



First results of the DSP 1 wave instrument STAFF-DWP; examples of combined Cluster-DSP wave studies

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The wave instrument onboard the equatorial spacecraft (TC 1) of the Double Star project consists of a combination of two instruments which are heritage of Cluster mission: the Spatio Temporal Analysis of Field Fluctuations (STAFF) experiment and the Digital Wave-Processing experiment (DWP). The STAFF three-axis search coil magnetometer measures magnetic fluctuations at frequencies up to 4 kHz. It provides waveform data up to 10 Hz plus some snapshots up to 180 Hz. DWP provides different onboard analysis tools that are mainly a digital Spectrum Analyser to fully characterise electromagnetic waves in the frequency range 10 Hz- 4 kHz and a particle correlator linked to the PEACE electron experiment. Unfortunately the boom holding the experiment antenna failed to deploy, which means interference from the spacecraft systems is very high. Even so, DSP encounters intense waves that can be analysed. Some wave results will be presented that show the capabilities of the experiment. Emphasis will be given to the comparison between DSP and Cluster. Intense narrow band whistler mode waves observed in the magnetosheath, known as lion roars are studied. The characteristics of lion roars observed during a one month period are reported. The maximum intensities appear higher than reported by most previous studies. During periods when Double Star and Cluster were in the magnetosheath at the same time, the characteristics of lion roars observed at the two locations are compared. The role of intense ULF waves observed at the magnetopause and the comparison of their characteristics at high and low attitude is one of the main objectives of the combined DSP-CLUSTER mission. In the time period February-May 2004, 21 coordinated magnetopause crossings have been identified and some results relative to their intensity and spectral power

law will be presented.