



## **The difference between isolated flux transfer events and flux transfer event cascades**

Anita Kullen, Simon Thor, and Tomas Karsson

Royal Institute of Technology, School of Electrical Engineering, Space and Plasma Physics, Stockholm, Sweden  
(kullen@kth.se)

Using a large Cluster database of dayside high-latitude and flank FTEs (flux transfer events) by Karimabadi et al. (2009), we investigate the difference between isolated FTEs (FTE separation time of more than 70 min) and FTE cascades (FTEs with a separation time of less than 10 min).

The study shows that isolated FTEs appear at arbitrary locations along the dayside magnetopause independent on any solar wind parameter. In opposite, most FTE cascades are clustered along the northern dusk and southern dawn regions of the magnetopause. A large majority of these appear during weakly southward IMF with a strong dawnward IMF component.

This distribution may be explained by a rapid duskward (dawnward) motion of newly opened field lines that reconnect during south-dawnward IMF in the northern dawn (southern dusk) region of the dayside magnetopause, probably as a result of tension release of the strongly kinked field lines. The estimated speed of these newly opened FTE field lines is compared to the rapid duskward (dawnward) plasma flows in the dayside polar cap of the northern (southern) hemisphere, seen in SuperDARN data during IMF conditions with  $|B_y| \gg |B_z|$  and  $B_z < 0$ .