

Kisat-A Magnetometer Observations of Birkeland Currents in the High-Latitude Region

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Abstract

Field-aligned(Birkeland) currents of the high-latitude polar region are to the linkage between the solar wind-magnetosphere system and the ionosphere. The characteristics of field-aligned currents at an altitude of 1300 km have been investigated from the KiSat-A satellite magnetometer data recorded at SatRec form March to May 1993. It is found that the polarity of both east-west and south-north magnetic components becomes reversed and distorted across the poleward edge. We suggest that these changes may occur due to the Region 1 and Region 2 currents. It is also suggested that the current time resolution, which is about 30 seconds, should be improved to prove gradual polarity changes in the polar region. In addition, it is shown how the observational results depend on the longitude in the high-latitude region.