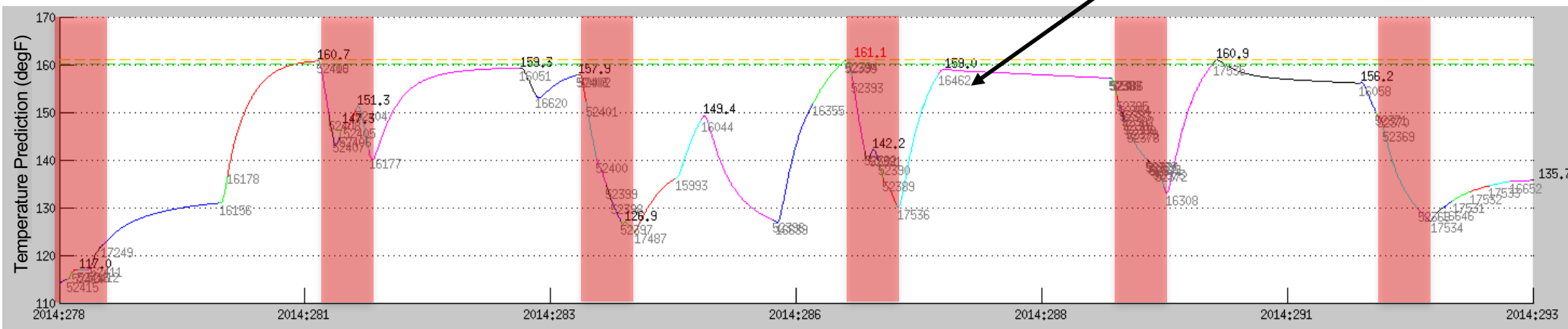
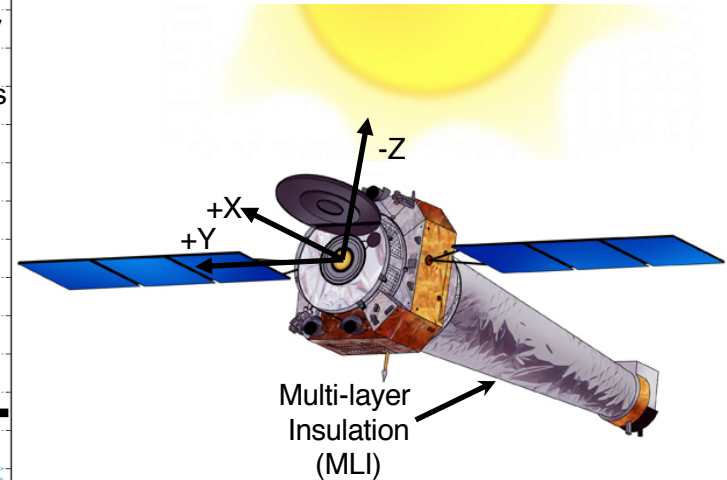
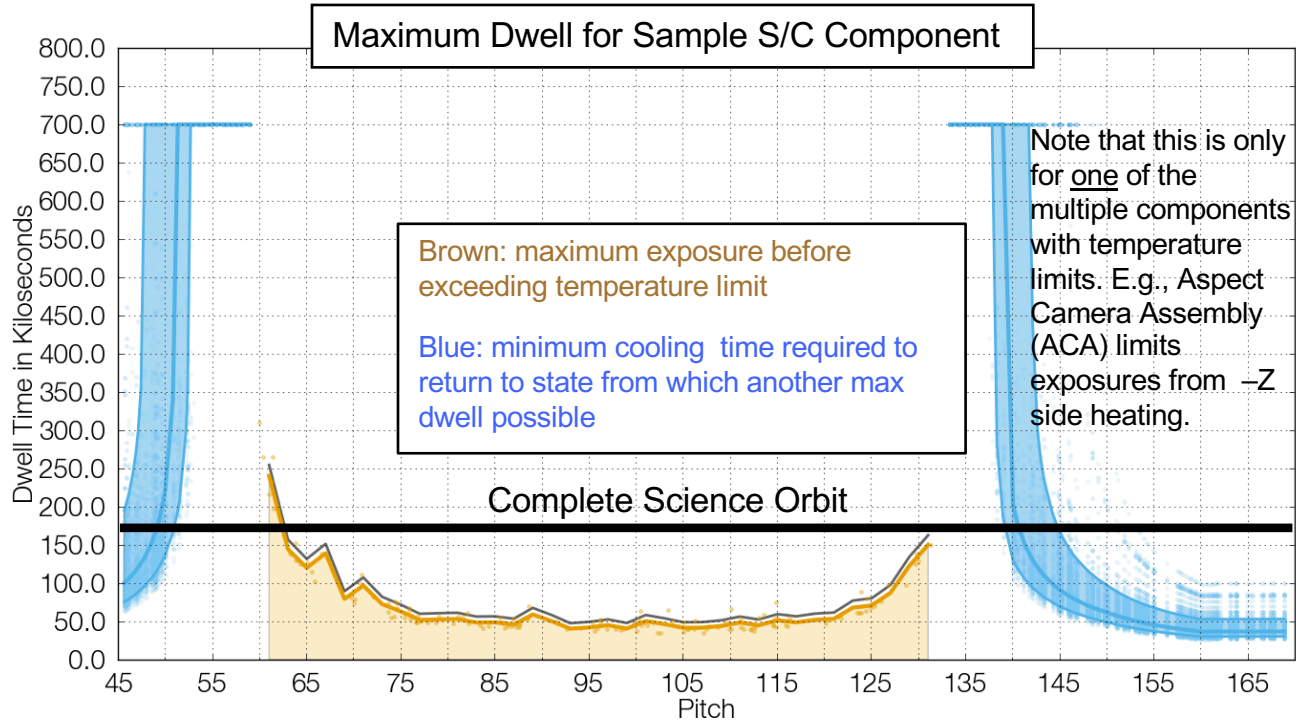




