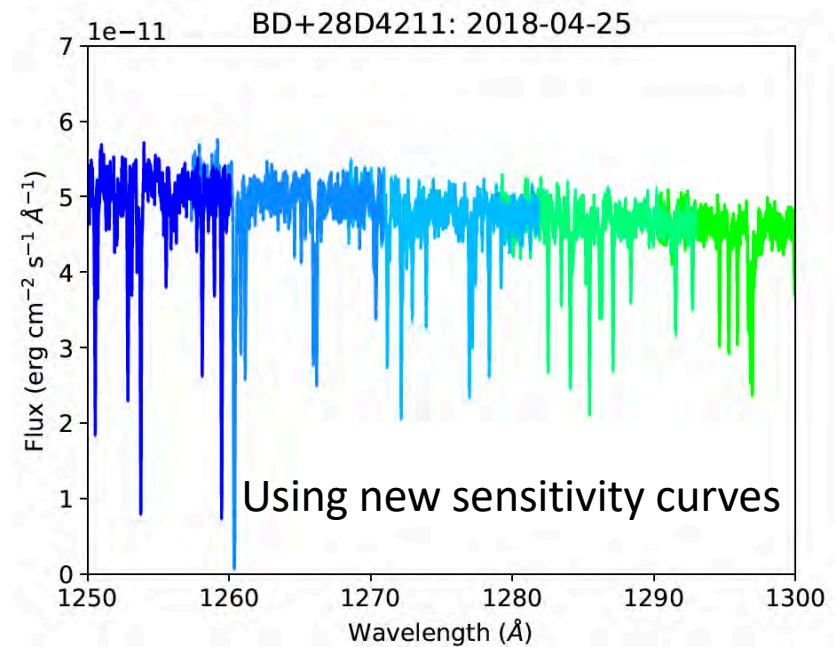
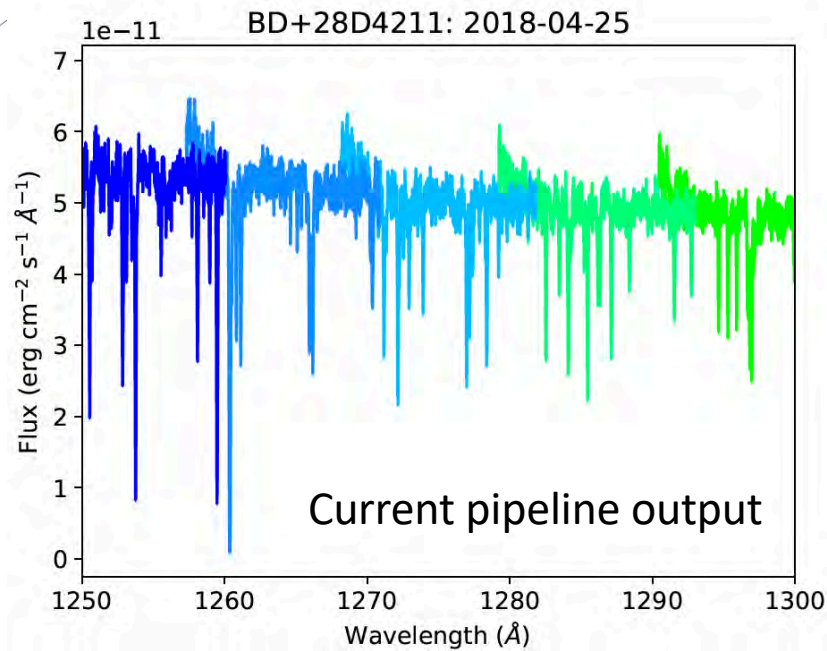


STIS Team Update

John Debes & Tala Monroe
for the STIS Team



Current Work: E140M Sensitivity Re-calibration



To Do:

Calstis is not set up in a way to easily interpolate between different sensitivity shapes. We are investigating the best way to implement the new sensitivity curves in the pipeline together with the blaze shift coefficients to recalibrate all post-SM4 E140M datasets.



