

The Results of the Cycle 13 Peer Review

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The observations approved for *Chandra's* 13th observing cycle are now in full swing and the Cycle 14 Call for Proposals (CfP) was released on 15 December 2011. Cycle 12 observations are close to completion.

The Cycle 13 observing and research program was selected as usual, following the recommendations of the peer review panels. The peer review was held 21–24 June 2011 at the Hilton Boston Logan Airport. More than 100 reviewers from all over the world attended the review, sitting on 15 panels to discuss 664 submitted proposals (Fig. 1). The Target Lists and Schedules area of our website provides lists of the various types of approved programs, including abstracts. The peer review panel organization is shown in Table 1.

The Cycle 13 CfP included a call for X-ray Visionary Projects (XVPs) for the first time. XVPs are major, coherent science programs to address key, high-impact scientific questions in current astrophysics and requiring 1–6 Ms of observing time. A larger amount of observing time available due to the lower fraction of an orbit spent within the radiation belts over the next 2–3 years as *Chandra's* orbit evolves. As a result, the observing time available for GO proposals and Large Projects (LPs) was not impacted by the XVP allocation. The total amount of time allocated in Cycle 13 was close to 27 Ms, including 8 Ms awarded to 4 XVPs and 4.7 Ms to 11 LPs. The response to the new XVP opportunity was very positive. The over-subscription for LPs and XVPs was 7.4 and 7.1 respectively. The overall

Table 1: Panel Organization

Topical Panels:	
<u>Galactic</u>	
Panels 1,2	Normal Stars, WD, Planetary Systems and Misc
Panels 3,4	SN, SNR + Isolated NS
Panels 5,6,7	WD Binaries + CVs, BH and NS Binaries, Galaxies: Populations
<u>Extragalactic</u>	
Panels 8,9,10	Galaxies: Diffuse Emission, Clusters of Galaxies
Panels 11,12,13	AGN, Extragalactic Surveys
XVP Panel	XVP Panel X-ray Visionary Proposals
Big Project Panel	LP and XVP Proposals

over-subscription in observing time was 5.4 (Fig. 2), typical of the past few cycles despite the much larger amount of time being allocated (Fig. 3). The continued evolution of the *Chandra* orbit has allowed us to again include XVPs in the Cycle 14 CfP.

As is 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 produced a rank-ordered list along with detailed recommendations for individual proposals where relevant. A peer review report was drafted for each proposal by one/two members of a panel and edited by the Deputy

