

## 2023 USGS Earthquake Science Center Internship Program Announcement

Do you want to work as part of a federal science agency that researches and monitors earthquakes and faults? The U.S. Geological Survey Earthquake Science Center is recruiting a diverse cohort of interns to work on earthquake monitoring, research, and information technology in summer 2023.

**Join us for an information session at 7 PM Pacific on Thursday  
February 2, 2023:**



Click [Zoom link](#)  
Or type: [shorturl.at/ksGIW](https://shorturl.at/ksGIW)  
Or use: Zoom Meeting ID: 840 3940 8489  
Passcode: 020223  
Or aim your camera at the QR code

*Please take a moment to review these notes before calling in: Update your Zoom client to the latest version before you join. A computer connected to audio is preferred (phone/tablet don't work as well). If possible, join the call 5 to 10 minutes early. Use your full name (first and last) when joining. You'll be placed in a waiting room briefly before entering.*

At the information session, Earthquake Science Center staff will describe the paid student internship opportunities, provide advice for applying, and answer questions. We encourage students at 2-year and 4-year colleges and universities who are considering careers or degrees in earth science, computer science, mathematics, physics, engineering, information technology, or other related fields. Applications from students with any level of experience are encouraged, we hope to hire a diverse cohort of interns. Positions are mostly for the duration of the summer, but some may be longer term by transitioning to part-time in the fall. Start date is flexible, but ideally will be late May or early June 2023.

Although the vacancy announcements are generic, you may indicate interest in a specific opportunity on the application. To apply for these USGS Pathways internships, go to <https://www.usajobs.gov/> and enter the job number (**to be shared at the zoom event**, or email [esc\\_internships@usgs.gov](mailto:esc_internships@usgs.gov) if you need it or can't find the posting). **The job application will open at 9 PM Pacific on Sunday, February 5, and close after we receive a limited number of applicants; we recommend you apply ASAP.** We suggest that you set up your account and upload the required documents (resume/CV and transcripts) in USAJOBS.gov in advance. **Make sure to include unofficial transcripts (readable pdf format preferred) from all institutions and provide proof of enrollment at your current institution. Please also prepare a short statement of interest to help us match you with a project.** Per federal rules, these positions are only open to U.S. citizens.

The internship opportunities are listed beginning on the next page. Mentor name and location are listed, as is the type of student that might fit best. All positions are in USGS offices. If you would like to contact the potential mentor, find contact info here: <https://www.usgs.gov/centers/earthquake-science-center/employee-directory>

**Please send any questions to [esc\\_internships@usgs.gov](mailto:esc_internships@usgs.gov)**

<https://www.usgs.gov/centers/earthquake-science-center>  
[https://twitter.com/USGS\\_Quakes](https://twitter.com/USGS_Quakes)  
[https://www.instagram.com/usgs\\_quakes/](https://www.instagram.com/usgs_quakes/)

## 2023 Internship Opportunities

*Short project description, mentor names, position location, type of student targeted for position*

1. Update and translate various point-, volume-, and fracture-source deformation computer models from Matlab to Python to streamline and improve modeling of reservoir deformation and induced seismicity. These computer codes will be specifically used in geothermal reservoir deformation analyses. Mentor: Ole Kaven. Possible locations: Pasadena, Menlo Park, Moffett Field, CA (2- or 4-year college/university student).
2. Support the Northern California Seismic Network (NCSN) as it continues its buildout for earthquake early warning (ShakeAlert) and assist with improving seismic and volcano monitoring site infrastructure against wildfires. Mentors: Jim Smith and John Krueger. Possible locations: Menlo Park, Moffett Field, CA (2- or 4-year college/university student).
3. Work with recently developed Python code written to compute earthquake focal mechanisms, informing us about faults and how earthquakes ruptured. Depending on background and interests, the intern could write documentation to help others use this code, program new features, and/or use this code to study earthquakes. Mentors: Rob Skoumal, Jeanne Hardebeck, David Shelly. Location: Moffett Field, CA (2- or 4-year college/university student; graduate student).
4. Work with recorded or felt reports of earthquake ground motion to better understand the observed distribution of shaking, as engineering projects and early warning systems rely on accurate models of earthquake ground shaking. Possible projects include database development or the evaluation and modification of existing ground motion models. Mentors: Grace Parker, Annemarie Baltay. Location: Moffett Field, CA. (2- or 4-year college/university student; graduate student).
5. Collect information from the National Inventory of Dams monitored by the USGS National Strong Motion Project's seismic sensors and integrate those data into the Center for Engineering Strong Motion Data Center. Learn about earthquake engineering and seismic station metadata and gain basic database and research skills. Mentors: Lisa Schleicher, Dean Childs, Dave Croker. Possible Locations: Menlo Park, Moffett Field, CA. (2-year college student).
6. The Cascadia subduction zone in the Pacific Northwest is famous for the absence of earthquakes along the plate interface over hundreds of years since the last M<sub>9</sub> earthquake in 1700. Explore the possibility that other plate-boundaries are similarly quiet, using new global databases of earthquake and plate-interface characteristics. Mentors: Joan Gomberg, Harold Tobin (University of Washington), Paul Bodin (University of Washington). Location: Seattle, WA. (2- or 4-year college/university student; graduate student).
7. Install, run, and develop open-source software applications to identify, locate, measure, and visualize earthquake information from data recordings of ground shaking. Knowledge of Linux, GitHub, Python is helpful. Learn earthquake seismology, data science, and computing skills; make a portfolio to show future employers. Mentor: Clara Yoon. Location: Pasadena. (2- or 4-year college/university student; graduate student).

8. Study earthquakes that occurred in Hawaii or other fascinating areas of the U.S. with the Aftershock Forecasting Team. Candidates will analyze data with Matlab and see their work impact public forecasts. Prior experience with Matlab or similar languages is helpful but not required. Learn more at <https://earthquake.usgs.gov/data/oaf/> . Mentors: Andy Michael, Jeanne Hardebeck, Morgan Page, Nicholas van der Elst. Possible locations: Pasadena, Moffett Field, CA. (2- or 4-year college/university student; graduate student).
9. Help the USGS create new data visualizations and maps to show forecasts of aftershocks after big earthquakes. Learn how the USGS models and communicates aftershock risk to the public. Desired skills include programming (Java) and interest in graphic/visual design and earthquake science. Mentors: Max Schneider, Morgan Page, Sara McBride. Location: Moffett Field. (4-year college/university student; graduate student).
10. Measure the contributions of individual and collections of seismic stations in the detection of earthquakes by an earthquake early warning system. Assist in building and improving web interfaces for displaying and assessing earthquake early warning alerts. Web front-end computer code is based on Flask and Javascript, and back-end coding will be done in Python. Mentor: Glenn Biasi. Location: Pasadena. (4-year college/university student; graduate student).
11. Investigate the tectonic geomorphology across the transition from the San Andreas Fault System to the Cascadia subductions zone in the greater Mendocino Triple Junction area. Intern will use GIS and tools such as TopoToolbox or LSDtopotools, and possibly fieldwork and/or use of cosmogenic isotopes to measure watershed denudation rates. Mentor: Stephen DeLong. Location: Moffett Field. (4-year college/university student; graduate student).