COR2 Status

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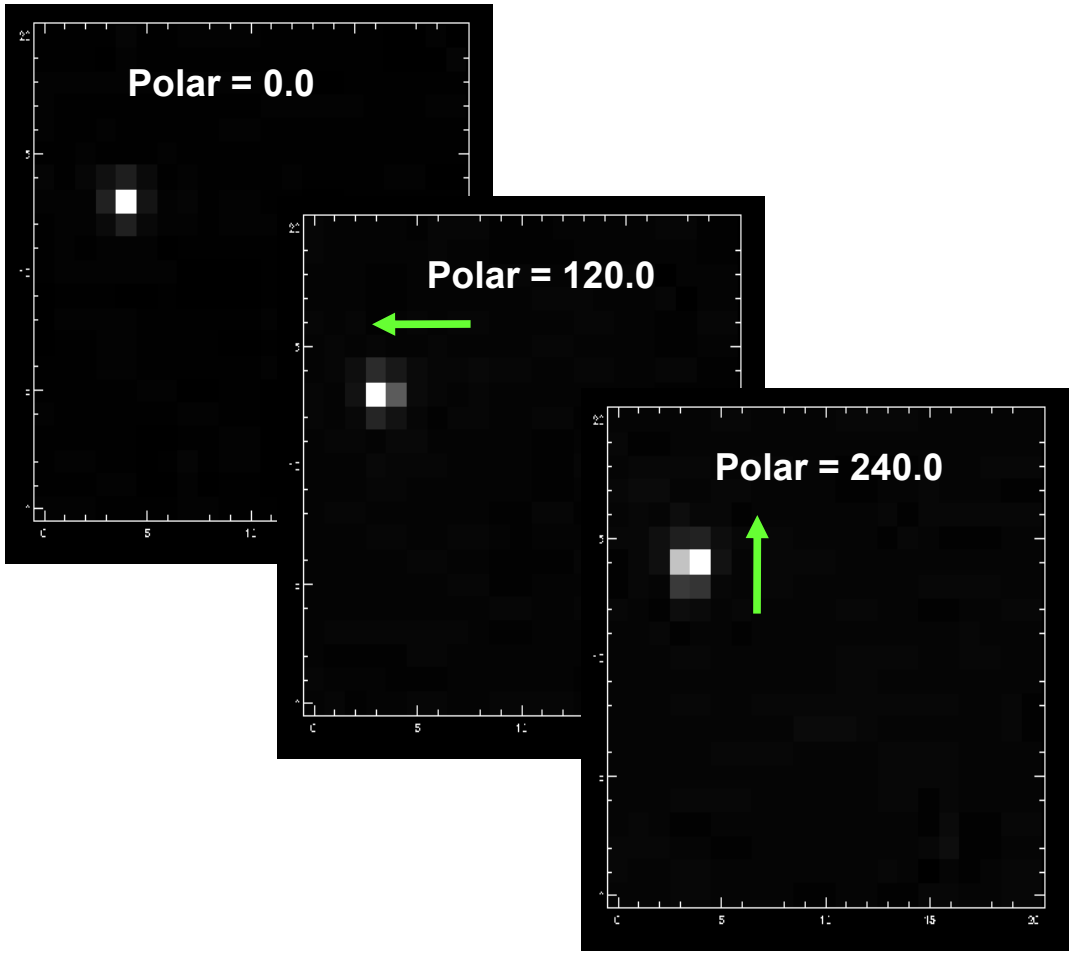
Instrument Status

- **Nominal**
  - **Synoptic Observing Plan: 3 TB, 1 pB per hour**
- **Calibrations completed**
  - **Pointing**
  - **Distortion**
  - **Photometry verification (using stars)**
  - **Polarization image rotation**
  - **Vignetting**
  - **Debris Catalogue**

