



Source extension of chorus waves in the equatorial plane

M. Hayosh (1), O. Santolik (1,2), and M. Parrot (3)

(1) Institute of Atmospheric Physics, Academy of Sciences of the Czech Republic, Prague, Czech Republic (hayosh@ufa.cas.cz), (2) Charles University, Faculty Mathematics and Physics, Prague, Czech Republic, (3) LPCE/CNRS, Orleans, France

We use measurements of the Cluster spacecraft and a ray tracing simulation to estimate the location and size of the global source of whistler-mode chorus emissions. In this study we use the data provided simultaneously by the STAFF-SA instruments on the four Cluster spacecraft on 19 August, 2003. To determine the direction of propagation of chorus we calculate Poynting vector whereas a ray-tracing method is used to estimate the chorus source extension. For the first time this analysis has been made along whole particular Cluster orbit in both hemispheres. Our study shows that minimum size of the global chorus source region in the equatorial plane is between 1-3 Earth's radii. The resulting location of the chorus source region is at radial distances between 3 and 8 Earth radii. This result is in agreement with previous analysis of Cluster data by Parrot et al., 2003, 2004 and with the study of Santolik et al., 2005 who analyzed data from the Double Star TC-1 spacecraft.