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Conjugate High Latitude Measurements of Traveling Convection Vortices during Solstice Conditions on 2013/01/09

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The ground magnetic response to a solar wind sudden impulse (SI) on 2013/01/19 produced traveling convection vortices observed in both northern winter and southern summer hemispheres by conjugate magnetometer chains along the 40 degree magnetic meridian. The conjugate measurements permit us to investigate the latitudinal dependence and dependence on interhemispheric conductance asymmetries. This event shows remarkable agreement in the timing and amplitude of the ground magnetic disturbance in both hemispheres, suggesting that the current strength is similar in both hemispheres despite the solstice conductance differences. Using additional observations and simulations, we explore the magnetospheric response to solar wind pressure transients and the resulting coupling to the ionosphere in both hemispheres by a current generation process. The Antarctic instrumentation for this research has been supported by the National Science Foundation through a Major Research Infrastructure (MRI) grant ATM-922979 and grant PLR-1243398 has supported the stations operations and the research.