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## LFM-TIEGCM-RCM (LTR)

The LFM is a global MHD model written by John Lyon, Joel Fedder and Clark Mobarry. It is primarily used to better understand Earth's Magnetosphere. The LFM can be coupled with a variety of models to aid in understanding of the physical processes in Geospace, such as:

- Magnetosphere Ionosphere Coupler/Solver ([MIX](#))
  - Thermosphere Ionosphere Electrodynamic General Circulation Model ([TIEGCM](#))
  - Rice Convection Model ([RCM](#))
- The coupled combination of models is called the LTR (LFM-TIEGCM-RCM).

The documentation on this wiki contains limited scientific descriptions of the models. It is intended as a guide to compile & execute the code(s) and documents some of the post-processing tools which have been developed for LTR.



### Note

The LTR models and documentation are constantly evolving. This wiki documents the latest release. In some cases, this includes documentation for unreleased/upcoming features. You should sign up to [the LTR-announce mailing list](#) and make sure you're using the [latest release](#). You can find a list of upcoming features via [the LTR roadmap](#).

## Scientific Documentation

- The October-November 2004 [Journal of Atmospheric and Solar-Terrestrial Physics](#) special issue: [Towards an Integrated Model of the Space Weather System](#) (i.e. [Lyon 2004](#)).
- The publications and presentations listed at the [BU CISM website](#)
- [LFM Field Aligned Current calculation](#) - Notes on the LFM inner boundary conditions. Gives insight into the calculation of  $I_{FA}$ , which is sent to [MIX](#).
- 2010 Merkin, & Lyon [Effects of the low-latitude ionospheric boundary condition on the global magnetosphere](#)
- 2015 Wiltberger et al. LFM-RCM Coupling paper

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