

CARNEGIE INSTITUTION FOR SCIENCE  

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DEPARTMENT OF TERRESTRIAL MAGNETISM  
5241 BROAD BRANCH ROAD, N.W.  
WASHINGTON DC 20015-1305

Tel: 202/478-8858

<http://www.dtm.ciw.edu/boss/>  
[boss@dtm.ciw.edu](mailto:boss@dtm.ciw.edu)

Fax: 202/478-8821

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TO: Wes Huntress, Chair, NASA Advisory Council Science Committee  
RE: Report from the Astrophysics Subcommittee (APS)  
FROM: Alan Boss, Chair, APS

This letter report summarizes the APS meeting held on July 7-8, 2010 at NASA HQ in Washington, D.C.

The Subcommittee is grateful for presentations from Katie Spear, Jens Feeley, Jon Morse, Paul Hertz, Michael Moore, Richard Howard, Linda Sparke, Jennifer Kearns, Vernon Jones, Julie Robinson, Jaya Bajpayee, Lou Kaluziński, Eric Smith, Doug Hudgins, George Sonneborn, Wilton Sanders, Martin Weisskopf, William Danchi, Mike Seiffert, Paul Goldsmith, and Kathy Flanagan. We are also thankful for the ongoing NASA staff support, in particular the work by Hashima Hasan and Marian Norris.

*Division Update:* Jon Morse presented the status of the Astrophysics Division (APD), beginning with several examples of the latest science results being returned by APD missions such as Herschel, Hubble, WISE, Swift, GALEX, and SOFIA. All fifteen currently operating APD space missions are rated as GREEN: on plan with adequate margins. SOFIA has successfully taken its first light measurements. Two recent mishaps in the balloon program are currently under investigation. The APD 2010 Senior Review of Operating Missions completed its work and concluded with a prioritized list for support of missions in their extended mission phases. The APS commends NASA for its efforts in conducting the Senior Review of Operating Missions. The results of the Astro2010 Decadal Survey are planned for presentation to APD in early August, in time for using these priorities to influence the FY12 budget cycle.

JWST recently passed its mission-level critical design review, and continues toward a planned launch date in mid-2014. Eric Smith showed numerous pictures of the progress being made in fabricating and testing the primary mirror segments and instruments. With regard to future planning, Morse explained that independent reviews by the Standing Review Board and a team looking at the overall test program are being convened to help with efforts to control cost and schedule growth. A letter from Senator Mikulski to the NASA Administrator requesting an additional independent review was also mentioned. The APS expects to receive a JWST programmatic update at its next meeting, given the possible impact this will have on implementing the Astro2010 decadal survey.

*APS operations:* The Subcommittee discussed ways in which the APS could be more effective in advising the APD and in keeping the greater astronomical community informed of APS and APD activities. For example, the APS felt that it would be better able to advise the APD about any specific areas of concern or to respond to questions on which the APD requires APS input if these issues or questions are brought to the attention of the APS well in advance of their meeting, so that APS members could prepare themselves as necessary to discuss these agenda items. We also suggest that the APS advertise its upcoming meetings, and briefly note the results of past meetings, in the American Astronomical Society's Newsletter, which is issued bi-monthly and is widely disseminated among astronomers and astrophysicists, as well as in the American Physical Society's Division of Astrophysics Newsletter or periodic e-mails.

*Unspent Funds:* Having the Sagan, Hubble, and Einstein Postdoctoral Fellowships all nominally begin on September 1, while the federal fiscal year ends on September 30, ensures that these fellowships will have unspent funds each year. This structural obstacle to lowering the amount of unspent NASA funds could be alleviated by staggering the start dates of some fraction of these Fellows through the year, as is done for the NASA Fellowships administered by Oak Ridge, where Fellowships can start at several different times during the year. While fellowships are not a major fraction of the unspent funds problem, we recommend that the APD look into this option, as well as other options, for minimizing unspent funds.

*Senior Review of APD R&T:* Linda Sparke presented the status of the APD's Research & Technology Programs, noting that the balance between these Programs was last reviewed nearly a decade ago, in 2000-2001. It was proposed that the APD program elements contained in the annual ROSES solicitations undergo a Senior Review, beginning in the fall of 2010. We support this proposal and its intention to ensure that the various program elements are receiving the support they need to make substantial contributions to APD's current and future missions. However, the charge for this Senior Review will be a critical one, and we recommend that the APS be allowed to review the charge after it is developed. We also expect to be updated about the progress of the Senior Review during subsequent APS meetings.

*Government Performance and Result Act (GPRA) Metrics:* The APS evaluated a large number of science highlights from APD missions during the last year, and agreed upon a representative sampling of these advances for inclusion in the annual GPRA publication. APS members suggested several new examples as well, and polished the descriptions of a number of the proposed examples. There was a unanimous consensus by the APS that the APD has achieved a GREEN level for all four of its specific science research objectives in 2009-2010 (i.e., under Sub-goal 3D, outcomes 3D.1, 3D.2, 3D.3, and 3D.4): progress on all four of these outcomes fully met or exceeded the expectations for the research program.

*International Space Station (ISS) Science Utilization:* Vernon Jones summarized the history of astrophysical science interest in the ISS, which has centered on high-energy

(X-ray, gamma ray, and cosmic ray) research. Given that the expected lifetime of the ISS has been extended to at least 2021, there is a renewed opportunity for science utilization of ISS in the next decade. APD has provided opportunities for science proposals for ISS utilization twice during the past decade (in 2001 and 2007) through the usual peer review process for missions of opportunity. For the first time, this opportunity has been specifically called out in the ROSES 2010 amendment released on July 7, 2010. The APS supports this request for proposals, which will be peer-reviewed in competition with proposals requesting support for sub-orbital projects. The APS was not presented with adequate information to judge whether the ISS is a suitable platform for astrophysical experiments beyond the ones currently planned. Coupled with the uncertain range of proposals for projects that would uniquely benefit from the ISS, at this time the APS does not recommend the establishment of a separate budget line for ISS astrophysics utilization. We note, however, that proposals for technology development, e.g., for telescope pointing mechanisms, advanced detector development, various technology demonstrations, etc., may be especially suitable for the ISS.

*Chandra Guaranteed Time Observer (GTO) Policy:* Wilton Sanders summarized the history of the Chandra GTO policy and placed this policy in the context of the GTO policies for other operating APD missions. The 2010 Senior Review of Operating Missions questioned whether Chandra's GTO program should still be in effect after a decade of operations. In 1994, NASA HQ stated that the GTOs would receive 15% of the observing time after the first 20 months of operations, for "the remainder of the mission lifetime". The fraction of GTO time became 11.4% due to changes in the GTO program roster. The GTO policy was reviewed in 2002 and it was concluded then that "Chandra is best served by the current policy", on the basis of the overall strength of the Chandra science program, maintenance of the instrument engineering competencies of the instrument principal investigators (IPI), and fairness to the IPI community. Eliminating the GTO program at the present time raises the risk of losing the key engineering support provided by the IPI teams at a phase of the Chandra mission when this support is most likely to become critical. In addition, this elimination would achieve no net savings, as the GTO time and funds would presumably be transferred to the General Observer (GO) community. The APS therefore recommends that the current GTO policy be retained, at least until the Chandra Users Group can be asked to review this issue. If the Users Group concurs, then there is no need to change the GTO policy. If the Users Group requests a change in the GTO policy, then the APS should revisit this issue at that time.

Best wishes,



Alan Boss, Chair, APS