Summed Polarizer Images "Wobble" Error

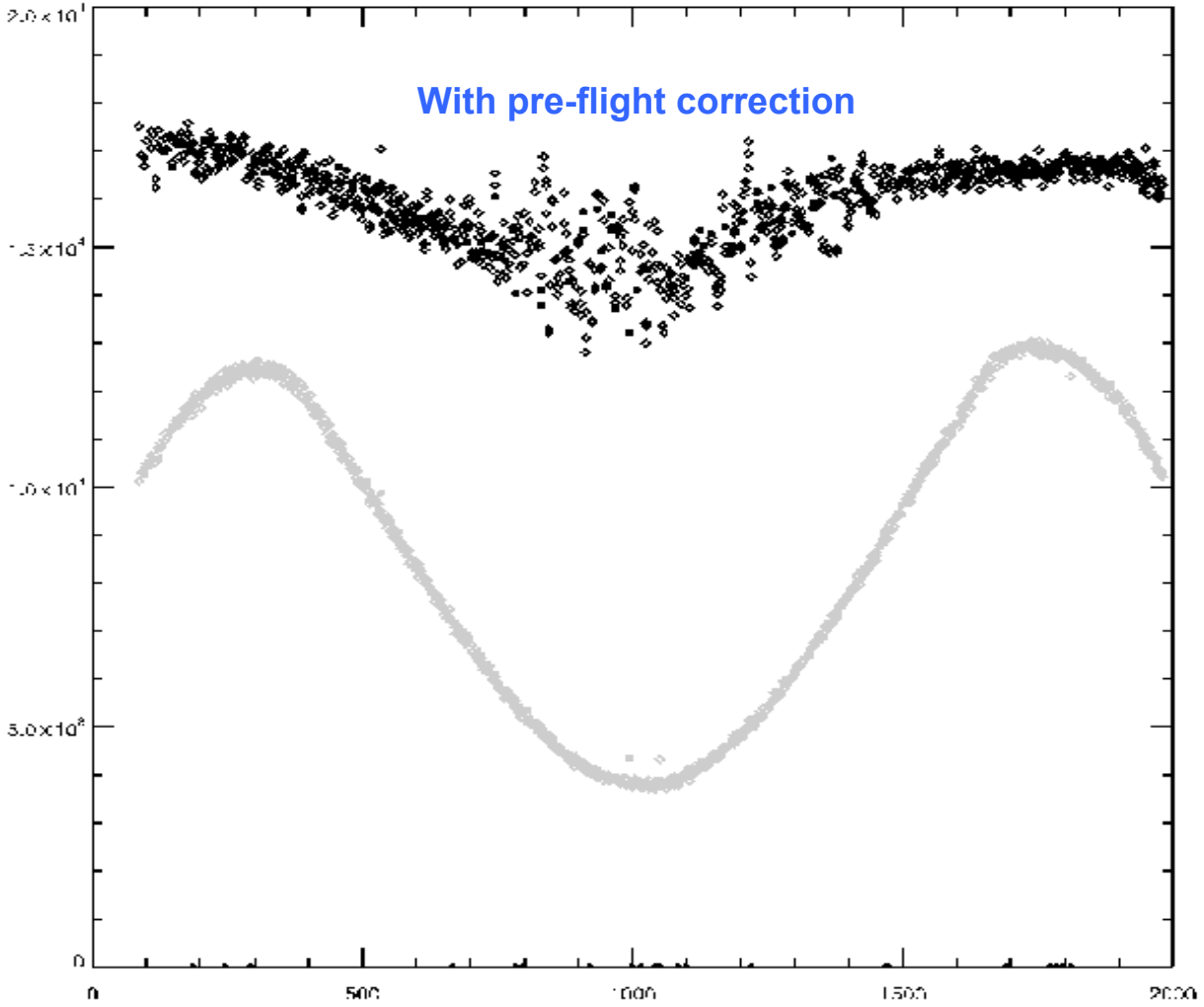
COR2A Example

- COR2 sequence images undergo a small motion as the polarizer rotates.
- Motion could be due to small wedge quality of the polarizer or a slight misalignment of the polarizer along its mount axis.
- A correction has been made to correct for motion in individual 'seq' images prior to summing.



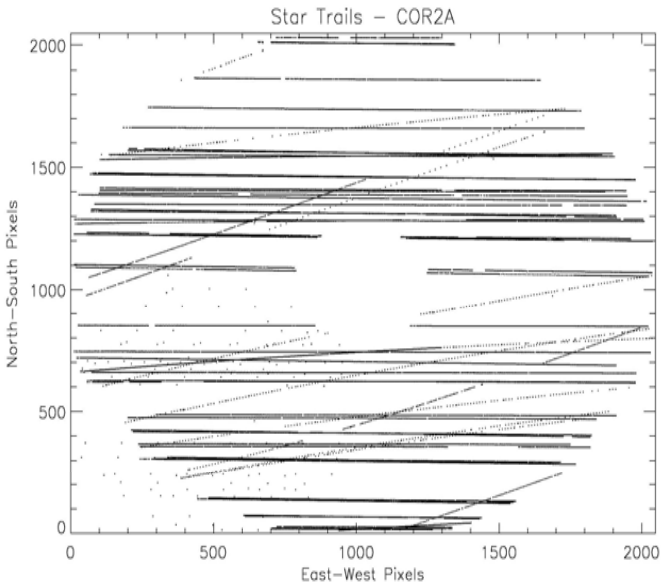
COR2 Vignetting

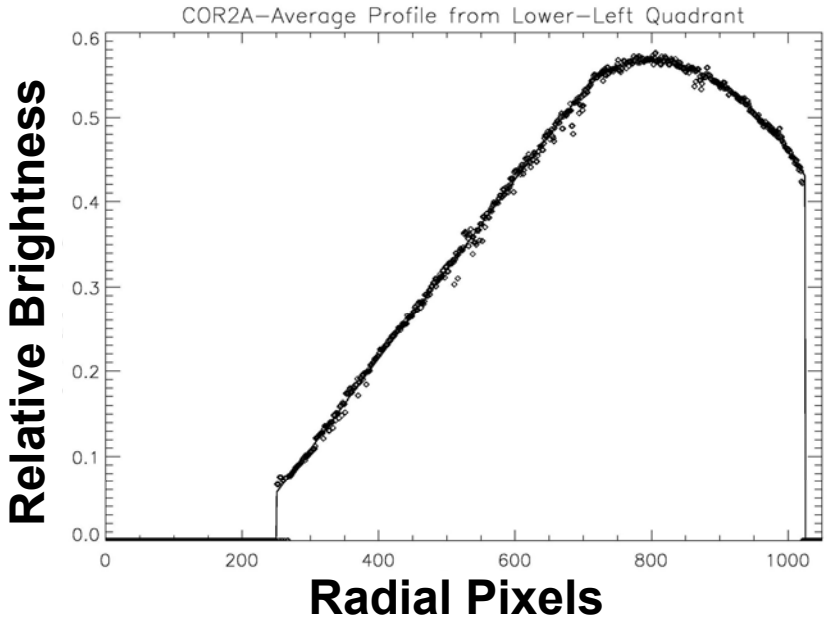
- In-flight stellar measurement in combination with analytical methods a being investigate to determine true vignetting function.
- A pre-flight vignettin image correlates wel with stellar measurements



