

# SOFIA

## Science Newsletter



June 2020

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### New Zealand Deployment Update

For many years, SOFIA has deployed the observatory to Christchurch, NZ, during the northern summer in order to take advantage of its excellent observing conditions and its access to important Southern Hemisphere astronomical targets, especially the Inner Galaxy and the Magellanic Clouds. After an extensive planning effort and a lot of careful consideration of the risk to staff and the scientific program, the observatory leadership has concluded that a Southern deployment in 2020 is not feasible and cannot occur. Many issues, such as international travel of a multi-national team and strict quarantine restrictions, proved to be too difficult to overcome without incurring unacceptable risk to achieving our scientific objectives. This was a difficult decision, and we did not make it lightly. We will be reviewing the affected programs and the possibility of conducting them in future Southern deployments.

The observatory is planning to return to science flights in Palmdale, California base, in July. Initial flight planning shows that many of the highest priority Cycle 8 scientific programs can indeed be completed from Palmdale through the northern summer and autumn months. Thus, despite the lack of Southern deployment, the observatory can achieve highly-ranked science programs from the north.

The entire observatory team is working hard to implement safe procedures to resume operations. Once the final plans are approved, we will inform the SOFIA community about the status of approved Cycle 8 proposals and the revised observing schedule.

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### June 30, 8:00am - 9:30 am PDT: Building Legacy Proposals Webinar

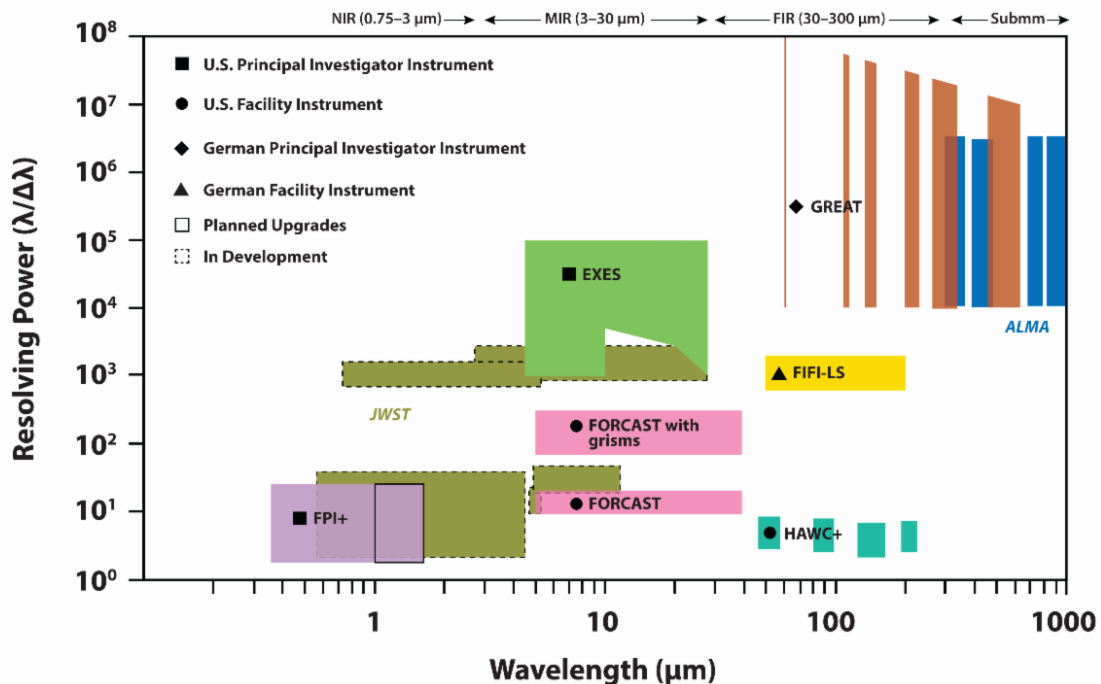
Led by B-G Andersson (SOFIA/USRA), with a talk by Matt Hankins (Caltech), this free webinar is open to anyone in the community. [Legacy observing programs](#) obtain large datasets of significant scientific value. This webinar will introduce details about how to formulate and build strong proposals for legacy projects for the [Cycle 9 Call](#) (deadline September 4, 2020), and discuss opportunities to create proposals with synergies across multiple observatories. Details on scheduling optimization will be discussed, as well as team-building strategies from a current legacy proposal PI. There will be ample time for Q&A and discussion. Please [join us via Webex](#). Phone connection is also possible at +1-415-527-5035 (Access code: 199 809 6449). More information on our [workshops page](#).

