



## Multiple Flux Ropes in the Earth's Magnetotail

Suzanne Imber and James Slavin

NASA/GSFC, United States (suzanne.imber@nasa.gov)

Flux ropes are frequently observed in the Earth's plasma sheet in association with fast sunward or anti-sunward flows and substorm-related phenomena such as auroral activity and dipolarisations. While the most common observation is a single Earthward or tailward travelling flux rope, multiple flux ropes are also often observed, usually in groups of two or three. The most common explanation for these observations is that the flux ropes formed due to multiple x-line reconnection, with one x-line eventually becoming dominant and ejecting flux ropes away from that location. The purpose of this study is to investigate the solar wind conditions and state of the magnetosphere leading to the current sheet becoming unstable over a large area and multiple flux ropes forming. Further, observations of 'groups' of flux ropes have been made, with a characteristic rate of repetition of the order of 10 minutes. We will investigate the implications of these observations on the reconnection rate and location in the tail, and corresponding auroral and substorm indicators.