

## The Results of the Cycle 18 Peer Review

**Andrea Prestwich**

The observations approved for *Chandra*'s 18th observing cycle are now underway. The Cycle 19 Call for Proposals (CfP) was released on 15 December 2016 and the proposal deadline is 15 March 2017. Cycle 17 observations are close to completion.

The Cycle 18 observing and research program was selected as usual, following the recommendations of the peer review panels. The peer review was held 28 June–1 July 2016 at the Hilton Boston Logan Airport. It was attended by 91 reviewers from all over the world, who sat on 11 panels to discuss the 547 submitted proposals (Figure 1). Access to lists of approved programs, including abstracts, can be obtained by selecting “Observations and Schedules” and then “Cycle Targets and Statistics” from the menu on the left hand side of our website (<http://cxc.harvard.edu/>). The peer review panel organization is shown in Table 1.

The total amount of time allocated in Cycle 18 was 17.1 Ms, including 5.7 Ms to 10 approved LPs. The overall over-subscription in observing time was 4.6 (Figure 2), typical of the past few cycles (Figure 3). In Cycle 18 the boundary between General Observers (GO) and Large Projects (LPs) was shifted from 300 ks to 400 ks. The primary motivation for this change was to decrease the workload of the peer review by reducing the number of LPs. The number of LPs declined from 71 in Cycle 17 to 48 in Cycle 18, in line with expectations. The total time requested for LPs remained almost constant (40.1 Ms in Cycle 17 vs. 36.3 Ms in Cycle 18).

Following our standard procedure, all proposals were reviewed and graded by the topical panels, based primarily upon their scientific merit, across all proposal types. The topical panels were allotted *Chandra* time to cover the allocation of time for GO observing proposals based upon the demand for time in that panel. Other allocations made to each panel included: joint time, Target of Opportunity TOOs with a <30 day response, time constrained observations in each of 3 classes, time in future cycles, constrained observations in future cycles, and money to fund archive and theory proposals. These allocations were based on the full peer review over-subscription ratio. The topical panels produced a rank-ordered list along with detailed recommendations for individual proposals where relevant. A report was drafted for each proposal by one/two members of a panel and reviewed by the Deputy panel chair before being delivered to the CXC. Panel allocations were modified, either in real time during the review or after its completion, to transfer unused allocations between panels so as to follow the review recommendations as far as possible.

Prior to the review, LPs were distributed to a group of “pundits”. Pundits are experienced scientists with broad research interests who focus exclusively on large projects. Pundits were asked to read all LPs and to provide written reports on specific proposals assigned to them. The pundit reports were made available to the topical panels and were incorporated into the panel discussion. LPs were discussed by the topical panels and ranked along with the GO, archive and theory proposals. The recommendations from topical panels were recorded and passed to the Big Project Panel (BPP), which included all topical panel chairs and the pundits. The schedule for the BPP at the review included time for reading and for meeting with appropriate panel members to allow coordination for each subject area. The meeting extended into Friday morning to allow for additional discussion and a consensus on the final rank-ordered lists and to ensure that all observing time was allocated. At least