Star Based Vignetting Function

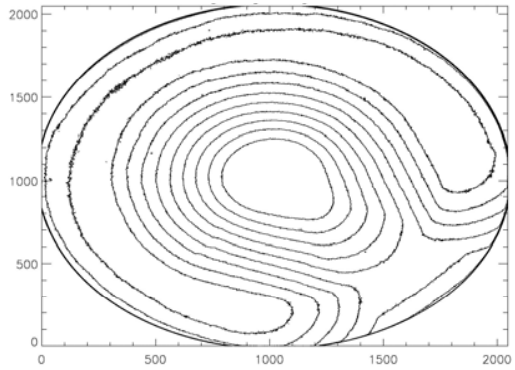
- **Procedure:**
  - **Use corrected star intensities (B/Bsun) to generate vignetting function**
  - **Fit intensities as function of distance from image center**
  - **Fit intensities near pylon with Gaussian profile (edges OK but pylon center is not)**



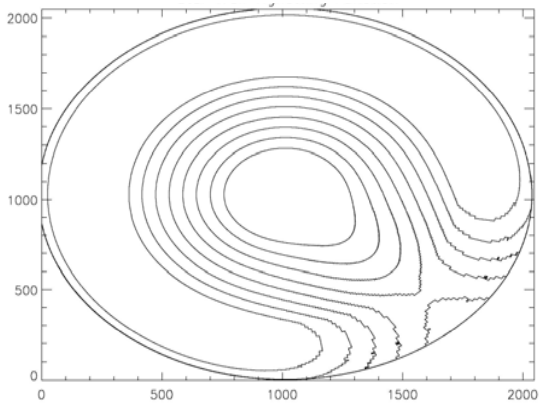


Pre- vs Post- Flight Vignetting Function

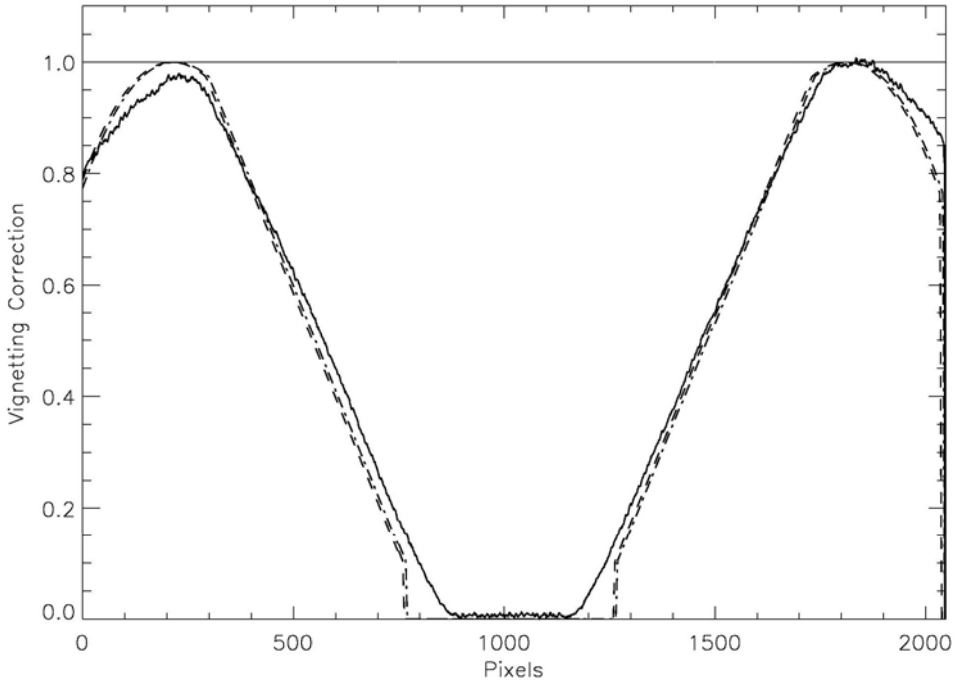
