

STUDY OF LITHOSPHERE STRUCTURE FROM ANALYSES OF VELOCITY DISPERSION CURVES IN THE ZAGROS

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We have used waveforms recorded of 10 broad band seismic station of Iranian National Seismic Network (INSN) from 2010 to 2013 to study lithosphere structure of Zagros zone (west of Iran). The seismicity of Iran suggests that much of the released energy is concentrated in the Zagros zone. There is no clear surface boundary to the Zagros folds and thrust belt so there are different crustal structures in Zagros zone. For this purpose we studied regional surface wave dispersion curves and group velocities of those waveforms. We could obtain our models by inversion of group velocity dispersion curves of Rayleigh waves in period range of 2 to 60s.

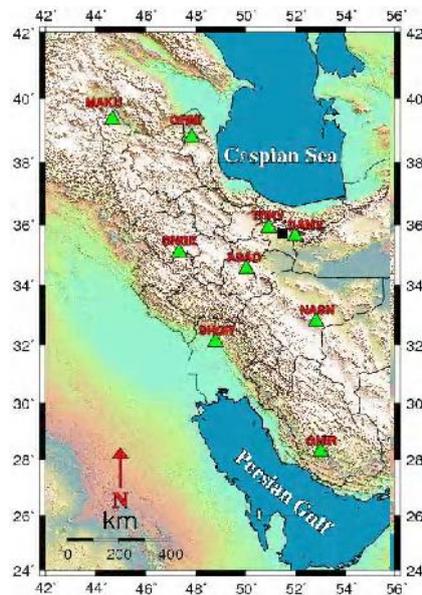


Figure 1. Iranian National Broadband Seismic Network (INSN)

We determined dispersion curves by analyzing the Z-component of fundamental mode Rayleigh waves using Surf98 code (Rober Herrmann's Computer Programs in Seismology (CPS 3.30, Updated 22 April 2013)). We inverted the dispersion curves by this program to create 1-D models of crustal shear wave velocity structure. These Models were calculated down to 60 km depth.

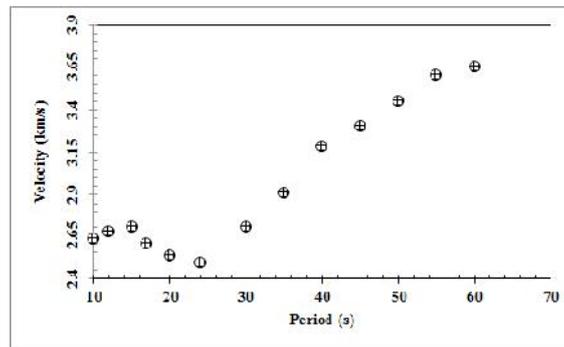


Figure 2. The surface wave dispersion for GHIR station

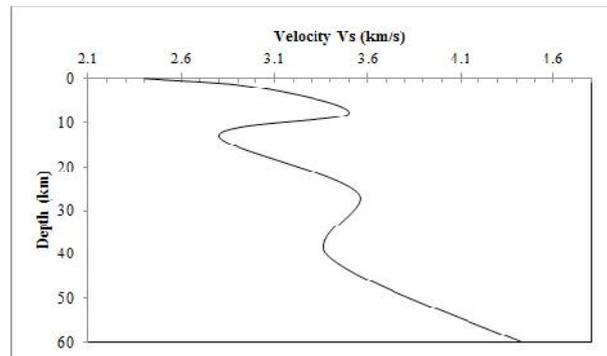


Figure 3. Mean of shear wave velocity model for beneath GHIR station

As expected, our results indicated different crustal structures in the beneath of Zagros zone. Average crustal thickness increases from west of Zagros (Ghir-Karzin (GHIR Station) to East of Zagros (Sanandaj-Sirjan metamorphic zone). Moho depth is estimated of 41 ± 3 and 55 ± 3 for beneath the GHIR station and the NASN station respectively. These thickening are related to the overthrusting of the crust of Arabian margin by the crust of Central Iran, along the Main Zagros Reverse Fault (MZRF).

Table 1. Result of method

Station	Latitude	Longitude	Moho Depth (km)
GHIR	28.285 N	52.986 E	41
SNGE	35.092 N	47.346 E	53
SHGR	32.108 N	48.801 E	40
NASN	32.799 N	52.808 E	55

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