Brian Penserini

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Education

Ph.D. Earth Science *University of California, Santa Barbara* **Santa Barbara, CA** *2018-2024*
GPA: 3.96/4

Dissertation: Spatiotemporal Variability in Exhumation in Response to Large-Scale Drainage Capture and Evolving Tectonics in the Northwest Himalayas

M.S. Geological Sciences *University of Oregon* **Eugene, OR** *2013-2015*
GPA: 4/4

Thesis: Debris Flow Network Morphology and a New Erosion Rate Proxy for Steepland Basins with Application to the Oregon Coast Range and Cascadia Subduction Zone

B.S. Geology *California Institute of Technology (Caltech)* **Pasadena, CA** *2009-2013*

Research and Professional Experience

Graduate Student Researcher/Associate/TA *(UC Santa Barbara)* **Santa Barbara, CA** *09/2018 - 03/2024*

- Used QGIS, ArcMap, and Matlab to perform spatial analyses of climate, geological, and environmental datasets and produce map visualizations for three scientific investigations in the Indian Himalayas.
- Wrote Matlab code to model river incision in response to multiple geologic and climatic scenarios.
- Presented research annually at national conferences (AGU, GSA) and published studies in peer-reviewed academic journals.
- Winner of the UCSB G.K. Gilbert Award for best student colloquium talk and a GSA AGeS2 award for geochronology research.
- Evaluated student performance for 35 undergraduates as instructor of record for EARTH 176 (Geological Applications of GIS), covering topics including data types, georeferencing, proximity analysis, and processing of Lidar point clouds.
- Led annual department and campus-wide instructional development workshops for 80 new graduate student TAs.

Student Trainee (Natural Sciences) *(U.S. Dept. of the Interior, USGS)* **Golden, CO** *06/2023 - 09/2023*

- Digitized >2,000 storm-induced landslides and developed a semi-automated landslide identification workflow using density-based clustering (DBSCAN) in ArcGIS Pro.
- Used Python (pandas, seaborn, statsmodels, scikit-learn) and Jupyter Notebooks to document exploratory analyses of landslide volume and mobility data for future use by the USGS Postfire Debris Flow Hazards group.
- Produced novel results suggesting that catastrophic postfire debris flows could recur on timescales shorter than previously thought (~100 years), emphasizing the impact of climate change on landslide hazards.

Geoscience Intern *(California Resources Corporation)* **Bakersfield, CA** *05/2019 - 08/2019*

- Improved reservoir characterization by incorporating well logs and new seismic data in a refined geological framework using Petrel.
- Provided improved estimates of initial in-place hydrocarbons and recommended new well installations to executive management to increase field production, potentially adding approximately $4MM in value to company assets.

Staff Geologist *(Haley & Aldrich, Inc.)* **Oakland, CA** *08/2017 - 02/2022*

- Conducted field oversight, documented daily activities, and collected soil, water, and gas samples for Phase II/III environmental site assessments.
- Coordinated with vendors to provide support services for remediation projects, including: permitting, drilling and well installation, traffic control, public relations, and transportation of investigation derived materials.
- Consulted with internal and external clients to develop project work plans and summary reports.
- Mentored and trained three junior staff geologists in environmental sampling methods and deliverable preparation.
- Provided subject-matter expertise and field training in sub-slab soil vapor sampling methods for Phoenix-based staff.
- Transitioned from full-time to on-call in September 2018.

Junior Staff Geologist *(Geosyntec Consultants, Inc.)* **Huntington Beach, CA/Brookline, MA** *09/2015 - 08/2017*

- Provided support services for site investigations and remediation activities at landfills, former dry cleaners, and industrial sites.
- Maintained transparent lines of communication with project managers, clients, and field support staff through daily written and oral updates.
- Took on project management responsibilities for a quarterly monitoring program of >100 groundwater wells at a Class I hazardous waste landfill.
- Responsible for management, validation, QA/QC, and analysis of large environmental datasets (>20,000 observations) using advanced Excel functions and R.
- Distilled statistical findings and incorporated client feedback in written deliverables to achieve stakeholder objectives and reduce quarterly expenditures by ∼$10,000.

Research Assistant/Graduate Teaching Fellow *(University of Oregon)* **Eugene, OR** *09/2013 - 06/2015*

- TA for GEOL 518 (Earth and Environmental Data Analysis), which covered topics including descriptive statistics, visualization, uncertainty analysis, hypothesis testing, regression, time series, and directional data.
- Developed a novel empirical model to relate channel morphology to erosion rates using meter-scale Lidar DEMs.
- Published results in a peer-reviewed academic journal (Geomorphology).

