nomena and its ecosystem is in good order. Note that the research are systematic and not selective, which can not reflect the environmental situation in general, but at the time of sampling.

On this point may be noted that there is a need for regular and thorough environmental monitoring marine and coastal areas of the lake (of course, this applies not only in the region), which should include a wide range of issues, ranging from enterprise monitoring and control of waste emissions and process waste, thermal and chemical pollution of waters to determine the intensity of self-purification, secondary contamination of biota and other issues.

References

Regional report on the state of the environment in Cherkassy in 2008. — DUONPS in Cherkasy region. — 2009. — 199 p.

Krasovsky G. Y. Space security monitoring water ecosystems using GIS technology. — Kiev: Intertechnolohiya, 2008. — 480 p.

Krasovsky G. Y., Petrosov V. A. Introduction to methods of monitoring the environment of space. — Kharkov: Aerospace University them. N. E. Zhukovskoho "KhAI", 1999. — 205 p.

Nikanorov A. M. Hydrochemistry: learning. Allowance. — Leningrad: Gidrometeoizdat, 1989. — 205 p.

Influence of surroundings features on the velocity structure of mantle under South-East Asia from data of seismic tomography

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The region of Southeast Asia is characterized by numerous micro-plates, which are separated by a complex system of subduction zones, marginal and back-arc basins, strike-slip boundaries and accreted terrains. The western part of Southeast Asia is comprised of three tectonic plates: the Southeast Asia plate, the Burma plate, and the Indo-Australian plate. The Pacific plate has influence on

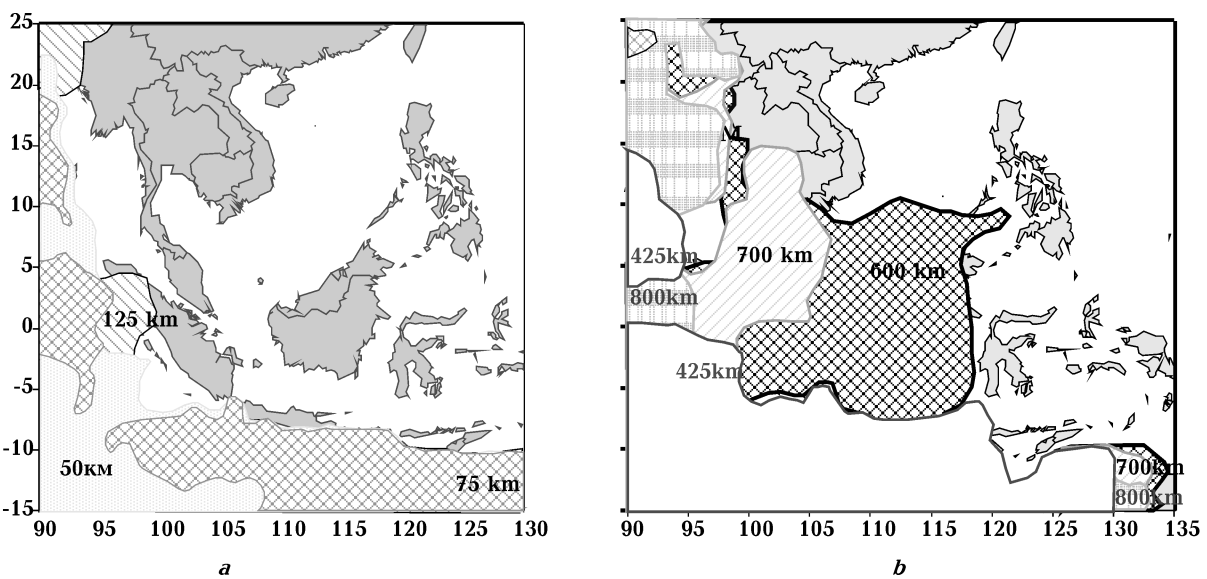

Fig. 1. Pattern of spreading of velocity boundaries in the mantle corresponding to the Indo-Australian Plate on the depth 50, 75, 125 (*a*), 425, 600, 700, 800 (*b*).

