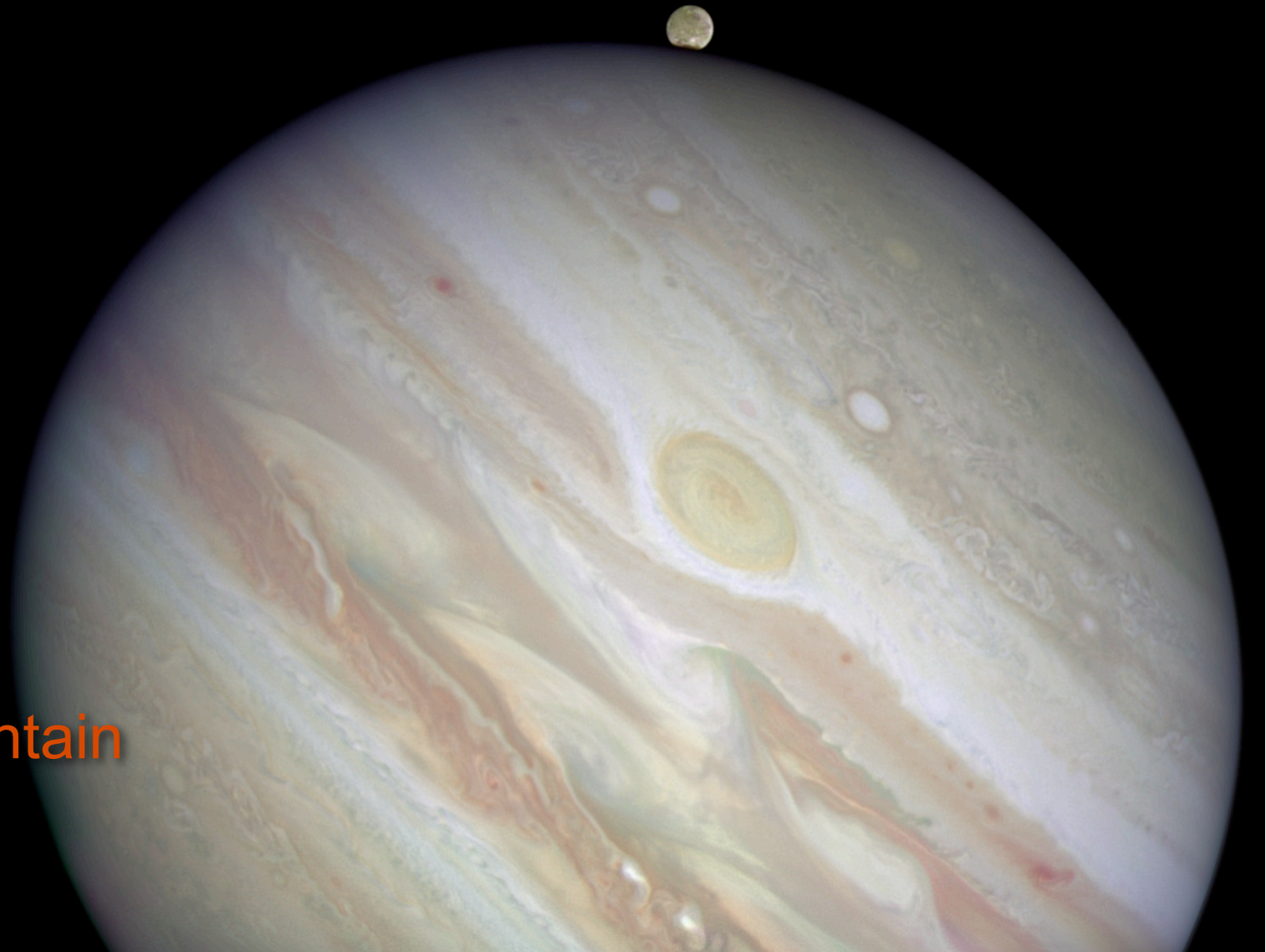


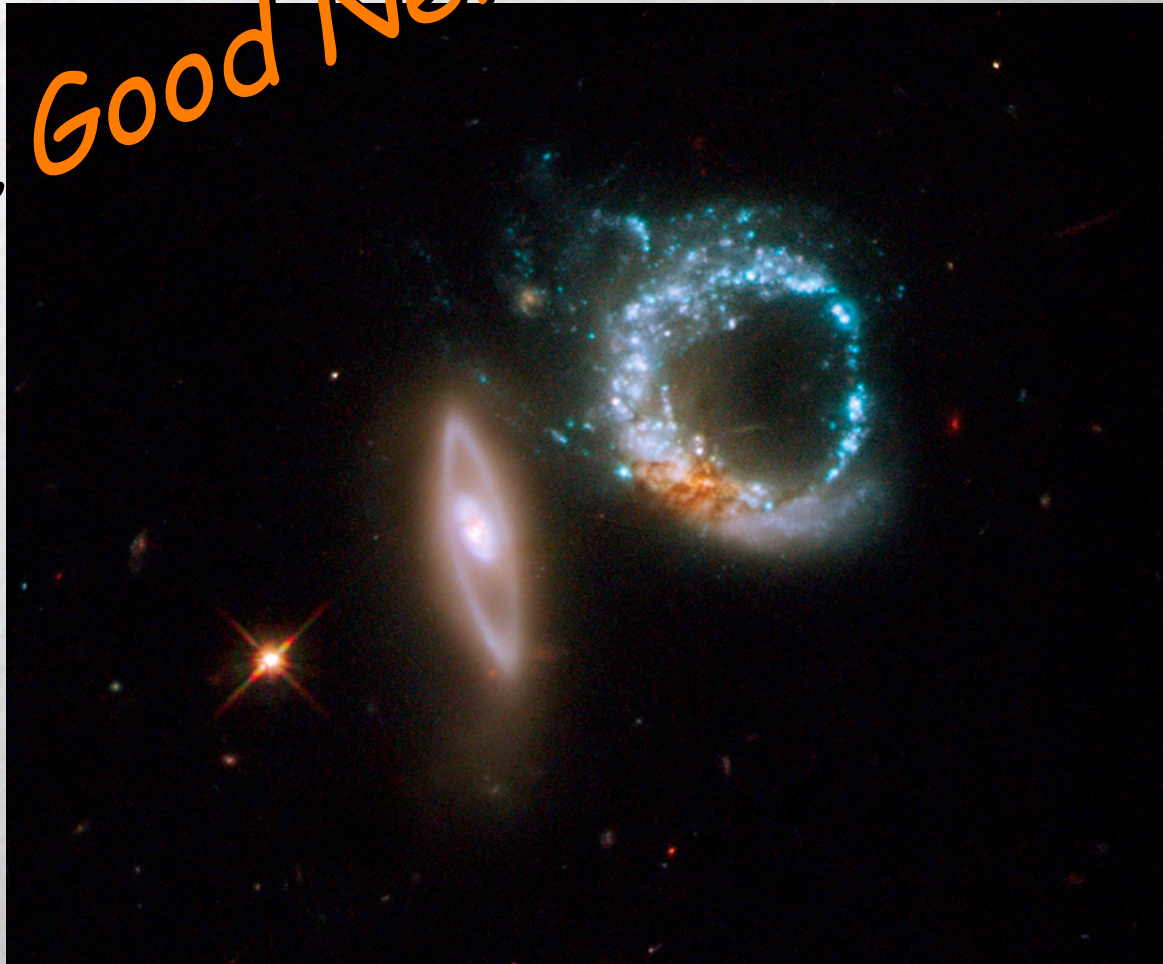
Space Telescope Users Committee

13th November 2008

Matt Mountain
Director



The Good News..