Recently Completed Work

Documentation:

- ISR 2018-06: Impacts of focus on aspects of STIS UV Spectroscopy
- ISR 2018-07: STIS Bright Object Protection for Available-But-Unsupported Modes
- ISR 2019-01: A New Method to Monitor the Focus of the STIS/CCD (in review)
- STIS Data Handbook v7.0 (**Last Update 2011**)

Software:

- Python versions of *inttag*, *tastis*, *ctestis*, and *doppinfo* released in STISTOOLS v1.3

Webpages:

- Entire STIS website migrated to Jahia platform
- Overhauled STISTOOLS documentation at <https://stistools.readthedocs.io/>



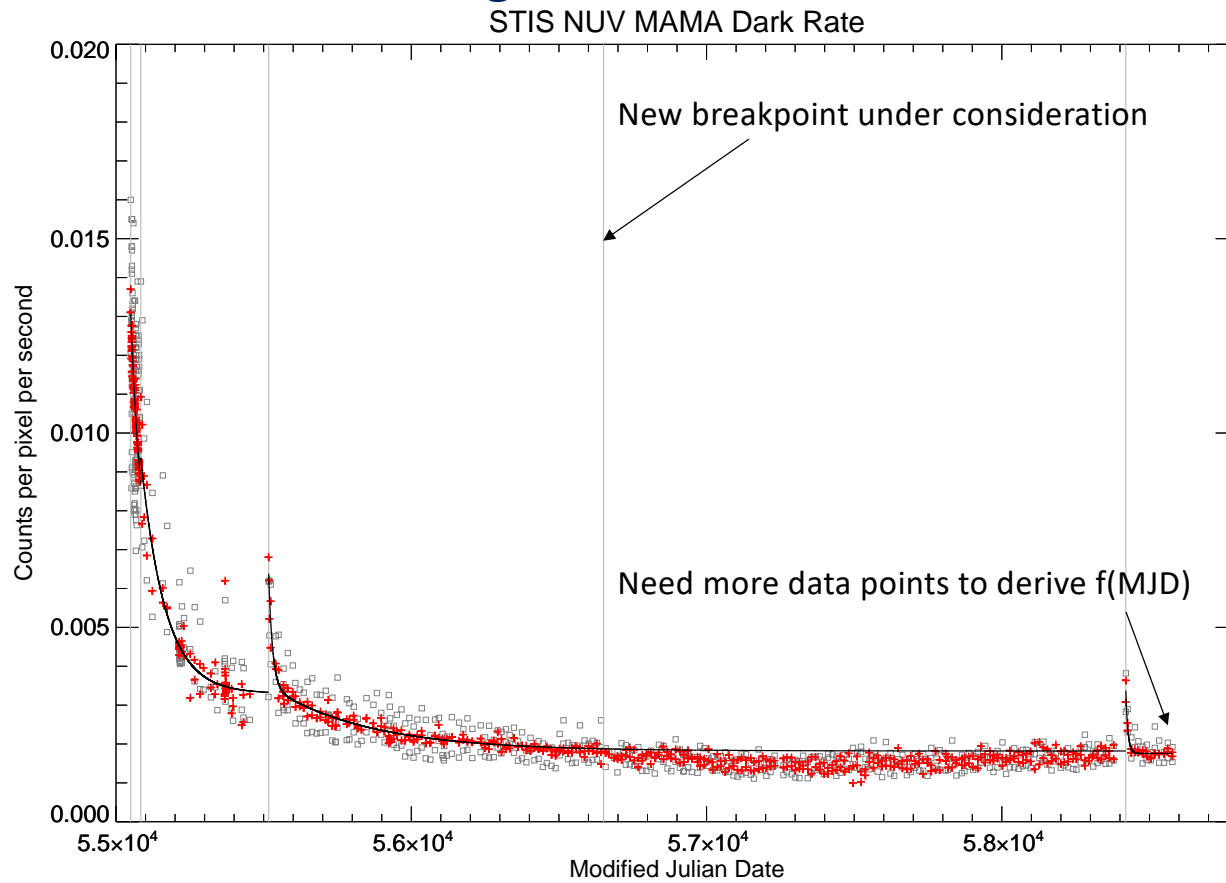
Ongoing and Future Work in FY19

- STIS Coronagraphic Performance — a study of the impact of jitter on performance
 - JATIS article under review presents strategies to reach the highest contrast, a noise model to estimate performance, SNR calculations, and observing strategies.
 - ISR in preparation documenting coronagraphic performance with high jitter
- New Fringe Flat Tool—to create a more user friendly tool in Python, and study the utility of a generic fringe correction
 - Coding sprint with MAST is scheduled before IRAF/PyRAF retirement
- Echelle Dispersion Monitor Revamp—assess need for legacy wavelength dispersion solutions
- Update to NUV dark TDCTAB in response to recent safing during gyro replacement
- Revisit SI monitoring strategies — including CCD anneal monitor and pixel stability
- Migration of the handbooks to Hdox

