

Comparative Study of ssc-associated Magnetic Variations at AKEBONO Satellite and Ground Network Stations

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The magnetic variations at the ground stations, which were located at higher than 70 degree in the Corrected Geomagnetic Latitude, show large amplitude variations caused by the ionospheric current, and show a not-clear correlation with that of the AKEBONO satellite. The D-component magnetic variations at the stations lower than 70 degree show partly a good correlation with the radial component of the magnetic field at the AKEBONO satellite. The compressional wave in the magnetosphere may couple into the poloidal oscillation, which can be observed as the D-component variation on the ground.

The magnetic data from the AKEBONO satellite and from the high-latitude ground network stations were analyzed to understand the storm sudden commencement (ssc) event on November 18, 1993. The foot point of the magnetic field through the AKEBONO satellite (Mlat=70.5, MLT=8:27) was located between the CANOPUS (organized by John Samson) Magnetometer Chain and the Greenland West Coast Magnetometer Chain (organized by Jurgen Watermann).

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On the other hand, the magnetic variation at the AKEBONO satellite did not show any signature associated with the Main Impulse on the ground. This fact can be explained by using the general model of Main Impulse at the high latitudes, that is, a localized FAC must be coupled with the twin-vortex type ionospheric current system.