

Jarunetr “Nadia” Sae-Lim

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PROFESSIONAL APPOINTMENTS

- Jan 2027– Incoming Assistant Professor, Department of Earth, Environmental, and Planetary Science, University of Tennessee, Knoxville
- Jan 2026 – Postdoctoral Fellow, University of Missouri-Columbia
PIs: Drs. Rebecca North and Sven Teurlincx (Netherlands Institute of Ecology)
- Develop a coupled GLM-AED2 and microcystin lake modeling framework to evaluate how aeration, nutrient cycling, and future climate change influence cyanobacterial bloom and toxin risk in a managed reservoir.
- 2024 – 2026 President’s Postdoctoral Fellow, University of California, Irvine
Mentors: Drs. Kathleen Johnson and Sakonvan Chawchai (Chulalongkorn University)
- Developed and applied data assimilation frameworks to integrate paleoclimate proxies with isotope-enabled climate model ensembles for rainfall reconstructions in Southeast Asia
 - Reconstructed past climate and environment based on a peat record from southern Thailand

ADDITIONAL PROFESSIONAL APPOINTMENTS

- Sept 2025 – Assistant Researcher to Prof. Sakonvan Chawchai, Chulalongkorn University
Supervisor: Dr. Sakonvan Chawchai
- Collaborate on paleoclimate and environmental change research in Thailand.

EDUCATION

- 2023 Ph.D. Earth, Environmental, and Planetary Sciences, Washington University
Thesis: Paleoclimate of the Peruvian Andean Highlands during the Late Holocene
Advisor: Dr. Bronwen L. Konecky
- 2020 M.A. Earth and Planetary Sciences, Washington University
- 2018 B.S. Geological Sciences with Honors, Brown University
Thesis: Tundra Fires, Climate, and Ecological Changes over the Last Millennium: A Multi-Proxy Record from the Yukon-Kuskokwim Delta, Alaska
Advisors: Drs. James Russell and Jan Tullis

RESEARCH INTERESTS

Tropical climate variability and change; Organic geochemistry; Regional monsoon dynamics; Climate data-model intercomparison; Lake modeling; Wetland-climate interactions; Societal resilience

ADDITIONAL RESEARCH EXPERIENCE

- 2017 – 2018 VOSS Undergraduate Fellow, Institute at Brown for Environment and Society
Advisor: Drs. James Russell and Richard Vachula (Auburn University)
- Analyzed tundra fire history using biomarkers (Alaska)
- 2017 The Polaris Project Research Assistant, Woodwell Climate Research Center, MA
PIs: Drs. Paul Mann (Northumbria University, UK), Sue Natali, John Schade, Max Holmes
- Collected sediment samples and survey data in fire-affected tundra (Alaska)
- 2015 – 2017 Undergraduate Teaching and Research Awards Researcher (UTRA), Brown University

PUBLICATIONS

Peer-reviewed

1. Sharp, Z. Jordan, W., Gargano, A., Cerling, T., ..., **Sae-Lim, J.**, ... Ehleringer, J. Extreme triple oxygen isotope fractionation in equisetum. (2025) *Proceedings of the National Academy of Sciences of the United States of America*. 122(44), e2507455122. <https://doi.org/10.1073/pnas.2507455122>
2. **Sae-Lim, J.***, Leknethip, S.*, Chawchai, S., Dubois, N., Lan, J., and Tan, L. The Thai-Malay Peninsula environmental changes around the 8.2-ka event based on multi-proxy analysis of a peat swamp core from southern Thailand. (2025) *Palaeogeography, Palaeoclimatology, Palaeoecology*. 672, 112987 <https://doi.org/10.1016/j.palaeo.2025.112987> (* equal contribution)
3. **Sae-Lim, J.**, Konecky, B.L., Hutchings, J.A., Michelutti, N., Grooms, C., Vuille, M., Castañeda, I., and Smol, J. Biomarker evidence for arid intervals during the past ~1,800 years in the central Andean highlands. (2025) *Earth and Planetary Science Letters*. 662, 119407. <https://doi.org/10.1016/j.epsl.2025.119407>
4. **Sae-Lim, J.**, Konecky, B.L., Morrill, C., Michelutti, N., Grooms, C., and Smol, J. (2025) Lake energy balance response to 21st century warming in the tropical Andes. *Global and Planetary Change*. 248, 104741. <https://doi.org/10.1016/j.gloplacha.2025.104741>
5. Vachula, R.S., Li, J., **Sae-Lim, J.**, and Xie, H. (2022) Ignition frequency and climate controlled Alaskan tundra fires during the Common Era. *Quaternary Science Reviews*. 289, 107418. <https://doi.org/10.1016/j.quascirev.2022.107418>
6. Vachula, R.S.*, **Sae-Lim, J.***, and Li, R. (2021) A Critical appraisal of charcoal morphometry as a paleofire fuel type proxy. *Quaternary Science Reviews*. 262, 106979. <https://doi.org/10.1016/j.quascirev.2021.106979> (* equal contribution)
7. Vachula, R.S., **Sae-Lim, J.**, and Russell, J.M. (2020) Sedimentary charcoal proxy records of fire in Alaskan tundra ecosystems. *Palaeogeography, Palaeoclimatology, Palaeoecology*. 541(1), 109564. <https://doi.org/10.1016/j.palaeo.2019.109564>
8. **Sae-Lim, J.**, Russell, J.M., Vachula, R.S., Holmes, R.B., Mann, P.J., Schade, J.D., and Natali, S.M. (2019) Temperature-controlled tundra fire severity and frequency during the last millennium in the Yukon-Kuskokwim Delta, Alaska. *The Holocene*. 29(7), 1223–1233. <https://doi.org/10.1177/0959683619838036>

