

STUDYING THE INTERSTELLAR MEDIUM



CHIPS

cosmic hot interstellar plasma spectrometer

Status of CHIPS

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cosmic hot interstellar plasma spectrometer

The logo for the Cosmic Hot Interstellar Plasma Spectrometer (CHIPS) is displayed in a stylized, white, outlined font. It is set against a background of a colorful nebula with a rainbow-like gradient from purple to yellow, and a satellite in space.

NASA • UC Berkeley • SpaceDev

CHIPS The Cosmic Hot Interstellar Plasma Spectrometer (CHIPS) satellite examines the interstellar medium, the gas that fills the space between the stars. Just as raindrops split sunlight into the colors of the rainbow, the CHIPS instrument will collect and separate the diffuse extreme ultraviolet glow from the interstellar medium.

By measuring the distribution and intensity of the glow, scientists will be able to test several competing theories about the formation of the clouds of hot interstellar gas that surround our solar system. CHIPS is the first project in NASA's University Explorers class of satellites.

<http://chipsat.gsfc.nasa.gov>

CHIPS Program Overview

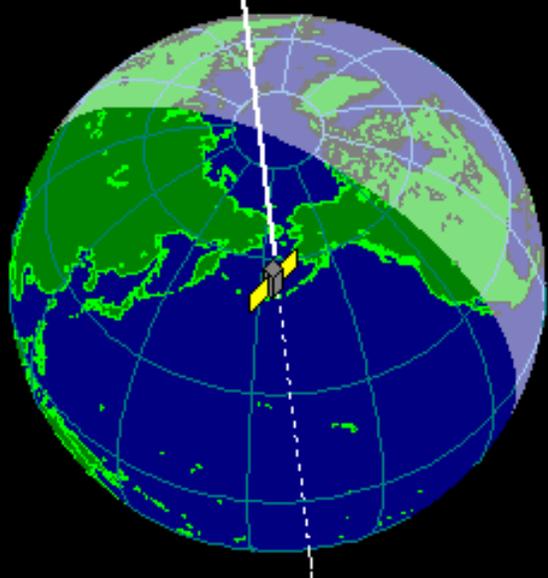
- University of California, Berkeley Space Sciences Laboratory & SpaceDev, Inc.
- P.I. Dr. Mark Hurwitz
- First UNEX to go beyond study phase
- Mission Objectives
 - All sky survey at EUV wavelengths (90 to 260 Å)
 - Constrain models of heating and cooling processes in nearby hot interstellar plasma
- Initial science results presented at AAS High Energy Astrophysics Division, March 2003.