WFPC-2 image taken 27-28th October

ANGST Survey Completed

NGC 253

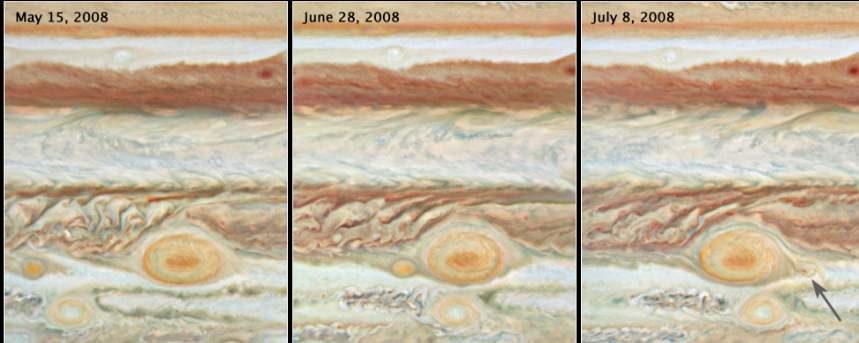
NGC 300

NGC 3077

NGC 4163

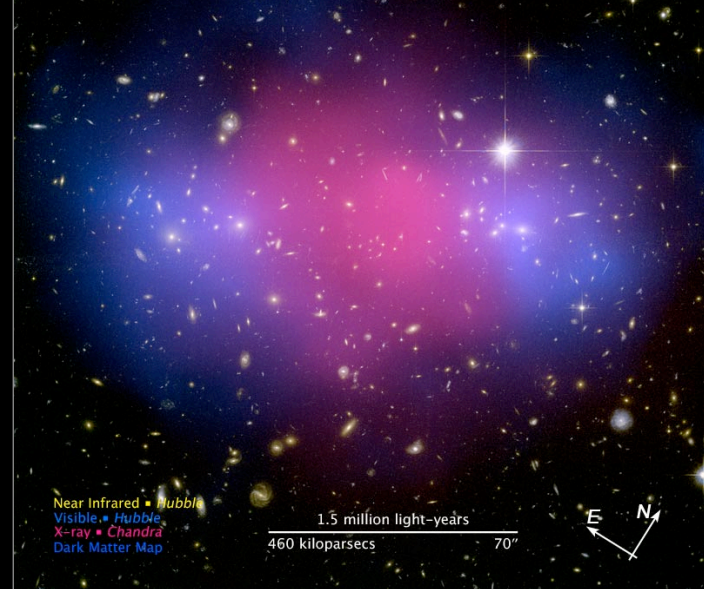
J. Dalcanton, 2008

Jupiter's Red Spots • Hubble Space Telescope WFPC2

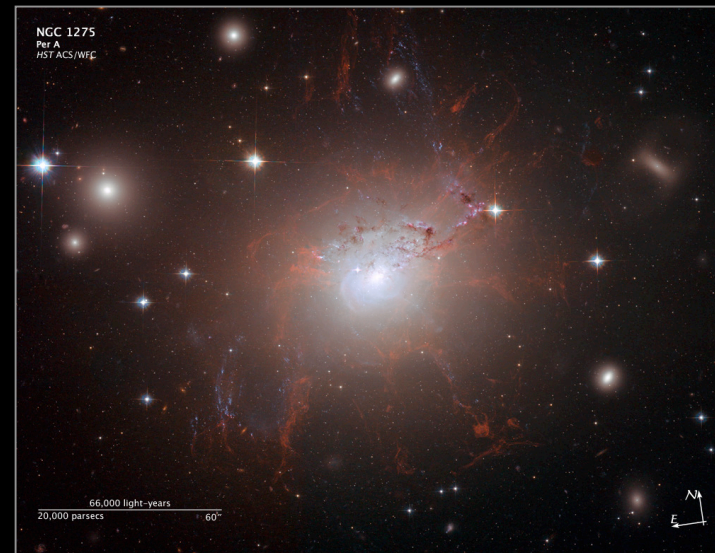


NASA, ESA, and A. Simon-Miller (NASA Goddard Space Flight Center) • STScI-PRC08-27

Galaxy Cluster MACS J0025.4-1222 Hubble Space Telescope ACS/WFC Chandra X-ray Observatory