In-revision

1. **Sae-Lim, J.**, Johnson, K., Griffith, M., Chawchai, S., Stark, M. Decadal-scale hydroclimate variability in Mainland Southeast Asia over the last millennium. (*Proceedings of the National Academy of Sciences*)
2. **Sae-Lim, J.**, Konecky, B.L., Castañeda, I., Hutchings, J.A., Salacup, J., Michelutti, N., Grooms, C., and Smol, J. Temperature variability in the Central Andes during the past 2,700 years based on glycerol dialkyl glycerol tetraethers. (*Organic geochemistry*)

AWARDS & HONORS

2021	Washington University Carl Tolman Prize (Teaching Award) (\$1,000)
2019	Washington University Outstanding Teaching Service Recognition
2018	Brown University Outstanding Senior Award in Academics and Research

FELLOWSHIPS & GRANTS

2025	PAGES 2025 5 th Young Science Meeting travel grant (\$2,485)
2024	UC President's Postdoctoral Fellowship (funded proposal; \$140,000) 3 rd INQUA-PAGES ECR TROPQUA workshop travel grant in Goa, India (\$1,200)
2021	IsoCamp course travel grant at the University of New Mexico, Albuquerque (\$2,700)
2018	Graduate Student Fellowship at Washington University
2017	American Geophysical Union Student Travel Grant (\$500) Research at Brown Grant (\$350) Polaris Project Fellowship (\$4,000) VOSS Undergraduate Fellowship (\$6,000)
2015	UTRA, Brown University (\$4,500)
2014	Royal Thai Undergraduate Student Scholarship in STEM (full tuition)

TEACHING & MENTORING

Instructor	
2019	Earth and Environment, <i>Washington University</i> (Lab section: 27 students) Developed laboratory curriculum and materials; led lab sessions (3 hours/week)
2014 – 2016	K-12 volunteer teacher during semester breaks, <i>Thailand</i>
Guest Lecture	
2026	Limnology, <i>Washington University</i> (~15 students) - Topics: Lake modeling and case studies from Peru and Missouri A Series of Unfortunate Events in Global Water Issues, <i>University of Missouri</i> (25 students) - Topics: Flooding in Southeast Asia
2021	Natural Disasters, <i>Washington University</i> (73 students, 2 lectures) Topics: Climate change, variability, mitigation, and adaptation
Teaching Assistant	
2021	Natural Disasters, <i>Washington University</i> (73 students) Head TA: Managed class logistics, trained undergrad TAs & ran office hours
2019	Earth and Environment, <i>Washington University</i> (66 students) Managed class logistics, trained TAs, ran office hours, & organized field trip
2016	Environmental Geochemistry (29 students) Directed a weekly session and organized field trips
Workshop	
2025	Climate model data exploration in Python workshop, <i>UC Irvine</i> (7 participants) Designed tutorials and led a workshop
Pedagogical Training	
2018 – 2023	The Center for the Integration of Research, Teaching, and Learning (CIRTL), <i>Washington University</i> Completed 10 pedagogical training courses
2019	EPIC program, <i>Washington University</i> Pedagogical training in evidence-based teaching practices

Mentoring	
2026	Meghan McLaughlin (Georgia Tech) – Research undergraduate project mentor
2025	Miranda E. Botello (UC Irvine graduate student)
2021 – 2022	Aida Zyba (Washington University) – Research assistant mentor
2020 – 2021	Allie Sheets (Washington University) – Research undergraduate project mentor
2019 – 2020	Department First-Year Graduate Student Peer Mentor

