

STRUCTURAL IRREGULARITIES IN THE LITHOSPHERE OF THE BUREYA MASSIF (RUSSIAN FAR EAST) AND GEOMECHANICAL MODELS

1Maslov, L. A., 2Shevchenko, B. F., 1Computing Center Far East Branch Russian Academy of Sciences, Khabarovsk, Russia; 2Institute of Tectonics and Geophysics Far East Branch Russian Academy of Sciences, Khabarovsk, Russia

Structural irregularities of the lithosphere produce a stress field that can be a source of many tectonic events in the region. It is shown that the maximal shear stress concentrates in the area of the maximal gradient of a layer thickness. In a multilayered model, superposition of stress fields from single layers takes place. Depending on a model, there could be the areas of a very high stress concentration. The 2-D «instant» stress field for the Bureya massif (southern part of the Russian Far East) has been evaluated. According to this result, the area of extension corresponds to the Khingan-Olonoy Mesozoic volcano-tectonic structure. In its northwestern part, the areas of Quaternary basalt are located. The area of compression corresponds to the Bira-Coton upper Cretaceous granite and granodiorite structure. Evaluation of tectonic stress field is necessary for estimation of an engineering construction hazard. The area under consideration is seismically active. At the same time, in this area several large engineering constructions such as railroad tunnels are located. As railroad tunnels produce a stress field in the Earth's crust, these stresses, interacting with the tectonic stress field can provoke and enhance for such a dangerous tectonic event as earthquake. It is shown that for correct estimation of an «engineering construction hazard» it is necessary to take into consideration tectonic and engineering stress fields nonlinear interaction.