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Features of the distribution of magnetic anomaly sources in the eastern part of the Barents Sea

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Despite the close attention to the northern Russian waters of many scientists, there are still a lot of unknowns in the ideas about geological structure and history of the development of the Barents Sea region, the existing tectonic schemes differ not only in details.
An important element of geological and tectonic models is information about the igneous complexes of the sedimentary cover and the foundation, which can be obtained by analyzing the magnetic field. We have carried out a generalization of marine magnetometric surveys in a volume of more than 50,000 kilometers, which allowed us to take a fresh look at the structure of the magnetic field of the eastern part of the Barents Sea. Due to the high accuracy and detail of observations conducted in the course of complex areal geophysical surveys in the fine structure of the magnetic field, a number of features have been identified, among which the most interesting are high-frequency isometric and linear anomalies with amplitudes the first nT.
To learn the high-frequency component of the field, based on the Fourier transform, and the newly developed methods for analyzing and estimating deep sources using wavelet spectra obtained with Poisson wavelets.
According to the results of the analysis of the complex of geological and geophysical materials with emphasis on magnetometric data, the following conclusions were made:
1. magmatic formations of the sedimentary cover, which represent the centers of magmatic activity (magmatic cameras and volcanic apparatuses), sills and dykes, are recorded by high-frequency magnetic isometric and linear anomalies. In the sedimentary cover of the eastern Barents Sea, igneous formations are ubiquitous;
2. the preferential depths of the upper edges of magnetoactive bodies, estimated by various methods, do not exceed 2 km and can be found in rocks of the Cretaceous age, indicating the potential possibility of not only Mesozoic, but also Cenozoic tectonic-magmatic activity;
3. dikes recorded by linear positive magnetic anomalies of predominantly northwestern strike have a length of tens of kilometers and are distributed both near the islands of Franz Josef Land and in the central part of the water area.