

Boyang Zhao

Postdoctoral Research Associate

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**Education**

- 2016-2021 **Ph.D. University of Massachusetts Amherst**, Amherst, USA. Department of Geosciences. Drs. Raymond Bradley and Isla Castañeda, advisors.
Dissertation title: Organic biomarker based climate reconstruction in southern Greenland and its relationship to the demise of Norse settlements
- 2013-2016 **M.Sc. Institute of Earth Environment, Chinese Academy of Sciences**, Xi'an, China. Dr. Yu Liu, advisor
Thesis title: The tree-ring record of mean relative humidity from May to July over the past 123 years from Qinglong region, Hebei province
- 2009-2013 **B.Sc. Nanjing University**, Nanjing, China. School of Geographic and Oceanographic Sciences. Dr. Shugui Hou, advisor
Thesis topic: Investigation of geochemical characteristics of the insoluble micro-particles in surface snow in east Antarctica

Major Research Interests: Paleoclimate; Organic biogeochemistry; Climate-environment-human interactions; Branched glycerol dialkyl glycerol tetraethers (brGDGTs); Leaf wax hydrogen isotopes; Tropical climate; Arctic climate.

Research Experience

- 2021-now **Postdoctoral Research Associate, Brown University**
Mainly focus on analyzing brGDGTs and leaf wax isotopes in lake sediments from Amazonia. PI: Dr. James Russell
- 2016-2019,
2021 **Research assistant, UMass Amherst**
Extracted total lipids from lake sediments and soils and analyzed organic compounds with GC-FID, GC-MS, HP-LC-MSD, and GC-IRMS
- 2014-2016 **Research assistant, Institute of Earth Environment, CAS**
Measured tree-ring width, and analyzed tree-ring cellulose oxygen isotopes

Honors, Awards and Research Funding

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| 2021 | College of Natural Sciences Graduate Student Fellowship COVID Relief Fund | \$10,308 |
| | This award is to support student research in the summer of 2021 | |
| 2020 | The Joseph Hartshorn Endowed Graduate Scholarship | \$1000 |

2019	This award is to support student research in Quaternary Geology Gloria Radke Memorial Prize	\$630
2019	This award is given to graduate students in support of field research. Geological Society of America Charles A. & June R.P. Ross Research Fund	\$2648
2018	This award supports research projects for graduate students, post-graduate students, and post-doctorate researchers in the fields of biostratigraphy. Leo M. Hall Memorial Prize	\$700
2017	This award is given to graduate students in support of field research. The Elinor I. Fierman Memorial Prize	\$358
2017	This award is given to a student researcher with preference given to laboratory studies. The H.T.U. Smith Memorial Prize	\$384
2015	This award is given to graduate students in support of field research. National Scholarship (honored by Ministry of Education, P. R. China)	¥20,000

Publications

Boyang Zhao, Isla S. Castañeda, Jeffrey M. Salacup, Elizabeth K. Thomas, William C. Daniels, Tobias Schneider, Gregory A. de Wet, Raymond S. Bradley, Prolonged drying trend coincident with the demise of Norse settlement in southern Greenland. *Science Advances*, in press

Boyang Zhao, Isla S. Castañeda, Raymond S. Bradley, Jeffrey M. Salacup, Gregory A. de Wet, William C. Daniels, Tobias Schneider, Development of an in situ branched GDGT calibration in Lake 578, southern Greenland. *Organic Geochemistry*, 2021, 152, 104168.

Boyang Zhao, Yu Liu, Huiming Song, Qiang Li, Mean relative humidity reconstruction based on the tree-ring width from Chinese pines since 1890 from the Qinglong region, China. *Journal of Earth Environment*, 2016, 7(5): 509-520. (In Chinese)

Qiang Li, Yu Liu, **Boyang Zhao**, Huiming Song, Ruoshi Liu, Temperature variability in North-Central China during the past 231 years based on multiple proxies. *Quaternary International*, 2018, 487: 26-32.

