

Note: 4-page summary is not required.

Polar Cap Electric Field Observations from the Resolute Bay Incoherent Scatter Radar

Hasan Bahcivan, Michael Nicolls, and Craig Heinselman

SRI International

The new incoherent scatter radar in Resolute Bay (RISR) is providing first-time observations of fine-scale spatiotemporal electric potential structure in the polar cap ionosphere. The sub-minute resolution ionospheric convection response can be intimately tied to solar wind magnetic pulses measured by the ACE and WIND spacecraft. Furthermore, we present estimates of electric potential maps ($\sim 400 \times 400$ km) constructed using simultaneous multi-beam position line-of-sight velocity measurements and new inversion techniques. The electric field divergence averaged over the mapped regions shows diurnal variation consistent with a two-cell convection pattern.