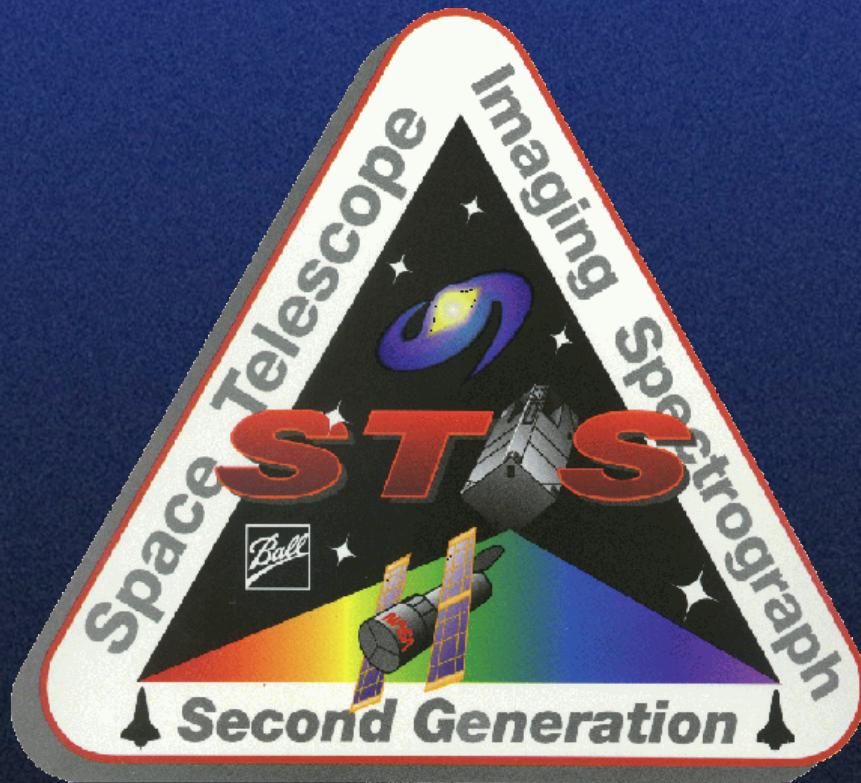


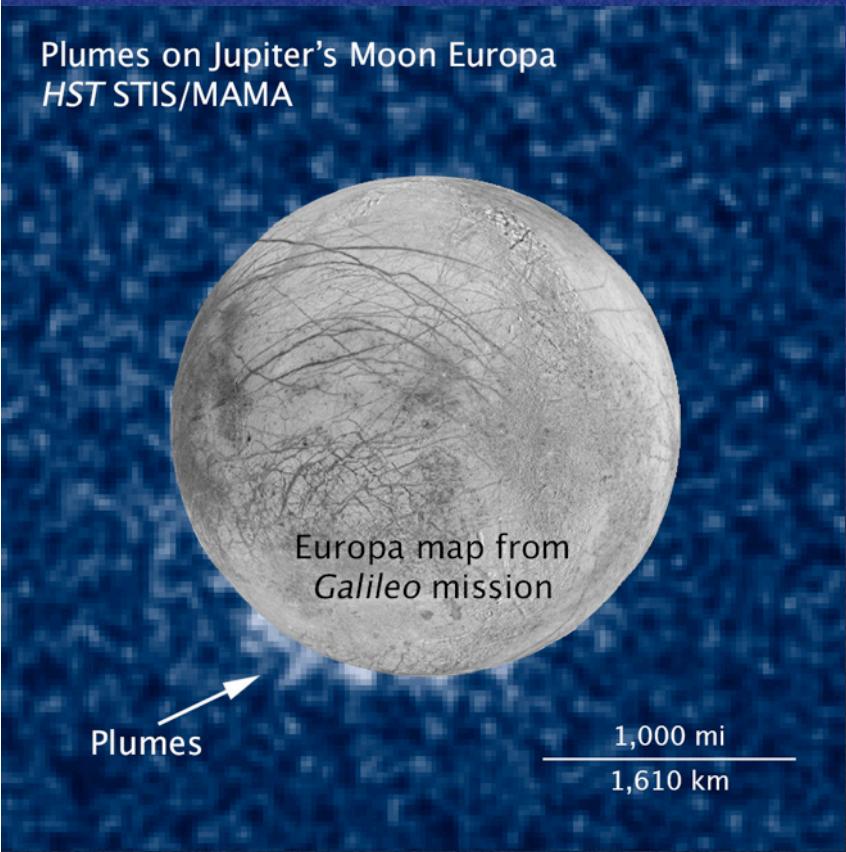
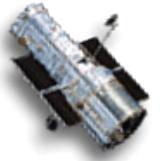
STIS Status Update



