



# USGS NSF Internship Opportunity

● <b>Point of Contact Name:</b>	Eric Thompson
● <b>Point of Contact Email:</b>	emthompson@usgs.gov
● <b>USGS Center:</b>	Geologic Hazards Science Center
● <b>Project Title:</b>	Improving ground motion characterization in USGS near-real-time products
● <b>Summary:</b>	After an earthquake, have you ever wanted to know more about its effects and impact? Have you wondered if the damage and loss estimates are accurate? This internship is your opportunity to wonder no more! You will learn how to create models of earthquake effects, and how to make them more accurate.
● <b>Project Hypothesis or Objectives:</b>	The USGS provides near-real-time products to describe the earthquake shaking and impacts. These products are used by organizations such as emergency responders, other government agencies, news organizations, and the general public. Effective estimation and communication of the earthquake hazard includes estimates of shaking intensity, economic losses, fatalities, landslides, and liquefaction. Our ability to accurately model some of these important aspects of earthquake hazard is currently limited by our ability to model certain ground motion characteristics, such as duration, directivity, and topographic amplification. This project will focus on advanced characterization of ground motions that are currently not accounted-for in USGS near-real-time products and will provide new information that is useful for downstream USGS products.
● <b>Duration:</b>	Up to 12 months
● <b>Internship Location:</b>	Golden, CO
● <b>Field(s) of Study:</b>	Engineering, Geoscience, Computing
● <b>Applicable NSF Division:</b>	EAR Earth Sciences, CMMI Civil, Mechanical & Manufacturing Innovation, PHY Physics, CISE Computer and Information Science and Engineering
● <b>Intern Type Preference:</b>	Any Type of Intern

- Keywords:** Seismic hazard, earthquake, duration, losses, risk, landslide, liquefaction, ground failure
  - Expected Outcome:** This project will develop new capabilities at the USGS for estimating duration and other ground motion characteristics, which will result in additional improvements in downstream products, such as near-real-time economic and fatality estimates, as well as landslide/liquefaction models.
  - Special skills/training Required:** Statistical and probabilistic methods, numerical analysis, and programming skills
  - Duties/Responsibilities:** The intern will analyze ground motions and compute derived metrics that describe the shaking duration and other ground motion characteristics. These metrics will be then analyzed to constrain the correlation with other ground motion parameters such as the peak acceleration and peak velocity. These models will then be used to update the ShakeMap Atlas set of events that are used for calibrating many important earthquake-related products.
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**Internal Information - Not to be posted:**

**Center Director Name:** Jill McCarthy

**USGS Responsibilities:** Facilities, Mentoring

**Preliminary Approval:** This opportunity has my Center's approval

**I already have a student in mind:**

**Comments:**

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