Back-up Slides



NUV Darks after the safing of HST

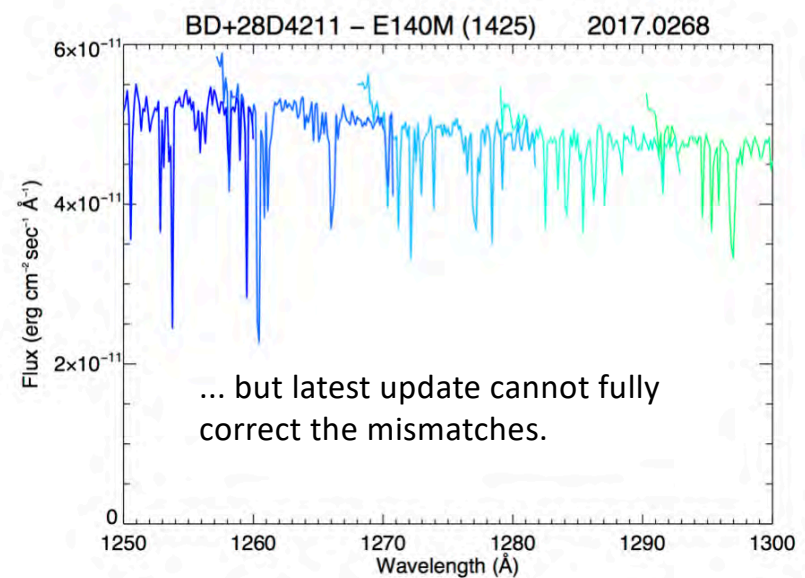
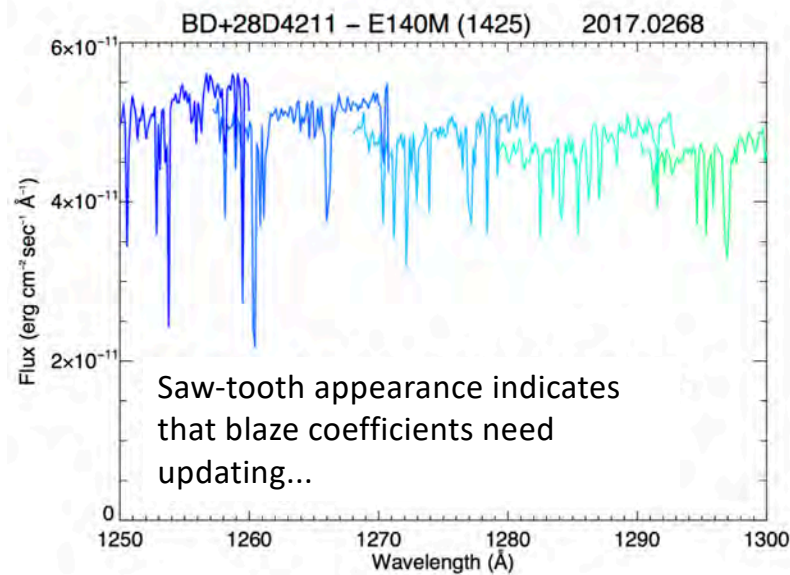




E140M Sensitivity Re-calibration



The problem: Flux mismatches in E140M can no longer be corrected by simply shifting the blaze functions. There is evidence that the overall shape has changed.



