

Modeling Results of the Two Largest Geomagnetic Storms of Solar Cycle 24

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In this paper, radiation belt response to the two largest geomagnetic storms of Solar Cycle 24 (17 March 2015 and the 22 June 2015) is investigated in detail. Even though both storms are primarily CME driven, each has its own complexities [Liu et al., 2015, Kataoka et al., 2015]. Using the CCMC's run-on-request system, modeling results using the RBE (Radiation Belt Environment) model within the SWMF (Space Weather Modeling Framework) and the RBE model coupled with the SWMF and RCM (Rice Convection Model, which takes the ring current's contribution into consideration) will be examined. Comparative and comprehensive analyses of the same event from two different models and of two events from the same model/model suite will be provided. Focus will be specially given to impacts of different solar wind drivers on radiation belt dynamics and to the coupling and interactions of different plasma populations/physical processes within the region.

Keywords: radiation belt dynamics, largest geomagnetic storms, coupling