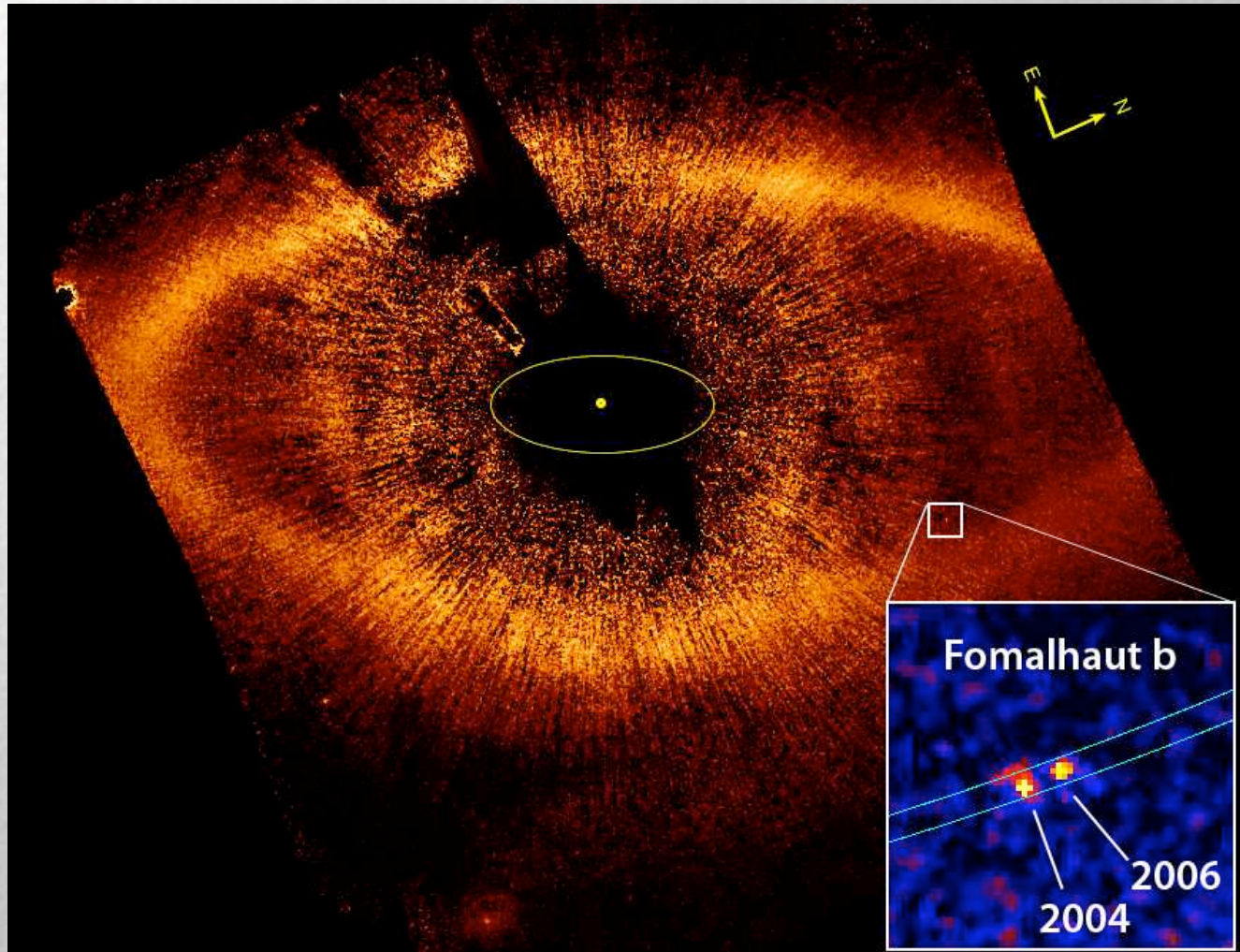
Bradać et al. 2008



Fabian et al. 2008

Optical Images of an Exosolar Planet 25 Light Years from Earth

Kalas et al., 2008 Science (today)



Fomalhaut b: Orbit = 119 AU, Mass $\sim 2.5 M_J$, Age = 100~300 Myr
Evidence of circumplanetary disk with dimension
comparable to orbits of Galilean satellites

1000 EVENTS

THAT SHAPED THE WORLD

<p>FIRST ALPHABET DEVELOPED EARTH PROVED SPHERICAL BYRON'S DISCOVERIES ATMOSPHERIC THINK UP ARMS REVOLUTIONIZED MYLON SYNTHESIZED FIRST ORIGIN TO THE MOON SURRENDERS HARVEY FURMAN'S</p>	<p>MOTION OF DISCUS CAPTAIN FIRST XEROX COPIES BROADCASTING BORN FIRST HEART TRANSPLANT PASCAL INVENTS CALCULATOR ALBION TRANSMISSION PERFORMED BERLIN WALL FALLS PRIESTLEY FINDS NICKEL</p>	<p>RADAR ORIGINATES CLODD FINCH'S DREAM FIRST SPACE RACE</p>	<p>HALLEY DOCUMENTS COMET EARTH COLLECTS TALMANTAN MOTION DESIGN BEER THERM PERFORM SPACE RACE</p>	<p>SAVILY, DIRTY PHILIPINE MUSIC</p>
