Modeling the high-latitude MIT system with the IPIM model

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Résumé

The Earth's Magnetosphere-Ionosphere-Thermosphere (MIT) system is strongly controlled by the laws of electrodynamics, which include significant contributions from all three components. Today, we face a growing need for a better representation of this MIT system, at all latitudes due to the growing use of GNSS satellites for positioning, which face accuracy and forecasting challenges that are not accessible with current data coverage and processing tools.

The IRAP Plasmasphere-Ionosphere Model (IPIM) is one of the only physical models developped in Europe which solves plasma transport equation along magnetic field lines and provides a complete 3D coverage of Earth's ionosphere and plasmasphere in latitudes, longitudes and altitudes.

The model is suited to study the high latitude ionosphere, but some adjustement has to be done on the inputs in order to simulate geomagnetic disturbances.

Thus, we will present the model and some interesting results at high latitudes for geomagnetic events, especially during a High Speed Stream event.

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