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About long-period Pulsations of Earth's magnetic Field before the powerful Flares

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It was shown earlier that before the powerful flares one can observe the long-period ($T > 20$ min) quasi-periodic fluctuations in the earth's magnetic field [1]. Fluctuations mentioned are caused by variations in the ionizing Sun radiations. At the same time fluctuations with the analogous periods are inherent in the microwave radiation of the Sun [2]. The similarity of the periods of the fluctuations observed in the earth's magnetic field and microwave solar radiation and their dynamics before the solar flares make it possible to speak about the connection of similar fluctuations. Thus, new prospects are opened in a study of the factors of space weather.

The investigations conducted by us relied on the Catalog of the numerical data of the magnetic observatories of Russia, for period 1984-2000 [3]. Data of H-component of earth's magnetic field are selected for the periods of time, including a series isolated powerful solar flares on different phases of the 22nd and 23rd solar cycles. Spectral processing of data (on daily intervals) is carried out for the purpose to reveal the periodic components with $T > 20$ min.

Analysis confirmed the results indicated above: 1-2 days prior to powerful solar flares there is the growth of the long-period pulsations of the H-component of earth's magnetic field. Such studies, in our opinion, offer possibilities as to learn more about the physical picture of phenomena on the route the Sun- Earth, as to expand the range of the forecasting methods of geoeffective solar phenomena.

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References.

1. Malygin V.I., Snegirev S.D. Planet Space. Sci. 1985. V. 33, No. 11. P.1251-1257.

2. Kobrin M.M., Korshunov A.I., Arbuzov S.I., Pakhomov V.V., Fridman V.M., Tikhomirov Yu.V. Solar Phys. 1978. V. 56. P. 359-373.

3. Amiantov A.S., Zaitsev A.N., Odintsov V.I., Petrov V.G. Variations of Earth's magnetic field. – M.: Stroiart, 2001.- 52.