

[EE] Evening Poster | P (Space and Planetary Sciences) | P-EM Solar-Terrestrial Sciences, Space Electromagnetism & Space Environment

[P-EM11] Effects of recurrent storms: from the heliosphere to the atmosphere

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Time intervals of declining solar activity are dominated by so-called recurrent storms. They are produced mainly by high speed streams (HSS) of the solar wind coming from coronal holes. A HSS is preceded by a co-rotating interaction region (CIR), where the fast stream interacts with slow solar wind. Recurrent magnetic storms are weak but they cause intense chorus activity, which leads to the acceleration of the magnetospheric electrons up to relativistic energies. These effects are comprehensively investigated now by the Van Allen and ERG space missions. Strong variations of interplanetary electric field in HSSs and precipitation of magnetospheric particles at middle and high latitudes disturb the ionosphere, thermosphere and atmosphere for several days or even weeks. This results in significant energy deposition, which is even greater than strong but short transient storms produced by CMEs. The role of recurrent storms in disturbances of the ionosphere, thermosphere and atmosphere has been under intense investigation during the last several years. Presentation of recent experimental results from space missions, such as modern Van Allen Probes, ERG, COSMIC, Swarm etc., ground-based networks as well as prediction of models on these subjects are encouraged.

[PEM11-P02] GEOPHYSICAL COMPLEX OF THE ISTP SB RAS FOR MONITORING OF EFFECTS OF RECURRENT MAGNETIC STORMS IN THE EARTH'S ELECTROMAGNETIC FIELD

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The Institute of Solar-Terrestrial Physics RAS SB (Russia, Irkutsk) has got a hardware-software complex for monitoring of electromagnetic fields at high and middle latitudes. This complex consists of the following ground based stations:

1. Magnetic Observatory "Irkutsk", founded in 1886, is dedicated to experimental investigation of the Earth's magnetic field by continuous three-component measurements of both absolute values and variations of the geomagnetic field in the frequency range between 0 and 5 Hz. The observatory is equipped by the following magnetometric instruments: the flux-gate declinometer-inclinometer for measurement of declination and inclination, the proton magnetometer for measurement of the total vector, and the three-component flux-gate magnetometer for measurement of H, D, and Z component variations.

2. Norilsk Complex Magneto-ionospheric Station is situated on the north of Krasnoyarsk region, and it works since 1962. At this station, there is a vast complex of geophysical instruments for absolute and variational observations of the Earth's magnetic field. This complex consists of a declinometer-

inclinometer, a three-component flux-gate magnetometer, and a proton magnetometer. Detection of geomagnetic pulsations is carried out using the induction nanoteslameter with 10 Hz sampling frequency of three channel scanning. Moreover, this station is equipped by a digital ionosonde, an oblique sounding station, an LFM probe, a rhyometer, and a cosmic ray monitor.

3. Baikal Magneto-Telluric Observatory "Uzur", located on island Olkhon (lake Baikal, 350 km from Irkutsk), is operating since 1962. Continuous twenty-four-hour all-the-year-round observations of low-frequency horizontal electric fields (telluric current, 0.001–10.0 Hz frequency range) and three-component measurements of magnetic components of geomagnetic pulsations (induction nanoteslameter, 0.001–10.0 Hz frequency range) are performed at this station. Moreover, measurements of vertical component of electric field of geomagnetic pulsations are performed under special programs (vertical measuring line is in Baikal waters). In 2008 the observatory was equipped by an advanced instruments and a standard software and started detection of eight component of the electromagnetic field of the Earth in a range of frequencies 0 - 200 Hz provided by a magnetotelluric station LEMI-418: three components - flux-gate magnetometers, three components - geomagnetic pulsations induction magnetometers, two components of an electric field - an instrument of terrestrial currents.

In the report, some scientific results, obtained from observational materials at these observatories, are presented. In this part, the reconstructed secular variation is described of H, D, Z components of the Earth's magnetic field according to the data of the oldest Siberian Magnetic Observatory "Irkutsk". The results are shown on the base of the unique experiment at Baikal observatory Uzur on synchronous measurements of 8 component of an electromagnetic field of the Earth at station LEMI-418 and absolute values of a magnetic field of the Earth in the Baikal rift zone. Besides, some extraordinary scientific results of simultaneous observation of geomagnetic pulsations and variations of ionosphere parameters in auroral latitudes at Norilsk station are stated here.

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