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977 **1990** The Hubble Space Telescope was deployed by NASA from the space shuttle *Discovery* on April 25, 1990. Named for astronomer Edwin Hubble, it peers across light-years and back in time to capture high-resolution images of galaxies that thrived one billion years ago.

■ **FOOTNOTE** Astronomer Edwin Hubble (1889-1953) discovered the existence of numerous galaxies besides ours and developed the theory that the farther apart galaxies are, the more quickly they move away from one another.

977 | *The Carina Nebula, captured through the Hubble Space Telescope*



- Cycle 17 Results
- ESA fraction
 - ◆ Pls: 15.4% proposals - 15.6% orbits
 - ◆ Cols: 38.5% proposals - 61% orbits

→ ESA MOU with NASA for HST expires 2010

- ESA held a Senior Review for continued support of HST after 2010 together with all other missions that ESA is currently operating.

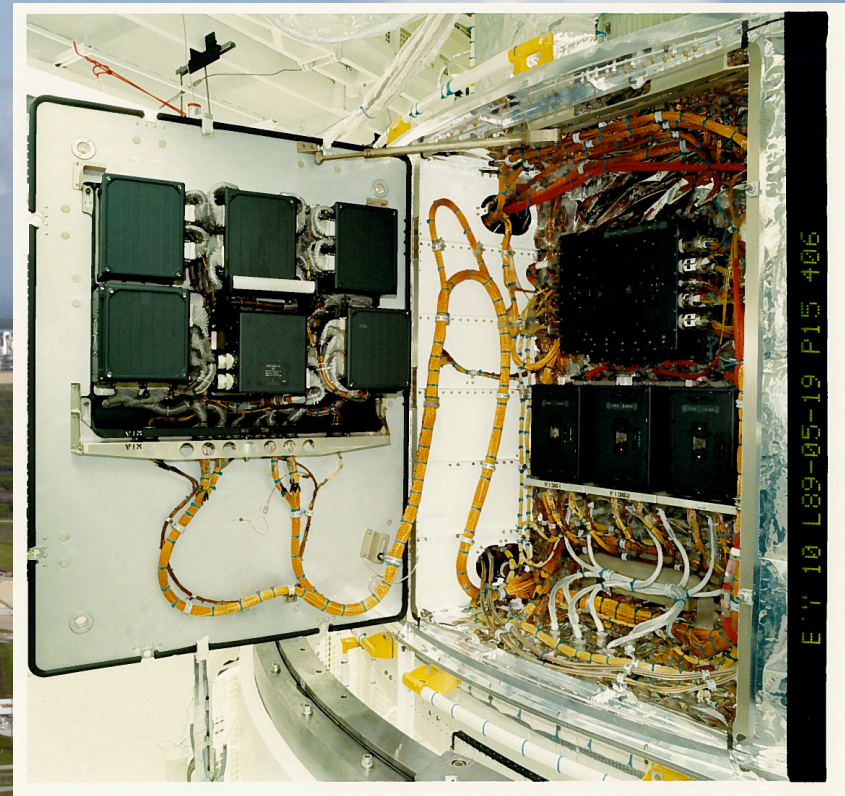
- ESA intends to put HST on a two-year funding cycle.

