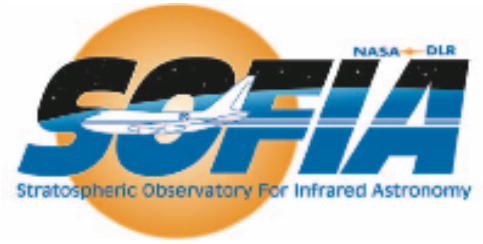

Data Rights and Usage Agreement for the SOFIA Basic Science Phase

USRA-DAL-SSMOC-SCOP-TN-2510

Date: March 4, 2010
Revision: -

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REVISION HISTORY

REV	DATE	DESCRIPTION
Draft	080728	Initial release
-	080801	Includes Tom Roellig's comments
	090626	Added org. for "Phase 2" generation
	090926	Includes Erick Young's changes and Rolf Güsten and Alois Himmes comments dated 0800924
	091127	Comments by Rolf Güsten on behalf of the GSSWG
	091221	Incorporated Comments from Rolf Güsten and Terry Herter
	100201	Incorporated additional comments from Rolf Güsten following the GSSWG meeting.
	100301	Incorporated additional comments from Pam Marcum, Rolf Güsten, and Alois Himmes
	100304	

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1. PREAMBLE

This document represents an agreement between USRA and DSI (under contract with NASA and DLR, respectively) and the Science Instrument (SI) teams at Cornell University and the Max-Planck Institut für Radioastronomie, Bonn, for the SOFIA science instruments FORCAST and GREAT, respectively, regarding the acquisition, use and rights to the data acquired during the Basic Science phase of Early Science.

2. BACKGROUND

The Basic Science observations will be undertaken as a collaborative effort between selected science proposers from the astronomical community, the Science Instrument teams and the SOFIA Science Mission Operations (SMO) organization. Based on the yet limited operational capabilities of SOFIA and the technical readiness of instruments, FORCAST and GREAT have been selected for a total of 15 Basic Science Flights. The US led part (12 flights) of the observations will be selected through a peer review competition, open to researchers from all US and non-German international institutions. The German portion of Basic Science (3 flights) will be allocated according to a process determined by DLR. Due to the early stages of the observatory and instrument characterization, the active participation in the preparation, data acquisition, reduction, and analysis by the Science Instrument teams will be essential. GREAT as a PI-class instrument will be operated by the PI team for all observations using GREAT, including those of US-led Guest Investigator observations. Basic Science is intended to demonstrate to the astronomical community, various stakeholders, agencies and the general public that SOFIA is ready to perform initial scientific observations and is capable of supporting future large coordinated observing programs, consistent with the constrained observing conditions expected during this early period. The goal is to acquire observations that will result in refereed publications.

3. US PROPOSAL SOLICITATION AND SELECTION

The US-led part of the observations to be performed in Basic Science will be selected though a peer reviewed call for proposals open to all qualified researchers, including the US based Science Instrument team members, but excluding SMO staff involved in the solicitation development and proposal selection. Both FORCAST and GREAT may be proposed for use in Basic Science. The Call for Proposals will be tied to progress in the development of the SOFIA facility, and it is expected that the Call will not be released until successful open door flights have been demonstrated. The GREAT instrument philosophy allows for continuous upgrades and evolution. The configuration offered and maintained for the US-led part of Basic Science will be defined by the GREAT PI in time for the US Call for Proposals.

The US-proposal selection will be made through a peer review process organized and led by the SMO Director. The make-up of the peer review is at the discretion of the SMO Director. There will be no *ex officio* members from the SI teams on the peer review panel. The selecting official will be the SOFIA Science Mission Operations Director

At the discretion of the SMO Director, an appropriate over-subscription of the available flight times may be accepted via the peer review process with an associated prioritization, which will allow for contingencies in flight planning including schedule delays. The implementation of the prioritization and target selection shall be approved by the SMO Director.

The SMO organization will generally be responsible for assessing the technical feasibility of the proposed investigations. In special cases, SMO may consult with the SI PI who will provide a written technical feasibility review to the SMO Director in time for the peer review process. The SMO Director will provide the submitted reviews to the peer review panels.

Due to uncertainties in the schedule of the observatory commissioning and because the Basic Science proposals solicitation will take place before any detailed in-flight characterization of the observatory, the solicitation will note, and request responses to, observing contingencies, including schedule slips (target availability), instrument sensitivities, image quality etc. The solicitation and proposal selection will take the proposed response to such contingencies into account and the selected proposal team(s) will be asked and allowed to modify their programs according to any actual contingency, with the concurrence of the SMO Director.

4. SOFIA BASIC SCIENCE TEAMS

The Basic Science Teams will consist of the selected General Investigator (GI) team(s), augmented by the affected Science Instrument (SI) PI(s), designated as program Co-Investigator. Additional Science Instrument team members may be added to each selected proposal team to participate in the scientific investigation based on negotiations between the lead GI and the SI PI(s). If needed, binding arbitration regarding such additional team members will be performed by the SMO Director. The SI PI may also designate essential personnel to operate the instrument.