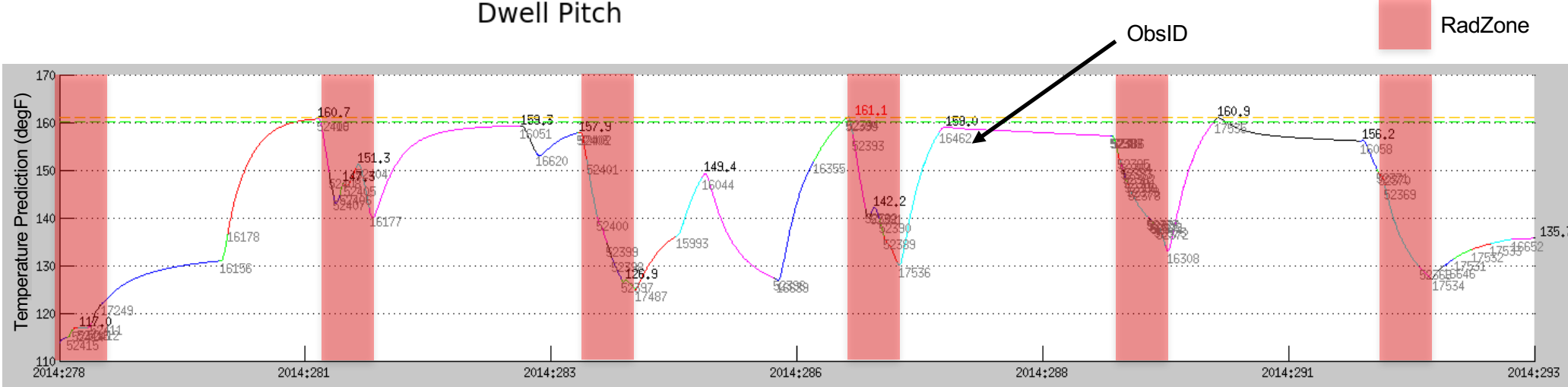
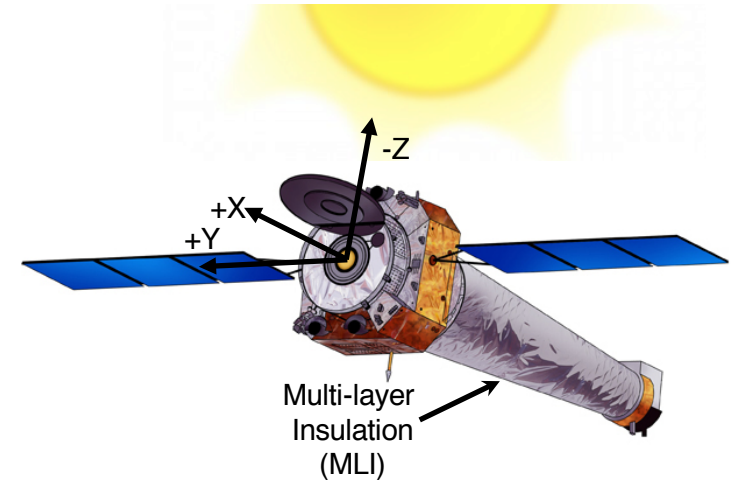
