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Description of Day-to-Day Variability in IRI

Dieter Bilitza (1,2), Boding Liu (1), and Joseph E Rodriguez (1)

(1) George Mason University, Fairfax, Virginia, USA (dbilitza@gmu.edu), (2) NASA, GSFC, Code 672, Greenbelt, Maryland, USA (dieter.bilitza-1@nasa.gov)

The International Reference Ionosphere (IRI) describes the monthly average behavior of Earth's ionosphere based on most of the accessible and reliable ground and space observations of ionospheric parameters. IRI is doing an excellent job in accurately representing these average conditions as countless comparisons with additional data have shown and as acknowledged by the fact that international organizations (COSPAR, URSI, ISO, ECSS) have accepted IRI as their ionosphere standard. However, with our ever-increasing dependence on space technology it has become important to go beyond the monthly averages and to provide a description of the day-to-day variability of the ionosphere. We will review past and ongoing efforts to provide IRI users with a quantitative description of ionospheric variability depending on altitude, time of day, time of year, latitude and solar and magnetic activity. We will present new results from an analysis of ISIS and Alouette topside sounder data. The IRI team is also pursuing the development of an IRI Real-Time (IRI-RT) that uses assimilative algorithms or updating procedures to combine IRI with real-time data for a more accurate picture of current ionospheric conditions. We will review the status of these activities and report on latest results.