John H. Debes

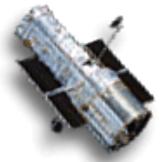


STIS in the News





Cycle 24 Usage of STIS



Configuration/Mode	Percentage of STIS Prime Exposure Time		Percentage of STIS SNAP Exposure Time	
	C23	C24	C23	C24
CCD	24.1%	31.1%	100%	--
CCD/Imaging	0.7%	1.1%	--	--
CCD/Spectroscopy	23.4%	30.0%	100%	--
MAMA/FUV	35.7%	41.3%	--	--
FUV/Imaging	11.0%	14.3%	--	--
FUV/Spectroscopy	24.7%	27.0%	--	--
MAMA/NUV	40.2%	27.6%	--	--
NUV/Imaging	0.8%	0.1%	--	--
NUV/Spectroscopy	39.2%	27.5%	--	--

**27% of Prime
Orbits**



The STIS Team



John Debes
Lead



Sean Lockwood



Tala Monroe



Molly Peeples



Charles Proffitt



Allyssa Riley



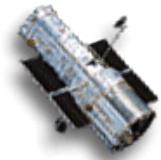
Tony Sohn



Nolan Walborn



Cycle 24 CCD Calibration Program



Title	External	External Parallel	Internal
STIS CCD Performance Monitor			14
STIS CCD Dark Monitor			730
STIS CCD Bias and Read Noise Monitor			369
STIS CCD Hot Pixel Annealing			39
STIS CCD Spectroscopic Flat-Field Monitor			19
STIS CCD Imaging Flat-Field Monitor			4
STIS CCD Spectroscopic Dispersion Solution Monitor			3
STIS CCD Sparse Field CTE			50
STIS CCD Full Field Sensitivity	1		0
STIS Slit Wheel Repeatability			1
STIS CCD Spectroscopic Sensitivity Monitor	5		



Cycle 24 MAMA Calibration Program

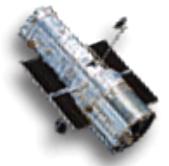


Title	External	External Parallel	Internal
STIS MAMA Spectroscopic Dispersion Solution Monitor			7
STIS MAMA Full Field Sensitivity	3		
STIS MAMA Spectroscopic Sensitivity and Focus Monitor / COS Observations of Geocoronal Ly α Emission	12	(3)	
STIS FUV MAMA Dark Monitor			54
STIS NUV MAMA Dark Monitor			52
STIS MAMA NUV Flat-Field Monitor			11
STIS MAMA Fold Distribution			2
Contingency programs			
STIS MAMA Anomalous Recovery			(6)
STIS Focus Parallel Measurement	(1)	(1)	
Special Programs			
Monitoring the 3 Primary WD Standard Stars	5		

