

Aqua Status



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MODIS Science Team Meeting
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July 23, 2002



Aqua Launch

May 4, 2002

- Flawless countdown
- Flawless launch
- Flawless spacecraft separation
- Flawless unfurling of the solar array

(photo by Bill Ingalls)



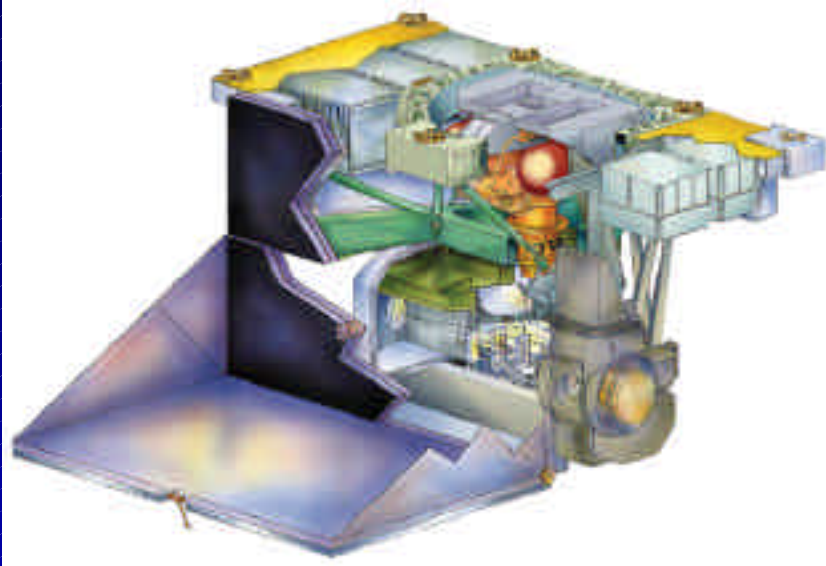
Highlights of Aqua's Early On-Orbit Progress

- May 4, 2002 -- Flawless launch and deployments of the solar array, AMSR-E antenna, both CERES instruments, and the X-band antenna.
- May 12 -- First AMSU science data.
- May 14 -- First HSB science data.
- May 15-23 -- Spin-up of the AMSR-E rotation rate from 4 rpm to 40 rpm.
- May 24 -- First AMSR-E science data.
- May 25 -- Deployment of the AIRS Earth shield.
- May 26 -- First AIRS visible/near-infrared science data.
- June 1 -- Key adjustment made to the Automatic Gain Control for AMSR-E, correcting earlier problems with the data.
- June 12 -- First AIRS infrared science data.
- June 17 -- Attainment of Aqua's 705 km operational altitude.
- June 18 -- First CERES science data.
- June 24 -- Deployment of the MODIS Earth shield.
- June 24 -- First MODIS science data.
- July 12 -- Direct broadcast turned on.

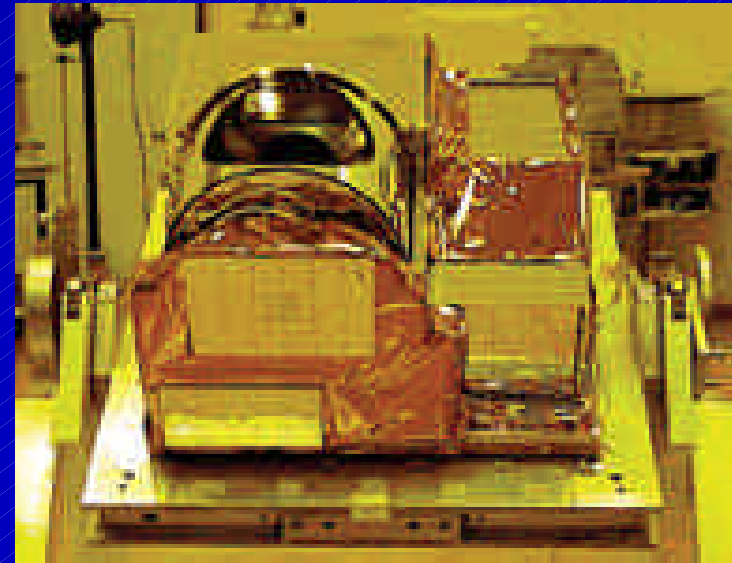




The Aqua Sounding Suite

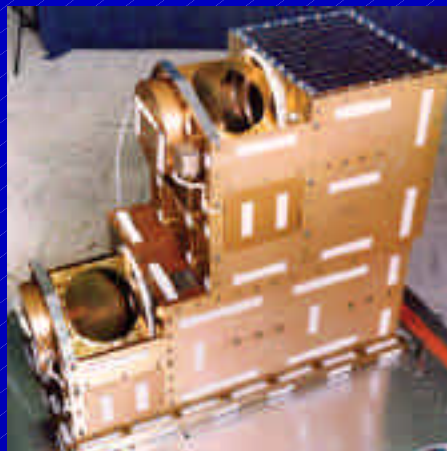


Atmospheric Infrared Sounder (AIRS)



Humidity Sounder for Brazil (HSB)

Advanced Microwave Sounding Unit (AMSU; two units)



AMSU A1



AMSU A2



AMSU First Light Images

Uncalibrated data at 23.8 GHz, May 12, 2002

(For the available AIRS first light images
see the AIRS Science Team web site.)

