

NING ZHAO

East China Normal University
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Education

- 2017 Ph.D. Massachusetts Institute of Technology
MIT-WHOI Joint Program in Oceanography
- 2011 B.S. Nanjing University
School of Geography and Ocean Science

Appointments

- Oct 2020 – Professor
State Key Laboratory of Estuarine and Coastal Research &
School of Marine Sciences, East China Normal University
- Jul 2017 – Sept 2020 Post-doctoral Scientist
Department of Climate Geochemistry, Max Planck Institute for Chemistry
- Feb – Jun 2017 Post-doctoral Investigator
Department of Geology and Geophysics, Woods Hole Oceanographic
Institution

Research Interests

Paleo- ocean circulation and carbon cycling; Marine sediment chronology; Marine isotope geochemistry; Ocean changes during the Anthropocene and warm climate intervals; Ice sheet change and its influences on marine geochemistry

Fieldwork and Seagoing Experiences

- 2017 (Feb-Apr) South China Sea, Pacific (61 days, JOIDES Resolution)
2014 (Jun) Newfoundland and Scotian Shelves, Atlantic (13 days, R/V Endeavor)
2014 (May) South of Iceland, Atlantic (9 days, R/V Endeavor)
2013 (Aug-Sept) Beaufort Sea, Arctic (21 days, USCGC Healy)
2011 (Jun-Jul) New England Slope, Atlantic (10days, SSV Corwith Cramer)
2010 (Oct) Yellow Sea, Pacific (5 days)
2009 (Aug-Sept) Lu Mountain, China (12 days)
2009 (Aug) Lake Baikal, Russia (20 days)

Awards and Honors

- 2020 Zi-jiang Outstanding Young Scholar, East China Normal University
2018 PAGES travel award for invited speakers

2016	Advanced Climate Dynamics Course (ACDC) Scholarship
2014	NOSAMS Graduate Student Internship
2013	Arctic Service Medal
2011	Outstanding Graduate of Nanjing University
2010	Baosteel Scholarship
2009	Outstanding Student of Nanjing University (4 among 3000 in the class of 2011)
2009 & 2007	Outstanding Student of Jiangsu Province, China
2008	National Scholarship of China

Service

2021-	Member of Science Steering Committee of PAGES Ocean Circulation and Carbon Cycling (OC3) working group
2022	Convener of the 21st International Sedimentological Congress session "Calibration and application limitation of sediment-based proxies"
2020	Convener of EGU2020 session "Tracers in the paleo sea"
2015	Organizing committee member and Co-chair for Paleoclimate and Cryosphere session, 9 th Graduate Climate Conference (GCC, http://www.graduateclimateconference.com)
2008-2009	Vice Chair, Student Union of the School of Geography and Ocean Science, Nanjing University
---	Reviewer for <i>Nature Communications</i> , <i>Nature Geoscience</i> , <i>Paleoceanography and Paleoclimatology</i> , <i>Earth and Planetary Science Letters</i> , <i>Geophysical Research Letters</i> , <i>Journal of Geophysical Research - Biogeosciences</i> , <i>Quaternary Science Reviews</i> , and IPCC 6 th Assessment Report
---	Proposal reviewer for U.S. National Science Foundation

Publications

In prep:

N. Zhao, H. Vonhof, L. Giosan, H.-L. Lin, R. Schiebel, and G. H. Haug. Plio-Pleistocene evolution of seasonal upper ocean stratification in the northwestern tropical Pacific.

Published:

M. Chen, G. Carrasco, N. Zhao, X. Wang, J. N. Lee, J. T. I. Tanzil, K. V. Annammala, S. C. Poh, F. M. Lauro, A. D. Ziegler, D. Duangnamon, and E. A. Boyle. Boundary exchange completes the marine Pb cycle jigsaw. *Proceedings of the National Academy of Sciences*, 2023, 120(6): e2213163120.

Juan Muglia, Stefan Mulitza, Janne Repschläger, Andreas Schmittner, Lester Lembke-Jene, Lorraine Lisiecki, Alan Mix, Rajeev Saraswat, Elizabeth Sikes, Claire Waelbroeck, Julia Gottschalk, Jörg Lippold, David Lund, Gema Martinez-Mendez, Elisabeth Michel, Francesco Muschitiello, Sushant Naik, Yusuke Okazaki, Lowell Stott, Antje Voelker, and Ning Zhao. A global synthesis of high-resolution stable isotope data from benthic foraminifera of the last deglaciation. *Scientific Data*, 2023, 10: 131.

