Abstract

The Coupled Magnetosphere Ionosphere Thermosphere (CMIT) model is designed to model the interaction between the solar wind and the closely coupled magnetosphere – ionosphere – thermosphere system. We begin by providing an overview of the model development plans in geospace including how the CMIT will be coupled with the Rice Convection Model to form the LTR model. A detail discussion of the current implementation of the Rice Convection Model to form the LTR model. A version of CMIT, with the LFM and TING models, concludes with a brief overview of results from the model.

Model Development Plans

In the first stage of development the current version of CMIT, with the LFM and TING models, is coupled with the two LFM-RCM model to form LTR.

Current Model Implementation

In CMIT the LFM and TING are run as separate executables with information passed between codes via a set of coupling subroutines within the LFM. These procedures convert MHD parameters to particle fluxes and interpolate them onto a geographic grid in order for TING to calculate conductivities and neutral winds. The information from TING is interpolated onto the LFM’s MLT grid, used to compute the ionospheric potential and passed to the magnetospheric portion of the code.

Model Results

The CMIT model is working well in the queued computational environment at NCAR and is currently undergoing extensive testing with idealized and real world solar wind conditions.

Neutral wind driven FACs persist well after magnetospheric FACs are reduced by the northward turning of the IMF. Effects of this feedback on the magnetosphere is currently under investigation.

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