



SOFIA supporting The IR/FIR community

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Mission Operations

January 4, 2022

SOFIA is the only far-IR observatory for the next decade.

- SOFIA will help prepare the astronomical community both scientifically and technologically for Astro2020's ambitious future.
- It advances the science by directly addressing **one third** of the decadal science priorities.
- The community can exploit the opportunity SOFIA provides to train the next generation of astronomers and instrument builders who will define, develop, and use the future far-IR space observatories described in the Astro2020 report.

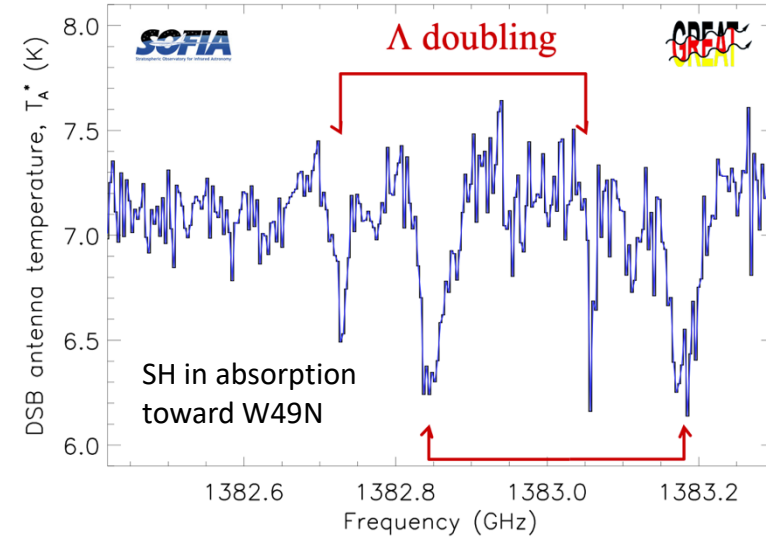
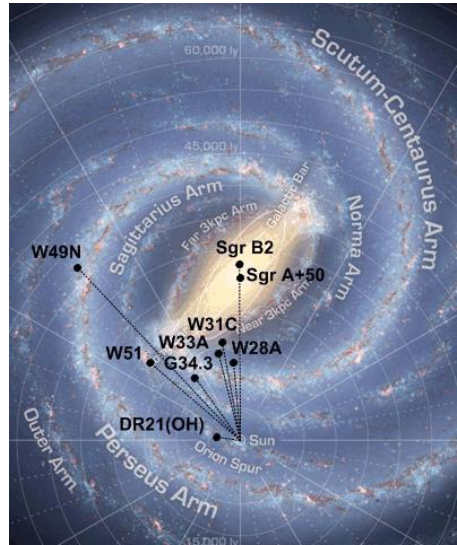


SOFIA Science

- SOFIA's efficiency and science productivity are on the right trajectory for SOFIA to achieve its full scientific potential.
- Annual publication rates for SOFIA have doubled over the past three years on topics ranging from the Earth to high-z galaxies.
 - <https://www.sofia.usra.edu/sites/default/files/2021-11/SOFIA-Science-2021.pdf>
- Legacy Science Programs are 30% of SOFIA schedule



SOFIA/GREAT Legacy, HyGAL: Characterizing the Galactic ISM with observations of hydrides, PI: Neufeld