First data passages over the
U.S. east and west coasts,
centered at 1:30 p.m. local time.

(images courtesy of the AIRS Science Team)



AMSU First Light Images Central U.S., May 16, 2002

Nighttime pass; intense thunder-
storm activity in Kansas.

Channel 6 (54.4 GHz)

Channel 4 (52.8 GHz)

Channel 3 (50.3 GHz)

Channel 1 (23.8 GHz)

(For the available AIRS first light images
see the AIRS Science Team web site.)

(images courtesy of the AIRS Science Team)



HSB First Light Images

Early Pass over the U.S. West Coast, 1:15 PDT, May 15, 2002

Channel 2 (150 GHz)

Channel 5 (183 ± 7 GHz)

(For the available AIRS first light images
see the AIRS Science Team web site.)

(images courtesy of the AIRS Science Team)



Early Geophysical Product from AMSU/HSB

Preliminary Rain Rate Images for June 16, 2002



Scandinavia

South central U.S.

(For the available AIRS first light images
see the AIRS Science Team web site.)

(images courtesy of the AIRS Science Team)



AIRS First Light IR Spectra

a. Brightness temperatures (in K) for all 2378 AIRS infrared channels for one footprint off the west coast of South Africa, June 13, 2002, 1:30 UTC.

(For the available AIRS first light spectra see the AIRS Science Team web site.)

500	1000	1500	2000	2500	wavenumber (cm ⁻¹)
20	10	6.7	5	4	wavelength (μm)

b. Detail showing the leftmost 128 of the 2378 channels in plot a.

(For the available AIRS first light spectra see the AIRS Science Team web site.)

(spectra courtesy of the AIRS Science Team)



Advanced Microwave Scanning Radiometer for EOS (AMSR-E)

