



NICMOS

June

## Good As New In 2002!

2002

### ... and Ready for G.O. Observations

**Better Scientific Performance**

**Stable and operating at 77.1 K**



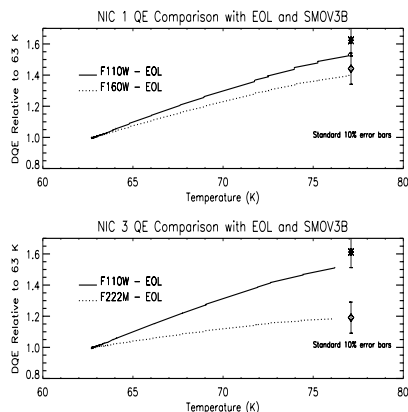
Cryocooler

## Sensitivity

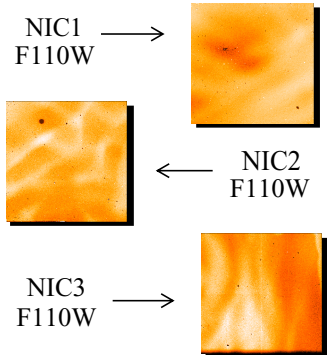
Higher NICMOS sensitivity will translate to better performance for about 90% of the science programs.

### A metric for comparison:

A faint object, with  $m_{AB}=22$  over  $1 \text{ arcsec}^2$  at  $1.6 \mu\text{m}$  in Nic2, F110W, exposed for 1200s had  $S/N=27$  before NCS and  $S/N=36$  after NCS. Thus, in a representative exposure time, post-NCS data should have about 30% more S/N than pre-NCS data.



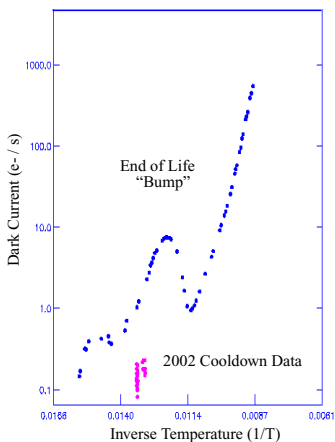
## NICMOS Flatfields



## Average Linear Dark Current

Early analysis indicates the following linear dark current levels. Note that science data will also be affected by amplifier glow and residual shading.

Camera	Cycle 11 e <sup>-</sup> / s	Cycle 7/7N e <sup>-</sup> / s
1	0.15	0.1
2	0.11	0.08
3	0.17	0.1



These preliminary results are averages of data taken since April 19, when the NICMOS detectors were turned back on. The final dark current measurements should not change by an appreciable amount.

**No Dark Current Bump!** The linear dark current is normal in the temperature between 78K and 85K, where anomalously high levels were observed during the warm-up in January 1999.

## New SAA Keywords

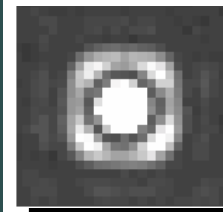
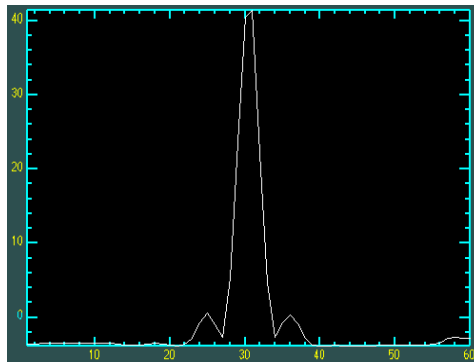
A new keyword, SAA\_EXIT, is now included in all dataset headers specifying the time elapsed since SAA passage. For further information, users should still refer to the NICMOS SAA-passage web tool. Also available are: SAA\_TIME, SAA\_DARK, SAACRMAP.

## Focus

Since cycle 7, the foci for NIC1 and NIC2 have moved slightly in the negative direction and are somewhat closer together. This improves the quality of images taken at the NIC1-NIC2 intermediate focus (PAMI). The focus for NIC3 remains beyond the range of the pupil alignment mechanism (PAM), but has moved in the positive direction, thus improving image quality over cycle 7. The coronagraphic focus (PAMC) remains unchanged for now.

	NIC1	NIC2	NIC3 settings* measured/PAM	PAMI	PAMC
Cycle 7	2.36	0.69	-12.18/-9.5	1.75	2.69
Current	1.8	0.2	-11.5/-9.5	1.22	2.69

\*Since NIC3 focus is beyond the range of motion of the PAM, the measured focus differs from the commanded PAM position

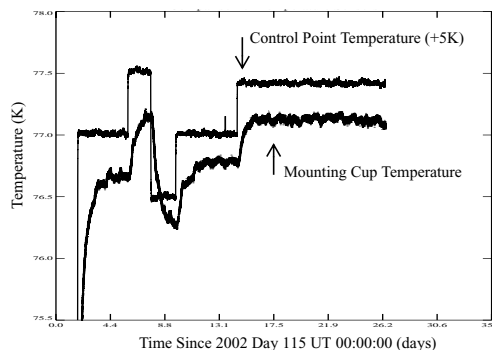


Typical NIC1 PSF with a bright central core, surrounded by the first airy ring

NIC 1 PSF at the optimal PAM setting. The left image is a cross-section of the primary PSF pictured to the right

## Software Improvements

- **Calnica** version 4.0 now creates and applies temperature dependent darks for all data sets.
- On-the-fly-reprocessing is now implemented for all NICMOS data retrieved from the STScI archive.
- Software is being developed to measure the detector temperature from the bias. This method is at least as accurate as reading temperatures from the mounting cup sensors. "Temperature from bias" will eventually be included in the **calnica** software.



The graph to the right shows how stable the instrument is over longer time scales. It also shows how quickly the instrument responds to commanded changes in temperature.

**Ultra Luminous Infrared Galaxy**

IRAS19297-0406

NICMOS - Camera 2



**NGC 4013**

NICMOS - Camera 3



ACS • Visible



NICMOS • Infrared

**Cone Nebula**

NICMOS - Camera 3

**EARLY RELEASE OBSERVATIONS JUNE 2002**