

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

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The electromagnetic emission in the topside ionosphere has been investigated since first satellites were located on the orbits. The HF measurements can be used to diagnose the different electron plasma waves as well as the electron ionospheric density. Strong wave activities associated with beams are manifested by VLF and HF modes particularly in the turbulent area of ionospheric plasma region. On the other hand pumping the electromagnetic waves from ground to the ionosphere and penetration of energetic particles from radiation belts can in consequence disturb top-side ionosphere and create over the industry area the turbulent region of ionospheric plasma. The aim of this paper is to discuss the morphological properly and describe the global distribution of energetic proton ( $E_p=55$  keV - 30 MeV) and electron ( $E_e=20$  keV - 1.2 MeV) fluxes and HF noises in frequency range 0.1 - 15 MHz gathered on the board of CORONAS-I, ACTIVE satellite. The correlations of local changes of the HF and high energetic particle distribution are discussed. The relations between the distribution of HF ionospheric plasma emission and energetic particle precipitation pattern can permit to understanding physical processes in ionosphere driven by the natural as well as the artificial sources. The described above analyze can be used in consequence as a tool for monitoring the Space Weather Effects Associated with the Earth's Ionosphere