

SATELLITE AND GROUND BASED OBSERVATIONS OF A LARGE-SCALE ELECTRON PRECIPITATION EVENT

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In this study we combine DEMETER electron spectra subionospheric VLF measurements and modelling to study relativistic electron precipitation (REP) during the 21 January 2005 storm period.

The study augments large-scale regional observations using VLF measurements of multiple subionospheric paths with detailed in situ measurements from the satellite to allow us to determine the spatial extent of the precipitation in addition to its energy distribution.

The precipitating spectrum (as measured by the satellite) is used to infer an altered electron density profile, modelled using a simple ionospheric electron model. This altered electron profile is then used in a subionospheric VLF model and compared with VLF results. Matching the model results with the subionospheric VLF measurements allows calculation of both the *intensity* and *size* of the precipitation region required to produce such an effect.

By providing a better picture of both the intensity and size of the precipitation region, we obtain a more complete picture of the net impact that such a precipitation event has on the upper atmosphere.

Relativistic electron, precipitation, subionospheric VLF

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