

Results of the Cycle 17 Peer Review

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The observations approved for *Chandra*'s 17th observing cycle are nearly half done. The Cycle 18 Call for Proposals (CfP) was released on 15 December 2015 and the proposal deadline was 15 March 2016. Cycle 16 observations are close to completion.

The Cycle 17 observing and research program was selected as usual, following the recommendations of the peer review panels. The peer review was held June 22-26, 2015 at the Hilton Boston Logan Airport. It was attended by 96 reviewers from all over the world, who sat on 13 panels to discuss the 578 submitted proposals (Figure 1). The "Target Lists and Schedules" link of our website (cxc.harvard.edu) provides access to lists of the various approved programs, including abstracts. The peer review panel organization is shown in Table 1.

The total amount of time allocated in Cycle 17 was 16 Ms, including 6 Ms to 13 approved Large Programs (LPs). The time allocated by Cycle 17 review was slightly down from previous cycles because 2 Ms of Cycle 17 time was awarded in Cycle 16 to allow for the X-Ray Visionary Program (XVPs). There was no XVP call in Cycle 17. The overall oversubscription in observing time was 4.9 (Figure 2), typical of the past few cycles (Figure 3).

A recent study by I. Neill Reid of the Space Telescope Science Institute (2014, PASP, 126, 923) examined the success rate of Hubble Space Telescope proposals as a function of gender. They found that male PIs have a higher success rate than female PIs. In any given cycle the statistical significance is small, but the discrepancy is present in all cycles studied suggesting a systematic effect. The success rate of male and female PIs of *Chandra* proposals is plotted in Figure 5, along with the total fraction of proposals submitted with a female PI. Prior to Cycle 10, there was a definite trend for male PIs to be more successful. However, since Cycle 10 there is no statistically significant difference in the success rates of male and female PIs. We tentatively interpret the recent lack of bias as due to the relatively high percentage of female *Chandra* PIs.

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 oversubscription 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 satisfy 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 pro-

Topical Panels:

Galactic

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

Extragalactic:

Panels 7,8,9 Galaxies: Diffuse Emission, Clusters of Galaxies

Panels 10,11,12 AGN, Extragalactic Surveys

Big Project Panel: LP Proposals

Table 1: Peer Review Panel Organization

vide 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

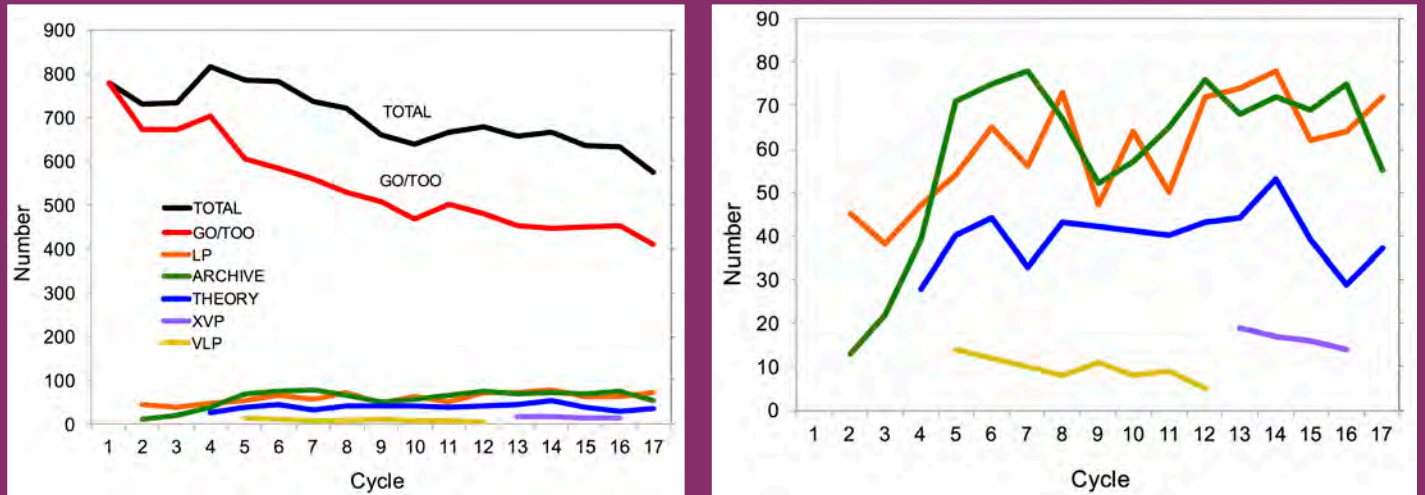


Figure 1: a: The number of proposals submitted in each proposal category (e.g. GO, LP, Archive etc.) as a function of cycle, b: zoom on lower curves. Since more proposal categories have become available in each cycle, the number classified as GO has decreased as others increased.

on the final rank-ordered lists and to ensure that all observing time was allocated. At least 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 17 was posted on the CXC website on 16 July 2015, 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

One proposal had joint *Chandra* time pre-allocated by the *Spitzer* Time Allocation Committee. No other observatories allocated time on *Chandra* this Cycle. The *Chandra* review accepted joint proposals with time allocated on: *Hubble* (16), *NuSTAR* (6), *NRAO* (14), *Swift* (3), *XMM-Newton* (1) and *Spitzer* (1).