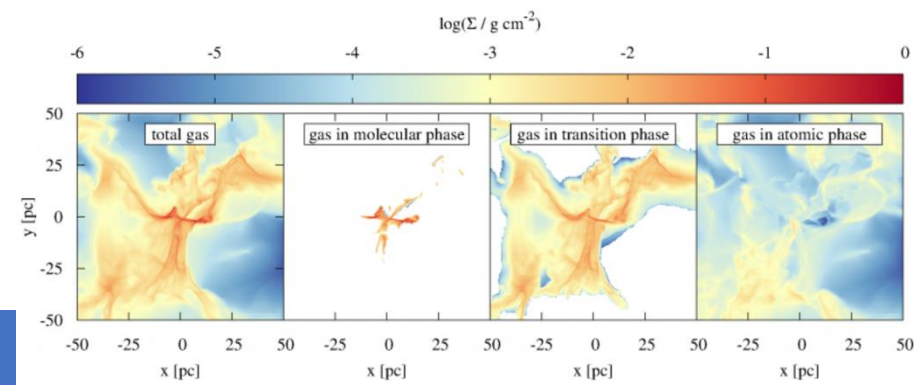
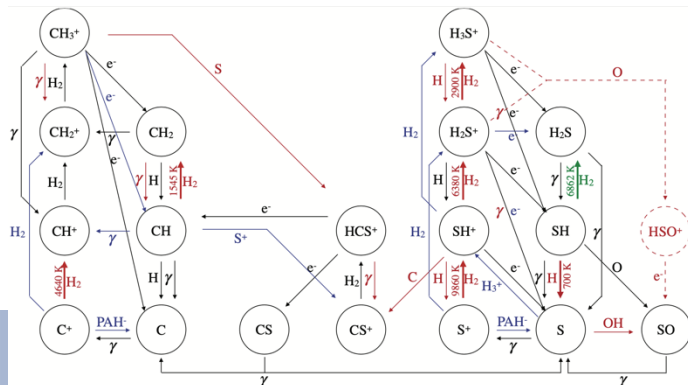


