

STScI Status (other than SM4)

April 10, 2008

Topics:

Cycle 16 program status

Current instrument status/activities

WFPC2 reprocessing plans

1-gyro mode

Multidrizzle

Hubble Legacy Archive

Cycle 16 Science Program Status

- Cycle 16 sized based on a September, 2008 SM4
 - ◆ Cycle 16 ends with SM4
 - ◆ Cycle 17 starts after SM4
- Scheduling considerations in Cycle 16
 - ◆ Contingency programs from ACS failure still active
 - ◆ Keep HST fully subscribed until SM4
 - ◆ Minimize WFPC2 carry-over past SM4
- Cycle 16 planning has followed SM4 date changes
 - ◆ Earlier, to August 7
 - ◆ Later, to August 28
 - ◆ Later, to end of September (unofficially)

Cycle 15 Large and Treasury Programs

ID	Title	Sched	Obs	Alloc	PI
10915 ¹	ACS Nearby Galaxy Survey	<i>Done</i>	218	218	Dalcanton
10842 ¹	Coma Cluster Distance	<i>Done</i>	80	80	Cook
10802	SHOES	<i>Done</i>	208	208	Riess
10861 ¹	Coma Cluster Survey	<i>Done</i>	42	42	Carter
10889	Study of Spiral Galaxies	<i>Done</i>	128	128	De Jong
10862	Auroral Imaging of Jupiter and Saturn	<i>Done</i>	129	128	Clark
10816 ¹	Formation History of Andromeda's Halo	<i>Done</i>	96	96	Brown
10872	Lyman Emission Galaxies	–	70	75	Teplitz

1. For proposals 10842, 10861, 10816, and 10915, the original allocations reduced due to loss of required ACS capability.

Cycle 15 Contingency Programs

ID	Title	Sched	Obs	Alloc	PI
11079	Treasury Imaging of Star Forming Regions in the LG	-	122	134	Bianchi
11080	Exploring the Scaling Laws of Star Formation	<i>Done</i>	84	84	Calzetti
11081	RR Lyrae stars in M31 Globular Clusters	<i>Done</i>	78	78	Clementini
11082	NICMOS Imaging of GOODS	-	168	180	Conselice
11083	The Structure, Formation and Evolution of Galactic Cores and Nuclei	12	177	199	Cote
11084	Lyman Emission Galaxies	<i>Done</i>	101	101	Zucker

Cycle 16 Large and Treasury Programs

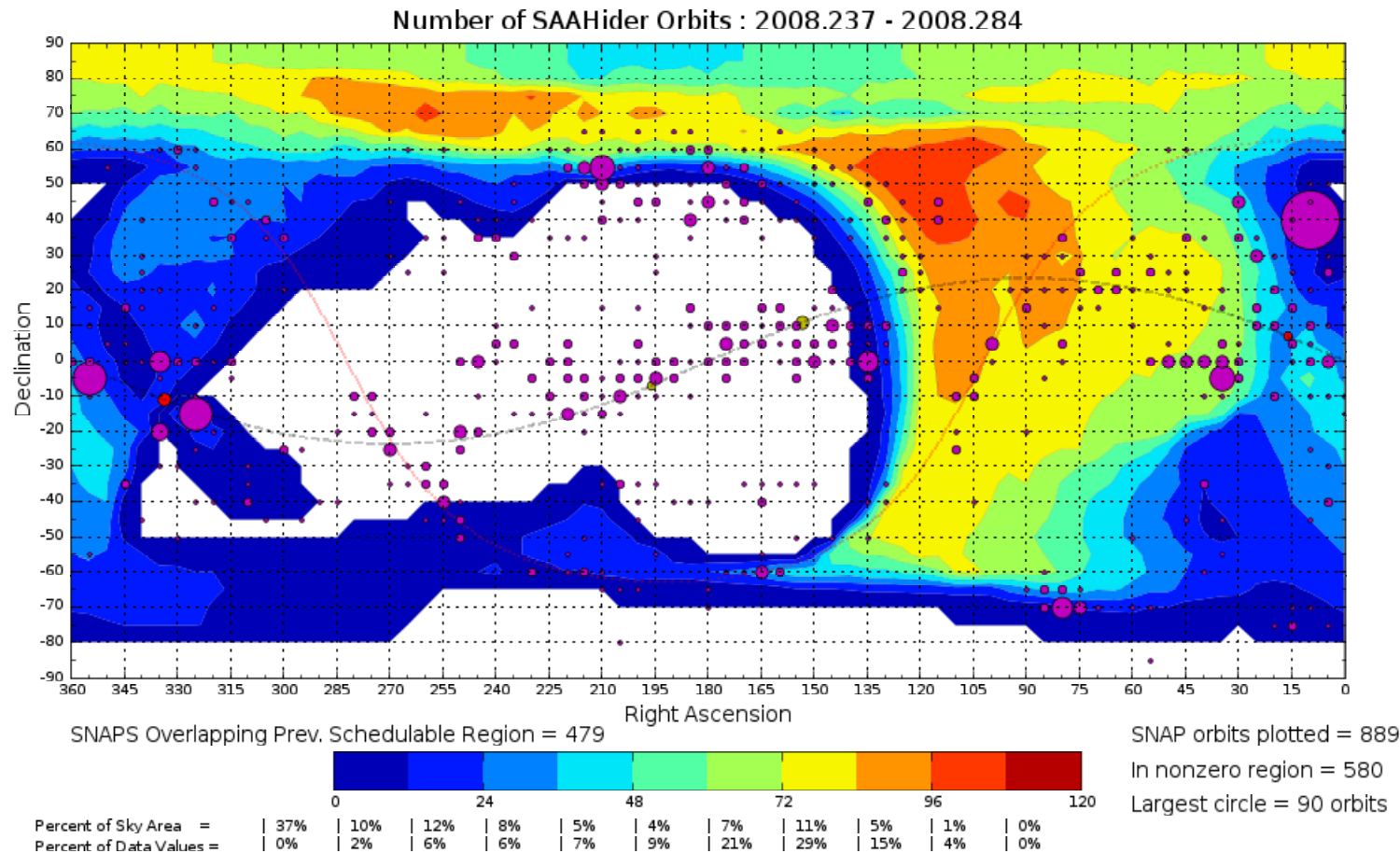
ID	Title	Sched	Obs	Alloc	
11120	Study of Massive Stars & ISM in the Galactic Center	22	30	144	Wang
11142	Infrared Luminous Galaxies at $0.3 < z < 2.7$	–	31	150	Yan
11149	Stellar Populations in the Subaru Deep Field	12	10	72	Egami
11178	Orbits, Masses, and Colors of Transneptunian Binaries	1	104	128	Grundy
11196	Ultraviolet Survey of Luminous Infrared Galaxies	6	28	81	Evans
11202	Early-type Galaxies: 0.1–100 Effective Radii	5	97	159	Koopmans
11210	The Architecture of Exoplanetary Systems	4	33	63	Benedict
11211	Astrometric Calibration of Population II Distance	2	48	67	Benedict
11219	Active Galactic Nuclei in nearby galaxies	1	37	82	Capetti
11235	Nuclear Regions of Luminous Infrared Galaxies	1	6	76	Surace
11236	Large Escape-Fraction Galaxies	–	37	117	Teplitz

