

Novel deep-space radar systems and topside HF wave measurements as new sources of data for Space Weather services

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To understand the properties of the 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 multi-point and multi-type sensor diagnostics, as the LOFAR-LOIS system. Ground-based multi-frequency and multi-polarisation netted radio and radar facilities and observation clusters in space will be helpful to find solutions to problems in space physics and to detect long-term environmental changes. The innovative radio spectrometer on board the COMPASS satellite was designed to investigate the still largely unknown mechanisms which govern these turbulent interactions of natural and man-made origin. Future simultaneous investigation and monitoring of the Earth environment by the combined LOIS-LOFAR system will be coordinated with space-borne low orbiting experiments. Real-time access to such high-resolution, multi-region data is likely to improve the quality of different types of space related services.