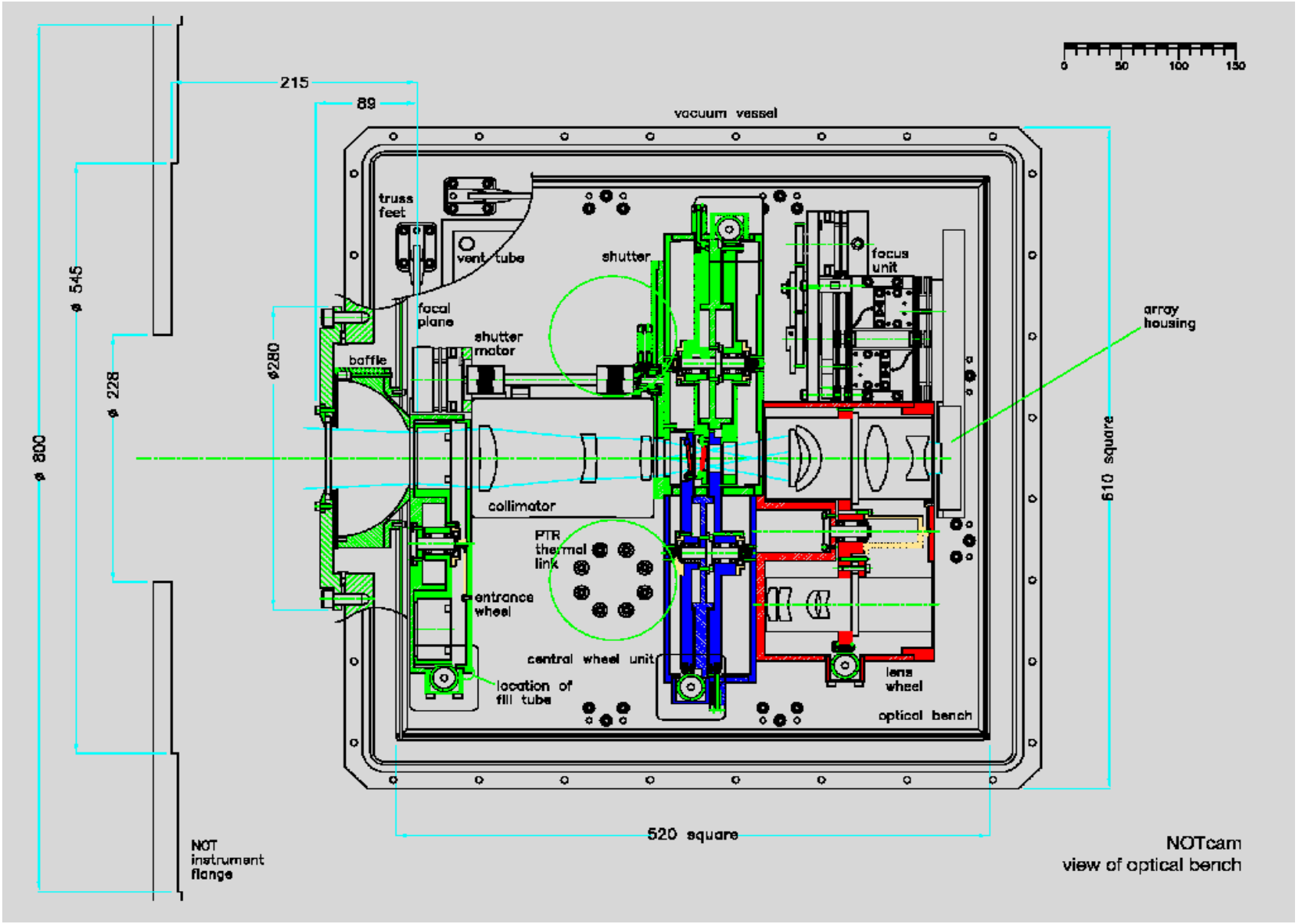
NOTCam and its new Science Array - What next?

