

Susannah M. Morey

Postdoctoral Associate

Cooperative Institute for Research in Environmental Sciences, CU Boulder

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RESEARCH INTERESTS

fluvial geomorphology, bedrock rivers, process geomorphology, feedbacks between surface processes and tectonics, extreme geomorphic events, floods, landslides, sediment transport, landscape evolution modeling

EDUCATION

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|------|---|
| 2023 | Ph.D., Geology, University of Washington, Department of Earth & Space Sciences
“The legacy of megafloods in the eastern Himalaya: from erosion to deposition”
Advisor: Dr. Katharine W. Huntington |
| 2016 | B.S., Geology, University of Texas at Austin, Jackson School of Geosciences
<i>Cum laude with Honors and Special Honors.</i>
“The Evolution of the Surveyor Fan and Channel System, Gulf of Alaska, based on Core-Log-Seismic Integration at IODP Site U1417”
Advisor: Dr. Sean Gulick |
| 2016 | B.A., Plan II Honors , University of Texas at Austin, College of Liberal Arts
<i>selective multidisciplinary honors program with a focus on problem solving, critical thinking, and technical writing</i> |

PUBLICATIONS

* denotes undergraduate or high school advisee

Published

1. **Morey SM**, Huntington KW, Turzewski MD, Mangipudi M*, & Montgomery DR (2022). *The erosional and depositional potential of Holocene Tibetan megafloods through the Yarlung Tsangpo Gorge, eastern Himalaya: Insights from 2D hydraulic simulations*. Journal of Geophysical Research: Earth Surface, 127, e2021JF006498. [10.1029/2021JF006498](https://doi.org/10.1029/2021JF006498)
2. **Morey SM**, Shobe CM, Huntington KW, Lang KA, Johnson AG, & Duvall AR (2024). *The lasting legacy of megaflood boulder deposition in mountain rivers*. Geophysical Research Letters, 51(1), e2023GL105066. [10.1029/2023GL105066](https://doi.org/10.1029/2023GL105066)
3. Pfeiffer, A. M., **Morey, S.**, Karlsson, H. M., Fordham, E. M., & Montgomery, D. R (2022). *Survival of the strong and dense: Field evidence for rapid, transport-dependent bed material abrasion of heterogeneous source lithology*. Journal of Geophysical Research: Earth Surface, 127, e2021JF006455. [10.1029/2021JF006455](https://doi.org/10.1029/2021JF006455)
4. Hoffman A, Holschuh N, Mueller M, Paden J, Muto A, Ariho G, Brigham C, Christian J, Davidge L, Heitmann E, Hills B, Horlings A, **Morey S**, O'Connor G, Fudge T, Steig E, Christianson K. (2023). *Scars of tectonism promote ice-sheet nucleation from Hercules Dome into West Antarctica*. Nature Geoscience.

In Review or Revision

5. Huntington KW, McQuarrie N, Hodges KV, Ghoshal S, **Morey SM**. *Thermochronologic constraints on the exhumation history of collisional orogens: Evaluating kinematic models of Miocene-Recent central Himalayan deformation*. Earth and Planetary Science Letters.

In Prep

6. **Morey SM**, Lang KA, Huntington KW, Shobe CM, Nath S, Loreen C. *Sedimentary evidence of Quaternary megaflood deposition in the Siyom River valley, eastern Himalaya*. In prep for submission to Geological Society of America Bulletin.
7. **Morey SM**, Tucker G, Overeem I, Campforts B, Shobe CM, Duvall AR. *Synchronous vs Stochastic Landsliding at Geologic Timescales*. In prep for submission to Journal of Geophysical Research: Earth Surface.
8. **Morey SM**, Gulick SPS, Walton ML, Swartz JM, Reece RS, Jaeger JM. *Pleistocene Climate Change in Southern Alaska Influencing Evolution of the Surveyor Fan and Channel System*. In prep for submission to Marine Geology.