NASDA

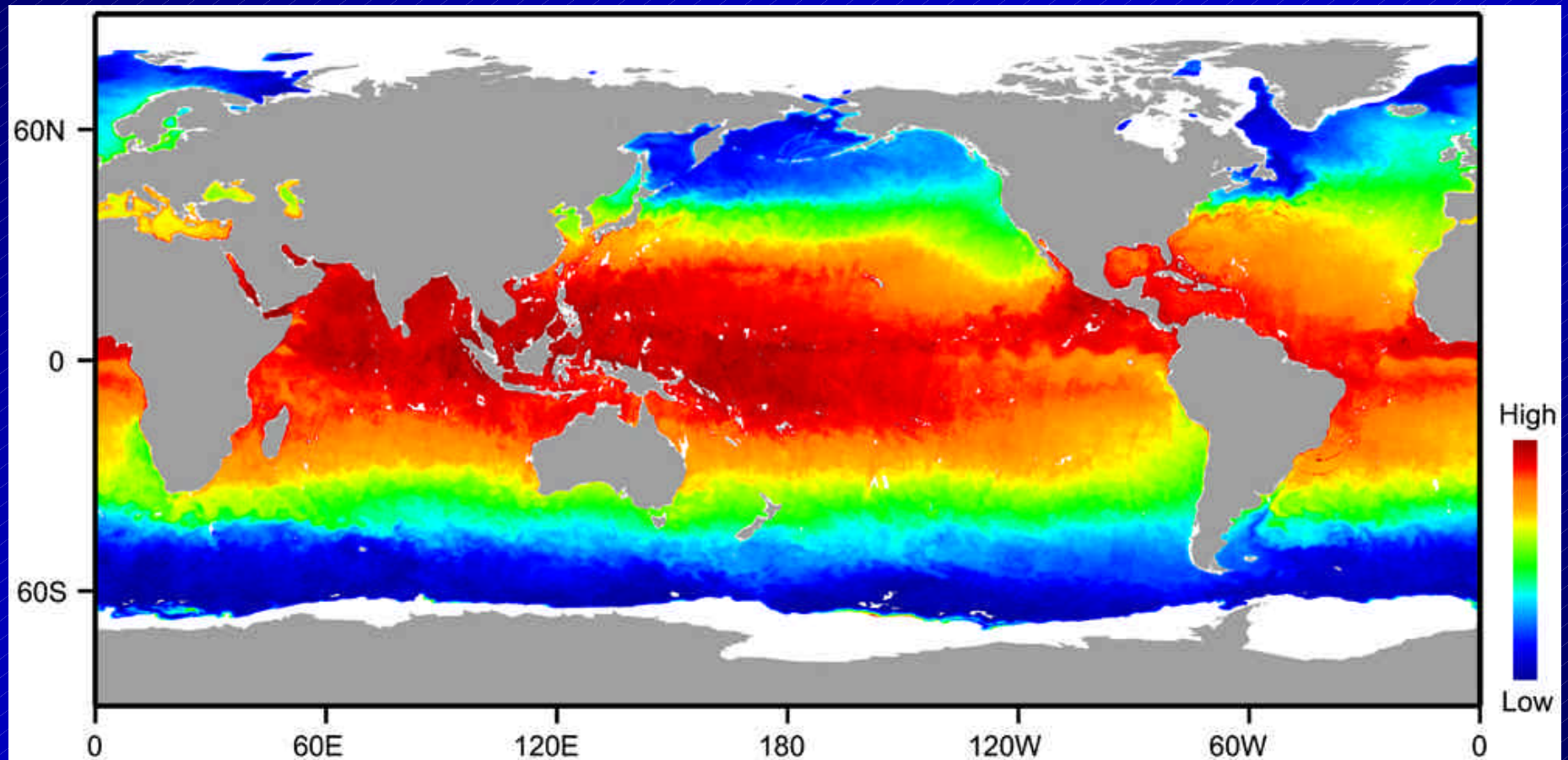




NASDA

AMSR-E First Light Image

Global Sea Surface Temperatures for June 2-4, 2002



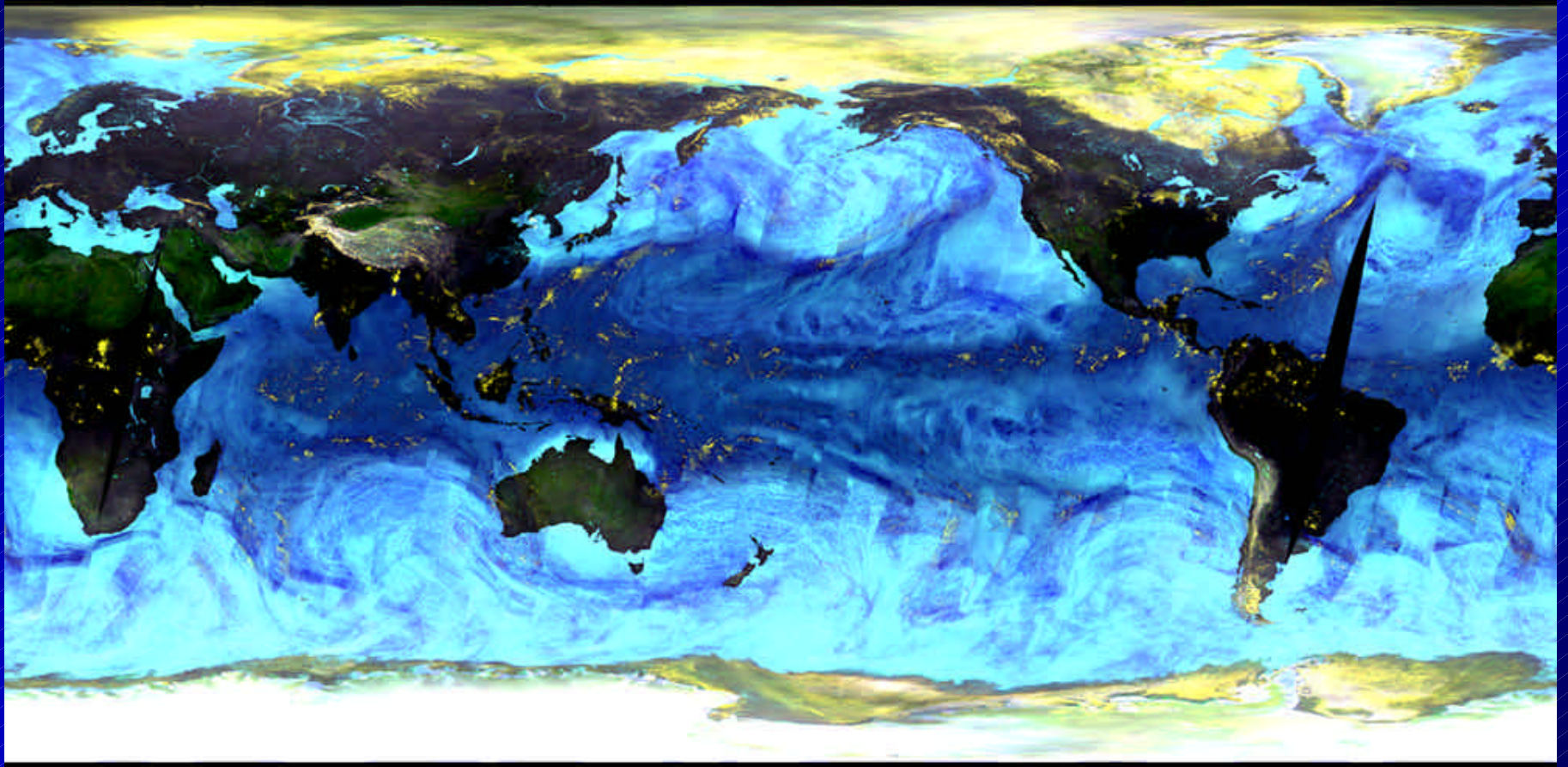
(image courtesy of NASDA)



NASDA

AMSR-E First Light Image

Three-Channel Composite for June 2-4, 2002



Channels used: 89 GHz V + H, 23.8 GHz H.