Absorption line spectroscopy

of multiple hydride molecules

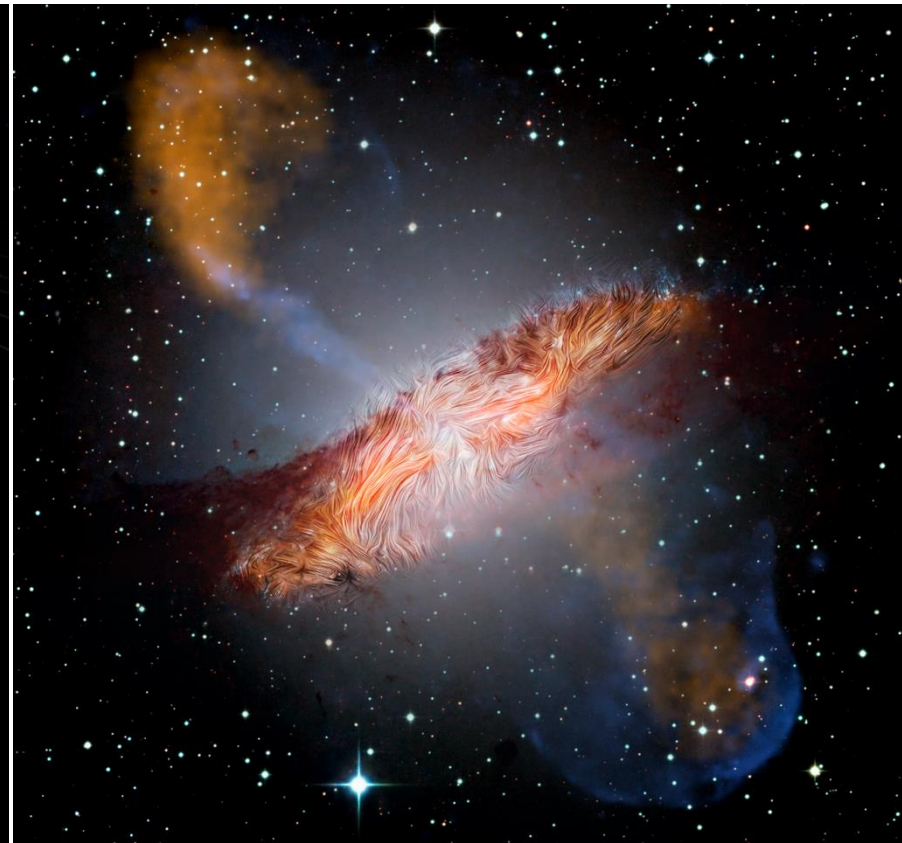
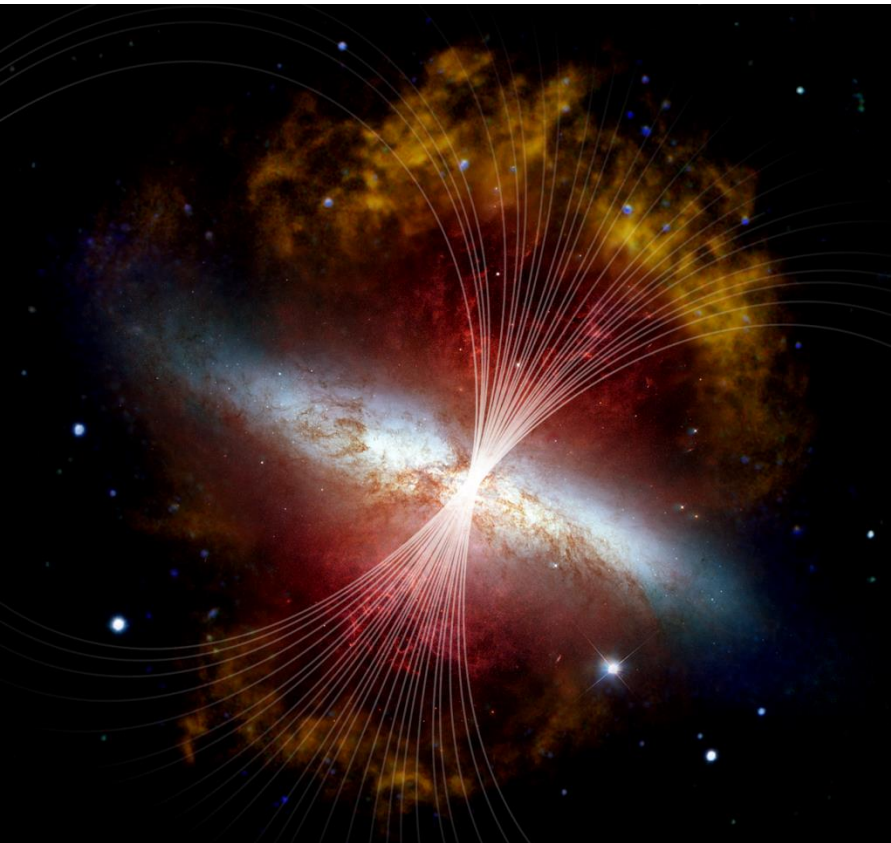
to constrain astrochemical models