Pre-Flight Vignetting



Post-Flight Vignetting



COR2A Pre- vs Post Flight Vignetting

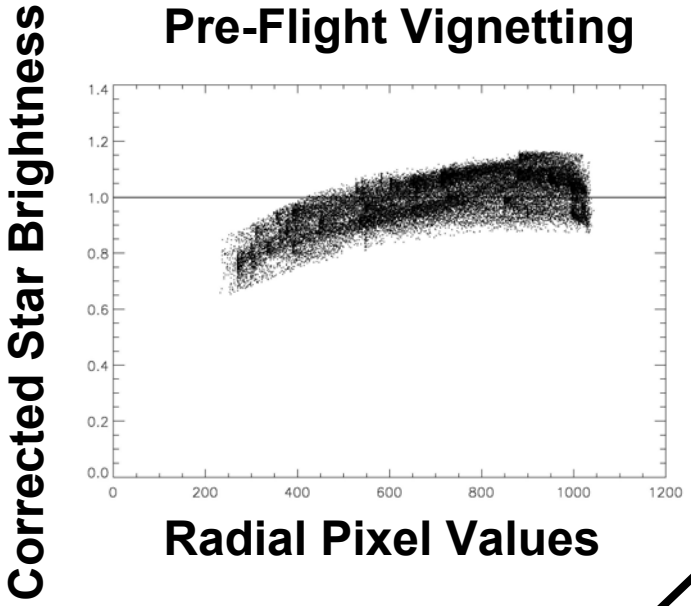


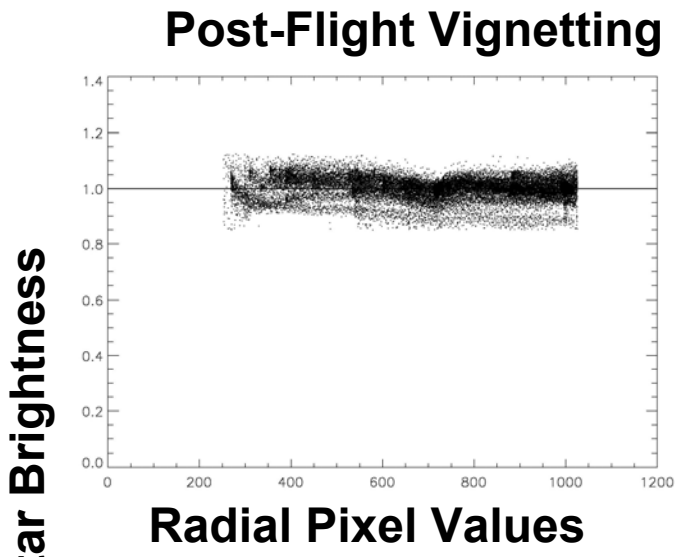
Pre-Flight

Post-Flight, Left-Right

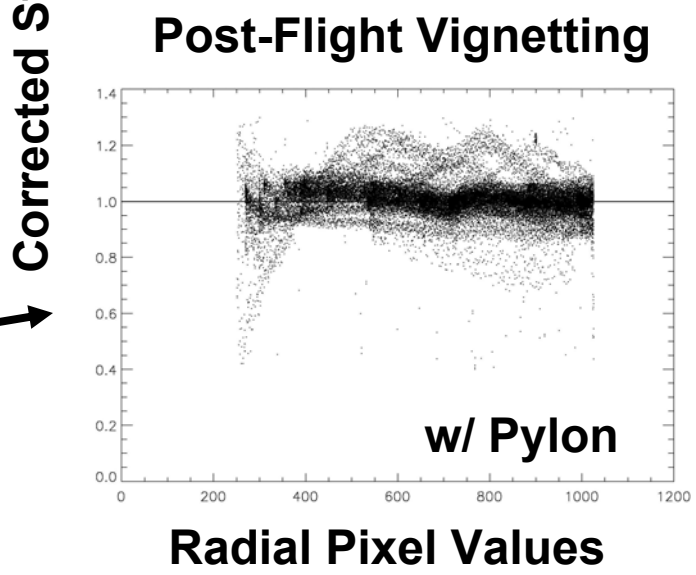
Post-Flight, Up-Down

Pre- vs Post- Flight Vignetting Function





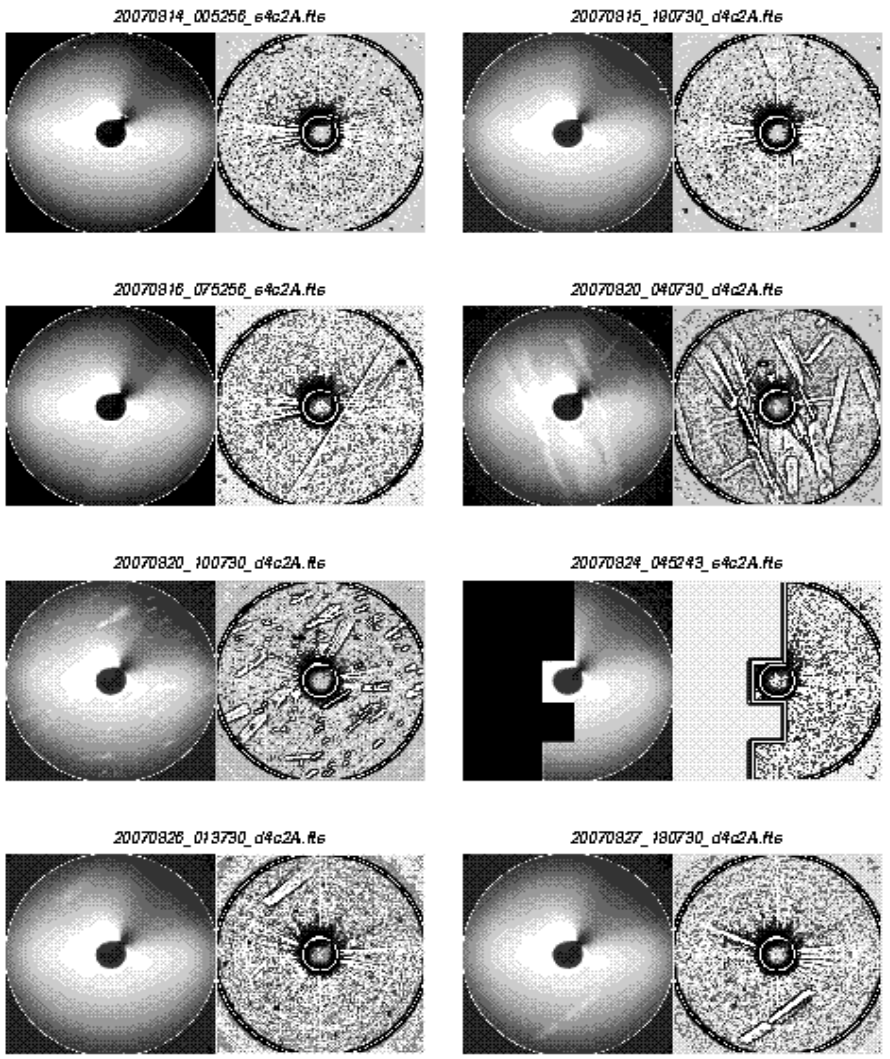
- Post-Flight vignetting function improved over Pre-Flight version
- Pylon still needs work