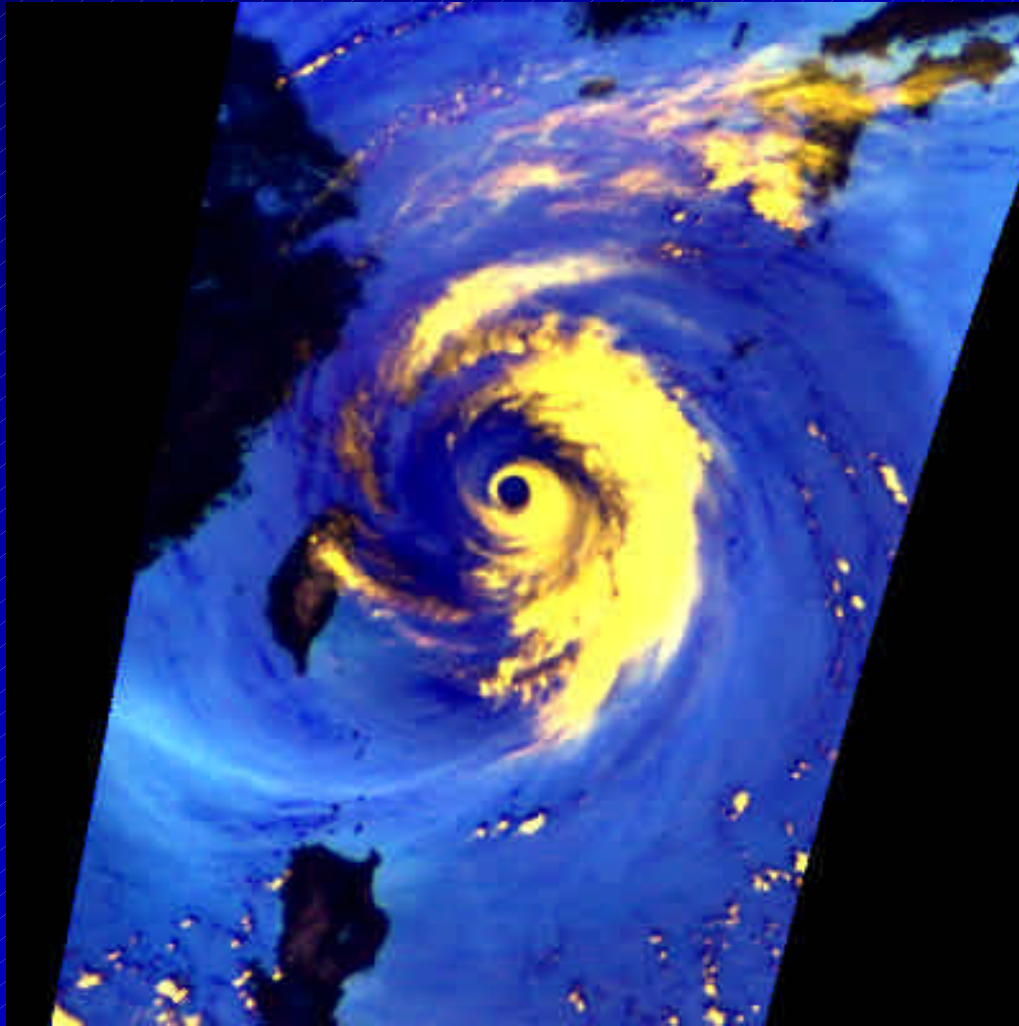
(image courtesy of NASDA)



NASDA

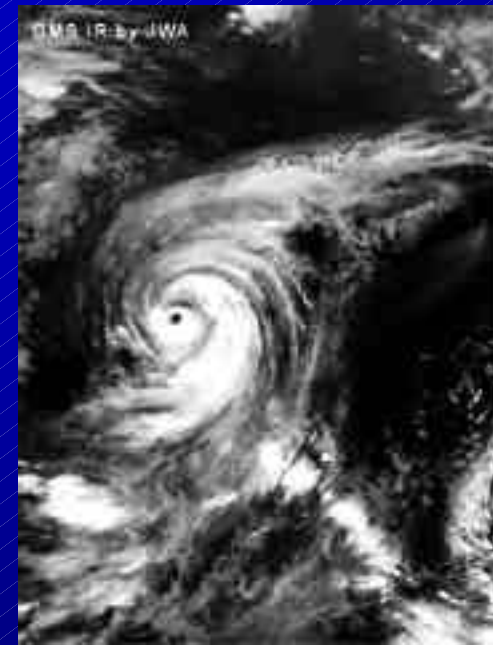
Typhoon in the East China Sea

July 4, 2002



AMSR-E image, 2:26 a.m. Japan Standard Time (JST). Color composite using the 89 GHz V + H and 23.8 GHz H channels.

Japanese GMS-5 image, 2:00 JST.