of the turbulent interstellar medium



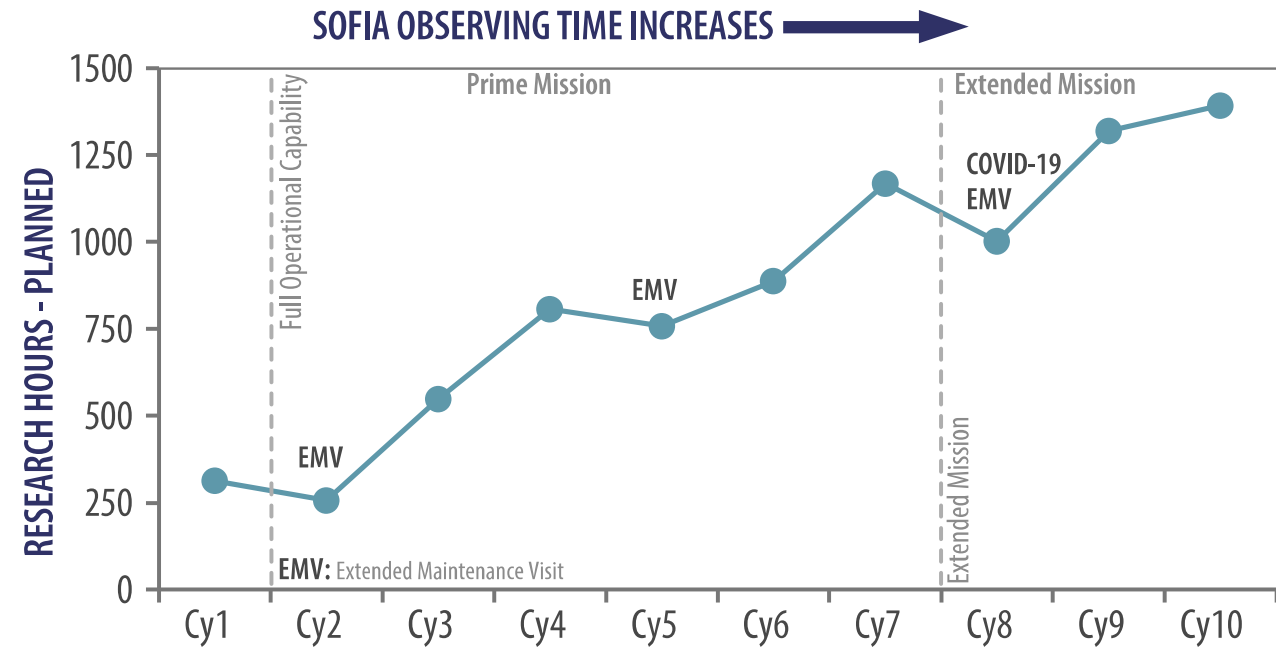
SOFIA/HAWC+ Legacy: Magnetic Fields of Galaxies

PI: Lopez-Rodriguez



SOFIA Science Opportunities

- Cycle 10 Call for proposals: **Due January 28**
<https://www.sofia.usra.edu/proposing-observing/proposal-calls/cycle-10>
- Observing time is increasing
 - 50% more than Cy6
- GO (550 hrs) and Legacy programs (200 hrs)
- Minimum grant \$75K for observing programs
- New multi-cycle time domain category
- SOFIA offers joint observing programs with GBT and IRTF
- JWST program support



SOFIA Science Opportunities

- SOFIA School 2022: Feb. 2-4, virtual and free
 - <https://sofia-school-2022.constantcontactsites.com>
- In-person conference on Our Galactic Ecosystem,
 - Feb. 28-March 4 2022
 - <https://arrowhead-2022.constantcontactsites.com>
 - Reg and abstract deadline is past
 - Late reg and abstract deadline is Feb. 14

**Our Galactic Ecosystem:
Opportunities and Diagnostics
in the Infrared and Beyond**

UCLA Lake Arrowhead Lodge
Lake Arrowhead, California
February 28–March 4, 2022

SAVE THE DATE FOR THIS IN-PERSON CONFERENCE!

The far infrared contains critical information about galactic ecosystem: The circle of life of stars and planets. What is the initiation of interstellar chemistry — via light hydrides? What is the role of feedback (from young and old stars) on the interstellar medium (ISM)? What is the role of magnetic fields in the evolution of the ISM and star formation?

