

# Jiang Zhu

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Postdoctoral Research Fellow  
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University of Michigan  
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## RESEARCH INTERESTS

- Constraining climate sensitivity through simulation of past climate from hothouse to glacial maximum
- ENSO variability in the past and future
- Abrupt climate change and the oceanic meridional overturning circulation
- Simulation and interpretation of geochemical tracers in paleoclimate records
- Global climate and hydroclimate changes

## EDUCATION

|   |          |
|---|----------|
| Ph.D., Atmospheric and Oceanic Sciences<br>University of Wisconsin-Madison, Madison, WI, USA<br>Advisor: <i>Prof. Zhengyu Liu</i> | May 2017 |
| M.S. Atmospheric and Oceanic Sciences<br>Peking University, Beijing, China<br>Advisor: <i>Prof. Haijun Yang</i>                   | Jun 2011 |
| B.S. Atmospheric Sciences<br>Peking University, Beijing, China  | Jun 2008 |

## RESEARCH EXPERIENCE

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| Postdoctoral Research Fellow, University of Michigan<br><i>Projects:</i> Climate sensitivity and cloud feedbacks; Water isotope-enabled simulation of the early Eocene; Oceanic meridional overturning circulation in deep-time hothouse climates; Paleoclimate data assimilation for the Paleocene—Eocene Thermal Maximum and the last deglaciation | June 2017–present |
| Graduate Research Assistant, University of Wisconsin-Madison<br><i>Projects:</i> Interpretation and modeling of water isotopes; ENSO variability in the past and future; Holocene temperature conundrum; Abrupt climate changes and the large-scale ocean circulation  | Aug 2011–May 2017 |
| Visiting Scholar, National Center for Atmospheric Research<br><i>Projects:</i> Development and validation of the isotope-enabled Community Earth System Model (with focus on the sea ice, ocean, river runoff and the coupler)   | Jan 2014–Jan 2015 |

