



Validation of the Space Weather Modeling Framework

G. Toth, **T.I. Gombosi**, I.V. Sokolov, D.L. De Zeeuw, A.J. Ridley, W.B. Manchester, Y. Ma

Center for Space Environment Modeling, University of Michigan, Ann Arbor, MI 48109

We will discuss new validation studies carried out with the Space Weather Modeling Framework. These simulations include CMEs, planetary magnetospheres and ionospheres and magnetic storms. In particular, we recently extended the global magnetohydrodynamic (MHD) code BATSRUS to include the physics of multispecies Hall MHD. The numerical algorithm is developed on a block adaptive grid with explicit and implicit time integration. We will discuss the effects of Hall MHD on the reconnection process that is of particular interest at the dayside magnetopause and in the magnetotail region. In addition, we will also show multispecies validation studies of magnetospheric dynamics.