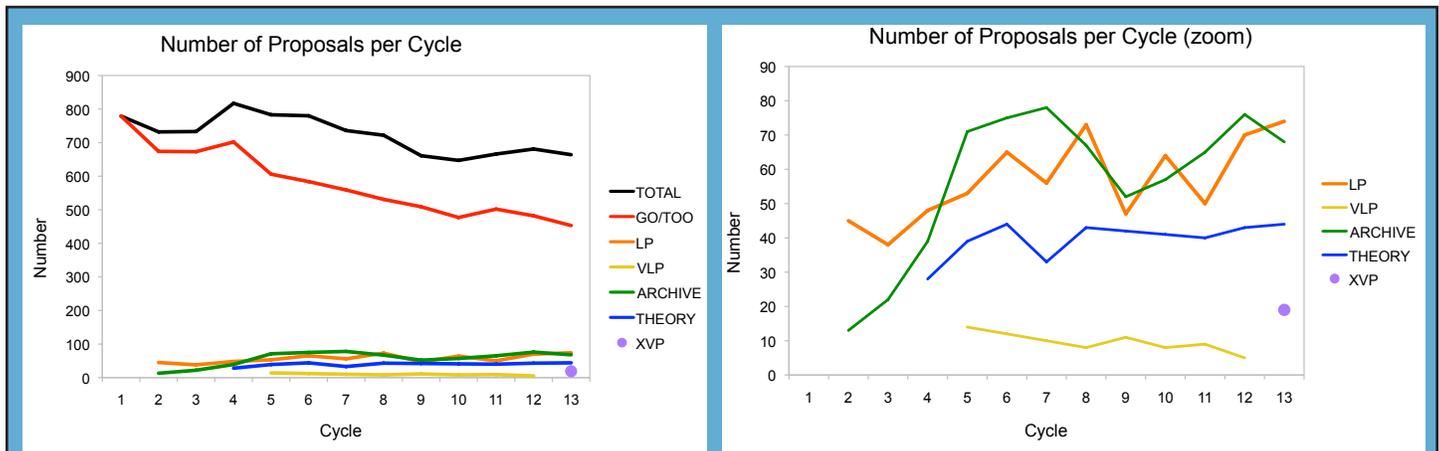


Fig. 1: (Left) The number of proposals submitted by proposal type (e.g. GO, LP, Archive etc.) as a function of cycle. (Right): zoom on lower curves. Since more proposal types have become available in each cycle, the number classified as GO has decreased as other types increase. The total number of submitted proposals is remarkably constant.

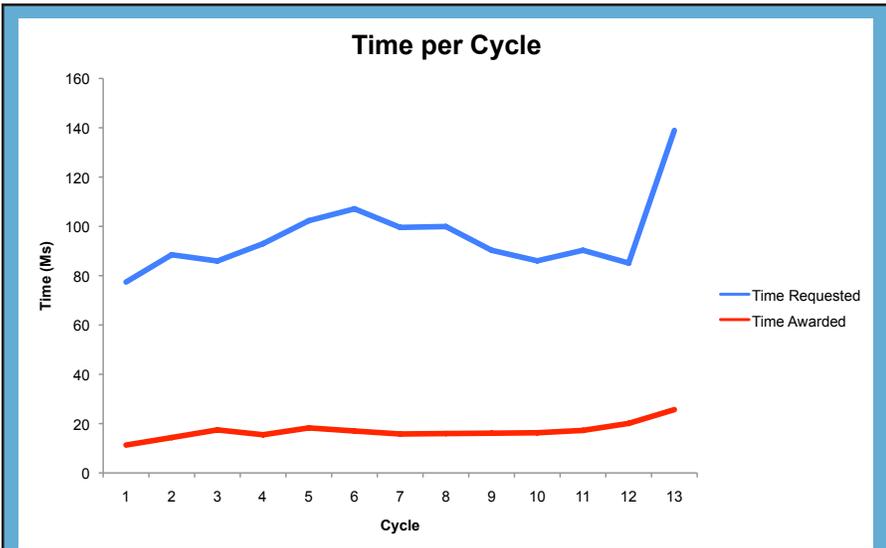


Fig. 2: The requested and approved time as a function of cycle in Msecs. This increased in the first few cycles, the largest effect being due to the introduction of Very Large Projects (VLPs) in Cycle 5. The increase in requested and awarded time in Cycle 13 is clear.

panel chair before being delivered to the CXC. 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 allocation limits for each panel were: joint time, TOOs with a < 30 day response, time constrained observations in each of 3 classes and money to fund archive and theory proposals. Many of these allocations are affected by small number statistics in individual panels so allocations were based on the full peer review over-subscription ratio. Panel allocations were modified, either in realtime during the review or after its completion, to transfer unused allocations between panels as needed.

LPs and XVPs were discussed by the topical panels and ranked along with the GO, archive and theory proposals. In addition, the XVPs were also discussed and ranked by a separate XVP/pundit panel. The topical and XVP panels' recommendations were recorded and passed

to the Big Project Panel (BPP), which includes all topical panel chairs and members of the XVP panel. The BPP discussed the LPs and XVPs separately and generated two rank-ordered lists. BPP panelists updated review reports, as needed, at the review and remotely over the following 2 weeks. 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 BPP meeting extended into Friday afternoon to allow for additional discussion and a consensus on the final rank-ordered lists to be reached.

The resulting observing and research program for Cycle 13 was posted on the CXC website on 15 July 2011, 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. Formal e-letters informing the PIs of the results, budget information (when appropriate) and providing a report from the peer review, were e-mailed to each PI in early August.

