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Data Released for SOFIA's First Completed Legacy Program

The Level 3 data of individual fields for the first completed SOFIA Legacy Program have been released into the observatory's data archive. The inaugural SOFIA Legacy Program employed the Faint Object infraRed CAmera for the SOFIA Telescope (FORCAST) to observe the Galactic Center using the 25-micron and 37-micron bands, resulting in data with an unprecedented spatial resolution – six times higher than past observations.

SOFIA Legacy Programs enable research targeting a rich archival dataset of significant scientific value for future analysis. These programs span up to two cycles of observations and are designed to enable community involvement in high-impact science by immediately releasing fully reduced observational data for public use with no proprietary period.

The Level 4 data product containing the fully processed mosaic of the region, including data from past SOFIA observations, is currently in development and will be released to the public upon completion. The SLP proposal was:

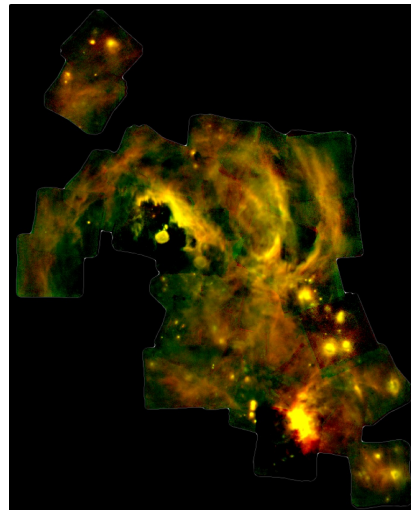
Constraining Recent Star Formation in the Galactic Center

PI: Matthew Hankins, Caltech

Proposal ID 07_0189

[Read the abstract here.](#)

The Galactic Center presents the most extreme conditions for star formation, containing more than 80 percent of the Milky Way Galaxy's dense molecular gas, high temperatures, significant turbulence, complex magnetic fields, and a strong gravitational



Sample illustration of a portion the Galactic Center Legacy mosaic before processing. This representation contains 23 of the 33 FORCAST Legacy fields observed including an additional six fields taken from previous archival data. These individual fields are fully processed and available in the SOFIA archive. The fully processed mosaic combining all relevant fields is currently being processed and will be released upon completion. [Click here to see full-size image.](#)

potential well. Despite the large amount of dense gas, observations reveal that the rate of star formation is only 0.1 solar masses per year out of the 1.2 solar masses per year produced by the entire galaxy – 10 times less than predictions by current theoretical models.

FORCAST excels at producing images and spectroscopic data from infrared-bright areas, and this program has provided a high-quality mosaic of the Galactic Center region. These infrared maps will greatly aid in the creation of a census of massive young stellar objects, thereby updating constraints for the star formation rate in the Galactic Center and improving star formation models for this region.

How to Use This Data

Step 1: Get the data.

[Register for a SOFIA DCS account](#) if you do not yet have one, then navigate to the [SOFIA Science Archive](#) to download the data. Detailed instructions for gathering and navigating SOFIA data are available [here](#).

Step 2: Use the cookbook recipe to explore the data.

[FORCAST Photometry](#)

Performing aperture photometry using flux calibrated FORCAST images accessed through Flexible Image Transport System (FITS) files.

Step 3: Contact the Help-Desk for any assistance.

The [Help-Desk](#) is available for questions regarding all stages of using SOFIA data, from downloading the data to analysis.

SOFIA Science Newsletter Honored

The [January 2019 issue](#) of *SOFIA Science*, the printed newsletter showcasing the observatory's science results, was honored with an "Award of Excellence" by APEX Awards for Publication Excellence. *SOFIA Science* was chosen out of almost 100 entries in the newsletter category.

The APEX Awards for Publication Excellence is an annual competition for corporate and nonprofit publishers, editors, writers, and designers who create print, web, electronic, and social media. APEX Awards are "based on excellence in graphic design, editorial content and the ability to achieve overall communications excellence."



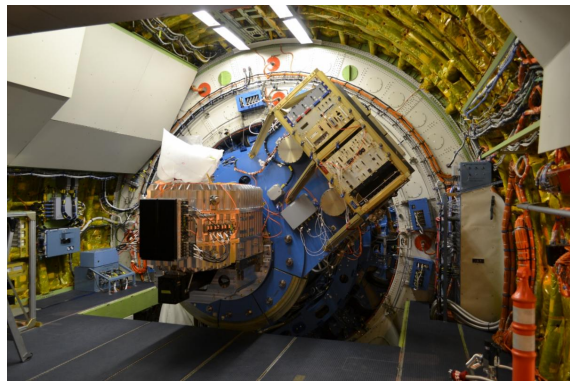
View the [SOFIA Science newsletter archive and subscribe here](#).