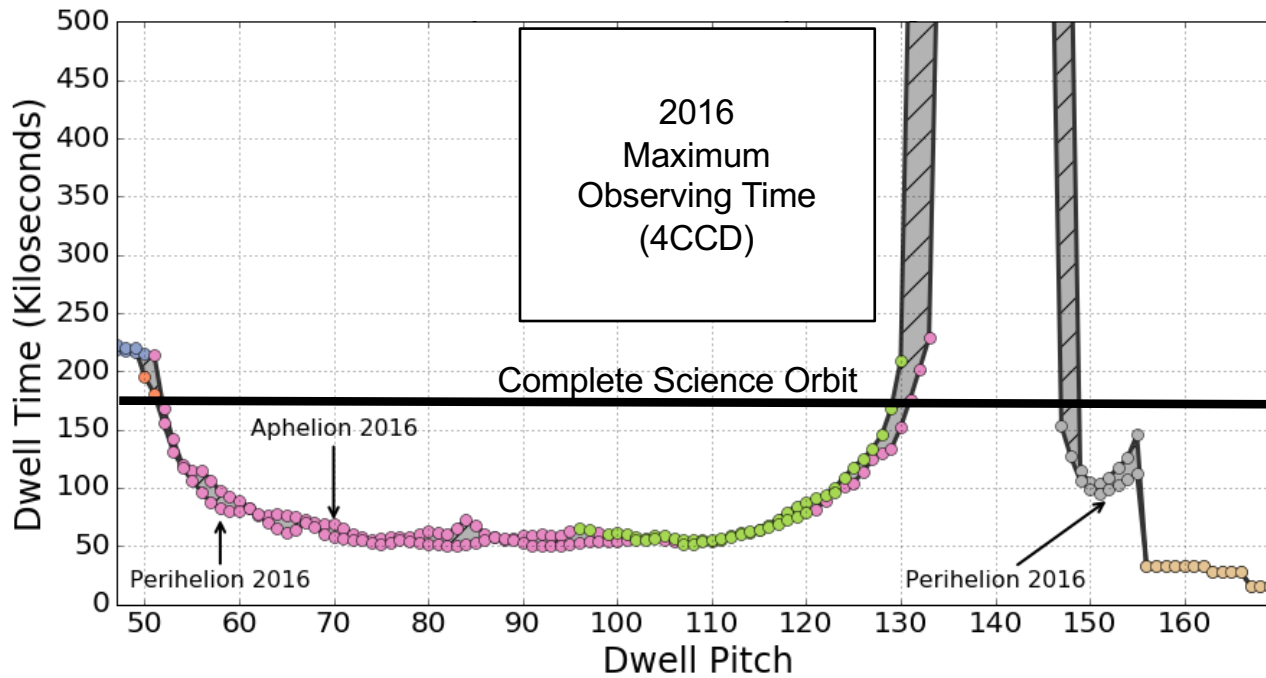
# Mission Planning Updates

