



Cycle 1 Call for Proposals

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Summary of Key Facts

- Cycle 1 will be open to world astronomical community
 - USRA will be issuing the call for all but the German community
 - DSI will be issuing a coordinated call for scientists at German institutions
- Period offered: July 2012- August 2013 in four observing campaigns
- Approximately 200 hours of time will be offered in the US call and approximately 45 hours will be offered in the German call

Types of Programs Supported

- Regular Programs
 - Targets with known positions
 - Known timing constraints (if any)
- Survey Programs
 - Like “snapshot” or “filler” programs on other observatories
- Target of Opportunity

Survey Program

- intended to allow studies of a target class
- provides the SOFIA project flexibility in flight planning.
- programs should identify a sample of targets and observations with a common scientific justification. The selection of survey proposals will be primarily judged on scientific merit, but samples with uniform sky distributions will be prioritized as they provide the best flexibility in flight planning.
- The intent is that a substantial fraction of the targets in a given survey program will be observed, but with no given target observation guaranteed to be executed. The proposal should discuss and justify a minimally useful fraction of completion.

Targets of Opportunity

- Two types:
 - programs with known targets, but unknown timing of the observations, such as observations of a specific target at an unknown time (e.g. an identified recurrent nova in outburst)
 - programs targeting a class of astronomical events, but with unknown targets and timings (such as observations of an as yet unidentified comet or supernova etc.)
- proposal must discuss timing constraints, including required turn-around time from triggering to observation
- Since SOFIA can only observe with a single instrument at the time (with the exception of FLIPO), rapid turn-around ToO requests with a specific instrument may be difficult to implement. Proposal must consider all available instruments
- SMO Director will accept or reject requests for ToO activation
- *Observations of specific Solar System targets or events with deterministically predicted timings (e.g. occultations) **do not** constitute ToO observations and should not be flagged as such.*

Review Criteria

1. The overall scientific merit of the proposed investigation.
2. The feasibility of accomplishing the objectives of the investigation given the early stage in the characterization of the observatory and instruments.
3. The degree to which the investigation uses SOFIA's unique capabilities.
4. The competence and relevant experience of the Principal Investigator and any collaborators to carry the investigation to a successful conclusion.

Cycle 1 Instrument Capabilities

- FORCAST
 - Facility Class Infrared Camera
 - Imaging modes fully supported in Facility Instrument Mode 5-40 μm
 - GRISM spectroscopy will be offered with resolutions of typically a few hundred (see SOFIA web site.) on a shared risk basis
- GREAT
 - Principal Investigator Class Spectrometer
 - L1a/b and L2 modes offered
 - Level of collaboration between GO and GREAT determined by mutual agreement after selection
- FLITECAM
 - Facility Class Instrument
 - Imaging modes will be fully supported after commissioning
 - GRISM spectroscopy ($R \sim 2000$) offered as shared risk
- HIPO/ FLIPO
 - Special purpose instrument
 - Requires collaboration with instrument PI

Moving Targets

- Successful guiding on the moving target requires it be bright at visible wavelengths, with a red (R-band) magnitude less than 10, which have a non-sidereal angular speed of $1''/s$ or less.
- The minimum acceptable solar elongation for a target is limited by the lower elevation limit of the telescope and the rule that we do not observe until after sunset. For Cycle 1, the minimum solar elongation is 25 degrees.
- Identification of solar system targets will be done manually by the Telescope Operator by inspecting images obtained with the guide cameras. The ephemerides of the proposed target must be accurate enough to allow for unambiguous identification: better than $30''$
- For moving objects fainter than 10th magnitude, it will be possible on a *shared risk* basis to utilize the fast diagnostic camera viewing the primary mirror as a guider camera. This mode has not yet been tested and requires a custom installation, so only a limited number of such observations will be performed. With this camera a sources brighter than 15th magnitude should be usable for guiding.

Guaranteed Time and Duplications

- The Science Instrument development teams have been granted guaranteed time, to perform investigations with their own instruments
- During Cycle 1, FORCAST, FORCAST-grism, GREAT, FLITECAM, HIPO, and FLIPO(=FLITECAM+HIPO) have guaranteed time allocations
- Allocations are for 2 years after delivery, but we are allocating them $\frac{1}{2}$ or less of their time during Cycle 1
- Reserved Observation Catalogs are part of the Call for Proposals; they include up to the entire GTO allocation (not just their Cycle 1 plans)
- Duplications must be identified and explained; need at minimum twice the signal-to-noise of the ROC entry

SOFIA Aids to Astronomical Productivity

- < see presentation by Ralph Shuping >
- Phase 1: proposal submission
 - SPT = SOFIA Proposal Tool
 - SITE = SOFIA Integration Time Estimator
 - VT = Visibility Tool
 - ATRAN – Atmospheric transmission predictor
 - PLEASE USE THIS AND LEARN ABOUT ATMOSPHERE ABOVE 43,000 FEET; WE ARE NOT IN SPACE
- Phase 2: detailed observing parameters
 - S-SPOT – Observation planning tool

Input Parameters

Give the **Observatory Altitude** (in feet; < 60000 ft):

Choose the closest value of the **Observatory Latitude**:

