



The Crustal And Upper Mantle Shear Wave Velocity Structure Beneath Eastern Turkey

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We obtained shear wave velocity structure of the crust and upper mantle beneath Eastern Turkey using group and phase velocity dispersion curves of fundamental mode Rayleigh and Love waves.

The data used, correspond to natural source broadband 3 component seismic records obtained during Eastern Turkey Seismic Experiment (ETSE).

The ETSE Experiment was the result of a collaborative effort between the Bogazici and Cornell Universities designed to investigate the Eurasia-Arabian Plate margins across the Bitlis Suture and East and North Anatolian Fault Zones.

Instrumentation was provided by PASSCAL, consisting of 29 REFTEK 72A recorders, with 28 Streckeisen STS-2 sensors and one Guralp CMG-3T sensor.

Earthquakes selected, were located at distances of 15 degree to 90 degree azimuths from the center of the array with large signal to noise ratio.

The Multiple Filter Technique (MFT) and the Phase Matched Filter Technique (PMF) are used in obtaining the group velocity dispersion curves. The combination of these two techniques permits the isolation of the fundamental mode to obtain cleaner group velocity dispersion curves.

After applying the MFT, the dispersion curves are used as an input for the PMF. With the application of the PMF, an improvement of the group velocity dispersion curves and also isolation of the fundamental mode are obtained.

Reapplying the MFT, a more accurate group velocity dispersion curve of the fundamental mode is calculated. In order to obtain phase velocity dispersion curves, these simpler signals are used.

Then both group and phase velocity Love and Rayleigh waves have been incorporated simultaneously into shear wave velocity inversion.

(Results imply a different shear wave velocity distribution within the region. In the middle of the array there is a low velocity zone. Due to the complexity of the region the thickness of the crust varies. The crust is thin at the northeastern part of the Anatolian Plateau.)