

Jiaxu Zhang | Curriculum Vitae

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EDUCATION

University of Wisconsin-Madison

Ph.D. Atmospheric and Oceanic Sciences

Dissertation: Understanding the deglacial evolution of deep Atlantic water masses in an isotope-enabled ocean model

Advisor: Zhengyu Liu (liu.7022@osu.edu)

Madison, WI

Aug 2016

Hokkaido University

M.S. Earth and Planetary Dynamics, Natural History Sciences

Thesis: Variations of the Kuroshio Extension during the last 50 years and their predictability

Advisor: Shoshiro Minobe (minobe@mail.sci.hokudai.ac.jp)

Sapporo, Japan

Aug 2009

Ocean University of China

B.S. Marine Sciences

Thesis: Coupled ocean-atmosphere response to an idealized freshwater forcing over the North Pacific

Advisor: Lixin Wu (lxwu@ouc.edu.cn)

Qingdao, China

Jun 2007

WORK EXPERIENCE

JISAO, University of Washington

Postdoctoral Scholar

Mentor: Wei Cheng (wei.cheng@noaa.gov)

Seattle, WA

Mar 2020 – Present

CCS-2 and CNSL, Los Alamos National Laboratory

Postdoctoral Research Associate

Mentor: Wilbert Weijer (wilbert@lanl.gov)

Los Alamos, NM

Apr 2017 – Feb 2020

Center for Climatic Research, University of Wisconsin-Madison

Honorary Fellow

Madison, WI

Oct 2016 – Oct 2017

National Center for Atmospheric Research (NCAR)

Graduate Student Visitor

NCAR responding staff: Bette Otto-Bliesner (ottobli@ucar.edu) and Esther Brady (brady@ucar.edu)

Boulder, CO

Aug 2011 – Aug 2012

RESEARCH INTERESTS

- Earth system modeling
- Arctic Ocean
- Paleoclimate dynamics
- AMOC and its impact on regional/global climate
- Coupled ocean-atmosphere interaction and climate variability
- Geotracers and isotopes

TEACHING EXPERIENCE

Teaching Assistant

Spring 2011

- AOS 528, Past Climates and Climatic Change, UW-Madison
- Task: teaching data analysis from both observations and models using Matlab.

Teaching Assistant

Fall 2013

- AOS 310, Dynamics of the Atmosphere and Ocean I, UW-Madison
- Task: grading, office hours, leading review lectures.

HONORS AND AWARDS

- Dissertation Completion Fellowship, Wisconsin Alumni Research Foundation, University of Wisconsin-Madison Aug 2015 – May 2016
- Graduate Student Fellowship of Advanced Study Program (ASP), National Center for Atmospheric Research (NCAR) Aug 2011 – Aug 2012
- Schwerdtfeger Award for excellent performance in first year graduate studies, University of Wisconsin-Madison Apr 2010
- Japanese Government (Monbukagakusho: MEXT) Scholarship grantee, Hokkaido University Aug 2007 – Aug 2009
- Outstanding Undergraduate Thesis of Shandong Province, No. X2008023, Shandong Province, China Jul 2008
- Outstanding Undergraduate, Shandong Province, China Jun 2007
- Outstanding Undergraduate Thesis, Ocean University of China Jun 2007
- He-Chongben Award, Ocean University of China Dec 2006

PUBLICATIONS

Submitted & in Preparation.....

- Gu, S, Z Liu, D Oppo, J Lynch-Stieglitz, A Jahn, **J Zhang**, K Lindsay, L Wu. Remineralization dominating the $\delta^{13}\text{C}$ decrease in the mid-depth Atlantic during the last deglaciation. *In prep.*
- Zhang, J**, W Weijer, M Steele, W Cheng, T Verma. Freshening in Labrador Sea linked to Beaufort Gyre freshwater release. *Nat. Commun., in review*
- He, C., Z. Liu, B. Otto-Bliesner, E. Brady, C. Zhu, R. Thomas, P. Clark, J. Zhu, A. Jahn, S. Gu, **J. Zhang**, J. Nusbaumer, D. Noone, H. Cheng, Y. Wang, M. Yan, The hydroclimate footprint accompanying pan-Asian monsoon water isotope evolution during the Last Deglaciation. *Science, in review.*

Published & in Press.....

