

Liping Zhang

Atmospheric and Oceanic Sciences Program (AOS)
Princeton University
300 Forrester Road, Sayre Hall
Phone: (609)-216-8293
Email: lipingz@princeton.edu; Liping.Zhang@noaa.gov

Education:

- Ph.D. in physical oceanography, Ocean University of China, 2012
- B.S. in marine science, Ocean University of China, 2008

Research Experience:

- Associate research scholar, Princeton University. 2016-now
- Postdoc research associate and visiting scientist, Princeton University. 2014-2015
- Research Associate, CIMAS, University of Miami. 2011-2013
- Graduate Research Associate, Ocean University of China. 2008-2011

Research Interests:

- Decadal Climate variability and predictability
- Interactions between anthropogenic forced climate change and natural variability
- Hydrological cycle and its associated salinity and water vapor variability
- Interactions between global climate change and regional climate change
- General circulation of the Ocean and Atmosphere

Honors and Awards:

- Princeton Atmospheric and oceanic science visiting scientist award, 2014
- Outstanding PHD graduation thesis in Ocean University of China (top 0.1%), 2012
- Hou Chongben Scholarship in Ocean University of China (top 1%), 2010
- Outstanding Academic Scholarship for graduate student in Ocean University of China (top 1%), 2009-2011
- Privilege to enter the Graduate Program at Ocean University of China, waived of the admission test, 2008
- Graduate student in National Science basic scientific research and personnel training base (Oceanography), (fellowship) 2008
- Song Qingling scholarship, 2006

- Outstanding undergraduate Student in Ocean University of China (top 5%), 2005-2007 (consecutive for 3 years)
- Outstanding Academic Performance Scholarship for undergraduate student in Ocean University of China (top 2%), 2005-2007 (consecutive for 3 years)

Publications:

*indicates corresponding author

Peer-reviewed journal articles

1. **Liping Zhang***, Thomas L. Delworth, William Cooke and Xiaosong Yang, 2018: Natural variability of Southern Ocean convection as a driver of observed climate trends. Accepted by Nature Climate Change.
2. **Liping Zhang***, Thomas L. Delworth, Xiaosong Yang, Richard G. Gudgel, Liwei Jia, Gabriel A. Vecchi and Fanrong Zeng, 2017: Estimating decadal predictability for the Southern Ocean using the GFDL CM2.1 model. *Journal of Climate*, 30, 5187-5203, DOI: <http://dx.doi.org/10.1175/JCLI-D-16-0840.1>
3. **Liping Zhang***, Thomas L. Delworth and Liwei Jia, 2017: Diagnosis of decadal predictability of Southern Ocean sea surface temperature in the GFDL CM2.1 model. *Journal of Climate*, 30, 6309-6328, DOI: <http://dx.doi.org/10.1175/JCLI-D-16-0537.1>
4. Thomas L. Delworth, Fanrong Zeng, Gabriel A. Vecchi, Xiaosong Yang, **Liping Zhang** and Rong Zhang, 2016: The North Atlantic Oscillation as a driver of rapid climate change in the Northern Hemisphere. *Nature Geoscience*, 9, 509-512.
5. Thomas L. Delworth, Fanrong Zeng, **Liping Zhang**, Rong Zhang, Gabriel Vecchi, Xiaosong Yang, 2016: The central role of ocean dynamics in connecting the North Atlantic Oscillation to the extratropical component of the Atlantic Multidecadal Oscillation, Accepted by *Journal of Climate*, JCLI-D-16-0358.
6. **Liping Zhang*** and Thomas L. Delworth, 2016: Impact of the Antarctic bottom water formation on the Weddell Gyre and its northward propagation characteristics in GFDL model, *Journal of Geophysical Research: Oceans*, 121, 5825-5846.
7. **Liping Zhang*** and Thomas L. Delworth, 2016: Simulated response of the Pacific decadal oscillation to climate change, *Journal of climate*, 24, 3971-3988.
8. **Liping Zhang***, Thomas L. Delworth and Fanrong Zeng, 2016: The impact of multidecadal Atlantic meridional overturning circulation variations on the Southern Ocean. *Climate Dynamics*, p1-21, doi:10.1007/s00382-016-3190-8.
9. Shujun Li, **Liping Zhang** and Lixin Wu, 2016, Decadal potential predictability of upper ocean heat content over the twentieth century, *Climate Dynamics*, doi 10.1007/s00382-016-3513-9.
10. **Liping Zhang*** and Thomas L. Delworth, 2015: Analysis of the Characteristics and Mechanisms of the Pacific Decadal Oscillation in a Suite of Coupled Models

from the Geophysical Fluid Dynamics Laboratory, *Journal of climate*, 28 (19), 7678-7701.

