Curriculum Vitae

Sourav Saha, Ph.D.

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Google Scholar

A. EDUCATION

2018 Ph.D. in Geology, University of Cincinnati, Cincinnati, OH
Dissertation title: "Reconstructing high-frequency Holocene glacial chronostratigraphies in the Northwestern and Central Himalaya and Transhimalaya."
Dissertation Advisor: Professor Lewis A. Owen.

2013 MPhil. in Geosciences, Jawaharlal Nehru University, New Delhi, India
Thesis title: "Drumlins in the Himalayas: Geography, Genesis, Classification and Evolutionary History."
Thesis Advisor: Professor Milap C. Sharma.

2011 M.A. in Geography, Jawaharlal Nehru University, New Delhi, India

2009 B.A. with honors in Geography, North Bengal University, West Bengal, India

B. EMPLOYMENT

2018–2020 Postdoctoral Scholar and Luminescence Laboratory Manager, Department of Earth, Planetary, and Space Sciences, University of California, Los Angeles

2018–2020 Part-time faculty, Department of Physics, Geology & Engineering Technology, Northern Kentucky University, Kentucky

2017–2018 Graduate Research Assistant, Geochronology laboratories of the Department of Geology, University of Cincinnati, Cincinnati

2016–2017 Graduate Teaching Assistant, Department of Geology, University of Cincinnati, Cincinnati

2014–2016 Graduate Research Assistant, Digital Collections & Repositories, UC Library, University of Cincinnati, Cincinnati

2012–2014 Graduate Teaching Assistant, Centre for the Study of Regional Development, Jawaharlal Nehru University, New Delhi

C. TEACHING EXPERIENCE

2018–2020 I (co)mentored a graduate and three undergraduate students at the UCLA Luminescence Laboratory. I trained the students on how to date sediment samples and conduct rigorous geochemical processing in the Lab. I occasionally took students on local field trips to train them in the field. In these field trips, I taught the students how to do mapping, collect field data, chose the best sample site, and collect cosmogenic and luminescence samples.

2018–2020 As a ***Part-time faculty*** at Northern Kentucky University, I taught the following three introductory geology courses. I designed and developed the courses and the syllabi, gave lectures (in-class and online), assisted students in assignments, research paper writing, oral poster presentations, and performed the grading. My online classes include comprehensive instructional and lecture videos with labs. In my in-person class, I applied the flipped

classroom (active learning) strategy. I provided multiple lecture videos before the class and applied more hands-on training and discussions during the class.

- *GLY 110: The Face of the Earth with Lab, Fall 2019* – online accelerated course.
- *GLY 110: The Face of the Earth with Lab, Spring 2019* – online accelerated course.
- *GLY 120: This Dangerous Earth, Fall 2018*

2016–2017 As a ***Teaching Assistant*** at the University of Cincinnati**,** I was responsible for developing multiple lecture modules in Physical and Environmental geology. I was responsible for delivering presentations, performing grading, evaluations, and pre-exam assistance.

- *GEOL 1002: Surface Processes, Spring 2017*
- *GEOL 1009: Natural Hazards, Fall 2016*
- *EVST/GEOL 2025: Hydrology and Biogeochemistry, Spring 2016*

2016–2020 Completed a certificate course on ***Preparing Future Faculty*** (PFF) at the University of Cincinnati. The PFF program intends to hone teaching skills, improve pedagogy, and incorporate innovative teaching methods in the classroom. Under this program, I taught traditional and non-traditional students, learned different active learning strategies (e.g., blended learning, flipped classrooms), and attended >10 workshops and conferences on pedagogy and science teaching on and off the campus. I also visited local Liberal Arts Colleges in Cincinnati to understand their teaching focus and styles, and I observed classes of other faculties both at UC and NKU.

2015–2016 Mentored undergraduate students in diverse group projects in the Himalaya—a study abroad program by the University of Cincinnati.

2012–2014 As a ***Teaching Assistant*** at Jawaharlal Nehru University, I was responsible for tutoring graduate students with technical support. I was also responsible for hands-on training in field mapping using GPS and compass-clinometer, preparing sedimentary logs, and geology mapping.

