

Summary of Experiences from Early Science

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The Role of User Support

- Provide support to astronomers using, or interested in using SOFIA.
- Serve as the communications interface between the astronomy community and Science Mission Operations for relevant issues.

Routine and necessary tasks -

- pro-actively provide information to the astronomy community.
- respond to their questions.
- maintain webpages and prepare necessary documentation.
- > need to be aware of the policies governing SOFIA operations.
- > need to understand technical details about the telescope, the instruments and the observatory.

Early Science Components

Short Science 1, using FORCAST: December 2010

Short Science 2, using GREAT: April 2011

Basic Science*, using FORCAST: May--June, 2011

Basic Science*, using GREAT: July, September, November, 2011

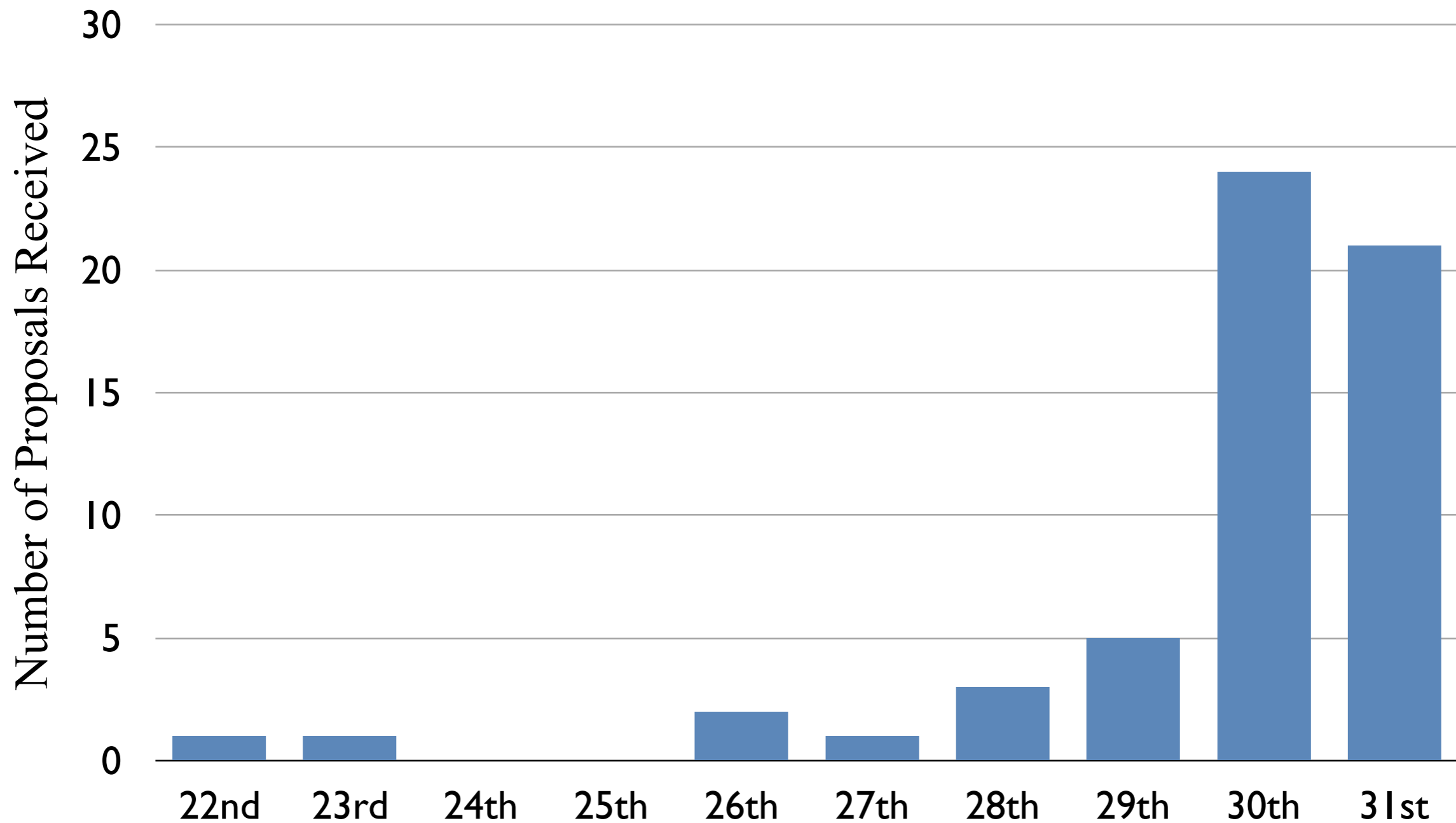
*the FORCAST flights included US Basic Science and German Demonstration Time observations.

