

Influence of the IMF B_Y – component on the substorm current wedge

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In this work the magnetospheric field-aligned currents associated with the development of a substorm at the southern interplanetary magnetic field (IMF) are investigated by data from the longitudinal mid-latitude station chain in the northern hemisphere of the Earth. The IMF-component variations are compared with characteristics of leaves of field-aligned currents in the substorm centers. It is shown that the ratio of Birkeland currents flowing into the ionosphere and flowing out of it depends on the IMF B_Y – component. In this connection the conditions in the polar cap under which during the disturbance period in the ionosphere the currents can flow between a 3 zone of the day cusp and a 2 zone of the night sector of the auroral oval. The revealed substantial differences between leaf structures of the substorm current wedge are explained by their appearance.