



The detailed gravitational field model for Antarctica

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The gravity field of Antarctica is of great interest of many researchers. For its study, land and marine observation was carried out on the continent as well as on the adjusted offshore water. But a number of the available points prohibit making a common map of the gravity field of Antarctica or its parts, excluding the territory, where by american geophysicists was made airgravity survey.

So, we can only produce its models on the base of spherical expansions.

At the same time, there are the gravity field models calculated by altimetry data. Such models are not covered regions further south to 83°S. Its comparison with the results of on-board survey shown that there are systematic discrepancy in some regions. This discrepancy may achieve ± 20 mGal.

At present there are a number of Earth's gravity field models, such as EGM-96, JGM-3, GRIM5-S1, GRIM5-S1CH1, PGM2000A.

We calculated Antarctic gravity field by these models and compare the results with the available measured points by statistical methods. Furthermore, we estimate discrepancy between different models.

This comparison shown following:

1. mean discrepancies between calculated models are within -0.044 ? $+0.019$ mGal;
2. mean discrepancy between final calculated model and land measured points is 3.23 mGal and RMS equal ± 15.31 mGal;
3. mean discrepancy between final calculated model and the results airgravity square survey is nearly 25mGal and RMS equal ± 13.34 mGal.

Such results allow to assume that the comprehensive gravity field model (step 15) obtained by us is perfectly adequate and good for use for solving regional geophysical problems.