

Recovering ionospheric velocities from SuperDARN returns contaminated by ground/sea scatter

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SuperDARN velocity data are frequently contaminated by a strong scatter from the sea/ground surface in the vicinity of the skip zone. In this work we studied mixed scatter effects by analysing computer-generated autocorrelation functions with variable signal-to-interference ratios and velocity magnitudes. Obtained information allowed us to develop recognition criteria for contaminated returns and to design an effective algorithm for recovering the ionospheric drift velocities. Application of the new technique to real radar data showed that contamination from the surface scatter leads to overall underestimation of the drift velocity magnitude and can considerably distort medium-scale features of the fitted convection maps.