

Kate Potter Leary

Curriculum Vitae

New Mexico Tech
Socorro, NM 87801

☎ 575-835-5320

✉ kate.leary@nmt.edu

🌐 <https://newmexicowatereducation.org/>

*"When you explore water, you explore everything."
– Stephen Grace; Author of Dam Nation*

Research Interests

- Fluvial geomorphology and process sedimentology
- Bedform kinematics in modern and ancient environments
- High resolution bedload transport sampling methods

Education

2013-2018 **Doctor of Philosophy in Geology**, Arizona State University, School of Earth and Space Exploration, Tempe, AZ.

"Field and Flume Investigations of Bedload Transport and Bedforms in Sand-Bedded Rivers"

Advisors: Mark Schmeeckle & Kelin Whipple; Committee Members: Arjun Heimsath, Ian Walker, Ramon Arrowsmith

2008-2012 **Bachelor of Arts in Geology; Religion**, Whitman College, Walla Walla, WA.

Double major in Geology and Religion with a focus in geomorphology and peace and conflict studies, respectively.

Appointments

Present **Water Leaders Education Program Manager**, New Mexico Bureau of Geology and Mineral Resources, Socorro, NM.

2020-2023 **Assistant Professor**, New Mexico Institute of Mining and Technology, Socorro, NM.

2018-2020 **Postdoctoral Scholar**, University of California Santa Barbara, Santa Barbara, CA.

Advisor: Vamsi Ganti

Spring 2018 **Visiting Assistant Professor**, New Mexico Institute of Mining and Technology, Socorro, NM.

2017 - 2018 **Dissertation Completion Fellow**, Arizona State University, Tempe, AZ.

2016 - 2018 **Volunteer Researcher**, Grand Canyon Monitoring and Research Center, U.S.G.S., Flagstaff, AZ.

Field investigations of bedform dynamics using repeat, multi-beam sonar.

2013-2017 **Research and Teaching Assistant**, Arizona State University, Tempe, AZ.

June-
November **National Association of Geoscience Teachers (NAGT) Intern**, Cascade Volcano Observatory, U.S. Geological Survey, Vancouver, WA.

2012 Assisted on earthen dam breach experiments (PI: Dr. Joseph Walder) and debris flow experiments (PI: Dr. Richard Iverson) at the U.S.G.S. debris flow flume.

Publications in Preparation

Voller, V.R., Camille, A., Sazeed, N., Luong, L., Steckler, M., Person, M., **Leary, K.C.P** (in prep), Onshore entrapment of sea water in coastal aquifers by rapid coastline progradation, *Water Resources Research*.

Leary, K.C.P and Ganti, V. (in prep), Testing Kinematic Controls on the Preservation of Fluvial Cross-Strata: Colorado River, Grand Canyon National Park, *Journal of Sedimentary Research*.

Publications

Stark, K., **Leary, K.C.P**, Cadol, D., Larrone, J. (in review), The efficiency of ephemeral channels in transporting bedload, *Water Resources Research*.

Leary, K.C.P, Tevis, L., and Schmeeckle, M.W. (2023), Spatiotemporal bedload transport patterns over bedforms, *Earth Surface Dynamics*, <https://doi.org/10.5194/esurf-11-835-2023>.

Le Coz, J., Perret, E., Camenen, B., Topping, D.J., Buscombe, D.D., **Leary, K.C.P.**, Dramais, G., Grams, P.E. (2022), Mapping 2-D bedload rates throughout a river reach from high-resolution acoustical surveys, *Water Resources Research*, <https://doi.org/10.1029/2022WR032434>.

Ashley, T., Mahon, R., Naqshband, S., **Leary, K.C.P.**, and McElroy, B. (2020), Probability distributions of particle hop distance and travel time over equilibrium mobile bedforms, *Journal of Geophysical Research: Earth Surface*, *125* (7), <https://doi.org/10.1029/2020JF005647>.

