

Shanti Bhattacharya Penprase

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EDUCATION

- Ph.D. Department of Earth & Environmental Sciences** *Anticipated*
University of Minnesota – Twin Cities & *May 2024*
Saint Anthony Falls Laboratory
Advisor: Dr. Andrew Wickert
“Climate, glaciation, and fluvial systems: glacial–post-glacial evolution of river systems in the upper Mississippi River Valley”
- B.A. Department of Geology** *June 2016*
Carleton College
Advisors: Dr. Bereket Haileab and Dr. Bryn Kimball
“Acid mine drainage simulated leaching behavior of goethite and cobalt substituted goethite”
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EMPLOYMENT

- Teaching & Research Assistant** *2018 – Present*
Department of Earth & Environmental Sciences (ESCI),
University of Minnesota
Minneapolis, MN
- Programs & Watershed Monitoring Assistant** *2017 – 2018*
Mississippi Watershed Management Organization
Minneapolis, MN
- Minnesota GreenCorps Member, Freshwater Society** *2016 – 2017*
Minnesota Pollution Control Agency
Saint Paul, MN
- Teaching Assistant** *2015 – 2016*
Department of Geology, Carleton College
Northfield, MN
- REU Research Student** *May 2014 – Aug. 2014*
Biosphere 2, University of Arizona
Tucson, AZ

PUBLICATIONS

- [1] Van Wyk De Vries, M., Romero, M., **Penprase, S.**, Ng, G.-H.C., and Wickert, A.D., 2023, Increasing rate of 21st century volume loss of the Patagonian Icefields measured from proglacial river discharge: *Journal of Glaciology*, p. 1–16. doi:10.1017/jog.2023.9.

In Review

- [1] Wickert, A., Barnhart, K., Armstrong, W., Romero, M., Schulz, B., Ng, C., Sandell, C., La Frenierre, J., **Penprase, S.**, Van Wyk de Vries, M., MacGregor, K. Open-source automated ablation stakes to constrain temperature-index melt models. *Annals of Glaciology*.

In Prep

- [3] **Penprase, S.**, Wickert, A., Larson, P., Wood, J., Larsen, I., Rittenour, T., Signals of environmental vs agriculturally-driven change in catchment-averaged erosion rate in the Trout Creek River Basin, southeastern Minnesota. *Geology*. ***Anticipated August 2023.***
- [2] **Penprase, S.**, Wickert, A., Larson, P. Geomorphic response of an upper Mississippi tributary to changing climate and base level during the last deglaciation.
- [1] Romero, M., Van Wyk De Vries, M., **Penprase, S.**, Wickert, A., Strelin, J., MacGregor, K., Last Glacial Maximum Evolution of the Santa Cruz River, Argentina.

FELLOWSHIPS & AWARDS

Approx. \$36,000 in competitive funding and awards

Outstanding Teaching Assistant Award ESCI, University of Minnesota	2023
H.E. Wright Footsteps Award <i>For outstanding students conducting research in Quaternary studies or related fields</i> ESCI, University of Minnesota	2023
Alvin Anderson Award <i>For excellence in research related to water resources and sediment transport</i> <i>\$2,000 stipend + support for purchase of books</i> Saint Anthony Falls Laboratory	2023
V. Rama Murthy & Janice Noruk Fellowship for Women <i>\$6,000 in semester support</i> ESCI, University of Minnesota	2023

Outstanding Student Presentation Award (OSPA) Earth & Planetary Surface Processes Section, American Geophysical Union (AGU)	2022
Junior F. Hayden Fellowship <i>\$3,000 in semester support</i> ESCI, University of Minnesota	2022
Best Oral Presentation Award EARTH Student Research Symposium, ESCI, University of Minnesota	2022
AGeS2 Geochronology Award <i>\$10,000 to support independently developed geochronology research</i> The Geological Society of America	2021
John W. Gruner Fellowship <i>\$6,000 in semester support</i> ESCI, University of Minnesota	2021
Warren E. Fisher Memorial Fellowship <i>\$3,000 in semester support</i> ESCI, University of Minnesota	2020
Richard Clarence Dennis Graduate Fellowship <i>\$6,000 in semester support</i> ESCI, University of Minnesota	2019
Thank a Teacher Award <i>Student-nominated for exceptional teaching</i> University of Minnesota	2019
Honorable Mention Graduate Research Fellowship Program, National Science Foundation	2018
Keck Geology Consortium Fellowship <i>Summer funding to support senior thesis</i> Keck Geology Consortium	2016

