



Topside HF wave diagnostics on board COMPASS satellite and ground-based LOIS radar facility as a novel tools of ionospheric plasma diagnostics

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To understand the property of solar terrestrial environment and to develop a quantitative model of the magnetosphere-ionosphere-thermosphere subsystem, which is strongly coupled via the electric field, particle precipitation, heat flows and small scale interaction, it is necessary to design and build new generation multipoint and different type sensor diagnostics. Ground based multi frequency and multi polarization LOIS clusters antennas and multi point space born plasma diagnostics should be helpful in achieving to solve problems of space physics and described long term environmental changes. The new design radio spectrometer on board COMPASS satellite was designed to investigate the still largely unknown mechanisms which govern these turbulent interactions natural and man-made origin. Future simultaneously investigation and monitoring of Earth environment by the LOIS facility will be coordinated with space borne low orbiting experiment. Therefore the main purpose of this presentation is to describe new advanced technics of diagnose the ionospheric environment and show the scientific challenges of COMPASS and LOIS experiment. The real-time access to gathered data will create the possibility to improve quality of service of traditional ionospheric as well as trans-ionospheric systems. It will be emphasize the description of electromagnetic property of near Earth environments in HF range as well.