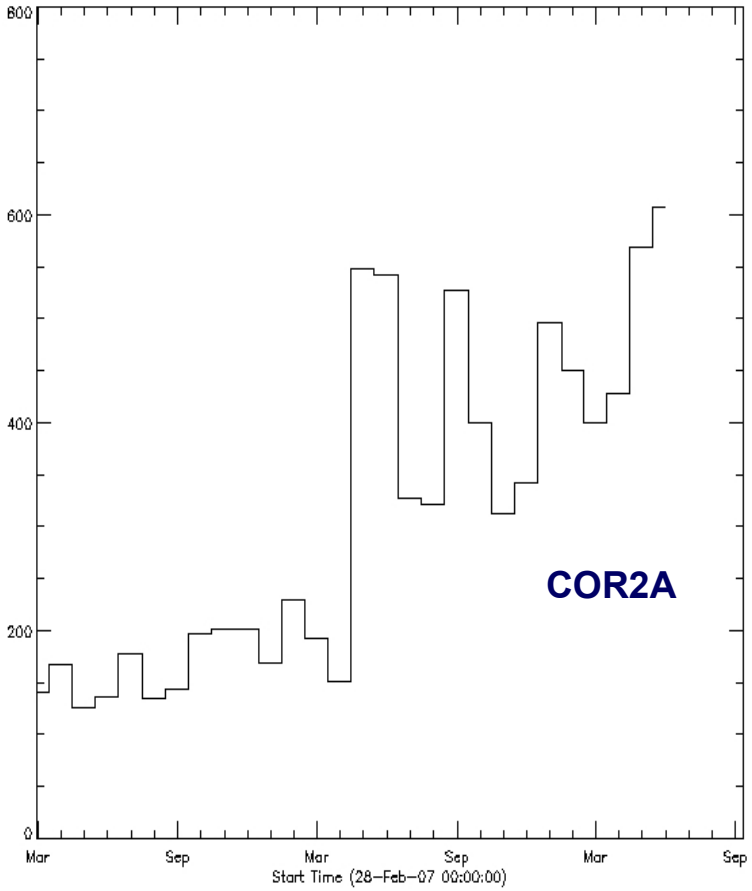
COR2 Debris

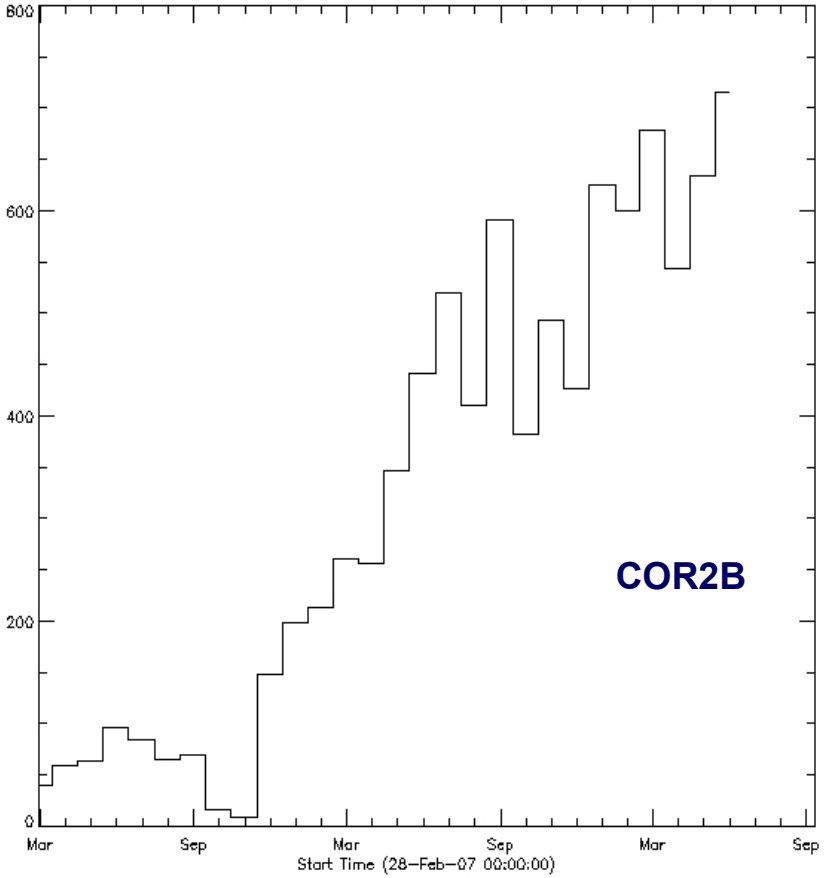
Debris considered significant if:

1. Obvious debris causes blur mark in image.
2. Not all of the pixels in the image are present.
3. The debris area spans more than 1/6 of the image radius, regardless of its brightness. This accounts for longer cosmic ray observances.
4. There is more than a 35 DNs difference between debris pixels and surrounding pixels. This accounts for darker cosmic ray events.
5. A cluster, often of perhaps stars, is considered debris if it covers a large area.
6. Cosmic rays that appear to have skipped off an object.