SELECTED CONFERENCE ABSTRACTS**Undergraduate Mentee*

- [13] *Wilwerding, A., **Penprase, S. B.**, Wickert, A., Understanding the Provenance of Slackwater Sediment in Southeastern Minnesota's Whitewater River, Earth & Environmental Sciences Student Research Symposium, May 2023.
- [12] **Penprase, S. B.**, Wickert, A., Larson, P., Larsen, I.J., Rittenour, T., Faulkner, D., Running, G. (2022) *Using Paired Optically Stimulated Luminescence and Cosmogenic Nuclide ^{10}Be Dating to Understand Changes in Erosion Rate within a Fill–Cut Terrace Sequence: Whitewater River, Southeastern Minnesota, USA*. **Invited**. Abstract (poster), 2022 Fall Meeting, American Geophysical Union, Chicago, IL. 12-16 Dec.
- [11] **Penprase, S. B.**, Wickert, A., Larson, P., Faulkner, D., Barefoot, E., Wood, J., Jones, J., Dunn, C., Larsen, I., Rittenour, T., and Running, G. (2022) *Impacts of Changing Climate and Glacially Driven Base Level on an Upper Mississippi River Tributary During the Most Recent Glacial–post-Glacial Transition*. Abstract (poster), 2022 Fall Meeting, American Geophysical Union, Chicago, IL. 12-16 Dec.
- [10] **Penprase, S.B.**, Wickert, A., Larson, P., Dunn, C., Bezada, M., Running, G., Faulkner, D., Jones, J., Schewe, J. (2021) *Characterizing River Profile, Concavity, and Sediment Discharge Response to Changes in Base Level across Timescales: Whitewater River, Southeastern Minnesota, USA*. Abstract EP 45C-1533 (poster), presented at 2021 Fall Meeting, American Geophysical Union, New Orleans, LA. 13-17 Dec.
- [9] **Penprase, S.B.**, Wickert, A.D, Clubb, F.J. (2020) *Signatures of glaciation on river channel long profiles: changes in slope and concavity*. Abstract EP012-0025 (poster), presented at 2020 Fall Meeting, American Geophysical Union, Virtual, 1-17 Dec.
- [8] Romero, M., **Penprase, S.B.**, Van Wyk De Vries, M. S., Wickert, A.D. MacGregor, K.R., Brignone, G., Martini, M., Strelin, J.A. (2020) *Geomorphological Expression of the Last Glacial Maximum (LGM) in Lago Argentino, Southern Patagonian Icefield*. Abstract EP029-0005 (poster), presented at 2020 Fall Meeting, American Geophysical Union, Virtual, 1-17 Dec.

