

Variability in the open magnetic flux during superstorms

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We report temporal variation of open magnetic flux of the polar cap during the superstorm on 11/20/2003 by using in-situ measurements made by DMSP spacecraft and remote-sensing measurements made by TIMED spacecraft. We examined how the shape of the poleward boundary of the auroral oval changed. Our result shows that the poleward boundary is extremely distorted in the morning sector during the main phase of the superstorm. In the expanding/contracting polar cap paradigm, this sector is not regarded as an important element. We discuss some significant points that are not included in that conventional paradigm.

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