2020

- Gu, S, Z Liu, D Oppo, J Lynch-Stieglitz, A Jahn, **J Zhang**, L. Wu. 2020. Assessing the potential capability of reconstructing glacial Atlantic water masses and AMOC using multiple proxies in CESM. *Earth Planet. Sci. Lett.* 541, 116294. [Link](#)
- He, C, Z Liu, J Zhu, **J Zhang**, S Gu, BL Otto-Bliesner, E Brady, C Zhu, Y Jin, J Sun. 2020. North Atlantic subsurface temperature response controlled by effective freshwater input in "Heinrich" events. *Earth Planet. Sci. Lett.* 539, 116247. [Link](#)

2019

- Hecht, M, M Veneziani, W Weijer, B Kravitz, S Burrows, D Comeau, E Hunke, N Jeffery, J Urrego-Blanco, H Wang, S Wang, **J Zhang**, D Bailey, C Mills, P Rasch, N Urban. 2019. E3SMv0-HiLAT : A Modified Climate System Model Targeted for the Study of High-Latitude Processes. *J. Adv. Model. Earth Syst.* 11, 2814–2843. [Link](#)
- Brady, E, S Stevenson, D Bailey, Z Liu, D Noone, J Nusbaumer, B Otto-Bliesner, C Tabor, T Wong, **J Zhang**, J Zhu. 2019. The connected isotopic water cycle in the Community Earth System Model version 1. *J. Adv. Model. Earth Syst.* 11, 2547–2566. [Link](#)
- Weijer, W, W Cheng, S Drijfhout, A Fedorov, A Hu, L Jackson, W Liu, E McDonagh, J Mecking, **J Zhang**. 2019. Stability of the Atlantic Meridional Overturning Circulation: A review and synthesis. *J. Geophys. Res. Oceans* 124, 5336–5375. [Link](#)
- Zhang, J**, W Weijer, M Maltrud, C Veneziani, N Jeffery, E Hunke, J Urrego-Blanco, J Wolfe. 2019. An eddy-permitting ocean-sea ice general circulation model (E3SMv0-HiLAT03): Description and evaluation. (Report No. LA-UR-19-25177) *Los Alamos Tech. Report*, 40 pp. doi: 10.2172/1542803. [Link](#)
- Gu, S, Z Liu, J Lynch-Stieglitz, A Jahn, **J Zhang**, K Lindsay, L Wu. 2019. Assessing the ability of zonal $\delta^{18}\text{O}$ contrast in benthic foraminifera to reconstruct deglacial evolution of Atlantic Meridional Overturning Circulation. *Paleoceanogr. Paleoclimatol.* 34, 800–812. [Link](#)
- Gu, S, Z Liu, A Jahn, J Rempfer, **J Zhang**, F Joos. 2019. Modelling neodymium isotopes in the ocean component of the Community Earth System Model (CESM1). *J. Adv. Model Earth Sy.* 11, 624–640. [Link](#)

2018

- Thibodeau, B, C Not, J Zhu, A Schmittner, D Noone, C Tabor, **J Zhang**, Z Liu. 2018. Last century warming over the Canadian Atlantic shelves linked to weak Atlantic Meridional Overturning Circulation. *Geophys. Res. Lett.* 45, 12376–12385. [Link](#)
- Cheng, W, W Weijer, W Kim, G Danabasoglu, S Yeager, P Gent, D Zhang, J Chiang, **J Zhang**. 2018. Can the salt-advection feedback be detected in internal variability of the Atlantic Meridional Overturning Circulation? *J. Clim.* 31, 6649–6667. [Link](#)

