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Applications of detailed 3D P-wave velocity crustal model in Poland for local, regional and global seismic tomography

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The 3D P-wave seismic velocity model was obtained by combining data from multiple studies during past 50 years. Data sources included refraction seismology, reflection seismology, geological boreholes, vertical seismic profiling, magnetotellurics and gravimetry. Use of many data sources allowed creation of detailed 3D P-wave velocity model that reaches to depth of 60 km and includes 6-layers of sediments and 3-layers of the crust. Purpose of this study is to analyze how 3D model influences local (accuracy of location and source time estimation for local events), regional (identification of wide-angle seismic phases) and global (teleseismic tomography) seismic travel times. Additionally we compare results of forward seismic wave propagation with signals observed on short period and broadband stations. National Science Centre Poland provided financial support for this work by NCN grant DEC-2011/02/A/ST10/00284.