Joint Time Allocation

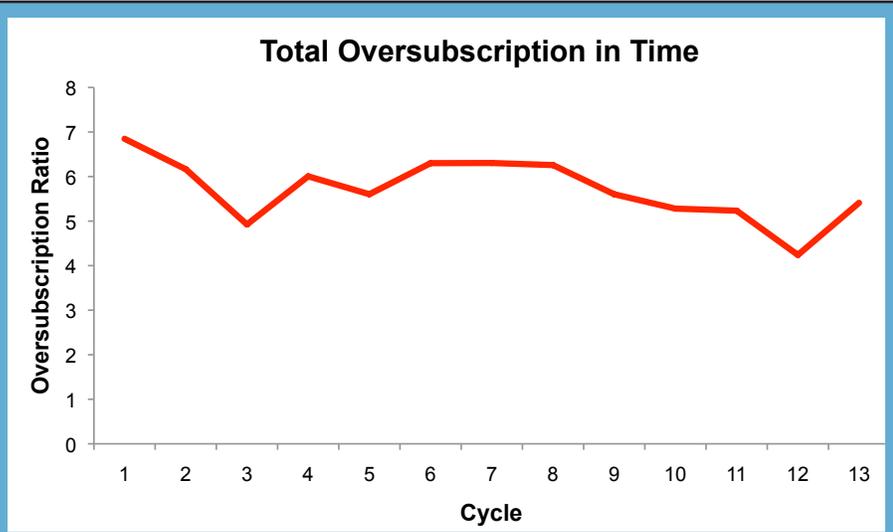
Chandra time was also allocated to several joint programs by the proposal review processes of *XMM-Newton* (4 proposals) and *Spitzer* (2 proposals).

The *Chandra* review accepted joint proposals with time allocated on: *Hubble* (20), *XMM-Newton* (4), NRAO (12), and NOAO (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 clas-

Fig. 3: The final over-subscription in observing time based on requested and allocated time in each cycle. Again the numbers are remarkably constant. The decrease in Cycle 12 reflects the 16% larger amount of time awarded by the peer review in that cycle to offset the significantly increasing observing efficiency as the orbit evolved (see article in 2011 Newsletter).



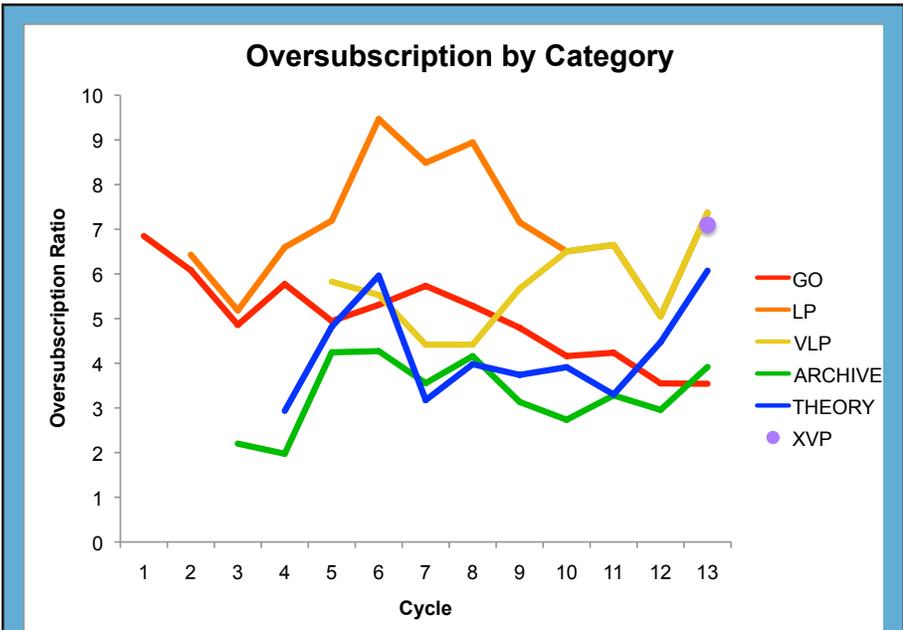


Fig. 4: The effective over-subscription ratio in terms of observing time for each proposal type as a function of cycle. Archive and Theory proposal over-subscription is against available funding. Please note that some of the fluctuations are due to small number statistics (e.g. Theory proposals).