(images courtesy of NASDA)



Clouds and the Earth's Radiant Energy System (CERES; two copies)



Schematic view

Actual CERES instruments, undergoing inspection





CERES First Light Image

Reflected Shortwave Flux, June 22, 2002

(For the available CERES first light images
see the CERES Science Team web site.)

(image courtesy of the CERES Science Team)



CERES First Light Image

Emitted Longwave Flux, June 22, 2002

(For the available CERES first light images
see the CERES Science Team web site.)

(image courtesy of the CERES Science Team)



CERES First Light Images

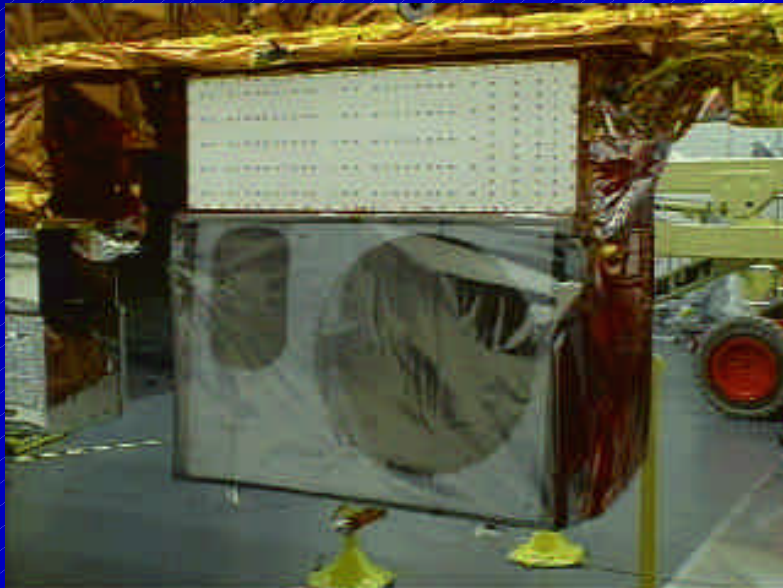
Shortwave and Longwave Fluxes, June 22, 2002

(For the available CERES first light images
see the CERES Science Team web site.)

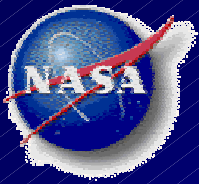
(images courtesy of the CERES Science Team)



Moderate Resolution Imaging Spectroradiometer (MODIS)