STC meeting La Palma 28/4-2008

Anlaug Amanda Djupvik

NOTCam

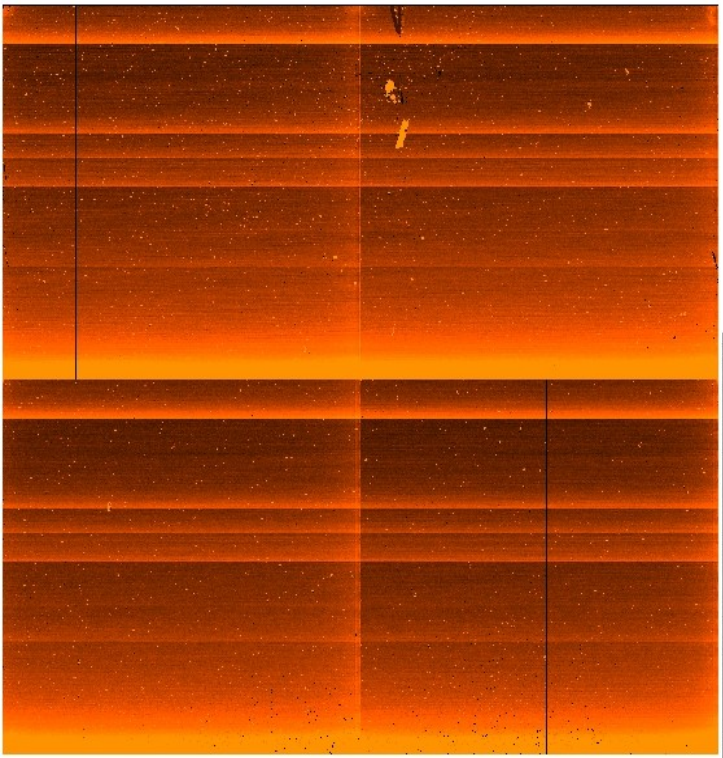


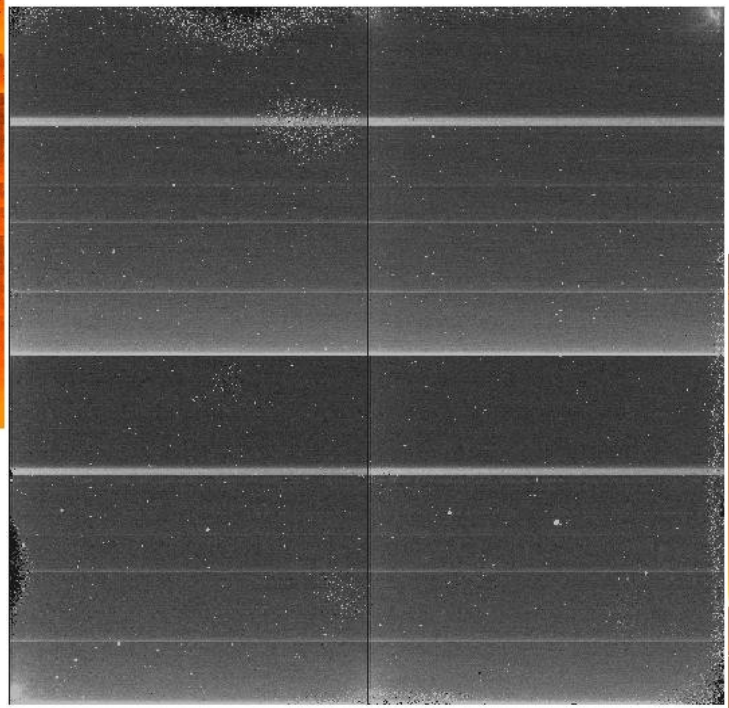
La Palma, 28/04/2008

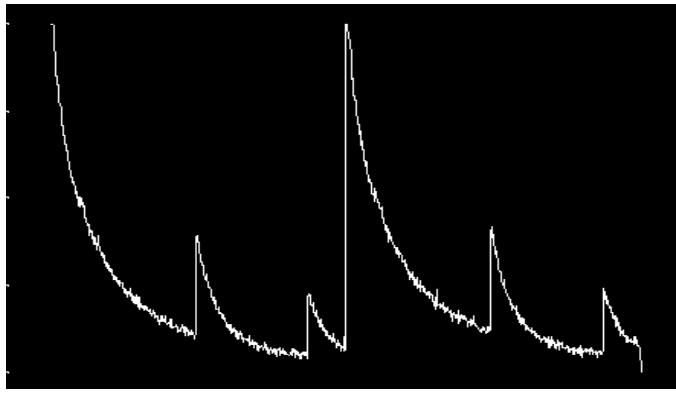
short history ...

