

Asymmetric Geomagnetic Disturbance Fields on the Ground and Its Relation to the Ring Current Asymmetry

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Local time asymmetry of geomagnetic disturbance fields in low or mid latitudes has been well known for more than 50 years, and it has been shown from low-altitude satellite observation that the asymmetry is not the effect of ionospheric currents but of magnetospheric currents. However, there still remain some controversial discussion or computer simulation results which relate to the asymmetry of the ring current. In this paper, we show that the storm time dawndusk asymmetry on the ground is mainly the effect of high-latitude field-aligned currents and not the effect of the ring current asymmetry. We also review recent satellite observations and computer simulation results and discuss that the asymmetry of the ring current is midnight centered rather than dusk centered.