Xinjia Zhang, Yu Liu, Huiming Song, Qiufang Cai, Qiang Li, **Boyang Zhao**, Han Liu, Ruochen Mei, Interannual variability of PDSI from tree-ring widths for the past 278 years in Baotou, China. *Trees*, 2017, 31(5): 1531-1541.

Yu Liu, Xinjia Zhang, Huiming Song, Qiufang Cai, Qiang Li, **Boyang Zhao**, Han Liu, Ruochen Mei, Tree-ring-width-based PDSI reconstruction for central Inner Mongolia, China over the past 333 years. *Climate Dynamics*, 2016: 1-13.

Qiang Li, Yu Liu, Huiming Song, Yinke Yang, **Boyang Zhao**, Divergence of tree-ring-based drought reconstruction between the individual sampling site and the Monsoon Asia Drought Atlas: an example from Guancen Mountain. *Science Bulletin*, 2015, 60(19): 1688-1697.

Oral Conference Presentations

Boyang Zhao, Isla S. Castañeda, Raymond S. Bradley, Jeffrey M. Salacup, Tobias Schneider, Late Holocene temperature and hydroclimate reconstruction from southern Greenland: evidence from biomarkers in lake sediments. *Arctic Workshop, April 2021 (online)*

Boyang Zhao, Isla S. Castañeda, Raymond S. Bradley, Jeffrey M. Salacup, William C. Daniels, Tobias Schneider, Gregory A. de Wet, Reconstructing summer water temperature from a southern

Greenland lake over the Common Era: a site-specific calibration for brGDGTs. *AGU fall meeting, December 2020 (online)*

Boyang Zhao, Isla S. Castañeda, Raymond S. Bradley, Jeffrey M. Salacup, William C. Daniels, Tobias Schneider, Gregory A. de Wet, Decadal summer lake water temperature variability in southern Greenland of the last 2 millennia: development and application of a site-specific brGDGT calibration. *GSA 2020 Connects Online, October 2020 (online)*

Boyang Zhao, Isla S. Castañeda, Raymond S. Bradley, Jeffrey M. Salacup, “Modern Cooling” Signal from Lake Sediments and Possible Causes. *GSA Northeastern Section, Portland, ME, March 2019*

Boyang Zhao, Isla S. Castañeda, Raymond S. Bradley, Jeffrey M. Salacup, Abundance of 5- and 6-methyl Branched Glycerol Dialkyl Glycerol Tetraethers (brGDGTs) at Lake 578 in Southern Greenland: Insights into Past Temperature Reconstruction. *AGU fall meeting, Washington, D.C., December 2018*

Boyang Zhao, Isla S. Castañeda, Raymond S. Bradley, Jeffrey M. Salacup, Temperature variability based on brGDGTs from a lake in southern Greenland over last 2000 years. *Arctic Workshop, Boulder, CO, April 2018*

Boyang Zhao, Isla S. Castañeda, Raymond S. Bradley, Jeffrey M. Salacup, A late Holocene decadal-resolution temperature record from South Greenland: A case study in the application of brGDGTs to Arctic lakes. *GSA Northeastern Section, Burlington, VT, March 2018*

Poster Presentations

Boyang Zhao, Isla S. Castañeda, Daniel Robert Miller, M. Helen Habicht, Benjamin Andrew Keisling, Jeff M Salacup and Raymond S Bradley, High seasonal variability in branched GDGT concentrations and distributions in settling particulate matter from Basin Pond, Maine, Northeastern USA. *AGU fall meeting, December 2021 (online)*

Boyang Zhao, Isla S. Castañeda, Raymond S. Bradley, Jeffrey M. Salacup, Did Drought Cause the Abandonment of Norse Settlements in Southern Greenland in 1450 AD? New Evidence from Lake Sediments. *AGU fall meeting, San Francisco, CA, December 2019*

Boyang Zhao, Isla S. Castañeda, Raymond S. Bradley, Jeffrey M. Salacup, William C. Daniels Climate Change and Norse Settlement Transition. *Graduate Climate Conference, Woods Hole, MA, November 2019*