INVITED TALKS

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| 2024 | CSDMS Earth Surface Processes Institute (ESPIIn): <i>Science Talk</i> |
| 2024 | Franklin & Marshall College: <i>Earth and Environmental Science Department Seminar</i> |
| 2023 | AGU Fall Meeting Session: <i>A Century of Outburst Flood Science</i> |
| 2023 | GFZ German Research Centre for Geosciences, <i>Section 4.7: Earth Surface Process Modelling</i> |
| 2023 | Western Washington University, <i>Geology Department Colloquium</i> |
| 2023 | Simon Fraser University, <i>River Dynamics Laboratory Group</i> |
| 2022 | West Virginia University, <i>Geology and Geography Department Colloquium</i> |
| 2022 | AGU Fall Meeting Session: <i>Earth and Planetary Surface Processes General Contributions</i> |
| 2021 | EGU General Assembly Session: <i>Advances in fluvial erosion mechanics – from rolling sediment to bedrock wear</i> |
| 2016 | Invited talks from undergraduate research (1 of 2 undergraduate students invited):
Geology Foundation Advisory Council Meeting, Austin TX
Austin Geological Society, Austin TX
Undergraduate Geological Society, UT Austin, TX |

CONFERENCE ABSTRACTS

* denotes undergraduate or high school advisee

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| 2023 | Morey SM , Shobe CM, Huntington KW, Lang KA, Johnson AG, Duvall AR. <i>The lasting legacy of megaflood boulder deposition: considering the longterm impact of megafloods in mountain rivers</i> . AGU Fall Meeting (invited). |
| 2023 | Nath S, Lang KA, Morey SM , Turzewski MD, Shobe CM, Larsen IJ, Huntington KW. <i>Observations of outburst flood deposits along the Siang River, eastern Himalaya</i> . AGU Fall Meeting |
| 2023 | Johnson AG*, Morey SM , Needle, M, Huntington KW. <i>To be (accurate) or not to be (accurate): constraining error of boulder measurements between Google earth and photogrammetry in the eastern Himalaya</i> . GSA Cordilleran Section Meeting. |
| 2022 | Morey SM , Shobe CM, Huntington KW, Duvall AR, Lang KA, Johnson AG*. <i>The geomorphic legacy of megaflood-derived boulders on bedrock river process and form</i> . AGU Fall Meeting. (invited) |
| 2021 | Morey SM , Huntington KW, Montgomery DR, Turzewski MD, Mangipudi M*. <i>Do megafloods reset mountain valleys?</i> EGU General Assembly (invited) |

- 2020 **Morey SM**, Huntington KW, Montgomery DR. *Hydraulics of a Megaflood in the eastern Himalaya: Feedbacks between Form and Flood*. AGU Fall Meeting.
- 2020 Pfeiffer A, **Morey SM**, Karlsson H, Fordham E, Montgomery D. *Survival of the strong, slow, and dense: Field evidence for rapid transport-dependent bed material abrasion of heterogeneous source lithology*. AGU Fall Meeting.
- 2020 Aldebot S, Weerasinghe K, **Morey SM**, Hill M, Huntington KW, Lang KA. *Evaluation of megaflood deposits with photogrammetry and photogrammetry*. AGU Fall Meeting.
- 2020 Jaeger JM, Gulick SPS, Frederik M, **Morey SM**, Somchat K, Reece RS. *Feeding a Subduction Zone from the Side: Neogene sediment delivery to and dispersal along the Aleutian-Alaska Subduction Zone*. GSA Annual Meeting
- 2019 **Morey SM**, Turzewski MD, Huntington KW, Montgomery DR, Leveque RJ. *The geomorphic legacy of Holocene megafloods in the eastern Himalaya: numerical simulations of outburst flood hydraulics down the Yarlung-Po-Siang River*. GSA Annual Meeting
- 2019 Davis E, **Morey SM**, Podhaisky M*. *Pairing Intertidal Sedimentary evidence with outburst-flood models for the Bonneville Landslide, Columbia River*. GSA Cordilleran Section 115th Annual Meeting.
- 2016 **Morey SM**, Gulick SPS, Swartz JM. *Sediment Transport Processes in the Gulf of Alaska: a morphological analysis of channel and fan sedimentary features*. AGU Fall Meeting.
- 2015 **Morey SM**, Gulick SPS, Walton ML, Swartz JM. *The Evolution of the Surveyor Fan and Channel System, Gulf of Alaska, based on Core-Log-Seismic Integration at IODP Site U1417*. AGU Fall Meeting.

