



Radiation Belt Reanalysis

Y. Shprits (1), D. Kondrashov (1), M. Ghil (1), Y. Chen (2) , and R. Thorne(1)

(1) UCLA (2) LANL

In this study we perform a reanalysis of the sparse MEA CRRES relativistic electron data using a relatively simple one-dimensional radial diffusion model and a Kalman filtering approach. The results of the reanalysis clearly show pronounced peaks in the electron phase space density (PSD), which can not be explained by the variations in the outer boundary, and can only be produced by a local acceleration processes. The location of the innovation vector shows that local acceleration is most efficient at $L^* = 5.5$. To verify that our results are not affected by the limitations of the satellite orbit and coverage, we performed an “identical twin” experiments with synthetic data specified only at the locations for which CRRES observations are available. Our results indicate that the model with data assimilation can accurately reproduce the underlying structure of the PSD even when data is sparse.