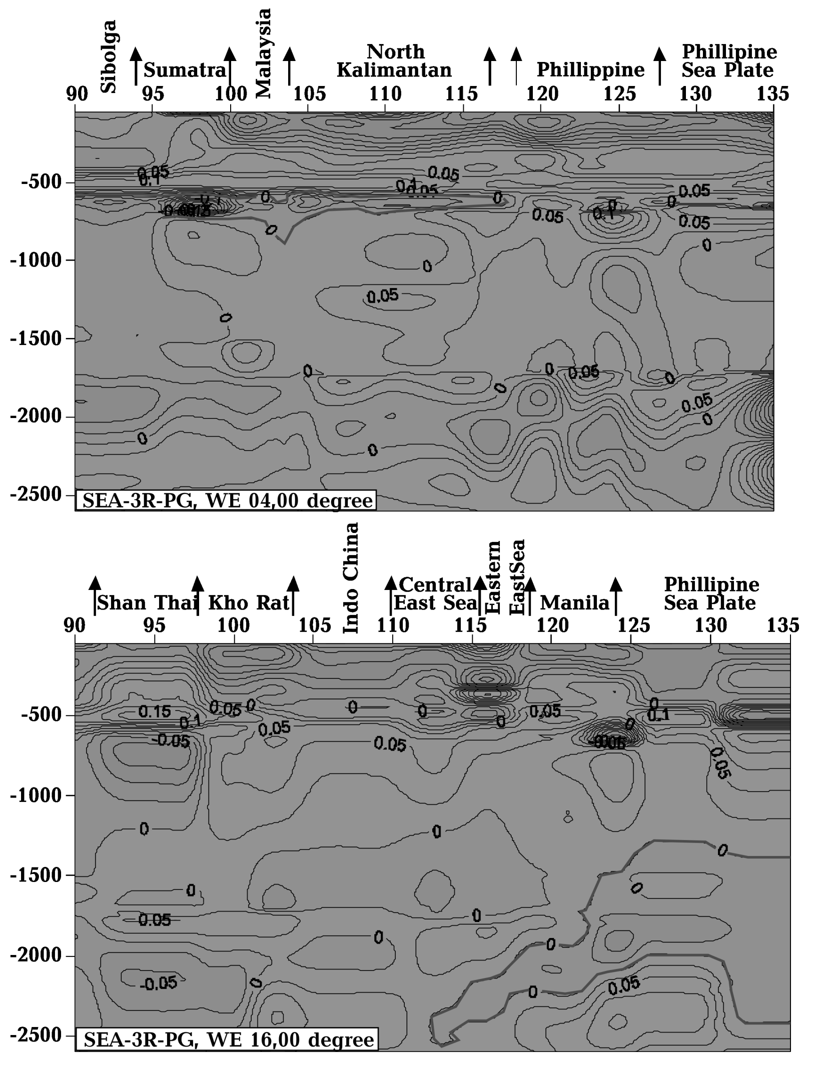

Fig. 2. The latitudinal cross-section of the 3D *P*-velocity model of mantle of the SE Asia.

east part. Tomographic methods can provide new information which can help to test tectonic models. The main objective of the research presented in this thesis is to improve our understanding about influence of surrounding structures on the velocity structure of mantle under South-East Asia of the on depths 50—2500 km. 3D *P*-velocity model of SE Asia has been obtained as a result of application of the method of Taylor approximation of solution of seismic tomography of *P*-waves arrival time introduced by V. S. Geyko [Geyko, Tsvetkova, 1989; Geyko, 1997; 2004). The solution is represented in a form of vertical sections (latitudinal and longitudinal) up to 2500 km depths with 1° spacing in residual in relation to one-dimensional referential model obtained as a result of seismic tomography analysis for Eurasia.

