

Faculty: Aggeliki Barberopoulou, Lecturer, Urban and Environmental Policy and Planning, Graduate School of Arts & Sciences

Project Locations: Athens, Greece and Medford, MA

Dates: May - July

Project Title: Historical Earthquakes: Why Exploitation of Historical Data is Important for Hazard Mitigation

Project Details:

Earthquake hazard assessments help understand potential risks and impacts to inform decisions on reducing damage or loss of life. This includes analyzing historical data, such as written records and geological evidence, and modern seismic monitoring data. This allows for a more complete understanding of future earthquake impacts and improves building codes to reduce damages. Two main forms of historical earthquake data are records from seismometers and observations of damage. Old seismometer records are analog and cover a limited time-window, leading to underestimations of hazard. To improve knowledge, methods must be developed to incorporate older analog records.

Work on this project was initiated at the end of Spring of 2022. Dr Barberopoulou analyzed the content of the INGV database to understand its content. Five criteria were used against the content of the database to identify earthquakes for further analysis. In collaboration with one undergraduate student, observations of earthquake impact were collected during our visit in government offices and libraries in Greece. Preliminary work was presented in a conference in Greece organized by the Geological Society of Greece.

Tasks and Responsibilities of Research Assistant:

The student will receive initial training in working with historical earthquake records (eyewitness and seismograms):

- Organizing records is critical as it will define future steps but also continuing to analyze events and prepare material for publications in scientific journals
- Student will produce a final report on the project, describing the research project and its results. Report will also include recommendations for future steps.
- Student may participate in a research paper on this topic, earning a co-author status if successful.

Qualifications:

Applicants should have a stated interest in interdisciplinary research and earthquake hazards. Additionally, the successful applicant should demonstrate the following:

- Some knowledge of earthquakes is a plus
- Interest in working with historical data
- Interest in learning about earthquakes and seismicity in Europe and Greece in particular
- Need to be comfortable with computers.
- Great organization, research and writing skills
- Computer, Data science, and/or earth sciences background is considered a plus

Description of Field Site:

Research assistant needs to be prepared to work in warm to hot weather (30-35 C/86-95 F). Student must plan to dress appropriately for the weather and remain hydrated. Summer hats and sunscreen are recommended to avoid heat stroke.

Housing in Greece:

Accommodations will be Airbnb. Student will most likely share accommodations with the faculty member. There will be a shared common area, and perhaps bathroom, but student is guaranteed a private bedroom.