

Magnetic flux changes and field-aligned currents on the dayside magnetosphere

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In the conceptual model, internal convection of various modes of the magnetospheric plasma and magnetic flux tubes is driven by the Maxwell stresses at the magnetospheric boundary regions that are fed by the changes of solar wind magnetic field (north-south, east-west components). The coupling mechanism at the magnetopause is ascribable to the physics of the occurrence of time-dependent magnetic flux changes (in turn, the imbalance of inflow and outflow of flux in a certain fixed volume) and flux transport (convection) and the prevalence of flux changes and convection finally down to the ionosphere. This study is devoted to determine characteristics of time-dependent flux changes and associated field-aligned current pattern in the dayside magnetospheric flux tubes by the SuperDARN data.

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