

East-west geomagnetic variations at mid-latitudes during magnetic storms and their relation with the convection electric field

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East-west geomagnetic disturbances at mid-latitudes on the nightside are principally attributed to field-aligned currents at high latitudes. In this paper, we examined the east-west disturbances at mid-latitudes during geomagnetic storms. The results shows:

1. Upward-current-sense disturbances are well correlated with the convection electric field.
2. Main phase of geomagnetic storms usually concurs with upward-current-sense disturbances at mid-latitudes.
3. During main phase of geomagnetic storms, region-2 sense disturbances tend to develop, although region-1 sense disturbances often become dominant at the beginning and the ending of storms.

We will also discuss the relationship between the upward-current-sense disturbances and intensity of the ring current.