11. **Liping Zhang*** and C. Zhao, 2015: Processes and mechanisms for the model SST biases in the North Atlantic and North Pacific: A link with the Atlantic meridional overturning circulation, *J. Adv. Model. Earth Syst.*, 7(2), 739-758.
12. **Liping Zhang***, C. Wang, Z. Song, and S.-K. Lee, 2015: Remote effect of the model cold bias in the tropical North Atlantic on the warm bias in the tropical southeastern Pacific, *J. Adv. Model. Earth Syst.*, 6(4), 1016-1026.
13. LD Yi, **Liping Zhang**, L Wu, 2015: On the mechanisms of decadal variability of the North Pacific Gyre Oscillation over the 20th century, *Journal of geophysical Research Oceans*, 120(9), 6114-6129.
14. ZY Song, HL Liu, CZ Wang, **Liping Zhang**, FL Qiao, 2014: Evaluation of the eastern equatorial Pacific SST seasonal cycle in CMIP5 models, *Ocean Science*, 10(5), 837-843.
15. C. Wang, **Liping Zhang***, S.-K. Lee, L. Wu and C. R. Mechoso, 2014: A global perspective on climate model biases. *Nature climate Change*, 4, 201-205.
16. Hong, L., **Liping Zhang**, Z. Chen, and L. Wu, 2014: Linkage between the Pacific Decadal Oscillation and the low frequency variability of the Pacific Subtropical Cell. *J. Geophys. Res. Oceans*, 119, 3464–3477.
17. **Liping Zhang***, C. Wang and S.-K. Lee, 2014: Potential role of Atlantic warm pool-induced freshwater forcing in the Atlantic meridional overturning circulation: Ocean-sea ice coupled model simulations. *Climate dynamics*, 43, 553-574.
18. **Liping Zhang***, C. Wang, 2013, Multidecadal North Atlantic Sea surface temperature and Atlantic Meridional overturning circulation variability in CMIP5 historical simulations. *Journal of Geophysical Research: oceans*, 118, 5772-5791.
19. C. Wang, **Liping Zhang***, Sang-Ki Lee, 2013: Response of Freshwater Flux and Sea Surface Salinity to Variability of the Atlantic Warm Pool. *J. Climate*, 26, 1249–1267.
20. C. Wang, **Liping Zhang***, 2013: Multidecadal Ocean Temperature and Salinity Variability in the Tropical North Atlantic: Linking with the AMO, AMOC, and Subtropical Cell. *J. Climate*, 26, 6137–6162.
21. **Liping Zhang**, Lixin Wu, Bolan Gan, 2013: Modes and Mechanisms of Global Water Vapor Variability over the Twentieth Century. *J. Climate*, 26, 5578–5593.
22. **Liping Zhang**, and C. Wang, 2012: Remote influences on freshwater flux variability in the Atlantic warm pool region. *Geophysical Research Letters*, 39, L19714, doi:10.1029/2012GL053530
23. Lixin Wu, Wenju Cai, **Liping Zhang**, Hisashi Nakamura, Axel Timmermann, Terry Joyce, Michael McPhaden, Michael Alexander, Bo Qiu, Martin Visbeck, Ping Chang, and Benjamin Giese, 2012: Enhanced warming over the global subtropical western boundary currents. *Nature Climate Change*, DOI: 10.1038/NCLIMATE1353.
24. **Liping Zhang**, Lixin Wu, 2012: Can Oceanic Freshwater Flux Amplify Global Warming? *Journal of Climate*, 25, 3417–3430.

25. **Liping Zhang**, Lixin Wu, and Jiaxu Zhang, 2011: Coupled Ocean-Atmosphere Responses to Recent Freshwater Flux Changes over the Kuroshio-Oyashio Extension Region. *Journal of Climate*, 24, 1507-1524.
26. **Liping Zhang**, Lixin Wu, and Jiaxu Zhang, 2011: Simulated Response to Recent Freshwater Flux Change over the Gulf Stream and Its Extension: Coupled Ocean-Atmosphere Adjustment and Atlantic-Pacifc Teleconnection. *Journal of Climate*, 24, 3971-3988.
27. **Liping Zhang**, C. Wang and Lixin Wu, 2011: Low-Frequency Modulation of the Atlantic Warm Pool by the Atlantic Multidecadal Oscillation. *Climate Dynamics*, 39, 1661-1671.
28. **Liping Zhang***, Lixin Wu, and Lisan Yu, 2011: Oceanic Origin of Recent La-Nina Like Warming Trend in the Tropical Pacific, *Advance in Atmospheric Science*, 28, 1-9, AAS20100129.
29. **Liping Zhang***, Lixin Wu, Xiaopei Lin, and Dexing Wu, 2010: Modes and Mechanisms of Sea Surface Temperature Low-Frequency Variations over the Coastal China Seas. *Journal of Geophysical Research*, 115, doi:10.1029/2009JC006025
30. Lixin Wu, Yan Sun, Jiaxu Zhang, **Liping Zhang** and Shoshiro Minobe, 2010: Coupled Ocean-Atmosphere Response to Idealized Freshwater Forcing over the Western Tropical Pacific, *Journal of Climate*, 23, 1945-1954.
31. Chun Li, Lixin Wu, Qi Wang, Liwei Qu and **Liping Zhang**, 2009: An intimate coupling of ocean-atmospheric interaction over the extratropical North Atlantic and Pacific. *Climate dynamics*, 32, 753-765.