Launch Attempts

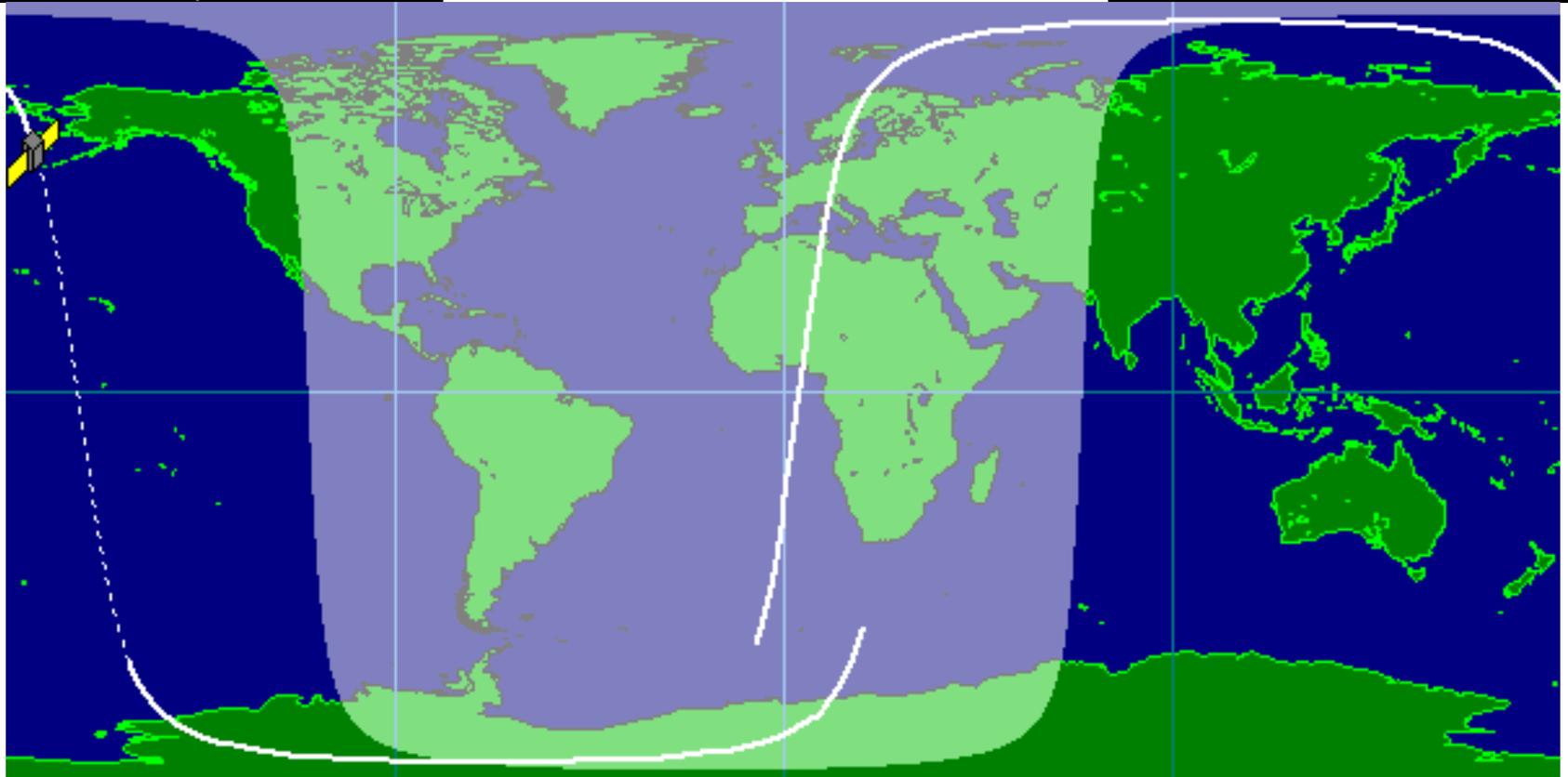
Dates	Events
Dec 19, 2002	Shroud Pyrotechnics Anomaly
Jan 11, 2003	Tank Pressurization Anomaly
Jan 12, 2003	Launch at 1945 Eastern!