Calls for Proposals Results

SOFIA's Calls for Proposals for Cycle 8 were issued on May 31 and received until September 6. During this time, the observatory received 243 proposals, including nine Legacy proposals, five Archival Research proposals, and 20 thesis-enabling proposals. The proposals span a broad range of topics, including the solar system, stars, star formation, interstellar medium, circumstellar medium, and extragalactic observations. The Time Allocation Committee, an external panel of researchers, met in mid-October to review the proposal submissions and provide insight on the most feasible and valuable proposals to the astronomy community, to aid in the selection process. The selection announcement will occur in December 2019, and Cycle 8 will officially begin on April 25, 2020.

FIFI-LS Flash Call Results

On September 18, 2019, SOFIA issued a Flash Call for FIFI-LS proposals to fill flight legs on currently scheduled flights. Utilizing Director's Discretionary Time (DDT), the observatory is able to accept proposals at any time during an observing cycle to accommodate observations of newly discovered phenomena, time-critical requests, or (as in this case) optimize planned science flights. The Flash Call solicited proposals for targets in a specific piece of sky, between RA 21–00 hours and north of Dec +20.



FIFI-LS instrument. Credit: NASA/SOFIA/USRA/Greg Perryman

Within three days, the observatory received 21 proposal submissions in response to the Flash Call. Of the 21, four have been selected for integration into the current flight plans for the upcoming Fall series, with an additional three proposals accepted and anticipated to be added into the following flight series. The accepted proposals span an exciting and diverse variety of science, including accretion bursts in massive star forming regions (Jochen Eislöffel, Thüringer Landessternwarte Tautenburg; [75_0043](#)), mapping a nearby galaxy as an analogue to the Milky Way (Dario Fadda, SOFIA Science Center; [75_0045](#)), maps of the physical parameters of photodissociation regions (Randolf Klein, SOFIA Science Center; [75_0046](#)), and effects of different environments on stellar outflows (Elaine Winston, Center for Astrophysics, Harvard Smithsonian; [75_0047](#)).

Unlike with normal SOFIA proposals, data from DDT proposals are not subject to a proprietary period and are available immediately for use by the community. View [currently available DDT data here](#) and [information on how to download and analyze the data here](#).

We're Hiring!

SOFIA has three to four postdoctoral positions available with funding (two-year term), with a possible third-year extension contingent on performance and funding. Post-docs will have the opportunity to work on topics such as the birth of stars and planets, origins of life, physics of the distant universe, and evolution of planetary systems. Funding is available for travel to conferences, visiting collaborators, equipment, and publications.

[Read the complete position summary and apply here.](#)

[More SOFIA openings can be found here.](#)

Upcoming Tele-Talks

SOFIA Tele-Talks are scientific presentations given via phone, with slides distributed ahead of time. The talks are targeted broadly towards members of the astronomy community who are interested in SOFIA science and in the current and potential scientific capabilities of the observatory. The talks are organized by Dan Lester (Exinetics) and held approximately twice a month on Wednesdays at 9:00am Pacific, noon Eastern.

For information on how to participate in the Tele-Talks, please check the [SOFIA Tele-](#)

The next Tele-Talks are:

- November 6: Enrique Lopez-Rodriguez (SOFIA Science Center); FIR polarimetry of NGC1068
- November 20: Irina Smirnova-Pinchukova (MPIfA); [CII] in AGNs
- December 4: Matt Greenhouse; HIRMES status and schedule update
- December 11: Klaus Pontoppidan; HIRMES science -- protoplanetary disks
- January 15, 2020: Stefanie Milam; HIRMES science -- comets
- January 29, 2020: Gordon Bjoraker; HIRMES science -- planetary deuterium
- February 5, 2020: Christine Chen; HIRMES science -- debris disks
- February 12, 2020: Dan Watson; HIRMES science -- outflows
- March 4, 2020: Pedro Salas; Carbon lines towards Orion A

The SOFIA Instrument Suite

The Stratospheric Observatory for Infrared Astronomy (SOFIA) features an airborne platform hosting the following instrument suite available for use by the community of astronomers worldwide:

EXES: Echelon-Cross- Echelle Spectrograph ($4.5 - 28.3 \mu\text{m}$)

FIFI-LS: Far Infrared Field-Imaging Line Spectrometer ($51 - 200 \mu\text{m}$)

FORCAST: Faint Object infraRED CAmera for the SOFIA Telescope ($5 - 40 \mu\text{m}$)

FPI+: Focal Plane Imager Plus ($0.36 - 1.1 \mu\text{m}$)

GREAT: German REceiver for Astronomy at Terahertz Frequencies ($0.490 - 4.747 \text{ THz}$)

HAWC+: High-resolution Airborne Wideband Camera Plus ($50 - 240 \mu\text{m}$)

HIRMES: High Resolution Mid-infrared Spectrometer ($25 - 122 \mu\text{m}$) (under construction)

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Please feel free to direct questions and comments to the
SOFIA Science Center Help-Desk: sofia_help@sofia.usra.edu.