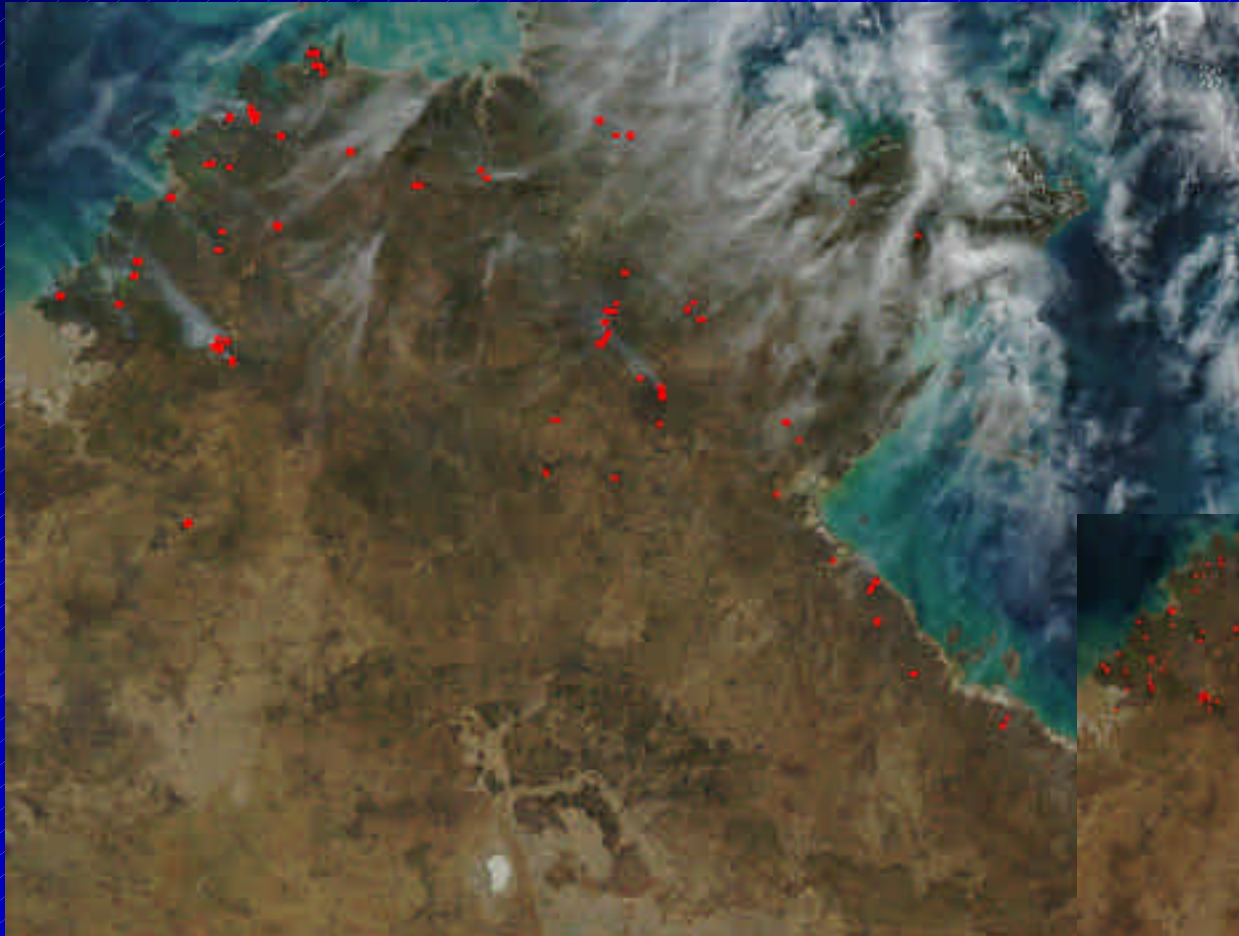


MODIS on Aqua, with the cover removed



MODIS First Light Image

Fires in Australia, June 24, 2002



Aqua first light image



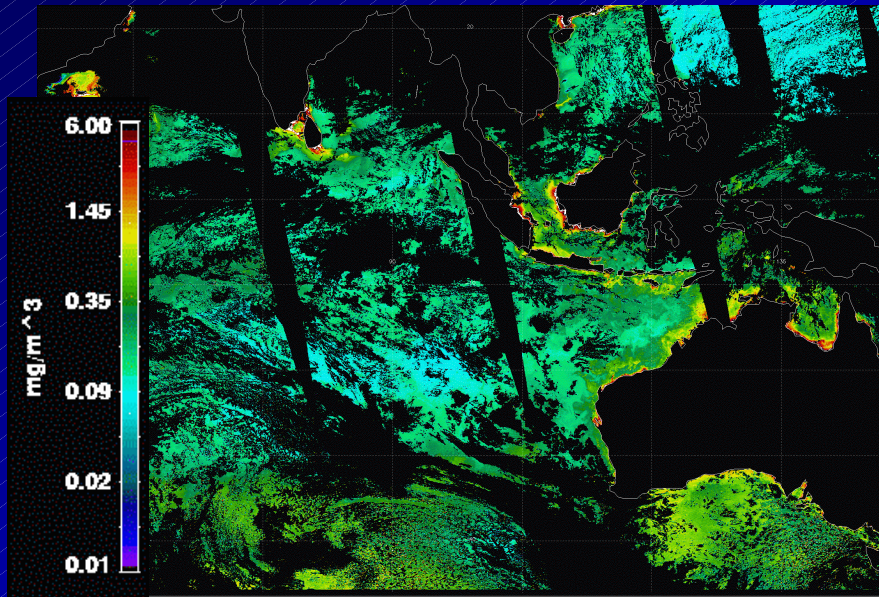
Terra image

(images courtesy of the MODIS Science Team)

