Qianqian Liu, Ph.D.

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Research Interests

Numerical Modeling and Data Assimilation, Coastal Ocean, Estuary and River Plume
Dynamics, Ecological Modeling, Ecosystem under Climate Change and Anthropogenic Activities

Education

Ph.D., Physical Oceanography, University of Rhode Island   05/2015   Narragansett, RI
Thesis: Dynamics of Rhode Island Coastal Waters.

M.S., Physical Oceanography, University of Rhode Island   12/2011   Narragansett, RI
Thesis: A Modeling Study of the Seasonal Variability of the Circulation in Rhode Island Sound.

B.S., Marine Science, Ocean University of China   06/2009   Qingdao, China
Thesis: Wave Generation over the Northeastern Coastal Waters of Taiwan during Typhoon Bilis in 2000.

Professional Experience

12/2016 – present	**Postdoctoral Research Fellow** NOAA Great Lakes Environmental research Laboratory (GLERL) Cooperative Institute for Great Lakes, University of Michigan, Ann Arbor, MI Annis Water Resources Institute, Grand Valley State University, Muskegon, MI ▪ Physical-biogeochemical simulation of Great Lakes and Muskegon Lake; ▪ HAB tracker of Lake Erie.
06/2015 – 12/2016	**Postdoctoral Research Associate** School of Marine Science, University of Maine, Orono, ME ▪ Develop and implement a coupled physical-biogeochemical model to study the physical dynamics, nutrient and biomass cycles in the San Francisco Bay and Delta Ecosystem; ▪ Examine San Francisco Bay's response to the "Warm Blob" during 2013-2015.
09/2009 – 05/2015	**Research Assistant** University of Rhode Island, Narragansett, RI ▪ Design and test a numerical model system covering the inner shelf of the southern New England shelf; ▪ Study the climatic variability of the circulation in the Rhode Island Sound and its response to global warming; ▪ Investigate the fundamental physical processes in Rhode Island coastal waters

Publications

1. **Liu, Q.**, S. Rao, F. Chai, R. Dugdale, F. Wilkerson and Y. Chao. San Francisco Bay nutrients and plankton dynamics as simulated by a coupled hydrodynamic-ecosystem model. Continental Shelf Research. in review.
2. **Liu, Q**., H. Xue, F. Chai, Y. Chao, and Y. Zhang. Physical Processes in San Francisco Bay at Tidal, Spring-neap and Seasonal Timescales: A modelling Study. Ocean Modelling. in review.
3. **Liu, Q.,** E. J. Anderson, and B. Biddanda. Wind-induced exchange and cold water intrusion into a freshwater estuary. in preparation.

4. Biddanda, B. A., A. D. Weinke, S.T. Kendall, L.C. Gereaux, T.M. Holcomb, M.J. Snider, D.K. Dila, S.A. Long, C. VandenBerg, K. Knapp, D.J. Koopmans, K. Thompson, J.H. Vail, M.E. Ogdahl, **Q. Liu**, T.J. Johengen, E.J. Anderson, and S.A. Ruberg. Chronicles of Hypoxia: Time-series buoy observations reveal annually recurring seasonal basin-wide bottom water hypoxia in Muskegon Lake Area of Concern - a Great Lakes estuary. Journal Great Lakes Research. in review.
5. **Liu, Q.,** L. Rothstein and Y. Luo (2017). A Periodic Freshwater Patches Detachment Process From the Block Island Sound Estuarine Plume. Journal of Geophysical Research: Oceans. 122(1), 570-586, doi:10.1002/2015JC011546.
6. **Liu, Q.,** L. Rothstein, Y. Luo, D. Ullman and D. Codiga (2016). Dynamics of Periphery Current in Rhode Island Sound. Ocean Modelling. 105, 13-24. doi:10.1016/j.ocemod.2016.07.001.
7. **Liu, Q.,** L. Rothstein and Y. Luo (2016). Dynamics of the Block Island Sound Estuarine Plume. Journal of Physical Oceanography. http://dx.doi.org/10.1175/JPO-D-15-0099.1.
8. Hou, F., X. Bao, B. Li, and **Q. Liu** (2015). The assessment of extactable tidal energy and the effect of tidal energy turbine deployment on the hydrodynamics in Zhoushan. Acta Oceanologica Sinica, 34(5), 86–91.
9. Luo, Y., L. Rothstein, **Q. Liu**, and S. Zhang. (2013). Climatic variability of the circulation in the Rhode Island Sound: A modeling study. Journal of Geophysical Research: Oceans, 118(9), 4072–4091.