## PUBLICATIONS

- **Zhu, J.**, & Poulsen, C. J. Quantifying the cloud particle-size feedback in an Earth system model. *Geophysical Research Letters*, *in revision*.
- **Zhu, J.**, Poulsen, C. J., Otto-Bliesner, B. L., Liu, Z., Brady, E. C., & Noone, D. C. Simulation of early Eocene water isotopes using an Earth system model and its implication for past climate reconstruction. *Earth and Planetary Science Letters*, *submitted*.
- 23 **Zhu, J.**, Poulsen, C. J., & Tierney, J. E. (2019). Simulation of Eocene extreme warmth and high climate sensitivity through cloud feedbacks. *Science Advances*, *in press*.  
<https://doi.org/10.1126/sciadv.aax1874>
- 22. Brady, E. C., Stevenson, S., Bailey, D., Liu, Z., Noone, D., Nusbaumer, J., . . . **Zhu, J.** (2019). The connected isotopic water cycle in the Community Earth System Model version 1. *Journal of Advances in Modeling Earth Systems*, *in press*. <https://doi.org/10.1029/2019MS001663>
- 21. Thompson, A. J., Skinner, C. B., Poulsen, C. J., & **Zhu, J.** Modulation of mid-Holocene African rainfall by dust aerosol direct and indirect effects. *Geophysical Research Letters*.  
<https://doi.org/10.1029/2018GL081225>
- 20. Thibodeau, B., Not, C., **Zhu, J.**, Schmittner, A., Noone, D., Tabor, C., . . . Liu, Z. (2018). Last century warming over the Canadian Atlantic shelves linked to weak Atlantic Meridional Overturning Circulation. *Geophysical Research Letters*, *45*.  
<https://doi.org/10.1029/2018GL080083> (*news release*)
- 19. Lu, Z., Liu, Z., **Zhu, J.**, & Cobb, K. M. (2018). A Review of Paleo El Niño-Southern Oscillation. *Atmosphere*, *9*(4), 130. <https://doi.org/10.3390/atmos9040130>
- 18. Liu, Y., Zhang, M., Liu, Z., Xia, Y., Huang, Y., Peng, Y., & **Zhu, J.** (2018). A Possible Role of Dust in Resolving the Holocene Temperature Conundrum. *Scientific Reports*, *8*(1), 4434. <https://doi.org/10.1038/s41598-018-22841-5>
- 17. Tabor, C. R., Otto-Bliesner, B. L., Brady, E. C., Nusbaumer, J., **Zhu, J.**, Erb, M. P., . . . Noone, D. (2018). Interpreting Precession-Driven  $\delta^{18}\text{O}$  Variability in the South Asian Monsoon Region. *Journal of Geophysical Research: Atmospheres*, *123*(11), 5927–5946.  
<https://doi.org/10.1029/2018JD028424>
- 16. **Zhu, J.**, Liu, Z., Brady, E. C., Otto-Bliesner, B. L., Marcott, S. A., Zhang, J., . . . Noone, D. (2017). Investigating the direct meltwater effect in terrestrial oxygen-isotope paleoclimate records using an isotope-enabled Earth system model. *Geophysical Research Letters*, *44*(24), 12501–12530. <https://doi.org/10.1002/2017GL076253>
- 15. **Zhu, J.**, Liu, Z., Brady, E., Otto-Bliesner, B., Zhang, J., Noone, D., . . . Tabor, C. (2017). Reduced ENSO variability at the LGM revealed by an isotope-enabled Earth system model. *Geophysical Research Letters*, *44*(13), 6984–6992. <https://doi.org/10.1002/2017GL073406>
- 14. Liu, W., Xie, S.-P., Liu, Z., & **Zhu, J.** (2017). Overlooked possibility of a collapsed Atlantic Meridional Overturning Circulation in warming climate. *Science Advances*, *3*(1), e1601666. <https://doi.org/10.1126/sciadv.1601666>. (*news release*)
- 13. Lu, Z., Liu, Z., & **Zhu, J.** (2016). Abrupt intensification of ENSO forced by deglacial ice-sheet retreat in CCSM3. *Climate Dynamics*, *46*(5–6), 1877–1891. <https://doi.org/10.1007/s00382-015-2681-3>