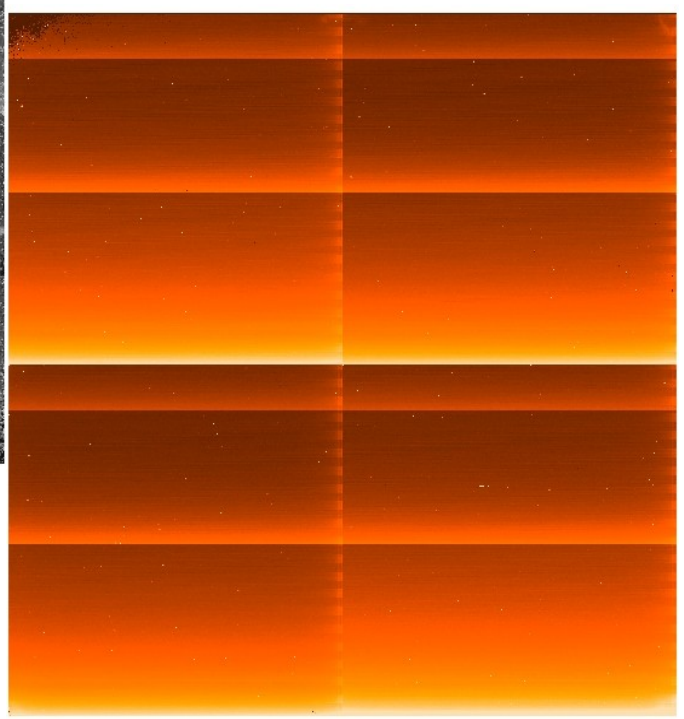
- SWIR1: Engineering Grade Array 2001-2005
- SWIR2: First Science Array
  installed 20/10 – 2005
  commissioned 26/10 – 2005
  used until April 2006, then died
- SWIR1: re-installed 11/5-2006
  used until November 2007
- SWIR3: New Science Array
  installed 7/12 – 2007
  commissioned 13/12 – 2007