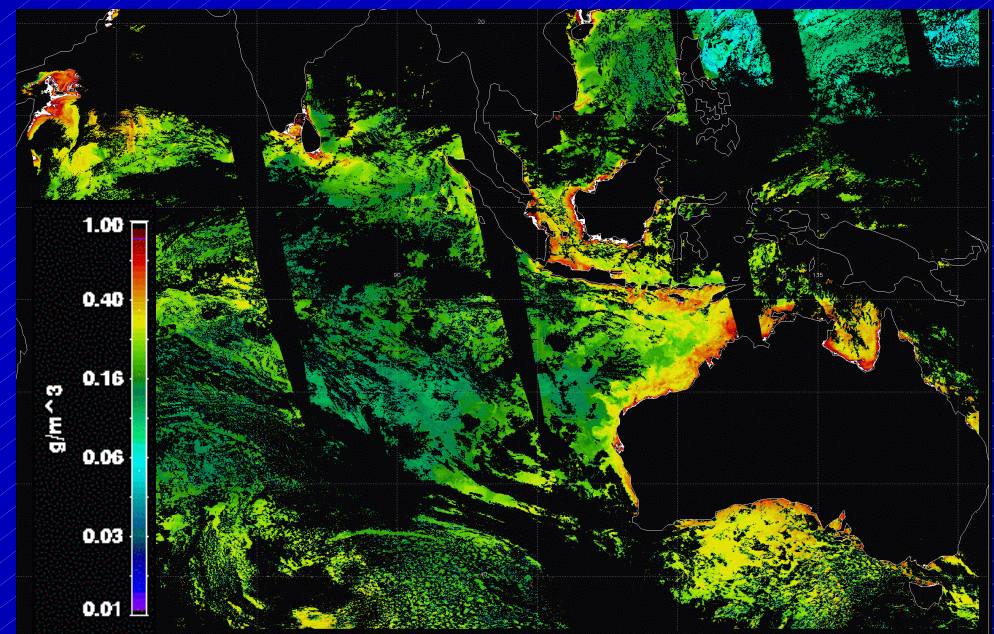


MODIS First Light Ocean Images

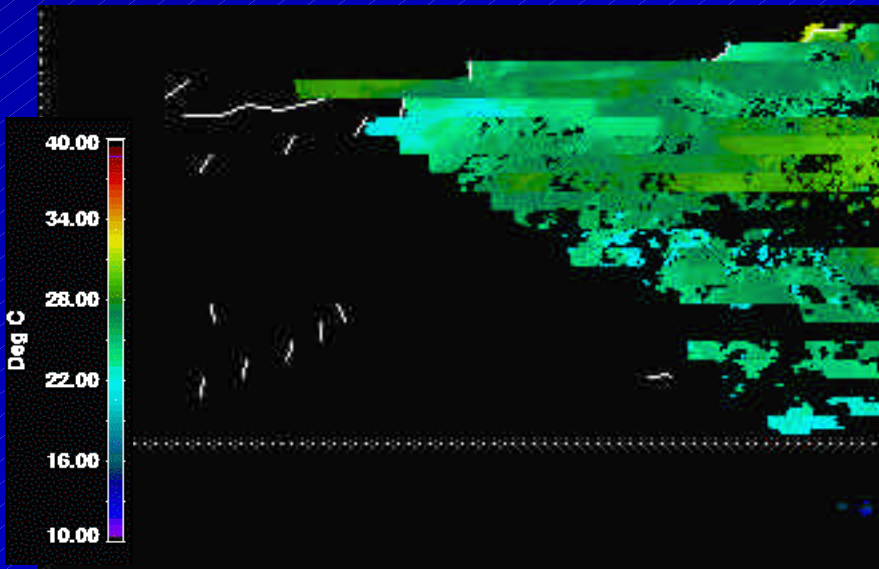
Indian Ocean, June 24, 2002



Chlorophyll a



Suspended solids

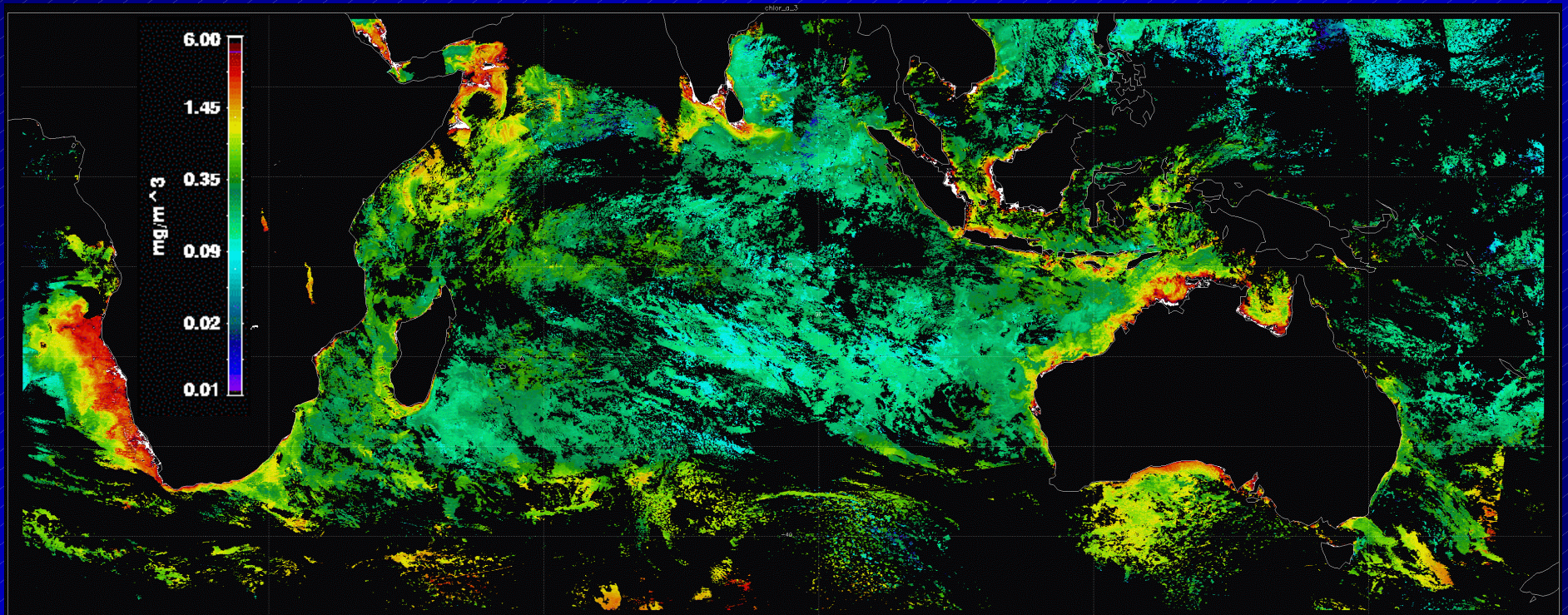


Daytime SST

(images courtesy of the MODIS Ocean Group, GSFC, RSMAS)