Conference Presentations:

- Liping Zhang “Estimating decadal predictability for the Southern Ocean using the GFDL CM2.1 model” Oral presentation, 2017 GFDL annual science meeting, Nov 2017.
- Liping Zhang and Tom Delworth and Fanrong Zeng. “Estimating decadal predictability for the Southern Ocean using the GFDL CM2.1 model” Poster presentation, ocean science meeting, Feb 2018.
- Liping Zhang and Thomas L. Delworth, 2017: Simulated response of the Pacific decadal oscillation to climate change. Poster. 97th American Meteorological Society Annual Meeting, Seattle, WA.
- Liping Zhang and Thomas L. Delworth, 2016: Simulated response of the Pacific decadal oscillation to climate change. Poster. NOAA/GFDL Poster Expo.
- Liping Zhang and Thomas L. Delworth, 2016: Impact of the Antarctic bottom water on the Weddell Gyre and its northward propagation characteristics in GFDL model Poster. NOAA/GFDL Poster Expo.
- Liping Zhang and Thomas L. Delworth, 2015: The impact of multidecadal Atlantic meridional overturning circulation variations on the Southern Ocean. Poster. 2015 AGU Fall Meeting, American Geophysical Union, San Francisco, CA.

- Liping Zhang and Thomas L. Delworth, 2015: Analysis of the characteristics, mechanism and predictability of the Pacific Decadal Oscillation in a suite of GFDL climate models. Talk. NOAA/GFDL lunchtime seminar.
- Liping Zhang and Thomas L. Delworth, 2015: Impact of multidecadal Atlantic meridional overturning circulation variations on the Southern Ocean. Talk. AGU JOINT ASSEMBLY, Montreal, Canada.
- Liping Zhang and Thomas L. Delworth, 2014: Analysis of the characteristics, mechanism and predictability of the Pacific Decadal Oscillation in a suite of GFDL climate models. Invited talk. Ocean University of China formal seminar.
- Liping Zhang and Thomas L. Delworth, 2014: Pacific decadal oscillation and North American hydroclimate. Poster. NOAA/GFDL Poster Expo.
- Liping Zhang and Thomas L. Delworth, 2014: The Pacific Decadal Oscillation and North American Hydroclimate. Poster. NOAA/GFDL Science Review.
- Liping Zhang, 2013: Role of Atlantic Warm Pool-induced freshwater forcing in the AMOC. Poster. U.S. AMOC/U.K. RAPID International Science Meeting ‘AMOC Variability: Dynamics and Impacts’ Hilton Baltimore - Baltimore, MD.
- Liping Zhang, 2012: Role of the Atlantic Warm Pool in the Atlantic Meridional Overturning Circulation: Ocean-Sea Ice Coupled Model Simulations. Talk. NOAA/AOML formal seminar.

Manuscript Referee:

Journal of Climate, Climate Dynamics, Journal of Geophysical Research-ocean, Journal of Meteorological Research, Entropy, Journal of Ocean University of China, Atmospheric and Oceanic Science Letters, PLOS ONE, GFDL Internal Review, **NSF founding reviewer**

Field Experience:

- East China Sea and Northwestern Pacific, CTD and Lowered ADCP deployment and data analysis, 2009

Skills

- **Computer**
Fortran Language; C Language; Matlab; Grads; Linux; Unix; Windows
- **Numerical models**
The Geophysical Fluid Dynamical Laboratory model (GFDL);
Community Climate System Model (CCSM);
Fast Ocean and Atmosphere Model (FOAM);
Hybrid Coordinate Ocean Model (HYCOM)
- **Others**
Data Analysis; Statistics Methods; CTD&ADCP (Lowered, Mooring, Shipboard) Manipulation and analysis.