2017

- Zhu, J, Z Liu, EC Brady, BL Otto-Bliesner, SA Marcott, **J Zhang**, X Wang, J Nusbaumer, TE Wong, A Jahn, D Noone. 2017. Investigating the direct meltwater effect in terrestrial oxygen-isotope paleoclimate records using an isotope-enabled Earth system model. *Geophys. Res. Lett.* 44, 12501–12510. [Link](#)
- Gu, S, Z Liu, **J Zhang**, J Rempfer, F Joos, EC Brady, DW Oppo. 2017. Coherent response of Antarctic Intermediate Water and Atlantic Meridional Overturning Circulation during the last deglaciation: Reconciling contrasting neodymium isotope reconstructions from the tropical Atlantic. *Paleoceanography* 32, 1036–1053. [Link](#)
- Zhang, J**, Z Liu, EC Brady, DW Oppo, PU Clark, A Jahn, SA Marcott, K Lindsay. 2017. Asynchronous warming and $\delta^{18}\text{O}$ evolution of deep Atlantic water masses during the last deglaciation. *Proc. Natl. Acad. Sci.* 114, 11075–11080. [Link](#)
- Zhu, J, Z Liu, EC Brady, BL Otto-Bliesner, **J Zhang**, D Noone, R Tomas, J Nusbaumer, TE Wong, A Jahn, C Tabor. 2017. Reduced ENSO variability at the LGM revealed by an isotope-enabled Earth system model. *Geophys. Res. Lett.* 44, 3449–3468. [Link](#)

2016 and before

- Zhang, J**. 2016. Understanding the deglacial evolution of deep Atlantic water masses in an isotope-enabled ocean model. *PhD thesis*. University of Wisconsin-Madison. [Link](#)
- Zhu, J, Z Liu, **J Zhang**, W Liu. 2015. AMOC response to global warming: Dependence on the background

- climate and response timescale. *Clim. Dynam.* 44, 3449–3468. [Link](#)
- Back, L, K Russ, Z Liu, K Inoue, **J Zhang**. 2013. Global hydrological cycle response to rapid and slow global warming. *J. Clim.* 26, 8781–8786. [Link](#)
- Liu, Z, AE Carlson, F He, EC Brady, BL Otto-Bliesner, BP Briegleb, M Wehrenberg, PU Clark, S Wu, J Cheng, **J Zhang**, D Noone, J Zhu. 2012. Younger Dryas cooling and the Greenland climate response to CO₂. *Proc. Natl. Acad. Sci.* 109, 11101–11104. [Link](#)
- Lin, H, P Jiang, **J Zhang**, J Wang, S Qin, S Sun. 2011. Genetic and marine cyclonic eddy analyses on the largest macroalgal bloom in the world. *Environ. Sci. Technol.* 45, 5996–6002. doi: 10.1021/es200579q (2011). [Link](#)
- Zhang, L, L Wu, **J Zhang**. 2011. Simulated response to recent freshwater flux change over the Gulf Stream and its extension: Coupled ocean–atmosphere adjustment and Atlantic–Pacific teleconnection. *J. Clim.* 24, 3971–3988. [Link](#)
- Zhang, L, L Wu, **J Zhang**. 2011. Coupled ocean-atmosphere response to recent freshwater changes over the Kuroshio-Oyashio Extension region. *J. Clim.* 24, 1507–1524. [Link](#)
- Wu, L, Y Sun, **J Zhang**, L Zhang, S Minobe. 2010. Coupled ocean-atmosphere response to idealized freshwater forcing over the western tropical Pacific. *J. Clim.* 23, 1945–1954. [Link](#)

FUNDING AND RESOURCES

- DOE FOA DE-FOA-0001862** 2018 – 2021
- Project name: Arctic freshwater pathways and their impact on the North Atlantic deepwater formation in a hierarchy of models.
 - Major Investigator, \$248K (3 years).
- 2018 Institutional Computing resources of Los Alamos National Laboratory (LANL)** 2018 – 2020
- Project name: The role of the Beaufort Gyre in Arctic and global climate variability: An eddy-permitting ocean-sea ice model perspective.
 - Lead PI, 4.658 M core-hours (2 years).
- 2015 NCAR Large-scale Allocation** 2015 – 2017
- Project name: Isotope-enabled Transient Climate Evolution of the last 21,000 years (iTraCE): Understanding Deglacial Climate/Isotope Changes using iCESM.
 - Major Investigator and Computing Manager, 3.260 M core-hours (2 years).