- *Geomorphological field techniques, Spring 2012*
- *Cartography, remote sensing, and GIS, Fall 2011*

D. MENTORSHIP EXPERIENCE

2018–Present Justin Higa (PhD., Geology), UCLA Luminescence lab.
2018–Present Marina Argueta (PhD., Geology), UCLA Luminescence lab, field methods.
2020–Present Christina Kitamikado (BS., Geophysics), UCLA Luminescence lab, field methods.
2018–2020 Norma Contreras (BS., Geology), UCLA Luminescence lab
2019–2020 Julianna Cativo (BS., Geophysics), UCLA Luminescence lab
2016 Kat Rivers (BS., Geology), UC Cosmogenic lab, field methods
2016 Mitch Kleimeyer (BS., Geology), UC field methods
2016 Zach Altman (BS., Geology), UC field methods

E. COURSES PREPARED TO TEACH

Geomorphology/Surface Processes
Sedimentology and Stratigraphy
Quantitative Geomorphology (Coding with R, Matlab, and Python)
Physical Geology + Lab
Environmental Geology + Lab

Paleoclimatology
Natural Hazards
Field Geology
Tectonic Geomorphology
GIS and Remote Sensing

F. RESEARCH INTERESTS

My research interests are focused on the use of geomorphic, geochronologic, remote sensing, and sedimentary tools to quantify surface processes, landscape evolution, paleoseismic, and paleoclimatic changes. My goal is to understand the dynamic interaction between climate, tectonics, and landscapes, especially in environmentally sensitive regions. I use and develop a variety of geochronometers, especially luminescence and cosmogenic surface exposure dating techniques. I use these geochronometers for dating glacial landforms, Quaternary alluvial deposits, and earthquake event horizons; to quantify hillslope erosion rates; to model sediment transport and depositional events in semi-arid alluvial fans. My research also involves extensive field data collection, including remote sensing and GIS mapping using unmanned aerial vehicles (UAVs) and high-resolution Structure from Motion (SfM) photogrammetry. My publications also include a synthesis of extensive geochronologic data (e.g., http://alpine.ice-d.org/) to develop numerical landscape evolution/paleoclimatic models. My primary study areas include the North American southwest; the western and central Himalaya, India; and the Clarence Valley, New Zealand.

G. PUBLICATIONS IN PEER-REVIEWED JOURNALS

Castillo, B., McGill1, S.F., Scharer, K.M., Yule, J.D., McPhillips, D., McNeil, J., **Saha, S.,** Brown, N.D., and Moon, S. 2020 *(accepted)*. Ages of Prehistoric Earthquakes on the Banning Strand of the San Andreas Fault, near North Palm Springs, California. *Geosphere–Geological Society of America*.

Orr, E.N., Owen, L.A., **Saha, S.**, Hammer, S., and Caffee, M.W. 2020. Rockwall slope erosion in the NW Himalaya. *Journal of Geophysical Research - Earth Surface, preprint. https://doi.org/10.1002/essoar.10502583.2*.

Orr, E.N., Owen, L.A., **Saha, S.,** Hammer, S., and Caffee, M.W. 2020. "Climate-driven late Quaternary fan surface abandonment in the NW Himalaya," Untangling the Quaternary Period—A Legacy of Stephen C. Porter. Ed: Waitt, R.B., Thackray, G.D., Gillespie, A.R., *Geological Society of America Special Paper*. https://doi.org/10.1130/2020.2548(04)

Saha, S., Owen, L.A., Orr, E.N., and Caffee, M.W. 2020. A statistical and numerical modeling approach for spatiotemporal reconstruction of glaciations in the Central Asian mountains. *MethodsX 220*, 372–400. https://doi.org/10.1016/j.mex.2020.100820

Orr, E.N., Owen, L.A., **Saha, S.,** and Caffee, M.W. 2019. Rates of rockwall slope erosion in the upper Bhagirathi catchment, Garhwal Himalaya. *Earth Surface Processes and Landforms 44*, 3108–3127. https://doi.org/10.1002/esp.4720

Saha, S., Owen, L.A., Orr, E.N., and Caffee, M.W. 2019. Cosmogenic ^{10}Be and equilibrium-line altitude dataset of Holocene glacier advances in the Himalayan-Tibetan orogen. *Data in brief 26*, 104412. https://doi.org/10.1016/j.dib.2019.104412