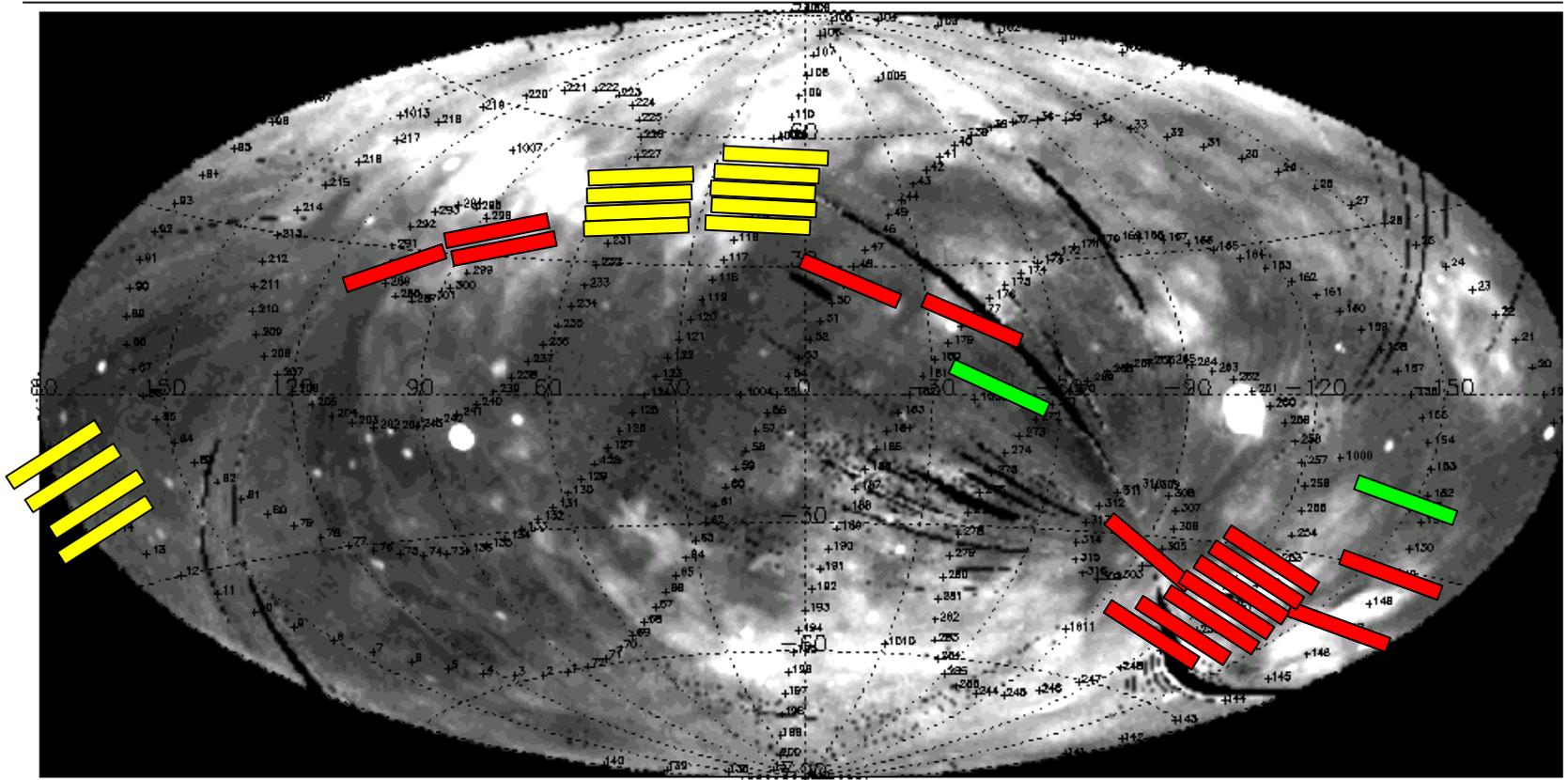


www.heavens-above.com

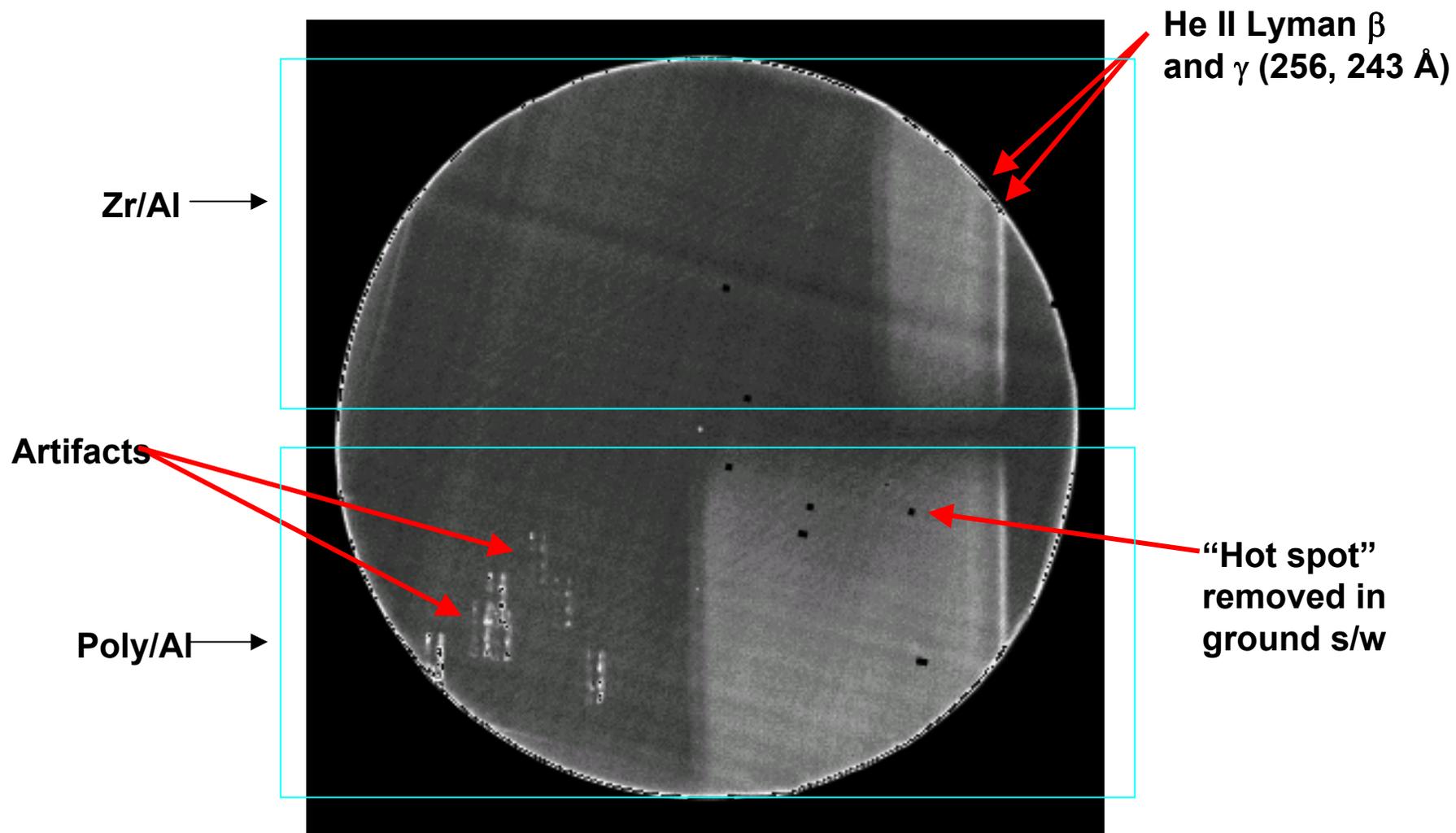
575 x 595 km, 94.0°



Early CHIPS Targets



Flight Detector Image (wide slits)



IP Protocols

- Mission going well!
- No problems with time synchronization
- Real time data via UDP: minor dropouts
- Real time commands via UDP: minor drops
- FTP transfers work well: ~16 MB/day

Observatory Status

- 5 radiation resets
- Data storage: good
 - Several dropped files
- Communications: good
- Pointing: good
 - One reaction wheel showing communications retries
- Power: good
- Thermal: good
- Lunar pointing: good
 - Daylight scattering
- Narrow slits in April
- One short duration HVPS anomaly
- Pulse height filtering software added

Ground Station Network

- Minor issues:
 - Adelaide, Australia
 - RF: moved amps closer to antenna
 - Several antenna tracking problems
 - Several power outages
 - Berkeley, California
 - Several antenna tracking problems
 - Several power outages
 - Several network outages
 - NASA Wallops Flight Facility
 - Amplifier
 - Manual configuration

Control Center Status

- Several minor issues:
 - Mission Control Center
 - Several network outages
 - Science Operations Center
 - Several network outages
 - Public Server
 - Public server hack
 - Configuration control on software installs

Summary

- IP protocols and tools work well!
- Use of Internet infrastructure adds levels of complexity but reduces cost.

References

CHIPS Science Web Page
chips.ssl.berkeley.edu

University Class Explorers Office
www.wff.nasa.gov/pages/code850.html

GSFC OMNI Project
lpinspace.gsfc.nasa.gov