33, doi: 10.1029/2006GL026272.
12. **Liang, X.**, X. Q. Zhang, and J. Tian, 2005: Observation of internal tides and near-inertial motions in the upper 450 m layer of the northern South China Sea. *Chin. Sci. Bull*, 50, 2890–2895, doi:10.1360/982005-210.
13. Tian, J., L. Zhou, X. Q. Zhang, **X. Liang**, Q. Zheng, and W. Zhao, 2003: Estimates of M2 internal tide energy fluxes along the margin of Northwestern Pacific using TOPEX/POSEIDON altimeter data. *Geophys. Res. Lett*, 30, doi: 10.1029/2003GL018008.

### **Selected Technical Reports**

1. Rodriguez E., D. Chelton, D. Dukhovskoy, T. Farrar, M. M. Flexas, T. Kilpatrick, P. Klein, **X. Liang**, D. G. Long, N. Maximenko, D. Menemenlis, S. Morey, R. Samelson, A. F. Thompson, S-P. Xie, White paper to NASA: Air-Sea Exchange Drivers of Climate Variability, Ocean Circulation, and Weather: A Case for Coincident Observations of Ocean Surface Winds and Currents, 2017
2. **Liang X.**, Lowered Acoustic Doppler Current Profiler (LADCP). In *Cruise report: RRS James Clark Ross*, JR281, 2013.
3. **Liang X.**, A. Brearley. Vessel-mounted ADCP. In *Cruise report: RRS James Cook*, JC054, 2011.
4. **Liang X.**, A. Thurnherr, Evaluating a Prototype of the Tele-dyne/RDI Workhorse ADCP, 2009.

### **Selected Invited Talks**

- 2020 USCLIVAR POS Panel Seminar
- 2019 University of Delaware (School of Marine Science and Policy)
- 2018 Louisiana State University (College of the Coast & Environment)
- 2018 Peking University (Department of Atmospheric and Oceanic Sciences)
- 2017 WHOI (Physical Oceanography Department Seminar)
- 2017 Columbia University (Lamont-Doherty Earth Observatory)
- 2016 Florida State University (Department of Earth, Ocean & Atmospheric Science)
- 2015 MIT (Sack Lunch Seminar Series)
- 2015 University of South Florida (College of Marine Science)
- 2015 North Carolina State University (Department of Marine, Earth, and Atmospheric Sciences)
- 2013 MIT (Sack Lunch Seminar Series)
- 2013 WHOI (Physical Oceanography Department Seminar)

### **Selected Presentations at Scientific Meetings**

- 2020 **Liang, X.**, Vertical Redistributions of the Oceanic Heat and Salt Contents, *Ocean Sciences Meeting*, San Diego, CA
- 2019 **Liang, X.**, Vertical Redistributions of the Global Oceanic Heat and Salt Contents, *EGU General Assembly*, Vienna, Austria
- 2018 **Liang, X.**, How Good is the Net Air-Sea Heat Flux from ECCO v4?, *ECCO Group Annual Meeting*, Austin, 2018
- 2017 **Liang, X.**, Influence of Mesoscale Eddies on the Deep Ocean Dynamics over the East Pacific Rise, *Ocean Surface Topography Science Team Meeting*, Miami, FL, 2017
- 2016 **Liang, X.**, C. Wunsch, P. Heimbach, G. Forget, R. Ponte and C. Picuch, Global ocean vertical heat flux and its bidecadal change, *CLIVAR Open Science Conference*, Qingdao, China, 2016
- 2014 **Liang X.**, C. Wunsch, P. Heimbach and G. Forget, Vertical redistribution of oceanic heat content, *AGU Fall Meeting*, San Francisco, CA, 2014
- 2014 **Liang X.**, C. Wunsch, Estimation of the global ocean vertical velocity, *Ocean Sciences Meeting*, Honolulu, HI, 2014
- 2013 **Liang X.**, C. Wunsch, Redistribution and dissipation of tidal energy over an idealized ridge, *Ocean Turbulence Conference*, Santa Fe, NM, 2013
- 2012 **Liang X.**, A. Thurnherr, Eddy-modulated internal waves and mixing on a mid-ocean ridge, *Ocean Sciences Meeting*, Salt Lake City, UT, 2012
- 2010 **Liang X.**, A. Thurnherr et al, Subinertial variability in the deep ocean near the East Pacific Rise, *Ocean Sciences Meeting*, Portland, OR, 2010

### **Teaching Experience**

\* all courses taught at USF are graduate courses

Fall 2020 MAST 602 - Physical Oceanography

Spring 2020 MAST 382 - Introduction to Ocean Sciences (co-taught with Dr. Wozniak)

Spring 2020 MAST 882 - Physical Ocean Science and Engineering Seminar  
Spring 2019 The Warming Papers (USF)  
Fall 2018 Geophysical Fluid Dynamics (USF)  
Spring 2018 Introduction to Climate Change and Climate Variability (USF)  
Fall 2017 Geophysical Fluid Dynamics (USF)  
Spring 2017 Introduction to Climate Change and Climate Variability (USF)

### **Postdoc Supervision**

2019-present Dr. Yingli Zhu  
2019-2020 Dr. Fanglou Liao

### **Graduate Student Supervision (Major Advisor)**

2019-present Chao Liu, PhD student  
2018-present Yang Zhang, PhD student  
2018-present Li Pan, PhD student  
2018-present Minghai Huang, PhD student  
2016-2019 Chao Liu, MS (USF)

### **Graduate Student Supervision (Committee Member)**

Lina Wang PhD student  
Jordan Meyer PhD student (USF)  
Jing Chen PhD student (USF)

### **Undergraduate Student Supervision**

2020-present Rucha Wani

### **Services**

#### **- Professional Service**

Reviewer (~10 papers/year) for various scientific journals: Nature, Science Advances, PNAS, GRL, J. Climate, JGR-Oceans, DeepSea Research, Climate Dynamics, Scientific Report, and others.

Reviewer (~1/year) for the NSF Physical Oceanography Program

Panel member of the USCLIVAR POS Panel (2020 - now)

AGU Fall Meeting Travel Grant Reviewer (2020)

Panelist of the NSF Physical Oceanography Program (2018)

#### **- University Service**

Chair of the USFCMS Honors and Awards Committee (2019)

Member of the USFCMS Annual Evaluation Committee (2018)

Member of the USFCMS Faculty Searching Committee for Chemical Oceanography (2018)

**- Public Service**

Invited Speaking for the SPOONBILL Ocean Sciences Bowl, St Petersburg, FL (2018)

Judge of SPOONBILL Ocean Sciences Bowl, St Petersburg, FL (2016)