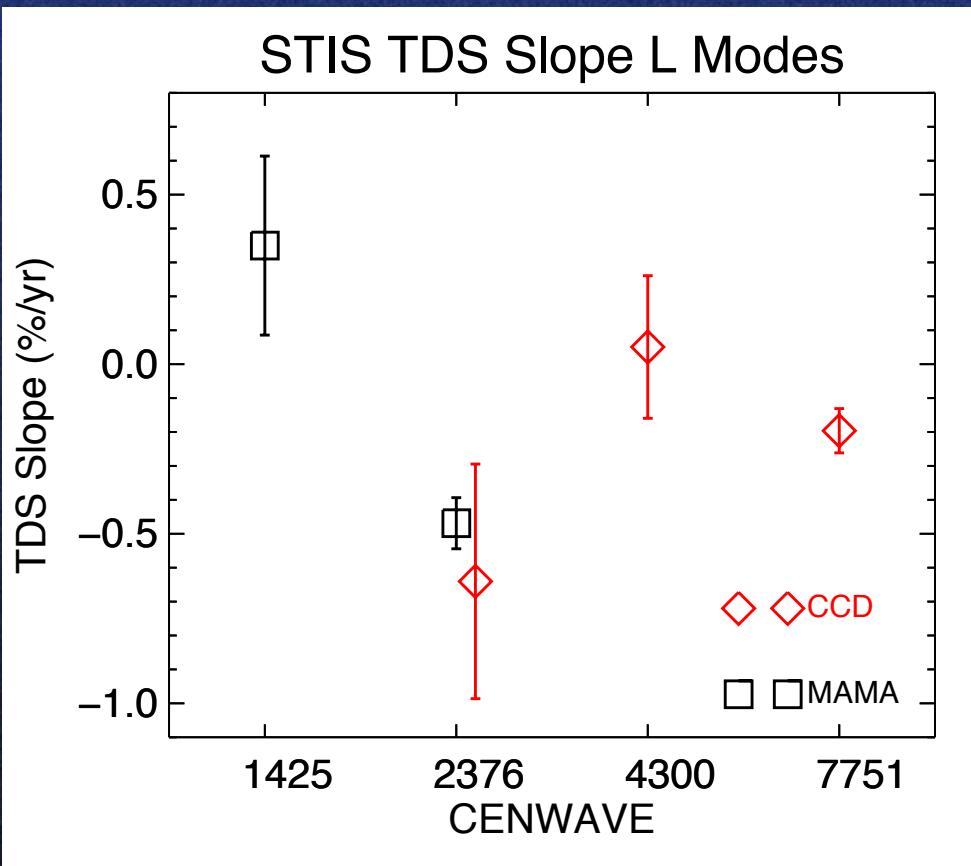
Total Cycle 24 Allocation: 26+(1) External, 3+(1) Ext. Parallel, 1355+(6) Internal



Instrument Status



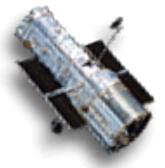
- No major changes to the instrument
- Detector properties steady or trends unchanged
- Time Dependent Sensitivity (TDS) trends continue



Detector	Dark Rate	Read Noise
CCD	-	-
GAIN=1	0.019 e ⁻ /s/pixel	6.2 e ⁻ /pixel
GAIN=4	0.019 e ⁻ /s/pixel	8.1 e ⁻ /pixel
NUV-MAMA	1.5x10 ⁻³ cts/s/pix	--
FUV-MAMA	1.5x10 ⁻⁴ cts/s/pix	--



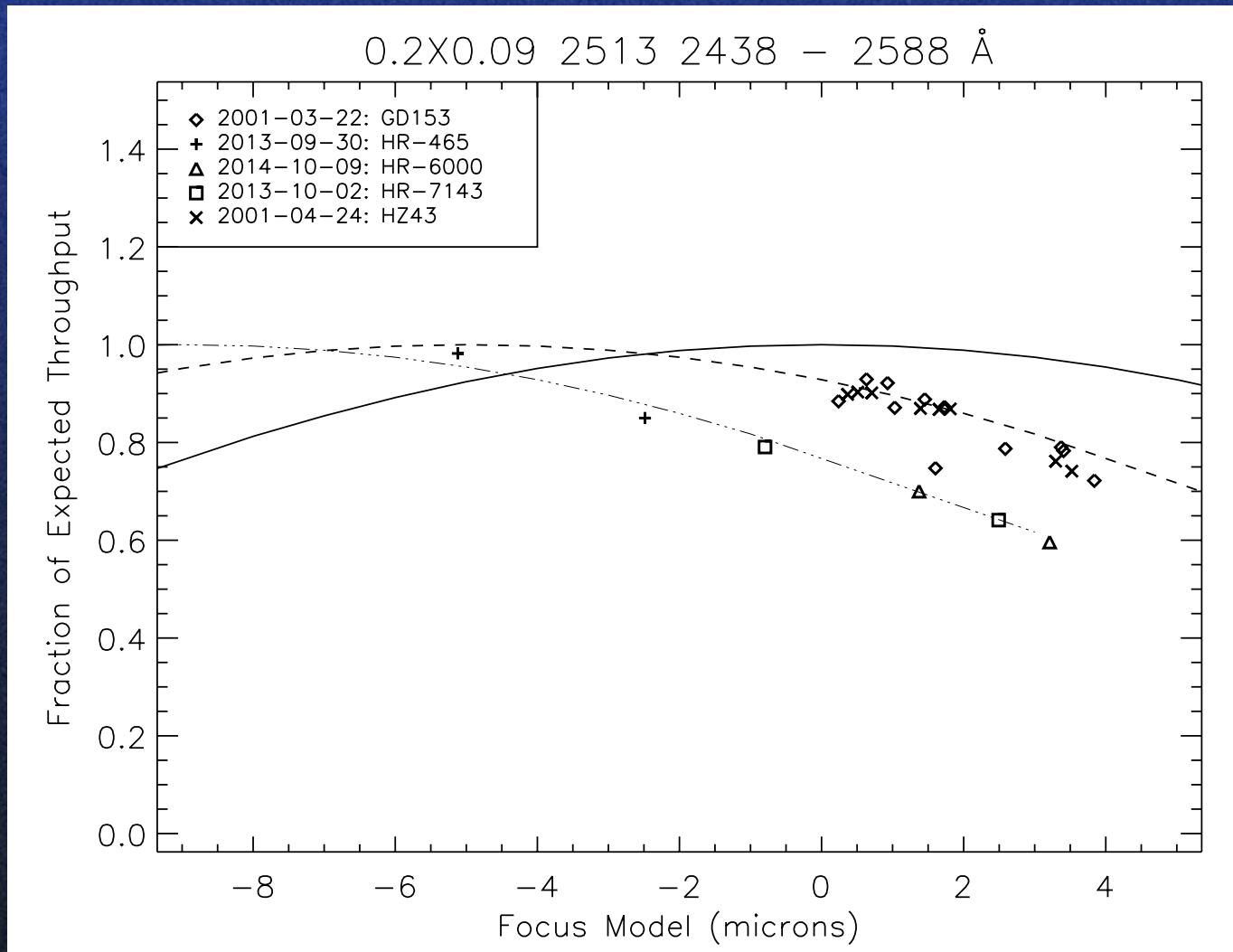
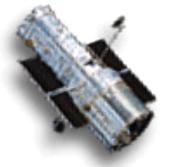
STIS Focus



