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Data assimilation of radiation belt electrons

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We present results from a data-assimilation of radiation belt electrons, and investigate the effect of the radial diffusion and the amplitude of the plasmashpheric hiss. In the data-assimilation, we use our 1-D radial diffusion model [Miyoshi et al., 2003, JGR] which includes various physical processes of the radiation belts such as radial diffusion, Coulomb collisions, and wave-particle interactions. We assimilate in-situ electrons measured by the Tsubasa satellite into a 1-D radial diffusion model. The particle filter is used for the assimilation to handle the nonlinear property of the model. We compare the assimilation result with that obtained with the empirical radial diffusion coefficients as function of the Kp index [Brautingam and Albert, 2000]. While the latter simulation overestimates the flux of the outer belt, the assimilation reproduces the appropriate flux variation. The result indicates that the data-assimilation is a powerful method to improve the physical model of the radiation belt which would be an important issue for the space weather.