CONFERENCE PRESENTATIONS

- 2020 Ocean Science Meeting** **San Diego, CA**
2/16–21, 2020
- [Oral] Impact of the Beaufort Gyre freshwater release on deepwater formation in the North Atlantic
- 2019 AGU Fall Meeting** **San Francisco, CA**
12/9–13, 2019
- [Poster] Impact of the Beaufort Gyre freshwater release on deepwater formation in the North Atlantic
- 2018 Ocean Science Meeting** **Portland, OR**
2/12–16, 2018
- [Oral] Asynchronous warming and $\delta^{18}\text{O}$ evolution of deep Atlantic water masses during the last deglaciation
- 2017 AGU Fall Meeting** **New Orleans, LA**
12/11–15, 2017
- [Oral] Asynchronous warming and $\delta^{18}\text{O}$ evolution of deep Atlantic water masses during the last deglaciation

2017 CESM paleoclimate working group meeting	Boulder, CO 2/27–3/3, 2017
[Oral] Asynchronous warming and $\delta^{18}\text{O}$ evolution of deep Atlantic water masses during the last deglaciation	
Understanding Changes since the Last Glacial Maximum	Corvallis, OR
<i>PMIP ocean workshop</i>	12/4–6, 2013
[Oral] Simulating $\delta^{18}\text{O}$ in CESM ocean model and its application to exploring meltwater events during the last deglaciation	
Isotopes of Carbon, Water, and Geotracers in Paleoclimate Research	Bern, Switzerland
<i>Conference</i>	8/26–28, 2013
[Poster] Simulating $\delta^{18}\text{O}$ in CESM ocean model and its application to understanding meltwater events during the last deglaciation	
2nd NPOCE western boundary current symposium	Lijiang, China 7/8–9, 2013
[Oral] Geotracer development in CESM and its application in paleoclimate research	
Synthesis of Transient Climate Evolution of the last 21-kyr (SynTraCE-21)	Providence, RI
<i>Workshop</i>	11/3–5, 2012
[Oral] Development of water isotope tracers in POP2	
17th annual CESM workshop	Breckenridge, CO 6/18–21, 2012
[Oral] Water isotope tracer development in POP2	
2012 CESM land model and biogeochemistry working group meetings	Boulder, CO 2/29–3/2, 2012
[Oral] Water isotopes in the Ocean Component of CESM	
2012 CESM paleoclimate working group meeting	Boulder, CO 2/15–17, 2012
[Oral] Evaluating climate sensitivity on different time scales and its relation with base climates	
1st NPOCE western boundary current symposium	Qingdao, China 5/31–6/2, 2010
[Oral] Variations of the Kuroshio Extension during the last 50 years and their predictability	

PROFESSIONAL SERVICE

- Journal/Book Reviewer**.....
- Journals: *Nature Geoscience*, *Geophysical Research Letters*, *Journal of Geophysical Research: Atmospheres*, *Climate Dynamics*, *Water*, *Remote Sensing*, *Geosciences*, *Climate*, *Quaternary* (A complete list of verified journal reviews can be found at publons.com/researcher/1629157/jiaxu-zhang/peer-review/)
 - Books: *2018 IPCC Special Report on the Ocean and Cryosphere*
- Academic Service**.....
- Session Primary Chair. “The Changing Thermohaline Structure of the Arctic Ocean: Mechanisms and Impacts”. Ocean Sciences Meeting 2020. San Diego, California. Feb 16–21, 2020
 - Colloquium Committee, Department of Atmospheric and Oceanic Sciences, UW-Madison. Responsible for suggesting weekly colloquium speakers, sending out invitation, putting up the colloquium fliers, and coordinating the speakers’ visits. May 2012 – May 2014

Community Outreach.....

- o Workshop Assistant, “Expanding Your Horizons”. This one-day workshop is for girls in 5th – 12th grade across Northern New Mexico to explore the fields of STEM through hands-on activities. Santa Fe, New Mexico. *Feb 14, 2019*