



USGS NSF Internship Opportunity

Point of Contact Name:	Kate Allstadt
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USGS Center:	Geologic Hazards Science Center
Project Title:	Hazard and losses from earthquake-triggered landslides and liquefaction
Summary:	Augment existing near real-time earthquake-triggered landslide and liquefaction hazard models with products such as landslide dam likelihood, road network disturbances, and disruption to ports. Investigate methods for improving and/or rapidly updating models such as remote sensing data, historical fill maps, and social media and news reports.
Project Hypothesis or Objectives:	Landslides and liquefaction triggered by earthquake shaking can have significant human impacts. Landslides can cause fatalities, impact structures, cut off roads, and block rivers with unstable landslide dams. Liquefaction can render ports, industrial, and commercial facilities unusable. The goal of this project is to expand on existing USGS efforts to develop global near real-time liquefaction and landslide models by developing methods to extract further information from the probability maps that are currently produced that could help guide response efforts. Depending on the interests of the student, potential products include landslide dam hazard and risk estimation, quantifying potential transportation impacts and regional connectivity, identifying areas that may be cut off from communication or access, and methods for updating models with rapidly available ground-truthed information (remote sensing, social media, and news reports). The resulting product(s) will be part of visible, widely-distributed USGS products and will benefit a variety of users, including emergency responders, government agencies, media, and the general public.
Duration:	Up to 12 months
Internship Location:	Golden, CO
Field(s) of Study:	Engineering, Geoscience, Computing

 Applicable NSF Division:	EAR Earth Sciences, PHY Physics, ENG Engineering, CISE Computer and Information Science and Engineering
 Intern Type Preference:	Any Type of Intern
 Keywords:	earthquakes, landslides, liquefaction, infrastructure, hazard, risk, GIS, statistics
 Expected Outcome:	The student will work with USGS collaborators to develop one or more products or methods that will augment the information we are able to provide to responders, government agencies, and the public. The result will be part of visible and widely distributed USGS products that are used by and benefit a variety of users.
 Special skills/training Required:	Experience with python, git and github, GIS, and familiarity with statistics, earthquake hazard, and geomorphology/geotechnical engineering would be helpful.
 Duties/Responsibilities:	The student would help develop one or more ground failure products that build on the probability maps output by existing ground failure models. The student will work in a collaborative setting with USGS scientists to turn multidisciplinary science (seismology, geomorphology) into a practical product. In doing so, the student will develop code and use statistics and geospatial analysis.

Internal Information - Not to be posted:

Center Director Name: Jill McCarthy

USGS Responsibilities: Equipment, Facilities, Mentoring, On-boarding, Background Check, Volunteer Agreement Management

Preliminary Approval: This opportunity has my Center's approval

I already have a student in mind: No

Comments:
