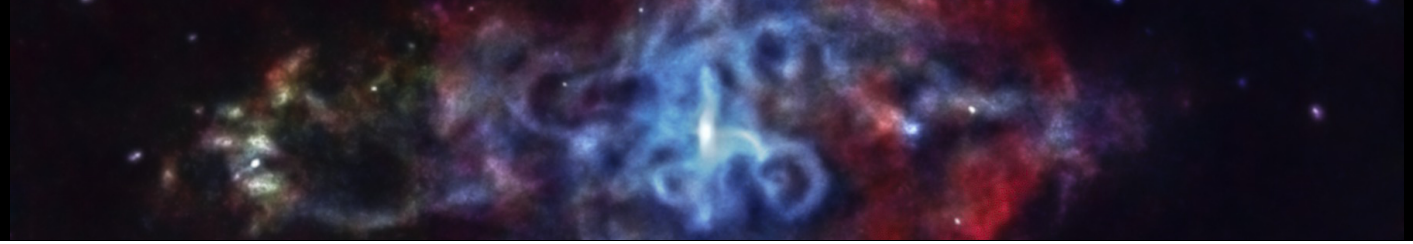
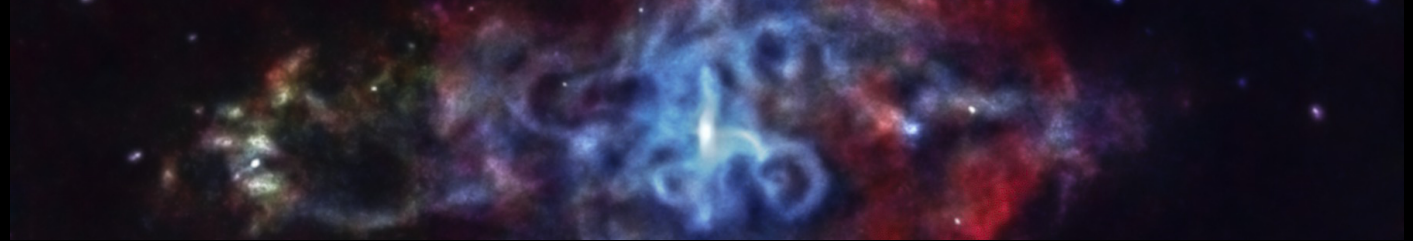


Director's Report

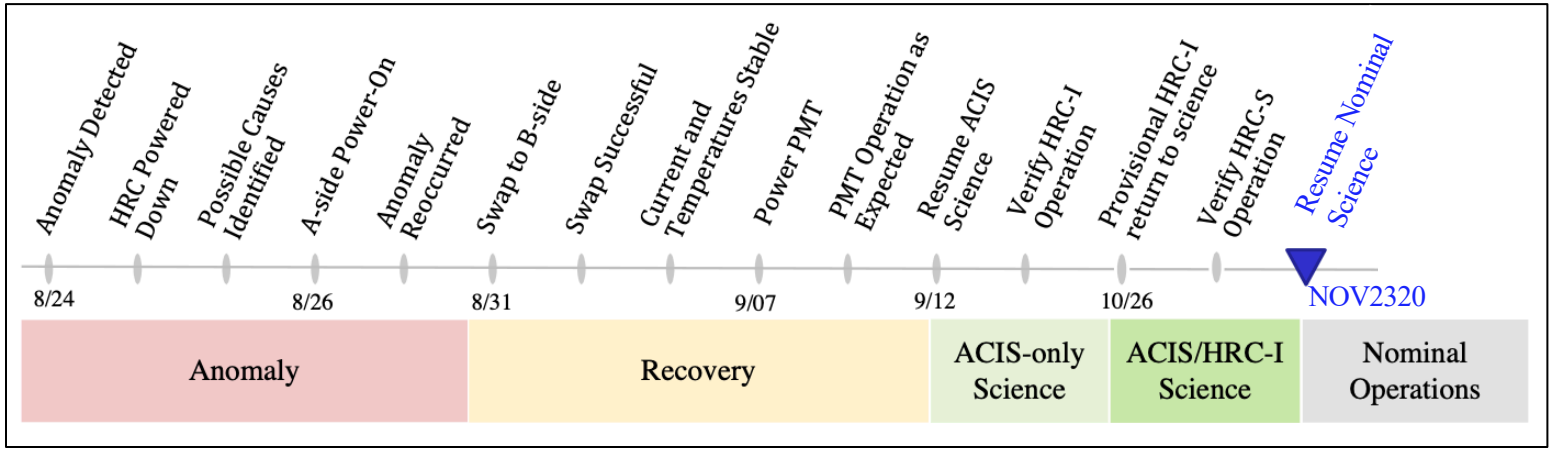


Quick Status

- Observatory functioning nominally.
- No spacecraft anomalies or load interruptions since last CUC meeting, except for TOO/DDT responses.
- Data processing and delivery functioning nominally.
- Data reprocessing (REPRO-V) proceeding on schedule.
- Cycle 23 Proposal Cycle underway. Proposal deadline arrived ~uneventfully on March 16.
- Continued support of mission under COVID-19 restrictions proceeding successfully.

HRC Return to Science

- *"The CUC recommends that efforts to fully recover science operations of the HRC are continued in as timely a manner as possible (without introducing unacceptable risk to the detectors), particularly given that some of the science observations approved for cycle 22 are time sensitive."*

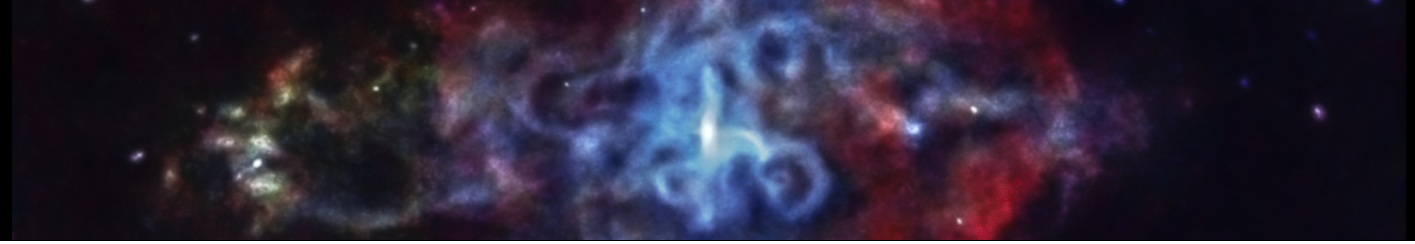


- HRC has returned to full nominal science operations as of NOV2320 weekly schedule.

- All performance on B-side electronics is nominal.
- Routine gain adjustments have been done on ACIS-I, and are currently underway for ACIS-S.
- Investigations of anomaly still ongoing.

- *"The CUC recommends that efforts be continued to establish contingency plans for protecting ACIS in the instance that an issue with the B-side electronics arises in the future, and the HRC anti-coincidence shields cannot be run with the degraded A-side electronics."*

- ACIS team is investigating changes to the process that uses the observed ACIS event rate to detect potentially dangerous radiation levels to trigger more frequently at lower radiation levels at the expense of false triggers (none of which have been observe in mission history).
- Flight team is investigating the concept of a load built for each orbit that would safe ACIS prior to entry in the radiation belts in the event that the normal command loads failed to execute.



Chandra Source Catalog

- **Good progress is being made — still planning production start in late 2021** with production expected to take ~1 year, both in line with the fall report to the CUC

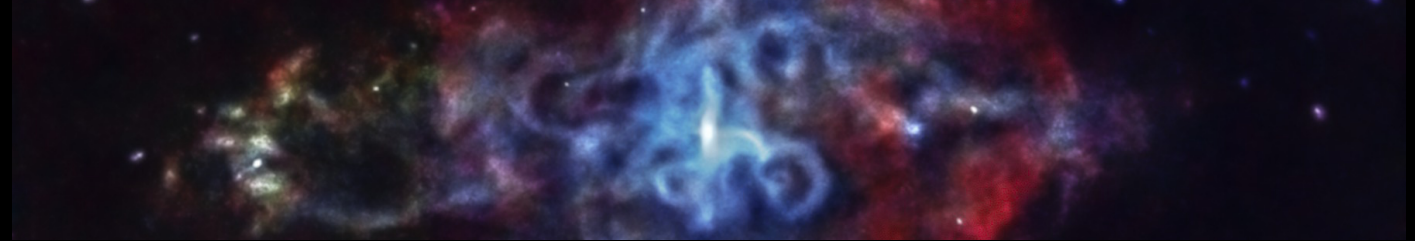
- **CSC 2.1 algorithmic updates — all software modifications are in place and being tested**
  - Updates designed to **significantly reduce human resource-intensive manual QA** — stack fine astrometry to tie CSC to the Gaia reference frame; MLE upgrade to use simultaneous fitting for crowded sources; aperture photometry upgrade to use robust MCMC

- **Infrastructure upgrades — all software updates are on schedule**
  - Data handling, efficiency, hardware tuning, and DS operations team production support

- **Processing new sky will be prioritized** — will follow a modified chronological order (approximately date-ordered single-and few-obsid stacks)
  - Multi-obsid stacks that are resource-intensive to process (but source-rich) will be interleaved for **operational efficiency**

- **Plan to make source properties available in the public database as they are processed**
  - Will provide a final, frozen catalog release after all processing has completed

- Regular catalog updates are being evaluated — ~annual releases fit available resources



