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Secular variations of the main geomagnetic field within the dipole model of its sources.

I. Demina, Yu. Farafonova, L. Nikitina
SPbF IZMIRAN St.-Petersburg Russia (e-mail irina_demina@mail.ru, fax +78123105035)

The authors suggest the dynamic model of sources of the main geomagnetic field. This paper is to consider global and local anomalies of secular variations as a result of time change in sources parameters. The model consists of the set of dipoles, most completely covering the spatial distribution of the main geomagnetic field for each epoch within the 100-year interval (from 1900 to 2000) with the 5-year time step. Up to now 12 more dipoles whose lifetime is more then 100 years and 6 dipoles exiting within 60-80 years are included into the model besides of the main one.

Dipoles obtained differ in magnitude within two orders and are located at different distances from the Earth's center. The least powerful of them coincide with the core-mantel boundary. The parameters of these sources are observed to be continuously changing with time within the 100-year interval considered, which made it possible to consider the influence of different level sources on the spatial distribution of secular variations.

The global anomalies of secular variations were shown not to be due to the change of a single dipole but are the result of the superposition of the dynamics of several sourses including the least powerful ones. At the same time, the formation and the decay of local foci of secular variations depend on dynamics of one or two dipoles. Thus formation and decay of the Caspian focus and the following formation of the European one can be shown to result from the dynamics of two sources of the third order of magnitude. The same holds for local anomalies of secular variations in magnetic observatories records. We believe the sources obtained to be representative of the real physical processes within the liquid core.

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