

STUDY OF SHORT PERIOD GEOMAGNETIC VARIATIONS ON BASE OF MAGNETIC SATELLITE SURVEY DATA

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Numerous investigations of the secular variations executed in XX century on the base of magnetic observatory data surely showed that temporal changes of the geomagnetic field are described with a few spatial structures of different dimensions and different living times. Two types of the secular variations were separated over 100-yr interval. The characteristic time of the first type of variations exceeds 100 years and they are away from our consideration. The periods of other variations are about 60-years. The changes of geomagnetic field intensity in a few foci located in middle latitudes account for 100-150 nT/yr. Unfortunately these results have predominantly qualitative character due to insufficient number and ununiform distribution of magnetic observatory data.

The satellite surveys which are carried out permanently from the beginning of XXI century provide uniform covering of the Earth's surface with precise measurements of the geomagnetic field. Using only the satellite survey data we revealed two quickly-developed anomalies of the secular variation. Their foci located in South Asia and Central part of Indian Ocean correspondingly. The spatial structure of the anomalies was determined with high precision and characterized with isometric form and dimensions of about 5-6 thousand km. For eight years of satellites missions the field intensity grew on several hundreds nT. It could be supposed that the appearance of new foci was accompanied with sudden changes of the secular variation (jerks) which took place in this region in the middle of the last decade of XX century. These growing foci are supposed to be the beginning stage of a 60-yr variation.

Secular variations of the geomagnetic field

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