Reanalysis of Radiation Belt Electron Phase Space Density using the UCLA 1-D VERB code and Kalman filtering: Sensitivity to assumed boundary conditions and changes in the loss model

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We present reanalysis of radiation belt electron phase space density using the VERB code and a Kalman filter at higher L^* than previously used. Simulations show that when setting up the boundary at $L^* = 10$, the heart of the outer radiation belt is negligibly affected for most of the time. We analyze the sensitivity of the reanalysis to changes in the electron-loss throughout the domain. In addition we examine the merits of including a boundary between trapped an un-trapped electrons. We show that reanalysis can reproduce phase space density and the dynamics in the heart of the outer radiation belt in a similar way for different electron losses. Furthermore, peaks in the outer radiation belt are seen in all the simulations presented in this study, supporting the idea that peaks develop in the heart of the radiation belt as a consequence of local acceleration processes.