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Complex model of the crust and upper mantle for the region of the South Asia - correlation between crustal and deep mantle structures.

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Combined analysis that involved models of the Earth crust and mantle for the region of the South Asia resulted in the following: subdivision of the crust of the region on Shan Tai, Kho Rat, Southern China, Indo-China, Taiwan, Sino Burma, Manila, Central part of the South China sea, Eastern part of the South China sea, Kalimantan, Truong Sa archipelago, Natuna, Sumatra, Java, Sulawesi, Timor, the Philippines blocks is mirrored in the depths of the Moho discontinuity, and in the depths of the bottom of the velocity layers that characterize velocity structure of the mantle and in velocity characteristics of these layers. Velocity profile of the each of the mentioned above blocks can be represented starting from the crustal bottom inwards the upper mantle. Let consider several largest blocks in terms of the average depths of velocity discontinuities (i.e. bottoms of the velocity layers), velocity characteristics displayed in maximal residuals and corresponding anomalies. Layers boundaries are defined as intersection with 1-d reference model. Areas with residuals >0.0 km/s are considered as high-velocity while areas with residuals <0.0 km/s are defined as low-velocity.

Indo-China block characterized by the following features: Moho depths [6] – 34 km, high-velocity layer of the seismic lithosphere – 62 km (>0.00 km/s), low-velocity layer in the upper part of the upper mantle – 500 km (-0.075 km/s), high-velocity layer of the transitional zone – 750 km (0.05 km/s), low-velocity zone of the discontinuity 1 – 800 km (-0.025 km/s).

Sino Burma: Moho at 38 km, low-velocity layer of the upper part of the upper mantle – 225 km (-0.125 km/s), high-velocity layer of the upper mantle – 650 km (0.15 km/s).

Sulawesi: Moho at 28 km, low-velocity layer of the upper mantle – 300 km (-0.15 km/s), high-velocity layer of the upper mantle – 650 km (0.15 km/s), low-velocity layer of the discontinuity 1 zone – 675 km (-0.025 km/s).

Velocity model of the South-Eastern Asia [1] was obtained by method of seismic tomography using methodology of the Taylor's approximation of the solution of the task of seismic tomography of the times of arrivals of P-waves developed by V.S. Geyko [2-4]. Solution is represented in series of horizontal and vertical sections. Vertical (latitudinal and longitudinal) sections represented to the 2500 km depths with 1 degree step in residuals relative reference 1-D model that was obtained due to solution of seismotomographic task for Eurasia. Horizontal sections are imagined as true velocities at depths from 50 to 2500 km with step 25 km.

Crustal model for the South Asia region [5] with resolution 1 on 1 degree was built using published interpretations of seismic profiles and receiver functions for this region. The model consists of the three layers of the solid crust. Besides depth to the boundaries of this layers, we provided average P-wave velocities in the upper, middle and lower parts of the solid crust.

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