

MAPPING THE IONOSPHERE USING A HF RADAR BACKSCATTER INVERSION TECHNIQUE

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ABSTRACT

High Frequency radar ground backscatter inversion to obtain ionospheric electron density profiles has the potential to provide remote sensing of the ionosphere up to thousands of kilometers from the transmitter/receiver location. The inversion technique requires radar data in the form of group path versus elevation angle profiles. The radar data is inverted to obtain a multiple quasi-parabolic segment plasma frequency profile of the true ionosphere. Using frequency scanning radar, the down-range gradients in electron density can be determined. In this paper, a prototype HF radar backscatter inversion is exercised using real data recorded with the Tasman International Geospace Environment Radar.