Saha, S., Owen, L.A., Orr, E.N., and Caffee, M.W. 2019. High-frequency Holocene glacier fluctuations in the Himalayan-Tibetan orogen. *Quaternary Science Reviews 220*, 372–400. https://doi.org/10.1016/j.quascirev.2019.07.021

Saha, S., Owen, L.A., Orr, E.N., and Caffee, M.W. 2018. The timing and nature of Holocene glacier advances at the northwestern end of the Himalayan-Tibetan orogen. *Quaternary Science Reviews 187*. 177–202. https://doi.org/10.1016/j.quascirev.2018.03.009

Orr, E.N., Owen, L.A., **Saha, S.,** Caffee, M.W., and Murari. M.K. 2018. Quaternary glaciation of the Lato Massif, Zanskar Range of the NW Himalaya. *Quaternary Science Reviews 183*. 140–156. https://doi.org/10.1016/j.quascirev.2018.01.005

Orr, E.N., Owen, L.A., Murari, M.K., **Saha, S.**, and Caffee, M.W. 2017. Quaternary glaciation of Stok, northern Zanskar Range, Transhimalaya, Northern India. *Geomorphology 284*. 142–155. https://doi.org/10.1016/j.geomorph.2016.05.031

Saha, S., Sharma, M.C., Murari, M.K., Owen, L.A., and Caffee, M.W. 2016. Geomorphology, sedimentology, and minimum exposure ages of streamlined subglacial landforms in the NW Himalaya, India. *Boreas 45*, 284–303. https://doi.org/10.1111/bor.12153

Saha. S. 2013. Water Quality Assessment of Four Different Wetlands and its implication to Climate Change. *International Indexed & Referred Research Journal*, *ISSN 0975-3486*, IV (40), 33–37. DOI: 10.13140/RG.2.1.3180.0401

H. PUBLICATIONS IN PEER-REVIEWED JOURNALS (in review)

Saha, S., Moon, S., Brown, N.D., Rhodes, Scharer, K.M., McPhillips, D., McGill, S. F., and Castillo, B. A. Holocene depositional history inferred from single-grain luminescence ages in southern California, North America. Geophysical Research Letter, *in review*.

I. MANUSCRIPTS/BOOKS IN PREPARATION

Dortch, J.M., Tomkins, M., **Saha, S.,** Schoenbohm, L., Murari, M.K., and Curl, D. Probability-based interpretation of terrestrial cosmogenic radionuclide ages: P-CAAT, a tool for the ages. Intend to submit to *Geochronology, in prep. (90% complete).*

Saha, S., Owen, L.A., Orr, E.N., and Caffee, M.W. The role of inherited cosmogenic ^{10}Be in the new Late Holocene moraine chronostratigraphy in the Bhagirathi catchment of the Garhwal Himalaya, northern India. Intend to submit to *GSA Bulletin, in prep. (75% complete).*

Owen, L.A., **Saha, S.,** and Dortch, J.M. Quaternary glaciations of the Himalayan-Tibetan orogen. Invited publication to *Quaternary Science Reviews, in prep. (50% complete).*

Saha, S., Moon, S., Brown, N., and Rhodes, E. J. Quantifying the degree of pedoturbation in upstream fans using single-grain luminescence dating and its implications in downstream sediment routing and deposition. Intend to submit to *Journal of Geophysical Research Earth Surface, in prep. (25% complete).*

Saha, S., Moon, S., Scharer, K.M., Rockwell, T. K., and Brown, N. Constraining a long-term paleolake and paleoseismic history using deep boreholes at the ancient Lake Cahuilla, Coachella, California. Intend to submit to *Bulletin of the Seismological Society of America, in prep. (40% complete).*

Chatterjee, U., Pradhan, B., Kumar, S., **Saha, S.,** and Zakwan, M. (Eds). Water, Land and Forest Susceptibility and Sustainability: Geospatial Approaches & Modeling. It will be published in *Elsevier, in prep.*

J. PUBLISHED ABSTRACTS

Saha, S., Moon, S., Brown, N.D., and Rhodes, E. 2020. Examining single-grain luminescence dating uncertainties between upstream fans and downstream sediment deposits in the seismically active southern California. 2020 AGU Fall meeting, Online. EP029-0008.

