

2008 GEM modeling challenge: metrics study of the Dst index in physics-based magnetosphere and ring current models and in statistical and analytic specifications.

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Abstract:

In this paper the metrics-based results of the Dst part of the 2008-2009 GEM Metrics Challenge are reported. The Metrics Challenge asked modelers to submit results for 4 geomagnetic storm events and 5 different types of observations that can be modeled by statistical or climatological or physics-based (e.g. MHD) models of the magnetosphere-ionosphere system.

We present the results of over 25 model settings that were run at the Community Coordinated Modeling Center (CCMC) and at the institutions of various modelers for these events. To measure the performance of each of the models against the observations we use comparisons of one-hour averaged model data with the Dst index issued by the World Data Center for Geomagnetism, Kyoto, Japan, and direct comparison of one-minute model data with the one-minute Dst index calculated by the United States Geologic Survey (USGS).