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Elastic and Anelastic Regional Structures for Crust and Upper Mantle in Iran

In this study, we purposed first elastic and anelastic structure of the lithosphere and asthenosphere of the Iranian Plateau is derived by means of tomographic techniques applied to local phase, group velocities and local attenuation coefficients of Rayleigh wave fundamental mode. We used commonly known as Hedgehog non-linear inversion method to evaluate of the velocity structure. We improved Hedgehog to derive attenuation structure by using attenuation coefficients of Rayleigh wave fundamental mode. For this goal, we conducted a tomographic inversion of Rayleigh wave dispersion and attenuation coefficient to obtain, two-dimensional (2-D) phase, group velocity and attenuation coefficient tomographic images in the period range from 10 s to 100 s for the Iranian Plateau. For this purpose, the fundamental modes, identified by FTAN, are used to determine the inter-station path average phase, group velocities and attenuation coefficient at selected periods. With this procedure, more than 240 group and phase velocity dispersion curves and 150 attenuation coefficient curves have been processed to obtain tomographic maps. Finally, we used fully non-linear inversion procedure to derive tomographic images of the elastic and anelastic structure of the lithosphere and asthenosphere of the Iranian Plateau

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