- STIS small aperture throughput in recent years has been less consistent than in the past
 - Peak of throughput of small clear apertures appears to have shifted significantly toward more negative focus values
 - especially evident in program 13346 where multiple exposures were done of some stars over one or more orbits
 - For echelle full resolution 0.2X0.06 and 0.2X0.09 apertures losses of up to 40% for individual exposures are not uncommon
 - Usually less averaged over whole breathing cycle
 - Recent data for “high-res” 0.1X0.03 slit finds ~ 50% below ETC
 - Limited historical data for clear comparison, but available data suggests effect was present but smaller at earlier time

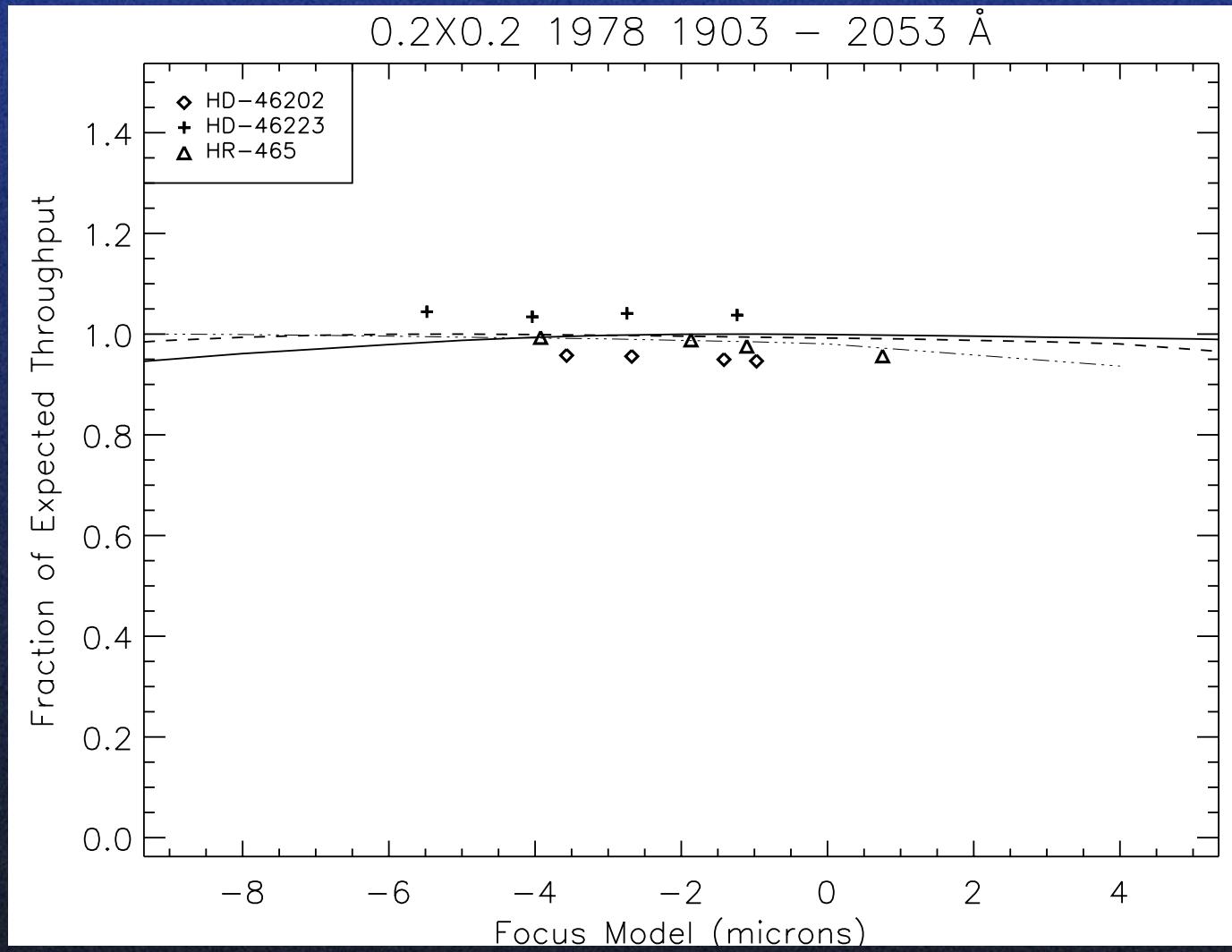


Small Aperture Throughputs



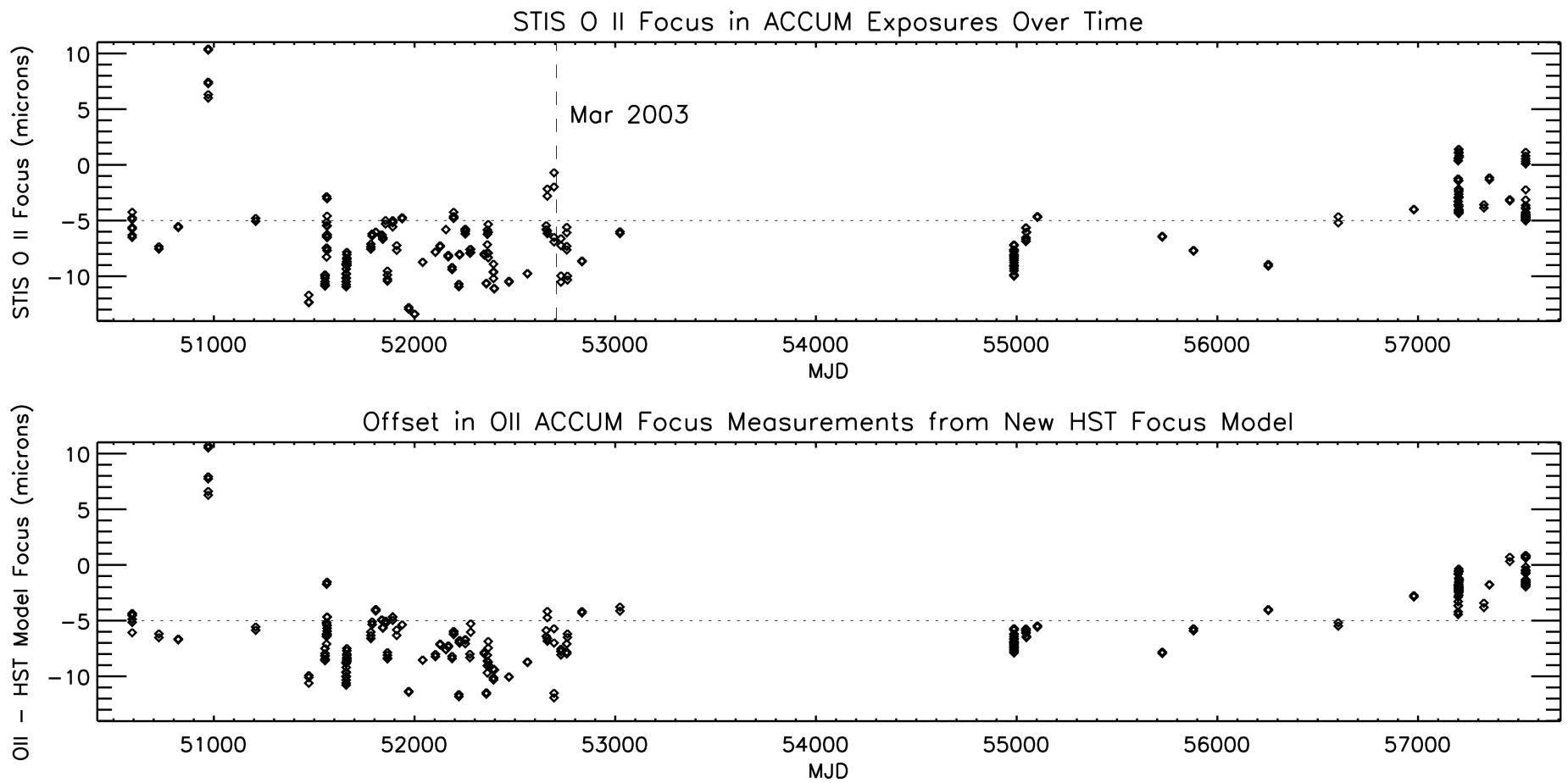
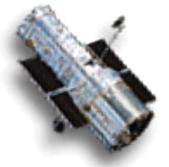