SHORT COURSES & WORKSHOPS

- 2023 Fluvial Landscape Reconstruction from the Sedimentary Record, Virtual Short Course from Penn State and Society for Sedimentary Geology (SEPM)
- 2022 NSF International Research Experiences for Students (IRES) Graduate Training Program in Advanced Techniques for Water Management, Netherlands
- 2020 Quantitative Analysis, Visualization, and Modelling of Detrital Geochronology Data, GSA Short Course
- 2020 Detrital and Petrochronologic Applications of U-Pb Geochronology and Lu-Hf and Trace/REE Geochemistry by Laser Ablation Inductively Coupled Plasma-Mass Spectrometry, GSA Short Course
- 2019 Topographic-Analysis-Kit for TopoToolbox, GSA Short Course
- 2018 Summer Institute on Earth-surface Dynamics (SIEDS), National Center for Earth-surface Dynamics 2, St. Anthony Falls Laboratory, University of Minnesota
- 2017 Landlab Earth Surface Modeling Toolkit, GSA Short Course

FIELD EXPERIENCE

- Geomorphology Field Work**
- 2019 Arunachal Pradesh, India
- 2018 Glacier Peak, WA
- Field Courses**
- 2019, 2020 Instructor, UW Field Geology Course, Montana (2019), Remote (2020), USA
- 2015 Participant, UT Field Geology Course, Montana, USA
- 2015 Participant, UT Marine Geoscience and Geophysics Field Course, Freeport, TX

Field Trips

- 2018 Participant, Pacific Northwest Friends of the Pleistocene 2018 Field Trip, Northwest Channeled Scabland, WA
- 2016 Participant, JSG Undergraduate Research Honors Field Trip, California Plate Margin: Subduction and Transform Tectonics, CA
- 2015 Participant, JSG Undergraduate Research Honors Field Trip, An Overview of Scottish Geology, Scotland

HONORS & AWARDS

▲ awarded based on submitted research proposal, provided full quarter of research support

† cash award

◇ awarded based on academic merit, provided partial support for semester of undergraduate research

- 2023 **Julian D. Barksdale Distinguished Service Award**†, UW
awarded for exceptional contributions in support of the Department's mission
J. Dungan Smith Endowed Graduate Fellowship†, UW
- 2022 Dorothy Stephens Fellowship▲, UW
Inquisitive Graduate Student Support Fund†, UW
UW ESS Research Gala†, *Award for Best Geomorphology Talk*
- 2021 **Howard A. Coombs Endowed Fellowship for Excellence in Teaching**▲, UW
highest award for teaching as a graduate student
UW ESS Research Gala†, *Award for Best Geomorphology Talk*
- 2020 Jody Bourgeois Endowed Fellowship in Sedimentary Geology▲, UW
- 2019 Quaternary Research Center Grant Award†, UW
Kenneth C. Robins Graduate Fellowship▲, UW
Inquisitive Graduate Student Support Fund†, UW
NSF 2019 Graduate Research Fellowship Program, Honorable Mention
- 2018 UW ESS Research Gala†, *Award for Best Poster Figure*
UW ESS Research Gala†, *Award for Best Poster Pitch*
- 2017 **UW Program on Climate Change Fellowship**▲, **Recipient**
- 2016 JSG Student Research Symposium†, *Best Undergraduate Poster*
JSG Undergraduate Support Fund◇, UT Austin
UT University Honors, *Cum Laude*
- 2015 W. Kenley Clark Memorial Endowed Presidential Scholarship◇, UT Austin
Undergraduate Research Fellowship◇, UT Austin
JSG Undergraduate Support Fund◇, UT Austin
UT University Honors, *Cum Laude*
- 2014 Wayne Franklin Bowman Endowed Presidential Scholarship◇, UT Austin
JSG Undergraduate Support Fund◇, UT Austin
UT University Honors, *Cum Laude*