Cycle 16 End Game

- We will have a shortfall if launch slips beyond August 28
- WFPC2 will not be a problem, only a few programs and orbits may be left unexecuted at SM4
 - Worst case we projected 10 programs to be unfinished by SM4
 - Now expect essentially all to be completed by SM4
- Shortfall is due to good mix of visits and efficient scheduling in Cycle 16:
 - Cycle 14: 71 orb/week
 - Cycle 15: 74 orb/week
 - Cycle 16: 79 orb/week
- Working with SPD to develop a plan for increasing the Cycle 16 program
 - Activate a few programs from Cycle 16 ranked list
 - Select programs observable in the late summer and early fall
 - Likely we will also increase the execution rate of Snapshots

Sky area for 2-gyro, EFF-70

- July 24- October 10



Status of Operational Instruments

- WFPC2 is performing nominally
- Temperature was adjusted in February to maintain control of WF4 bias stability
 - ◆ Good bias stability has been observed since the August 07 adjustment. We expected to see the bias levels and the gains start decreasing and reach the 200DN threshold by this summer.
 - ◆ The 0.6 C deg reduction should result in stable biases through Sept 08.
 - ◆ Beyond Sept 08 we would expect the bias level to drop below the 200 DN threshold and occasionally have some 0 DN bias images.
 - ◆ Winter is the warmest period for HST and the residual change in temperature available may not provide further mitigation to the problem.
 - ◆ We expect few WFC2 observations after September

WFPC2 Closeout Highlights/Plans

- Reprocessing of the WFPC2 data will start after the completion of the regression test of OPUS 2008.2 (Early July). The process should take 4-5 months.
 - ◆ Characterization of the relative chip motion extended up to 2008 with a precision of ± 0.2 pixel
 - ◆ The determination of the WFPC2 scale has been extended from 3 to 8 filters with a precision of 1 part out of 10000.
 - ◆ The independent characterization of the 3 existing scale measurements is consistent with the values of Anderson & King 2000.
 - ◆ The correction for the 34th row defect has been developed and will be implemented in the geometric distortion correction
 - ◆ The correction for the WF4 gain anomaly is very mature and it has been implemented in the pipeline
 - ◆ The correction for the WF4 streaks will be maintained as an offline tool
- Release of the final version of the WFPC2 Instrument Handbook is planned for August 2008.
- Work for the final version of the WFPC2 Data Handbook will start in June 2008 for a release in the winter.