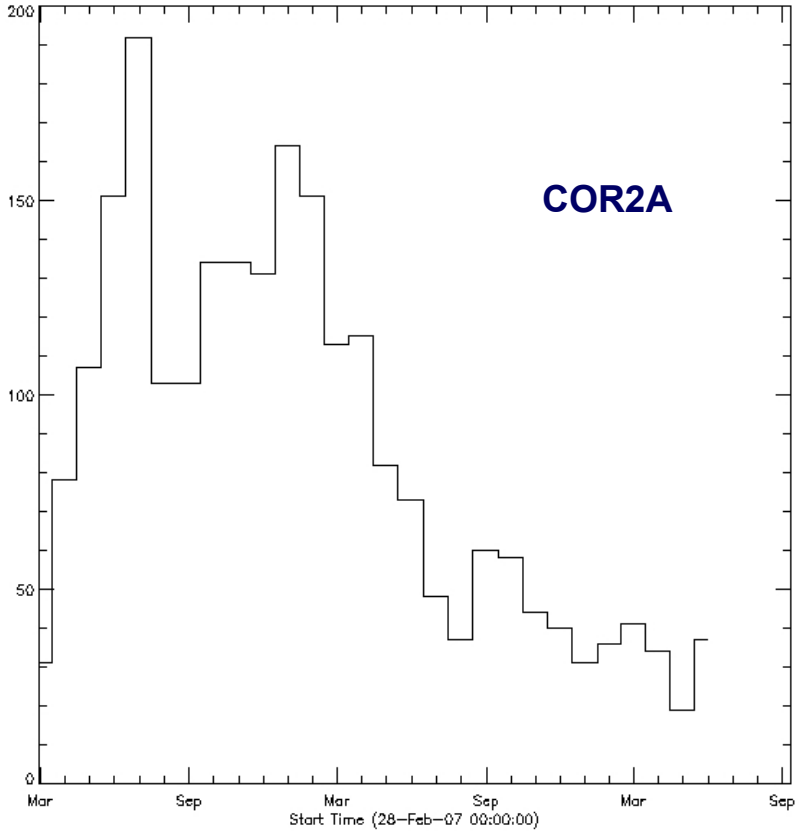


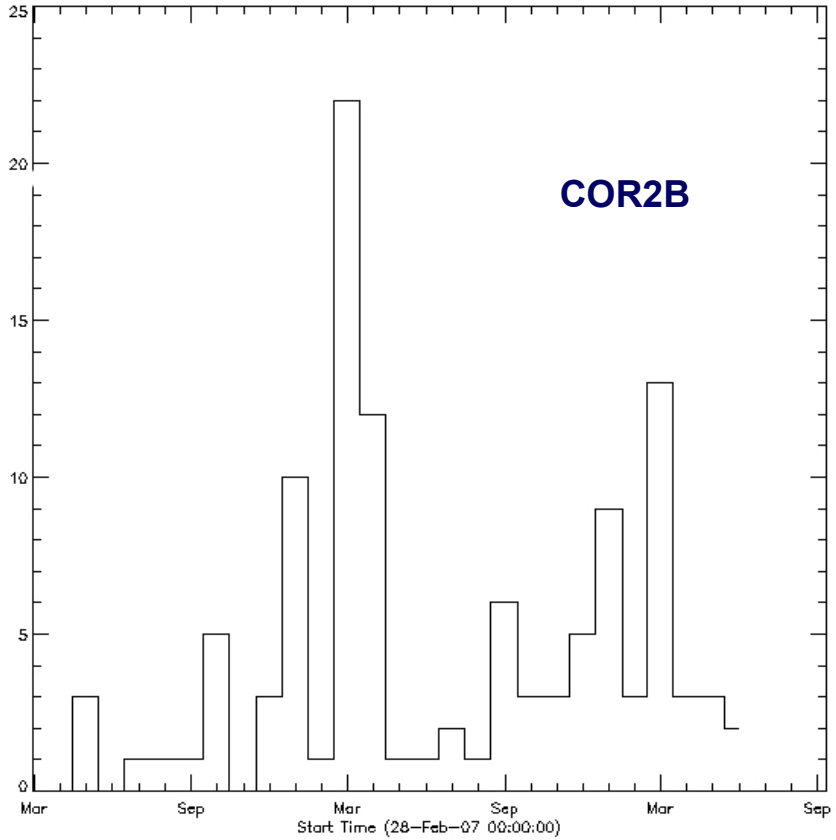
Cosmic Ray Count Statistics





Debris Count Statistics



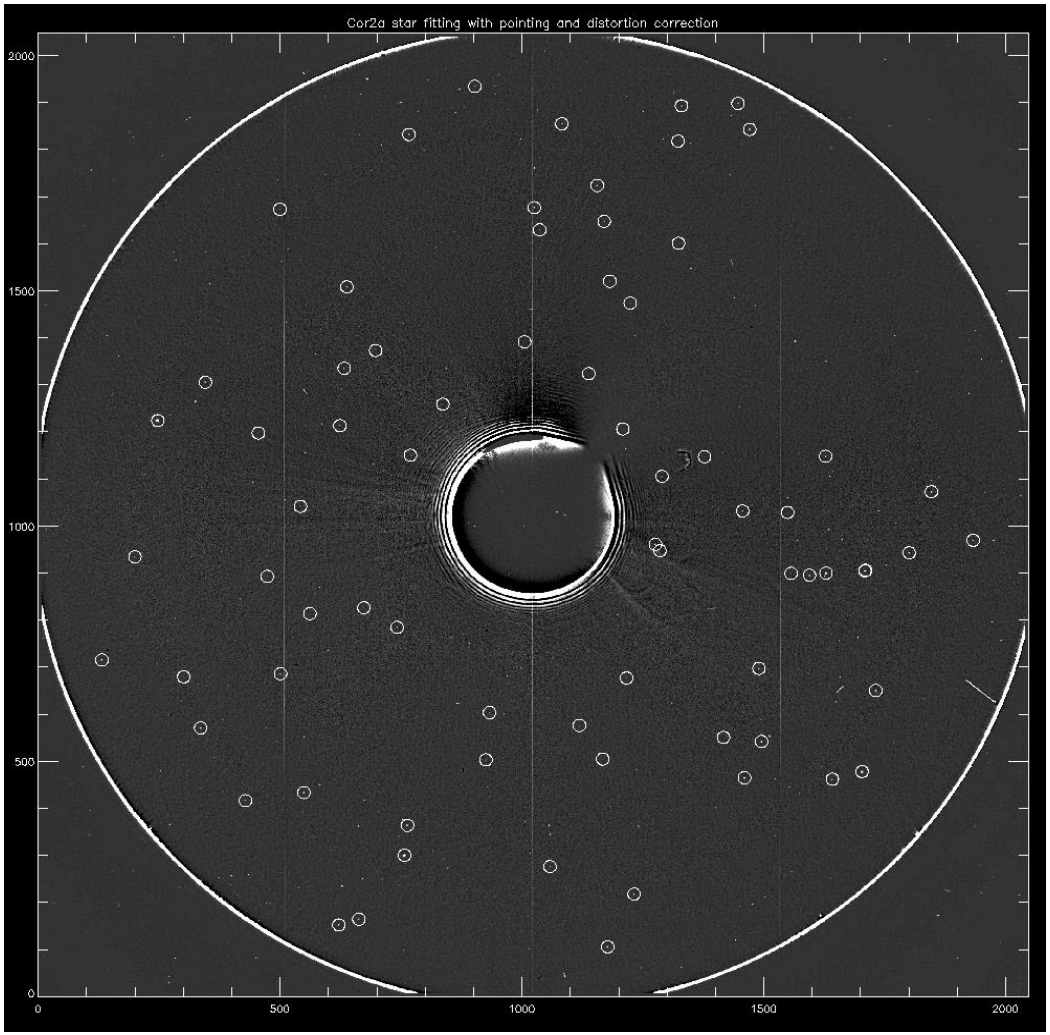


Backup Slides

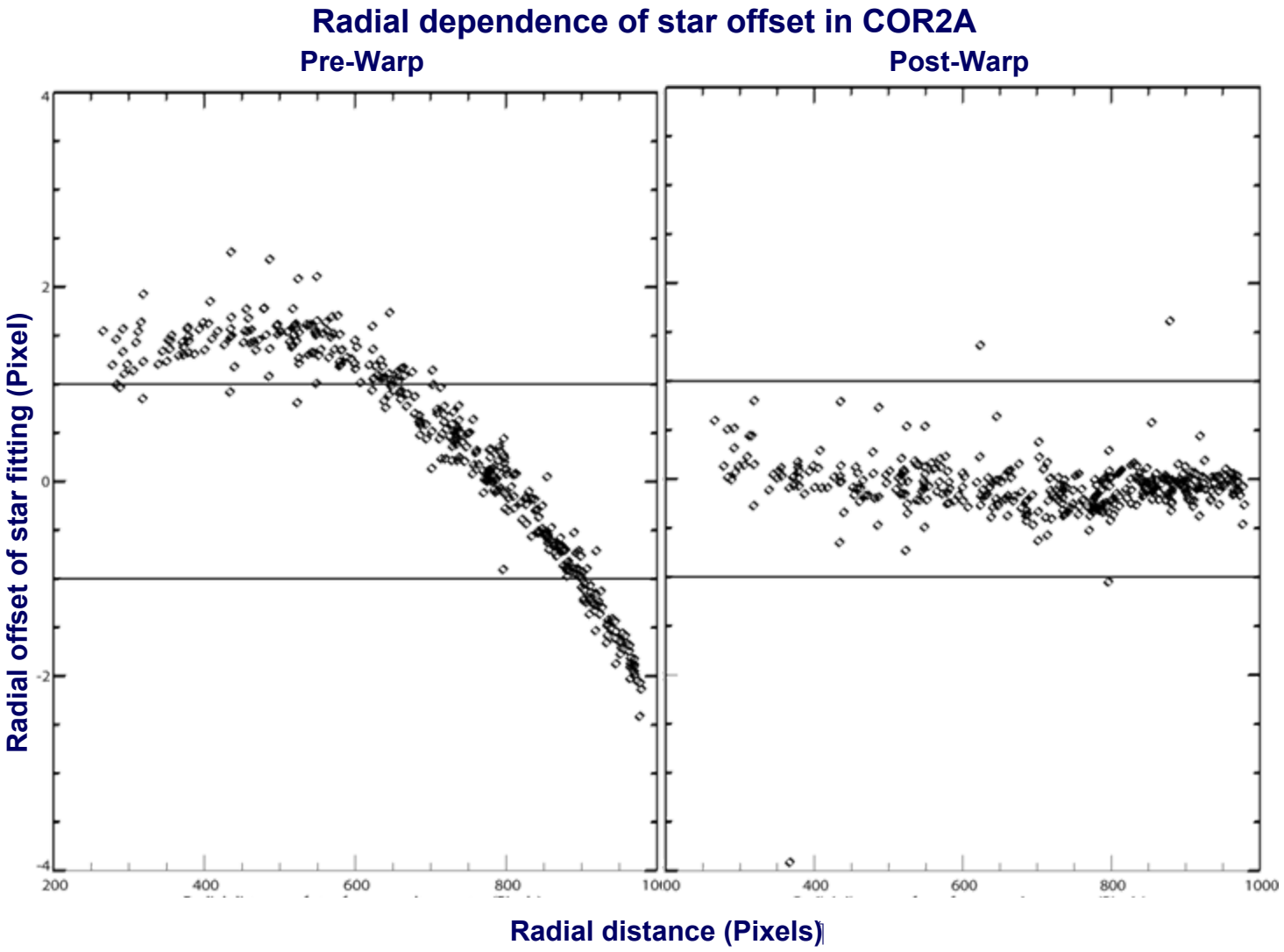
COR2 Pointing Issues

- Off pointing assumed to have occurred during launch.
- Compute distance between true star locations and detected point sources within each images FOV.
- Distance should depend on translation and rotation combination.
- Our rotation and translation corrections were implemented into COR2_point and secchi_prep by means of the CRVAL and CROTA keywords in the header. (CRPIX remains occultor center.)