INVITED TALKS

2026	Unraveling Tropical Monsoon Variability: Case Studies from the Andes and Southeast Asia, <i>University of California, Los Angeles</i> From Monsoons to Future Resilience in the Indo-Pacific and Beyond, <i>University of Tennessee, Knoxville</i>
2025	From Monsoons to Future Resilience in the Indo-Pacific and Beyond, <i>University of Hawaii at Manoa</i> Unraveling Tropical Monsoon Variability: Case Studies from the Andes and Southeast Asia • <i>University of California, Riverside's Hewett Club seminar series</i> • <i>Scripps Institute of Oceanography's Geoscience/Marine Chemistry and Geochemistry seminar series</i> • <i>University of California, Irvine ESS seminar</i>
2024	Little Ice Age aridity in the central Andean highlands despite enhanced South American summer monsoon, <i>American Geophysical Union Fall Meeting (AGU)</i>

SERVICE

Research Community	
2025 –	Past Global Change (PAGES) • Speleothem Isotope Synthesis and AnaLysis working group (SISAL), <i>regional coordinator</i> • Hydroclimate2k Lake working group, <i>member</i>
2019 – 2025	AGU Fall meeting, <i>Session convener, chair, and OSPA judge</i> • Historical and Paleo Perspectives on Fire in the Earth System (2019 – 2024) • Southeast Asia and the Indo-Pacific (2022, 2024 – 2025)
2019	Annual Midwest Geobiology Symposium, <i>Student Organizer</i>

University & Department	
2021 – 2022	Graduate Student Vice President (department)
2021	Washington University Strategic Planning: Environmental, Climate Change, and Sustainability Working Group, <i>Committee member</i>
2021	Perspective Graduate Student Weekend (department), <i>Student Organizer</i>
2020	Diversity, Equity, and Inclusion Committee (department)
2019, 2021	Washington University Graduate Student Orientation, <i>Graduate Student Leader</i>
2019 – 2021	Graduate Student Advisory Council, <i>Department Representative & Public Relations</i>
2018 – 2022	Departmental Colloquium Student Organizer

Peer Review	
Reviewer for <i>Earth and Planetary Science Letters</i> , <i>Quaternary Research</i> , <i>Global and Planetary Change</i> , <i>Arctic Science</i> , <i>Geophysical Research Letters</i> , <i>Mediterranean Geoscience Reviews</i> , <i>Quaternary Science Review</i> , <i>Paleoceanography and Paleoclimatology</i> , <i>Climate Dynamics</i> <i>Ad-Hoc reviewer for NSF Postdoctoral Fellowship proposals</i>	

CONFERENCE

AGU 2025 (talk), 2024 (1 talk, 1 poster), 2022 (poster), 2021 (talk), 2020 (poster), 2019 (talk)
3rd INQUA-PAGES ECR workshop: TROPQUA 2024 (talk)
Washington University Climate Change Program Seminar 2022 (talk)
Annual Midwest Geobiology Symposium 2021 (poster), 2019 (talk)

MEDIA COVERAGE

- National Geographic: “[Lost Temple of the Inca](#)” (Film directed by Jim Aikman, 2020)
- Woods Hole Research Center: “[The Polaris Project 2017](#)” (Video by Jarunetr Sae-Lim, 2019)
- Mountainfilm: “[Permafrost Now](#)” (Documentary film directed by Stash Wislocki, 2018)
- The New York Times: “[When Alaska’s Permafrost isn’t Permanent.](#)” (The Daily 360° video) and “[Alaska’s Permafrost is Thawing.](#)” (Online article) by Henry Fountain, 2017

SKILLS

Field

- Lake sediment, soil, and peat coring
- Plant, soil, sediment, and water sampling
- Bathymetric and geological field mapping

Field Experience

- Lake Indian Hills, Cuba, MO – Lake sediment coring and tributary and lake water sampling (2026)
- Hoa Huong Cave, central Vietnam – Speleothem sampling and cave monitoring (2025)
- Rio Grande in Albuquerque, NM – Plant and soil sampling (2021)
- Lake Sibinacocha, Peru – Plant, soil, and water sampling (2019)
- Yukon-Kuskokwim Delta, AK – Lake coring, wetland vegetation survey, and carbon and nitrogen cycling sampling (2017)
- Huerfano, CO, and San Ysidro, NM – Geologic field mapping (2017)

Laboratory

- Organic geochemistry sample preparation and extraction via Accelerated Solvent Extractor (ASE)
- Biomarker analysis using GC-FID and GC-MS
- Compound-specific isotope analysis using GC-C-IRMS
- EA-IRMS analysis of bulk carbon and nitrogen cycling applications
- Water isotope analysis using Picarro water isotope analyzer
- X-ray Fluorescence (XRF) core scanning and geochemical analysis
- Microscope-based sample selection for radiocarbon dating
- Macrocharcoal analysis for reconstructing past fire activity

Data Analysis and Modeling

- Paleoclimate proxy interpretation and age-depth model development
- Lake and wetland modeling (water balance and ecological models) e.g., GLM-AED
- Climate data-model intercomparison
- Paleoclimate data assimilation
- Machine-learning-based isoscape modeling
- Statistical analysis and visualization in Python and R