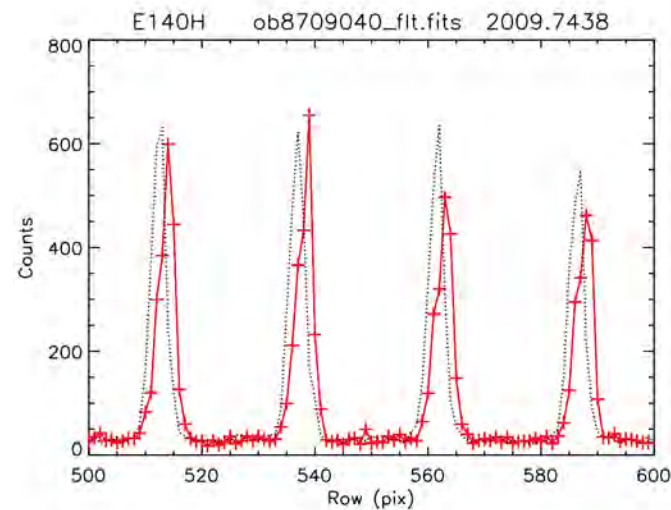
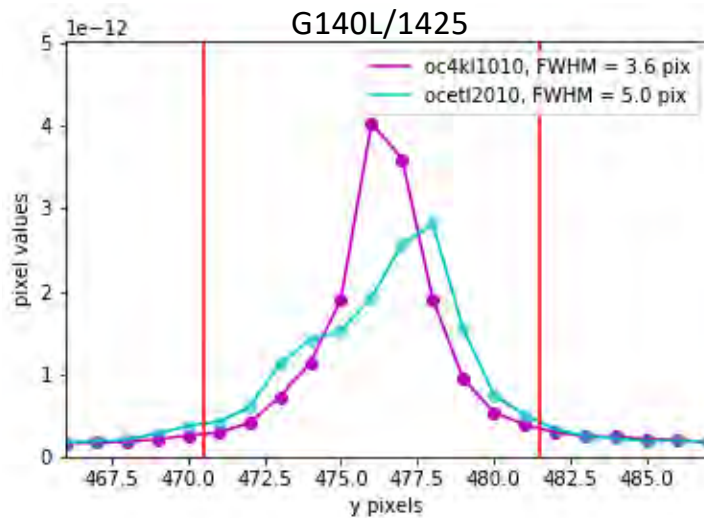
Monroe, Jul. 2018 STAN



Impacts of the STIS Focus on UV Spectroscopy



Changes in the STIS focus relative to Observatory best focus along with orbital breathing result in some spectroscopic observations exhibiting more spatially dispersed and asymmetrical cross dispersion profiles.



Flux anomalies can occur in extracted 1D spectra

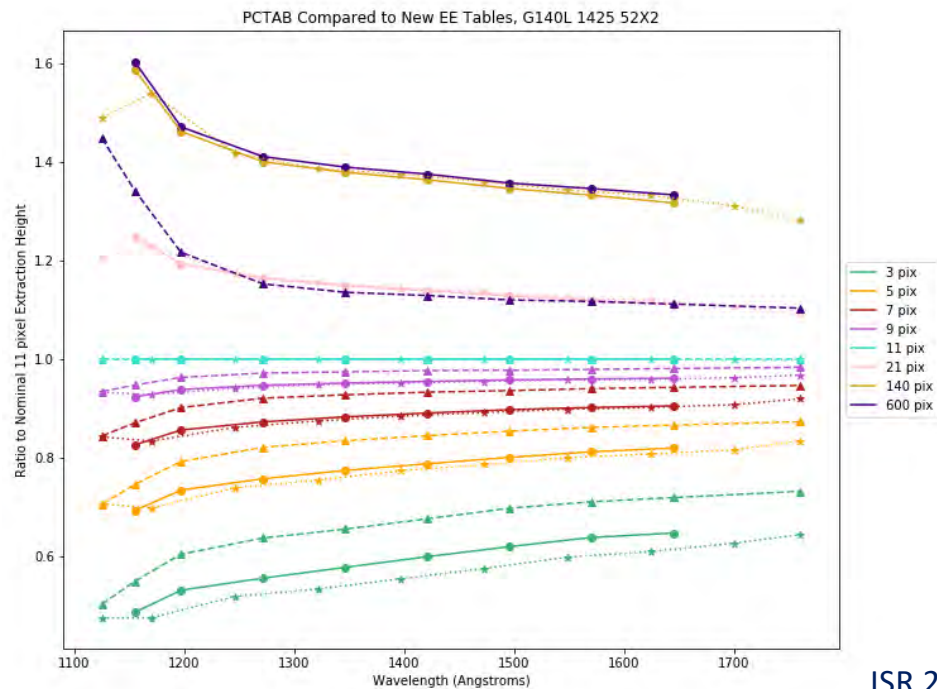
ISR 2018-06



Enclosed Energy Curves

Focus changes prompted examination of the Enclosed Energy (EE) tables used in the ETC and PCTAB reference file.

- New EE tables will be delivered for ETC 28.1.
 - Better estimates of the brightest pixel for more accurate BOP.
 - Improved SNR estimates for non-standard extraction heights.