In obedience to our model there is prevailing influence on the structures of SE Asia of velocities structures, proper the Indo-Australian plate. The mantle of the Indo-Australian plate is characterized by a double-layer structure of upper mantle (heavy high-velocity seismic lithosphere and thin low-velocity layer), high-velocity transition zone of upper mantle, low-velocity layer of the zone-1 and quasi-homogeneous middle mantle. Each of layers has the features. Disparity of tectonic boundary of plate and boundary of distribution of low-velocity and high-velocity areas, corresponding to this structure, is thus marked (the boundary of velocity area is distinguished for residual 0.0 km/s to that at changing of sign of velocity heterogeneity) (Fig. 1). Maximal advancement of velocity layers of mantle structures of Indo-Australian plate — to 118° longitudes on a depth 600 km. Other there is business with the east outskirts of SE Asia. Boundary of mantle of the Philippine plate, distinguished on the boundary of velocity areas observed in a middle mantle and zone-1. So, Philippine plate is selected a sloping low-velocity layer, going from the side of the Philippine plate (1300—2000 to the depth 2400 km). The boundary of plate on a low-velocity layer (on depths 1400—2400 km) comes to 112° longitudes. Partly the boundary of the Philippine plate can be selected on completion of high velocities layer which goes down on the depths of middle mantle and reaches in a westward to 110° longitudes, and under Java to 108° longitudes (600—1400 km). In an upper mantle the boundary of the Philippine plate is expressed by changing of depth of bedding of bottom and top of velocity layers. About the degree of influence of velocity structures corresponding to the Philippine plate on the structures of Asia judging is difficult. It is fact that the tectonic boundary of plate coincides with the exit of low-velocities from a bottom mantle. The South-China Sea is the knot of joining of structures of velocities, going from a south (Indo-Australian Plate) and from a north (velocities structure of South China). The picture of mutual introduction of layers of velocities is observed in upper mantle and transitional zone of upper mantle with 112° longitudes to 118° longitudes, within the limits of 10—20° latitude North (Fig. 2).

References

Geyko V. S. A general theory of the seismic travel-time tomography // Geophys. J. — 2004. — **26**, № 2. — P. 3—32.

Geyko V. S. Taylor approach of the wave equation and the eikonal equation in inverse seismic problems // Geophys. J. — 1997. — **19**, № 3. — P. 48—68 (in Russian).

Geyko V. S., Tsvetkova T. A. On unigueness in solution of unidimensional inverse kinematik problem of seismic // Geophys. J. — 1989. — **11**, № 6. — P. 61—67 (in Russian).

On the problem of correlation between the faults of the Ukrainian Shield and mantle fault zones

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Fault ensembles of basement surface of the Ukrainian Shield (USh) have been analyzed by geological maps of Ukraine (9 maps, scale 1:500000—1:1000000, editors: O. Oleynic, 1978; Kalyayev, 1984; N. Krilov, 1988; D. Gurskiy, 2000; A. Kuzmin, 2002; D. Gurskiy, S. Kruglov, 2004; V. Kalinin, 2007; S. Kruglov, 2007) in the network of the problem [Starostenko et al., 2007].

Mantle faults of the USh and adjacent regions — zones of deep faults (lineaments) touching the surface of asthenosphere, according to [Sollogub, 1986] are “longitudinal” lineament B and NE zones, crossing upper mantle — G, D, E. Their geological-geophysical profiles are different, however these zones and trans-regional mantle sutures (H-Sm and D-Br) determine the structure pattern of Mohorovichich discontinuity surface (Figure).

Faults are systematized as circular extension diagrams of faults by each of maps. Diagrams of these maps equally well illustrate two known systems of faults — diagonal and orthogonal. Some other dependences of fault extensions are revealed on the diagrams for certain megablocks of the USh (see Figure).

Structural-paragenic approach [Rastsvetaev, 1987] adapted by us to the level of knowledge of Precambrian permits to interpret “structural-forming” directions. They have been obtained methodically independently though coincide with strikes of the mantle fault zones of USh. Such coincidence is observed relative to the nearest deep zones, dominating in corresponding parts of the USh. The mantle zones of NE strike G, D, E differ somewhat by strike azimuth, one can observe on the diagrams of