Saha, S., Moon, S., Rockwell, T.K., Scharer, K.M., and Brown, N.D. 2020. Reconstructing long-term subsidence and paleoseismic history of the ancient Lake Cahuilla along the southern San Andreas fault in Coachella, California. Poster Presentation at 2020 SCEC Annual Meeting, poster #022.

Burns, J., McGill, S., Rhodes, E.J., Dolan J.F., Brown, N.D., and **Saha, S.** 2020. Dating of Offset Geomorphic Features Along the Garlock Fault, Mojave Desert, California: Testing a Proposed Earthquake Supercycle Model. Geological Society of America Cordilleran Section. Abstract #347542 (meeting canceled due to COVID19).

Saha, S., Moon, S., Brown, N.D., and Rhodes, E. 2019. Inferring sediment dynamics using single-grain feldspar post-IR IRSL luminescence dating in southern California, North America. 2019 AGU Fall meeting, San Francisco. GC13A-06.

Orr, E.N., Owen, L.A., **Saha, S.**, Hammer, S., and Caffee, M.W. 2019. Deciphering the Controls of the Rate and Spatial Distribution of Rockwall Slope Erosion in the NW Himalaya. 2019 AGU Fall meeting, San Francisco. EP22A-03.

Higa, J., Moon, S., Brown, N., Argueta, M.O., **Saha, S.**, Stock, J.M., Sabbeth, L., Bennett, S.E.K., and Martin, A. 2019. Combining Luminescence Dating and High-Resolution Imaging to Analyze an Evolving Microcontinent, Isla Ángel de la Guarda, Gulf of California, México. 2019 AGU Fall meeting, San Francisco. T41H-0367.

Dortch, J., **Saha, S.**, Tomkins, M.D., Murari, M.K., Schoenbohm, L.M., and Curl, D. 2019. Probability-based interpretation of terrestrial cosmogenic radionuclide ages: P-CAAT, a tool for the ages. 2019 AGU Fall meeting, San Francisco. EP31D-2325.

Owen, L.A., **Saha, S.**, Dortch, J. 2019. Timing and extent of Quaternary glaciation in the Himalayan-Tibetan orogen. 2019 AGU Fall meeting, San Francisco. GC41B-03.

Saha, S., Moon, S., Brown, N.D., Rhodes, E.J., McGill1, S.F., Castillo, B., Scharer, K.M., McPhillips, D., and Yule, J.D. 2019. Influence of sediment dynamics and alluvial fan formation on paleoseismic studies in southern California, North America. SCEC annual meeting, poster# 129.

Castillo, B., McGill1, S.F., Scharer, K.M., Yule, J.D., McPhillips, D., McNeil, J., **Saha, S.,** Brown, N.D., and Moon, S. (2019). Ages of Prehistoric Earthquakes on the Banning Strand of the San Andreas Fault, near North Palm Springs, California. SCEC annual meeting, poster# 134.

Peña, K., McGill1, S.F., Rhodes, E.J., Dolan, J., Brown, N.D., Castillo, B., Hatem., A., **Saha, S.,** Zinke, R. (2019). Paleoseismic Results from the Christmas Canyon West Site, Central Garlock Fault, Searles Valley, California. SCEC annual meeting, poster# 107.

Saha, S., Moon, S., Brown, N.D., and Rhodes, E.J. 2019. Influence of sediment dynamics and alluvial fan formation on paleoseismic studies in southern California, North America. 13th New World Luminescence Dating Workshop.

Saha, S., and Owen, L.A. 2019. ^{10}Be dating of Holocene moraines in the Himalayan-Tibetan orogen: noise versus signal. INQUA 2019 congress in Dublin, oral# 297.

Saha, S., Moon, S., and Brown, N.D. 2019. Influence of sediment dynamics on paleoseismic studies in Southern California, North America. SoCal Geomorphology Symposium.

