



IMF B_y influence on magnetospheric convection in the Earth's magnetotail

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The dawn-dusk $-$ component of the interplanetary magnetic field (IMF B_y) is known to have an influence on the high-latitude ionospheric plasma convection causing convection patterns which are distorted from the symmetric two-cell form. In this study, we use data from Geotail, Cluster, and THEMIS missions to statistically investigate average convective ion flows in the magnetotail plasma sheet under influence of nonzero IMF B_y . We find that IMF B_y causes hemispheric asymmetry in the tail flows, which depends on the direction of IMF B_y . The one hemisphere is dominated by a dawn-dusk flow component, which is oppositely directed in one hemisphere compared to the other hemisphere. This asymmetry is observed both for earthward and tailward flows. The results suggest that the ExB-drift is hemispherically asymmetric and this asymmetry depends on the direction of IMF B_y . This implies that IMF B_y has a major influence on the magnetic flux transport in the magnetotail.