Status of Operational Instruments

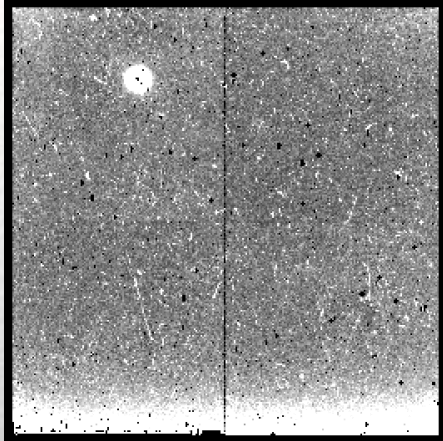
- NICMOS is operating nominally
 - ◆ ~40-50% of Cycle 16 science program
- Expanded normal calibration programs:
 - ◆ Improved flatfields:
 - ◆ all filters, all 3 cameras
 - ◆ multiple epochs to capture time dependence
 - ◆ Substantially expanded darks (400 orbits, ~20 epochs):
 - ◆ cover all widely used SPARS/STEP readout sequences
 - ◆ greatly improve temperature-dependent darks, reduces reliance on synthetic darks
- Special “legacy” calibration programs:
 - ◆ Improved photometric non-linearity calibration in all cameras
 - ◆ Photometric characterization (cross-calibrate with WFC3, JWST, etc)
 - ◆ Revised geometric distortion (dependence on time, wavelength)
 - ◆ Improved grism calibration across entire detector

NICMOS Calibration Software

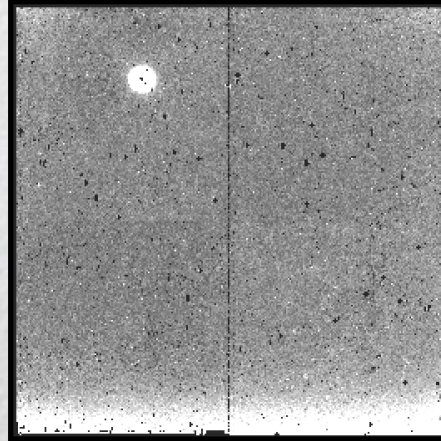
- Recently released (STSAS/Pyraf and/or OPUS2008.1):
 - ◆ **SAAclean**: removes persistence from SAA CRs (Barker, Koekemoer)
 - ◆ **RNlincor**: corrects count-rate-dependent non-linearity (de Jong et al.)
 - ◆ **Puftcorr**: corrects “staypuft” electronic crosstalk (Barker et al.)
 - ◆ **Calnica**: many improvements in CR/hot pixel rejection and error array calculation (Dahlen, Bergeron et al.)
- Prototype release / testing:
 - ◆ Bright Earth persistence removal (Riess & Bergeron, ISR 2008-01)
 - ◆ Temperature from bias determination (Bergeron, Pirzkal et al.)
- Currently under development:
 - ◆ Generalized low-level background removal (Dahlen et al.)
 - ◆ Improved amp quadrant pedestal offset correction (Wiklind et al.)
 - ◆ Full NICMOS support for MultiDrizzle (Pirzkal, Koekemoer et al.)

SAA cosmic ray persistence removal

Before

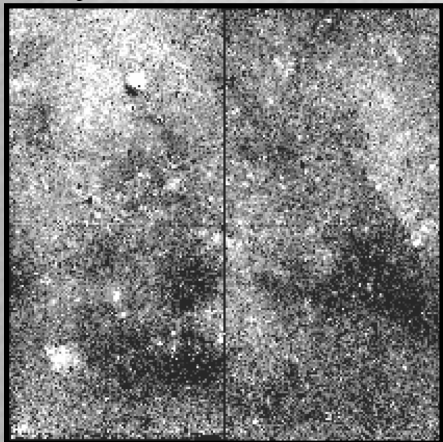


After

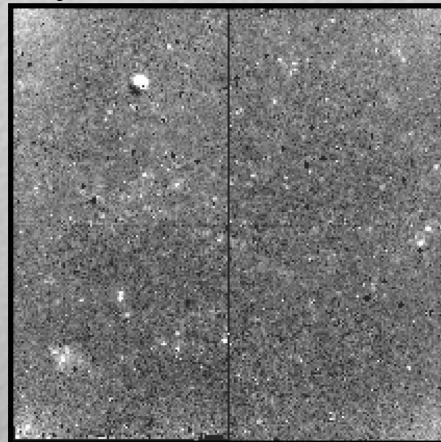


Bright Earth persistence removal

Before

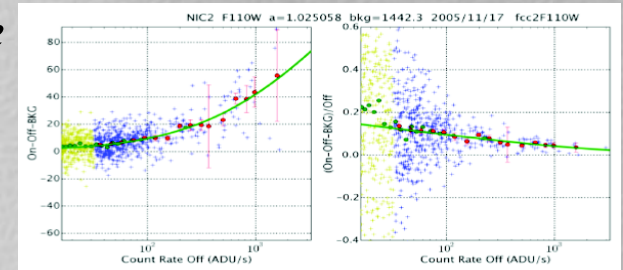


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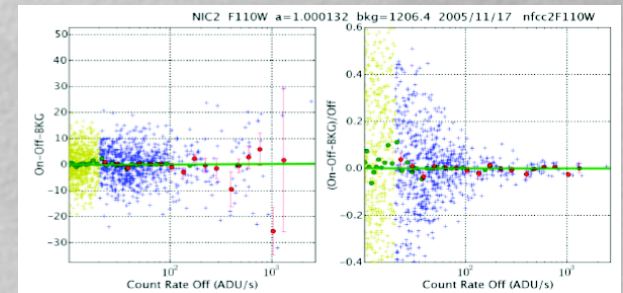