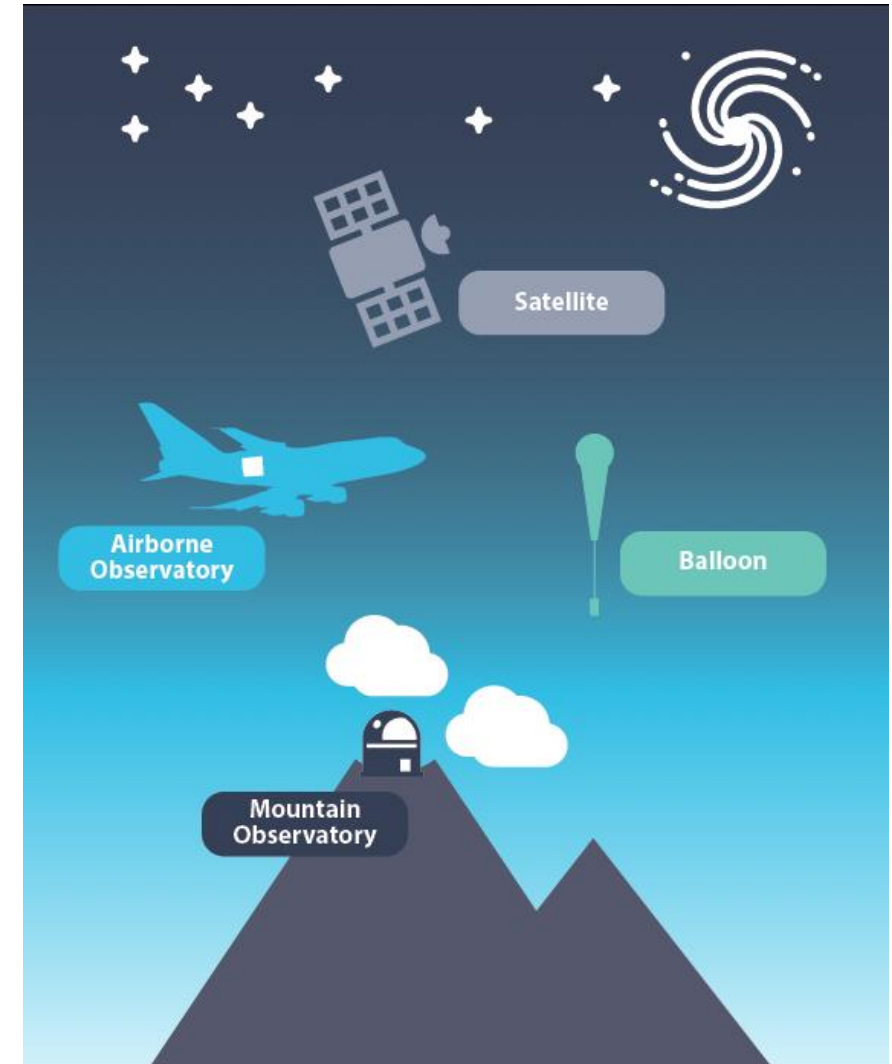
SOFIA provides a flexible, and our currently only, general access to the far infrared (30–300 μm) and its tracers of atomic and molecular lines and FIR polarization. This conference will allow in-person discussions of the results, and future opportunities in studying galactic ecosystem using FIR methods, from SOFIA and other platforms. A goal will be to explore synergy with other observatories, including JWST and ALMA, and with theory.

