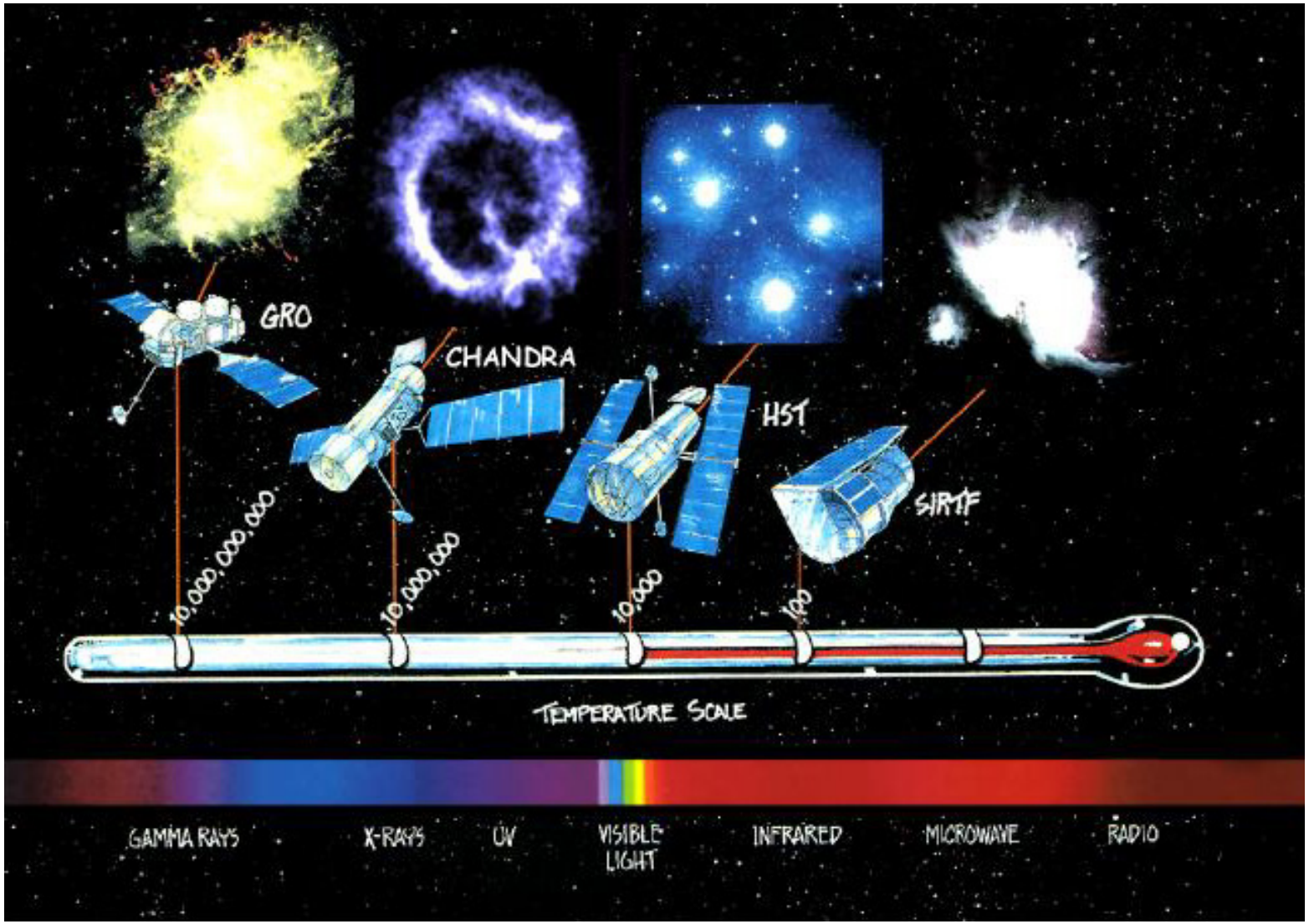
The Compton Gamma-Ray Observatory

Project Scientist: Neil Gehrels (1990-2000)

