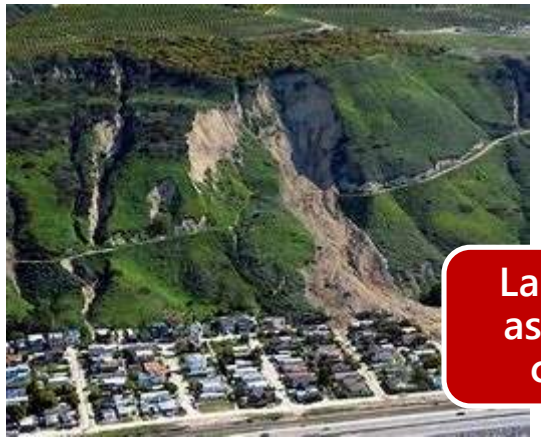
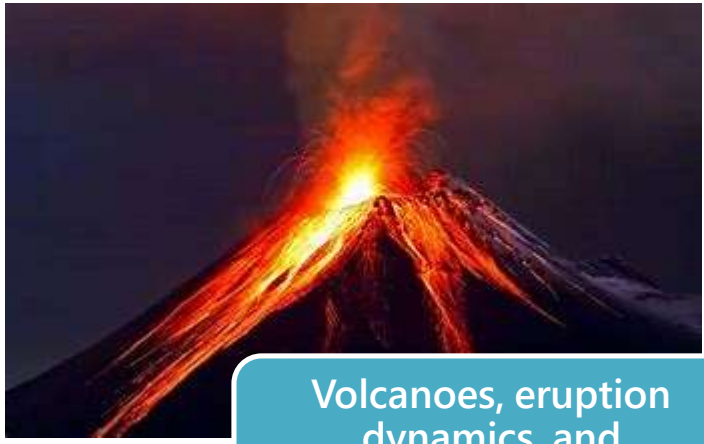
GEOHAZARDS (6CFU)
Topics

Earthquakes, seismic waves, and hazards, impact on buildings

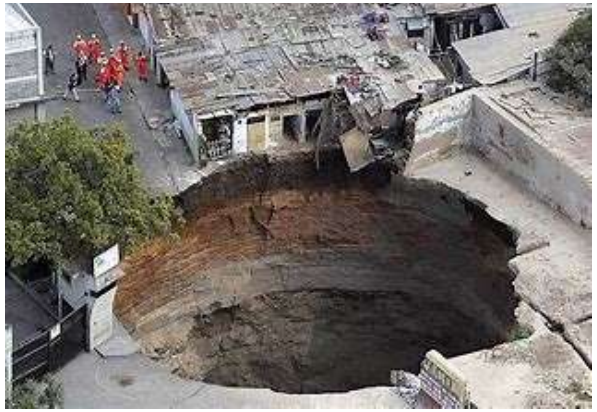


Landslide hazard assessment and classification

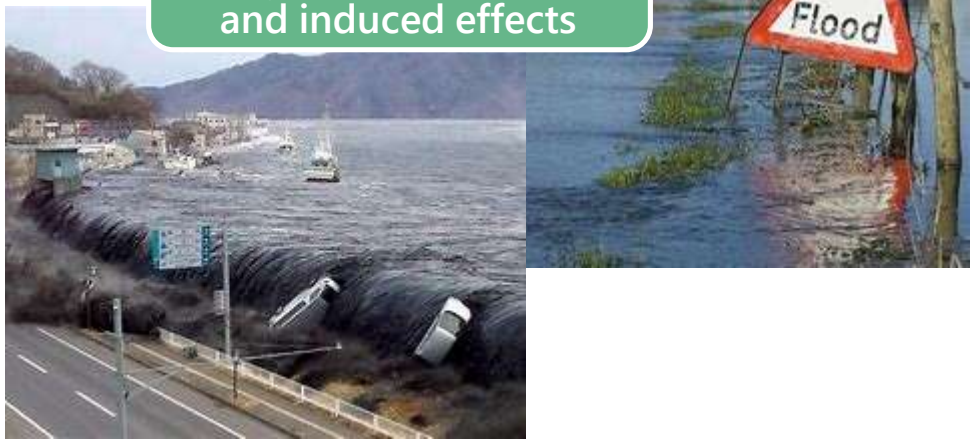


Volcanoes, eruption dynamics, and volcanic hazard

Geo-technical and human-induced hazard: sink-holes and subsidence



Foolds, tsunamis, hydraulic hazard, and induced effects



Anthropogenic hazards, environmental pollution

GEOHAZARDS

Goals

- Providing an overview about the most significant geohazards;
- Understanding the role of geological processes and human activities on hazard and risk assessment;
- Understanding what is a georisk: definition and equation;
- Knowing methods and tools for geohazard assessment and georisk mitigation;
- Knowledge about the dynamic of geological processes and anthropogenic activities inducing hazard conditions (earthquakes, volcano eruptions, floods, landslides, tsunami, sinkholes, contamination, etc.);
- Application of simple but rigorous hazard analysis.

Evaluation/Examination

- Oral exam with presentation and discussion of a short ppt on a specific topic, chosen by the student, and in-depth discussion of additional issues addressed throughout the course.

GEOHAZARDS
Syllabus

- Impact of Natural Hazards in the World and Definition of Risk, Sendai Framework, Natural and Anthropic Hazards.
- Geological Processes & Geohazards: Plate Tectonics and Geodynamics, Endogenous Dynamics and Exogenous Forces.
- Anthropic Geohazards: Human Impact on the Earth System, Interactions Anthropic/Geo Spheres.
- Anthropic Processes and Geohazards: Landslides, Contamination, Floods, Sinkholes.
- Seismic hazard: Definition of Seismic Risk and Earthquakes, Seismic Hazard Assesment, Seismic Risk Analysis.
- Volcanism and Volcanic Hazard: Products of Volcanic Activity, Types of Volcanoes, Hazards and Volcanic Risk
- Flood related Hazards: River Dynamics and Floods, Types of Rivers, Floodplain, Frequency of Flooding.
- Sinkholes, Settlements, and Consolidation: Sinkholes - Where and why, Collapse Mechanisms.
- Groundwater Pollution and Soil Contamination: Remediation Strategies for Contaminated Sites.
- Landslides: types, processes, and hazard. Factors Inducing Landslides and Risk Aspects Related to Landslides.
- Tsunami and Conclusions: Tsunami causes and dynamics. Global multi-hazard assessment and insights.