J. Repschläger, N. Zhao, L. Lisiecki, D. Rand, J. Muglia, S. Mulitza, A. Schmittner, O. Cartapanis, H. Bauch, R. Schiebel, and G. H. Haug. Active North Atlantic deepwater

- formation during Heinrich Stadial 1. *Quaternary Science Reviews*, 2021, 270: 107145.
- O. Marchal, and N. Zhao (2021). On the estimation of deep Atlantic ventilation from fossil radiocarbon records. Part II: (in)consistency with modern estimates. *Journal of Physical Oceanography*, 2021, 51(8): 2681-2704.
- O. Marchal, and N. Zhao (2021). On the estimation of deep Atlantic ventilation from fossil radiocarbon records. Part I: modern reference estimates. *Journal of Physical Oceanography*, 51(6): 1843-1873.
- N. Zhao, D. Oppo, K.-F. Huang, J. Howe, J. Blusztajn, and L. D. Keigwin (2019). Glacial-interglacial Nd isotope variability of North Atlantic Deep Water modulated by North American ice sheet. *Nature Communications*, 10: 5773.
- D. Khider et al. (92 co-authors including Ning Zhao) (2019). PaCTS v1.0: A crowdsourced reporting standard for paleoclimate data. *Paleoceanography and Paleoclimatology*, 34: 1570-1596.
- N. Zhao, and L. D. Keigwin (2018). An atmospheric chronology for the glacial-deglacial Eastern Equatorial Pacific. *Nature Communications*, 9: 3077. (Research Highlight in *Science*)
- H. C. Larsen, G. Mohn, M. Nirrengarten, Z. Sun, J. Stock, Z. Jian, A. Klaus, C. Alvarez-Zarikian, J. Boaga, S. A. Bowden, A. Briais, Y. Chen, D. Cukur, K. Dadd, W. Ding, M. Dorais, E. Ferre, F. Ferreira, A. Furusawa, A. Gewecke, J. Hinojosa, T. W. Höfig, K. Hsiung, B. Huang, E. Huang, X. Huang, S. Jiang, H. Jin, B. Johnson, R. Kurzawski, C. Lei, B. Li, L. Li, Y. Li, J. Lin, C. Liu, C. Liu, Z. Liu, A. Luna, C. Lupi, A. McCarthy, L. Ningthoujam, , N. Osono, D. W. Peate, P. Persaud, N. Qiu, C. Robinson, S. Satolli, I. Sauermilch, J. C. Schindlbeck, S. Skinner, S. Straub, X. Su, C. Su, L. Tian, F. M. van der Zwan, S. Wan, H. Wu, R. Xiang, R. Yadav, L. Yi, P., C. Zhang, J. Zhang, Y. Zhang, N. Zhao, G. Zhong, and L. Zhong (2018). Rapid transition from continental breakup to oceanic crust at South China Sea rifted margin. *Nature Geoscience*, 11: 782-789.
- L. D. Keigwin, S. Klotzko, N. Zhao, B. Reilly, L. Giosan, and N.W. Driscoll (2018). Deglacial floods in the Beaufort Sea preceded Younger Dryas cooling. *Nature Geoscience*, 11: 599-604.
- Z. Sun, Jian, Z., Stock, J.M., Larsen, H.C., Klaus, A., Alvarez Zarikian, C.A., and the Expedition 367/368 Scientists (including N. Zhao) (2018). South China Sea Rifted Margin. Proceedings of the International Ocean Discovery Program, 367/368: College Station, TX (International Ocean Discovery Program). <https://doi.org/10.14379/iodp.proc.367368.2018>
- N. Zhao, O. Marchal, L. D. Keigwin, D. Amrhein, and G. Gebbie (2018). A synthesis of deglacial deep-sea radiocarbon records and their (in)consistency with modern ocean ventilation. *Paleoceanography and Paleoclimatology*, 33: 128-151.
- Z. Sun, Stock, J., Klaus, A., and the Expedition 367 Scientists (including N. Zhao) (2018). Expedition 367 Preliminary Report: South China Sea Rifted Margin. International Ocean Discovery Program. <https://doi.org/10.14379/iodp.pr.367.2018>
- Y. Zhang, C. Ma, N. Zhao, W. Shi, D. Liu, C. Zhu, and C. Zheng (2015). Late Holocene Pb/Sr ratios as a paleoclimate proxy in the Qianmutian Peat of Tianmu Mountains, Zhejiang Province. *Journal of Stratigraphy*, 39(1): 97-107. (In Chinese, with English abstract)
- E. A. Boyle, J.-M. Lee, Y. Echegoyen, A. Noble, S. Moos, G. Carrasco, N. Zhao, R. Kayser, J. Zhang, T. Gamo, H. Obata, and K. Norisuye (2014). Anthropogenic lead emissions in the ocean: the evolving global experiment. *Oceanography*, 27(1): 69-75.

