

Title: Electromagnetic whistler-mode waves in the plasma environment of the Earth's magnetosphere.

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Abstract: Results of this doctoral thesis are based on observations provided by the Cluster and Double Star missions. We have determined the variability of the spatio-temporal characteristics of chorus-like emissions under different geomagnetic conditions from a data set covering almost four years of measurements provided by the equatorial Double Star TC-1 spacecraft. From the TC-1 data set we have also identified the dependence of frequency bandwidths, amplitudes and occurrence rates of chorus-like emissions on the geomagnetic activity. We have also processed a similar data set from 11 years of Cluster measurements of electric and magnetic fields. This study was focussed on details of the spectral structure of individual chorus wave packets. We have used measurements from the WBD (Wideband) instrument situated onboard all four Cluster spacecraft. We have classified all types of spectral shapes and determined their occurrence rates. We have examined the dependence of chorus frequency drift rate df/dt on the cold plasma density n_e and on the dimensionless parameter Q for several selected events. We have prepared a case study of a relationship between df/dt and amplitudes of observed wave packets. We have also discussed variations in the chorus source location deduced from fluctuations of the ambient magnetic field, and the evolution of chorus frequency spectrum during propagation of individual wave packets from the source region.

Keywords: Earth's magnetosphere, whistler-mode waves, chorus wave packets, wave-particle interactions