

CISM space weather modeling of the Sun-to-Earth system

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The Center for Integrated Space weather Modeling (CISM) simulates the entire Solar-terrestrial system by coupling several codes together. These codes range from the solar corona to the earth's upper atmosphere, and include: the MAS solar corona model, the ENIL solar wind model, the LFM magnetosphere code, and the thermosphere ionosphere TING model. Several additional models, such as the solar SEP model, the RCM inner magnetosphere model, and a radiation belt model, are also included to provide additional information about space weather events. The CISM suite of models is coupled using Intercomm for interprocess communication and Overture for grid interpolation. This suite of models has been successfully run to simulate a CME that propagates through the heliosphere to affect the geospace environment, and is being validated and verified for observed events. Visualization tools have also been developed both to analyze model results and to facilitate the transition of the CISM model to operational use.