More information:
<https://www.sofia.usra.edu/Arrowhead2022>

NASA USRA NSF AUI NRAO

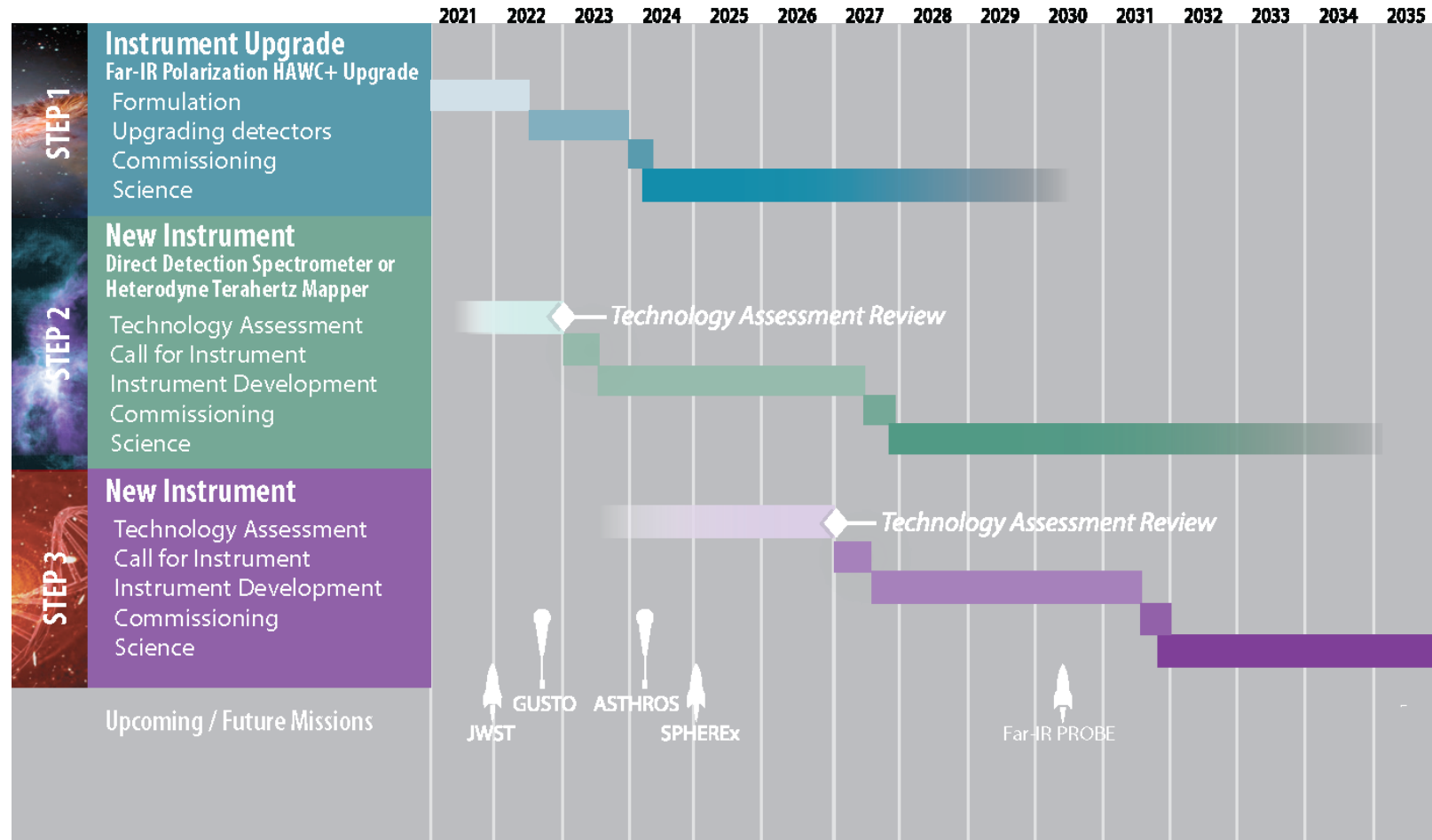
SOFIA is an important sub-orbital mission

- SOFIA offers the only reliable and repeatable suborbital platform
 - guest observer program
 - Instrumentation program to update and replace
 - Stepping stone between balloon program and space missions
 - Supports a scientifically diverse opportunity for the astronomical community.



SOFIA Instrument Roadmap

- SOFIA can increase its capability by up to X10 with new instrument



<https://www.sofia.usra.edu/sites/default/files/Other/Documents/instrument-roadmap-public.pdf>

Decadal context for SOFIA

- Current and future science of SOFIA is exciting and compelling.
- Over the past 2 years, SOFIA has experienced tremendous scientific growth.
- Astro2020 comments are based on information pre-March 2020, missed this growth and put SOFIA into a static box.
- NASA's Astrophysics Advisory Committee (APAC) applauded recent efforts to improve the scientific productivity of SOFIA in their letter for the March 2021 meeting.
- Decadal acknowledges the importance of Senior Review process.
- SOFIA was put into Senior Review last summer, post-Astro2020 is pending
- SOFIA is finalizing its proposal for Senior Review, due Feb. 11.
- We have a strong case and hope to deliver it.



Join the SOFIA Community!

- Our SOFIA User community of investigators and authors is 2,138 strong and growing (12% last year).
- Virtual science workshops and other community engagement activities have increased our wider SOFIA community size by an additional 30% of new to SOFIA astronomers.
- To learn more about SOFIA opportunities visit our website:

<https://www.sofia.usra.edu>