Chandra Data Exclusive Use Period

- **Stefan Immler (NASA HQ):** *"Paul [Hertz] and I… would like CXC and CUC to make a recommendation…as to whether it should be kept 12 mos., reduced to 6 or 3 mos., or eliminated altogether."*
- **AXAF Level I Policy document** (Section 5.0 Data Dissemination):

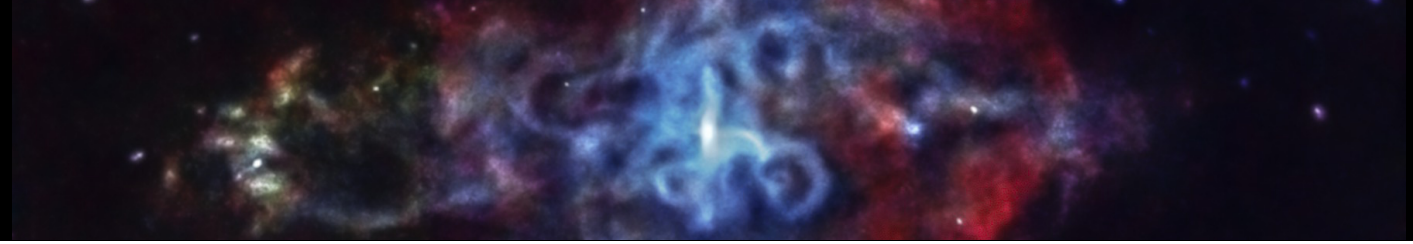
  "After a one-year proprietary period, beginning from the time the observer receives the reduced and calibrated data, the AXAF data shall be made readily available to the data archives, general scientific community, and the public."
- **Chandra Users' Committee input** (fall 2020):

  "The CUC did not reach full consensus… [R]eduction from 12 mo. to 6 mo. was considered to provide no strong benefit… there was some feeling that a reduction (or even elimination) for some time-domain observations might be beneficial."
- **Recommendation from Chandra Project Scientist and CXC Director:**

  Based on the above, it is our feeling that the current EUP policies for Chandra data continue to serve the community in an appropriate and desirable manner, with the possible exception of those pertaining to specific time domain studies.

  We recommend no change to the 12-month EUP for Chandra GO, LP, and GTO observations.

  At present, we have received no further direction on this matter. Time-domain working group will consider possible recommendation for limited categories of science observations.



Explore Joint Time with ALMA

CUC: "*The committee renews our recommendation that the Director keeps exploring the possibility of Joint Observing programs with ALMA."*

• ALMA is a multinational facility: ESO (33.75%), US/NSF (33.75%), Japan/NINS (22.5%), Chile/CONACYT (10%)

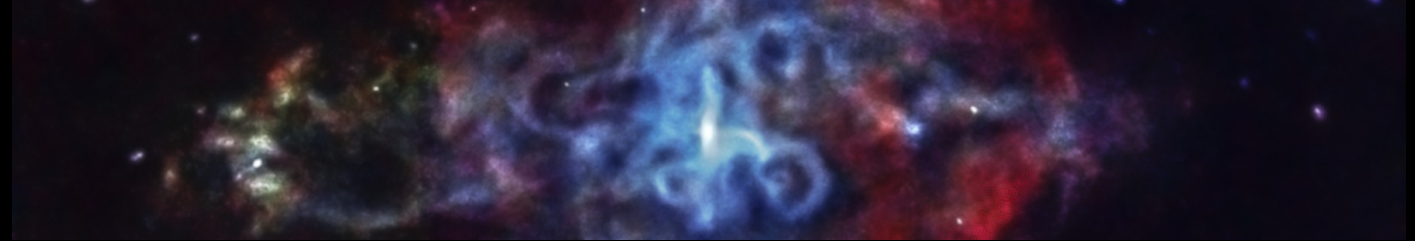
- Joint programs complicated.
- ALMA does not have joint programs with any NASA observatories.

• NRAO does allow requesting ALMA time

- Chandra has joint program with NRAO, but time can be requested only for VLA, GBT and VBLA.

• Discussions of future possibilities have begun with NRAO Director.

- Topic will be raised at ALMA Board at a meeting in April



Investigate Chandra Support of Time Domain Science

- Hosted workshop "**Chandra Frontiers in Time-Domain Science"** (October 2020)
  - Included three panel discussions:
    - ➢ Communications & Coordination
    - ➢ Synergies
    - ➢ Multi-messenger Astronomy II
- Recommendations and discussion points from workshop have been recorded and reviewed.
- Chandra Time Domain Working Group being formed to discuss and formulate final recommendations.
  - Co-Chairs: Jon Miller (Michigan) and Rudy Montez (CXC)
  - Working group will carry on discussions and provide assessment that can identify feasible recommendations.