Count-rate non-linearity correction:

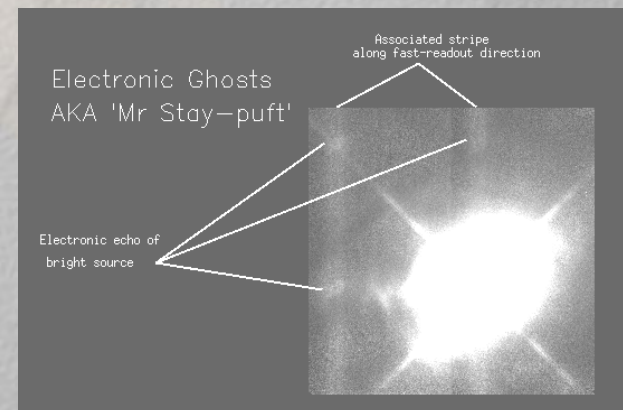
Before



After



“Puftcorr”: electronic crosstalk ghosts



Status of Operational Instruments

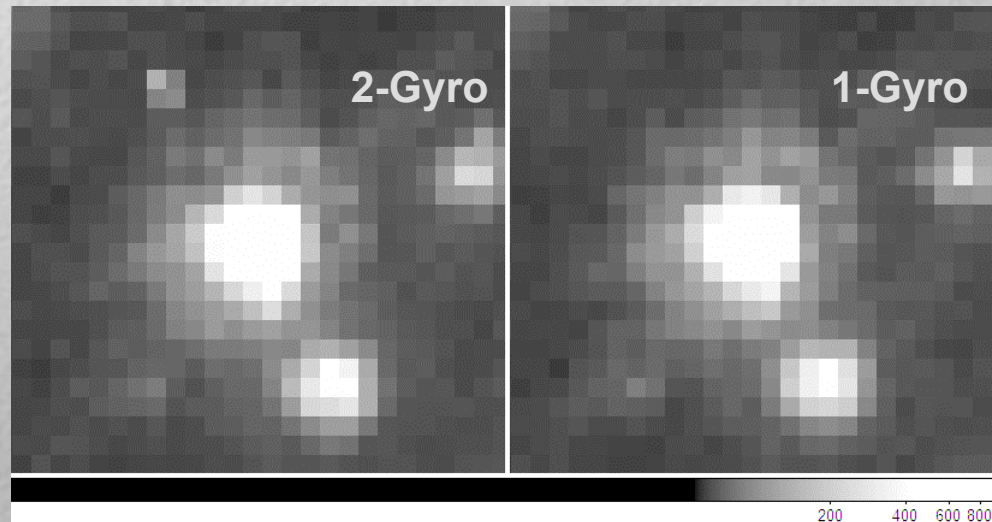
- ACS/SBC is operating nominally
- We have developed an improved version of the SBC MAMA throughput curve that accounts for the detector red leak.
 - ◆ The red leak impacts observation of objects redder than a G0V star.
 - ◆ New limits for the bright object protection have been calculated and made available on the ACS web page.
 - ◆ The new table will be published in a revised version (8.1) of the ACS instrument handbook that will be released before the TAC results are communicated.
- An improved CTE correction formula for WFC has been calculated.
 - ◆ The new formula represent an improvement in terms of both accuracy and precision.
- The skew term variation in the geometric distortion correction of WFC has been fully characterized and will be fully implemented in the new version of multidrizzle.
 - ◆ This correction will improve alignment and combination of images taken in different visits and different orientations.

One Gyro Mode

- One Gyro Science mode was flight tested in January
- The One Gyro test was a complete success
 - ◆ Guide Star Acquisitions and other PCS activities all worked as planned
 - ◆ WFPC2 observations showed no significant increase in PSF
- Kalman-Filter Safemode (developed in parallel with One Gyro Science) was tested and was also successful
- Current Project plan:
 - ◆ If another gyro fails between now and SM4 - 1 month, then switch operations to One Gyro Science mode
 - ◆ If there is a failure after SM4 - 1 month, then bring up spare gyro and operate in Two Gyro Science mode
- Cycle 16 LRP is consistent with One Gyro mode, only a handful of observations would need replanning

WFPC2- 1 Gyro Testing

- We have used the WFCP2/PC to test the performance of the 1-gyro operation.
- Two sets of identical observations were taken, the first on Jan 29 in 2-gyro mode and the second on Jan 31 in 1-gyro mode. The program consisted of multiple exposures of two rich star clusters NGC 5904 and NGC 6341



QuickTime™ and a
TIFF (Uncompressed) decompressor
are needed to see this picture.