Cosmetics – zero darks

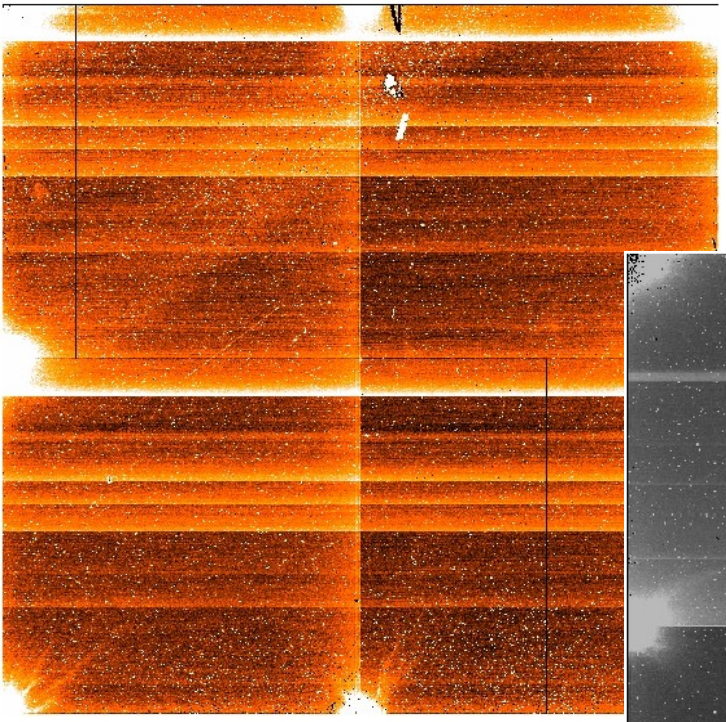


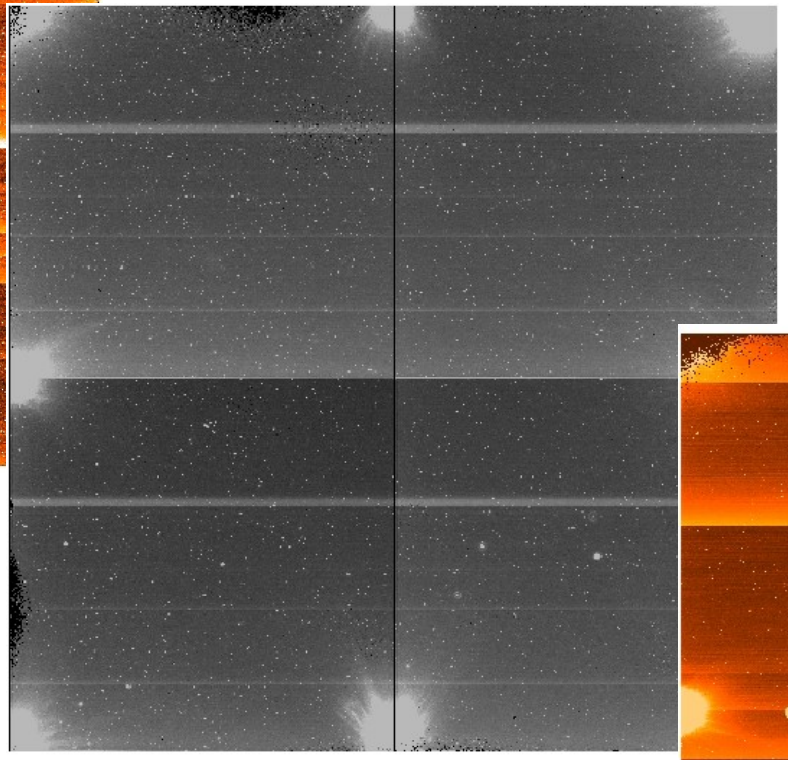


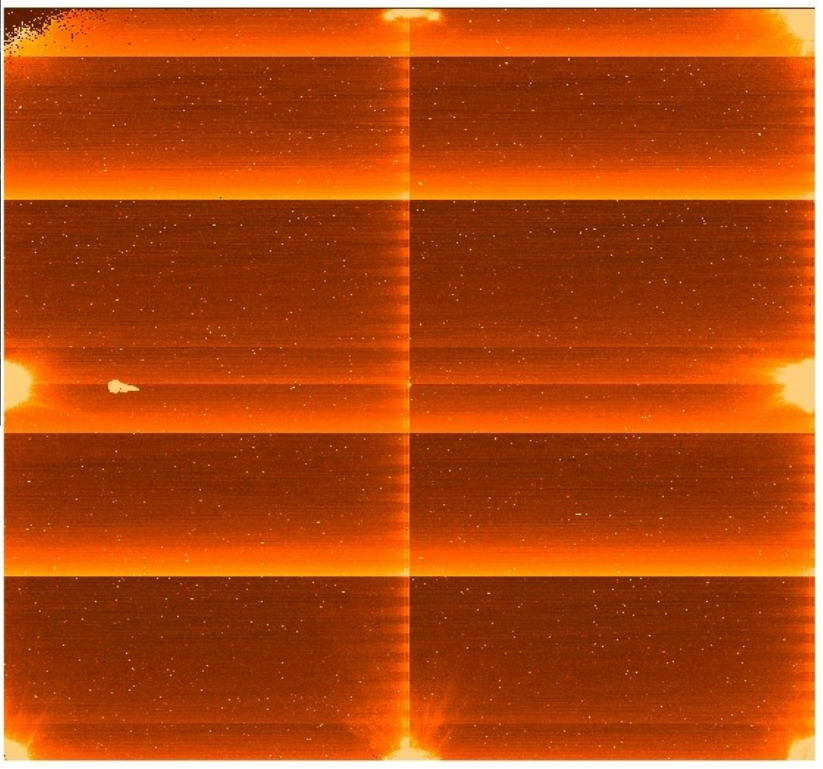