Recollections by Nicholas White

Colleague, Collaborator and Friend

The Great Observatories

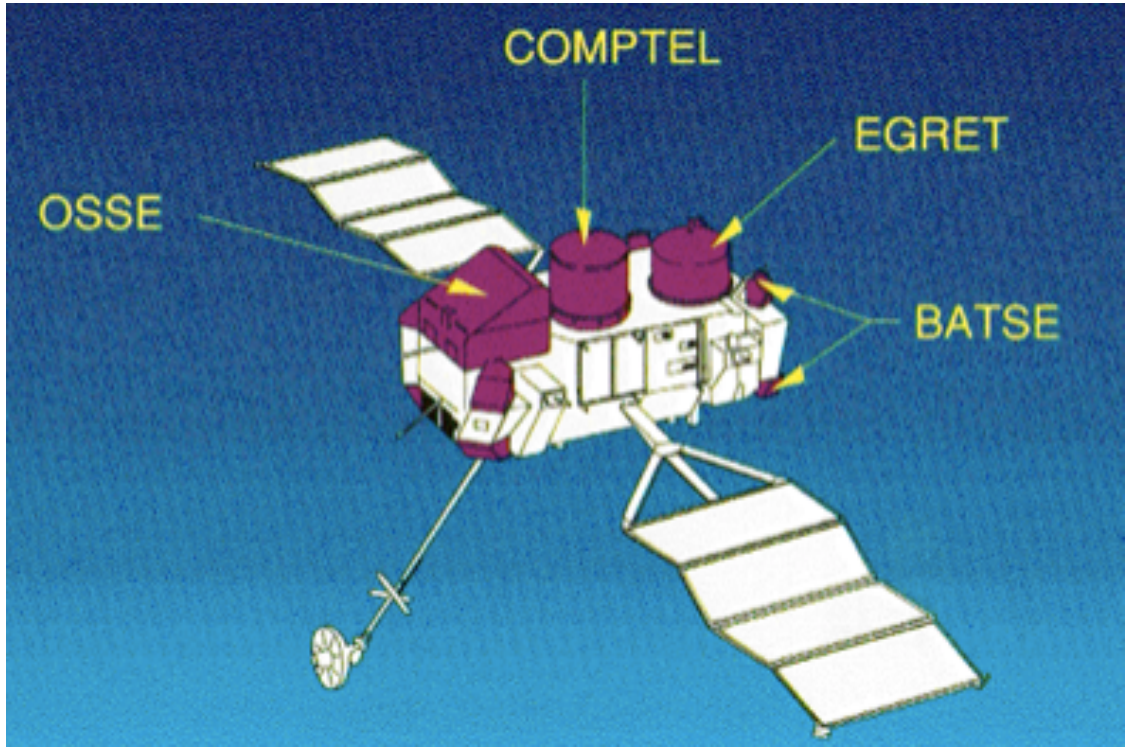


Launch and Deployment

Shuttle Atlantis STS-37
April 7, 1991

17,000 kilograms (37,000 lb)

Compton Gamma Ray Observatory



Compton had four instruments that covered an unprecedented six decades of the electromagnetic spectrum, from 30 keV to 30 GeV

- Burst And Transient Source Experiment (BATSE) 20-1000 keV
- Oriented Scintillation Spectrometer Experiment (OSSE) 0.05-10 MeV
- Imaging Compton Telescope (COMPTEL) 0.8-30 MeV
- Energetic Gamma Ray Experiment Telescope (EGRET) 30 MeV-10 GeV

Compton Science Support Center

Compton was the first Gamma Ray Observatory to have a Guest Observer program

A dedicate Science Support Center to support community use

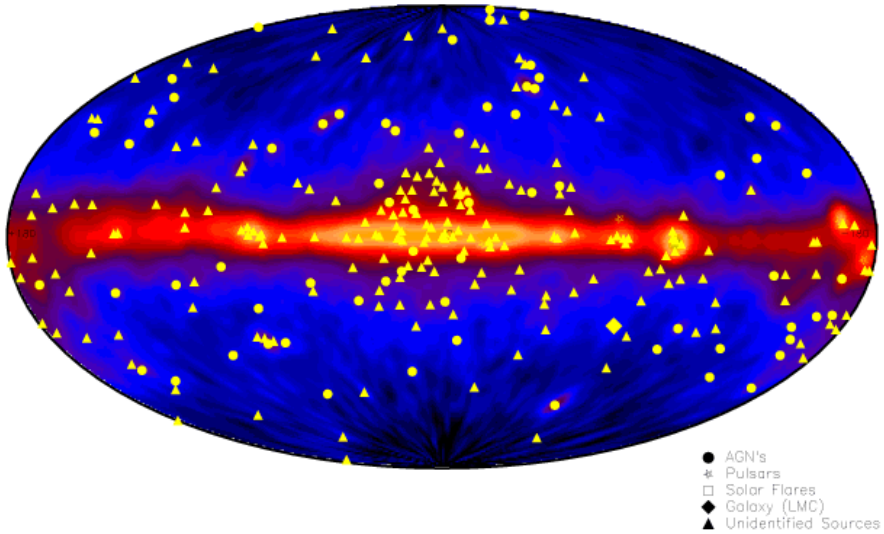
Broadened and deepened the community engagement in Gamma ray astronomy

