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Space Technology 5 衛星とグリーンランドの地磁気チェーンを用いた沿磁力線電流の時間発展の共役観測
Conjugate observations of field-aligned current evolution with Space Technology 5 and Greenland magnetometer chain

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It is believed the field-aligned current in the cusp and polar cap responds quickly to the change in IMF, and that a new field-aligned current state is established within several minutes. The purpose of this paper to understand what kind of a transitional state occurs during such a relatively short period of time using the magnetic field measurements from Space Technology 5 mission and the Greenland west magnetometer chain. ST5 mission is a three microsatellite constellation [e.g., Slavin et al. 2008]. Taking advantage of this constellation, we have taken several events in which the cusp/polar cap field-aligned current pattern changes above the Greenland magnetometer chain within approximately 10 min. The ground magnetometer data for these simultaneous events show that gradual variations occur beneath the change of the field-aligned current. These variations are caused by temporal change of the Hall currents, suggesting that a transitional state exists in which the electric field, which is related to the closure of the field-aligned current, evolves. We present results about the detail of the electrodynamics in this state.

キーワード: 沿磁力線電流, 地上磁場変動, カスプ, ポーラーキャップ, 惑星間空間磁場
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