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Poster

The 03/13/1989 and 10/29/2003 geomagnetic storms were events that caused power blackouts for people in Québec and in southern Sweden, respectively. Many studies have confirmed that geomagnetic storms can cause rapidly varying magnetic fields and ground induced currents, which locally differ dramatically. To better understand this hazard, we analyze data of 10-s resolution from ground magnetometer stations within the International Monitor for Auroral Geomagnetic Effects (IMAGE) array (which is supported by a consortium of European agencies) for both events. For the 03/13/1989 storm, we use data from seven stations located in northern Norway and Finland. The stations have geomagnetic latitudes ranging from 63o to 67o and average ~200 kilometers apart from their nearest neighbor. For the 10/29/2003 storm, we use 26 stations spread throughout Scandinavia. These Scandinavian stations have geomagnetic latitudes ranging from 54o to 75o and are as close as 87 kilometers from their nearest neighbor. We examine the spectral content of the geomagnetic timeseries to evaluate the spatiotemporal variability in geomagnetic power and the frequency characteristics of the storm. We also evaluate the variability of geomagnetic storm power as a function of geomagnetic latitude and storm time index (e.g., Dst). We find that during quiet times, higher magnetic latitude stations have relatively more power. Meanwhile, during more disturbed storm times, magnetic power increases at lower latitudes such that the peak in storm power occurs at a significantly lower latitude than the peak latitude in power for quiet times.

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