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Building a Catalog for Near-Source Ground Motion Analysis of Moderate Earthquakes using the February 2023 Türkiye Sequence

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Seismic hazard assessment partly relies on the ability to predict ground motion, particularly near the source, where damage is generally the most severe. In this region, existing strong-motion database lack sufficient recordings, leading to poorly calibrated prediction models and large uncertainties. My PhD research aims to confront these models with seismic ground motions recorded close to the fault.

To this end, I am building a database from thousands of aftershocks of the two Turkish earthquakes of February 2023 (Mw 7.7 and 7.6, respectively). The study focuses on moderate-magnitude earthquakes (3.5 to 6) recorded at distances shorter than 15 km from their source, representative of reference scenarios for seismic hazard assessment in mainland France. Using continuous recordings from 101 stations between February 2023 and November 2024, seismic phases are automatically detected and associated into probable events, which are then located using a probabilistic approach and subjected to quality control. Magnitudes are estimated through the inversion of seismic wave displacement spectra. This process led to the identification of 371 usable events, forming the basis for future analyses of near-source ground motions.

Speaker information

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