

Longitudinal dependence of the Inter-Hemispheric Field-Aligned Currents as Observed by the Oersted Satellite

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The inter-hemispheric field-aligned currents flowing between magnetic conjugate points are related to the Sq dynamo current system and has been predicted to exist in the dawn region, the noon region and the dusk region.

The inter-hemispheric field-aligned currents in the dawn and the noon region were confirmed with the Oersted satellite data and the ground-based observations. However, the field-aligned currents in the dusk region cannot be confirmed by the ground geomagnetic field data and are roughly consistent with theoretical predictions. Inter-hemispheric field-aligned currents was found to be depend on longitudes. It is probably caused by the longitudinal dependence of the Sq dynamo current system.

The inter-hemispheric field-aligned currents flowing between magnetic conjugate points are related to the Sq dynamo current system and has been predicted theoretically. We examine the effect of the inter-hemispheric field-aligned currents by the Oersted satellite and ground magnetic field observations.

Inter-hemispheric field-aligned currents has been theoretically predicted to exist in the dawn region (from the summer to the winter hemispheres), the noon region (from the winter to the summer) and the dusk region (from the winter to the summer).

The inter-hemispheric field-aligned currents in the dawn and the noon region were confirmed with the Oersted satellite data and the ground-based observations, and are roughly consistent with theoretical predictions. However, the field-aligned currents in the dusk region cannot be confirmed by the ground geomagnetic field data. Inter-hemispheric field-aligned currents was found to be depend on longitudes. Between 0 and 45 degree geomagnetic longitudes, the current intensity and direction of the inter-hemispheric field-aligned currents are different from other longitudinal regions. It is probably caused by the longitudinal dependence of the Sq dynamo current system and is influenced by the anomaly of the geomagnetic main field.