Geophysical Research Abstracts,
Vol. 10, EGU2008-A-12245, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-12245
EGU General Assembly 2008

New map and grid of compiled magnetic anomalies from the Arctic Ocean and adjacent continental part of the Russian Federation

T. Litvinova (1) and V. Glebovsky (2)

(1) All Russian Geological Research Institute (VSEGEI), St Petersburg, Russia, (2) VNIIOkeangeologia, St Petersburg, Russia (Tamara_Litvinova@vsegei.ru)

New regional magnetic anomaly compilations of the Arctic Ocean and adjacent continental part of the Russian Federation provide a unique view on the history and geological structure of one of the most difficult of access, poorly known and perspective for mineral resources area of the Earth. It allows the correlation of prominent features on conjugate landmasses to the Arctic shelf in more details than early compilations (Verhoef et al, 1996; Maschenkov et al. 2001; Kovacs, Glebovsky, 2002, Makarova et al, 1978, Litvinova, 2000, 2004, etc.).

New compilation within the Arctic Ocean is based on practically all available aeromagnetic historical and recent information collected by both the US Navy and Russian organizations (Polar Marine Geological Expedition, Head Department of Navigation and Oceanography). This information was combined, totally reprocessed, adjusted and leveled in VNIIOkeangeologia under several international projects and next loaded into the joint database for converting to grid with cell size 5x5 km.

The continental part of the Russian Federation in new compilation is presented by magnetic grid with the same cell size (5x5 km) that was created in VSEGEI (2004). This grid is based on results of regular aeromagnetic surveys at scale 1:200 000.

The final magnetic grid (5x5 km) of the whole study area was calculated by means of leveling and unification of gridded data sets compiled in VSEGEI and VNIIOkeangeologia.

We hope the resulting magnetic anomaly map and grid of the Arctic Ocean and adjacent continental part of the Russian Federation will prove to be significantly more detailed and reliable both for regional studies and for the planning of new detailed surveys.

They allow solving a number of regional geological issues, as for instance:

- To specify a character of magnetic anomalies distribution within the area of continental shelf and adjoining land;

- To study the area in more detail based on joint analysis of magnetic anomaly field with other geophysical and geological data and to specify its tectonic and geological structure in regional scale;

- To organize constantly filled up database in a mode of monitoring.

Final digital magnetic anomaly map and grid can be used for both revealing dynamics of geological processes, and for development and realization of strategic questions connected with the study and rational use of the Earth's interior.

The natural observations realized in a summary map, provide reception of the many-sided analytical and synthesized interpretation. The main task in complex interpretation is an establishment one-for-one conformity and dependences between results of interpretation of geophysical fields and the geological data on a structure of an earth's crust.

The analysis of map ÀÌP allows to make typing of abnormal structures on amplitude - to frequency characteristics and to obtain the data for tectonic division into districts of extensive territories with various types of a geological structure.

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