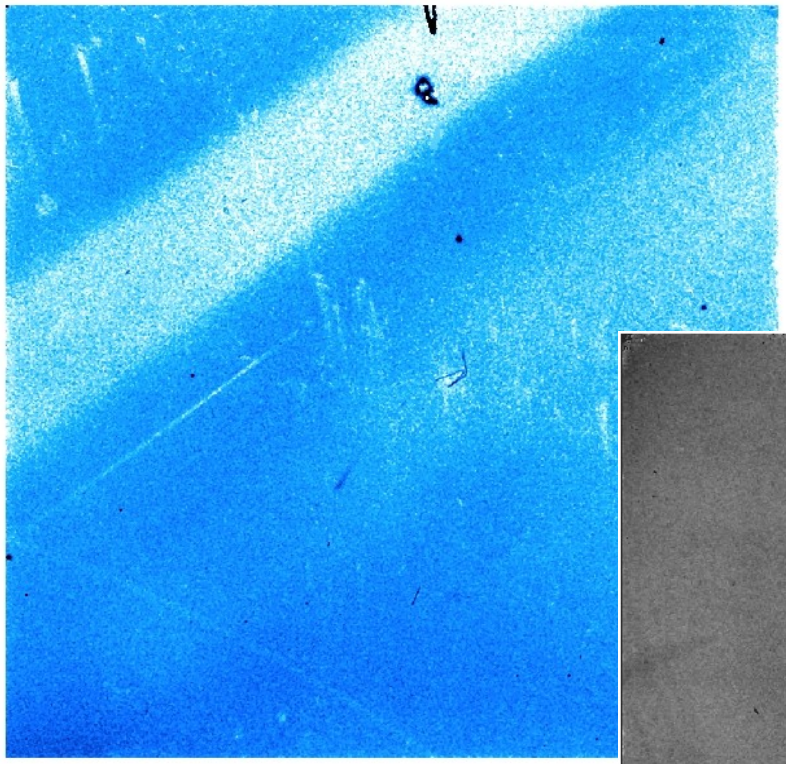
Cosmetics – longer darks

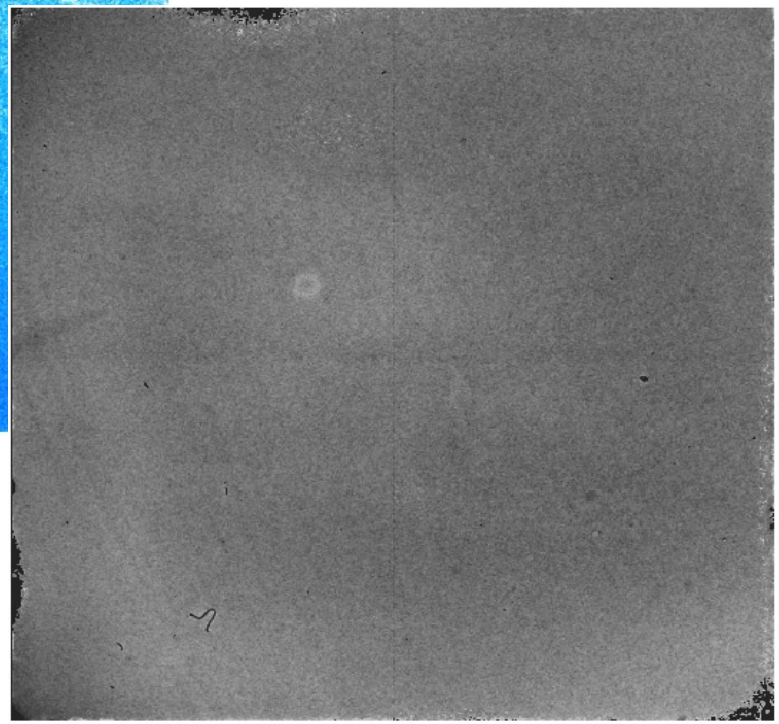


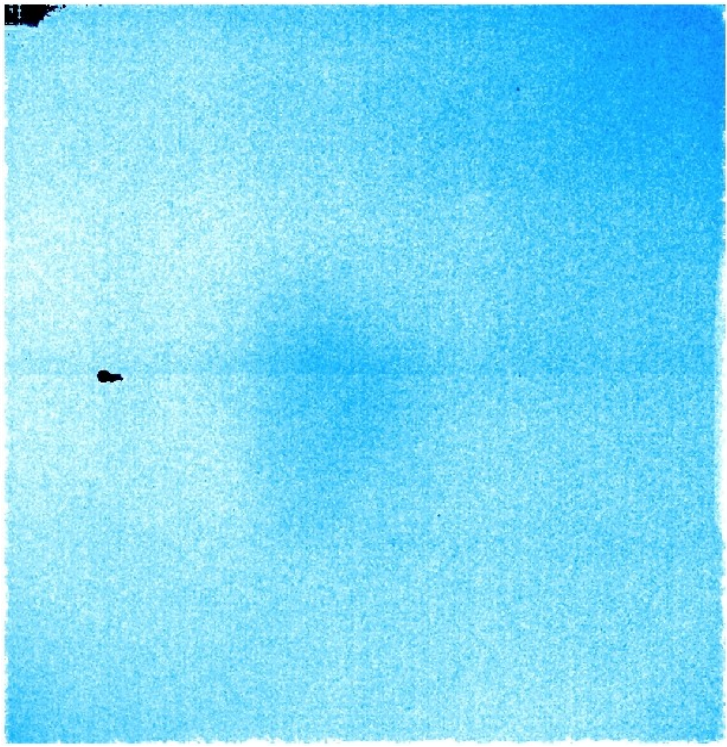




Detector flat field

