

2022 June 2

To: Dr. Margaret Meixner, Director SOFIA Science Mission Operations  
Re: SOFIA Science Users Group (SUG) Meeting #20 – Report

The SOFIA Science Users Group (SUG) held its 20th meeting virtually on Tuesday, May 24, 2022. The primary discussion topics between SUG members and members of the SOFIA Science Mission Operations (SMO), led by Drs. Margaret Meixner (SMO Director), Bernhard Schulz (SMO Co-Director), Naseem Rangwala (SOFIA Project Scientist), William Reach (Associate SMO Director), and several other members of the SMO, are captured in the meeting agenda.

The SUG appreciates that the SMO made presentations, and other materials available to the SUG members prior to the meeting. This report, the agenda, and additional charts and documents presented at the SUG meeting will be available at: <https://www.sofia.usra.edu/science/sofia-overview/advisory-groups/sofia-users-group-sug>.

- The SUG acknowledges that this meeting took place at a time of considerable uncertainty and significant changes for the SOFIA project and the SMO. This has resulted in adjustments of priorities and focus of activities at the SMO. The SUG applauds the work the SMO has done in view of this situation, and how it diligently works to maximize the scientific output of Cycle 9, ensures that SOFIA’s scientific legacy is secured, and that documentation and user support material are preserved for current and future users.

Below are highlights and recommendations based on the SMO staff presentations and conversations, which were consensus items derived from the SUG’s impressions and discussions. These are not necessarily in rank order, but thematically grouped. We have itemized each highlight for clarity and to enable specific reference to recommendations and actions in future discussions.

### **[SUG20 – 1] Scientific Activity**

The SUG applauds the SMO for its activities over the last several cycles that have resulted in significant increase in scientific productivity, both in volume as well as in scientific breadth and value. The SUG sees this as a result of diligent work by the SMO leadership, and the whole project. The SUG is impressed by the fact that the number of SOFIA publications per hour-on-the-sky now equals that of notable space missions such as *Herschel*.

### **[SUG20 – 2] SOFIA Close-Out Plans**

The SUG was informed about the current ramp-down, and close-out plan, and acknowledges that these activities are still under development.

The SUG expressed disappointment with the fact that the NASA Senior review of the SOFIA project never came to fruition. The SUG believes that many of the goals and priorities outlined in the *Decadal Survey's goals for the next decade* are encompassed within the current SOFIA science activities. The SUG is concerned that without the SOFIA observatory there will be a decade-long hiatus in our ability to access far-infrared wavelengths, leaving an unfortunate gap in the wavelength coverages provided by the *James Webb Space Telescope* and the Atacama Large Millimeter/Submillimeter Array (ALMA).

The SUG expressed serious concern that the ramp-down and close-out plan is implemented in an abrupt manner, and on a very short timescale, with obvious risks for securing the scientific legacy of SOFIA. While the SMO presented a good plan for the close-out, the SUG is concerned that attrition of key personnel during the close-out phase could make it difficult to fully implement the planned activities.

### **[SUG20 – 3] SOFIA Close-Out Activities**

The SUG recommends/endorse the following close-out activities

- Maximize Legacy Program completion, even to the point where it drives the flight instrument selection. The SUG realizes that this can only be done within the bounds of personnel availability and work-hour limitations.
- The SUG recommends that the legacy teams are given the opportunity to optimize their programs in order to maximize the scientific return of remaining flights, as long as this is compatible with existing or planned flight plans.
- The SUG endorses the effort to finish on-going general programs over starting new ones, even if their scientific ranking would dictate otherwise.
- The SUG expressed strong support for reprocessing all archival data sets using the new and improved pipelines.

- The SUG is pleased to see the plans for archiving SOFIA data with IRSA, but expressed concern regarding the long-term hosting of supporting documentation. This includes pipelines, Jupyter notebooks, and SOFIA tutorials. The SUG would like to see a NASA commitment to long-term preservation of these resources, possibly in connection with IRSA. Ownership of the supporting material needs to be defined.
- The SUG suggests that the SMO ensures that documentation for shared-risk observing modes is made available for archived data, possibly by engaging external groups that have analyzed such data sets.

#### **[SUG20 – 4] Call for Archival Proposal #4**

The SUG is positive about a fourth Call for Archival Proposals by the end of 2022, for short term archive proposals, and suggests that a funding model for this activity be defined together with USRA. The SUG believes that given the increased interest for archival SOFIA data, a fourth SARP would lead to an optimized utilization of SOFIA data, and prefers this to moving the SARP to ADAP while the project is technically still active.

The SUG discussed the relative merits of a fourth Call for Archive Proposals and the reprocessing of archival data with the latest pipelines. If this would become a matter of personnel resources, the SUG recommends that highest priority is given to the reprocessing of archival data.

#### **[SUG20 – 5] CYCLE 10 Call for Proposals**

The SUG is pleased to hear that the scientific quality of the Cycle 10 proposals was the highest in any previous SOFIA proposal cycle. The SUG feels that this cycle should be executed, especially since a call for proposal went out to the community, the response was good, and proposers spent a significant amount of time and effort to submit high quality proposals. The proposal review process finished, and a tentative observing plan has been constructed. The science community deserves a fair chance of seeing the results of their efforts.

The SUG recommends that the comments, but not the ranking, be communicated to the PIs of the Cycle 10 proposals. This is not urgent and can wait until later in the year or early in 2023, preferably before the upcoming the JWST proposal deadline.

#### **[SUG20 – 6] SOUTHERN HEMISPHERE DEPLOYMENTS**

The SUG was pleased with the results from the SOFIA deployment to Santiago, Chile, and believes that this mode of suitcase deployments leads to an improved efficiency, use of instruments as well as personnel, and increases the scientific impact of SOFIA. The SUG was also pleased with the media attention, and engagement of the local astronomy community, which

is positive for growing the user community.

### **[SUG20 – 7] COLLABORATIVE EFFORTS**


The SUG is pleased that joint proposals are being offered; currently GBT and NASA's IRTF. The SUG finds it very positive that there were plans for including ALMA, JCMT and, possibly, JWST. The SUG appreciates the synergy with such proposals as several of these instruments, observing at complimentary wavelengths, have angular resolutions well matched to that of SOFIA.

### **[SUG20 – 8] OUTREACH ACTIVITIES**

The SUG is happy to see the increased community engagement activities. This has resulted in an enhanced visibility of SOFIA, its scientific results, and increased the user community. The last two years have seen an impressive number of events; scientific meetings, science presentations, tutorials, technical talks, etc. The SUG strongly suggests that all online material currently accessible through the SMO webpages is preserved, and remains available for the user community (see [SUG20-3]).

The SUG fully endorses the plans for a SOFIA conference during 2023.

Respectfully,

A handwritten signature in black ink, reading "Tommy Wiklind". The signature is written in a cursive style with a large, sweeping initial "T" and a long, trailing flourish at the end.

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