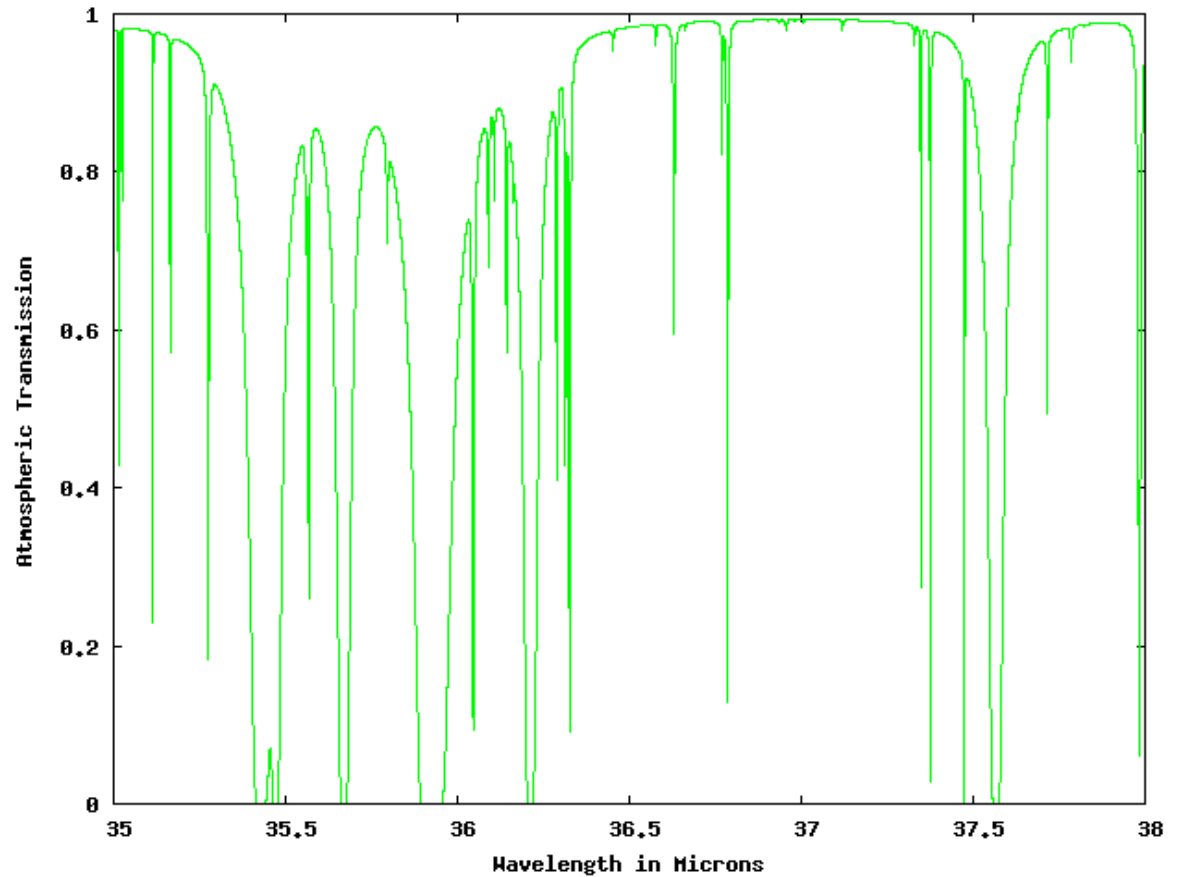
Give the desired **Water Vapor Overburden** (in microns; 0 if unknown):

Choose the **Number of Atmospheric Layers** (usually 2):

Give the **Zenith Angle** of Observations (between 0 and 90 deg):

Give the desired **Wavelength Range** (min and max in microns; min > 0.85):

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Funding

- Budget has been set aside for US Guest Investigators to support their data analysis
 - Approximately \$3 K / hour will be available
 - Separate budget proposal submitted in Phase 2
- Available to US PIs and to US CO-Is on foreign-led proposals

Participation on Observing Flights

- SOFIA GIs are encouraged to participate in the on-board observations
- Queue-scheduled, so observations from many different programs are usually executed on any given flight; therefore,
 1. Only a limited number of observations in the GIs program are likely to be executed on any given flight.
 2. the ability to interactively modify a program is limited to the specific observation, within its allocated flight leg. No changing targets. Using settings (e.g. filters) not originally awarded to the current program will generally not be allowed.
 3. the number of "Astronomer seats" on any given flight is limited. If more GIs request for seats are made, for a given flight, than can be accommodated, the SMO Director will decide which GIs will be invited to fly on each flight.

Education and Public Outreach

- Proposers indicate whether they will participate
- Airborne Astronomy Ambassadors Program call has been released in coordination with the observing call for proposals
 - Guest Investigators will have the opportunity to host AAA educators as part of their observing program
 - <http://www.sofia.usra.edu/Edu/programs/ambassadors/ambassadors.html>

Cycle 1 Schedule

- Release Date for Call for Proposals 14 November 2011
- Update of CFP 12 December 2011
- Proposals Due 27 January 2012
- Selections Announced 9 March 2012

- Cycle 1 Observations Begin ~July 2012