



Dynamic Triggering of Tremor and Earthquakes along the Dead Sea Transform by the 2023 Kahramanmaraş Earthquake Doublet

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The Kahramanmaraş earthquake doublet, which struck south-eastern Turkey, imparted stress changes that dramatically affected neighboring regions: northern Israel, located about 600 km to the south of the epicenters, experienced roughly a hundred-fold increase in seismicity rates during the first week following the $M > 7$ earthquakes. Here, we study seismic records along the Dead Sea Transform (DST) in order to identify, locate, and determine the characteristics of seismic sources triggered by seismic waves due to the $M > 7$ earthquakes. We take advantage of a dense near-fault accelerometer network recently installed along the DST in Israel, and scan high- and low-pass filtered seismograms to look for body- and surface-wave triggering. We find that Love waves generated by the $M_w 7.5$ earthquake triggered a small-magnitude earthquake in the northern Dead Sea lake area. Importantly, we find the first evidence of deep tectonic tremor along the DST, also triggered by the $M_w 7.5$ Love waves. This tremor episode is composed of two 10 s bursts aligned with the strongest Love wave energy. Preliminary tremor envelope cross-correlation location results suggest it resides in the Jordan Valley, north of the Dead Sea lake, at 10 to 20 km depth, within the San Andreas Fault tremor depth range. Despite its larger magnitude, we do not find evidence for dynamic triggering due to the $M_w 7.8$. The lack of dynamic triggering due to the $M_w 7.8$, and the fact that waves from both earthquakes travel along similar paths to Israel, allow us to establish a threshold for dynamic earthquake triggering in the Dead Sea area.