MINIS Observations of MeV electron precipitation on January 21st 2005
During the magnetospheric disturbances of January 21st 2005 the MINIS balloon campaign observed intense X-ray bursts at three locations separated in L-shell and local time. These X-rays are bremsstrahlung radiation produced by highly relativistic (~1MeV) electrons precipitating out of the Earth’s radiation belt and the bursts show interesting spatial and temporal structure. We will present a brief background on single-point observations from previous balloon campaigns and show the unique structure revealed by these newer multi-point observations. We have also modeled the bremsstrahlung production and atmospheric scattering to obtain the energy spectrum and flux of precipitating electrons. Using these modeling results we then make an estimate of the loss rate of high energy electrons from the trapped population. Estimating the loss rate is an essential part of understanding the trapped population of these killer electrons.