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Data ingestion and assimilation in ionospheric models

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Abstract

Current understanding of the ionospheric behaviour has been obtained through different observations, modelling and theoretical studies. Knowledge of the ionospheric electron density distribution and its fluctuations, high quality data sets, as well as reliable data ingestion and assimilation techniques are essential for models predicting ionospheric characteristics for radio wave propagation and for other applications such as satellite tracking navigation, etc., to mitigate the ionospheric effects on radio wave propagation. Effect of the ionosphere on Global Navigation Satellites System (GNSS) accuracy is one of the main factors limiting the reliability of GNSS applications.

In accord with the objectives of the European COST 296 project, (Mitigation of Ionospheric Effects

on Radio Systems, MIERS) under an international collaboration some new results have been achieved in collecting and processing high quality ionospheric data, in adaptation of the ionospheric models to enable data ingestion and assimilation, and in validation and improvement of real-time or near-real time ionospheric ionisation electron density reconstruction techniques.

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- Comparison between low-cost and...

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