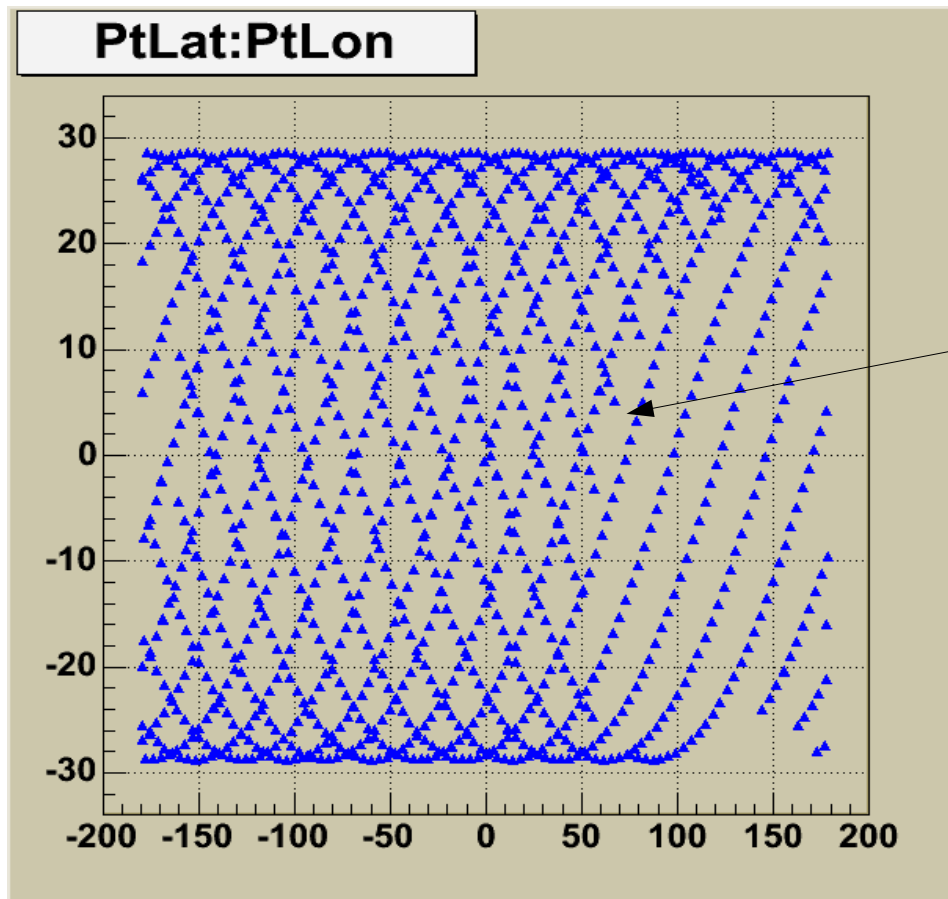


Longitude, SAA and Gleam

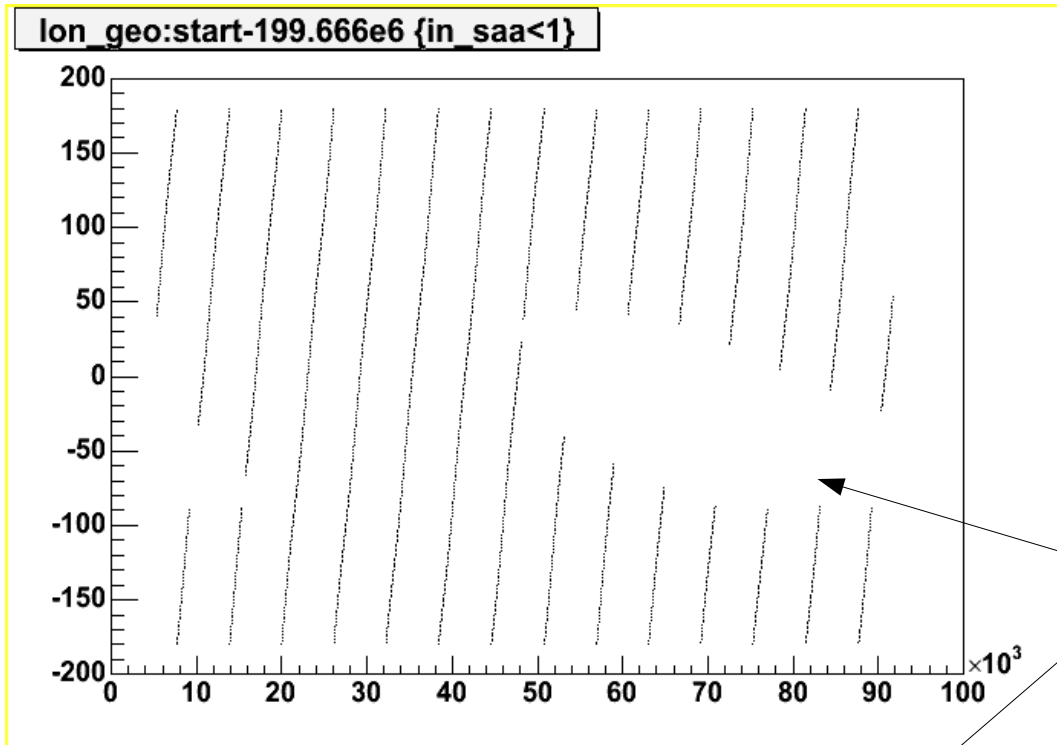
- Igor Volobouev found that the Longitude in the ascii input file appeared to be calculated wrongly.
- Steve Ritz noticed that the distribution of spacecraft lon/lat for the background runs looked odd.



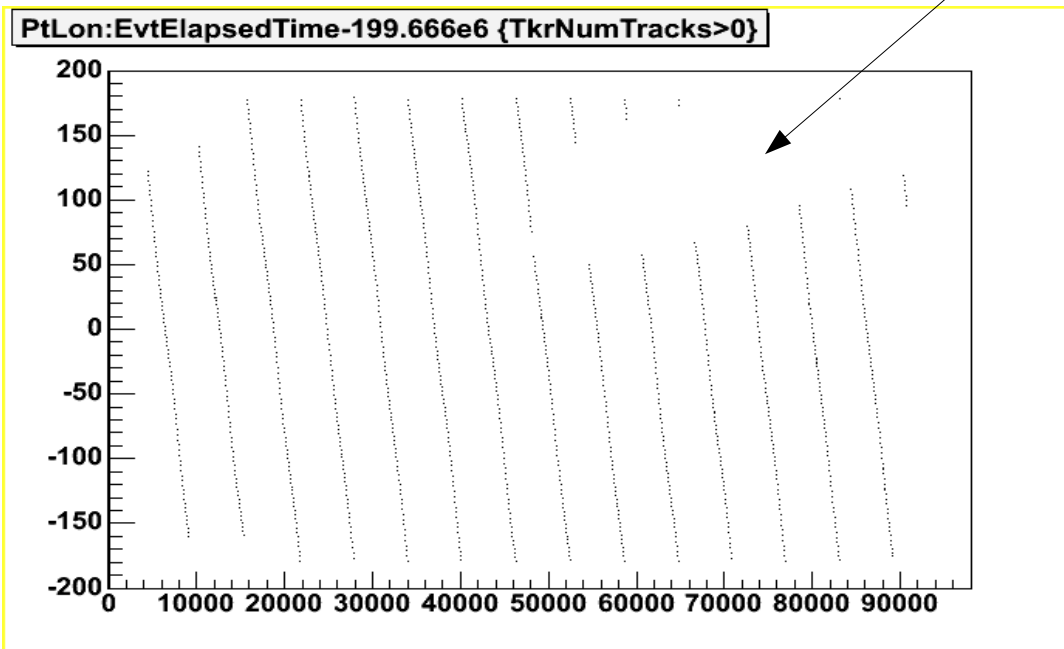
Why the abrupt break here?

Longitude vs Time

- There are two places where we record longitude and time.
 - pointing_history tree, one record every 30 s.
 - MeritTuple, one record per event.
- I added a flag to the pointing_history tree to record whether we were in the SAA and then compared the longitude vs time from both trees.