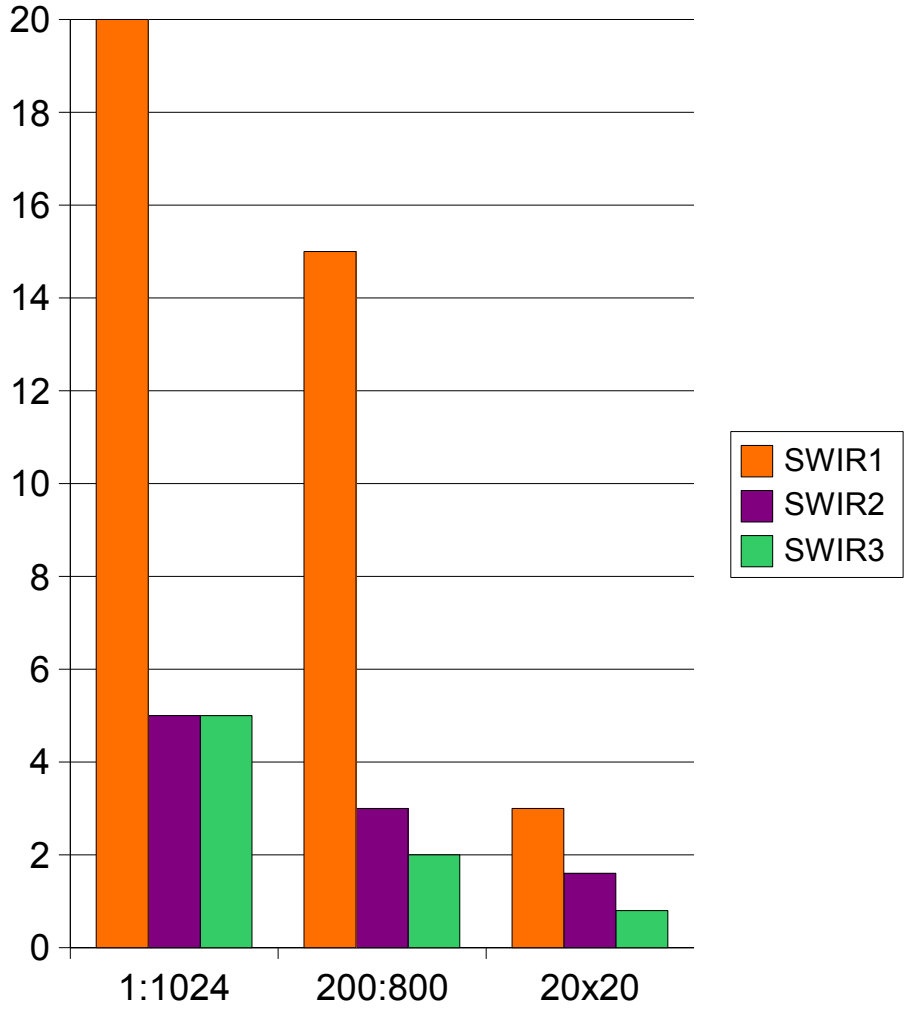






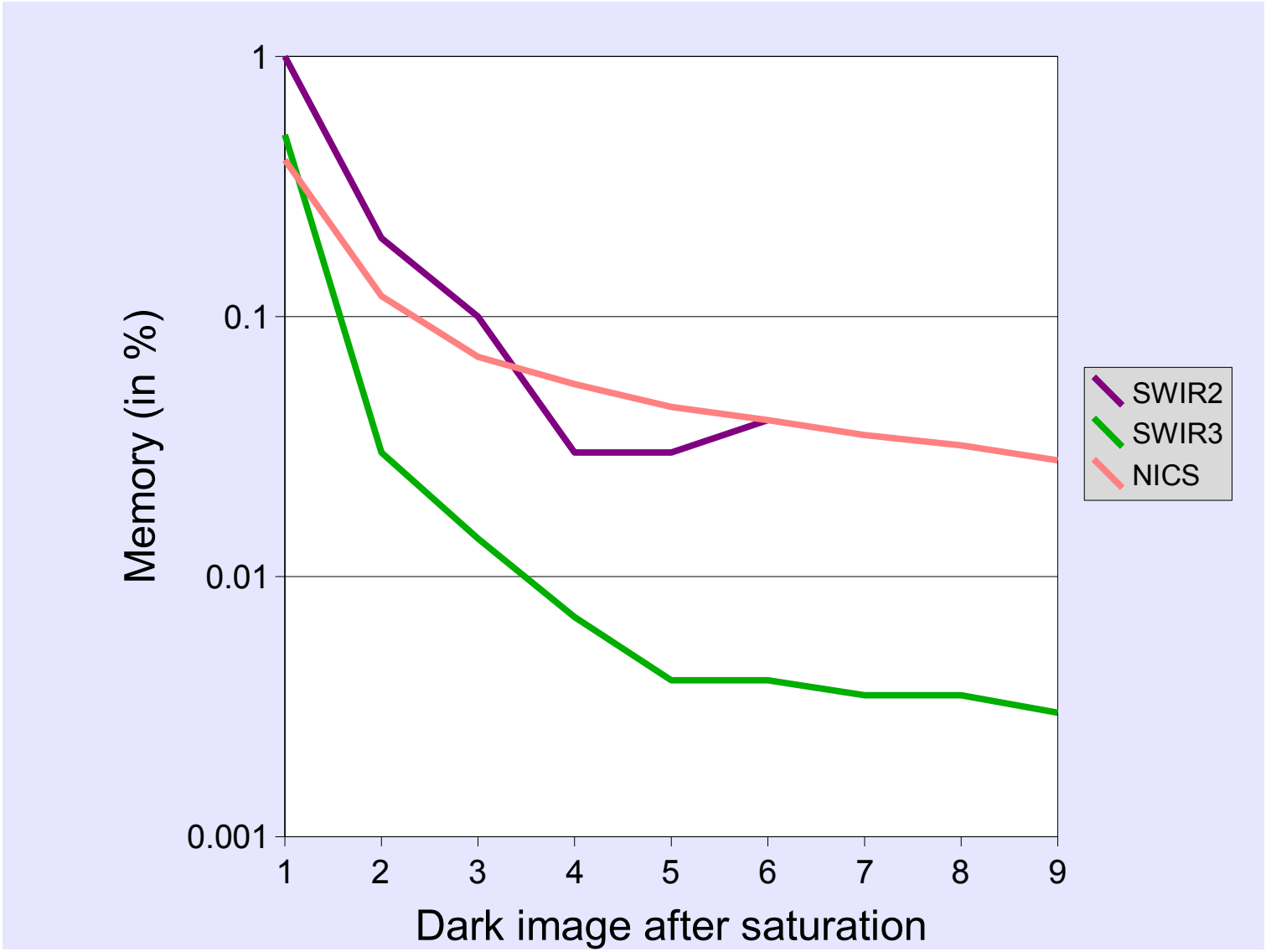
WF-camera + Ks filter

More about detector flatness

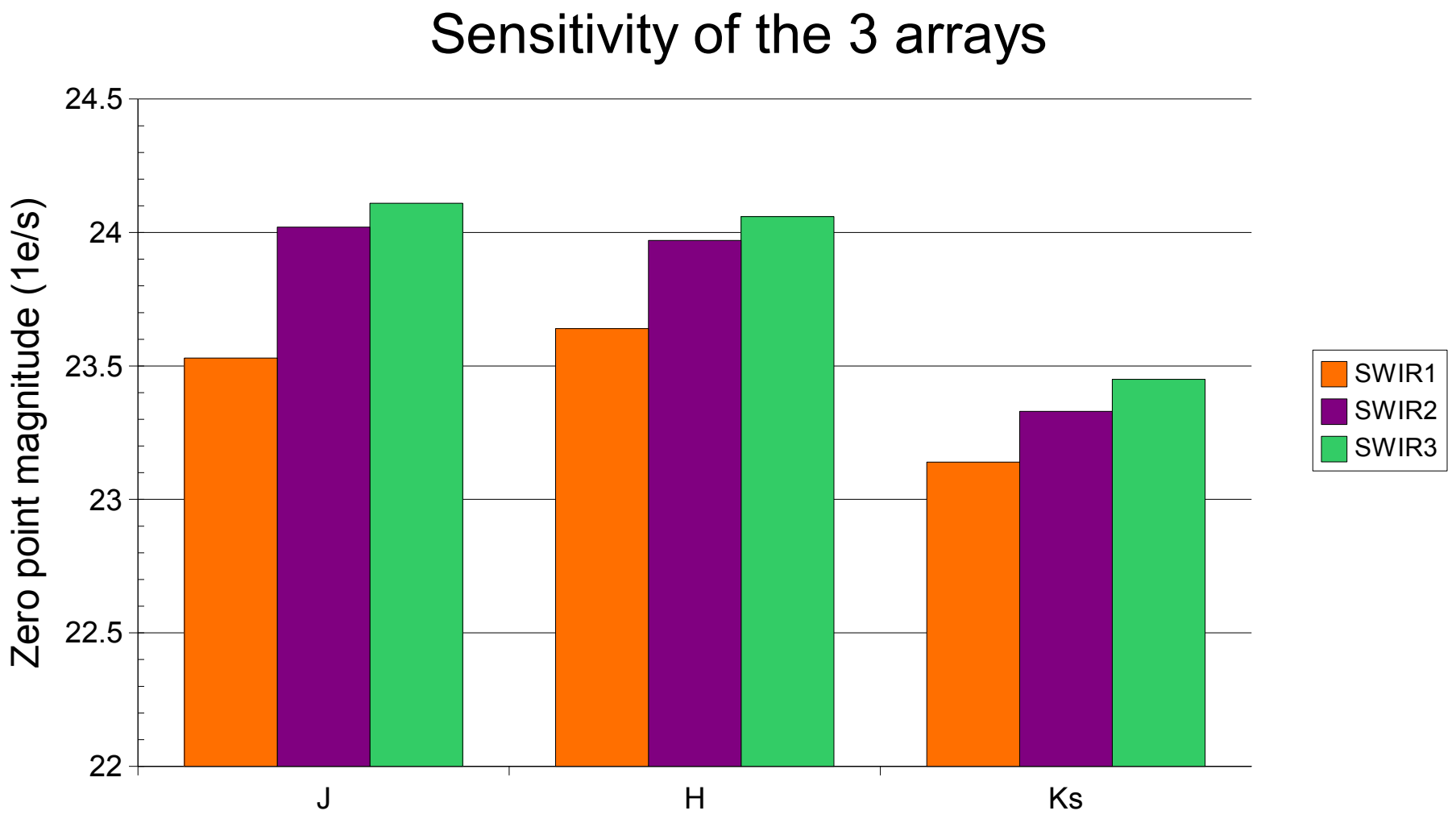


- **[1:1024]** = max deviation in percent over entire FOV
- **[200:800]** = max dev in percent in central field
- **20x20** = typical std dev in boxes of 20x20 pixels all over the array

