



Pitch angle evolution of energetic electrons at geosynchronous orbit during disturbed times

R. Friedel, Y. Chen, G. Reeves & T. Cayton

ISR-1, Los Alamos National Laboratory, Los Alamos, NM 87544, USA, ((friedel@lanl.gov, chen@lanl.gov, reeves@lanl.gov, tcayton@lanl.gov)

Pitch angle resolved data have been obtained for three of the Los Alamos geosynchronous energetic particle instruments for parts of the period 2001-2004. The pitch angle distributions show a clear dependence on local time with predominant butterfly distributions at the night side transitioning to cigar at the day side. These are geometric effects due to the Earth's magnetic field asymmetry (shell splitting) which dominate the gross features of the pitch angle distribution and which make it difficult to observe activity dependent changes in the pitch angle distribution such as isotropization due to wave scattering or the effects of in-situ acceleration processes. We "remove" here the geometric effects in the pitch angle distributions by sorting the data into pitch-angle dependent L^* coordinates and the re-assembling the pitch angle distribution adiabatically at a constant, fixed L^* of 6.0, using activity-dependent magnetic field models such as Tsyganenko 2004 storm. We will then use this re-assembled dataset to investigate the pitch angle dependence at $L^*=6.0$ during disturbed times and can see clear evidence for both chorus wave acceleration and EMIC loss processes.