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 6.2.8). Each class was allocated an annual quota based on our experience in

previous cycles. The same classification scheme was used in Cycles 10-17. 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 18 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 Sept 2015 at SAO. In Cycle 17 each project was allocated a budget based on the details of the observing program (see CfP Section 9.4). 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 17 on 1 Jan 2016.

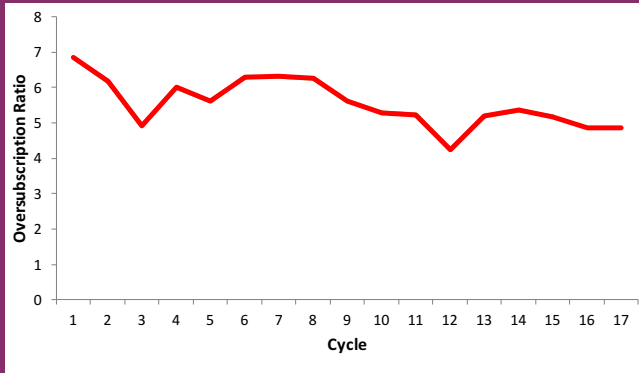


Figure 2: The final oversubscription in observing time based on requested and allocated time in each cycle. The numbers are remarkably constant.

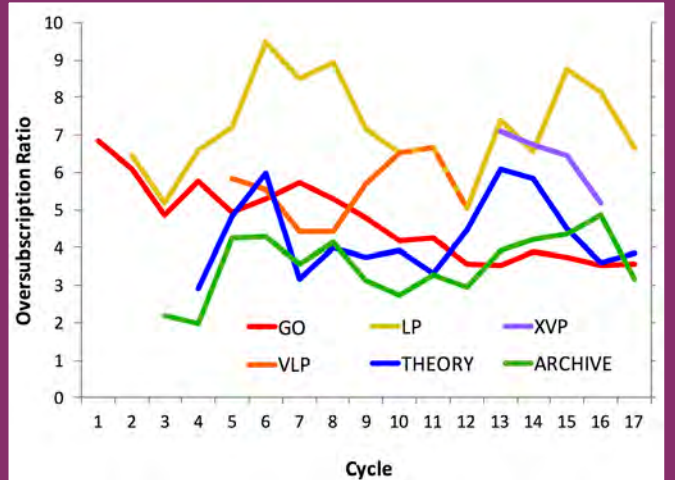


Figure 4: The effective oversubscription ratio in terms of observing time for each proposal category as a function of cycle. Note that some of the fluctuations are due to small number statistics (e.g. Theory proposals).

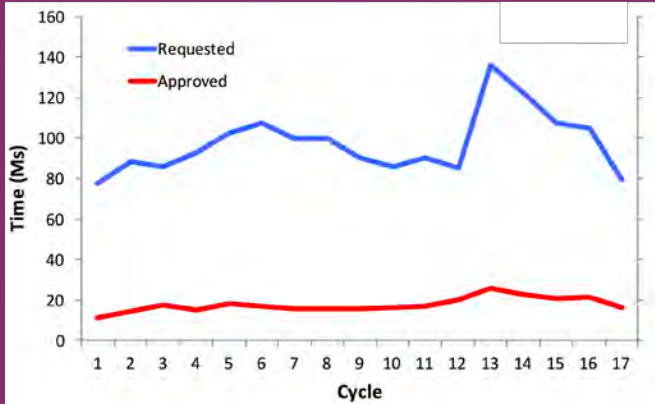


Figure 3: The requested and approved time as a function of cycle in ks including allowance for the probability of triggering each TOO. The available time increased over the first three cycles, and in Cycle 5 with the introduction of Very Large Projects (VLPs). The subsequent increase in time to be awarded 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.

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 of cycle. Figures 6, 7 (on the next page) 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. ■

