

Cluster and SuperDARN observations of flux transfer events from the Cluster 10,000 km seasons

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Abstract - From 2006 onwards, the Cluster spacecraft cross the dayside magnetopause at their largest separation of the entire mission (~10,000 km). We present two case studies of conjugate Cluster and SuperDARN observations: 27th January 2006 and 27th March 2007. In the first interval, the IMF was dominated by the B_x component, with a weak negative B_z component and a weak but variable B_y component, and the cross-polar cap potential was approximately 50 kV. In the second interval, the IMF was close to southward and the cross-polar cap potential was between 60-70 kV. Despite the different global reconnection rates, the Cluster spacecraft observed FTEs at approximately the same rate (~1 per minute), suggesting that each FTE contains more flux in the latter interval. Cluster observations show that some of these FTEs do extend further azimuthally than they do poleward, consistent with extended X-line models of FTEs.