

Magnetic Effects of the Field-Aligned Current on the Ground in middle latitudes

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We examine the magnetic effects of the field-aligned current on the ground with a statistical analysis of the ground-based magnetic data at mid-latitudes and a numerical calculation.

The magnetic effects of the FACs would be canceled out because of the ionospheric Pedersen current, if we assume that the FACs vertically flow into or out of the ionosphere and uniformly diverge or converge as the Pedersen currents in the ionosphere. Some magnetic effects of the FACs, however, may be observed on the ground, because the FACs flow obliquely and the Pedersen conductivity is inhomogeneous.

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