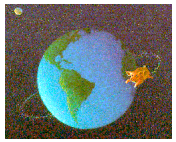
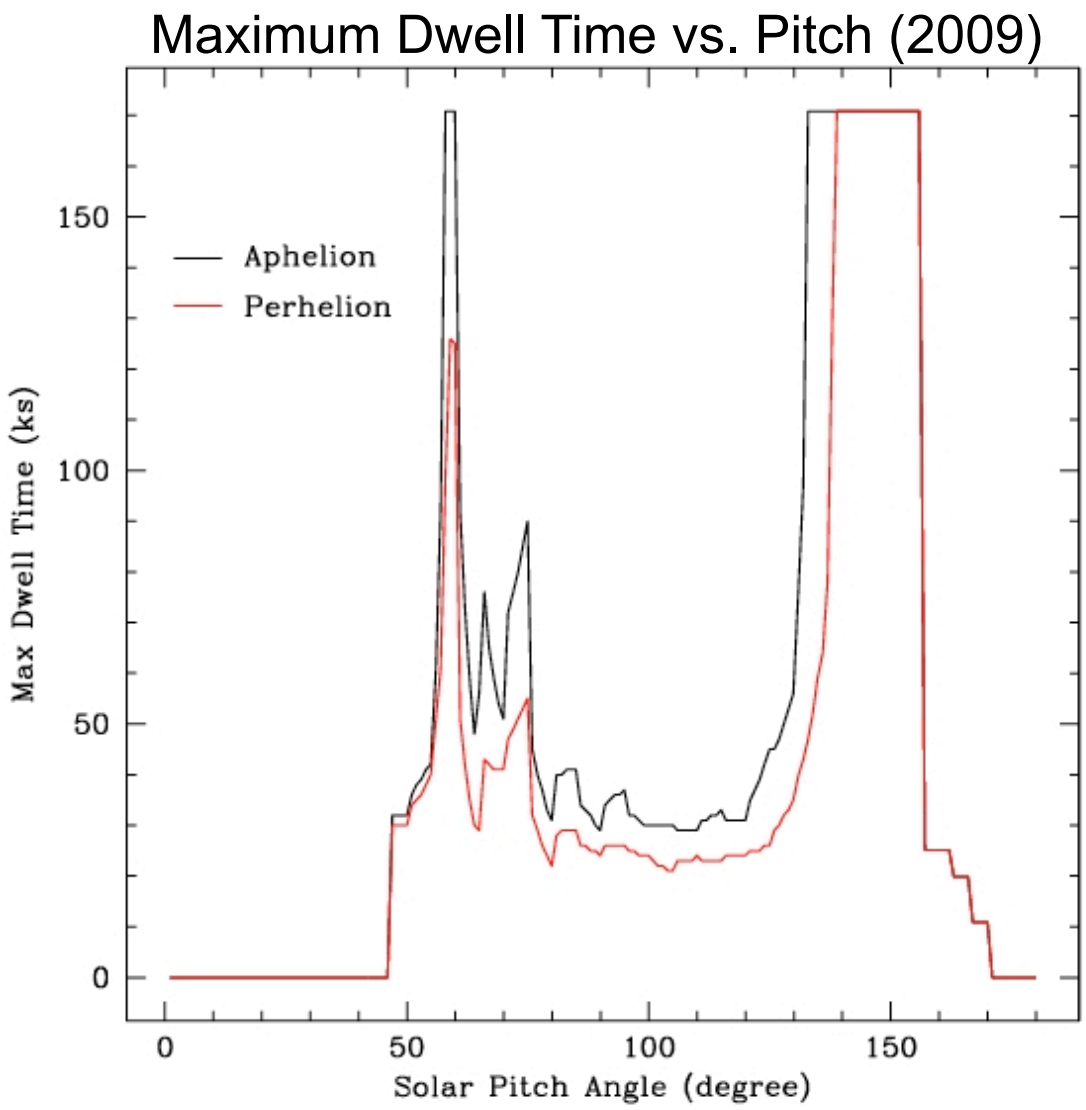
Update on Chandra Observing Constraints

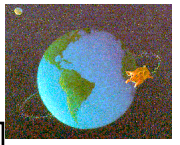
EPHIN Constraints





- EPHIN temperature restrictions limit observing time at certain (most) pitch angles
  - the maximum dwell time at a given angle is decreasing
  - perihelion/aphelion effects matter as well
- Efforts to raise the maximum EPHIN temperature have mitigated this somewhat
  - EPHIN behavior at higher temps shows some issues
  - plans for increasing temperature limit on hold pending more study of identified EPHIN options
  - maximum dwell times in Cycle 10 may be lower than hoped; time at bad pitch will pose challenges; LTS generation still in progress

