



Double Star and Cluster observations of FTEs on the dawnside flank of the magnetosphere

A. Marchaudon (1), C. J. Owen (1), J.-M. Bosqued (2), M. W. Dunlop (3), A. N. Fazakerley (1), A. D. Lahiff (1), C. Carr (4), A. Balogh (4), and H. Rème (2)

(1) Mullard Space Science Laboratory, UCL, Dorking, UK, (2) Centre d'Etude Spatiale des Rayonnements, Toulouse, France, (3) Rutherford Appleton Laboratory, Chilton, UK, (4) Imperial College, London, UK (am@mssl.ucl.ac.uk / Fax: +44 1 483 278312 / Phone: +44 1 483 204293)

We present Cluster and Double Star observations during a close magnetic conjunction on May 8, 2004. The 2 spacecraft were on the dawnside flank of the magnetosphere, with Double Star located near the equatorial plane and Cluster at higher geographic latitudes in the Southern Hemisphere. Double Star, at its apogee, was skimming the magnetopause for almost 8 hours (between 08:00-16:00 UT). Flux Transfer Events (FTEs), moving southward of the reconnection site were observed by Double Star almost throughout the period, except between 09:20 and 10:00 UT and between 13:50 and 14:30 UT, when the satellite entered the magnetosheath proper. Cluster, travelling on a mainly dawn-dusk trajectory, crossed the magnetopause around 10:05 UT in the same Magnetic Local Time (MLT) sector as Double Star. The four Cluster spacecraft remained close to the southern magnetopause boundary layer and also observed FTEs for a period of 3 hours between 10:30 and 13:30 UT.

In spite of being well inside the magnetosphere, the FTE signatures observed by Cluster were still characterised by a mixing of magnetospheric and magnetosheath electron populations, implying that these FTEs were very newly reconnected flux tubes. Between 10:30 and 13:30 UT, these very newly reconnected flux tubes were observed by Cluster and Double Star. However, it was not possible to identify a one-to-one correlation between the FTEs observed by Cluster and Double Star.

We will discuss the reconnection geometry on the dawnside magnetopause with respect to the variable solar wind conditions, as well as the structure of the reconnection

line. In particular the simultaneous observation of FTEs at both Cluster and Double Star, separated by 2 hours in MLT, implies that the reconnection line on the magnetopause must be extended over several hours in MLT.