→ **HST ranked #1**

ESA contributes 15 scientists at STScI, who represent about one third of the astronomical research staff complement for HST.

Johnson Space Flight Center

- as it was on the 26 September'08



Then on the 27th September one side of Science Instrument Control and Data Handling Unit (SI C&DH) failed

Re: HST -" once again unto the breach"

From:

"Griffin, Michael D. (HQ-AA000)" <Michael.D.Griffin@nasa.gov>

Date: Tue, 7 Oct 2008 15:45:42 -0500

To: <mmountain@stsci.edu>

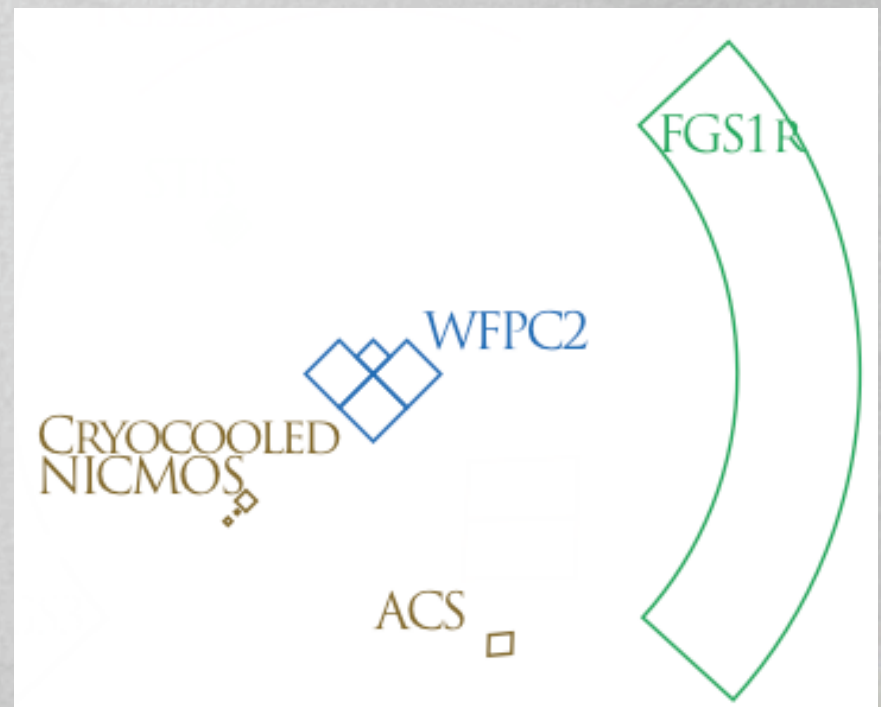
Matt-

You're welcome, and thanks for the kind words, but I don't deserve them. This is an obvious call. We're not going to spend hundreds of millions of \$\$\$ on the last servicing mission only to leave behind a single-string bird. At least I am not. And yeah, it'll cost some money. Some may not like that. If the White House or some members of Congress disagree (when they find out what I did, that is), so what? What are they going to do, fire me?