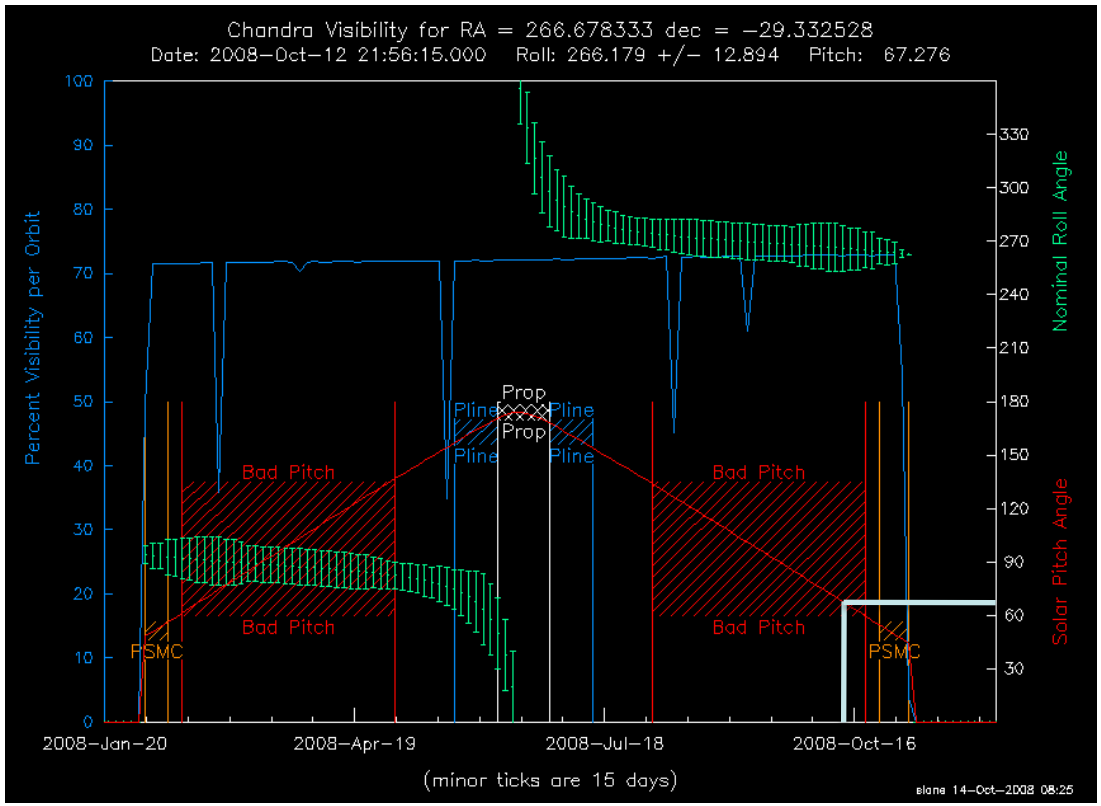
Dwell-Time Matrix



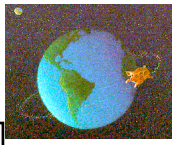
Time (secs) to reach 114 degF on 2008:286:08:00:00.000

	Final Pitch												
Init Temp	45	55	65	75	85	95	105	115	125	135	145	155	165
90	+Inf	+Inf	66300	46800	34500	32100	28800	30000	37800	+Inf	+Inf	+Inf	+Inf
95	+Inf	+Inf	59700	40800	29400	27300	24600	25800	33300	+Inf	+Inf	+Inf	+Inf
100	+Inf	+Inf	51300	33300	23700	21900	19800	20700	27600	+Inf	+Inf	+Inf	+Inf
105	+Inf	+Inf	40500	24600	17100	15600	14100	15000	20400	+Inf	+Inf	+Inf	+Inf
110	+Inf	+Inf	24000	12900	8700	7800	7200	7500	11100	+Inf	+Inf	+Inf	+Inf

- Maximum uninterrupted time on target depends on pitch and on starting EPHIN temperature
  - e.g. on 10/12/08, for a pitch of 67°, maximum time is ~60 ks for a typical coldest T_{start} ~ 93°F
- The T_{start} value is higher (often much higher) in mid-orbit
  - in addition, the coldest T_{start} value is increasing with time
  - table like above will be placed on CXC web pages (linked to RPS)
  - shorter perigee passes in ~2012 will make this worse



Dwell-Time Matrix



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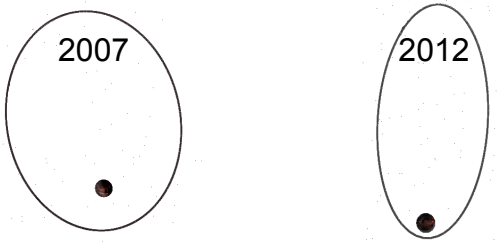
- Perigee time is decreasing
  - this will raise coldest T_{start}
  - Adjustments to T_{EPHIN} limit may make this irrelevant before the effect is significant



- Max dwell times at off-nominal roll angles are generally small
  - current plots do not differentiate between short and long observing times; improvements under discussion