MODIS Combined Terra/Aqua Chlorophyll Product for the Indian Ocean, June 25, 2002

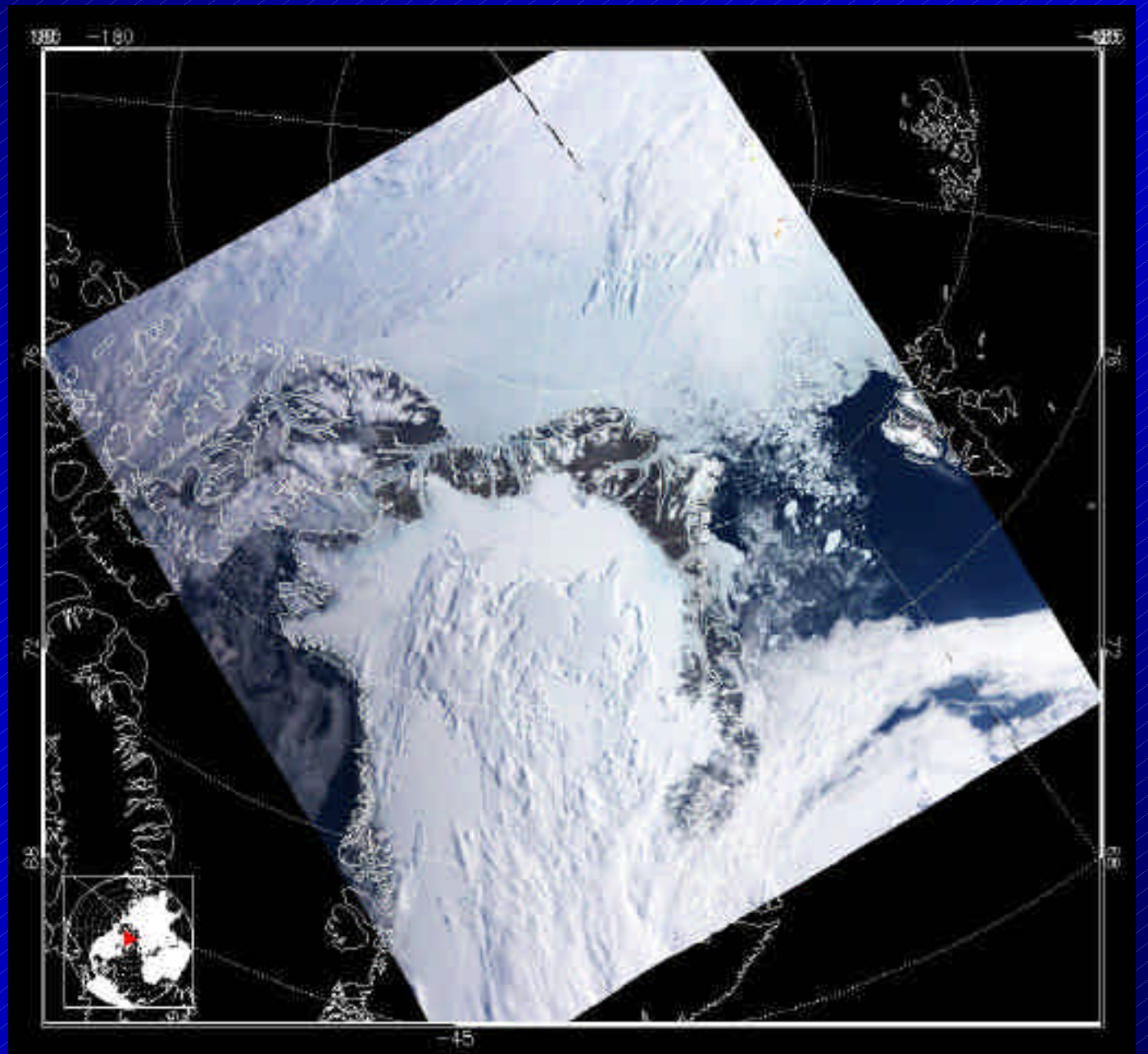


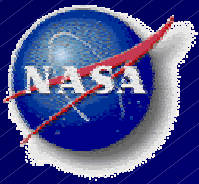
(image courtesy of the MODIS Ocean Group, GSFC, RSMAS)



MODIS First Light Image of the Arctic Sea Ice and Greenland Ice Sheet, July 13, 2002

(image courtesy of the
MODIS Science Team)





Status of Various Additional Items

- Deep space maneuver: On hold; a coordinated Terra/Aqua plan is being formulated.
- Aqua Special Issue of the IEEE TGARS: 32 papers were submitted and are now undergoing review.
- Icing on AIRS: Defrosting is scheduled for September.
- Aqua brochure and trading cards: These are completed and are now available.





Summary

- Aqua is in its operational orbit, at 705 km.
- All six Aqua instruments are sending back high quality data.
- The Aqua science teams have generated first light images from each of the six instruments.
- A press release has gone out for the AMSR-E images, and a sequence of press releases is planned for the other instruments, with the MODIS press release currently scheduled for August 6.