The GREAT flights included US Basic Science, German Demonstration Time and German Consortium observations.

Basic Science, US Call: Timeline

- March 1 2010: Observers Handbook and other supporting material made available.
- April 19 2010: Call for Proposals released.
Cycle opened; DCS allows ingest of proposals.
- July 30 2010: Proposal deadline, 11:59 pm PDT; DCS closes cycle July 31 morning.
- Aug. 2010 - Feb. 2011: Proposals sorted, technical reviews, peer review panel meeting, selection of successful proposals, “phase 2” activities, finalizing flight plans.
- May 2011: **Basic Science Observations start.**

Basic Science: Proposal Submission Times

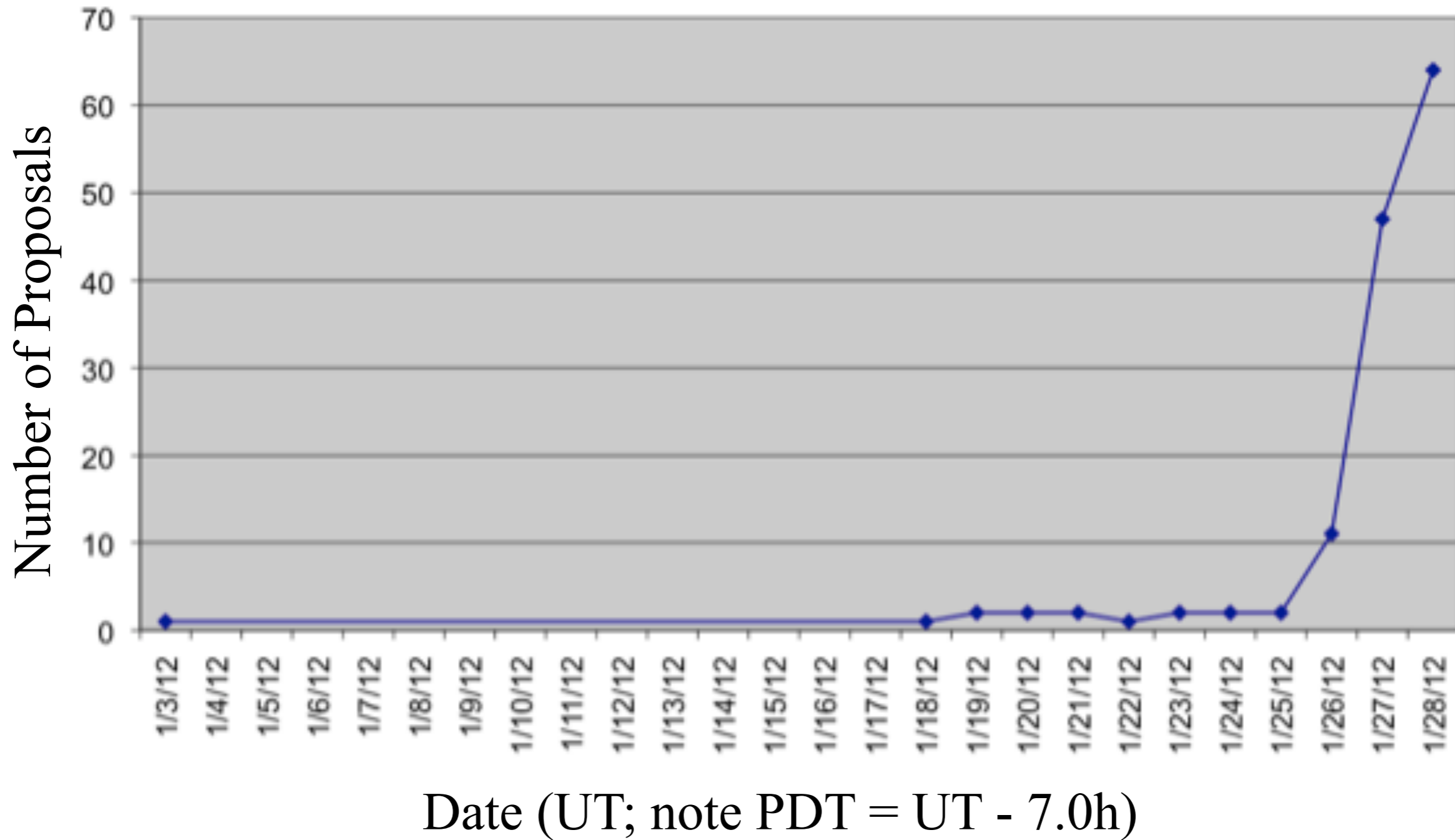


Date, July 2010, UT (note: PDT = UT - 7.0 hrs)

