



Geotechnical Extreme Events Reconnaissance

Turning Disaster into Knowledge

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PRESS RELEASE

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GEER Responds to the Cephalonia, Greece Earthquakes to Document their Impacts: A team from the Geotechnical Extreme Events Reconnaissance (GEER) Association, supported by the National Science Foundation, is investigating the region affected by the sequence of Magnitude M5.2 and M5.7 earthquakes (according to ITΣAK, the Greek Institute of Engineering Seismology and Earthquake Engineering) that occurred in the Ionian Island of Cephalonia, in Greece on January 26 and February 02, 2014, respectively. GEER members and other earthquake professionals are documenting the earthquakes' effects on the subsurface and infrastructure of the region. Dr. Sissy Nikolaou, a senior associate and director of geo-seismic department at Mueser Rutledge Consulting Engineers (MRCE) and GEER Advisory Panel member, is coordinating the investigation of the geotechnical impacts. The US GEER team includes Prof. Dimitrios Zekkos (The University of Michigan) and Prof. Dominic Assimaki (Georgia Institute of Technology). The GEER team will focus on documenting geotechnical effects of extreme events as part of the U.S. National Earthquake Hazards Reduction Program (NEHRP). They will work together with members of several other organizations, documenting the earthquake effects on the built and social environments. Advancing earthquake-resistant design requires that many disciplines work together to understand what happened during such earthquakes.

Representatives from several engineering schools are participating in the GREEK-US GEER efforts, including Professors George Gazetas and Elli Vintzilaiou (National Technical University of Athens), George Athanassopoulos and George Mylonakis (University of Patras), Kyriazis Pitilakis and Spyros Pavlides (University of Thessaloniki), and Panos Tsopelas, Achilleas Papadimitriou, and Marina Moretti (University of Thessaly). Several practicing engineers have volunteered their time, including the firms of Easy Facilities SA and Diatonos Mechaniki, who will have representatives on site to assist the GEER team. The volunteers of GEER will reach out to all local earthquake engineering and seismology institutes. Thus, the number of members of the GREEK-US GEER team will continue to grow beyond this initial group of researchers.

GEER will also collaborate with the Learning from Earthquakes Program of the Earthquake Engineering Research Institute (EERI), and the Applied Technology Council (ATC), represented by Ramon Gilsanz of Gilsanz Murray Steficek (GMS), a board member of the EERI-NYNE Chapter and past president of ATC, as well as with EERI members in Greece.

The Cephalonia, Greece Earthquakes occurred on the Ionian Island of Cephalonia which is situated on the subduction of the African and European plates and has historic large seismicity. The sequence of the 2014 M5.2 and M5.7 earthquakes a week apart revived memories of the 1953 earthquakes that occurred in the same region and produced extensive damage on the island with two events of M6.4 and M7.2, occurring 3 days apart. The 2014 earthquakes were felt over a widespread area, including the capital, Athens. A particular focus of the GEER study will be observations of performance of waterfront structures, ports and quay walls, liquefaction and lateral spreading, slope stability, near-fault motions, topographic effects of the ground motions, and soil-foundation interaction. It will be important to study how soil and geologic conditions may have influenced structural and non-structural damage patterns in the region.

Extreme events engineering is an experience-driven field where immediately following the occurrence of an event (e.g., earthquake, tsunami, hurricane, landslide, or flood), perishable data that can be used to advance our understanding is systematically collected. Field observations are particularly important in the field of geotechnical engineering, because it is difficult to replicate in the laboratory soil deposits built by nature over thousands of years. Detailed mapping and surveying of damaged areas provides the data for well-documented case histories that drive the development of many of the design procedures used by engineers. Documenting and sharing the key lessons learned from major events around the world contributes significantly to advancing research and practice in engineering. Working collaboratively with other organizations in reconnaissance, such as local universities, EERI and ATC, enrich these key lessons.

After the field investigation is complete, observations and findings will be posted on the GEER and EERI websites. Images from the various investigators will also be posted on both websites and visible through Google Earth. Additional information is available on the GEER website at: <http://www.geerassociation.org/>.