

UPPER MANTLE SEISMIC DISCONTINUITIES TOPOGRAPHY VARIATIONS BENEATH EASTERN EUROPE

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A b s t r a c t

The structure of the mantle transition zone between two seismic discontinuities at depths near 410 and 660 km is one of the most important issues to understand the Earth's dynamics. Most of what we know about this zone is based on seismic interpretation. Seismic waves observed in the distance range of about 15-28° turn in the transition zone and give us information about structural details of penetrated region. We present new results on the upper mantle velocity structure beneath Eastern Europe obtained from individual earthquakes for which seismic data has been collected during two passive experiments, TOR and SVEKALAPKO. Comparison with the earlier models describing the upper mantle velocity structure allowed to study lateral changes in the topography of the 410

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and 660 discontinuities. Variations in the average thickness of the transition region are thought to reflect variations in the mantle temperature. We cannot exclude non-thermal effects occurring in the Earth's mantle but the thickness of the transition zone may be a useful thermometer for indication of lateral temperature variations. The size of velocity jumps could be translated into chemical composition, mainly for olivine content at discontinuity.

Key words: upper mantle transition zone, 410-km and 660-km discontinuities, passive experiment, TOR, SVEKALAPKO.