# Thermal Balance: A Reminder



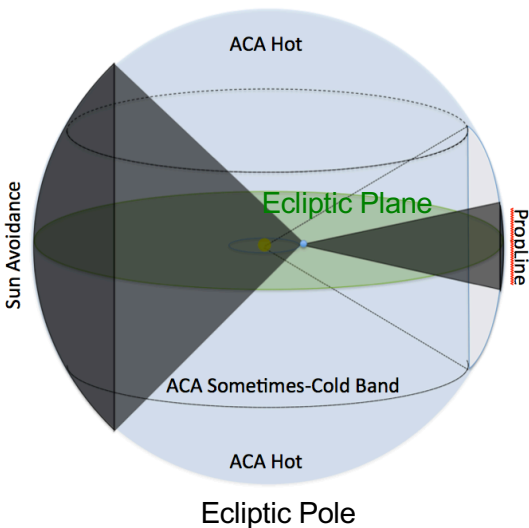
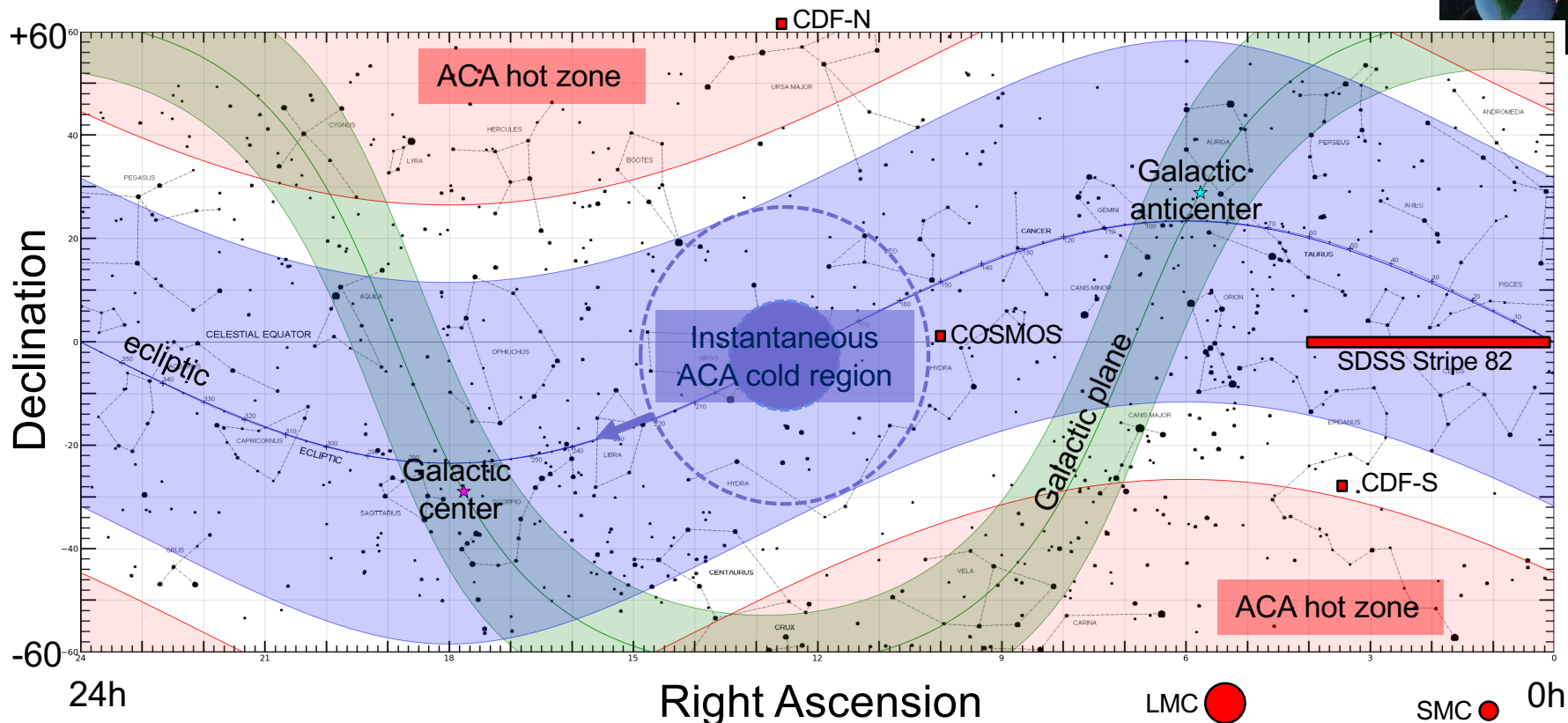
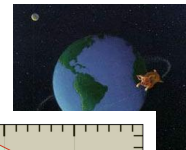
- Scheduling is a balance of heating and cooling multiple s/c components
- Observations often split to accommodate temperature limits

