

SNOPAC Notes on Senior Review Preparation

Teleconference, 16 June 2017

The SOFIA NASA Observatory and Program Assessment Council (SNOPAC) participated in a teleconference to discuss Program status and planning for the upcoming Senior Review. Council members Andrew Harris, Jay Lockman, John Nousek, Lisa Storrie-Lombardi, and Mike Werner were present for the entire time. Matt Greenhouse joined as the Chair of the SOFIA Users Group.

In this report, the main question the SNOPAC sets itself is this: Is the program on track with filling science and operations visions, especially as they relate to the Senior Review?

- Our top-line recommendation is to **FOCUS ON SCIENCE IMPACTS, NOT JUST DEMONSTRATING RESULTS**. Some of the results are spectacular, but they often appear to be presented more as technical achievements than as steps forward in science. This is normal early in a project's life, but the emphasis has to shift to scientific gains rapidly. Presentations must be able to explain the implications of the observations, most preferably showing how SOFIA has made a unique and unexpected contribution -- this will involve getting the experts to provide background material as well as nice images. Demonstrating that SOFIA observations really push progress in a field, especially if it is not one familiar to the reviewer or audience member, is essential.
- Presentations must be built around scientific points. A scattered summary of old results mixed with a few new ones leaves the audience feeling that their time is being wasted, and inadvertently gets them impatient with the program as a whole. Exciting science, especially new science, has to be showcased and explained. Demonstrating breadth (by community pressure or by construction in the time allocation process) or demonstrating capabilities (by construction in instrument selection) is less important than demonstrating scientific progress.
- Being coy about new data with advisory committees or especially the Senior Review, and likely in many cases at meetings with general audiences, is intolerable in SOFIA's present state. Showing many millions of dollars worth of data that have been dumbed down, but with promises that the results will be really great, is not a productive tease for coming attractions, but is instead may sound defensive or be an invitation for audiences to dismiss what they see. If the PIs have reason to believe that there is a competitor waiting to scoop them on preliminary data, let them explain that to keep the results fully confidential. In general, however, either show the science results and at least preliminary conclusions, or don't show anything at all.
- A unified voice and approach in all scientific presentations is something very important. Message control must be a Program priority, even as different presenters will take advantage of their own styles and emphases.

- To state the obvious, the Senior Review proposal defines the strategy for the program's future. Science presentation and strategy will be key parts of this, as will operational considerations.
- The focus for developing the science case must be firmly on the future. It is essential to emphasize the scientific aspects of SOFIA's unique capabilities in wavelength coverage, complementarity to other programs, and its ability to adapt its instrumentation to match evolving science questions.
- In general, and specifically for the science part, the SNOPAC was concerned that the approach proposed during the teleconference was too ambitious, as it was on a very tight timeline. We encourage a small core of science leaders to be more dictatorial: to identify where SOFIA can make its highest-impact science contributions, map a strategy for how they will be implemented, justify how they will play into the observatory's future record of scientific productivity, and then set people to work on fleshing out these ideas. We encourage Program scientific leadership to use all advisory committees (including the SNOPAC, of course) as sounding boards to help you set these priorities.
- Once the science leadership team is identified, it is essential to agree on terms of reference for the proposal process. All parties can then accept roles and responsibilities for clearly delineated responsibilities. The terms of reference should also indicate how decisions will be made. Consultation with the SNOPAC may be valuable in establishing the terms.
- It is important to have a proposal manager who is separate from the science or operations team, and from the writers. The manager's role is to keep the broad view of the entire proposal and its balance, chivying writers and other content producers as needed. The manager would also be responsible for ensuring uniform and high quality of the final proposal.
- The SNOPAC does not have much insight into operations, but we endorse Eddie Zavala's approach of tackling a bottoms-up serious review in this area to identify critical areas and trades. A similar bottoms-up review for science and science resources so the Senior Review can see a comprehensive view of trades.

The SNOPAC's dominant conclusion is that everyone involved in SOFIA must be helped to realize that building scientific support for the program is absolutely necessary to SOFIA's continued existence. Management skill throughout the program will be necessary to set and maintain the right priorities for everyone, given competition from the program's running demands and individuals' personal strengths. SOFIA will succeed only if cooperation and coordination flow freely throughout the program.