Small Aperture Throughputs



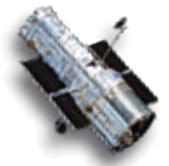


STIS Focus Measurements





STIS Focus



- Phase retrieval of narrow band STIS filtered OII images appears to confirm a significant focus change starting in about 2011
 - OII focus is significantly offset from best spectroscopic & aperture focus
 - Historically measured OII focus out by equivalent $-7.2 \mu\text{m}$ of secondary offset
 - Recent images taken with show only $-4.5 \mu\text{m}$ offset
 - Offset stable over the last year
- Results suggest $\sim 3 \mu\text{m}$ offset for spectroscopic apertures from previous focus may be cause of decreasing small aperture throughputs
- Mitigation:
 - Warn users, for now recommend increase in exposure times for small aperture programs that require specific SNR
 - Hit to efficiency small enough not to risk moving STIS corrector mechanism (not moved since 1997)



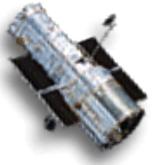
Lamp Lifetime Investigation



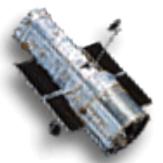
Lamp	Lifetime (%)	Purpose	2020 Fading
Deuterium	27	NUV Flats	Mitigation needed
Krypton	35.1	FUV flats	Mitigation needed
LINE	18	Wavecal	Mitigation needed
HITM1	13.3	Wavecal/TA	-
HITM2 (spare)	1.6	Wavecal/TA	-
Tungsten	<10%	CCD Flats	-



