## Director's Log, *Chandra* date: 602294405

## **Belinda Wilkes**

## https://twitter.com/BelindaWilkes

During the past year we have continued our theme of planning for the future and assessing *Chandra*'s Legacy.

The summer workshop: "Chandra Science for the Next Decade" brought ~150 scientists from all over the world to present their work and discuss ideas for future Chandra science along with synergies with new and upcoming missions. A summary is provided on page xl by one of the chairs of the SOC. The Cycle 19 CfP, released on 15th December 2016, was adjusted to respond to discussions at the meeting, including restoring Very Large Projects (>1Ms) and expanding several of the joint programs to facilitate proposals for Large multi-wavelength science (see What's New in the CfP; *http://cxc.harvard.edu/proposer/whatsNew.* html). The proposal deadline is 15th March 2017. The 2017 workshop: "From Chandra to Lynx: Taking the Sharpest X-ray Vision Fainter and Farther" will continue our theme, looking much further into the future as the NASA Mission Concept study for a successor to Chandra, "Lynx" (formally known as X-ray Surveyor; https://wwwastro.msfc.nasa.gov/ Lynx/), moves into full swing (see Workshop advertisement on page 49 and <u>http://cxc.harvard.edu/cdo/cxo2lynx2017</u>). We encourage you to join us as we seek to better define the primary science and requirements for Lynx.

Within the CXC, we have hired 6 new science staff over the past 2 years, distributed throughout the science and the data systems divisions (see Table 1), and have adjusted the roles of existing staff as senior staff retire or change their emphasis. The new staff have brought energy and fresh perspectives to the CXC as they learn their roles and get to know those around them. We also celebrated the past, holding extremely well-attended memorial events for Dr. Stephen Murray, the original HRC PI, and Dr. Dan Harris, former CXC scientist (see articles in the 2016 Newsletter).

Name	CXC Group
Akos Bogdan	Calibration
Francesca Civano	Data Systems Operations
Raffaele D'Abrusco	Archive Operations
Rodolfo Montez Jr.	Chandra Director's Office
Malgosia Sobolewska	Monitoring and Trends Analysis
John Zuhone	ACIS

Table 1: New Science Hires at the CXC



Figure 1: Dr. Zurbuchen visiting the Chandra booth at AAS #229

Late in 2016 we were deeply saddened by the loss of our long-time Lead Flight Director, Dr. Mike Juda, after a long fight with cancer, and of retired HRC scientist, Dr. Martin Zombeck (see articles on page xvii and page xx).

2016 was a NASA Senior Review year. This is always a mixed blessing. Preparing the proposal is a major task involving significant time from many senior staff. While the technical aspects of the observatory do not change radically, the science section is always new, summarizing highlights from Chandra science results over the previous 2 years. With an average of ~500 papers per year, the proposal can only hope to skim the surface. On the other hand, the proposal provides an excellent opportunity to learn about the science our community is doing and the major accomplishments and high impact of many of the results. This knowledge feeds down into Chandra science talks to the public and the community. The SR2016 panel visited the Chandra Operations Control Center in March and met with us, toured the facility and discussed operations, science, impact, the future etc., for 2.5 days. Their report was



*Figure 2: The Chandra booth at AAS #229 with new educational activiy in the foreground.* 

very positive, stating that they "enthusiastically endorse the recommendation to extend the mission through 2020 and beyond" and that "The stewardship of the observatory remains exemplary. The Project's highest priorities are to maximize the scientific return of the observatory while maintaining the health and safety of the instruments and spacecraft."

At NASA's request, an idea rooted in the SR2016 process, I convened and chaired a meeting (at the Jan 2017 AAS) of staff from currently operating and soon-to-be launched NASA Astrophysics missions to open discussions exploring missing Legacy science and synergies. A particular topic of discussion concerned ways in which to proactively improve communication and coordination of planned observations, beyond those specifically requested by specific projects, so as to maximize the science output and legacy of the archives from our rich fleet of observatories while they are still in operation. I will report on actions and results from these discussions as they move forward.

Over the past year Chandra has continued its excellent performance, observing at high efficiency despite the continued challenge of maintaining the thermal balance of the various subsystems. In Cycle 19 there continues to be only one limitation on proposal submission as a result of the resulting operational complexities: a maximum of 2 Ms of observing time will be allocated within 60 degs of the ecliptic poles to Large and Very Large programs (see section 4.2 of the CfP). Science highlights for the year included the completion of the expanded Chandra Deep Field South, now totaling 7 Ms on the central region and the topic of a press release at the AAS in Grapevine (refer to the list of press releases on page xxxix), and a 24 hour period of multi-wavelength monitoring of Sgr A\*. In addition to scheduled observations, Chandra observed a wide variety of DDT targets during the past year including GRBs, transients, supernovae, neutron stars, pulsars, magnetars and a number of different kinds of X-ray binary, intermediate mass black hole candidates, AGN, and the earth-like-exoplanet-hosting star system Proxima Centauri, well known for its X-ray flares.

Another major effort during the past year has been our response to NASA's direction to cut back and merge the NASA Astrophysics named fellowship programs, of which the Einstein Fellowship is a part (see article on page xxxviii). NASA aims to retain the diversity of all aspects of this program, in particular to cover the full range of Astrophysics science, going forward. We will continue to work as part of the management team for the merged program, which will start with the 2018 Fellows.

The 2017 AAS in Grapevine, TX brought with it the opportunity to meet the new NASA Associate Administrator for the Science Mission Directorate, Dr. Thomas Zurbuchen. Dr. Zurbuchen spoke at the NASA Exhibit and toured all the NASA mission exhibits, including the Chandra booth (Figure 1), spending significant time meeting and talking with staff. He also spoke at the NASA town hall meeting. Dr. Zurbuchen is a scientist, most recently Professor of space science and aerospace engineering at the University of Michigan, and his keen interest and broad knowledge of the science and missions of SMD were clear to us all. We look forward to working with him! Once again several Chandra-related presentations were given at the NASA hyperwall, which provides a wonderful display to highlight the spectacular Chandra and multi-wavelength data. The Chandra exhibit also hosted a new educational activity, designed and built in-house by CXC staff members Evan Tingle and Joseph DePasquale, to illustrate the principle of grazing incidence X-ray telescopes such as Chandra. This was a great success. Even I managed to adjust the two pairs of mirrors to focus the doubly-reflected rays on the detector. I encourage you to stop by and try it out for yourself at future meetings.