ASTRA runs a global 3-D first-principles fully coupled thermosphere-ionosphere model in real-time for space weather applications. The model is the Thermosphere-Ionosphere Mesosphere Electrodynamics General Circulation Model (TIMEGCM). ASTRA also runs the Assimilative Mapping of Ionospheric Electrodynamics (AMIE) in real-time. Using AMIE to drive the high latitude inputs to the TIMEGCM produces high fidelity simulations of the global thermosphere and ionosphere. Now these simulations can be viewed on ASTRA’s Android Phone App: “ASTRA SpaceWeather”. Simply download it from the Google Marketplace.

This paper presents the current status of real-time thermosphere-ionosphere space-weather forecasting. We explore some of the issues in maintaining real-time simulations with assimilative data feeds in a quasi-operational setting, and discuss some challenges of presenting large amounts of data on a smartphone.

The ASTRA SpaceWeather app includes the broadest and most unique range of space weather data yet to be found on a single smartphone app. This is a one-stop-shop for space weather and the only app where you can get access to ASTRA’s real-time predictions of the global thermosphere and ionosphere, high latitude convection and geomagnetic activity. Because of the phone’s GPS capability, users can obtain location-specific vertical profiles of electron density, temperature, and time-histories of various parameters from the models. The SpaceWeather app has over 12,000 downloads, and a following of active users. It is clear that real-time space weather on smartphones is here to stay, and must be included in planning for any transition to operational space-weather use.

Also see our Solar Dynamics Observatory app!