Multidrizzle evolution

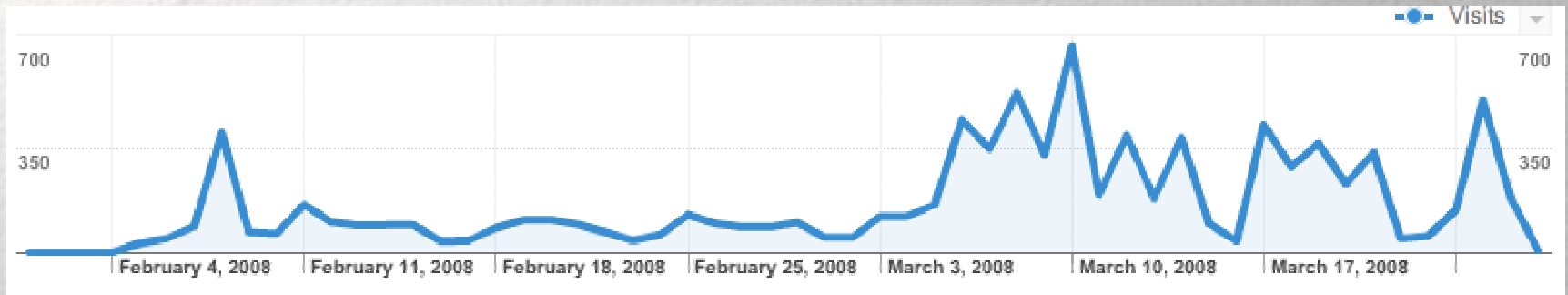
- Single image *drizzle* originated with HDF analysis (Fruchter, Hook, etc.)
- *Multidrizzle* provided automatic alignment, CR cleaning, and image combination to improve ACS pipeline products (Koekemoer, etc.)
- Many users (at STScI, and elsewhere) have used it, sometimes for tasks beyond its original design
 - ◆ Has become an important tool
 - ◆ Has resulted in a better understanding of problems associated with combining HST high spatial resolution data
- *Multidrizzle* does a good job of combining images from a single visit, but:
 - ◆ Images are never fully geometrically calibrated -- ancillary calibration files are required to properly combine the data
 - ◆ Users find it difficult to combine data from separate visits
 - ◆ Code is neither conceptually nor structurally modular

Multidrizzle plans

- Effort being led by Andy Fruchter and Warren Hack
- What will we do ?
 - ◆ Modularize and rationalize the code
 - ◆ Put “geometrically calibrated” data in a “standard” FITS format
 - ◆ Create routines to help users combine data from multiple epochs
- Multidrizzle uses:
 - ◆ STScI Pipelines for visit level combination
 - ◆ STSDAS for user support
 - ◆ HLA pipeline for mosaic and multi-visit combinations
- New Multidrizzle handbook
- Expect graceful evolution to new system over ~ next year

Hubble Legacy Archive

- First official release, DR1, on February 4



- Hardware and Infrastructure Status
 - ◆ All new H/W is in place
 - ◆ Clustered OS and file systems set up
 - ◆ Performing system tests before installing HLA-specific S/W
 - ◆ Operational before DR2
- DR2 release is planned for July 31

3445 Searches in the past 2 weeks

- (366) m101
- (30) m32
- (27) m33
- (68) m51
- (17) m81
- (14) 14 03 12.6 54 20 56.7 r=0.1d
- (14) antennae
- (12) m101 r=10.0d
- (11) 0 0 r=180d
- (11) m32 r=10d
- (9) mars

DR2 Planning

- Held DR2 Kickoff Meeting
 - ◆ Established high-level milestones
 - ◆ Agreed upon priorities and who was working on what
 - ◆ Identified areas where focused discussion needs to happen
- DR2 Plan Summary
 - ◆ Intermediate goal for completing items: May 1st
 - ◆ New data products (top priority):
 - ◆ WFPC2 combined images for 90% of the visits
 - ◆ ACS mosaics for 50%
 - ◆ ACS grism extractions for 20%
 - ◆ Reprocessed ACS combined images for EDR data set
 - ◆ Version “1.1” of source lists
 - ◆ Contributed MAST products (e.g., UDF, GOODS, COSMOS)
 - ◆ New/Enhanced functionality (top priorities listed only):
 - ◆ Improved footprints performance; mosaics support
 - ◆ User-supplied background images; footprint filtering
 - ◆ “Shopping cart” functionality for consolidating downloads
 - ◆ Contributed products support

Footprints for easier browsing of Hubble data

Inventory

Images

Footprints

NICMOS Grism (ST-ECF)

Help

30 dor RA = 84.676663 Dec = -69.100781 r = 0.200000 [05:38:42.399 -69:06:02.81]