Mike

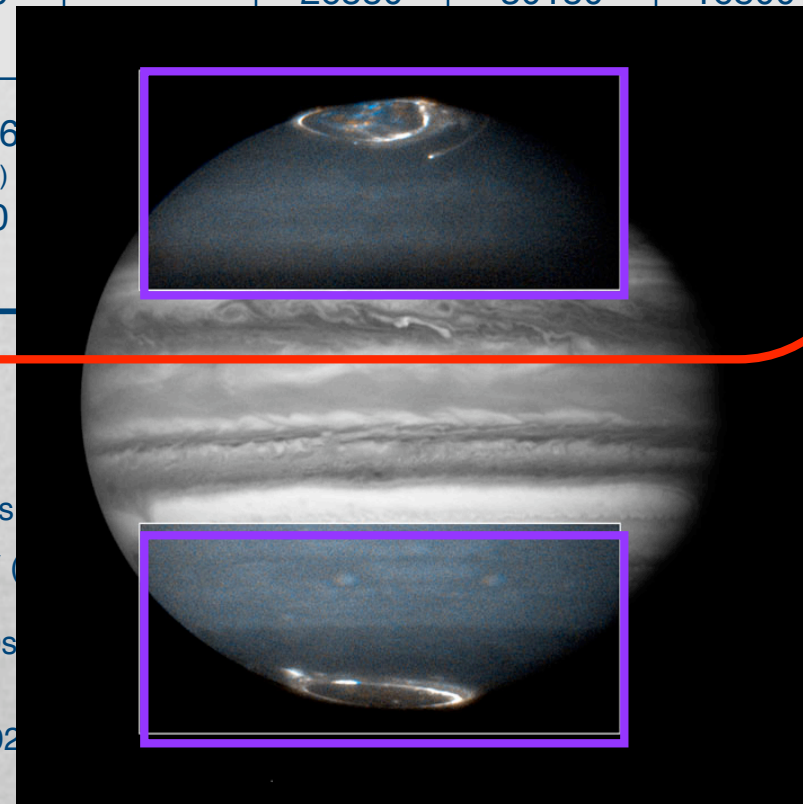
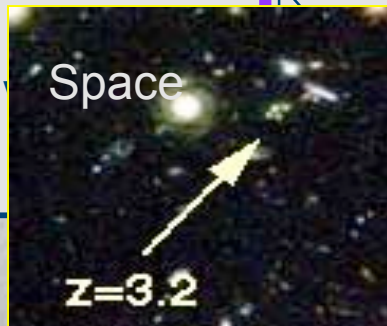
HST's Science Program until SM4

- HST will be kept scientifically active as much as possible
- WFPC2, ACS/SBC & FGS Cycles 15 & 16 executing + more SNAPs
- NICMOS cryocooler to be restarted
- Cycle 17 ACS/SBC, NICMOS & FGS programs that could execute earlier and in 2 gyro science mode
- **Short turn-around proposal solicitation**



Time (in seconds) to Reach X^{th} Magnitude at S/N = 5

	UV (X=21)	U (X=25)	B (X=27)	V (X=27)	R (X=27)	I (X=26.5)	Z (X=25)
HST WFPC2	19000 (F160BW)	6100 (F336W)	4100 (F450W)	3200 (F555W)	7600 (F675W)	6600 (F814W)	4300 (F850LP)
Gemini-S GMOS		6400 (u')	8000 (g')		26550	30150	16800
		52740 (U _{Bess}) 114976 (u')	15216 (B _{Bess}) 9000 (g')				



N
 All
 • V
 • G
 • F

calculated with the assumptions
 me CR-SPLIT = 4, except UV
 00s), g' (4x2000s), r' (9x2950s
 5274s), u' (16x9061), B (8x1902
 550s), z (6x2055s)

HST/NICMOS Compared with Ground-based 8m-class Telescopes: On-Source Exposure Time Required to Reach S/N=5

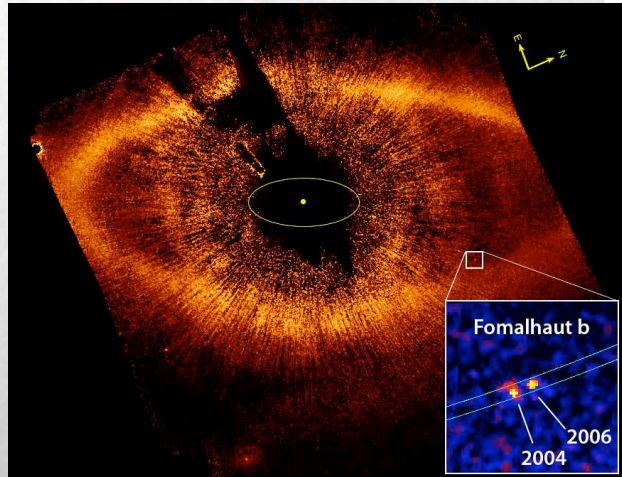
		J=25.2	H=24.5	K=23.2
<i>HST/NICMOS:</i>		F110W	F165W	F205W
NIC3	51" x 51"	0.5 hours	0.6 hours	-
NIC2	19" x 19"	1.7 orbits	1.8 orbits	9.6 orbits
NIC1	11" x 11"	4.7 orbits	4.2 orbits	-
<i>8m with AO:</i>		J	H	Ks
Gemini/NIRI+Altair	22" x 22"	16.4 hours	17.8 hours	1.0 hours
VLT/NAOS+CONICA	27" x 27"	10.7 hours	12.2 hours	4.4 hours
<i>8m without AO:</i>		J	H	Ks
		12.5 hours	23.8 hours	1.4 hours
		11.2 hours	25.9 hours	9.1 hours



