HF waves and energetic plasma particle monitoring as a diagnose tool of the of ionospheric plasma disturbances.


(1) Space Research Center PAS Warsaw, Poland
(2) NPEMKI, L-19992 Medzhov, Russia.
(3) IFP SAS, 84353 Kosice, Slovakia.

Global distribution of HF emission in the ionosphere in the frequency range 0.1-15 MHz. The spectral intensity was integrated at night time 30.03.1994 during quiet condition and from 2 to 6.04.1994 during strong geomagnetic disturbances, recorded by SORS-1 instrument on board the Coronas-I satellite. The resolution is 5x5 deg; the units are DB/sr. It is evident that in the main phase of the geomagnetic storm. In the area over which the observed enhancement of HF noises during geomagnetic disturbances seems to be larger than for quiet conditions, the observed intensities of these noises are practically at the same level. In the auroral region at the longitude large than 150 deg the local enactments of radiations seems to be driven mainly by the natural particle precipitations.
Figure presents the CORONAS-I satellite data about the near-equatorial proton flux registration. The altitude is H=500 km. The energy of protons is E=1.2 MeV. The upper figure corresponds to the disturbed period of geomagnetic activity. The lower figure – to quiet period of geomagnetic activity. It is visible that flux increased in the geomagnetic disturbances time. This is additional argue that one source of equatorial protons is radiation belt (current ring).