Instrument	#Footprints
<input checked="" type="checkbox"/> ACS	53
<input checked="" type="checkbox"/> WFPC2	472
<input checked="" type="checkbox"/> STIS	444
<input checked="" type="checkbox"/> NICMOS	399
<input checked="" type="checkbox"/> NICMOS GRISM	0
<input checked="" type="checkbox"/> FOS	199
<input checked="" type="checkbox"/> GHRS	77
DSS Image	<input checked="" type="radio"/> On <input type="radio"/> Off
Data Product	
<input type="radio"/> Exposure(Level 1)	
<input type="radio"/> Combined(Level 2)	
<input checked="" type="radio"/> Best Available	
<div>Submit</div>	

To Zoom, go to Advanced Search and enter a smaller value for Radius (smallest value 0.01 degrees)

Click [here](#) for NVO STC Web Services

Reset SelectionSave Table

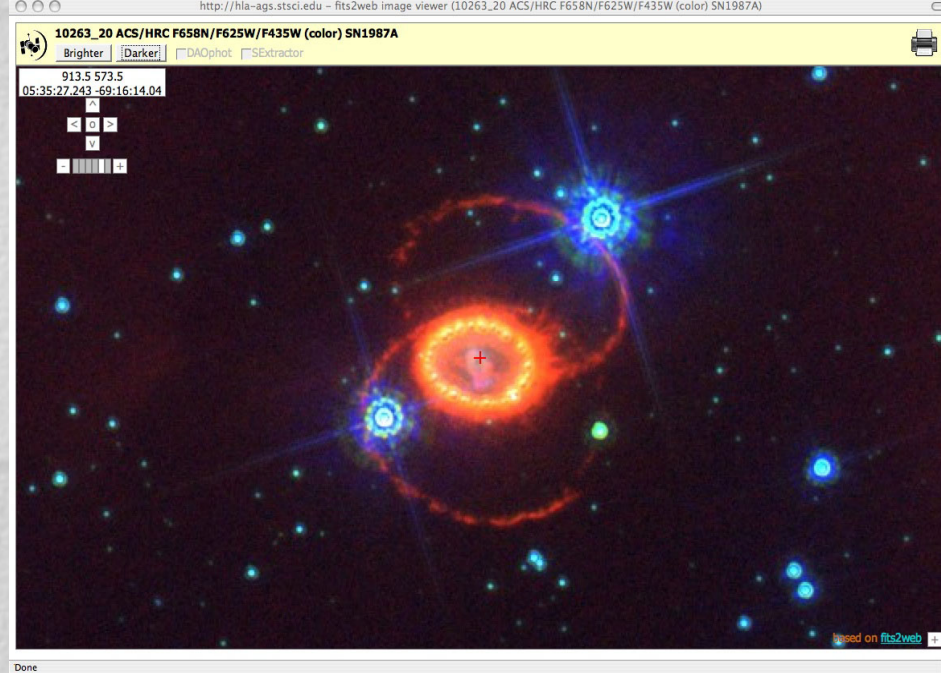
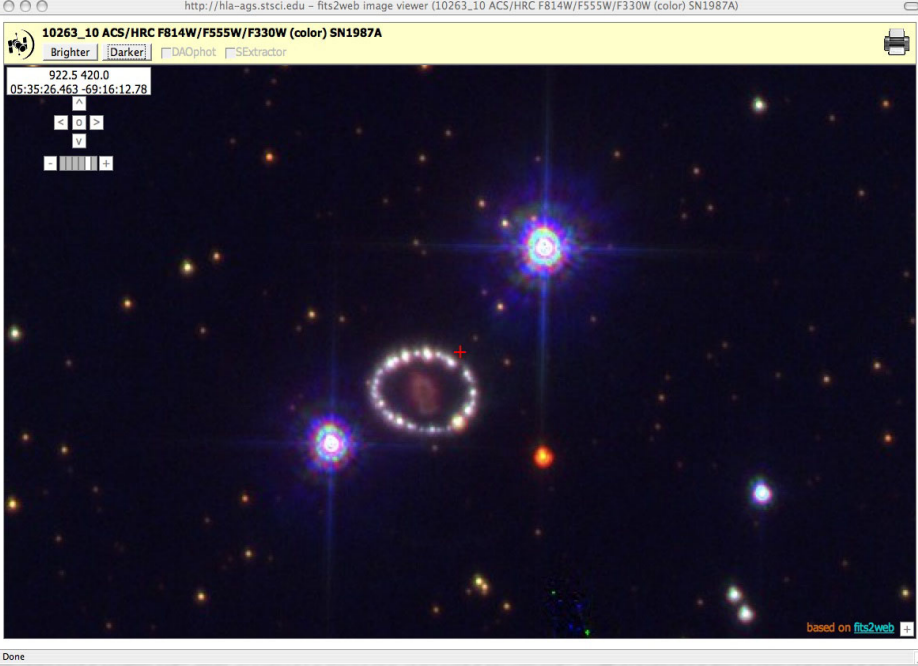
RA, Dec, Radius: 84.68, -69.10 deg., 12.00'

