



Engineering Organizations Release Joint Report on February 6, 2023 Earthquakes

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For immediate release

The [Geotechnical Extreme Events Reconnaissance Association](#) (GEER) and the [Earthquake Engineering Research Institute](#) (EERI) released a major report today on the three-month anniversary of the Kahramanmaraş earthquake sequence that affected southern Türkiye and northern Syria earlier this year. The [M7.8 and M7.7 earthquakes struck on February 6, 2023](#), approximately nine hours and 95 kilometers apart. The resulting shaking had devastating impacts across a wide region of southern Türkiye and northern Syria, killing nearly 60,000 people and damaging or destroying hundreds of thousands of buildings.

"This report presents the work of dozens of engineers, scientists, and experts who came together to investigate these catastrophic events," said Ayse Hortacsu of the Applied Technology Council, who co-chaired EERI's response. "We captured important perishable data that sheds light on why the earthquakes were so destructive, what factors contributed to the widespread damage, and how other structures and systems performed well."

"February 6, 2023 Türkiye Earthquakes: Report on Geoscience and Engineering Impacts" details the findings of six international reconnaissance teams that traveled to Turkey in February and March to examine and document the geotechnical and structural effects of the earthquakes, working in close coordination with partnering organizations including the Earthquake Engineering Research Center at Middle Eastern Technical University (METU) and the Disaster and Emergency Management Presidency (AFAD).

"Apart from the significance of this event due to characteristics of the ruptures and associated consequences," stated GEER principal investigator David Frost, "this event represented an important opportunity to evaluate how the Turkish earthquake community had evolved its seismic design and post-disaster reconnaissance protocols since the 1999 Kocaeli and Düzce earthquakes."

An [EERI-GEER advance reconnaissance team](#) made an initial visit a week after the earthquakes to collect perishable data and identify areas for further research. Immediately following the advance team, a Phase I GEER team collected perishable data along extensive fault ruptures, inspected affected dams, and mapped areas with variable levels of liquefaction-related damage. [Three reconnaissance teams from EERI's Learning From Earthquakes Program \(LFE\) followed in mid-March](#), focusing on impacts to buildings, hospitals, and lifelines — such as water, electricity and gas infrastructures, transport networks and facilities, communications systems, and food storage

and distribution. Finally, a Phase II GEER team performed reconnaissance of liquefaction-related damage to port facilities and foundations.

Edited by Önder Çetin (METU), Jonathan Bray (UC Berkeley), David Frost (Georgia Tech), Ayse Hortacsu (ATC), Eduardo Miranda (Stanford), Robb Moss (Cal Poly), and Jonathan Stewart (UCLA) along with more than 50 contributing authors, the report details the earthquakes' tectonic setting and surface rupture, ground motions, and observed liquefaction and landslide effects. It examines evidence of damage to buildings, hospitals, lifelines, and dams, as well as highlighting examples of good seismic performance. Additional chapters provide a summary of the reconnaissance effort, an overview of impacts in Syria, and recommendations for future research.

“Documenting the impacts of catastrophic earthquakes like these is a crucial step towards building more resilient communities,” said EERI President Janiele Maffei. “This report contains valuable lessons not only for Türkiye and Syria, but for every region facing seismic hazards.”

The full report is available to download here:

<https://bit.ly/GEER-EERI-Kahramanmaras-Report>

EERI is also hosting a webinar series in May in which members of the LFE reconnaissance teams will present their findings. Information and a registration link are available here:

<https://www.eeri.org/what-we-offer/webinars/16272-lfe-kahramanmaras-earthquakes-reconnaissance-webinar-series>

GEER: <https://geerassociation.org/>

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