ISR 2018-06

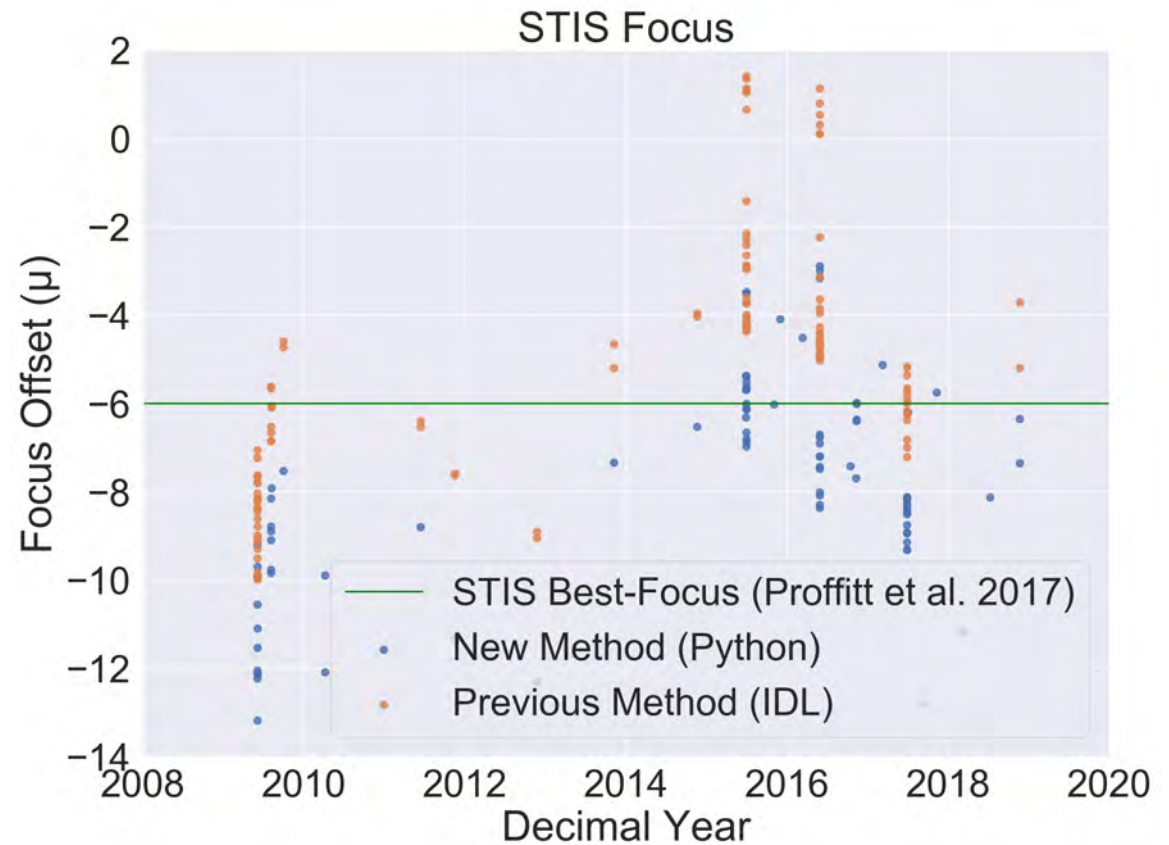


Improved STIS Focus Monitor



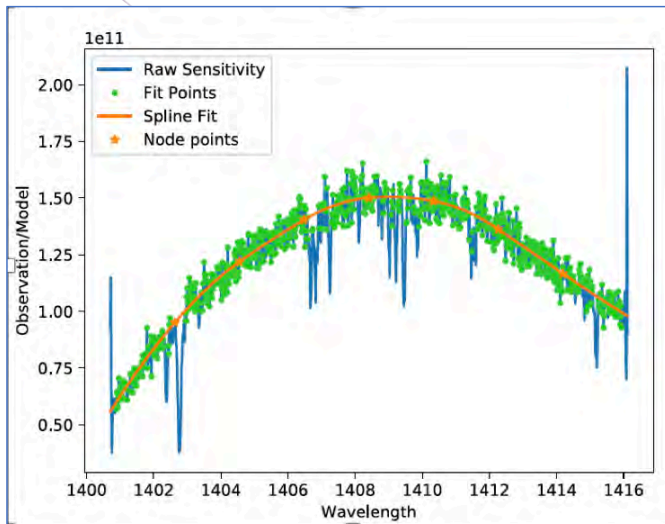
New Monitor in Python

- Old method used phase retrieval (PR) and highly manual IDL code
- New monitor uses TinyTim, but finds a constant offset wrt PR ~ 2.8 microns
- ISR is under review





E140M Sensitivity Re-calibration



The newly derived sensitivity curves confirm shape change: The sensitivity of the left (blue) edges of the order are the same but larger on the right (red) edge.

Spline functions are fit to each order of recent observations of primary standard star **G191-B2B**.
Raw sensitivity = Net count rate/model flux.

