

HEEYEON SUN

Ph.D. Candidate in Geosciences
Department of Earth, Geographic, and Climate Sciences,
University of Massachusetts-Amherst



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EDUCATION

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| Ph.D. Candidate in Geosciences (GPA: 4.0/4.0) | Sep 2023 – Present |
| Earth, Geographic, and Climate Sciences, University of Massachusetts-Amherst | Amherst, MA, USA |
| <ul style="list-style-type: none">• (Expected) Dissertation: Multi-Proxy Reconstruction of Holocene Climate Variability in Arid Central Asia using Lacustrine Organic Biomarkers• Advisor: Dr. Isla S. Castañeda | |
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| M.S. in Geology (GPA: 3.87/4.0) | Aug 2021 – May 2023 |
| Geological and Atmospheric Sciences, Iowa State University | Ames, IA, USA |
| <ul style="list-style-type: none">• Thesis: Using Clam-based Stable Isotopes and Growth Histories to Reconstruct Oceanographic Variability in the Southern Mid-Atlantic Bight over the last 185 years• Advisor: Dr. Alan D. Wanamaker | |
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| B.S. in Geological Sciences, Summa cum laude (GPA: 4.178/4.5) | Mar 2013 – Feb 2019 |
| Geological and Environmental Sciences, Chungnam National University | Daejeon, South Korea |
| Study Abroad Program (GPA: 4.0/4.0) | Jan 2017 – Dec 2017 |
| Geology, Eastern Illinois University | Charleston, IL, USA |

RESEARCH & PROFESSIONAL EXPERIENCE

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| Graduate Research Assistant | Sep 2023 – Present |
| Biogeochemistry Lab, University of Massachusetts-Amherst | Amherst, MA, USA |
| <ul style="list-style-type: none">• Investigate Holocene climate variability in Lake Issyk-Kul using organic geochemical proxies.• Analyze GDGTs, alkenones, and leaf-wax biomarkers to reconstruct past temperature and hydroclimate.• Perform biomarker extraction (ASE) and instrumental analyses (HPLC-MS, GC-irMS, GC-FID, GC-MS).• Develop age models and conduct statistical analyses and visualization using Python.• Present findings at international conferences and prepare manuscripts for publication. | |
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| Vice President | Sep 2024 – April 2025 |
| Korean Graduate Student Association, University of Massachusetts-Amherst | Amherst, MA, USA |
| <ul style="list-style-type: none">• Support for Korean graduate students in UMass-Amherst to manage better academic life and a better understanding of Korean culture for other students and the campus community | |
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| Graduate Research Assistant | Aug 2021 – May 2023 |
| Stable Isotope Paleo Environments Research Group, Iowa State University | Ames, IA, USA |
| <ul style="list-style-type: none">• Stable Isotope Analysis for Reconstruction of Climate Variability in Mid-Atlantic Region | |
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| Research Assistant | Sep 2020 – Feb 2021 |
| National Science Museum | Daejeon, South Korea |
| <ul style="list-style-type: none">• Development of Database for a Comprehensive Collection of Fossils and Rocks | |
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| Research Assistant | Jun 2020 |
| Korea Institute of Geoscience And Mineral resources | Daejeon, South Korea |

- Sediment Sample Preparation for Radiocarbon dating & Geochemical analysis and Analysis of Particle Size.