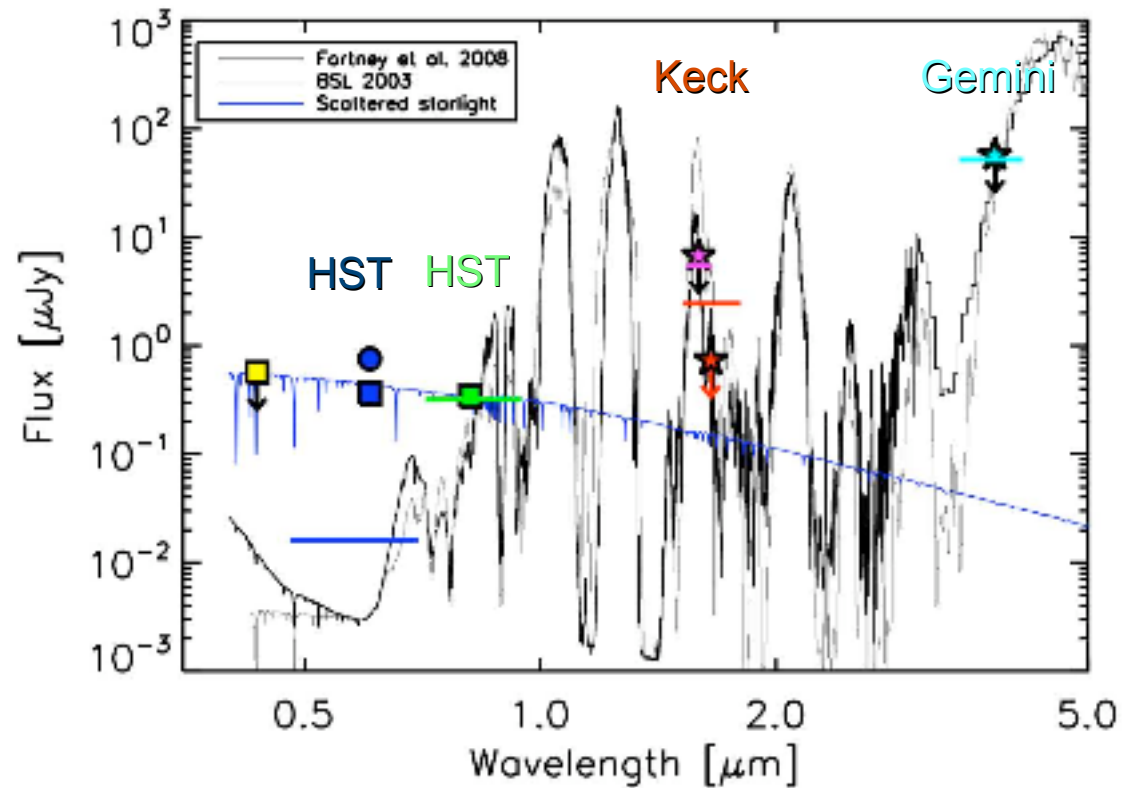
High redshift SNe and Dark Energy

adiacal and earthshine background
 ile [J=0.66", H=0.64", K=0.61" without AO]
 ure radius = 0.3"
 x seeing FWHM (default for VLT)
 osure time calculators for these telescopes.

NICMOS is still a *very competitive* science capability



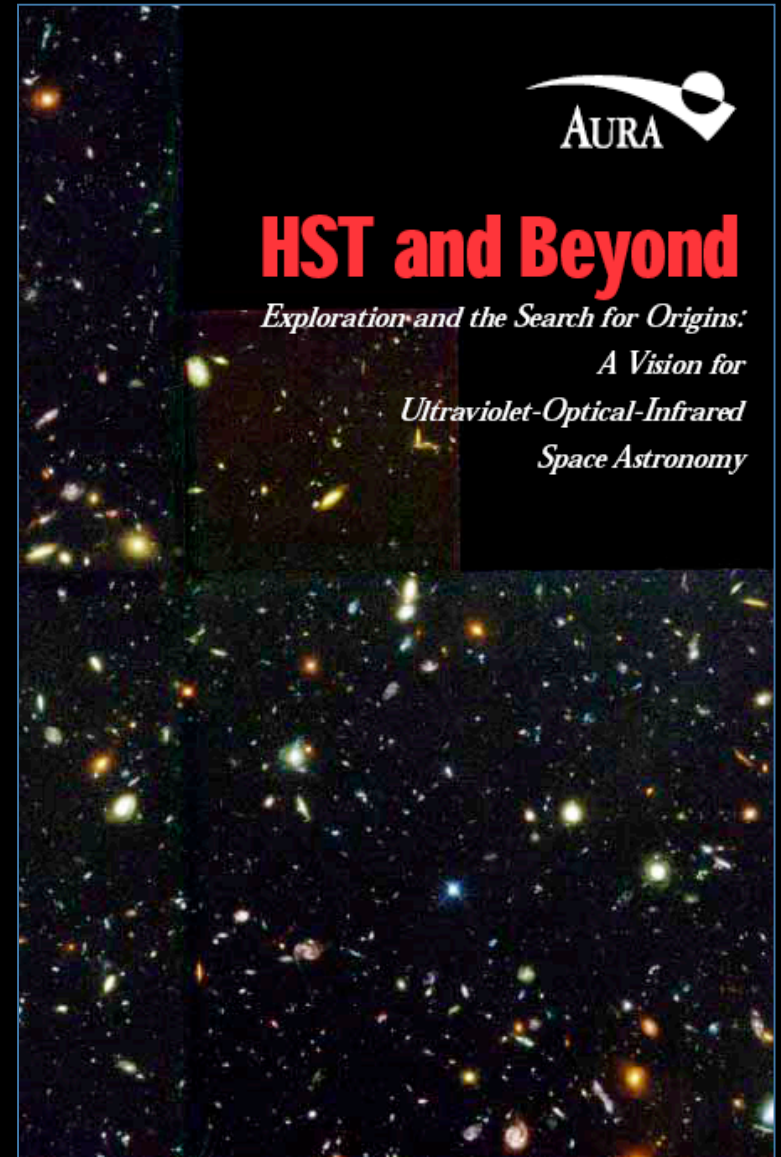
From Kalas et al (2008)



