Geophysical Research Abstracts, Vol. 7, 03527, 2005
SRef-ID: 1607-7962/gra/EGU05-A-03527

Observations of waves below the local proton cyclotron frequency by the DEMETER spacecraft during the magnetic storm on 8-10 November 2004

O. Santolík (1,2), M. Parrot (3), F. Němec (1), J. J. Berthelier (4)

(1) Charles University, Faculty of Mathematics and Physics, Prague, Czech Republic, (2) IAP/CAS, Prague, Czech Republic, (3) LPCE/CNRS, Orleans, France, (4) CETP/CNRS, Saint-Maur des Fossés, France

During the magnetic storm on 8-10 November 2004, the DEMETER microsatellite observed a number of intense electromagnetic wave phenomena. These waves were mainly related to the presence of injected energetic particles, but some of the wave observations were also influenced by variations of the cold plasma density and composition. Among those wave phenomena, waves below the local proton cyclotron frequency are known to be strongly dependent on the multi-ion mode structure, consisting of additional cutoffs and polarization cross-overs. This mode structure mainly depends on the local ion composition. We present analysis of data obtained by the DEMETER spacecraft during the burst-mode intervals on 8-10 November 2004, when multicomponent measurements of magnetic and electric field fluctuations are recorded. Wave-normal directions of electromagnetic waves are estimated using a recently developed technique based on the singular value decomposition (SVD) procedure, and other analysis methods based on simultaneous measurements of the entire set of components of magnetic field fluctuations. The direction of the Poynting flux is obtained from the simultaneous measurements of the electric and magnetic field fluctuations. This analysis allows us to estimate the propagation properties and the source mechanism of observed waves.