TEACHING EXPERIENCE

Curriculum Development

- 2022 *ESS 311: Geomechanics*, development of online lab curriculum, with J. DeGrande (2021) and P. Morgan (2022)
- 2020, 2021 *ESS 426: Fluvial Geomorphology*, development of online curriculum, with B. Collins
- 2020 *ESS 400: Field Geology*, development of fluvial geomorphology module for online field course

Teaching

- 2024 CSDMS Earth Surface Processes Institute (ESPIIn)

2020-2022	Teaching Assistant in <i>ESS 311: Geomechanics</i> taught by D. Schmidt (2020, 2022), G. Bergantz (2021)
2020, 2021	Teaching Assistant in <i>ESS 426: Fluvial Geomorphology</i> taught by B. Collins
2019, 2020	Teaching Assistant in <i>ESS 400: Field Geology</i> taught by M. McGroder, A. Duvall, C. Condit
2018, 2019	Teaching Assistant in <i>ESS 101: Introduction To Geology And Societal Impacts</i> taught by T. Swanson, UW
2017	Assistant in <i>Morphodynamics and Quantitative Stratigraphy</i> , taught by W. Kim, UT

SERVICE LEADERSHIP, MENTORING, & OUTREACH

Service Leadership

2024	Website and Social Media Committee, Social Media Manager, AGU EPSP Section
2022-2023	Earth Surface Process Faculty Search Committee, Graduate Representative, ESS, UW
2021-2022	Graduate Student Representative to the Faculty, ESS, UW
2022	Brown Bag Seminar Planning Committee, ESS, UW
2020-2021	Curriculum Committee, Graduate Representative, ESS, UW
2020	ESS Graduate Student Justice, Equity, Diversity, & Inclusion (JEDI) Reading Group, Co-founder, UW
2019, 2020	Planning Committee Member, ESS Research Gala, UW
2018-2019	Curriculum Chair, UW ESS Outreach Program (Rockin' Out), WA
2017-2018	Graduate Climate Conference Planning Committee, Pack Forest, WA
2018, 2019	Planning Committee Member, ESS Open House, UW

Mentoring

* denotes co-author on publication

2024	A. Shinn, Front Range Community College undergraduate <i>RECCS intern</i> <i>A Decade Later: the fate of sediment mobilized during the 2013 Front Range Flood</i>
2022-present	G. Johnson*, UW undergraduate <i>Measuring boulder size in boulder bars along a megaflood pathway, Yarlung-Siang River, eastern Himalaya</i> <i>Constraining error of boulder measurements between GoogleEarth and photogrammetry in the eastern Himalaya</i>
2022	S. Pol, UW undergraduate <i>Measuring boulder size in boulder bars along a megaflood pathway, Yarlung-Siang River, eastern Himalaya</i>
2022	C. Loreen*, UW undergraduate <i>Analyzing grain-size in megaflood sediment along the Yarlung-Siang River, eastern Himalaya</i>
2020-2021	M. Mangipudi*, high school student, now at Stanford University <i>STEM Futures Fellow Research Program</i>
2019	M. Van Arnem, UW undergraduate, <i>Using HEC-RAS to simulate monsoon flow along the Yarlung-Siang River, eastern Himalaya</i> <i>Using GeoClaw to simulate baseflow on the Columbia River</i>
2018-2019	M. Podhaisky, UW undergraduate, <i>Reconstructing paleotopography of Columbia River</i>

- 2016-2017 Mentoring Program Coordinator, YouthLaunch
 nonprofit for youth empowerment, Austin, TX
- 2013-2016 Mentorship Program Coordinator, Knowledge is Power Program (KIPP),
 national charter school based in UT Austin
- Outreach**
- 2020-present Leader: Discovery Park Geology Walks, Seattle, WA
 Twice a year
- 2017-present Developer & Leader: Dam Break Response, Using the Augmented Reality
 Sandbox to understand flooding
 Twice a year
- 2016 Volunteer of the Year, Plan II Honors
 selected from ~130 members of graduating Plan II Honors Class, UT Austin