

# Lixin Qu

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## Education

Ph.D. Oceanography, Texas A&M University, 2014–2019 (expected).

*Certificate:* High Performance Computing in Geoscience (expected).

M.Sc. Physical Oceanography, Ocean University of China, 2011–2014.

*Study Abroad:* Sino-German summer school on marine sciences, Germany, 2012.

B.Sc. Information and Computing Science, Ocean University of China, 2007–2011.

*Exchange Program:* School of Mathematics, Shandong University, China, 2008–2009.

## Research Experience

Research Assistant, Department of Oceanography, Texas A&M University, 2014–present.

Research Assistant, College of Oceanic and Atmospheric Sciences, Ocean University of China, 2011–2014.

## Research Interests

Fluid dynamics; Submesoscale processes; Near-inertial waves; Coastal mixing processes and turbulence;  
Theory and numerical simulation of flow in coastal environments

## Research

### *Publications*

#### Refereed Publications

**Qu, L.** and R. D. Hetland (submitted). Non-geostrophic baroclinic instability over sloping bathymetry: buoyant flow case. *Journal of Physical Oceanography*.

Luo, L., D. Wang, T. Zu, **L. Qu**, S. Ou, and J. Wang (in revision). Buoyant plume off the Pearl River Estuary induced by an extreme precipitation event during spring and summer 2016. *Continental Shelf Research*.

**Qu, L.** and R. D. Hetland (2019). Temporal resolution of wind forcing required for river plume prediction. *Journal of Geophysical Research: Oceans*, 124, 1-15. doi:10.1029/2018JC014593.

**Qu, L.**, X. Lin, R. D. Hetland, and J. Guo (2018). The asymmetric continental shelf wave in response to the synoptic wind burst in a semienclosed double-shelf basin. *Journal of Geophysical Research: Oceans*, 123(1), 131-148. doi:10.1002/2017JC013025.

**Qu, L.** and X. Lin (2014). The effect of the continental shelf slope around island on the Island Rule. *Journal of Ocean University of China*, 44 (Sup.), 001-006 (in Chinese with English abstract).

## Manuscripts in Preparation

**Qu, L.**, R. D. Hetland, and L. N. Thomas. Near-inertial waves in a baroclinic vortex.

**Qu, L.** and R. D. Hetland. Non-geostrophic baroclinic instability over sloping bathymetry: dense flow case.

## Other and Products

**Qu, L.** and T. Zu (2017). "Northern South China Sea Forecast System," An operational high-resolution ocean forecast model on the northern shelf of South China Sea. <http://barataria.tamu.edu:8080/NSCS>

**Qu, L.** (2014). The oceanic responses to synoptic wind bursts in the Yellow Sea and Bohai Sea (Master's dissertation). <http://cdmd.cnki.com.cn/Article/CDMD-10423-1014329439.htm>

## Conference and Seminar Presentations

**L. Qu** , R. D. Hetland, and L. N. Thomas, "Internal-wave-driven mixing within submesoscale eddies," Oceanography Departmental Seminar, Texas A&M University, November 26, 2018. (talk)

**L. Qu** , R. D. Hetland, and L. N. Thomas, "Near-inertial waves at submesoscale coherent vortices in a buoyancy-driven flow," Physics of Estuaries and Coastal Seas Meeting 2018, Galveston, TX, October 14–19, 2018. (talk)

**L. Qu** and R. D. Hetland, "Baroclinic instabilities and near-inertial waves in buoyancy-driven flow," Communicating Ocean Science, Texas A&M University, May 7, 2018. (poster)

**L. Qu** and R. D. Hetland, "Non-geostrophic baroclinic instability over sloping bathymetry," AGU Virtual Poster Showcase, April, 2018. (poster)

**L. Qu** , R. D. Hetland\*, and L. N. Thomas, "Effects of near-inertial wind forcing on baroclinic instabilities in a large buoyancy driven current," Ocean Sciences Meeting, Portland, OR, February 11–16, 2018. (talk)

**L. Qu** and R. D. Hetland, "Temporal resolution of wind forcing required for river plume prediction," Ocean Sciences Meeting, Portland, OR, February 11–16, 2018. (poster)

**L. Qu** , T. Zu, and R. D. Hetland, "An operational high-resolution ocean circulation forecast model on the Northern South China Sea shelf," Supercomputing 2017 Conference, Denver, CO, November 12–17, 2017. (poster)

