

THE APPLICATION OF THE INVESTIGATIONS OF SOLAR – GEOMAGNETIC DISTURBANCES

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The number of sunspots, that increase and decrease in unequal cycles, correspond to the number of registered magnetic storms on the Earth. The Sun's plasma streams that shoot out from the sunspots cause an increase in the solar winds and doing so they affect the geomagnetic field and the Earth's atmosphere. These investigations represented the nature of the Sun's and Earth's magnetic field, their mutual connection and anomalies. One example of such a causal connection was the most extreme magnetic storm (Big Magnetic Storm) that has occurred during the last two Sun Cycles.

The results of different solar, geophysical and climatological researches, show connection between solar geomagnetic activity changes (SGMA), electromagnetic environmental field changes and meteorological parameters (MP) changes. Satellite researches show that during registration of intensive magnetic storm class, on sensors are registered changes of density and temperature of upper atmosphere levels.

In each of mentioned Big Magnetic Storm, are observed groups of periodical, aperiodical or irregular geomagnetic field variations. That is shown by groups D_{st} and D_i geomagnetic field variations. Analyze of structure geomagnetic field variations is done on several European observatories of the middle geomagnetic latitude.

For months and days when intensive solar storms and intensive magnetic storms are registered, structure of meteorological parameters changes will be analyzed. Here will be shown the hourly distribution of air temperature for magnetic quiet days (Q- days) and for magnetic disturbed days (D- days), in those months when the Big Magnetic storms were registered. Assignment of hours values of temperature air and Sun's interval number, before, during and after the SGMA disturbance will be observed.

The results of analyzes of the SGMA indices changes and meteorological parameters, will be applied in researching process of meteorological weather situation arising. The way how the SGMA indices changes are induced in the structure of the meteorological weather situation. The meteorological situation has the influences on dynamic and structure of changes in the biosphere.

On example of Big Magnetic Storm in October (from 28, October, 28 until 02, November 2003) is shown how the changing solar activity and Earth's Magnetic Field and how these solar-geophysical events affected on equipments for navigation, instruments and equipment, on work of different satellite systems and devices.

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