- [7] Magnani, M.B., Ito, E., Wiens, D., Wickert, A.D., Ivins, E.R., Fedotova, A., Van Wyk de Vries, M.S., Mark, H.F., **Penprase, S.B.** (2020) *Solid Earth response of the Patagonian Andes to post-Little Ice Age glacial retreat: a multi-pronged approach*. Abstract G013-05 (talk), presented at 2020 Fall Meeting, American Geophysical Union, Virtual, 1-17 Dec.
- [6] Wickert, A.D., Schildgen, T.F., Tofelde, S., Savi, S., Rojo, Y., Fleagle, S., Callaghan, K.L., Barnes, R., **Penprase, S.B.**, Larson, P., Roth, D.L. (2020) *Self-consistently matching sediment supply, water discharge, and channel slope: Lane's balance at the catchment scale*. Abstract EP014-06 (talk), presented at 2020 Fall Meeting, American Geophysical Union, Virtual, 1-17 Dec.
- [5] **Penprase, S.B.**, Wickert, A.D., Larson, P., Clubb, F.J., Kurak, E. (2019) *Isolating climatic and glacial impacts on river morphology: a paired-catchment study in the upper Mississippi River watershed*. Abstract EP53I-2253 (poster), presented at 2019 Fall Meeting, American Geophysical Union, San Francisco, CA, 9-13 Dec.
- [4] Popken, B., Van Wyk de Vries, M.S., Wickert, A.D., **Penprase, S.B.** (2019) *Ice flow dynamics during retreat induced separation of a tributary glacier*. Abstract C31B-1518 (poster), presented at 2019 Fall Meeting, American Geophysical Union, San Francisco, CA, 9-13 Dec.
- [3] Van Wyk de Vries, M.S., Wickert, A.D., Ito, E., Rada, C., Roberti, G., Popken, B., **Penprase, S.B.** (2019) *Large Volcanic Landslides on the Southern Patagonian Icefield and Linkages to Glacial Retreat*. Abstract V52C-07 (talk), presented at 2019 Fall Meeting, American Geophysical Union, San Francisco, CA, 9-13 Dec.
- [2] **Penprase, S.B.**, Kimball, B.E. (2015) *Acid mine drainage simulated leaching behavior of goethite and cobalt substituted goethite*. Abstract GC51F-1147 (poster), presented at 2015 Fall Meeting, American Geophysical Union, San Francisco, 14-18 Dec.
- [1] **Penprase, S.B.**, Abramson, N., LaSharr, K., Chorover, J. (2014) *The effects of rock type and landscape position on solution chemistry of soils in the Biosphere 2 Desert Site of the Santa Catalina Mountains Critical Zone Observatory*. Abstract EP23B-3597 (poster), presented at 2014 Fall Meeting, American Geophysical Union, San Francisco, 15-19 Dec.

INVITED TALKS

Invited Presenter AGU Fall Meeting	<i>Using Paired Optically Stimulated Luminescence and Cosmogenic Nuclide ¹⁰Be Dating to Understand Changes in Erosion Rate within a Fill–Cut Terrace Sequence: Whitewater River, Southeastern Minnesota, USA</i>	Fall 2022
Panel Moderator & Contributor Beyond the Lab Speaker Series, Saint Anthony Falls Laboratory	<i>The Ghost Valley: Human Impacts on the Whitewater River Valley, southeastern Minnesota, Panel Discussion</i>	Fall 2022
Departmental Seminar Speaker Geology Department, Carleton College	<i>Linking river profile, base level change, and glaciation across timescales: Whitewater River, Southeastern Minnesota</i>	Spring 2022
Co-Presenter Source-to-sink Webinar Series	<i>Waves of ice-sheet-mediated aggradation and incision transform upper Mississippi valley networks</i>	Spring 2022
Invited Speaker Minnesota Geological Survey	<i>Building coding tools to constrain fluvial response to glaciation in southeastern Minnesota</i>	Spring 2021
Invited Speaker American Institute of Professional Geologists, Minnesota Section	<i>Impacts of Glaciation on River Profile Morphology and Evolution</i>	Spring 2021

TEACHING

Invited Lectures

Surface & Groundwater Hydrology Macalester College	<i>Stormwater and rainfall runoff: Impacts on natural and urban systems</i> <i>3 course sessions, including lecture, class discussion, and in-class activity</i>	Spring 2022 & Spring 2021
Geomorphology University of Minnesota	<i>Glacial Processes Week</i> <i>4 lectures and original assignments on geochronology, glacial processes, and paraglacial environments</i>	Fall 2020
Advanced Geomorphology Macalester College	<i>OSL: Introduction to geochronology and applications to glacial and fluvial systems</i> <i>Lecture and class discussion</i>	Spring 2020