5. OBSERVING TIME AND RESERVED OBSERVATIONS

Basic Science observations will nominally be performed over a three-month period, consisting of flights for instrument check out and calibration and up to 15 flights for the Basic Science projects.

Each of the FORCAST and GREAT teams will be invited to submit a list of Reserved Observations, which will be excluded from GI Basic Science. The SMO Director will review the submitted Reserved Observations to confirm that they conform to the guidelines set within this document. The General Investigator Basic Science teams shall not do any Reserved Observations unless agreed to by the Instrument PIs.

A Reserved Observation shall consist of the combination of position on the sky, instrument observing mode, and length of observation. “Instrument observing mode” encompasses the basic scientific intent of the observation by specifying, for example, the filter for FORCAST or the frequency of observation for GREAT. The full set of Reserved Observations submitted by a

team shall not exceed the total of their Guaranteed Time times a factor to account for uncertainties in instrument performance. This performance factor shall be specified by the SMO Director and is nominally a factor of 1.5.

The Reserved Observation List will be independent between the two instruments. The initial Reserved Observation List will only apply to Basic Science, and the Instrument PIs will have the opportunity to revise the Reserved Observation List prior to subsequent proposal calls.

Flight science time for Basic Science will not be counted as part of the commissioning or Guaranteed Time, even if a selected Basic Science team is led by a member of one of the Science Instrument teams.

6. OBSERVATION PLANNING

The detailed planning of the observations will be performed by the SOFIA staff with inputs from the Proposal and Instrument PIs. SOFIA Science Operations (through the Instrument Scientist) will lead the detailed planning of the observations with inputs from the SI and GI teams, as required. Based on the accepted proposals, inputs from the GI and SI PI teams and calibration requirements, the Instrument Scientists will, together with the SOFIA Mission Operation group, generate the flight plans. The Basic Science observation plan will be approved by the SMO Director who will have the authority to make modifications, deletions and additions of observations to optimize the Basic Science program.

7. CALIBRATION

Calibration of the Basic Science observations will be performed as an observatory level activity. Time will be set aside before observing time is allocated for calibration observations with an aim to produce 20% accuracy flux calibration, or better. For proposals with special calibration requirements, the time for calibration must be explicitly requested in the proposal. The observing time for such observations will be charged to the proposal and implemented – if recommended by the peer review - on a best effort basis.

The observatory will provide a set of flux calibrators. Implementation of the calibration plan/strategy during Basic Science will be the joint responsibility of the Instrument Scientist and the Instrument PI during flight planning.

8. OBSERVATIONS

Observations will be performed by the Science Instrument teams with support from the SOFIA project and GIs. The detailed science crew complement on the aircraft depends on allowances by the DFRC platform project, but it is expected that a single on-board position will be available for the GI team during Basic Science. At the discretion of the SI PI and the SMO Director, additional GI team members may assume roles of the SI team during Basic Science flights and hence replace SI team members in the flight operations.

9. DATA RIGHTS, ARCHIVING AND PROPRIETARY PERIODS

All scientifically meaningful raw data obtained during the Basic Science phase shall be made available to the Observatory in standard FITS format, with header information and appropriate FITS keywords conforming to the SOFIA FITS keyword dictionary. This delivery does not include documentation or analysis tools. The lead GI and SI PI(s) shall jointly notify the SMO Director of which data sets are to be labeled to be "not scientifically meaningful", as soon as possible after each flight, but no later than one month after the flight.

These validated data will be accessible to the general community after a proprietary period of six months after ingestion. The data release will make clear the limitation on community support by the SI teams during the Early Science period. Specifically, that there will be no guaranteed SI team support for the analysis of the Basic Science data released through the SOFIA archive.

Any reduced and calibrated data products shall be delivered to the SOFIA Archive and will be made available to the community three months after Archive ingestion. Ingestion shall be initiated at the time of acceptance of the first publication that is based on these data,

Approval to deviate from these archiving requirements may be granted by the SMO Director in unusual circumstances.

10. PUBLICATIONS, PRESS RELEASES AND PRESENTATIONAL MATERIAL

Press releases associated with SOFIA observations during Basic Science may be released by the PI team institutions, NASA and the DLR.. The investigation PI will be responsible for the scientific content of the releases, in concurrence with the instrument PI. The SOFIA Science Center E&PO officer and his or her DSI E&PO counterpart will coordinate the press release process, and they will be responsible for establishing the protocol to ensure the coordination of the timing of press releases with the various NASA and DLR public affairs entities.

Other presentation material based on the validated Basic Science observations can be generated by any member of the Basic Science Team and will be considered part of the Team's collective set of material. Any member of the Team may use these materials for the purpose of demonstrating SOFIA's readiness (e.g., in public science talks or conference proceedings) with the approval of the Science PI.