**L. Qu** and R. D. Hetland, "Temporal resolution of wind forcing required for river plume predictions," Gordon Research Conference: Coastal Ocean Modeling, University of New England, June 11–16, 2017. (poster)

**L. Qu** , T. Zu, and R. D. Hetland, "An operational high-resolution ocean circulation forecast model on the Northern South China Sea shelf," High Performance Research Computing: Research Computing Week, Texas A&M University, June 5–9, 2017. (poster)

T. Zu\*, J. Li, **L. Qu**, Y. Shu, J. Chen, H. Zhu, J. Yao, and D. Wang, "Variability of the coastal circulation revealed by High-Frequency Radar in the Guangzhou Bay of the northern South China Sea," AGU Fall Meeting, San Francisco, CA, December 12–16, 2016. (poster)

**L. Qu**, X. Lin, and R. D. Hetland, "The semienclosed oceanic response to wind bursts: the sub-inertial processes in the Yellow Sea and Bohai Sea," WCRP/CLIVAR Second International Symposium on Boundary Current Dynamics, Li Jiang, Yun Nan, China, July 8–9, 2013. (poster)

## Funded Proposals

### Lead Principal Investigator

**L. Qu**, 2014–2018. China Scholarship Council Graduate Fellowship Program, \$76,800.0 total award.

## Grants

Effects of near-inertial oscillations on baroclinic instabilities in a large buoyancy driven current, Texas Sea Grant, June 1, 2018 – May 31, 2019, \$1,687.5, PI: **L. Qu**.

## *Selected Other Conferences and Workshops Attended*

SciPy Conference and Tutorial, Austin, TX, July, 2015, 2016, 2017, and 2018.

Special HPC Seminar and Workshop on Cloud Computing, Texas A&M University, March 21, 2017.

TUFTE Presenting Data and Information Workshop , Houston, TX, October 12, 2016.

COAWST Model Training, Woods Hole, MA, August 15–19, 2016.

NVIDIA GPU Programming Workshop, Texas A&M University, April 27–28, 2016.

## Teaching

Teaching Assistant, Python for Geoscientists (OCNG 469/669), Texas A&M University, Spring 2017.

Student Lecturer, Summer School on Marine Sciences, University of Bremen/GEOMAR, Summer 2012.

Teaching Assistant, Visual Basic Programming (Fundamental Series), Ocean University of China, Fall 2011.

## Field Work

Texas continental shelf: R/V Point Sur, NSF RAPID, September 27–29, 2017.

## Honors & Awards

James Sharp Graduate Scholarship, Texas A&M University, 2014 and 2018.

Chapman Award for Graduate Research, Texas A&M University, 2017.

Donald and Melba Ross Scholarship, Texas A&M University, 2017.

A.T. Webber '22 and A.T. Webber, Jr. '49 Fellowship in Oceanography, Texas A&M University, 2016.

Robert O. Reid Oceanography Fellowship, Texas A&M University, 2015.

Outstanding Graduate Student Award, Ocean University of China, 2012.

Excellent Undergraduate Student Award, Ocean University of China, 2011.

National Scholarship, Ministry of Education of China, 2009 and 2010.

First Prize Scholarship for Academic Performance, Ocean University of China, 2008, 2009, and 2010.

## Service

Referee: Ocean Science; Journal of Geophysical Research - Oceans; Continental Shelf Research.

Peer judge for AGU Virtual Poster Showcase, 2018.

Meeting coordinator for Physics of Estuaries and Coastal Seas Meeting, Galveston, TX, 2018.

Meeting coordinator for Physical Oceanography Numerical Group, Texas A&M University, 2018–2019.

## *Professional Activities*

Member: The Oceanography Society.

## Skills

### *Idealized CFD Tools*

Skilled in DIABLO (LES solver) and DEDALUS (PDE solver in spectral methods).

### *Ocean Modeling*

Extensively used ROMS ocean modeling code; experience with COAWST and GOTM modeling.

### *Programming Languages*

Proficient in Python; skilled in Fortran, C, C++, and Matlab.

### *High Performance Computing*

Skilled in MPI and OpenMP; experience with CUDA and OpenACC.

### *Other Skills*

Skilled in Mathematica; proficient in  $\text{\LaTeX}$ ; extensive experience with Linux system administration, using a cluster, and shell scripting.