sification scheme for constrained observations which accounts for the difficulty of scheduling a given observation (CfP Section 5.2.8). Each constraint class was allocated an annual quota based on our experience in previous cycles. The same classification scheme was used in Cycles 10–13. In Cycle 13, the quotas were increased commensurate with the larger amount of observing time to be awarded. There was a large demand for constrained time so 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 with panel chairs enabled us to record the priorities of their panels in the event that more constrained observations could be allocated. Any remaining uncertainty concerning priorities during the final decision process was discussed with the relevant panel chairs before the recommended target list was finalized.

The same 3 constraint classes will be retained in Cycle 14 so as to ensure a broad distribution in the requested constraints. We urge proposers to specify their constraints as needed by the science.

Early Start for Cycle 13 Observations

Cycle 13 observations began early this year, in July/August, due to the continuing fall-out from the spacecraft “MUPS anomaly,” during the summer of 2009 (described in the 2010 Newsletter) which resulted in many of the summer Cycle 11 targets being observed during the summer of 2009. The resulting lack of Cycle 12 summer targets in 2011 meant that Cycle 13 summer targets were needed to maintain an efficient schedule. An announcement was distributed in May 2011 informing Cycle 13 proposers that they may be called upon for fast turn-around in checking and confirming their observation parameters to allow observation in the summer. Due to the excellent response of observers and the diligence of the User Interface and Mission Planning teams, the updated procedures ran smoothly and an efficient schedule was maintained throughout the summer and beyond.

Cost Proposals

PIs of proposals with US collaborators were invited to submit a Cost Proposal, due in Sept 2011 at SAO. In Cycle 13 each project was allocated a budget based on the details of the observing program (see CfP Section 8.4). Awards were made at the allocated or requested budget levels, whichever was lower.