12. Guan, J., Liu, Z., Wen, X., Brady, E., Noone, D., **Zhu, J.**, & Han, J. (2016). Understanding the temporal slope of the temperature-water isotope relation during the deglaciation using isoCAM3: The slope equation. *Journal of Geophysical Research: Atmospheres*, 121, 10,342–10,354. <https://doi.org/10.1002/2016JD024955>
11. Wen, X., Liu, Z., Wang, S., Cheng, J., & **Zhu, J.** (2016). Correlation and anti-correlation of the East Asian summer and winter monsoons during the last 21,000 years. *Nature Communications*, 7, 11999. <https://doi.org/10.1038/ncomms11999>
10. **Zhu, J.**, Liu, Z., Zhang, J., & Liu, W. (2015). AMOC response to global warming: dependence on the background climate and response timescale. *Climate Dynamics*, 44(11), 3449–3468. <https://doi.org/10.1007/s00382-014-2165-x>
9. Liu, W., Lu, J., Leung, L. R., Xie, S. P., Liu, Z., & **Zhu, J.** (2015). The de-correlation of westerly winds and westerly-wind stress over the Southern Ocean during the Last Glacial Maximum. *Climate Dynamics*, 45(11–12), 3157–3168. <https://doi.org/10.1007/s00382-015-2530-4>
8. **Zhu, J.**, Liu, Z., Zhang, X., Eisenman, I., & Liu, W. (2014). Linear weakening of the AMOC in response to receding glacial ice sheets in CCSM3. *Geophysical Research Letters*, 41(17), 6252–6258. <https://doi.org/10.1002/2014GL060891>
7. Liu, Z., **Zhu, J.**, Rosenthal, Y., Zhang, X., Otto-Bliesner, B. L., Timmermann, A., . . . Timm, O. E. (2014). The Holocene temperature conundrum. *Proceedings of the National Academy of Sciences*, 111(34), E3501–E3505. <https://doi.org/10.1073/pnas.1407229111>. (*news release*)
6. Nace, T. E., Baker, P. A., Dwyer, G. S., Silva, C. G., Rigsby, C. A., Burns, S. J., . . . **Zhu, J.** (2014). The role of North Brazil Current transport in the paleoclimate of the Brazilian Nordeste margin and paleoceanography of the western tropical Atlantic during the late Quaternary. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 415, 3–13. <https://doi.org/10.1016/j.palaeo.2014.05.030>
5. Huang, B., **Zhu, J.**, & Yang, H. (2014). Mechanisms of Atlantic Meridional Overturning Circulation (AMOC) variability in a coupled ocean-atmosphere GCM. *Advances in Atmospheric Sciences*, 31(2), 241–251. <https://doi.org/10.1007/s00376-013-3021-3>
4. Liu, Z., Carlson, a. E., He, F., Brady, E. C., Otto-Bliesner, B. L., Briegleb, B. P., . . . **Zhu, J.** (2012). Younger Dryas cooling and the Greenland climate response to CO<sub>2</sub>. *Proceedings of the National Academy of Sciences*, 109(28), 11101–11104. <https://doi.org/10.1073/pnas.1202183109>. (*news release*)
3. **Zhu, J.**, & Yang, H. (2012). Response of the Atlantic Thermohaline Circulation to Changes of Atmospheric Green House Gases. *Acta Scientiarum Naturalium Universitatis Pekinensis*, 48(2), 231–238. (*in Chinese with English abstract*)
2. Yang, H., & **Zhu, J.** (2011). Equilibrium thermal response timescale of global oceans. *Geophysical Research Letters*, 38(14), L14711. <https://doi.org/10.1029/2011GL048076>
1. Qian, W., **Zhu, J.**, Wang, Y., & Fu, J. (2009). Regional relationship between the Jiang-Huai Meiyu and the equatorial surface-subsurface temperature anomalies. *Chinese Science Bulletin*, 54(1), 113–119. <https://doi.org/10.1007/s11434-008-0410-6>

## SELECTED PRESENTATIONS

**Zhu, J.**, C. Poulsen, and J. Tierney, “Simulation of Eocene extreme warmth and high climate sensitivity through cloud feedbacks”. CESM Paleoclimate Working Group Meeting. February 2019. Boulder, USA. (*ORAL*)

**Zhu, J.**, C. Poulsen, and J. Tierney, “Simulating Eocene extreme warmth and high climate sensitivity through low-cloud feedbacks”. AGU Fall Meeting. Dec. 2018. Washington, D.C., USA. (*ORAL*)

**Zhu, J.**, C. Poulsen, Z. Liu, E. Brady, B. Otto-Bliesner, and D. Noone, “Modeling the oxygen isotope in the early Eocene hothouse climate using an isotope-enabled Earth system model”. Goldschmidt Conference. August 2018. Boston, USA. (*POSTER*)

**Zhu, J.**, C. Poulsen, “Simulating the Eocene hothouse climate using the water isotope-enabled Community Earth System Model (CESM1.2)”. DeepMIP Conference. July 2018. Bristol, UK. (*ORAL*)

**Zhu, J.**, Z. Liu, E. Brady, B. Otto-Bliesner, S. Marcott, J. Zhang, X. Wang, J. Nusbaumer, T. Wong, A. Jahn, and D. Noone, “Investigating the direct meltwater effect in terrestrial oxygen-isotope records using an isotope-enabled Earth system model”. CESM Paleoclimate Working Group Meeting. March 2018. Austin, USA. (*ORAL*)

**Zhu, J.**, Z. Liu, E. Brady, B. Otto-Bliesner, S. Marcott, J. Zhang, X. Wang, J. Nusbaumer, T. Wong, A. Jahn, and D. Noone, “Investigating the direct meltwater effect in terrestrial oxygen-isotope records using an isotope-enabled Earth system model”. AGU Fall Meeting. Dec. 2017. New Orleans, USA. (*ORAL*)