★ Groundbased observations at $1.6\mu\text{m}$ and $3.8\mu\text{m}$ could not detect Fomalhaut-b and so Kalas et al (2008) could not definitively constrain planet model, NICMOS measurements at $1.6\mu\text{m}$ are hence critical

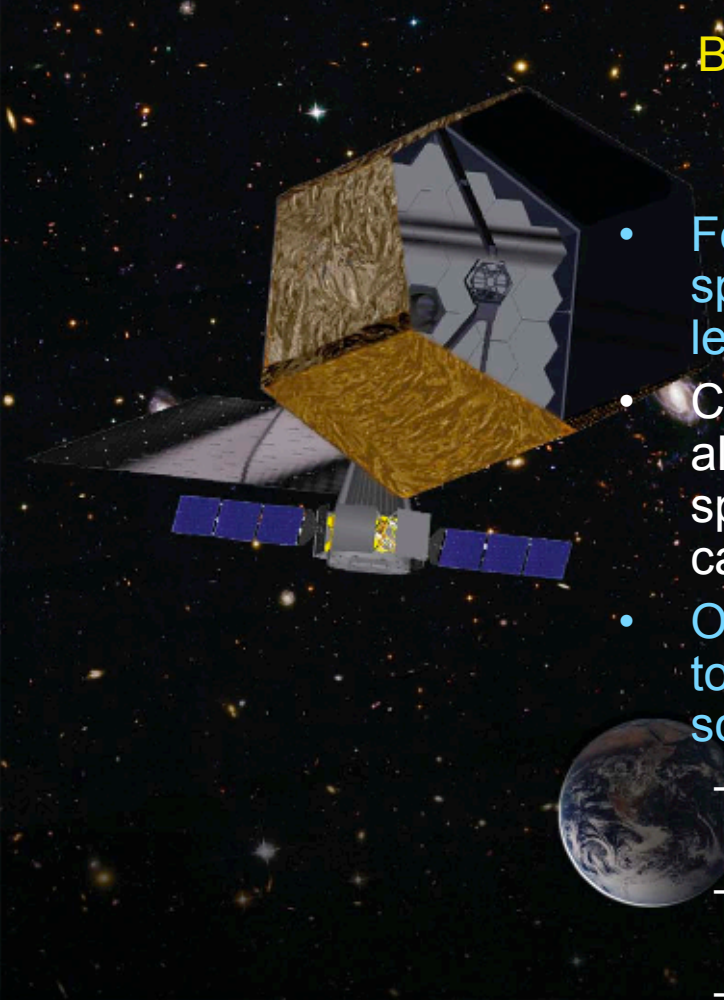
Preparing for the Decadal Survey:

- Appoint a committee to craft a report similar to the **“HST and Beyond”** report (May 1996). David Spergel is chair of the committee.
- **HST&B Charter:** To “study possible missions & programs for UVOIR astronomy in space for the first decades of the 21st century” and “initiate a process that will produce a new consensus vision of the long-term goals” of UVOIR space astronomy.
- HST&B focused on science opportunities with less emphasis on technical capabilities.
- Authored and refereed by prominent members of the community.



What AURA & STScI Will Do:

Beyond JWST: The Next Steps in UV/Optical/NIR Space Astronomy, March 26-27, 2009

- 
- Focus on the long-term, grand scientific vision for space-based astronomy (through 2030) - ensure the legacies of HST and JWST continue.
 - Complement to the 2010 Decadal Survey. Should also update assessment of the synergy between space-based UVOIR telescopes with the realistic capabilities of AO+large ground-based telescopes.
 - Original HST & Beyond report took 2 years from start to publication. Need to work on much shorter schedule:
 - Begin with community workshop here at STScI on March 26-27, 2009.
 - Prepare “powerpoint” input for NRC Decadal Review Committee by summer.
 - Hardcopy report by fall 2009. Send to NRC DRC.
 - David Spergel (Princeton) has agreed to Chair “The Next Steps in UV/Optical/NIR Astronomy”¹⁴

ATLAST

11/13/08