T1.2-P16. Velocity Structure of the Iran Region Using Seismic and Gravity Observations

We present a 3D seismic velocity model of Iran generated using a joint inversion of body wave travel times and high-wavenumber filtered Bouguer gravity observations. The body wave dataset is derived from previous work on location calibration and includes over 1000 events that qualify as GT5. The associated arrival time dataset for these events include many direct crustal P and S phase measurements, as well as regional (Pn and Sn) and teleseismic phases. The dataset has been carefully groomed to identify and remove outliers, and empirical reading errors are estimated for most arrivals from multiple-event relocation analysis. We use gravity anomalies derived from the global gravity model EGM2008. To avoid mapping broad, possibly dynamic features in the gravity field into density and seismic speed variations, we high-pass wavenumber filter the gravity measurements. We use a simple, approximate relationship between density and velocity so that both datasets may be combined in a single inversion. The final optimized 3D models allow us to explore how multi-parameter tomography addresses crustal heterogeneities and areas of limited coverage, and improves travel time predictions. Final results of the simultaneous inversion will also help us to better understand one of the most prominent examples of continental collision.

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