Star fitting with pointing and distortion correction



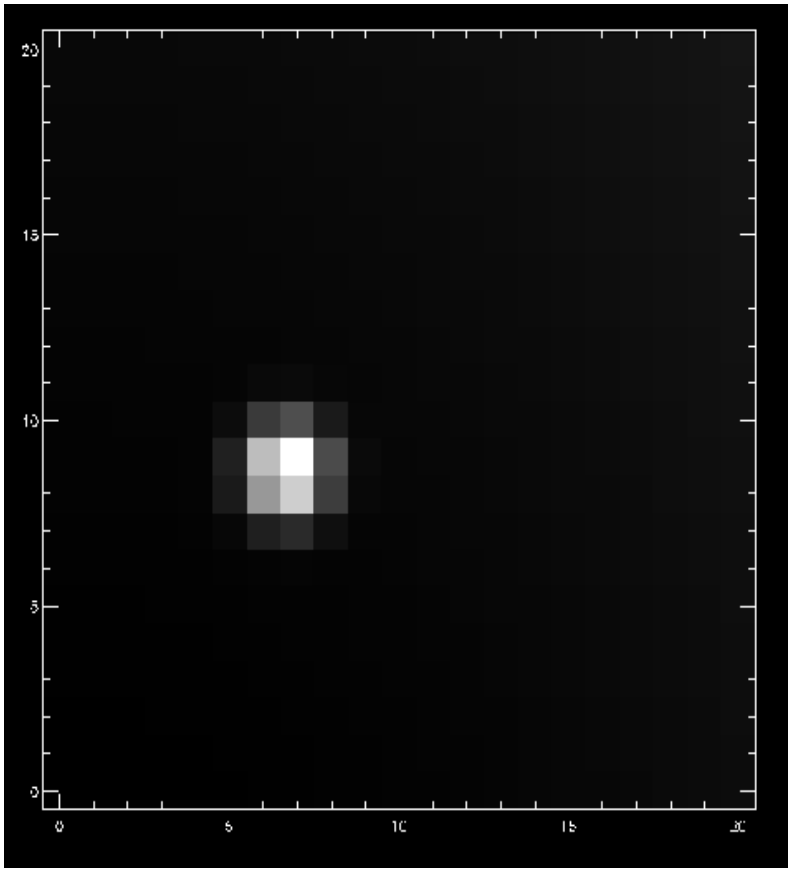
COR2-A Distortion Correction



- IDL routines:
  cor2_point
  cor2_warp
  cor2_distortion
- For questions:
  K. Baldwin
  K. Battams

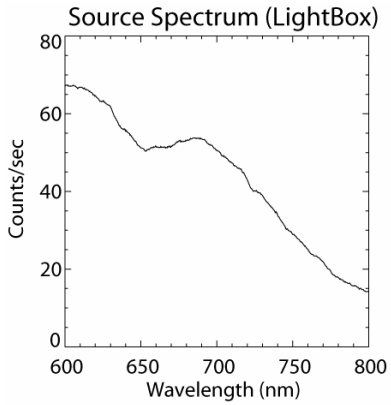
Photometry

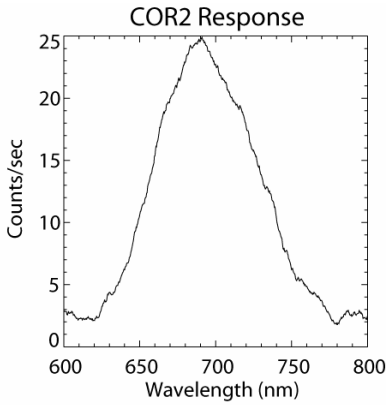
- Used point spread function and aperture photometry to find star counts across the FOV.
- A square of 5 x 5 pixels is shown to best approximate the point spread function.
- The background is determined by examining the subsequent and prior images. The median of the three images at each pixel is taken to be the background.

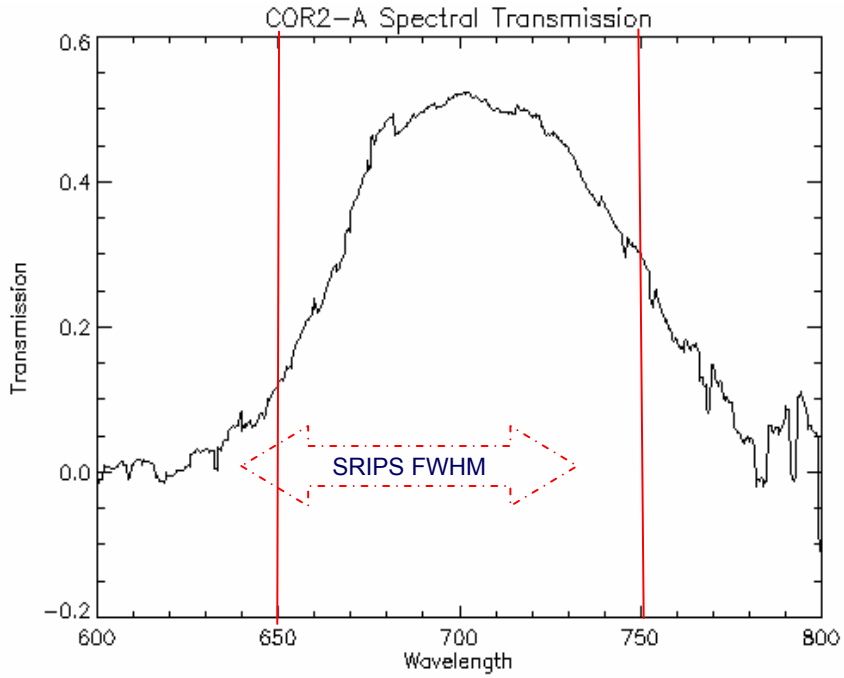


COR2 Spectral Calibration

- **Calibration based on LASCO's Lightbox using new Spectrometer.**
- **Accuracy ~20%.**







Summary

Parameter	Required Performance	Measured Performance
FOV (deg)	8	8.4
Spatial Resolution (arcsec)	30	25-30
FWHM Bandpass (nm)	650-750	650-770
Stray Light @ $6R_{sun}$ (MSB)	$< 2 \cdot 10^{-10}$	$< 3 \cdot 10^{-11}$
Polarization Accuracy	10%	2%
Min. Vignetting	80%	80%
Nominal Exposure (sec)	4	4