Saha, S., Owen, L.A., Orr, E.N., Ward, D.J., and Caffee, M.W. 2018. Systematically inherited cosmogenic ^{10}Be in late Holocene age moraine boulders in the Bhagirathi valley, Garhwal. Geological Society of America Abstracts with Programs. Vol. 50, No. 6. doi: 10.1130/abs/2018AM-320045

Orr, E.N., Owen, L.A., **Saha, S.,** and Caffee, M.W. 2018. Timing and nature of alluvial/ debris flow fan formation in the NW Himalaya of northern India. Geological Society of America Abstracts with Programs. Vol. 50, No. 6. doi: 10.1130/abs/2018AM-315806

Saha, S., Owen, L.A., Orr, E., Caffee, M.W., Dortch, J., and Sharma, M.C. 2017. Timing and nature of Holocene glacier advances across the Himalayan-Tibetan orogen. 2017 AGU Fall meeting, New Orleans. C23D.

Orr, E., Owen, L.A., and **Saha, S.** 2017. Determining the rates and drivers of headwall erosion within glaciated catchments in the NW Himalaya. 2017 AGU Fall meeting, New Orleans. EP33F.

Saha, S., Owen, L.A., Orr, E., and Dietsch, C. 2017. High-frequency Holocene glacial chronostratigraphies in the Himalayan-Tibetan orogen offer insight into past shifts of Earth's thermal equator and coeval changes in the sources of moisture. 9th International Conference on Geomorphology (9th ICG), New Delhi, India. Abstract # 18, p. 167.

Saha, S., Owen, L.A., Orr, E., and Dietsch, C. 2016. Reconstructing high-resolution Holocene glacial chronostratigraphies in the Himalaya. GSA Abstracts No. 282114, 48 (7), 304-2.

Saha, S., Owen, L.A., Orr, E., and Dietsch, C. 2016. Reconstructing late Holocene glacial advances in the NW Himalaya, northern India by resolving the problem of too-old (inherited) surface exposure ages on young moraines. GSA Abstracts No. 282261, 48 (7), 328-3.

Saha, S., Owen, L.A., Orr, E., and Dietsch, C. 2016. An attempt to reconstruct high-resolution Holocene glacial fluctuations across the Himalayan-Karakoram-Tibetan orogeny. 6th Third Pole Environment Workshop, 32.

Orr, E., Owen, L.A., and **Saha, S.** 2016. Interaction between climate and erosion in high altitude mountain environments: The effect of precipitation gradients upon headwall erosion in Northern India, NW Himalaya. 6th Third Pole Environment Workshop, 34.

Saha, S., Owen, L.A., and Dietsch, C. 2015. Chronostratigraphy of the Himalayan glacial fluctuations at the millennial timescale during the Holocene. GSA Abstracts No. 268563, 47 (7), 793.

Saha, S., Owen, L.A., and Dietsch, C. 2015. Chronostratigraphy of the Himalayan glacial fluctuations at the millennial timescale during the Holocene. GSA Abstracts No. 252860, 47 (3), 115.

Saha, S., and Sreekesh, S. 2012. Changes in coastal morphology and mangrove vegetation in and around the Godavari basin. National Conference on Mangrove Wetlands and Near-Shore Marine Ecosystems from Sustainable Issues to Management and Restoration, 27.

K. ACADEMIC & PROFESSIONAL LEADERSHIP EXPERIENCE

2017 Treasurer for the Geology field trip to California and Nevada organized by the Department of Geology at the University of Cincinnati. Responsibilities include planning, budgeting for the entire trip, distributing funds, and communicating with graduate students and faculty members.

2016 *Geo-club* treasurer, a geology graduate student organization at the University of Cincinnati (UC). Work involved budgeting for Departmental activities and annual fieldwork, fundraising activities on and off-campus, communicating with alumni, and maintaining the UC alumni communication group in Linkedin.

2014 Founding member of 'Centre for Planning and Alternative Development.' The organization is a non-governmental body to improve primary education in rural Uttarakhand, India.

2013 Indian graduate student team leader of the field geology team organized by the Department of Geology, Univesity of Cincinnati, under Professor Lewis Owen's supervision.

L. SERVICES

2021 Reviewer of the journal *Tectonics*, AGU publications.

2021 Reviewer of the *Geosciences Journal (GEOJ)*, Springer.

2020 Reviewer of the journal *The Cryosphere*, European Geoscience Union.

2020 Reviewer of the journal *Environmental Processes*, Springer.

2019 Demonstration of augmented reality sandbox model to educate the public on earth's surface processes and landforms as part of UCLA's outreach activities (e.g., CicLAvia).

