

GEMISIS-Magnetosphere: A loss mechanism of relativistic electrons in the outer radiation belt during non-magnetic storm time

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Some observations have shown high energy electron flux decreases after an enhancement of solar wind dynamic pressure. The events have been observed even in non-magnetic storm time. In this study, a loss mechanism of relativistic electrons in the outer radiation belt during non-magnetic storm time is studied by using three-dimensional drift-approximated relativistic test particle simulation. The empirical magnetic field, which is calculated from the Tsyganenko model, is applied to the simulations by using the solar wind data obtained from ACE spacecraft. In the simulations, the inductive electric field caused by solar wind dynamic pressure variation is applied, following Ukhorskiy et al. (2006).

We compare the simulated flux variation with the GOES observed MeV electrons, and discuss the effect of the solar wind dynamic pressure variation on the loss of relativistic electrons at geostationary orbit.