

3-D seismic velocity model of the Eastern Mediterranean region using body-wave tomography

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The Israeli National Data Center monitors and characterises the seismicity of the Eastern Mediterranean region as part of its mandate with the Comprehensive Nuclear-Test Ban Treaty. The seismic velocity model is one of the factors that affects most the location accuracy. Three-dimensional tomographic studies of the area have been conducted in the past, but are patchy with inhomogeneous resolution, due to limited data sets and irregular data quality. We developed a new, high-resolution body-wave velocity model of the Eastern Mediterranean region. Major efforts were applied into producing a high-quality body-wave traveltime dataset, essential in order to obtain a high-resolution velocity model. We gathered seismic data from local events, as well as from man-made explosions, mostly quarry blasts in Israel and Jordan. We used both Pg and Pn phases to constrain the crust and uppermost mantle. The work was done in the Regional Seismic Travel Time framework. Our velocity model will not only enhance the CTBT organisation's seismic location capabilities, it will also be of significant importance for earthquake monitoring in the region and for the Earthquake Early Warning System being implemented in Israel.

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