5'

N

E

W



Four out of 600 ACS and STIS images of SN1987A

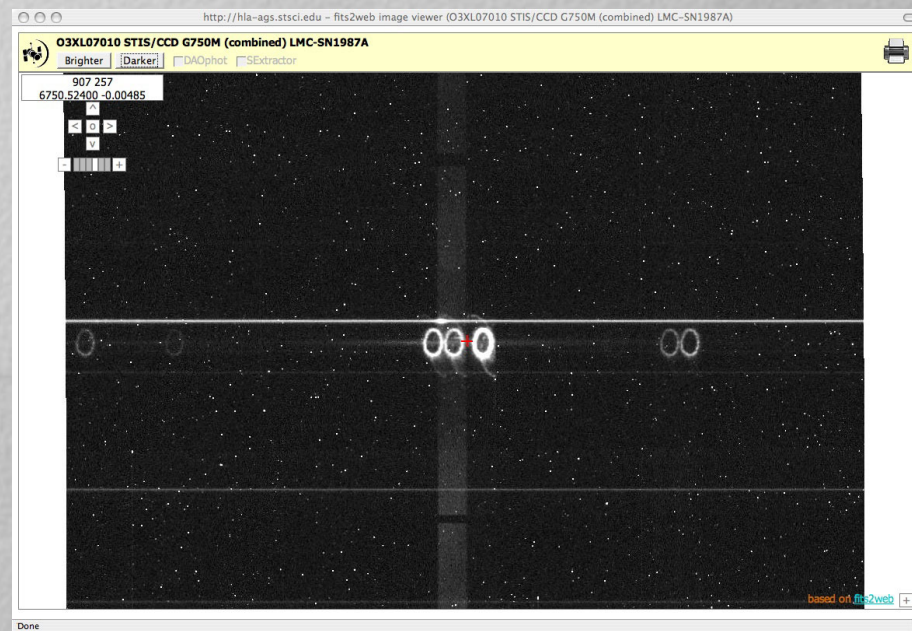
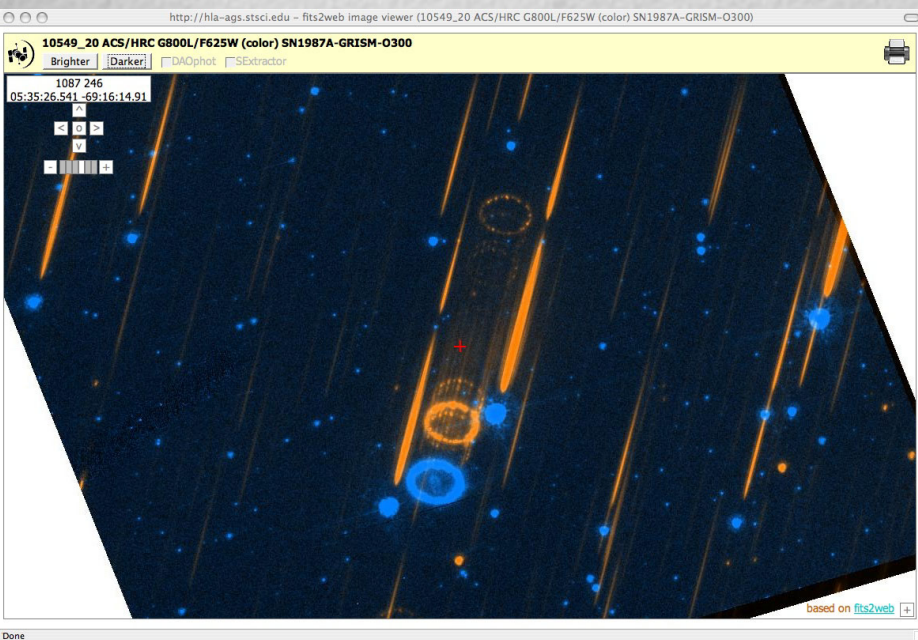
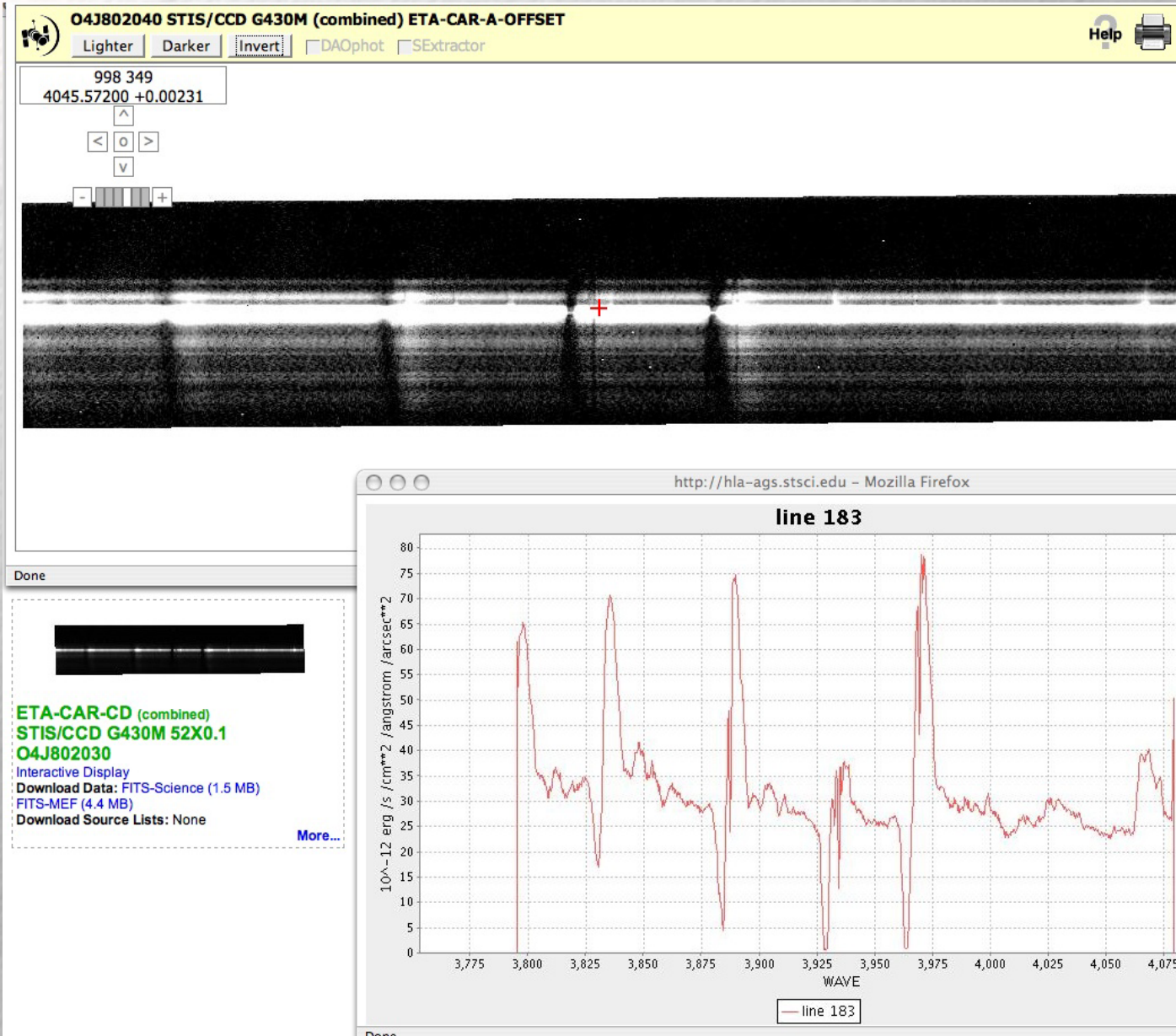