Teaching Experience

Instructor of Record

- UC Santa Barbara, Department of Earth Science
  - EARTH 176: Geological Applications of GIS (Spring 2022)

Teaching Assistant

- UC Santa Barbara, Department of Earth Science
  - EARTH 20: Geological Catastrophes (Fall 2023)
  - EARTH 104G: Digital Analysis and Interpretation of Field Data (Winter 2023)
  - EARTH 176: Geological Applications of GIS (Fall 2020, Spring 2023)
  - EARTH 104A: Field Studies in Geological Methods (Fall 2019, Spring 2021)
- University of Oregon, Department of Geological Sciences
  - GEOL 418/518: Earth and Environmental Data Analysis (Winter 2015)
  - GEOL 455/555: Mechanical Earth (Fall 2014)
  - GEOL 305: Dinosaurs (Fall 2014)
  - GEOL 103: Exploring Earth History (Spring 2014)
  - GEOL 102: Exploring Earth's Environment (Winter 2014)
  - GEOL 201: Dynamic Planet Earth (Fall 2013)
- California Institute of Technology, Division of Geological and Planetary Sciences
  - Ge 1: Earth and Environment (Spring 2013)

Committees and Service

EPSP Student Committee *American Geophysical Union* *04/2022 - 09/2023*

- Worked with AGU leadership to start an international peer-to-peer mentoring program for 30 graduate students.

Geoscience Mentoring Program (GEMSS) *UCSB Earth Science* *09/2020 - 06/2023*

- Served on the Executive Committee and provided one-on-one mentoring for two undergraduate students.
- Mentees each received full-time employment offers in their desired field upon graduating.

Student Justice, Equity, Diversity, and Inclusion Council *UCSB Earth Science* *03/2020 - 06/2022*

- Worked with faculty to develop new DEI practices within the department.

Question Answerer *UCSB ScienceLine* *08/2020 - 06/2022*

- Answered earth science questions submitted by K-12 students on a biweekly basis.
- Selected as top answerer for 2020-2021 academic year.

Journal Peer Review

Earth Surface Processes and Landforms

Lithosphere

Awards and Fellowships

- George Tunell Memorial Fellowship - *UCSB Earth Science, 06/2023*
- G.K. Gilbert Award, Best Student Colloquium Talk - *UCSB Earth Science, 06/2022*
- Lloyd and Mary Edwards Field Studies Fellowship - *UCSB Earth Science, 06/2021*
- Geological Society of America (GSA) AGeS 2 Award - *GSA, 05/2021*
- ScienceLine Earth Science Award - *UCSB ScienceLine, 05/2021*
- Grad Student Research Grant - *GSA, 05/2020*
- GeoHost Awardee - *International Geological Congress, 12/2019 (declined)*
- UC Regents Fellowship in Earth Science - *UCSB, 09/2018*

Certifications

- Google Data Analytics Professional Certificate (05/2024) - *Coursera, Google*
- Google Advanced Data Analytics Professional Certificate (In Progress) - *Coursera, Google*
- Geologist in Training (02/2016) - *California State Board of Engineers, Land Surveyors, and Geologists*
- HAZWOPER 40-hr (Lapsed)

Skills

- **Programming Languages:** Python, Matlab, R, SQL, C++ (Basic)
- **Python Packages:** NumPy, pandas, matplotlib, seaborn, statsmodels, scikit-learn, ArcPy
- **Software:** GIS software (QGIS, ESRI ArcMap 10 and ArcGIS Pro), Microsoft Office (Outlook, OneNote, Excel, Powerpoint, Word, Teams, Project), Jupyter Notebook, Git/GitHub, RStudio, BigQuery, Adobe Illustrator, Tableau
- **Geosciences:** Well Log Intepretation, Seismic Correlation, and Reservoir Modeling in Petrel, Environmental Sampling Methods (Water, Soil, Gas), Numerical Modeling, Field Mapping, Near-Surface Geophysical Field Methods, Drilling Oversight, gINT, Soil logging (USCS), Google Earth Engine (Basic)
- **Professional/Soft Skills:** Analytical Problem Solving, Project Management and Planning, Data Quality Assurance and Quality Control, Peer Review, Teamwork, Adaptability, Independent Learning, Critical Thinking

Publications

Penserini, Brian D., Kristin D. Morell, Alexandru T. Codilean, et al. "Magnitude and Timing of Transient Incision Resulting from Large-Scale Drainage Capture, Sutlej River, Northwest Himalaya." Earth Surface Processes and Landforms 49 (2024): 334-353. https://doi.org/10.1002/esp.5705

Penserini, Brian D., Joshua J. Roering, and Ashley Streig. "A morphologic proxy for debris flow erosion with application to the earthquake deformation cycle, Cascadia Subduction Zone, USA." Geomorphology 282 (2017): 150-161. http://www.sciencedirect.com/science/article/pii/S0169555X16306821

Penserini, Brian D., Kristin D. Morell, Brian J. Yanites, et al. "Quaternary Slip along the Himalayan Crest as a Novel Driver of Drainage Capture." *(in prep)*.

Penserini, Brian D., Kristin D. Morell, Vincent Godard, et al. "Modern Exhumation Patterns of the Northwest Himalayas Resolved using ^{10}Be-derived Denudation Rates and Topographic Analyses." *(in prep)*.

Penserini, Brian D., Francis K. Rengers, Matthew A. Thomas, et al. "Reloading the Channel Network through Postfire Shallow Landsliding" *(in prep)*.