Presentations

1. 05/2017 Oral: A Physical-Biogeochemical Simulation of Muskegon Lake. the 60th International Association for Great Lakes Research (IAGLR) Conference; Detroit, MI.
2. 11/2016 Oral: Modelling the San Francisco Bay Ecosystem. 9th Biennial Bay-Delta Science Conference; Sacramento, CA.
3. 06/ 2016 Oral: A Modelling Study of the nutrient and biomass cycles in San Francisco Bay. 14th International Conference on Estuarine and Coastal Modelling; Kingston, RI.
4. 04/ 2016 Poster: The nutrient and biomass cycles in San Francisco Bay: A Modelling Study. Interagency Ecological Program Annual Workshop; Folsom, CA.
5. 02/ 2016 Poster: A Modeling Study of the San Francisco Bay and Delta Ecosystem in High and Low River Flow Years. Ocean Science Meeting; New Orleans, LA.
6. 01/2016 **Invited Talk**: Dynamics of Rhode Island Coastal Waters. *Ocean University of China*; Qingdao, China.
7. 01/2016 Oral: San Francisco Bay and Delta Ecosystem Study. Workshop on Regional Modeling of the Western Pacific and Eastern Indian Oceans; Guangzhou, China.
8. 11/ 2015 Oral: Modeling the circulation in Rhode Island Coastal Waters. Coastal Estuarine Research Federation; Portland, OR.
9. 06/2015 Poster: A cyclonic current around the Periphery of Rhode Island Sound. Gordon Research Seminar and Gordon Research Conference; Biddeford, ME.
10. 05/2015 **Invited Talk**: Physical Processes in Rhode Island Coastal Waters. *Woods Hole Oceanographic Institution*; Woods Hole, MA.
11. 02/ 2015 **Invited Talk**: Seasonal variability of the Block Island Sound Estuarine Plume. *University of Connecticut*; Groton, CT.
12. 10/ 2013 Oral: Climate variability of the circulation in the Rhode Island Sound: a modeling study. Mid-Atlantic Bight Physical Oceanography and Meteorology (MABPOM) meeting; Narragansett, RI.
13. 10/ 2013 Poster: How does the Connecticut River influence the circulation, transport and salinity around Block Island Sound? MABPOM; Narragansett, RI.
14. 11/ 2012 Oral: A modeling study of the seasonal and interannual variability of the circulation in Rhode Island Sound. MABPOM; Groton, CT.
15. 02/ 2012 Poster: A modeling study of the seasonal variability of the circulation in Rhode Island Sound.

Ocean Science Meeting; Salt Lake City, Utah.

Grants

- 2008: Distribution and variation of global Coriolis-Stokes force based on the 40 years reanalysis data from ECMWF. **1,5000 CNY (~$2, 000)**, National Program for Creative Experiment by College Students, PIs: Weili Wang, **Qianqian Liu**

Professional Development

- Pattullo Conference, Warrenton, Virginia, 10/2017
- NOAA FVCOM Workshop, Silver Spring, MD, 09/2017
- Waves (WAVEWATCH III) Summer School, University of Maryland, College Park, MD, 07/2017
- Meteotsunami Warning System for the Great Lake: A CIGLR Summit; University of Michigan, Ann Arbor, MI, 06/2017
- Mentoring Physical Oceanography Women to Increase Retention (MPOWIR) Program, 2016-2017
- SCHISM (a derivative of SELFE) Workshop, Gloucester Point, VA, 05/2016
- Tutorial on Scientific Writing and Publishing, Kingston, RI, 04/15
- CERF Early Career Mentoring Program, Portland, Oregon, 11/2015

Research Cruises and Experiments

- Summer 2017: Muskegon Lake Observatory Program Design and Deployment
- 10/2010: A comprehensive ocean survey studying Gulf of Maine Euphausiids. Northern flank of Georges Bank, R/V Endeavor
- 04/2010: Jiffy Cruise: Investigation of pH and its effects on the carbon dioxide system. Narragansett Bay, R/V Cap'n Bert
- 12/2009: Circular poiseuille fluid experiment. Narragansett Bay Campus, University of Rhode Island.
- 08/2009: Fluid mechanics experiments including Reynolds number in laminar and turbulent flow and boundary layer flow. Ocean University of China; Qingdao, China.
- 06/2008: Ocean current and seawater quality investigation. Jiaozhou Bay, vessel Qingdaodiao NO.34. China.
- 04/2007: Ocean Investigation. East China Sea, R/V Dongfanghong 2

Services

- 2017 & 2015 Student Judge for the 24th CERF Conference
- 2017 Student Judge for the 60th IAGLR Conference
- 2015 Graduate School of Oceanography student volunteer for the Providence Boat Show: a mobile autonomous surface vehicle (ASV) fleet for teaching, research and outreach. Providence, Rhode Island

Professional Societies

MPOWIR, AGU, CERF, AMS, IAGLR

Teaching Training/Experience

- Fall 2009: ELS 512 - Oral Communication Skills for International Teaching Assistants
- Class Lecture on "Mental Inputs to Narragansett Bay: A history and Assessment of Recent Conditions" in Course OCG694: The Ecology of Narragansett Bay
- Class Lecture on "Seasonal Variability of Chlorophyll a in Block Island and Rhode Island Sounds" in Course OCG594: Satellite Oceanography

- Class Lecture on "Anthropogenic effects to the nutrients and planktons in Narragansett Bay" in Course OCG593: Biological Oceanography

Awards

- 2017 MPOWIR Travel Grant to Pattullo Conference
- 2015 Graduate School of Oceanography Alumni Award
- 2009 Ocean University of China Outstanding Graduates Award
- 2006-2008 Ocean University of China Excellent Students Award
- 2007 National Endeavor Scholarship
- 2007 Scientific and Technological Innovation Award
- 2006-2008 Ocean University of China Excellent Academic Performance Scholarship
- 2006-2008 National Education Foundation in Ocean Science Scholarship
- 2006 National Zhao Yang Award

Technical Skills

Numerical Models: ROMS, **SCHISM** (a derivative of SELFE), the Carbon, Silicate, Nitrogen Ecosystem (**CoSiNE**) Model, SWAN, FVCOM, WAVEWATCH III

Tools: MATLAB, FORTRAN, SMS, Python, R

Others: MPI parallel programming; UNIX/LINUX shell scripting; Statistical ocean and atmosphere data analysis; ADCP Programming and deployment