1st Compton Symposium

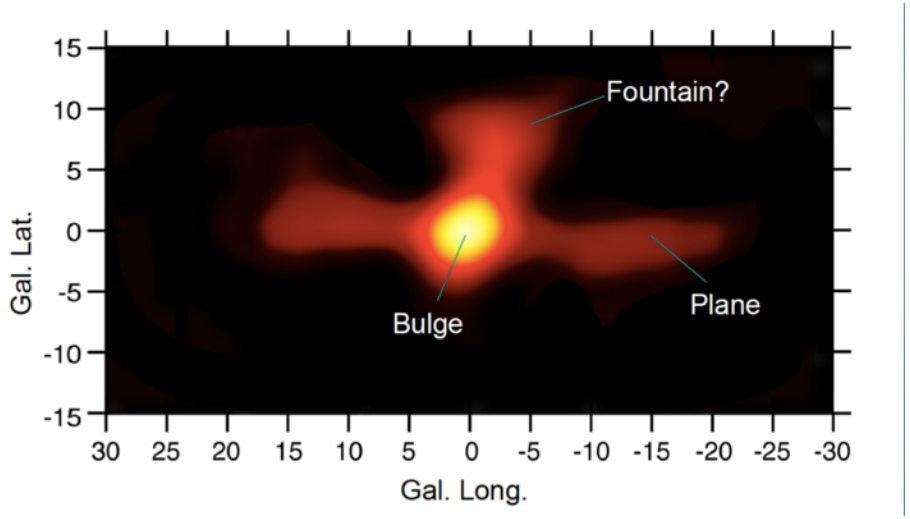
Neil Gehrels, Martin Rees, Don Clayton, Jerry Fishman, Chip Meegan, John Horack

