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3-D crustal structure from local earthquake array in Hatay-Maras area, East of Mediterranean region of Turkey

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We report a new seismic velocity model for the Hatay-Maras region to better understand crustal structure at the at the south-east extremity of the Eastern Mediterranean region of Turkey. This area shows significant seismic activity comprising 3 remarkable branches of the East Anatolian Faulz Zone (EAFZ). To perform the 3-D tomographic inversion, we have used more than 5000 of small-to-moderate earthquakes recorded between 2007-2016 by at least 30 permanent broad-band stations.

Using P-and S-wave arrivals to image the crustal structure, a passive tomography inversion algorithm developed by Koulakov (2009) was used to compute Vp,Vs velocities and the Vp/Vs ratio. 3 principal profiles have been considered along perpendicular to the 3 different EAFZ branches namely Antakya-Turkoglu, Turkoglu-Golbasi and Erkenek-Celikhan segments. Obtained results from joint analysis of synthetic modelling, hypocenter distribution and geological information, give us new constraints on the seismic velocity characteristics of the study area.

We identify distinct velocity zones having varied absolute velocities and Vp/Vs ratio anomalies down to 40km depth of the earth crust. Initial result exhibit the Moho discontinuity at around 30-35 km depth ranges as undulated shape.

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