Undergraduate Research Assistant

Mar 2014 – Feb 2019

CNU Rock Magnetism Lab, Chungnam National University

Daejeon, South Korea

- Data Analysis of Volcanic Eruption & Climate Data and Conference Presentation

Certificate of Completion

Jul 2018 – Aug 2018

Korea Meteorological Administration

Seoul, South Korea

- Completion of International Meteorological Professional Training Course

CONFERENCE PRESENTATION & PUBLICATIONS

1. **Sun, H.**, Ricketts, D. R., Salacup, J. M., Johnson, T. C., & Castañeda, I. S., Divergent GDGT Proxy Responses Reveal Holocene Climate and Environmental Changes in Lake Issyk-Kul, Central Asia, Poster presentation, Gordon Research Conference on Organic Geochemistry, Holderness, USA, (2026)
2. Remaili, S., Whitney, N., Williams, B., Ummenhofer, C., Biastoch, A., Martin, T., Wanamaker, A. D., Thatcher, D. L., Berg, J., Hauser, A., **Sun, H.**, Mette, M., Walton, A., Powell, E., Mann, R., Hofmann, E. E., Klinck, M. J., Explaining Variability in Shell-Based Oxygen Isotope Ratios in the Western North Atlantic Using a Proxy System Model, AGU Fall Meeting 2025, New Orleans, USA, (2025)
3. **Sun, H.**, Castañeda, I. S., Salacup, J. M., & Ricketts, R. D., Spatial-temporal Patterns of the Holocene Climate over Arid Central Asia: Insights from the Lacustrine Records of Eastern Lake Issyk-Kul, Oral presentation, GSA Connects 2025, San Antonio, USA, (2025)
4. **Sun, H.**, Castañeda, I. S., Salacup, J. M., & Ricketts, R. D., Paleoclimate Variability of Lake Issyk-Kul from 14 ka to the Present Based on Organic Biomarkers. Oral presentation, AGU24 Annual Meeting, Washington D.C., USA, (2024)
5. Castañeda, I. S., Daniels, W., Konecky, B., Sae-Lim, J., Salacup, J. M., Schneider, T., **Sun, H.**, Wilk, A., & Zhao, B., Investigating OH-GDGTs and GMGTs in lacustrine sediments and potential relationships to environmental conditions, AGU24 Annual Meeting, Washington D.C., USA, (2024)
6. Castañeda, I. S., **Sun, H.***, & Salacup, J. M., Temperature and hydroclimate variability in Mid-latitude Arid Central Asia during the past 13,600 years: A multi-proxy investigation of Issyk-Kul (Kyrgyzstan). Oral presentation, GSA Northeastern Section Meeting, Manchester, USA, (2024) *presenting author
7. Swanner, E. D., Harding, C., Akam, S., Lascu, I., Ledesma, G., Poudel, P., **Sun, H.**, Duncanson, S., Bandy, K., Branham, A., Bryant-Tapper L., Conwell, T., Jamison, O., & Netz, L., Thermal stratification and meromixis in four dilute temperate zone lakes, Biogeosciences, 21, 1549-1562, (2024)
8. Thatcher, D. L., Whitney, N. M., Walton, A., **Sun, H.**, Jarosinski, L., Wanamaker, A. D., Lavigne, M., Williams, B., & Stewart, J., Evidence of coherent warming in the northwest Atlantic Ocean from *Arctica islandica* oxygen isotope records. Poster Presentation, International Sclerochronology Conference, virtual, (2023)
9. **Sun, H.**, Wanamaker, A. D., Thatcher, D. L., Whitney, N. M., Jarosinski, L., Stewart, J. A., Williams, B., & Lavigne, M., Oceanographic Variability in the Rapidly Warming Coastal Mid-Atlantic (USA) over the last 200 years: Insights from Shell-Based Geochemistry and Growth Histories. Poster Presentation, AGU Fall meeting, Chicago, USA, (2022)
10. Thatcher, D. L., **Sun, H.**, Whitney, N. M., Jarosinski, L., Lavigne, M., Williams, B., Stewart, J., & Wanamaker, A. D., Oceanographic changes recorded in *Arctica islandica* shells from the Mid-Atlantic Bight. Poster Presentation, Virtual International Sclerochronology Conference, (2022)
11. **Sun, H.**, Thatcher, D. L., Whitney, N., Jarosinski, L., Lavigne, M., Williams, B., Stewart, J., & Wanamaker, A., Developing multi-centennial shell-based records from the Mid-Atlantic region. Oral presentation (given virtually), PAGES 6th Open Science Meeting, Agadir, Morocco, OSM18, (2022)

12. **Sun, H. & Yu, Y.**, Where do Volcanoes Occur at Destructive Plate Boundaries?. Oral Presentation, Fall Joint Conference of the Geological Sciences, Jeongsun, South Korea, pp. 203, (2014)
13. **Sun, H. & Yu, Y.**, Rainfall Dilution: The Solution to Anthropogenic Pollution?. Poster Presentation, Asia Oceania Geosciences Society (AOGS), Sapporo, Japan, SE04-027, (2014)

AWARDS AND HONORS

2026	Conference Travel Support, Gordon Research Conference on Organic Geochemistry, Holderness, NH, USA
2026	Leo M. Hall Memorial Fund, Department of Earth, Geographic, and Climate Sciences, University of Massachusetts-Amherst, Amherst, MA, USA
2025	Kerry Kelts Research Award, GSA Limnogeology Division, Boulder, CO, USA
2024	GSA Graduate Student Research Grant, The Geological Society of America, Boulder, CO, USA
2024	Elinor Fierman Memorial Fund, Department of Earth, Geographic, and Climate Sciences, University of Massachusetts-Amherst, Amherst, MA, USA
2023	CSD Facility Visiting Graduate Student Program Grant, Continental Scientific Drilling Facility, University of Minnesota, Minneapolis, MN, USA
2019	College of Natural Sciences Dean's Award, Chungnam National University, Daejeon, South Korea
2017	International Student Scholarship for excellence in academic studying and writing, Eastern Illinois University, Charleston, IL, USA
2017	College of Sciences Dean's list in recognition of high academic performance, Eastern Illinois University, Charleston, IL, USA
2013 – 2017	Scholarships for academic excellence, Chungnam National University, Daejeon, South Korea
2016	Global Talent Scholarship for exchange studentship, Chungnam National University, Daejeon, South Korea
2014	Scholarship for Excellence Incentive, Chungnam National University, Daejeon, South Korea

TEACHING EXPERIENCE

Teaching Assistant University of Massachusetts-Amherst	Sep 2024 – Present Amherst, MA, USA
• GEOLOGY 105 (Spring 2026) Dynamic Earth • GEOGRAPH 110 (Fall 2025, Spring 2026) Introduction to Climate Science • ENVI-SCI 101 Discussion (Fall 2024, Fall 2025) Introduction to Environmental Science	
Teaching Assistant Iowa State University	Aug 2021 – May 2023 Ames, IA, USA
• GEOL 100 (Spring 2022 - Spring 2023) How the Earth Works • ENSCI 382 (Spring 2022) Analysis of Environmental Systems II • GEOL 201 Lab (Fall 2021) Geology for Engineers and Environmental Scientists	

LABORATORY TECHNIQUES

High-performance liquid chromatography-mass spectrometry (HPLC-MS)

GC-isotope ratio monitoring mass spectrometry (GC-irMS)

Gas chromatography flame ionization detector (GC-FID)

Gas chromatography-mass spectrometry (GC-MS)

The New Wave-Merchantek Micromill

COMPUTER TECHNIQUES

Python Jupyter

RStudio

Matlab

Adobe Illustrator

Latex

HTML

ArcGIS Pro

Adobe Photoshop

Microsoft Office

Geochemist's Workbench

CooRecorder

CDendro