**Zhu, J.**, Z. Liu, B. Otto-Bliesner, E. Brady, D. Noone, J. Zhang, R. Tomas, A. Jahn, J. Nusbaumer, and T. Wong. “Reduced ENSO Variability at the LGM Revealed by an Isotope-enabled Earth System Model”. CESM PaleoClimate Working Group Meeting. March 2017. Boulder, USA. (*ORAL*)

**Zhu, J.**, Z. Liu, B. Otto-Bliesner, E. Brady, D. Noone, J. Zhang, R. Tomas, A. Jahn, J. Nusbaumer, and T. Wong. “Reduced ENSO Variability at the LGM Revealed by an Isotope-enabled Earth System Model”. AGU Fall Meeting. Dec. 2016. San Francisco, USA. (*ORAL*)

**Zhu, J.**, Z. Liu, B. Otto-Bliesner, E. Brady, D. Noone, J. Zhang, R. Tomas, A. Jahn, J. Nusbaumer, and T. Wong. “Reduced ENSO Variability at the LGM Revealed by an Isotope-enabled Earth System Model”. CLIVAR Open Science Conference. Sep. 2016. Qingdao, China. (*ORAL*)

**Zhu, J.**, Z. Liu, X. Zhang, I. Eisenman, and W. Liu. “Linear Weakening of the AMOC in Response to Lowering Ice-sheet Topography in CCSM3”. High-Resolution Proxies of Paleoclimate Workshop. May 2015. Madison, WI. (*POSTER*)

**Zhu, J.**, Z. Liu, J. Zhang, and W. Liu. “AMOC response to global warming: dependence on the background climate and response timescale”. Annual CESM Workshop. Jun. 2014. Breckenridge, CO. (*POSTER*)

**Zhu, J.**, Z. Liu, X. Zhang, I. Eisenman, and W. Liu. “Transient weakening of the AMOC to a receding glacial ice sheet in CCSM3 and its physical mechanisms”. Annual CESM Workshop. Jun. 2014. Breckenridge, CO. (*ORAL*)

## HONORS/AWARDS

|  |           |
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| Student Travel Grant, 2016 AGU Fall Meeting                    | Dec. 2016 |
| Graduate Student Travel Award, AOS, UW-Madison                 | Oct. 2016 |
| International Travel Grant, CLIVAR Open Science Conference     | Sep. 2016 |
| Honorable Mention, AOSS Community Poster Reception, UW-Madison | Apr. 2015 |
| Reid Bryson Graduate Scholarship, CCR, UW-Madison              | Mar. 2015 |
| Merit student, Peking University                               | Dec. 2009 |
| Outstanding Freshman Scholarship, Peking University            | Sep. 2004 |

## TEACHING EXPERIENCE

|   |                       |
|---|-----------------------|
| Certificate in <i>Postdoctoral Short Course on College Teaching in Science and Engineering</i> , University of Michigan | Jan. 2019 – Apr. 2019 |
| Teaching Assistant of <i>Introduction of Atmospheric Science</i> , School of Physics, Peking University                 | Sep. 2009 – Jan. 2010 |
| Teaching Assistant of <i>Descriptive Physical Oceanography</i> , School of Physics, Peking University                   | Sep. 2008 – Jan. 2009 |

## PROFESSIONAL SERVICES

**Reviewer for:** *Geophysical Research Letters, Journal of Climate, Journal of Geophysical Research–Oceans, Journal of Geophysical Research–Atmosphere, Climate Dynamics, Earth System Dynamics, Quaternary Science Reviews, Climate of the Past, Paleoceanography and Paleoclimatology, Atmosphere, Water*

**Convener of:** 2018 Goldschmidt Conference Session 08a: Understanding Past and Present Climate with Water Isotopes

## PROFESSIONAL AFFILIATIONS

American Geophysical Union

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