Geophysical Research Abstracts
Vol. 12, EGU2010-2440-1, 2010
EGU General Assembly 2010

A statiscital and event study of magnetotail dipolarizations

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A statistical study of 5 years of Cluster data has been performed on dipolarizations of the Earth's magnetotail. The dipolarization events are selected automatically using criteria in plasma beta and magnetic field configuration. In the data set both events with and without high-speed flows are included. We have performed super-posed epoch analysis to obtain the temporal profile of the dipolarization. It was found that the temporal scale of the dipolarization is anticorrilated with the plasma flows. The relationship between the flows and the spatial scale of the dipolarization will be discussed.

We also study the radial evolution of the dipolarization by comparing characteristics at 19 Re (from years 2001/2/3) with observations at 14 Re (from years 2006/7). For selected events with strong negative Bz turnings before dipolarization, we will perform an a detailed event study.