N. Zhao, Y. Yang, J. Gao, Y. Liu, T. Cai, and J. Jia (2014). The influences of natural and human activities on sources and evolution of organic matter in the Yuehu lagoon sediments. *Geochimica*, 43(4): 365-374. (In Chinese, with English abstract)

Thesis

Zhao, N. (2017). Reconstructing Deglacial Ocean Ventilation Using Radiocarbon: Data and Inverse Modeling (PhD Thesis). Massachusetts Institute of Technology.

Conference Abstracts

N. Zhao, H. Vonhof, L. Giosan, R. Schiebel, and G. H. Haug. Reconstruction of Pliocene East Asian monsoons using individual foraminiferal analyses. 13th International Conference on Paleoceanography, 2019, Sydney, Australia

N. Zhao, and O. Marchal. On the estimation of deglacial changes in ocean ventilation from a global compilation of deep-sea radiocarbon records. EGU General Assembly, 2019, Vienna, Austria

J. Repschläger, N. Zhao, O. Cartapanis, S. Mulitza, L. Lisiecki, J. Muglia, A. Schmittner, R. Schiebel, and the Pages OC3 working group members. OC3 regional North Atlantic compilation of benthic $\delta^{13}\text{C}$ and $\delta^{18}\text{O}$ data reveal glacial and deglacial endmember composition changes in northern sourced deepwater. EGU General Assembly, 2019, Vienna, Austria

N. Zhao, D. Oppo, O. Marchal, J. Howe, K.-F. Huang, J. Blusztajn, and L. D. Keigwin. On the North Atlantic Deep Ventilation during the Last Glacial Maximum and the Younger Dryas. 3rd workshop of PAGES working group OC3: global synthesis, 2018, Cambridge, UK

N. Zhao, L. D. Keigwin, O. Marchal, and G. H. Haug. Deep Ocean Ventilation in the North Atlantic during the Younger Dryas. Goldschmidt Conference, 2018, Boston, USA

N. Zhao, O. Marchal, L. D. Keigwin, D. Amrhein, and G. Gebbie. A synthesis of deglacial deep-sea radiocarbon records and a test of their consistency with modern ocean circulation. 12th International Conference on Paleoceanography, 2016, Utrecht, the Netherlands

N. Zhao, and L. D. Keigwin. Ventilation history of the intermediate western North Atlantic during the last deglaciation. AGU Fall Meeting, 2015, San Francisco, USA

N. Zhao, and L. D. Keigwin. Strong intermediate-depth ventilation in the subpolar North Atlantic and weak Labrador Current during the Younger Dryas. XIX INQUA Congress, 2015, Nagoya, Japan

N. Zhao, and L. D. Keigwin. Dating wood-benthic foram-planktic foram trios from the Panama Basin to better constrain Antarctic Intermediate Water ventilation age during the last deglaciation. AGU Fall Meeting, 2014, San Francisco, USA

E. A. Boyle, A. Noble, Y. Echegoyen, J.-M. Lee, K. Norisuye, T. Gamo, H. Obata, J. Zhang, N. Zhao, G. Carrasco, and K. Fornace. Pb and Pb isotopes throughout the global ocean, GEOTRACES style (Urey Medal lecture). Goldschmidt Conference, 2014, Sacramento, USA

N. Zhao, E. A. Boyle, G. Carrasco, et al. A 60-year (1951-2010) coral Pb and Cd record off Kuwait coast, Arabian Gulf. Gordon Research Conference on Chemical Oceanography, 2013, Biddeford, USA