CGRO Science Highlights

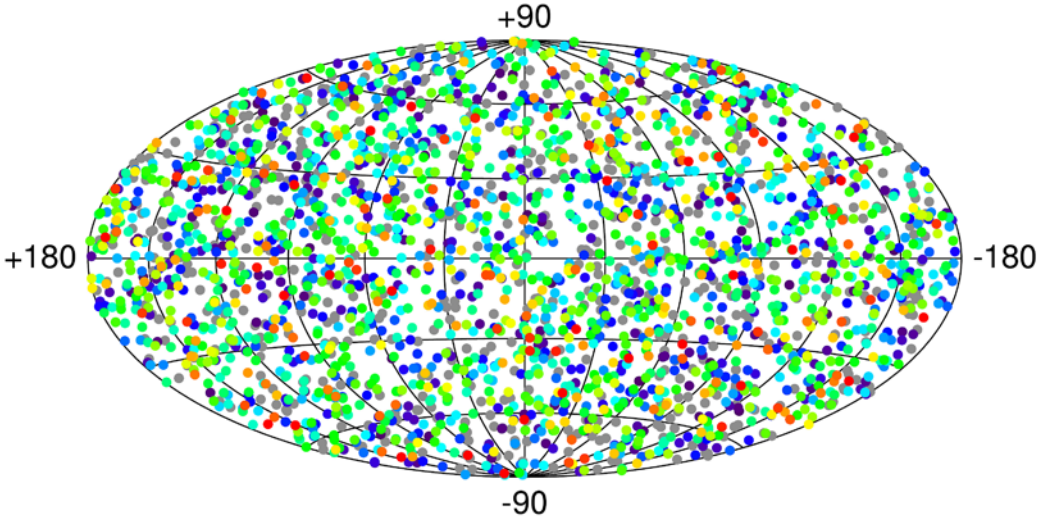
EGRET Unidentified Sources



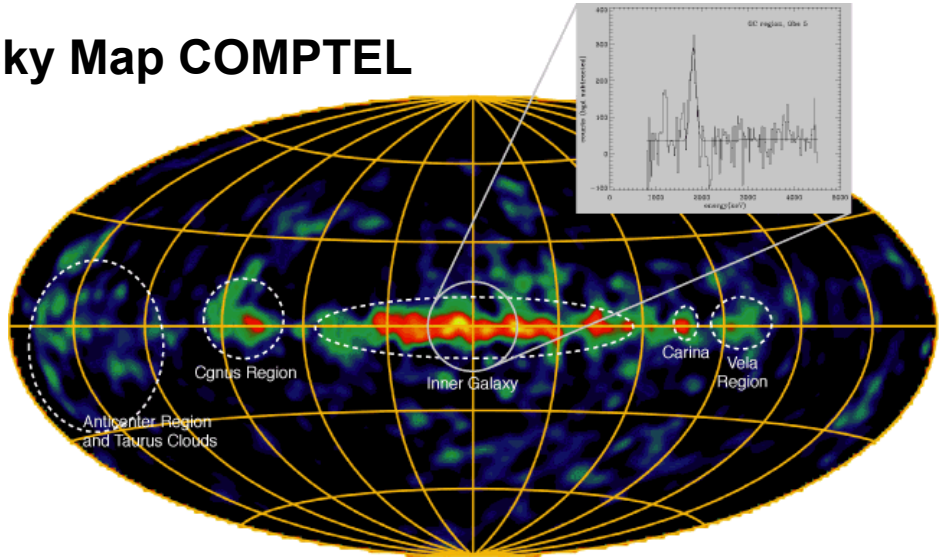
OSSE Extended 511 keV Annihilation Line Emission from Galactic Center Region



2704 BATSE Gamma-Ray Bursts



^{26}Al All-Sky Map COMPTEL



The New York Times

U.S.

NASA Set for Crash of a Huge Spacecraft

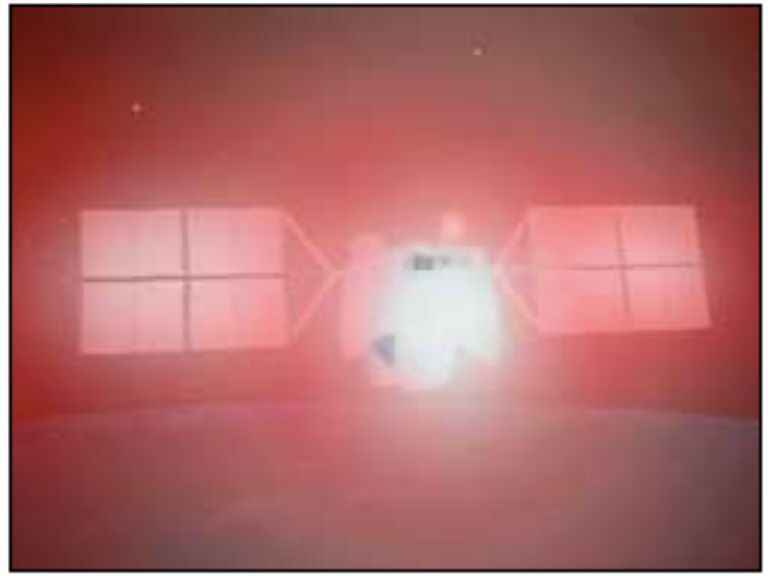
By WARREN E. LEARY JUNE 3, 2000

With a mix of sadness and anticipation, NASA engineers prepared today for the fiery death this weekend of a giant spacecraft that has made pioneering discoveries in gamma ray astronomy.

After gradually lowering the orbit of the 17-ton craft, the Compton Gamma Ray Observatory, with a series of rocket firings -- a process they have already begun -- technicians will guide it into Earth's atmosphere early Sunday, Eastern Daylight Time, for a fatal plunge into the Pacific Ocean.

This is the first time the National Aeronautics and Space Administration will have intentionally guided so large a craft to its destruction, in hope of minimizing danger to people on the ground. The bus-size spacecraft has been operating with only two of its three stabilizing gyroscopes since December, and NASA officials calculated that if it lost another gyroscope and came down on its own, there would be a 1-in-1,000 chance that someone would be killed by the debris.

"The mood right now is pretty sad," Dr. Neil Gehrels, Compton project scientist, said in an interview from Goddard today. "It's been a great mission with a great spacecraft, and now it's ending."



