

Problem of representation transforms of a gravitational field in various software.

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During processing gravimetric data in various programs often there is a problem of incompatibility of formats of initial and entrance data for used software. At the same time there are new methods of processing data, which allow to use earlier received gravimetric data them transformants for the decision of concrete geology-geophysical tasks. Thus it is important to keep up that at converting files from one format in another; there was no distortion of the information that, in turn, can lead to incorrect results of processing and interpretation of data.

The example of repeated processing gravimetric data - the State Maps of a gravity of M 1:1000000 is considered. A format of data - text files DAT, system of coordinates - projection Gauss-Kruger. At work software TRANSF (BRGM), a format of entrance data GRD, in coding ASCII is used. Pre-processing data includes following stages:

1. Conversion of latitude - longitude grid points into the GIS projection system.
2. Reinterpolation on a kilometric grid of the Bouguer anomaly map.
3. Recalculation in format GRD, with application Surfer (Golden Software).

As initial data represented a set of files for adjacent sites, there are two ways of preprocessor preparation of data:

1. Processing of each of sites separately, then construction of the general map, by overlapping results.
2. Gathering all sites in a total area.

One of lacks of the first variant is duration of preparation of the data, connected with repeated performance of the same operations for various sites that in turn leads to increase in probability of errors. Also, at transformation of a field, in boundary areas undesirable effects (for example effect Gibson) which lead to loss of data.

Using the second variant, it is possible to avoid lacks of the first, having reduced time of performance of a task in view and to reduce a computing error.

Initial data represent gravimetric maps: sheets O49, O50, O51, O52, O53, P49, P50, P51, P52, P53, in a digital kind. We create a new text file; in it is written down the information from all initial files. The received file is process able by means of Surfer (Golden Software); on an exit we have a file of format GRD. We receive the common map of a gravitational field (fig. 1).

At a following stage by means of program CONVFLGK (BRGM) it is convertible data in new system of coordinates:

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Transverse Mercator  
WGS84  
FE = 1500000  
FN = 0  
Central meridian = 123  
Scale factor: 1  
Latitude origin: 0
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As a result we receive a new file of data. However as a result of transformation of coordinates empty areas were formed, values of a field in them entered the name equal $1.70141 \cdot 10^{38}$ ("zero") that did not allow using program TRANSF. Instead of "zero" we write down values of a field from the nearest boundary area. As a result we receive rectangular area of values not containing "zero".

In system of coordinates of value on X and Y enter the name in meters, in our case it is necessary to recount in a kilometric grid. By means of program Surfer it is calculated new GRD a file.

After performance of all listed above stages of preparation we receive the file of format GRD - necessary for the further data processing in used GIS.

After processing also it's possible to transfer obtained data in an initial format, carrying out the described actions upside-down.

Described above operation do not increase an initial error. The computing error on each of stages much less than common error σ that on the other hand increases the size of files.

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