Elizabeth Johnston, Ph.D.

Geospatial and climate impacts researcher with a Ph.D. in Earth System Science. Previously served as an Energy Policy Analyst. Applies responsible artificial intelligence to inform mitigation and adaptation.

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Education

Ph.D. Earth System Science | Stanford University

M.S. Marine Science | University of San Diego

B.S. Earth & Environmental Science | Furman University

Selected Publications

Johnston, E.C. (2024) Impact of climate variability on landslide hazard in the western United States. Doctoral Dissertation. Stanford University. https://searchworks.stanford.edu/view/in00000069376

Johnston, E.C., et al. (2021) Quantifying the effect of precipitation on landslide hazard in urbanized and non-urbanized areas. Geophysical Research Letters, 48, https://doi.org/10.1029/2021GL094038

Computational Skills

- **Programming Languages**: statistics/data-science (R, Python); numerical computing/engineering (MATLAB); compiled (C); scripting (bash)
- **Geospatial Analysis**: ArcGIS, QGIS, Google Earth Engine
- **Version Control & Repositories:** Github, Zenodo
- **Data Management & Visualization**: Adobe Creative Suite; Microsoft Office Suite (e.g., Excel, PowerPoint); Google Suite (e.g., Sheets, Slides)

Research Experience

Climate Change Impacts | Stanford University | June 2018 - present
Stanford University provided funding from fall 2017 through fall 2023

- Designed reproducible workflows for geospatial modeling, statistical analysis, machine learning, and data visualization
- Leveraged distributed computing to improve efficiency
- Applied principles of econometrics to infer causality
- Analyzed remotely-sensed data products to detect patterns and trends
- Presented at international conferences and published peer-reviewed journal article that was selected for press release

Isotope Geochemistry | Stanford University | August 2017 - June 2018

- Researched isotopic signatures of tectonically-driven landscape evolution
- Collected, processed, and analyzed samples by mass spectrometry

Trace Metal Geochemistry | University of San Diego | Aug. 2014 - May 2017
Dean's Merit, Stephen Sullivan Memorial, and San Diego Association of Environmental Professionals Scholarships provided funding

- Researched the trace metal geochemistry of an ancient volcanic system
- Planned fieldwork with San Diego Parks and Recreation Department
- Collected rock, soil, and water samples
- Analyzed samples for trace metal concentration (e.g., XRF)
- Assessed mineral composition (e.g., SEM, XRD, microscopy)
- Processed and visualized geospatial and geochemical data
- Mentored high school, undergraduate, and graduate students
- Published master's thesis; presented at international conferences

Last updated October 11, 2025

Physical Science Lab Assistant | Univ. of San Diego | May 2015 - Aug. 2016
Employed by Environmental and Ocean Sciences Department
- Ensured proper safety protocol and data collection, including quality assurance/quality control (i.e., QA/QC) for physical science courses (e.g., Environmental and Ocean Geochemistry; EOSC 452L)
- Resolved technical concerns with laboratory instruments (e.g., FAAS)

Energy Policy Analyst | University of San Diego | December 2013 - May 2015
Employed by Energy Policy Initiatives Center
- Developed greenhouse gas inventories to estimate emissions among the electricity, transportation, waste, water, and agricultural sectors
- Co-authored climate action plans that quantified potential emissions reductions and made recommendations for climate policies

Climate Education | University of San Diego | October 2013 - March 2014
Employed by Energy Policy Initiatives Center
- Examined effects of climate on extreme events, water, and public health
- Conducted standardized interviews about knowledge of local climate impacts with community leaders among public and civil society sectors
- Coordinated with local nonprofits (e.g., SANDAG, San Diego Foundation)

Engineering Communications | Vanderbilt University | May - August 2013
Employed by Vanderbilt University Graduate School of Engineering
- Wrote articles (e.g., about Young Scientist publication) and created informational material for School of Engineering (e.g., research profiles)

Geospatial Modeling | Furman University | Aug. 2012 - May 2013
Furman Advantage Fellowship provided funding
- Applied ArcGIS and remotely sensed imagery to assess landslide hazard
- Presented at international conference and was covered in local news

Incentivizing Carbon Mitigation | Upstate Forever | May - August 2011
Shi Sustainability Fellowship provided funding
- Analyzed and reported the feasibility of a local carbon offsets program
- Conducted literature reviews, held focus groups with local businesses, and distributed an online survey which received over 500 responses

Fluvial Sediment Transport | Furman University | August 2009 - May 2010
Howard Hughes Medical Institute (HHMI) provided funding
- Researched particulate organic carbon transport by first-order streams
- Collected sediment and storm water samples (e.g., ISCO), processed and analyzed samples (e.g., LOI), and analyzed data

Teaching Experience

Academic Skills Educator | Stanford University | June - October 2022
- Developed and led workshops that centered planning and resilience

Teaching Assistant | Stanford University | September 2017
- Field assistant for Geological History of the Rocky Mountains (ESS 101)

Instructor | University of San Diego | August 2015 - May 2017
- Taught lab sections for Natural Hazards (EOSC 104L; 4 semesters) and Environmental Geology (EOSC 485L; 1 semester)

Consultant | Center for Teaching & Learning | Furman Univ. | Aug. 2010 - May 2013
- Provided writing and multimedia support to undergraduate students

Outreach & Service

2023 | PhD Pathways Advisory Committee | Stanford Career Education

2022 | Mentor | Girls in STEM

2022 | Graduate Student Food Pantry Volunteer | Stanford University

2021 | Service Award for Diversity, Equity, and Inclusion | Stanford University

2019 | Organizing Committee | Women in Data Science @ Stanford Earth

2018 – 2019 | Executive Board | Stanford University Women in Earth Science

2016 | Instructor | National Ocean Sciences Bowl

2015 | San Diego Association of Environmental Professionals Scholar

2013 | Coral Reef Ecology Research Assistant | Scripps Institution of Oceanography

2013 | Student Ambassador | GSA Switch Energy Awareness & Efficiency

2012 | Conference & Field Trip Assistant | Carolina Geological Survey

Conference presentations
(primary author)

AGU Fall Meeting 2021| “Effect of wildfire severity on the longevity of precipitation-triggered landslide hazard” | Poster

AGU Fall Meeting 2020 | “Impact of urbanization on antecedent precipitation and landslides: evidence from the San Francisco Bay” | Talk

AGU Fall Meeting 2019 | “The combined influence of antecedent rainfall and urbanization on landslides: an empirical approach based on data for the Pacific Coast of the United States” | Talk

AGU Fall Meeting 2018 | “Multi-scale signatures of climate change on landslide susceptibility: a case study for the Pacific Coast of the United States” | Poster

AGU Fall Meeting 2016 | “Investigations of the geochemical controls on anomalous arsenic enrichment in the Santiago Peak Volcanics of Southern California” | Poster

GSA Cordilleran Meeting 2015 | “Arsenic enrichment associated with historic gold mining in Julian, CA: a case study for ecosystem and public health impacts related to mining” | Poster

Climate Change Impacts and Responses 2015 | “Urban climate action planning: demonstration of greenhouse gas mitigation tool for analysis of local energy and climate policies” | Talk

GSA Southeastern Meeting 2013 | “Landslide hazard zonation using GIS-based modeling” | Poster

GSA Southeastern Meeting 2011 | “Particulate organic carbon transport by headwater streams in the piedmont of South Carolina” | Poster