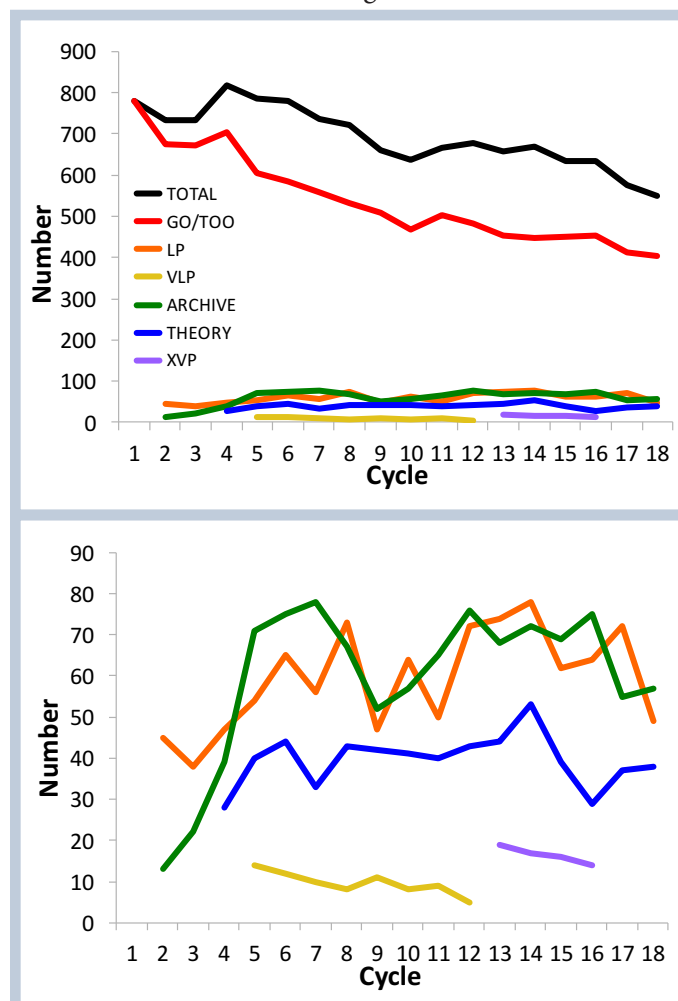


Figure 1: (top) The number of proposals submitted in each proposal category (e.g. GO, LP, Archive etc.) as a function of cycle; (bottom) zoom on lower curves. Since more proposal categories have become available in each cycle, the number classified as GO has decreased as others increased. The total number of submitted proposals has been remarkably constant over the 6 past cycles.

Topical Panels:	
<b>Galactic</b>	
Panels 1,2	Normal Stars, WD, Planetary Systems and Misc.
Panels 3,4	SN, SNR + Isolated NS
Panels 5,6	WD Binaries + CVs, BH and NS Binaries, Galaxies: Populations
<b>Extragalactic</b>	
Panels 7,8	Galaxies: Diffuse Emission, Clusters of Galaxies
Panels 9,10,11	AGN, Extragalactic Surveys
<b>Big Project Panel</b>	LP Proposals

**Table 1: Panel Organization**

2 BPP panelists updated each review report to include any BPP discussion that occurred at the review and/or remotely over the following week.

The resulting observing and research program for Cycle 18 was posted on the CXC website on 18 July 2016, following detailed checks by CXC staff and approval by the Selection Official (CXC Director). All peer review reports were reviewed by CXC staff for clarity and consistency with the recommended target list. Budget allocations were determined for proposals which included US-based investigators. Formal e-letters informing the PIs of the results, budget information (when appropriate) and providing the report from the peer review, were e-mailed to each PI in August.

### Joint Time Allocation

Two proposals were allocated *Chandra* time by the HST Time Allocation Committee (TAC), one proposal approved by the *Spitzer* TAC and one proposal by the *XMM* TAC. The *Chandra* review accepted joint proposals with time allocated on: *Hubble* (7), *NuSTAR* (7), NRAO (10), NOAO (3), *Swift* (5), and *XMM-Newton* (2).

### Constrained Observations

As observers are aware, the biggest challenge to efficient scheduling of *Chandra* observations is in regulating the temperature of the various satellite components (see POG Section 3.3.3). In Cycle 9 we instituted a classification scheme for constrained observations which accounts for the difficulty of scheduling a given observation (CfP Section 4.4.2). Each class was allocated an annual quota based

on our experience in previous cycles. The same classification scheme was used in Cycles 10-18. There was a large demand for constrained time such that not all proposals which requested time-constrained observations and had a passing rank ( $>3.5$ ) could be approved. Effort was made to ensure that the limited number of constrained observations were allocated to the highest-ranked proposals review-wide. Detailed discussions were carried out with panel chairs to record the priorities of their panels in the event that more constrained observations could be allocated. Any uncertainty concerning priorities encountered during the final decision process was discussed with the relevant panel chairs before the recommended target list was finalized.

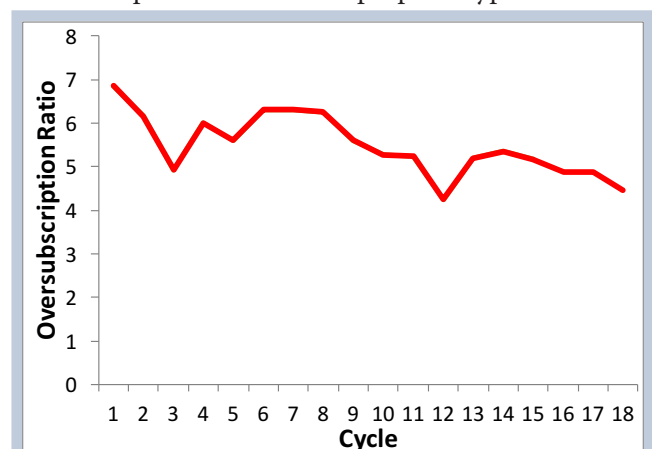
Please note that the most oversubscribed class was “EASY” while “AVERAGE” was only marginally oversubscribed. In practice these two classes were combined when determining which observations should be allocated time. The same three classes will be retained in Cycle 19 so as to ensure a broad distribution in the requested constraints. *We urge proposers to request the class of constraint required to achieve the science goals.*

