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Are there signatures of complexity in fluctuating magnetospheric electric fields implied by HF radar observations of ionospheric Doppler shift?

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Signatures of complexity and self-organised criticality in natural systems include intermittency and self-similarity over extended spatial and temporal scales. Generic re-scaling techniques have been applied to the probability distribution functions (PDFs) of fluctuating magnetospheric electric fields implied by SuperDARN measurements of Doppler velocity made in the high-latitude ionosphere. The PDFs were sorted according to the orientation of the interplanetary magnetic field, magnetic local time, and ionospheric regions of high and low Doppler spectral width (regions of open and closed magnetic flux, respectively). Mono-fractal re-scaling of the PDFs was strongest on open field lines in the noon sector during the winter.