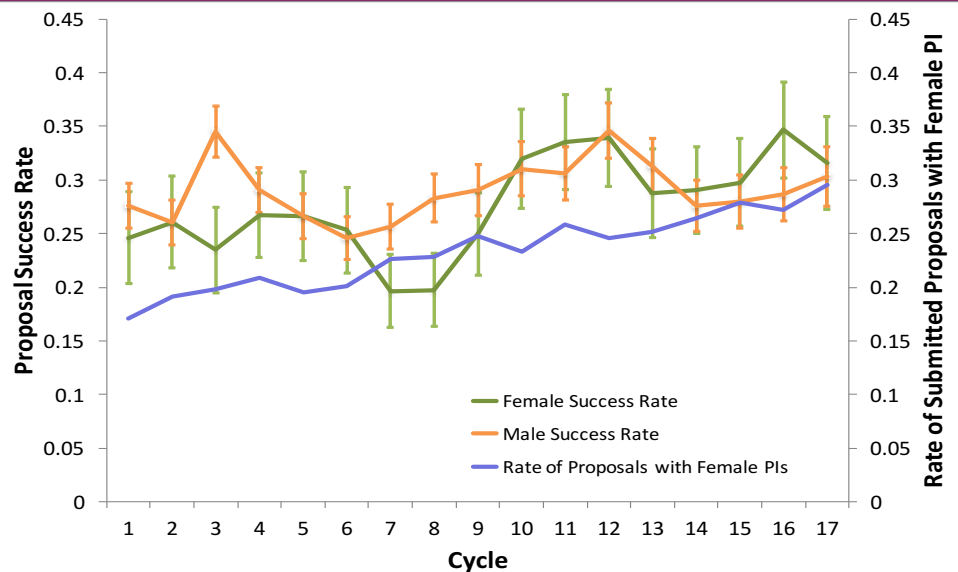


Figure 5: The success rate of male (orange) and female (green) PIs as a function of cycle, and the overall fraction of female PIs (blue). Since cycle 10, the success rate for female and male PIs has been very similar.

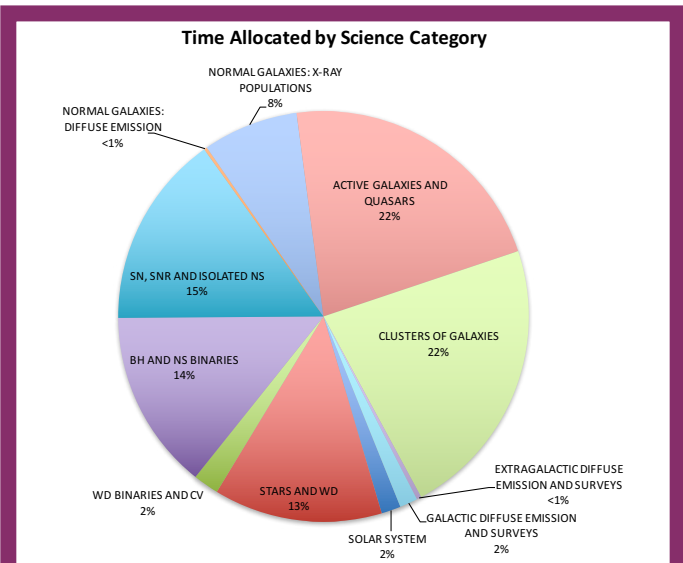


Figure 6: A pie chart indicating the percentage of Chandra time allocated in each science category. Note that the time available for each science category is determined by the demand.

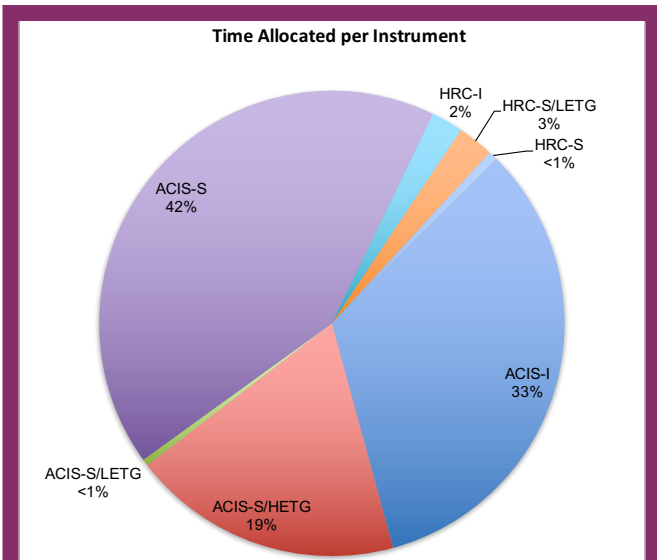


Figure 7: A pie chart showing the percentage of Chandra time allocated to observations for each instrument configuration.

Country	Requested		Approved	
	# Props	Time	# Props	Time
Australia	2	80		
Austria	2	250		
Bulgaria	1	120		
Canada	5	1157	3	552
Chile	4	460	3	420
China	2	80		
Costa Rica	1	20		
Denmark	1	0		
France	5	517	1	150
Germany	19	3882	5	715
Greece	1	30		
India	6	318	1	45
Ireland	1	160		
Italy	36	8024	8	1437
Japan	12	1668.7	2	150
Korea	1	120		
Mexico	1	250	1	250
Netherlands	14	2055	4	545
South Africa	2	65	1	50
Spain	7	535	1	85
Switzerland	5	990		
Taiwan	5	674		
Turkey	3	420		
UK	24	4049	6	808
Venezuela	1	90		

USA	417	58215	139	13584
Foreign	161	26015	36	5207

Table 2: Requested and Approved Proposals by Country.