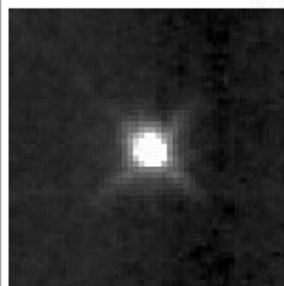
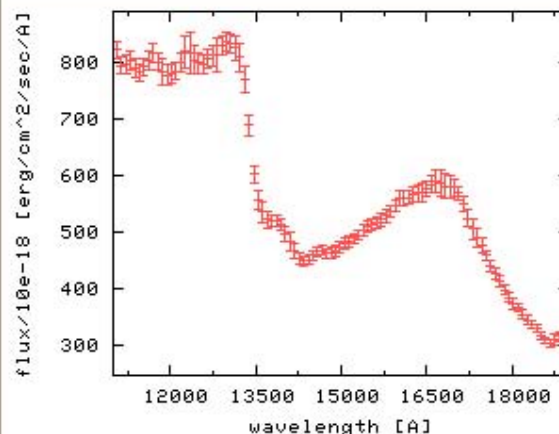
Image view and interactive display of STIS long-slit spectral data



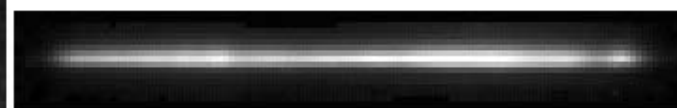
NICMOS GRISM Extractions from ST-ECF

[Define new query](#) [Home](#) [HLA FAQ](#)

[Previews](#)



10.15 arcsec on a side



----- wavelength ----->

Target Name	HNG_J032911.35+311717.4_N8VM10N1Q
Target Ra, Dec	03:29:11.348 +31:17:17.36
Target Galactic Lat, Lon	-20.522465 158.357257 [deg]
Target Ecliptic Lat, Lon	11.979005 57.706494 [deg]
Search ESO/HST Archives	exposures within 2 arcmin