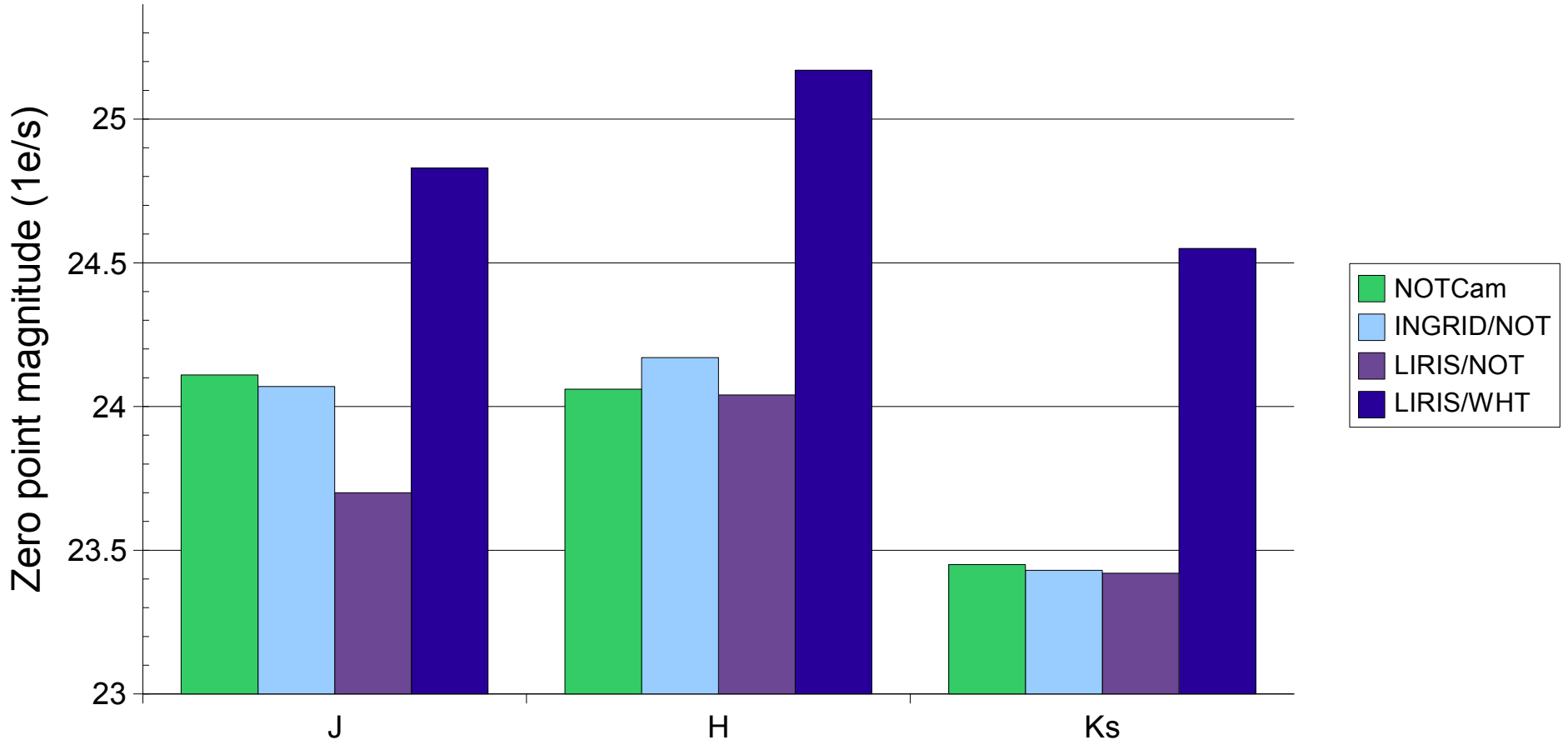
Memory effect



JHKs zero points



How does NOTCam compare?



M57 – the Ring Nebula

J (1.25 µm)

H (1.64 µm)

H2 v=1-0 S(1) (2.122 µm)

WF-cam
Beamswitch
6 x frame 10 6
Quick-look red
notcam.cl

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M57 optical vs. infrared

ALFOSC BVR (Nowotny)

Near-IR vs. Spitzer/IRAC

3.6 (blue), 4.5 (green), 5.8 (orange), and 8.0 (red) microns.

SWIR3 summary

- cosmetically clean (< 1% bad pixels)
- very flat pixel to pixel response
- sensitive (10% more than SWIR2)
- exhibits a weak memory (charge persistence)
- read noise: 9-10 e-, gain: 2.5 e-/adu
- saturates at 56000 adu, linear < 22000 adu
- no hot spots at long integrations (as SWIR2)

What next?

- get rid of re-current pick-up noise
- understand properly the vacuum behaviour
- test current polarimetry mode (4 polaroid sheets)
- upgrade polarimetry to use Wollastons:
    1) material ? (AgGaS2, LiYF4, LiNbO3)
    2) two single Wollastons or WeDoWo?
    3) imaging- and spectro-polarimetry?
    4) cost (LiNbO3 in 1996: 9800 DM per piece)
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