Basic Science: Help-desk

- The help-desk email address was used to direct questions to a “Request Tracker”. The responders were R. Sankrit and B-G Andersson.
- 58 tickets were created between the CfP release and the deadline; 34 in the last 5 days.
- 43 distinct issues - *technical: 13, procedural: 16, relating to DCS tools: 14*
- User support acknowledged receipt of query usually within half an hour.
- Answers were often contained in the response, or issues were resolved on the same day. **All issues were resolved before the deadline.**
- Based on the questions, information was added to web pages and/or to the FAQ. A separate Basic Science FAQ was maintained.
- Several users helped us test our systems, as part of the follow up to their queries.
- One major problem: a proposal was “lost” within the DCS system, and had to be reviewed separately. This was fixed soon after and was not an issue for Cycle 1.

Cycle 1: Proposal Submission Times



Cycle 1: Help-desk

- The help-desk email address was used to direct questions to a “Request Tracker”. The responders were R. Sankrit, A. Helton and B-G. Andersson.
- 110 tickets were created between the CfP release and the deadline; 90 after the AAS Meeting (Jan. 13, 2012); 70 in the last week.
- About 70 distinct issues - the distribution among *technical*, *procedural* and *relating to DCS tools* was approximately 1/3 each.
- User support acknowledged receipt of query within a few business-hours.
- **All issues (from the Users point of view) were resolved before the deadline.**
- No FAQ generated for Cycle 1; websites and the Observers Handbook were updated. We will now start populating the main FAQ.
- The systems were working well and user questions revealed relatively minor issues and glitches, except for two: non-ascii characters and GREAT overheads.

Several help-desk questions about non-ascii characters were pre-empted by SMO staff monitoring error-message emails and contacting the proposers.

GREAT overhead issues were fixed in software after the deadline. For Cycle 1 proposals, we will provide consistent values as part of the Technical Review process.

Flying on SOFIA

The PIs of successful Basic Science proposals were asked whether they would like to fly on SOFIA. Almost everyone replied in the affirmative.

One GI was invited to fly on each Basic Science Flight.

GIs had to complete “egress training” before flying. There were limited training sessions offered, and training was not allowed on the day of flight. Therefore GIs had to stay at least one night in Palmdale in addition to the night of the flight.

All observations were obtained in queue mode; there are very few options for changing observing parameters.

Quick reduction of data were carried out on-board, and GIs could get an idea of what was obtained.

(Anecdotal) Some GIs were present in the “Observing Area” on SOFIA only while their observations were being obtained, while others were there for most of the flight.

GIs from Germany flew on the German Demonstration Time science flights.

SOFIA Data - Basic Science

Three levels of data: raw (level 1), reduced (level 2) and flux-calibrated (level 3).

GREAT data reduction was done by the Instrument Team, and provided to GIs. Several papers based on GREAT Short Science and Basic Science data have been submitted to refereed journals for publication.

FORCAST data reduction was done by the SMO staff. Thus, several aspects of the procedure expected to be in place in future cycles were tested during Basic Science

The data reduction and calibration process required intensive manual intervention.

Level 2 data were available in late August, 2011.

Level 3 data were produced in November and December 2011. The documentation was prepared early 2012. This was sent to Basic Science GIs in February 2012.

Several papers based on FORCAST Short Science data have been submitted to refereed journals. Basic Science data are at the point where GIs can analyze and interpret them with a view to publishing the results.

All levels of FORCAST data were archived by DCS and made available to GIs via this archive. (In contrast, only GREAT raw data have been archived as required.)

The proprietary period for the calibrated data is linked to acceptance of publication in a refereed journal, as outlined in the Basic Science Data Rights Agreement.

Post-Observation Activities

SOFIA Workshop

A workshop was organized by the SOFIA Science Center and held at NASA Ames on November 7, 8, 2011. Intended to be of interest both to Basic Science GIs and to potential new SOFIA users, the goal of the workshop was to provide a forum for members of the astronomy community to interact with SOFIA Science Center staff, and learn about the details of SOFIA observations and data. About 40 people attended the workshop. The agenda and presentations are posted on the Workshop website.

http://www.sofia.usra.edu/Science/workshops/SOFIA_Workshop_2011/

AAS Special Session

A SOFIA Special Session, “Early Science Results from the SOFIA Observatory” (#116) was organized at the 219th meeting of the American Astronomical Society (January 2012, Austin, Texas). The presentations included results from Short Science and Basic Science with FORCAST and GREAT. We estimated that the audience numbered between 100 and 200. Most of the presentations may be found on the SOFIA website,

<http://www.sofia.usra.edu/Science/workshops/>