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Imaging of Space-Weather Storms

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Tomographic inversion and data assimilation with physical models can be used to reveal the three dimensional distribution of electron density in the ionosphere.

The talk will focus on the techniques for imaging the ionosphere and the physics that can be revealed through the imaging. Particular focus will be given towards solar storms and their effects on our upper atmosphere that are revealed through the Multi-Instrument Data Analysis System) MIDAS algorithms.

Imaging and data-assimilation (image-model coupling) are discussed in the light of their use in real-time specification and forecasting of ionospheric events. The accuracy of the techniques are discussed in the light of recent applications requiring TEC and electron density for system calibrations in areas including radio astronomy and GPS positioning.