

Suppression of ionospheric electric field turbulence and magnetospheric magnetic field line topology

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We report the result of the statistical analysis of ionospheric echoes with high (larger than 450 m/s) Doppler velocity and very narrow (smaller than 60 m/s) spectral width, observed by the Cutlass and Syowa SuperDARN radars in the polar cap region. The appearance of these echoes is associated with the disappearance of the electric field turbulence in the high-latitude ionosphere. We show that the appearance of ionospheric echoes with very narrow spectral widths in the polar cap is associated with the highly tail-like configuration of the magnetotail, by using the satellite data. This result is consistent with the statistical results and their interpretation by Golovchanskaya et al. [2002].