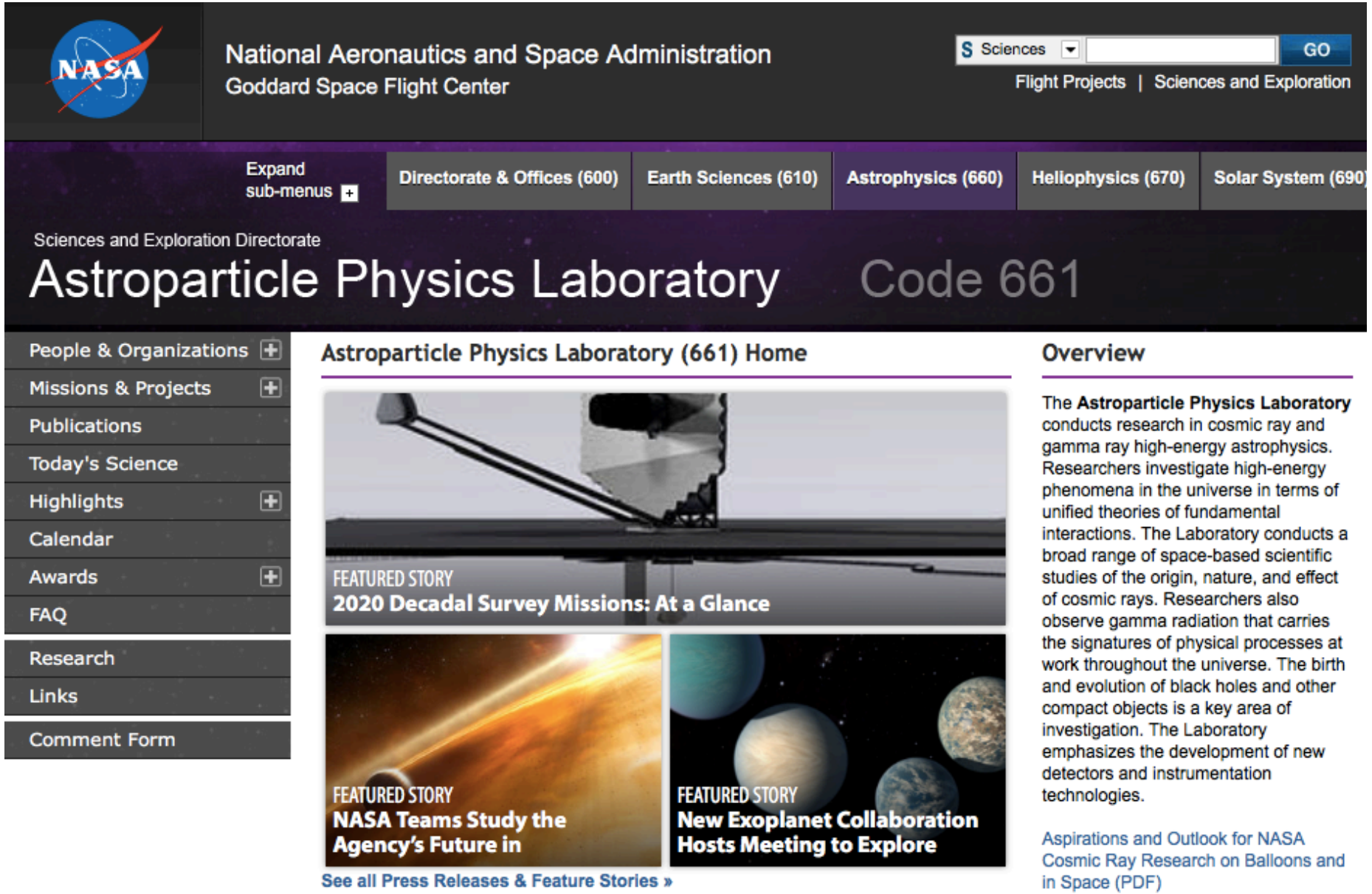
Animation shows CGRO feeling heat of reentry.
Photo: NASA TV/Spaceflight Now

What did we learn?

- Extended mission duration led to a robust Guest Observer program
  - Run by the CGRO Science Support Center the CGRO GO was well managed and was successful in generating many important user investigations.
  - GO Participation was difficult to support because the GO program was an after thought when the program was extended to 3 years and beyond. Each instrument had its own data processing and archiving system.
  - With a small gamma-ray astronomy community, the CGRO GOs became a large and vocal support group not just for CGRO, but built community support for a follow-on mission (Fermi Gamma-Ray Observatory).
- The Compton Fellowship Program was very successful in attracting bright productive young scientists into the field.
- The close working relationship between the GRO Project Staff and the PI Teams led to many enhancements in the scientific return. The mission might have failed at the start had not the GRO Project Staff planned for the possibility of problems in the deployment of the appendages (solar panels and high-gain antenna). The CGRO scientific community will forever be indebted to the heroic efforts of Jerry Ross and Jay Apt in rescuing what could have been a very crippled Observatory. This was the first extravehicular activity in 6 years.
- The most significant early failure of both tape recorders actually was a fortuitous benefit to the study of gamma-ray bursts allowing immediate notification of bursts to other observers for followup observations.

Courtesy Don Kniffen

Neil Gehrels: Lab Chief



Further, "the silver lining here is that there are some exciting new gamma ray missions coming soon," Dr. Gehrels said, including the launching of Europe's Integral spacecraft in 2002, the flight of the United States' Explorer Swift mission in 2003 or 2004, and the launching of the giant Gamma-Ray Large Area Space Telescope around 2005.

New York Times