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**Largo S. Leonardo Murialdo 1, Rome, room B2 (and on Teams)**

**The seismic events in Turkey on February 6th 2023**

**Aybige Akinci**

**National Institute of Geophysics and Volcanology (INGV)**

<https://teams.microsoft.com/l/meetup-join/19%3aRyqVtS3ES2vwEMmPSyvLYD4pGoB8FNyWqdbViQMXG8Y1%40thread.tacv2/1680160828160?context=%7b%22tid%22%3a%22ffb4df68-f464-458c-a546-00fb3af66f6a%22%2c%22oid%22%3a%2282ff11cc-5157-41af-92ed-e10be63bf6a7%22%7d>

## ABSTRACT

On Monday, February 6th, 2023, at 0417 local time, the Southeastern region of Turkey near the Syrian border experienced two strong earthquakes. The first earthquake was recorded as an event of Mw7.7 by AFAD, followed by a second earthquake recorded as an Mw7.5 event at 15:24 local time. The earthquakes caused widespread damage to buildings and infrastructure across the region, resulting in tens of thousands of casualties and injuries. Aftershocks continued for several days after the initial earthquakes.

Turkey and Syria are situated on a series of active faults, including the East and North Anatolian faults, which mark the boundaries between several tectonic plates such as the Anatolian Plate, Eurasia, and the Arabian Plate.

The two earthquakes on February 6th occurred on multiple segments of the East Anatolian fault system. These earthquakes occurred at relatively shallow depths of 12 km and 15 km for the first and second earthquakes, respectively. The earthquakes broke several segments of the 500 km long East Anatolian fault zone. Rupture lengths were ~350 km for the Mw 7.7 event and ~160 km for the Mw 7.5 earthquake. It is currently estimated that the displacement along the fault line at specific points exceeded 7-8 m.

The devastating impacts of the earthquakes are due to the high ground motion levels recorded, which spanned a large area with basins developed as a result of regional tectonics. In the Antakya province, ground motion amplification was evident, leading to unprecedented structural damage and loss of life. Many newly constructed buildings sustained moderate to severe damage. Despite efforts to improve the safety and risk of structures designed and built after the M7.4 Kocaeli (Izmit) earthquake of 1999, the quality of structural design and construction in Türkiye still needs improvement.