SAA appears in a different place. The lines of lon vs time have opposite slopes (Earth rotating in different direction?).

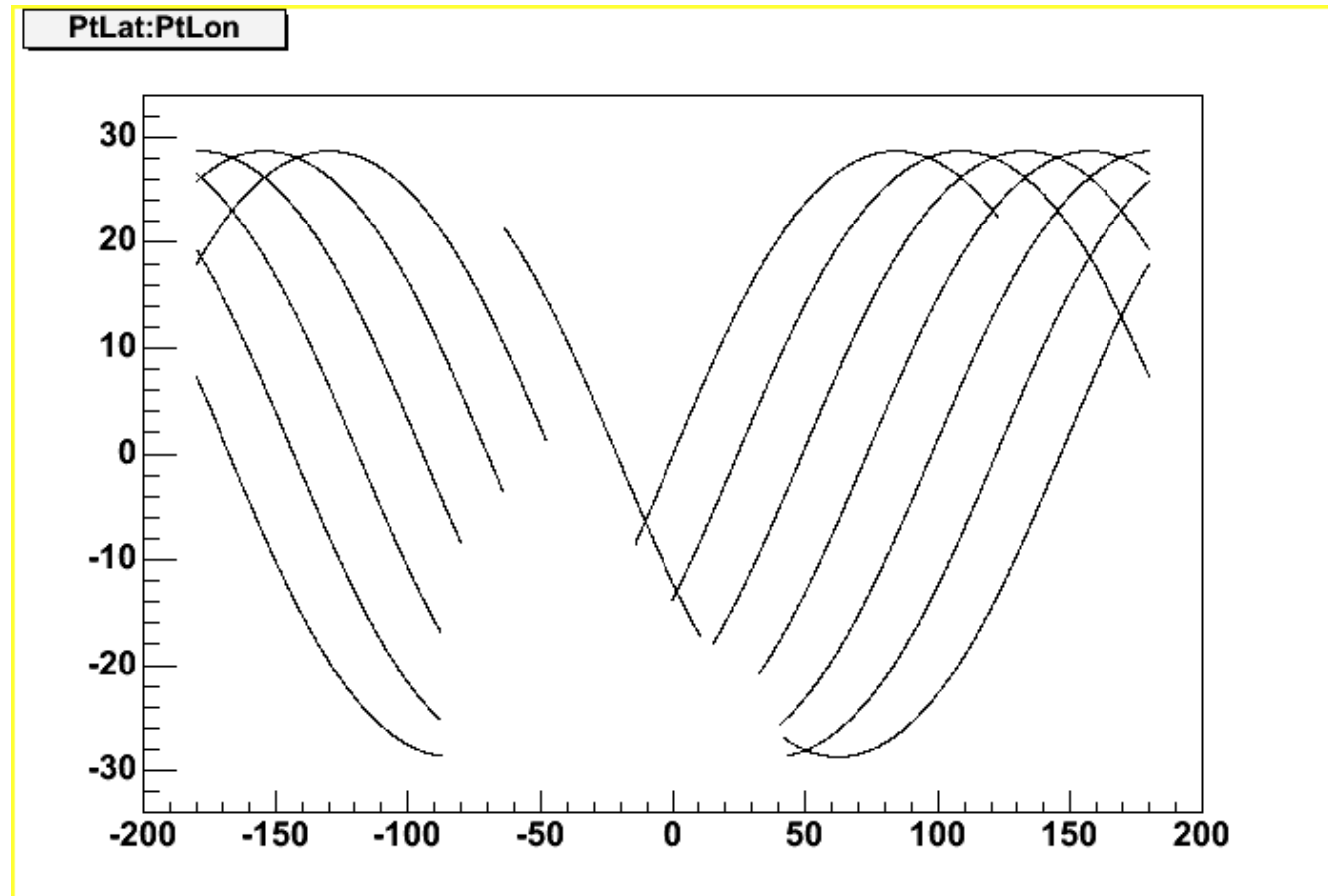


This is caused by a difference in sign. The definition of lon from the pointing_tree is used to determine the location of the SAA, but the events are assigned a different lon (reversed sign) this led to the oddness in Steve's plot