# Thermal Balance: A Reminder



- Scheduling is a balance of heating and cooling multiple s/c components
- Observations often split to accommodate temperature limits

# Constraints: Sky View



- Sometimes-cold ACA (-Z) region covers large sky area.
  - Many well-known fields can provide some cooling (e.g., Galactic Center, COSMOS field, SDSS Stripe 82).
  - Others (e.g., CDF-N, LMC, SMC) difficult for long exposures.
- X-ray Visionary Programs currently limited to  $<2$  Ms within  $30^\circ$  of ecliptic pole.

# Actions and Other Activities



- CUC 2015 MP Action:

Discuss with CDO efforts to "identify particular examples of hidden or poorly-specified constraints and attempt to provide further information to proposers on such issues" so as to avoid confusion about how to specify constraints as well as how (or if) to interpret spacecraft constraints in planning by observers.

- Reviewed RPS instructions; modified some descriptions.
- Provided additional screening in technical reviews.
- Initiated post-IPPS review of constraints/preferences in remarks.

- Thermal investigations/activities:

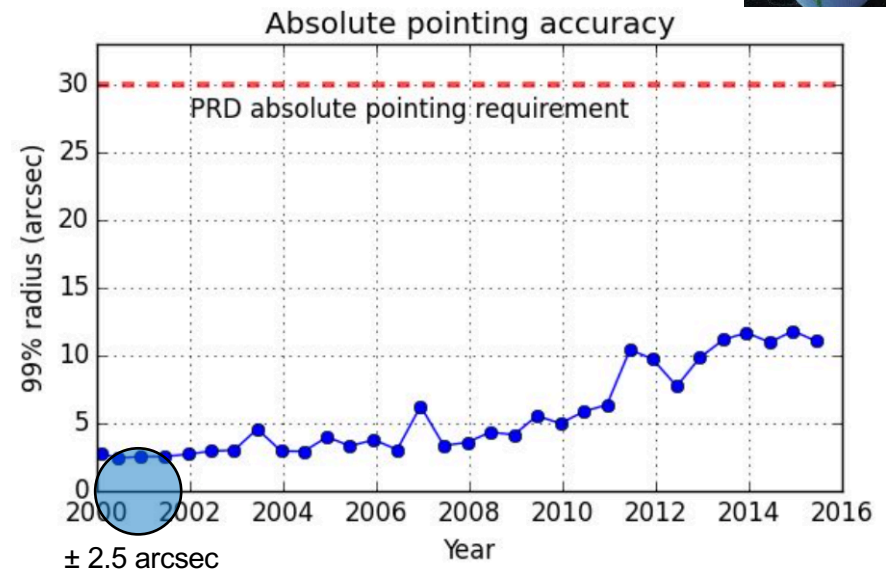
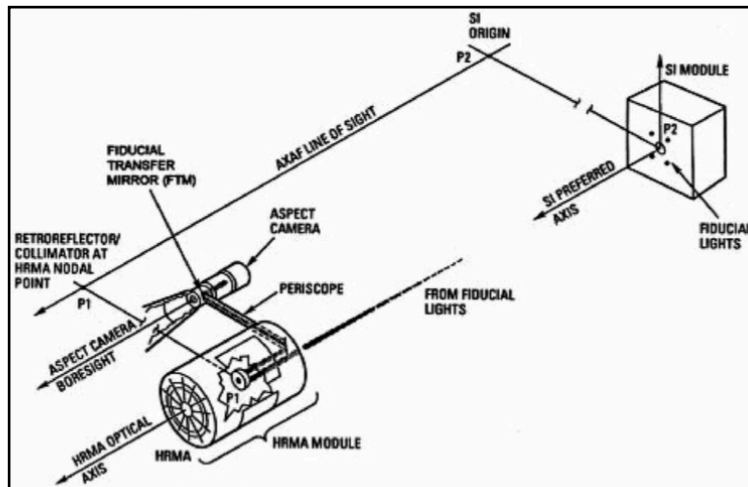
- Disabled ACA "multiple star" flag; enabled temperature increase.
- Analyzed/monitored other temperatures.