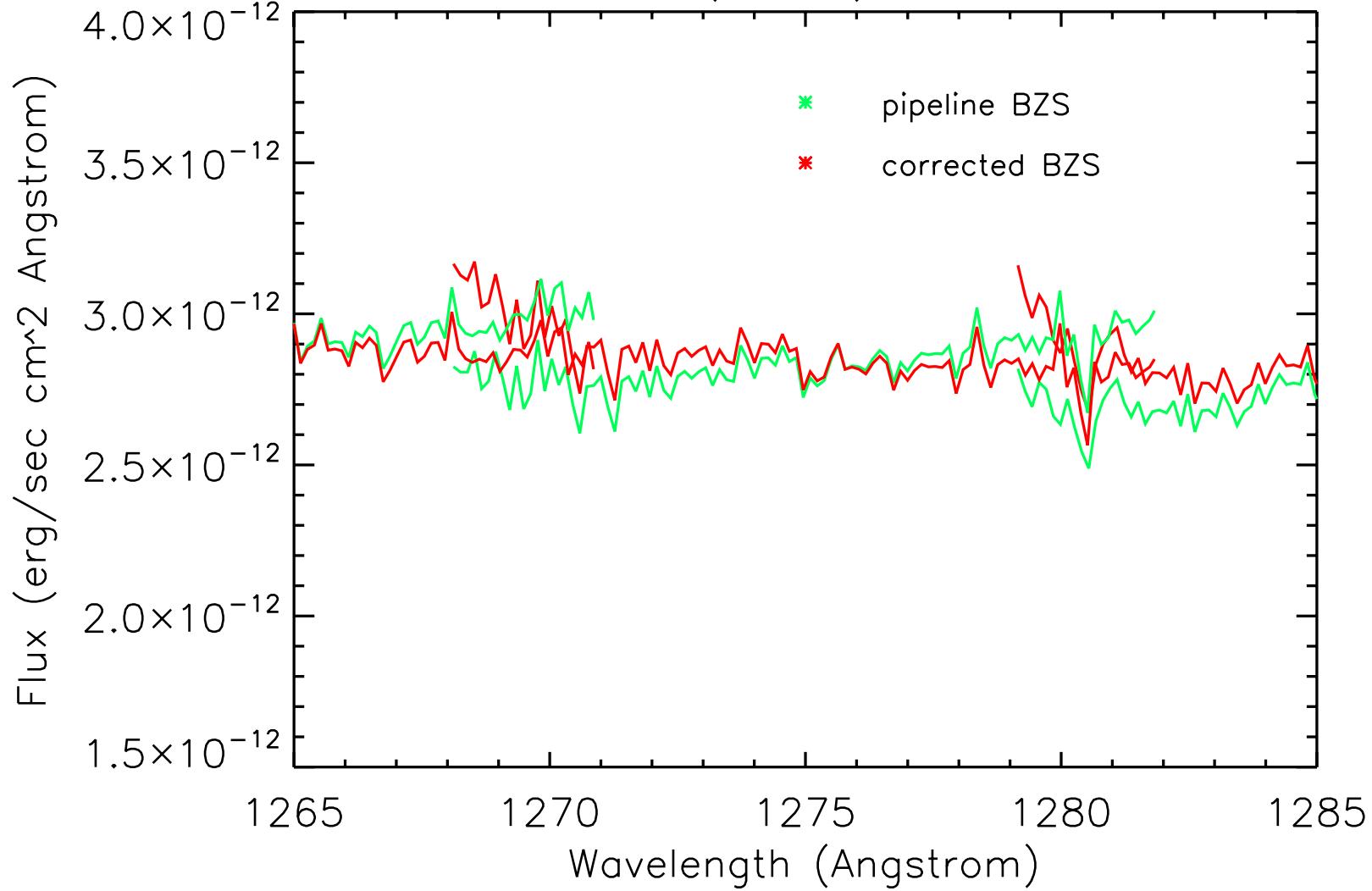
Echelle Blaze Correction



- FY17 will be a push to update/optimize spectroscopic calibrations, especially the echelle
- First priority is the echelle blaze function corrections, which have shifted and degraded with time
- Majority of orders can be corrected with a simple time dependent shift in the blaze function
- Small fraction of orders in E140M/1425, E140H/1598 show departures of 5-10% at the blue end of orders with new correction
- The STIS team is creating a working group within the team to work on solutions

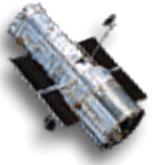


Recent – E140M (1425) – BZS 2015.6430





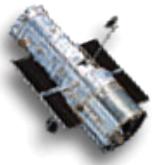
Spectroscopic Legacy Working Group



- SPLWG to start discussions on how to support work archival STIS spectroscopic data
- Working group to be convened for discussions soon:
 - Internal
 - Jason Tumlinson
 - Andrew Fox
 - Molly Peeples
 - Cristina Oliveira
 - Alessandra Aloisi
 - External
 - Ed Jenkins
 - Charles Danforth
 - Tom Ayres
 - Brian Keeney



Other Work

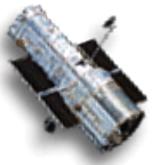


Ongoing Work:

- FUV Geometric Distortion
- Updates to Wavelength Solution monitoring
- Re-delivery of darks from 2009-2010
- BAR5 JATIS Article

Recently Completed:

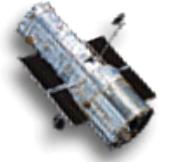
- ISR 2016-01, “Determination of the STIS CCD Gain” Riley, Monroe, Lockwood



Back-up slides



Team Organization



	Lead	Deputy
Calibration	Monroe	Peeples
Front End	Lockwood	Proffitt
Pipeline	Proffitt	
User Support	Walborn	Peeples
ETC	Peeples	Lockwood
CCDs	Lockwood	
MAMAs	Peeples	