



Love and Rayleigh Wave Group Velocity Maps of Turkey and Surroundings

M. Didem CAMBAZ and Hayrullah KARABULUT

Bogazici University, Kandilli Observatory and Earthquake Research Institute, Geophysics Department, Turkey
(didem.samut@boun.edu.tr)

Love and Rayleigh Wave Group Velocity Maps of Turkey and Surroundings

Cambaz M D (1), Karabulut H (1)

(1) Bogazici University, Kandilli Observatory and Earthquake Research Institute, Istanbul, Turkey

We present the group velocity maps of Turkey and surrounding regions obtained from both active and passive seismic sources. A waveform database was formed from 285 earthquakes with magnitudes $M_w > 4.5$ recorded by more than 270 broadband stations. Similarly, a database for noise correlations was constructed from the continuous recordings of 156 permanent and temporary broadband stations between the years 2006-2009. We computed both Rayleigh and Love wave group velocity maps for periods of 10 - 50s from vertical and transverse components of both earthquake and noise sources. The results from ambient noise were compared with the group velocity maps obtained from earthquakes. The group velocity maps were interpreted in relation to the geological and tectonic observations in the region. The study shows the existence of significantly different crustal types in the area. Low group velocities at shorter periods (10-20s) are observed in the local sedimentary basins, the eastern Mediterranean and the Black sea. The eastern Anatolia region is also characterized by low group velocities while Pontides and Bitlis-Pötürge massif display higher group velocities. The central Anatolia exhibits uniform velocity distribution indicating more homogenous crust. The Isparta angle is marked by a wedge shaped-low group velocity anomaly. High velocities observed on the maps are associated with metamorphic, magmatic arcs along the orogenic belts of Pontides, Pötürge massif and crustal thinning in the Aegean region. At larger periods (40-50s) the Anatolian block shows low and uniform group velocity distribution while its surroundings display higher group velocities with the exception of the eastern Mediterranean region.