- ✧ Temperature limit increases in past year: ACA (3\*), OBA (2)
- ✧ (somewhat) longer dwell times enabled
- ✧ ACIS DEA restriction added

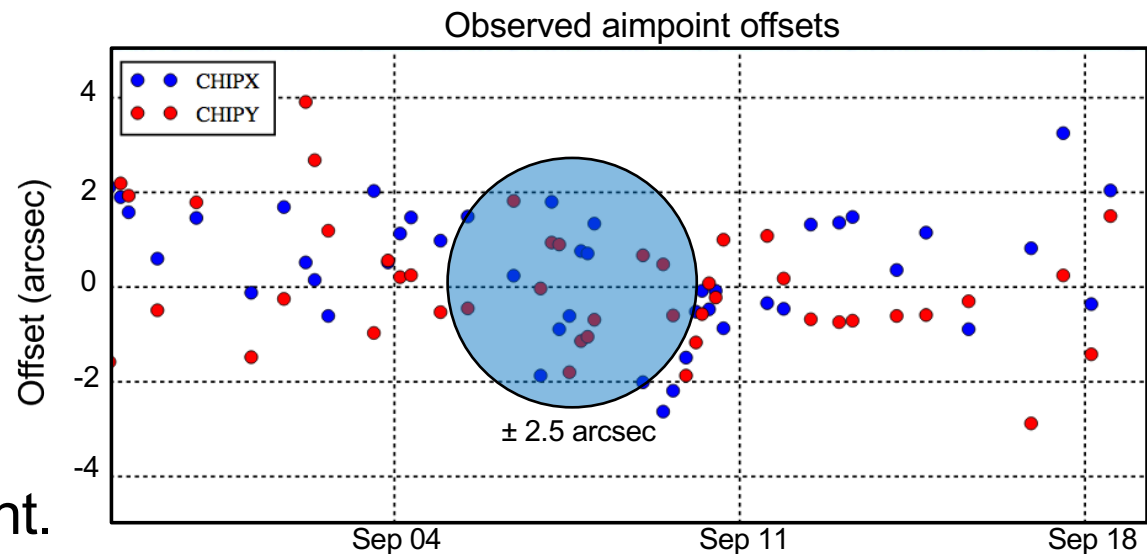
- ACA annealing activities carried out on 9/9/16; analysis underway.

\* One increase was just due to recalibration; no dwell time increase enabled.

# Dynamical Aimpoint Adjustments



- Thermal effects result in degradation of absolute pointing accuracy (i.e., ability to place target at specific detector position); **aimpoint drift**.
- ACA team has created thermal model to generate pointing-by-pointing offsets that correct for thermal drift.
  - **Excellent Results**
- Default aimpoints have been updated in Cycle 18; Note: ObsVis version number important.