Boyang Zhao, Isla S. Castañeda, Raymond S. Bradley, Jeffrey M. Salacup, A case study of applying branched glycerol dialkyl glycerol tetraethers (brGDGTs) to lake 578 from southern Greenland. *Northeast Geobiology Meeting, Amherst, MA, March 2019*

Boyang Zhao, Isla S. Castañeda, Raymond S. Bradley, Jeffrey M. Salacup, A case study of applying brGDGTs to Arctic lakes: proxy constraints and temperature reconstruction. *Gordon Research Conference on Organic Geochemistry, Holderness, NH, August 2018*

Boyang Zhao, Isla S. Castañeda, Raymond S. Bradley, Jeffrey M. Salacup, A case study of applying brGDGTs to Arctic lakes: proxy constraints and temperature reconstruction *Gordon Research Seminar on Organic Geochemistry, Holderness, NH, July 2018*

Scientific Expeditions and Fieldworks

- 2019 *Southern Greenland*, cored several lakes; sampled water & soils, recovered sediment traps. Took lead role in organizing and carrying out field activities.
- 2018 *Southern Greenland*, collected surface sediments, deployed sediment traps, collected water, vegetation and soil samples. Took lead role in organizing and carrying out field activities.
- 2017 *Southern Greenland*, collected surface sediments, deployed sediment traps, collected water, vegetation and soil samples.
- 2015 *Xi'an, China*, collected numerous tree cores from buried wood. Led the campaign.
- 2015 *Shanxi province, China*, collected numerous tree cores at multiple study sites.
- 2015 *Gansu province, China*, collected numerous tree cores at multiple study sites.
- 2014 *Tianmu Mountains, Zhejiang province, China*, collected numerous tree cores, Led the campaign.
- 2014 *Ta-pieh Mountains, Hubei province, Anhui province, China*, collected numerous tree cores at multiple study sites.
- 2014 *Lushi, Henan province, China*, collected tree cores.
- 2013 *Gansu province, Ningxia province, Inner Mongolia, Hebei province, Liaoning province, China*, collected numerous tree cores at multiple study sites.

Teaching Experience

- 2021 Spring **Teaching assistant**
UMass Amherst, GEO 494 Living on Earth
- 2020 Fall **Teaching assistant**
UMass Amherst, GEO 563 Glacial and Surficial Geology
- 2020 Spring **Teaching assistant**
UMass Amherst, GEO 103 Intro Oceanography
- 2019 Fall **Teaching assistant**
UMass Amherst, GEO 445 Sedimentology

Guest Lectures

- 2021 Nov. Explore wildfire history in the Northeastern U.S.
UMass Amherst, PUBHLTH 397, Air pollution and health
- 2019 Apr. Streams and Floods: The Geology of Running Water
UMass Amherst, GEO 101H The Earth

Undergraduate Mentoring

Aaron Freeman, Brown University, Amazonia project. May 2024.

Service

Reviewer: *Geochimica et Cosmochimica Acta*, *Organic Geochemistry*, *Chemical Geology*

AGU Fall Meeting Outstanding Student Presentation Awards (OSPA) judge

Volunteer & Outreach

1. Guest presentation (*What did I do as a Geoscience major student?*) at Greater Lowell Technical High School, which is a diverse urban high school serving primarily disadvantaged

students. We presented climate change related research and tried to inspire the students find their own diversified paths after high school. **2018**

2. Volunteer instructor of Eureka! Summer Science Camp Workshops: Eureka! is a program for 8-12th grade girls that is aimed at increasing the retention of women in STEM fields. The girls in the program are from Holyoke, MA and surrounding cities in Pioneer Valley and many are from low-income households and are members of underrepresented groups. Helped teach workshops on sea level rise and geochemistry. **2017&2019**

Academic References

Dr. James Russell

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Dr. Raymond Bradley

University Distinguished Professor (Ph.D. advisor)
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Dr. Isla Castañeda

Associate Professor (Ph.D. advisor)
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