

GAMBIT Database and Explorer

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The Global Assimilative Modeling of Bottomside Ionospheric Timelines (GAMBIT) is a recent addition to the Global Ionosphere Radio Observatory (GIRO) Internet-accessible data resources provided for public access by the Lowell GIRO Data Center (LGDC). The GAMBIT Database is an online retrospective repository of records that are computed in real-time every 15 minutes by the IRI-based Real-Time Assimilating Mapping (IRTAM) algorithms. The IRTAM *morphs* the empirical “climatology” IRI model into agreement with the GIRO measurements, so that the new model representations of the ionosphere closely follow its “weather” variability. These ionospheric weather timelines can be acquired from LGDC-operated GAMBIT in their compact form of expansion coefficients for visualization and applications. New GAMBIT Explorer software is available for further analysis. The GAMBIT Explorer uses NASA WorldWind libraries to build an interactive environment with a variety of representations of 2D global surfaces of the IRTAM-computed characteristics, currently foF2 and hmF2, on the Earth’s projections. A suite of tools is available for validation of the IRTAM results obtained by using partial or complete input GIRO data sets, and by comparisons with coincident global GNSS TEC maps acquired from the MIT Madrigal repository.