created each UTC day with a unique file name keyed to the date. Those files are downloaded by command stations as visibility opportunities occur. The files are emailed to the PI who post processes them.

Results

CEDEX was first activated in December 2001. On December 15 the first files were collected and downloaded. Over the next 12 days data were collected that included about nine orbits of the satellite. Some of those data are plotted in figures 14 and 15.

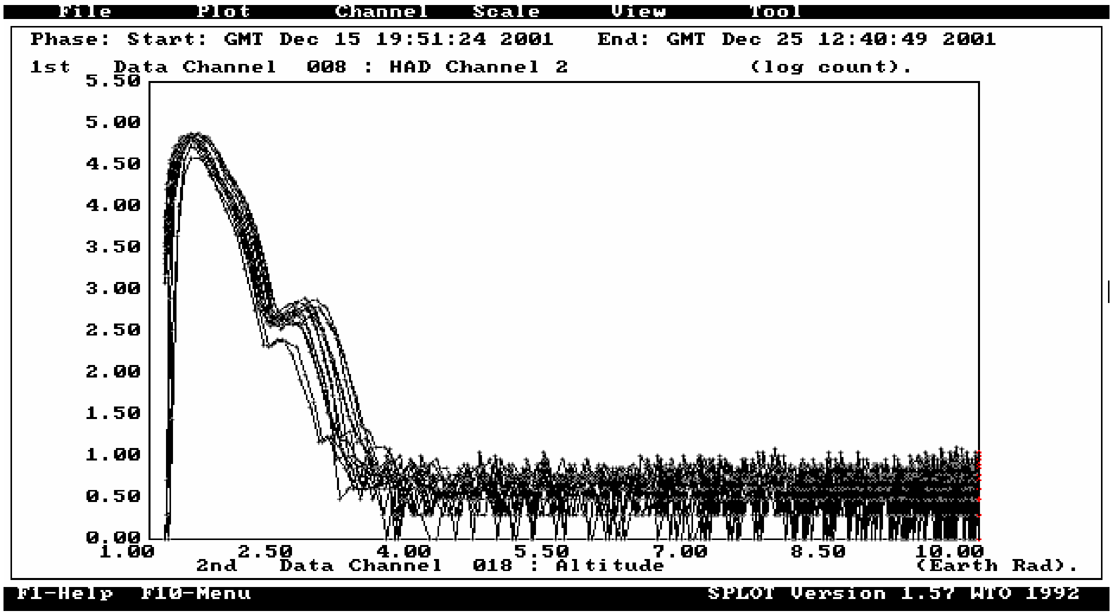

Figure 14 clearly shows the form of the inner Van Allen (proton) belt.

The horizontal scale is in geocentric Earth-radii R_E (1=Earth's surface).

Because the magnetic field is not centered on the center of the Earth and the orbit precesses, there is a slight spread in count rates for each altitude.

The vertical axis plots the number of proton strikes in the detector over a 150 second integration period. The scale is logarithmic, - i.e. 5 = 100,000 counts, etc.

The peak proton flux is clearly shown at ~1.7 R_E, as is an unexpected second peak at ~ 3 R_E. This second belt is currently under investigation and may be related to recent solar flare activity – similar to the radiation belt created by the major flare of March 1991. A slight rise in galactic-cosmic ray flux is also discernable at high altitudes out to 10 R_E.

Additionally AO-40 has such a high apogee (about 10 earth radii), that it may prove possible to probe Earth's bow-shock region, if the apogee becomes coincident with the mid-day meridian. If collection of these data is accomplished it will represent data may be correlated with data from the CLUSTER mission.