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### July 27-29: Building the SOFIA Instrument Roadmap Workshop II

This will be the second workshop this summer to solicit and collect community input to help create a plan and timeline, or a “roadmap,” for SOFIA’s instrument development. It will be held July 27-29. [The first workshop](#), focused on science cases, was held on June 22-24, and was a successful event with more than 200 attendees, vibrant discussions and engaging talks by more than 20 invited speakers. The talks' slides will be available shortly. The outcome of that workshop will be a list of science cases based on the community input.

## The SOFIA Instruments



The workshop in late July will focus on concepts and feasibilities for technology, instrument upgrades, and new instruments, which could address the SOFIA science cases. The workshop format includes invited and contributed talks as well as ample time for discussion. For inquiries about contributing talks, please e-mail B-G Andersson ([bg@sofia.usra.edu](mailto:bg@sofia.usra.edu)). Invited speakers include Chris Packham (UTSA), Judy Pipher (Rochester), Leslie Looney (Illinois), Paul Goldsmith (JPL), Chris Walker (Steward Observatory), Mike Person (MIT). [Registration is now open](#) and [more information can be found here](#).

## Cycle 9 Calls for Proposals Open

SOFIA is inviting proposals for Cycle 9 observations, with a deadline of **September 4, 2020, 21:00 PDT** (September 5, 2020, 4:00 UTC). Detailed information about the Cycle 9 calls can be [found on our website](#).

Two Calls for Proposals are offered:

- A [Call for regular programs](#), for which **approximately 400 hours of observations** will be offered and funding up to \$4M is expected to be available for eligible proposers
- A [Call for the SOFIA Legacy Program](#), which enables programs producing a rich archival dataset of significant scientific value to the astronomical community. Up to four legacy proposals will be accepted, with each **allocated up to ~200 hours of observing time** (~100 hours of observations per cycle). Funding is expected to be available at the level of \$2M per year.

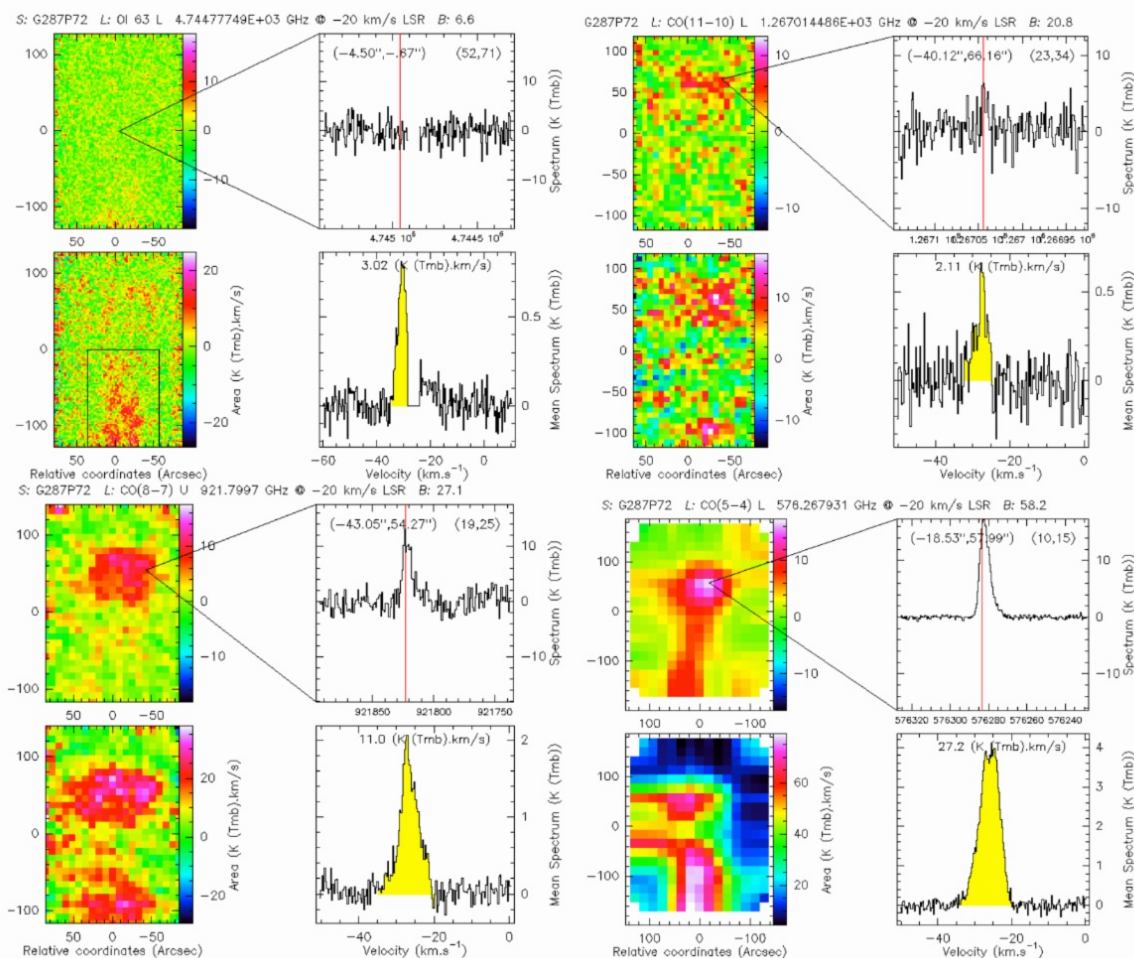
All six instruments -- [EXES](#), [FIFI-LS](#), [FORCAST](#), [FPI+](#), [GREAT](#), and [HAWC+](#) -- will be available during the Cycle. SOFIA plans to offer two Southern deployments: a long