Ganti, V., Hajek, E., **Leary, K.C.P.**, Straub, K., Paola, C. (2020), Fluvial morphodynamic hierarchy and the fabric of the sedimentary record, *Geophysical Research Letters*, *47* (14), <https://doi.org/10.1029/2020GL087921>.

Leary, K.C.P. and Ganti, V. (2020), Preserved fluvial cross strata record bedform disequilibrium dynamics, *Geophysical Research Letters*, *46*, <https://doi.org/10.1029/2019GL085910>.

Leary, K.C.P. and Buscombe, D. (2020), Estimating sand bed load in rivers by tracking dunes: a comparison of methods based on bed elevation time series, *Earth Surface Dynamics*, *8*, 161–172, <https://doi.org/10.5194/esurf-8-161-2020>.

Leary, K.C.P. and Schmeekle, M.W. (2017), The importance of splat events to the spatiotemporal structure of near-bed fluid velocity and bedload motion over bedforms: laboratory experiments downstream of a backward-facing step, *Journal of Geophysical Research: Earth Surface*, *122*, 2411–2430, <https://doi.org/10.1002/2016JF004072>.

Grants and Awards

- American Chemical Society Petroleum Research Fund, PI, “*Paleo-hydrologic analysis and quantitative sedimentology of the paleo-Rio Grande system during transition from aggradation to incision.*” 2022-present.
- National Science Foundation Frontier Research in Earth Science (FRES) Program, Co-PI, “*Exploring the linkages between sea-level change, sediment transport and geomorphology on coastal freshwater sequestration.*” 2019-present.
- Outstanding Graduate Poster Presentation, GSA Cordilleran Section Meeting, Flagstaff, AZ., May 2018
- ASU Graduate College Completion Fellowship Recipient Fall 2017 - Spring 2018
- SESE Summer Exploration Graduate Fellowship Research Award Recipient 2017
- ASU College of Arts and Sciences Graduate Excellence Award Recipient 2014
- Geological Society of America Student Research Grant Recipient 2013
- National Association of Geoscience Teachers (NAGT) U.S. Geological Survey Internship Recipient 2012

Invited Presentations

Leary, K.C.P. & Vamsi Ganti – Invited Oral Presentation at AGU 2021 entitled “Testing Kinematic Controls on the Geometry of Preserved Fluvial Cross Strata: Colorado River, Grand Canyon National Park”

Leary, K.C.P. – Colloquium Talk, Northern Arizona University, March 2017

Selected Meeting Presentations

Leary, K.C.P., Ganti, V. (2021, December), Testing Kinematic Controls on the Geometry of Preserved Fluvial Cross Strata: Colorado River, Grand Canyon National Park. In AGU Fall Meeting 2021. AGU.

Leary, K.C.P., Ganti, V. (2019, December), Cross-stratification preferentially records bedform disequilibrium dynamics. In AGU Fall Meeting 2019. AGU.

Leary, K.C.P., Ganti, V. (2019), Preservation of bedform disequilibrium in the stratigraphic record, Southern California Geomorphology Symposium, San Diego, CA, 4 May.

Leary, K.C.P., Schmeekle, M. (2018), The (in)stability of bedform geometry: observations of bedload transport patterns on the sub-bedform scale, Abstract EP33A-03 presented at the 2018 Fall Meeting, AGU, Washington D.C., 10-14 Dec.

Teaching Activities

New Mexico Tech, Socorro, NM.

Geology of National Parks (100-level)
Earth Surface Processes (200-level)
Fluvial Geomorphology (500-level)
Flow and Transport in Hydrologic Systems (500-level)
GeoJustice (400/500 level)

Arizona State University, Tempe, AZ.

Introduction to Geology Laboratory Course (90 students; 3 sections)
Online Introduction to Geology (395 students)
Online Introduction to Geology Lab (395 students)
The Confluence of Rivers and Civilization (4-week course; 40 students)

Synergistic Activities

- Member of the EPSP social media committee– responsible for the day-to-day social media presence of EPSP on Twitter and Instagram (@AGU_EPSP).
- Member of the IRIS Distributive Acoustic Sensing (DAS) Research Coordination Network (RCN) Geomorphology working group