University of Minnesota

Geomorphology	Teaching Assistant <i>Graduate + Undergraduate</i>	Fall 2022 (<i>In-person</i>) & Fall 2020 (<i>Online</i>)
Hydrogeology Field Camp	Teaching Assistant <i>Graduate + Undergraduate</i>	Summer 2022 (<i>In-person</i>) & Summer 2021 (<i>Online</i>)
Earth Surface Processes	Teaching Assistant <i>Graduate + Undergraduate</i>	Spring 2021 (<i>Online</i>)
Earth & Its Environments	Teaching Assistant <i>Undergraduate</i>	Summer 2019, Fall 2019, & Fall 2018 (<i>In-person</i>)

Carleton College

Introduction to Geology	Teaching Assistant <i>Undergraduate</i>	Fall 2015 (<i>In-person</i>)
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UNDERGRADUATE MENTORING

****Student from a one or more group(s) historically underrepresented in geosciences***

Abigail Wilwerding* University of Minnesota <i>Understanding the Provenance of Slackwater Sediment in Southeastern Minnesota's Whitewater River</i>	Direct Supervisor & Research Advisor	2022 – Present
Anna Gonzalez* University of Minnesota <i>Downstream Fining of Clast Size in the Whitewater River Valley</i>	Direct Supervisor & Research Advisor	2022 – 2023
Hana Uyeda* Carleton College <i>Impacts of Oil Pipelines on Indigenous and Socially Vulnerable Communities</i>	Senior Thesis Advisor	2021 – 2022
Campbell Dunn* University of Wisconsin <i>Seismic refraction data processing and field data collection</i>	Fieldwork Supervisor, Research Project Collaboration & Advising	Summer 2021
Jesse Schewe University of Minnesota <i>Seismic refraction field data collection</i>	Fieldwork Supervisor	Summer 2021
Peter Mitchell University of Minnesota <i>Coding and Digital Elevation Model (DEM) analysis</i>	Research Project Collaboration	2020 – 2021

SERVICE

Steering Committee & Network Committee Advancing Geochronology Science, Spaces, and Systems (AGeS)	2022 – Present
Student Committee, Earth & Planetary Surface Processes American Geophysical Union (AGU)	2022 – Present
Board Member & Student Representative	2020 – Present

Association of Women Geoscientists (AWG), Minnesota

Founder & Mentor, Graduate Student Mentoring Program 2020 – Present
ESCI, University of Minnesota

Co-Convener, EP34B: Landscape Evolution Beneath & Beyond the Ice 2022
American Geophysical Union Fall Meeting

Member, Sedimentary Systems Faculty Search Committee 2021 – 2022
ESCI, University of Minnesota

Mentor, Women in Science and Engineering (WISE) 2020 – 2021
University of Minnesota

Planning Committee 2019 – 2021
Student Research Symposium
ESCI, University of Minnesota

Executive Outreach Committee 2019 – 2021
ESCI, University of Minnesota

LABORATORY EXPERIENCE & QUALIFICATIONS

¹⁰Be Cosmogenic Nuclide Dating 2022
Field & Lab
University of Massachusetts Amherst (*Supported by AGeS2 Award*)

Optically Stimulated Luminescence Dating 2021, 2019
Field & Lab
Utah State University

Geoprobe Sediment Core Processing & Description 2021 – Present
Field & Lab
University of Minnesota

Teaching Certificate 2021
Preparing Future Faculty Program
Center for Educational Innovation, University of Minnesota

SELECTED FIELD EXPERIENCE

- Glacial–Post-Glacial Transition, **Minnesota, USA**
Three field seasons

- Hydrogeology Field Camp, **Minnesota, USA**
One field season + One online field season
 - Glacial Isostatic Adjustment, **Southern Patagonian Icefield, Argentina**
One field season
 - Field Camp, Carleton College Geology Department, **New Zealand**
One field season
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PROFESSIONAL AFFILIATIONS

- Asian Americans and Pacific Islanders in Geosciences (AAPiG)
- Association of Women Geoscientists (AWG)
- Earth Science Women's Network (ESWN)
- American Quaternary Association (AMQUA)
- American Geophysical Union (AGU)
- Geological Society of America (GSA)