

PLUTONIC STRUCTURE OF THE LITHOSPHERE IN THE RUSSIAN FAR EAST AND ADJACENT AREAS (CONTINENT-OCEAN TRANSITIONAL ZONE)

SHEVCHENKO B. F., Institute of Tectonics and Geophysics, Far East Branch, the Russian Academy of Sciences, Khabarovsk, Russia

Based on the scheme of complex geophysical zoning the structure of the lithosphere is determined. The scheme is compiled by using gravimetric, magnetic, seismic, seismotomographic and heat flow data. The considered block-layered model of the region under study bears on depths to Moho surface (15-46 km) and to a surface of the thermal asthenosphere (25-150 km and more). From the blocks the data are derived on the types of velocity sections (6 types). The types of are derived sections of the distinguished lithosphere blocks have definite lateral zonality. The revealed zonality of the lithosphere is one of the indications showing that this area is similar to dissipative structure (according to J. Prigozhin). Within the region the spatial periodicity is revealed which is displayed in diverse properties. Mechanical stresses are observed in the base of the lithosphere, and geochemical heterogeneities of the crust are diffident. The considered area includes diverse geological structures of different age. The plutonic boundaries between the structures are reflected as boundaries separating the corresponding blocks which are traced to 70 km depths and more. The subhorizontal interfaces of blocks, their inclined boundaries permitted to make conclusions about the nature and direction of horizontal displacements. For example, the plutonic boundary of juncture of the Siberian plate with Paleozoic Mongolo-Okhotsk folded mobile belt has a complicated thrust and underthrust nature. The plutonic boundary between the Hokkaido-Sakhalin (Cenozoic) and Sikhote-Alin (Mesozoic) folded systems passes along the western coast of Sakhalin. It bears the character of the left-lateral shear traced down to 70 km depth and more. In its northern part the plutonic boundary is represented by the underthrust. The revealed deep structure can be explained from the view of plum-tectonics hypothesis.