

RCM-VERB COUPLED SIMULATIONS OF THE DYNAMICS OF THE RADIATION BELTS DURING STORMS

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The evolution of the relativistic electron fluxes in the radiation belts can be described by the 3D modified Fokker-Planck equation in terms of radial distance, pitch-angle, and energy. Recently developed at UCLA VERB code models the dynamics of relativistic electrons subjected to ULF, ELF, and VLF waves including radial diffusion driven by PC4-5 waves; pitch-angle scattering by hiss, chorus, anthropogenic whistlers, lightning generated whistlers, and EMIC waves; and local acceleration driven by chorus waves. Numerical simulations of a geomagnetic storm using VERB code, coupled with RCM are presented. Dynamics of the 10-100 keV electrons is inferred from RCM simulations and is used as an electrons seed population for the radiation belts modeling using VERB code. Presented sensitivity numerical simulations show the influence of the time-dependent convective sources on the radiation belt dynamics.

radiation belts modeling

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