

## **Exploration Gravity - the Novelty of Processing and Interpretation**

Vashchillov, YU.YA., Sakhno, O.V. North-East Interdisciplinary Research Institute Far East Branch of the Russian Academy of Sciences, Magadan, Russia

The use of detailed gravity for prospecting of deposits is based on the construction of 3D density models and their geologic interpretation. On the basis of these models theoretical maps of the gravity anomalies are compiled. These maps have the minimum error comparatively to the initial maps in topography reduction and Bouguer's reduction. Density heterogeneities are approximated by system of vertical prisms with triangle inclined upper and lower basements. Incorrectness of Bouguer's reduction on the sea, particularly on the shelf with relatively large depths of the sea bottom, has resulted into necessity to introduce the topogeodesic correction with the replacement of the water stratum by the rocks with given density, and with the use of mentioned system of vertical prisms. 3D density and geological models are composed on the ore and supposed oil and gas prospective territories and in the water areas of the former USSR. In the Markovskaya basin, Chukotka, the geological model with the age classification of rocks up to the stages is composed as a system of vertical sections and horizontal tomographic sections at the depths of 1.5, 3.5, and 5 km. It was in contradiction with the previous seismic data, but further it was completely by the drilling supported results. On the Omolon mass, north-eastern Russia, it was shown that all gold-ore occurrences and deposits were in structures with the rock density of  $2660-2710 \text{ kg/m}^3$  at the depth of 1.5-2.0 km. These may be the Lower- and Upper-Paleozoic granites and granodiorites, Archean plagiogranites, biotite-amphibole gneiss and other rocks.