### Cost Proposals

PIs of proposals with US collaborators were invited to submit a Cost Proposal, due in Sept 2016 at SAO. In Cycle 18 each project was allocated a budget based on the details of the observing program (see CfP Section 10.4). Awards were made at the allocated or requested budget levels, whichever was lower. The award letters were emailed in December, in time for the official start of Cycle 18 on 1 Jan 2017.

### Proposal Statistics

Statistics on the results of the peer review can be found on our website: under “Target Lists and Schedules” select the “Statistics” link for a given cycle. We present a subset of those statistics here. Figure 4 displays the effective over-subscription rate for each proposal type as a function



*Figure 2: The final oversubscription in observing time based on requested and allocated time in each cycle. The numbers are remarkably constant.*

of cycle. Figures 6, 7 show the percentage of time allocated to each science category and to each instrument combination. Table 2 lists the numbers of proposals submitted and approved per country of origin. ■

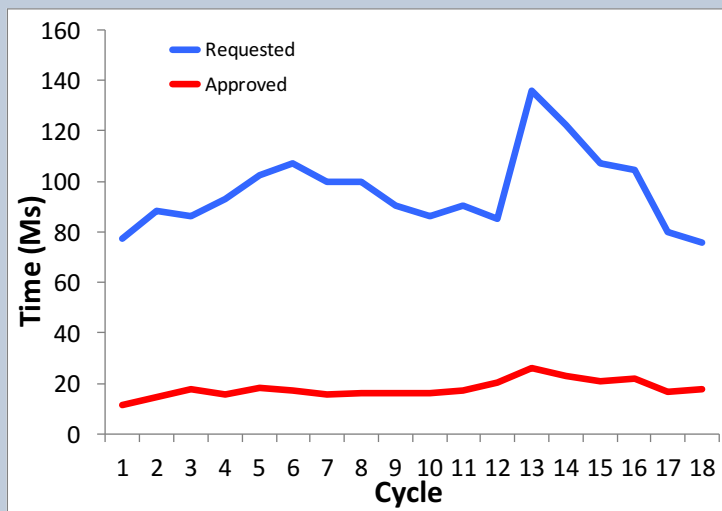


Figure 3: The requested and approved time as a function of cycle in ks including allowance for the probability of triggering each TOO. The available time increased over the first three cycles, and in Cycle 5 with the introduction of Very Large Projects (VLPs). The subsequent increase in time to be awarded due to the increasing observing efficiency and the corresponding increase in requested time in response to the calls for X-ray Visionary Projects (XVPs) in Cycles 13-16 is clear.

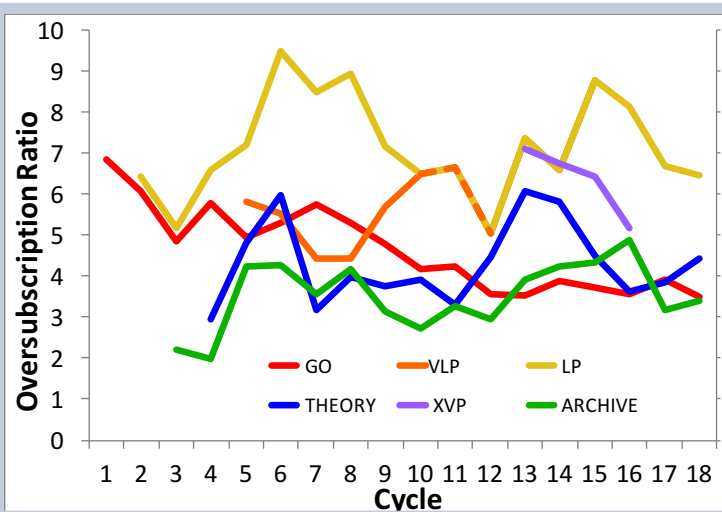


Figure 4: The effective oversubscription ratio in terms of observing time for each proposal category as a function of cycle. Note that some of the fluctuations are due to small number statistics (e.g. Theory proposals).

