



ID: P1.2-501

Type: e-Poster

wave velocity structure of upper mantle along the Zagros collision zone

Tuesday 29 June 2021 11:45 (15 minutes)

Investigation of the lithospheric shear-wave velocity as a clue helps to improve our understanding of Iranian plateau evolution. Therefore, we estimate shear wave velocity models beneath profiles perpendicular to the Zagros strike by using trans-dimensional Bayesian inversion of the Rayleigh wave group velocity dispersions at periods of 5-120 s. Our velocity models, in line with the support of the segmented slab, show that the different geodynamic processes have dominated in the northern and central-southern Zagros. In the northern Zagros, the Arabian lithosphere, near the suture, has likely experienced distributed thickening while it has underthrust beneath central Iran in the central-southern Zagros. The presence of a high-velocity anomaly at depths 80-120 Km elongated between the low-velocity lithospheres of the UDAM and the Lut block implies that the southern slab has not flattened up to the east of Iran and the Eocene-Oligocene flare-up magmatism in the Lut block is directly independent on the Neo-Tethys subduction. Our results support the slab break-off idea along the Zagros. In the central and southern Zagros, lateral tearing might be responsible for the slab detachment so that has started from beneath the central UDMA.

Promotional text

This study is aimed at understanding the Zagros velocity and geodynamic model using a large amount of seismic data and nonlinear modeling. Due to the location of Bushehr nuclear power plant in the Zagros zone, knowing more about the velocity and geodynamics of the Zagros will be

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Session Classification: T1.2 e-poster session

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