2019 Member of the editorial board of *Quaternary Perspectives* newsletter, INQUA.

2019 Reviewer of the journal *Paleogeography, Paleoclimatology, Paleoecology*.

M. FELLOWSHIPS, HONORS, & AWARDS

2020 Served as a panel member of the journal *Quaternary Research*, Cambridge University Press, and the American Quaternary Association (AMQUA).

2020 Certified in *Preparing Future Faculty*, University of Cincinnati, Cincinnati.

2019 Elected *Early Career Representative (ECR)* of the Stratigraphy & Chronology (SACCOM) division of the International Union for Quaternary Research (INQUA).

2017 *Young geomorphologists award of* €600 by the International Association of Geomorphologists in the 9th International Conference on Geomorphology, New Delhi, India.

2017 *Departmental Good Spirit Award* of $300 by the Department of Geology, University of Cincinnati.

2014-2018 *University Graduate Assistantship* and *Graduate Assistant Scholarship* by the University of Cincinnati, Cincinnati, OH.

2011-2014 *National Eligibility Test* and *Junior Research Fellowship* by the University Grant Commission, India.

Dec 2010 *National Eligibility Test* and *Junior Research Fellowship* in Earth Sciences by the Council of Scientific and Industrial Research, India (declined).
2009–2011 *Merit-cum-Mean* scholarship by the Jawaharlal Nehru University, New Delhi, India.

N. INVITED TALKS

2021 Dhupguri Girl's college, Dhupguri, West Bengal, India.
2020 Bankura Zilla Saradamani Mahila Mahavidyapith, Bankura University, India.
2020 Associazione Italiana per lo Studio del Quaternario (AIQUA) 2020, Virtual meeting, Italy.
2019 International Union for Quaternary Research (INQUA) 2019, Dublin, Ireland.
2017 Department of Geology Colloquium, University of Cincinnati, Cincinnati.
2016 Quaternary and Anthropocene Research Group, University of Cincinnati, Cincinnati.
2016 Department of Geology Colloquium, University of Cincinnati, Cincinnati.
2016 Centre for the Study of Regional Development, Jawaharlal Nehru University, Delhi.
2015 Quaternary and Anthropocene Research Group, University of Cincinnati, Cincinnati.
2015 Department of Geology Colloquium, University of Cincinnati, Cincinnati.

O. GRANTS

2020 Southern California Earthquake Center (SCEC), $47,575 to study the "Constraining a long-term paleolake and paleoseismic history using deep boreholes at the ancient Lake Cahuilla, Coachella, California" –status: pending.
2019 Southern California Earthquake Center (SCEC), $40,989 to study the "Constraining a long history of paleolake and paleoseismicity at Coachella, CA, using deep borehole samples" – status: ongoing.
2019 USGS: National Earthquake Hazards Reduction Program (NEHRP), $65,690 to study the "Influence of sediment dynamics and alluvial fan formation on paleoseismic studies in southern California, North America" –status: ongoing.
2016 Purdue University, Purdue, IN: Cross-college *SEED Grant*, $14,205 for processing 21 cosmogenic ^{10}Be samples and three radiocarbon samples for Ph.D. research, *Status – Completed*.
2016 Geological Society of America: *Graduate Student Research Grant*, $1,875 for Ph.D. fieldwork in the Himalaya in the summer, *Status – Completed*.
2015 Graduate Student Governance Association, University of Cincinnati, Cincinnati: *Graduate Student Governance Association Research Fellowship*, $2,375 for Ph.D. fieldwork in the Himalaya in the summer, *Status – Completed*.
2015 Geological Society of America: *Graduate Student Research Grant*, $1,875 for Ph.D. fieldwork in the Himalaya in the summer, *Status – Completed*.

P. PROFESSIONAL MEMBERSHIPS

American Geophysical Union (AGU)
International Union for Quaternary Research (INQUA)
Geological Society of America (GSA)
The American Quaternary Association (AMQUA)
International Association of Geomorphologists (IAG)
Association of Polar Early Career Scientists (APECS)
Houston Geological Society (HGS).

Q. LANGUAGE PROFICIENCY

Languages speak, read, and write
English (fluent), Bengali (native), Hindi (native).