GlastRelease v7r3

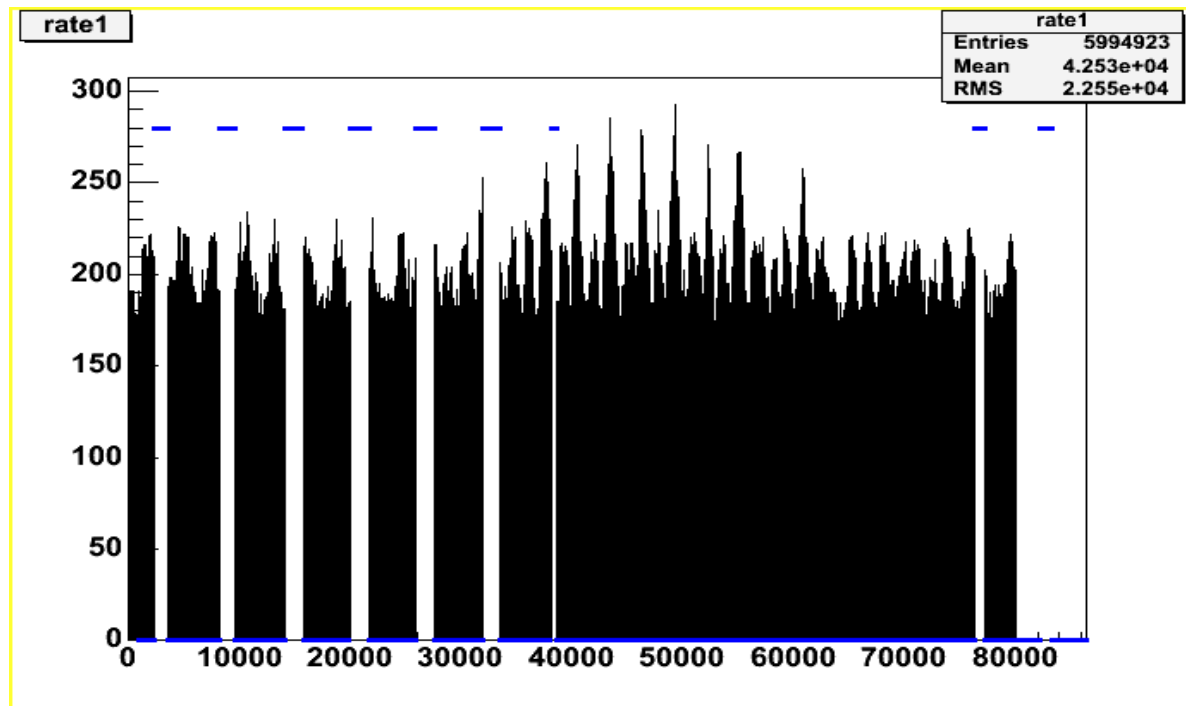
- We flipped the sign in the definition of longitude in GlastRelease v7r3 (used to generate the 1 B dataset).
- This appears to have fixed the problem, the SAA now appears in the right place.

This plot shows
LAT vs LON for
the first half of the
1B background data.



SAA and background rate

- This plot shows background rates (for events which pass OBF and $\text{TkrNumTracks} > 0$).
- The horizontal blue line indicates periods when the spacecraft was in the SAA.



The drop in background rates is due to SAA outages.

How should the time of the SAA outages relate to the point in the orbit where the rate is highest?

A final note

- What about Igor's concern that the longitude appeared to be incorrect in the input file?
 - He was taking the ECI coordinates and time and calculating longitude.
 - Time in the file is given in seconds past a reference date.
 - I had changed the reference date for the DC2 orbit file (to 1/1/2008 from 5/1/2007) but forgotten to document this.
 - So the longitude is being calculated correctly.
 - It doesn't really matter, as this is redundant information which should not be used in Gleam.