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Radio data and associated tools prospective at CDPP

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Abstract

The CDPP (french data center for plasma physics) is hosting a large database of radio data (ISEE-3, Wind, Viking, Interball, Cluster, Ulysses, Cassini, STEREO, etc). Although some of them can be accessed and studied through the AMDA (Automated Multi Dataset Analysis) tool, these data need specific display and analysis tools. We are thus conducting a prospective study to evaluate the needs and the possible forms of a radio data analysis tool.

The radio data usually consists in electric spectral densities measured on a dipole antenna. Depending on the receiver design and on the electrical antenna configuration, the total spectral flux density of the wave can be retrieved, as well as the polarization of the wave, the direction of the k-vector, and the apparent angular size of the source. Spectral flux densities and polarization can be plot in any AMDA-like tool. However, the direction of arrival and apparent angular size of the source can be used to build radio maps for which new tools have to be developed. Multi-spacecraft (or simply multi observer, if we include ground based radio observations) also imply the development of basic tools such as a time-of-flight triangulation tool. Links to any other relevant data sets (plasma data, auroral images, auroral indices, magnetic field models, solar wind data, solar wind models, propagation solar wind simulation results) shall also be considered in terms of interoperable access. This tool will eventually be available through the Plasma Node of IDIS (Integrated and Distributed Information System) to be developed inside the EUROPLANET RI project.