Given the early start of observations, we modified

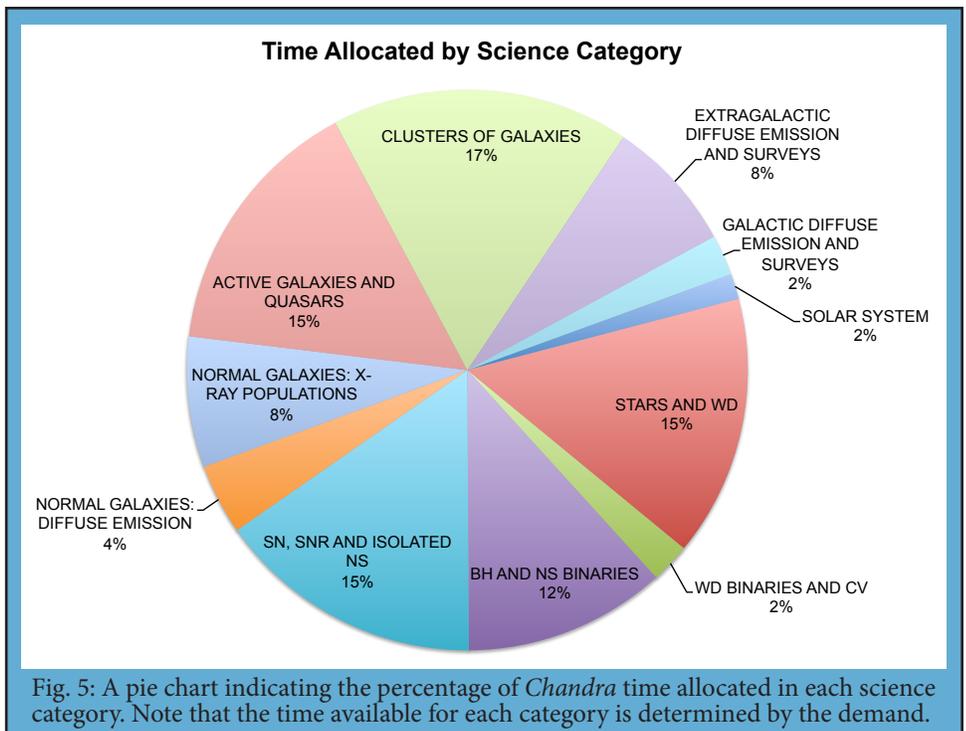


Fig. 5: A pie chart indicating the percentage of *Chandra* time allocated in each science category. Note that the time available for each category is determined by the demand.

our procedures to facilitate early award of cost proposals with observations made in July and August. Complete proposals submitted before the 7th September deadline and for which observations had already been made were treated as high priority, processed and awarded in mid-October.

The remainder of the award letters were emailed in late October and November, in good time for the official start of Cycle 13 on 1 Jan 2012.

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. Fig. 4 displays the effective over-subscription rate for each proposal type as a function of cycle. Figs. 5, 6 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 by country of origin.

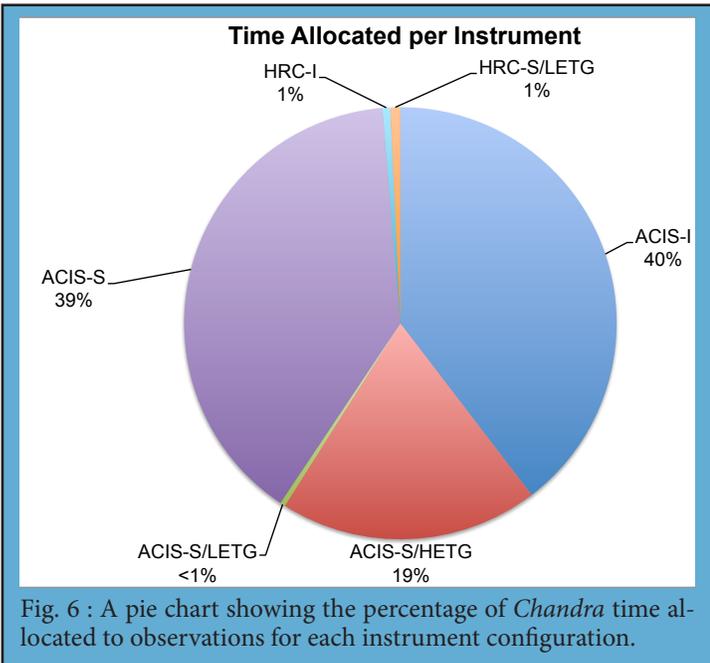


Table 2: Number of Requested and Approved Proposals by Country

Country	Requested		Approved	
	# Pro- posals	Time (ksec)	# Pro- posals	Time (ksec)
USA	493	112744.5	149	21591.0
Foreign	171	29150.5	50	5178.0

Country	Requested		Approved	
	# Pro- posals	Time (ksec)	# Pro- posals	Time (ksec)
Argentina	2	200.0		
Australia	5	860.0	1	150.0
Belgium	1	250.0		
Canada	10	887.0	3	111.0
Chile	1	278.0		
China	2	464.0		
Denmark	1	160.0		
France	10	1085.0	5	345.0
Germany	19	7343.0	5	405.0
Hong Kong	1	10.0		
India	6	640.0	1	40.0
Israel	1	180.0		
Italy	36	6144.0	9	849.0
Japan	9	917.0	2	200.0
Korea	1	262.0		
Netherlands	15	1470.0	4	630.0
Russia	2	94.0		
S. Africa	2	1044.0		
Spain	9	1140.0	5	480.0
Switzerland	1	50.0	1	50.0
Taiwan	3	281.0	3	281.0
Turkey	1	75.0		
U.K.	33	5316.5	11	1687.0

* Note: Numbers quoted here do not allow for the probability of triggering TOOs