



Radiation Environment at LEO in the frame of Space Monitoring Data Center at Moscow State University – recent, current and future missions

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Radiation Environment of Near-Earth space is one of the most important factors of space weather. Space Monitoring Data Center of Moscow State University provides operational control of radiation conditions at Low Earth's Orbits (LEO) of the near-Earth space using data of recent (Vernov, CORONAS series), current (Meteor-M, Electro-L series) and future (Lomonosov) space missions. Internet portal of Space Monitoring Data Center of Skobeltsyn Institute of Nuclear Physics of Lomonosov Moscow State University (SINP MSU) <http://swx.sinp.msu.ru/> provides possibilities to control and analyze the space radiation conditions in the real time mode together with the geomagnetic and solar activity including hard X-ray and gamma- emission of solar flares. Operational data obtained from space missions at L1, GEO and LEO and from the Earth's magnetic stations are used to represent radiation and geomagnetic state of near-Earth environment.

The models of space environment that use space measurements from different orbits were created. Interactive analysis and operational neural network forecast services are based on these models. These systems can automatically generate alerts on particle fluxes enhancements above the threshold values, both for SEP and relativistic electrons of outer Earth's radiation belt using data from GEO and LEO as input.

As an example of LEO data we consider data from Vernov mission, which was launched into solar-synchronous orbit (altitude 640 – 830 km, inclination 98.4°, orbital period about 100 min) on July 8, 2014 and began to receive scientific information since July 20, 2014. Vernov mission have provided studies of the Earth's radiation belt relativistic electron precipitation and its possible connection with atmosphere transient luminous events, as well as the solar hard X-ray and gamma-emission measurements. Radiation and electromagnetic environment monitoring in the near-Earth Space, which is very important for space weather study, was also realised during the Vernov mission.