



Controlling Effect of Wave Models and Plasmapause Position on the Dynamic Evolution of Radiation Belt Electrons

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Chorus waves play an important role in the dynamic evolution of radiation belt electrons. Using more than 5 years of Van Allen Probe data, we developed a new analytical model for upper- and lower-band chorus waves. We apply this new chorus wave model into radiation belt simulation using Versatile Electron Radiation Belt (VERB) code. The chorus wave model derived from Van Allen Probe data are limited to magnetic latitude 20 degree. For high latitude chorus waves, we adopted some assumptions and also referred to Cluster and ERG data. Our simulations show importance of high latitude chorus waves. Chorus waves can not only provide net acceleration of radiation belt electrons, but also net loss of them, especially during geomagnetic quiet times. In our simulations, we also show the importance of plasmapause position in the dynamic evolution of radiation belt electrons.