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Response of topside ionosphere to man-made electromagnetic emissions

Ewa Slominska (1), Hanna Rothkaehl (1), Jan Slominski (1), and Grzegorz Wiktorowicz (2)
(1) Space Research Center PAS, Warsaw, Poland (ewa@cbk.waw.pl), (2) Warsaw University, Department of Physics

Investigation of electromagnetic measurements in the VLF range, obtained by DEMETER satellite revealed that terrestrial navigational stations are clearly "visible" in the ionosphere. Statistical studies were performed in the frequency range between 10kHz and 20kHz for one component of electric and magnetic field. We used data collected with ICE and IMSC instruments placed on-board DEMETER.
This first satellite from the CNES MYRIADE micro-satellite series was launched on a polar orbit in June 2004 and provides permanent in-situ observations of ionospheric plasma parameters at the altitude of $\sim$700 km. As there are now more than five years of operational data a statistical study on both, the bulk ionospheric parameters and electromagnetic emissions, is possible. Since, statistical analysis have shown how easily are detectable man-made signals in the ionosphere, it has implied further studies on other plasma parameters.
Using Langmuir probe experiment ISL ("Instrument Sonde de Langmuir") we develop global maps for electron temperature and density. Data are represented in geographic coordinates and averaged over one-month period. We present comparison analysis, that give the statistical background for further studies of noises occurring in the upper layers of ionosphere.