Country	Requested		Approved	
	# Props	Time	# Props	Time
Australia	5	709	3	619
Austria	2	150		
Belgium	1	405		
Bulgaria	2	200		
Canada	8	1838	4	458
Chile	4	505	1	300
China	3	180	1	150
France	5	567	3	267
Germany	18	3725	5	502
Greece	2	60		
India	6	600	2	130
Italy	22	5377	5	540
Japan	10	844	1	20
Korea	1	60	1	60
Mexico	4	240	1	170
Netherlands	9	862	4	432
Poland	2	145		
Russia	3	67	2	47
South Africa	1	195	1	195
Spain	5	986	2	95
Switzerland	3	285		
Taiwan	3	194		
Turkey	2	240	1	40
UK	26	4453	13	1520
USA	401	58128	118	13880
Foreign	146	22887	50	5545

Table 2: Requested and Approved Proposals by Country.

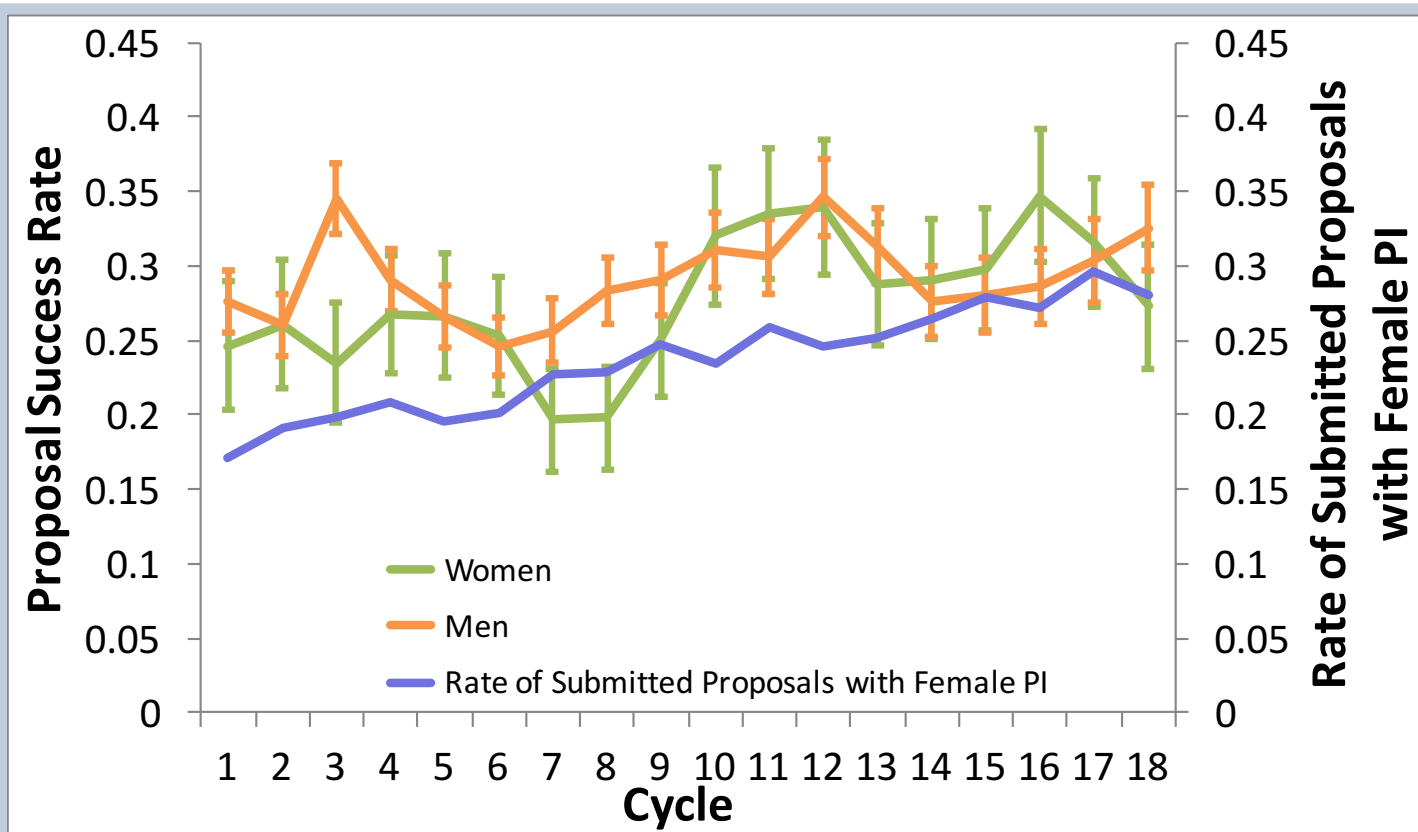


