Geophysical Research Abstracts,
Vol. 11, EGU2009-2972-2, 2009
EGU General Assembly 2009

The crustal structure beneath the northwest of Zagros (Kermanshah Region, Iran) using teleseismic receiver functions

N. Afsari (1) and F. Sodoudi (2)

(1) Islamic Azad University, Science and Research Campus, Tehran Branch, Tehran, Iran (ng_afsari@yahoo.com, 0049331 2881277), (2) Helmholtz Centre Potsdam, GFZ German Research Centre for Geosciences, Global Seismology, Potsdam, Germany (foroug@gfz-potsdam.de, 0049 331 2881277)

Characterization of the detailed structure of the crust and upper mantel is an important goal of geophysical studies. Teleseismic body waveforms have been used to infer crust and upper mantel structure. In this study we use the P receiver function method to determine the crustal thicknesses and Vp/Vs ratios and map out the lateral variation of Moho depth under northwest of Zagros (Kermanshah region, western Iran). The data used in this study are selected teleseismic data (epicentral distance between 30°-95°, mb> 5.5) recorded at six short-period three component stations of Kermanshah Network (2003-2007). Our results revealed a Moho depth of approximately 40 km beneath this area. The thinnest crust was found beneath DHR in west part of the study area (36±1 km), whereas the thickest crust was observed in the eastern part of the area beneath VIS (51.5± 2 km) related to the overthrusting system existed along the MZT. We observed that Moho depth increases from west to east. The average VP/VS ratio was estimated to be 1.76 and varies from 1.72± 0.04 to 1.83± 0.03. In addition the crustal structure was also determined by the modeling of the P receiver functions. The main phases, which were observed in our final P receiver functions, are the Moho conversions, their multiples in the crust as well as the conversions at the base of the sedimentary layer. The crustal thickness derived from inversion of these data is approximately 42.5 km and is in good agreement with our first results obtained from the Zhu and Kanamori method as well as with those obtained from other geophysical studies. The average shear wave velocity was estimated to be 3.69 km/s in the crust reaching 4.80km/s in the upper mantle.