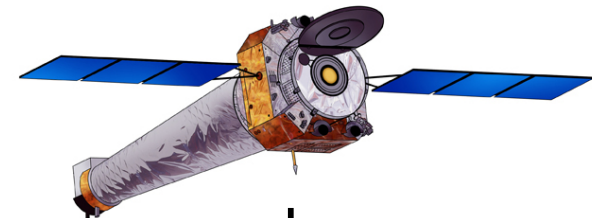
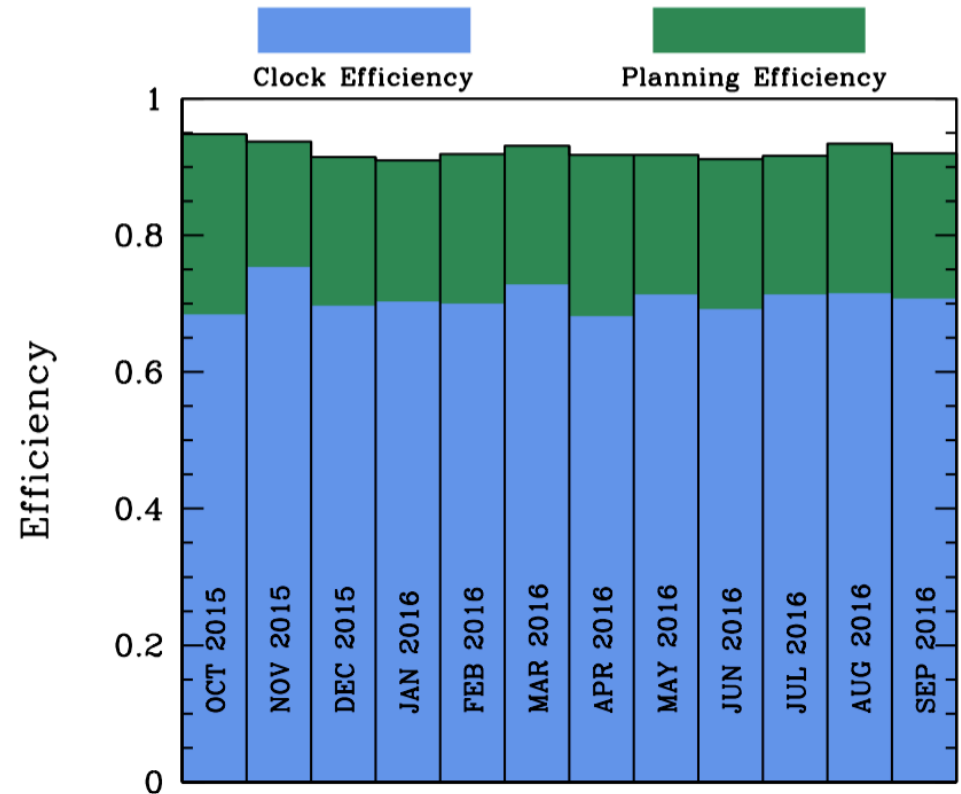


# Observation Scheduling



From 10/1/2015-9/22/2016:

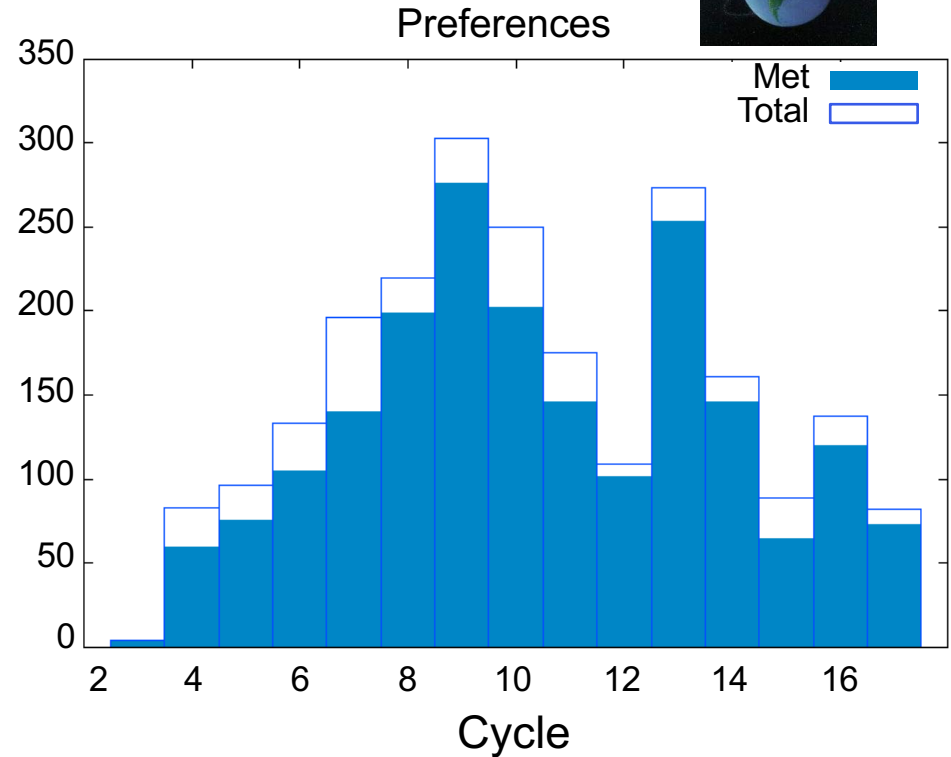
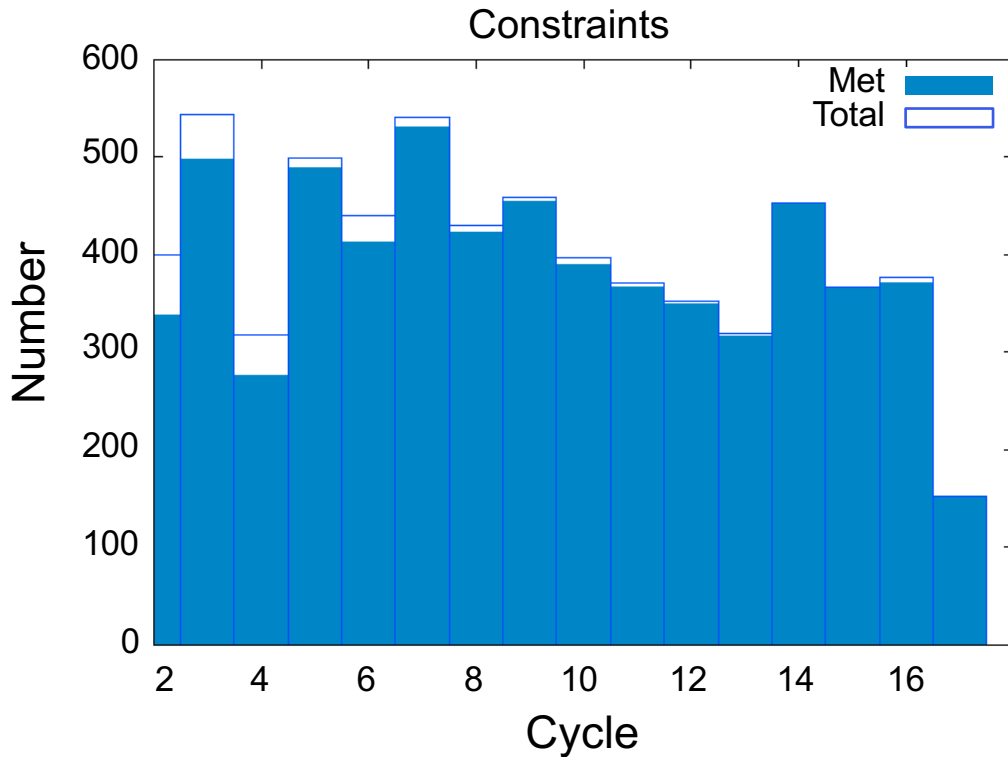
- Scheduled:
  - 938 observations (21.9 Ms)
- Executed:
  - 39 TOO observations (986 ks)
  - 25 DDT observations (457 ks)
  - ✧ interrupted 9 operating loads for TOO/DDT support
- Coordinated Observations:
  - Constraints: 7 observations (442.8 ks)
  - Preferences: 29 observations (419.61 ks)
  - Non-specified/Unofficial: 44 (783.9 ks)
  - TOO/DDT coordinations: 19 (541 ks)



+

HST, VLA, NuSTAR, SWIFT,  
XMM, Spitzer, MEarth, VLT,  
SMA, Keck, GBT, INTEGRAL,  
Astrosat

# Constraints and Preferences



- Continue to successfully meet observing constraints
  - Small number missed due to replans from anomalies or radiation events.
  - Some are “slight misses” that have been approved by observers.

- Most observing preferences continue to be met (but requested number has decreased).
  - Generally not met if preference requires observing at bad pitch angle or sacrifices potential “cold” time.
  - Ability to meet preferences declining with increasing thermal constraints.