Figure 5: The success rate of male (orange) and female (green) PIs as a function of cycle, and the overall fraction of female PIs (blue). Since cycle 10, the success rate for female and male PIs has been very similar.

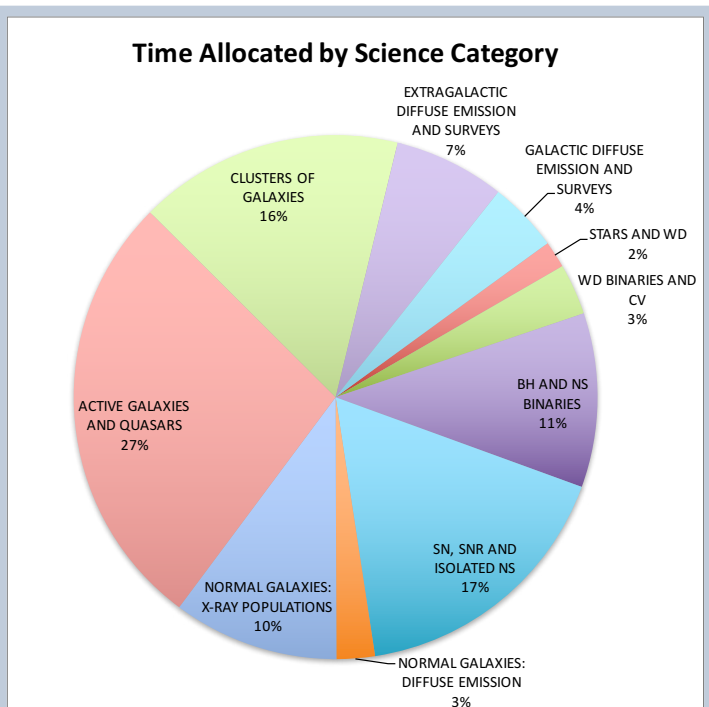


Figure 6: A pie chart indicating the percentage of Chandra time allocated in each science category. Note that the time available for each science category is determined by the demand.

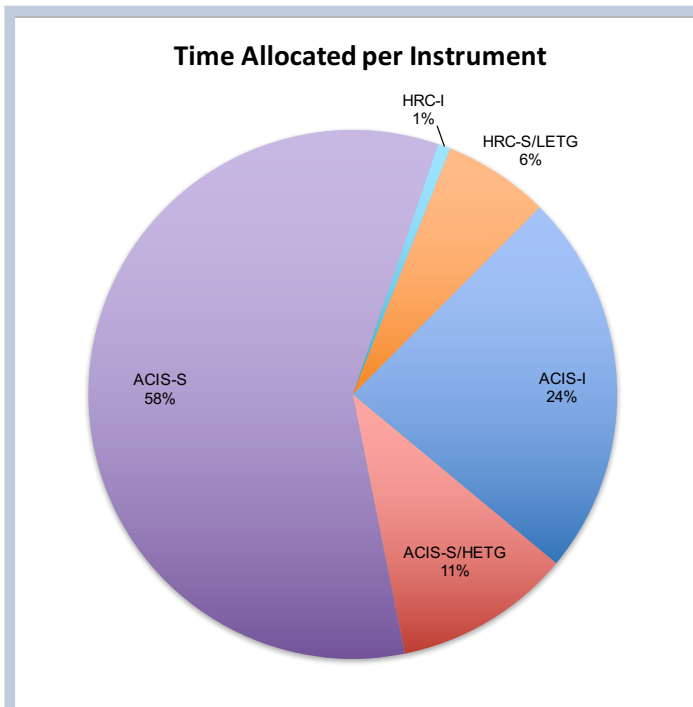


Figure 7: A pie chart showing the percentage of Chandra time allocated to observations for each instrument configuration.