ID: **O1.2-165** Type: **Oral**

-wave arrival-time tomography of the Middle East

Tuesday, 29 June 2021 17:05 (15 minutes)

High-resolution tomographic images of the MiddleEastern region are essential to accurately locate ground motion events during nuclear monitoring programs. The purpose of this study is to retrieve detailed models down to lowermantle beneath the Middle Eastern region using a set of reliable regionally observed teleseismic P arrival times from the ISC-EHB bulletin (Engdahl et al., 1998). Our current inversion results are consistent with the previous regional tomographic studies. In checkerboard tests of cell dimension as low as $\sim 2.4^{\circ}$($\sim$ 280 km at surface) are well recovered down to a 1000 km depth beneath the Anatolian plateau where we currently have the densest coverage with ISC data. The Caucasus region and northern parts of the Iranian plateau shows good recovery of $\pm 4\%$ Vp perturbation amplitudes at depths $\sim$ 70 – 135 km. There is fair recovery for a minimum of $\sim 2.4^{\circ}$ cell size beneath the Iranian Plateau, Zagros mountain region, Persian gulf, and northeast Iraq. We are able to further improve coverage especially down to lithospheric depths within the Arabian peninsula using first arrival times measured from waveform data collected from regional networks. The ultimate goal is to perform full-waveform inversion of the region constrained by the constructed P-wave model.

Promotional text

Seismic Imaging of Middle Eastern crust and mantle

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Session Classification: T1.2 - The Solid Earth and its Structure

Track Classification: Theme 1. The Earth as a Complex System: T1.2 - The Solid Earth and its Structure