Mapping the outer LLBL with SuperDARN double-peaked spectra. **Mapping the outer LLBL with SuperDARN double-peaked spectra**

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**Abstract**

A SuperDARN HF radar pair (Saskatoon- Kapuskasing) has been used to measure Doppler spectra of backscatter from the dayside F-layer. Normally the spectra are single-peaked, but a small fraction exhibit a doublepeaked (D-P) signature. On the 2D convection maps, these D-P spectra occur in range cells located poleward of the convection reversal. A comparison with DMSP SSJ/4 particle data measurements and their mapping to magnetospheric boundaries shows that the D-P spectra are concentrated just equatorward of the magnetopause, in regions of spatially/temporally structured soft electron precipitation (about 300 eV) where the highly variable flux can reach 2- 5 ergs=cm2=s. The D-P spectra are most easily explained in terms of scattering from small-scale vortices of size less than the radar resolution of 45 km. The D-P spectral measurements are illustrated by SuperDARN and DMSP data for a dayside event on Feb. 20, 1995, when northward IMF conditions prevailed. We conclude that HF radar D-P observations can be used to map in real time the dayside 2D ionospheric footprint of the outer LLBL.

- Paper (.pdf, 986K)
- Diagram 1 (.eps)

- Diagram 2 (.eps)
- Diagram 3 (.eps)