Director's Log, Chandra date: 577065605

Belinda Wilkes

https://twitter.com/BelindaWilkes

Following a positive 25-year lifetime study of the spacecraft sub-systems in 2014, the *Chandra* team is planning for the long-term, and the past year has seen many related activities. This forward-looking theme is also prevalent in the larger High Energy Astrophysics (HEA) community as NASA begins to plan for missions to be considered by the next decadal survey. Chandra's uniquely high spatial resolution continues to provide ground-breaking science across most of astrophysics and, barring being run over by the proverbial bus, we expect to continue to do so for at least 10 more years (subject, as always, to continued NASA funding). After meeting last summer to discuss the future, the HEA community united behind concepts for an X-ray Surveyor mission which would preserve Chandra's spatial resolution but with significantly higher effective area—complementing ESA's Athena mission which is planned to launch in the late 2020s. A follow-up workshop in Washington, DC this past October discussed major science topics and questions to be addressed by such a mission, including galaxy formation, the first black holes, stellar birth and death, and the structure of neutron stars. This workshop served as a precursor to the formal NASA Science and Technology Definition Team (STDT) activities which are beginning now.

Chandra continues to operate at high efficiency and to accept proposals without restrictions on sky coverage, despite (graceful) aging which results in challenges for observation scheduling. As we carefully balance the thermal status of various spacecraft components, observations may be split into multiple pieces, and we continue to restrict the number of approved constrained observations. In seeking targets at appropriate solar pitch angle for a given schedule, Chandra observing cycles now have longer overlap periods. For example, several Cycle 16 observations are scheduled for late summer 2016, while the earliest Cycle 17 observations were made in fall 2015. We continue to guarantee that all approved observations will be completed.

As we look to the future, we aim to ensure that there are no gaps in *Chandra*'s scientific legacy, and that we take full advantage of its capabilities to prepare and shape future missions. The *Chandra* work-

shop in 2015, "The Universe in High-resolution X-ray Spectra" provided excellent summaries of the current status across various source classes, and included a discussion of areas that need development, related to observations, software, and basic atomic data (article on pp. 34-35). The upcoming 2016 *Chandra* workshop is entitled "*Chandra* Science for the Next Decade" (advertisement on p. 39) and aims to bring together X-ray and multi-wavelength scientists to envisage the future of *Chandra* science in the complex and changing landscape of new missions, telescopes, and big data. Please come and join your voice to the discussion!

On the topic of upcoming missions, we hosted a visit from Professor Takahashi (PI and Project Manager) and Dr. Ohashi (Project Scientist) last fall to discuss collaboration and cooperation with Hitomi (then Astro-H). We had already scheduled our first simultaneous calibration observations, and were looking forward to detailed discussions at the HEAD meeting in Naples when contact with Hitomi was lost. We are deeply sorry that Hitomi was eventually not recoverable and send our commiserations to the team who worked so hard for so many years. Its loss is a major setback for X-ray astronomy, pushing the opportunity for high quality, high-resolution spectra into the future by more than 10 years.

Within the CXC, as several senior staff retire or change their emphasis, we have hired new science staff to ensure a fully-trained workforce for the next decade. This has been an exciting time, our first scientist hires in many years. We were extremely pleased with the number and high quality of the applicants, and we enjoyed interviewing many of them. We were only sorry that we did not have more positions to fill so as to take further advantage of the breadth and depth of talent in our community.

Recent activities at the CXC have been dominated by the bi-annual NASA Senior Review, with the proposal submitted in January and on-site meetings with the review panel in March. While this activity is intense and dominates the work of a significant number of staff, it is always very useful and enjoyable to review our status and, in particular, the science results of the past two years, and to look forward to expected progress over the next two years. Initial, informal feedback from NASA indicates positive response from the panel, and we look forward to their final report which is expected in May.

Chandra observed a wide variety of DDT targets in the past year including relatively common source types such as GRBs, transients, and SN, several programs tracking the very bright outburst of LMXB V404 Cyg (see lead science article pp. 1-7), participating with a plethora of NASA missions in observing (and detecting!) Pluto during the New Horizons flyby, and tracking a new outburst in M87. This last target was for a project led for many years by retired CXC scientist Dan Harris, who died late last year (see article on pp. 13-15). The series of five observations, led by his longtime collaborators Teddy Cheung and Francesco Massaro, was successfully completed two days before the extremely well-attended memorial event held for Dan at CfA in March. It was good to be able to report that the science he loved lives on.

Many of you will also have seen a variety of *Chandra* science presented on NASA's Hyperwall at both the IAU in Hawaii and the AAS in Kissimmee, FL. The size of the wall allows for spectacular images that are visible from a great distance and are presented during key morning and afternoon sessions in the exhibit hall. Topics ranged from a general overview of recent *Chandra* science (given by myself), to more detailed science results on jets, galaxy clusters, surveys, galaxies, stars and stellar coronae, the *Chandra* Source Catalog, and image processing techniques presented by experts in each area. Please keep an eye out for us again at the next winter AAS meeting!