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Re: Meeting #9 of the [SOFIA Science Users Group](#):

The SOFIA Science Users Group (SUG) met at NASA Ames Research Center during 26 May 2016. This meeting was supported by 9 of 11 committee members (Imke de Pater & John Bally absent). The focus of this meeting is reflected by the [agenda and presentations](#) that are available on-line. Recommendations of the SUG resulting from discussion of these presentations with SOFIA staff follow (in no order):

The SUG commends the team on realizing a refereed publication rate of 18.9 observing hours per paper – exceeding the program goal of 20 hours per paper. The SUG notes the importance of ongoing professional outreach to insure broad awareness of the observatory’s science productivity and suggests that the Project develop graphics for the website that shows productivity in absolute terms and in a way that can be placed in context of Spitzer and Hershel. For example, journal articles per unit telescope time or integrated citation count as a function of observing cycle may be informative metrics.

We commend the project for its ongoing analysis of factors that limit science productivity. The SUG concurs with the Project’s decision to use contingency flights and carryover of highly ranked projects across observing cycles to reduce the incidents of incomplete GI projects.

R9.1: The SUG recommends that the Project be proactive in securing invited plenary talks at major scientific meetings over the next two years. To this end, we recommend that the Project contact the AAS Council about the 2017 winter meeting.

We thank the Project for determining the root cause of the thermal stray light from the #1 engine cone and their decision to install the missing secondary mirror spider covers to mitigate this problem.

The SUG commends the Project on recognizing need to retire old science instruments (SIs) as warranted by their productivity/cost, and for having a notional schedule for the review process. Although the JWST operations phase will erode the uniqueness of some existing SI capability, we note that the JWST capability for target of opportunity (ToO) observations is limited by its field of regard (35% of the sky). SOFIA’s ability to access any part of the sky on short notice remains unique. Hence, we suggest that a “mothball state” alternative to fully retiring the FORCAST instrument be investigated such that it can be used to observe high priority ToOs.

We note that the two Generation-3 SIs under consideration for selection in the fall will substantially enhance the science potency of SOFIA. One expects the promise of their productivity to be an important component of the Senior Review proposal for SOFIA.

R9.2: Given that the cost of these instrument projects is roughly \$15-20M each, we strongly recommend that the Project thoroughly explore the trade space for selecting both of them. Phasing their sequential delivery 1 year apart and modest reallocation of operating costs with impact to realized flight hours should be considered in this trade.

We are quite concerned by the manner in which the Gen-3 SI studies are being managed by SOFIA. We feel that the Project's decision to manage these aircraft sensors under NASA's 70120.5 procedure intended for space flight sensors is substantially off the mark. It places a very heavy systems engineering paperwork burden on these small projects that will not add value to SOFIA science or safety, and will result in cost/schedule growth. In discussion with the Project, we learned that they were under the impression that safety-critical content necessitates management under the 7120.5. We offered to deliver counter examples and have done so.

R9.3: The SUG recommends that the NASA Project and Program reach out to GSFC Wallops Flight Facility to better understand how suborbital projects with safety-critical content can be efficiently managed under the 7120.8.

The SUG strongly commends the Project in their success toward meeting the 15 day requirement on Level-3 data delivery. We thank Project Management for addressing staffing concerns expressed by the SUG in prior reports with addition of a scientist and engineer this year and an allocation of two additional FTEs during FY17. However, the SUG is concerned by the ongoing difficulty with calibration of data from the Water Vapor Monitor (WVM) and associated impact to the FIFI-LS pipeline.

R9.4: The SUG recommends that Project Management ensure that staffing for the WVM (currently at a fraction of 1 individual's time) not continue to be a pacing item for resolution of this long standing problem.

The SUG commends the project on completion of the FIFI-LS commissioning and ongoing work toward completion of HAWC+ commissioning. We suggest that the Project investigate the chopping secondary instability that was observed by HAWC, as it is a facility issue that may be common to other instruments.

R9.5: The SUG recommends that the unexpected acoustic/vibration environment that was encountered during HAWC+ commissioning be characterized, with SI-to-telescope system Interface Requirements updated accordingly, to enable future instrument projects to design and verify to the correct operational environment.

Finally, we ask that the NASA Office of Education support our next meeting by phone to discuss why the scope and reach of the highly successful SOFIA Airborne Ambassador's program has been reduced from National to local. The SUG feels that this change severely devalues the program and its effectiveness toward bringing current NASA science into the class room.

We thank the Project for clear concise presentations and appreciate the effort that went into producing them.

Sincerely,



Matt Greenhouse
Chair: SOFIA Science Users Group