## Featured Public Archival Data: [OI] and CO Maps of Pillars in the Carina Nebula

The Carina Nebula is home to several massive star clusters and more than 65 O stars. The Trumpler 16 cluster, including its famous member eta Carina, is thought to power the winds and radiation responsible for carving out complex structures. Based on the morphology of these structures, this region of the Carina Nebula is known as the South Pillars. Because these pillars are likely formed by the strong winds and radiation of massive stars, they are ideal places to investigate the interaction between this stellar feedback and dense molecular gas

The GREAT instrument was used to make fully-sampled and velocity-resolved maps of three pillars in the southern region of the Carina Nebula, which scientists can use to probe the kinematics, morphology, and physical conditions within these interesting regions. In its 4GREAT/HFA (High Frequency Array) configuration, GREAT simultaneously obtained maps of five transitions ([OI] 3P1->3P2 at 4.7 THz, CO(5-4), CO(8-7), CO (11-10), and CO (22-21)), with an angular resolution varying from ~6" for [OI] to ~50" for CO(6-5).

The data were taken in June 2019 during SOFIA's southern deployment to Christchurch, New Zealand, over ~7.5 hours on 2 flights. The data are provided as a service to the community with no exclusive use period, and are publicly available in the [SOFIA Science Archive at IRSA](#) under proposal ID 75\_0038.



GREAT maps of G287P72 in [OI] (top-left), CO (11-10) (top-right), CO (8-7) (bottom-right), and CO (5-4) (bottom-right). For each map, four panels are shown. The top-left panel shows the channel map at the velocity indicated by the red line in the top-right panel. The top-right panel shows the spectrum at the position indicated by the

intersection of the two black lines. The bottom-left panel shows the integrated intensity image summed over the velocities indicated by the yellow shading on the bottom-right. The bottom right shows the average spectrum of the map.

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## Join Science Talks Remotely: Tele-Talks

Tele-Talks are scientific presentations given via phone, with slides distributed ahead of time. The talks are held approximately twice a month on Wednesdays at 9:00 a.m. Pacific, noon Eastern. For information on how to participate in the Tele-Talks, please check the [SOFIA Tele-Talk webpage](#).

### Upcoming Tele-Talk Schedule

- July 1: SOFIA-FORCAST Survey Toward the Giant HII Regions of the Galaxy: M17; Wanggi Lim (SOFIA/USRA)
- July 8: Discovery of the Linear Carbon Chain Molecules 13CCC and C13CC Towards SgrB2(M); Thomas Geisen (University of Kassel)
- July 15: Mass Loss in Cluster M Supergiants; Emma Beasor (NOAO)
- August 5: Optical Depth in [CII]; Cristian Guevara (University of Cologne)
- August 19: Mass Motions in Orion A; Cornelia Pabst (Leiden)
- September 9: [CII] in LMC; Vianney Leboutellier (University of Paris-Saclay)

e-Newsletter Editors: Kassandra Bell and Arielle Moullet

Please direct questions and comments to the SOFIA Science Center help desk:  
[sofia\\_help@sofia.usra.edu](mailto:sofia_help@sofia.usra.edu).

