

Collaborative Efforts (ALMA, IRTF, GBT, JWST etc.)

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SOFIA SUG Spring Meeting
2022

Synergies and Mutual Support

- Modern astronomy is increasingly multi-wavelength
- Starting in Cycle 9 Joint proposals were offered with the **Green Bank Telescope** (similar beams at [C II] and CO (J=1-0))
- Starting in Cycle 10 Joint proposals were offered with the **Infrared Telescope Facility** (complementary spectroscopic capabilities)
- DDT for HST proposals (2 awarded:
<https://www.sofia.usra.edu/data/multi-observatory-programs/hstsofia-joint-observations>)
- In Cy 9 and 10 time was set aside for JWST support
 - Cy 8 “highly encouraged” such proposals
- At the Lake Arrowhead conference a verbal (but in open session) agreement was made (Meixner and Remijan) for a joint SOFIA-ALMA proposal opportunity

Collaborative support

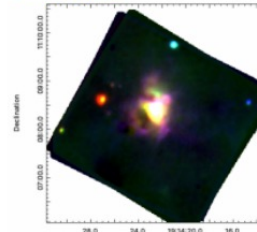
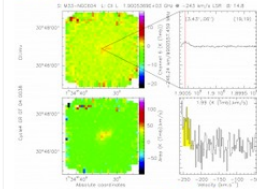
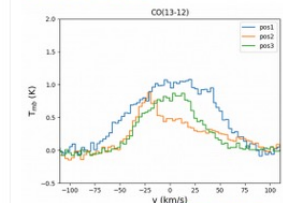
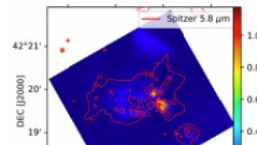
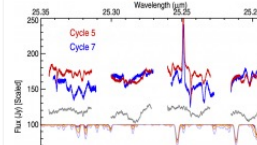
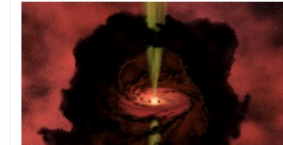
- The SOFIA archive is growing and has data that can support other observatories. To highlight this, the SMO has generated a number of tools and databases.
- Highlight of archive science:



We selected highlights from the SOFIA processed data archive, from a variety of programs which are available to be analyzed by anyone in the astronomy community. You can find help on how to analyze SOFIA processed data in these [tutorials](#), and information about the SOFIA archive can be found [here](#).

Click on a category title to see highlights in that category. A link to the latest highlight in the category is below each thumbnail image.

[Click here](#) to search all highlights for keywords or abstracts.

<p>All Highlights</p>  <p>Latest Highlight: Characterizing the dust and PAH of the ultracompact HII regions</p>	<p>Extragalactic</p>  <p>Latest Highlight: Velocity Resolved [CII] and [NII] Maps of Select HII Regions of M33</p>	<p>Galactic Center</p>  <p>Latest Highlight: CO Excitation across the Circumnuclear Disk</p>
<p>Interstellar Medium</p>  <p>Latest Highlight: Spitzer 5.8 micrometer map of the interstellar medium</p>	<p>Stars and Supernovae</p>  <p>Latest Highlight: Spectra of stars and supernovae</p>	<p>Star Formation</p>  <p>Latest Highlight: Star formation in a protoplanetary disk</p>

Collaborative support

- The SOFIA archive is growing and has data that can support other observatories. To highlight this, the SMO has generated a number of tools and databases.
- ALMA and JWST programs with target overlaps in the SOFIA archive:

High-potential SOFIA datasets including sources that will be observed with JWST and sources already observed with ALMA. Below are several of the key columns of the table. The full table includes source positions (RA: hour angle; Dec: degrees), wavelength (microns), instrument, program ID, observed dates, and release date are listed for the SOFIA dataset. For sources with planned JWST observations, the JWST instrument, JWST proposal IDs and JWST target names are also included. The same applies for ALMA except this data also include the years of any associated publications; SOFIA dataset with exclusive access period starting after August, 2022 are not listed. [Download the full datasets table here.](#)

Archival SOFIA datasets with additional ALMA data or planned observations with JWST			
Target	Instrument	JWST Instrument	ALMA Proposal ID
GV TAU	EXES		2016.1.00813.S 2018.1.00756.S
NGC 253	EXES	MIRI/IFU MIRI/IMAGE NIRCAM/IMAGE	2011.0.00061.S 2011.0.00172.S 2012.1.00108.S 2012.1.00657.S 2012.1.00789.S 2013.1.00099.S 2013.1.00191.S 2013.1.00368.S 2013.1.00735.S 2013.1.00973.S 2013.1.01151.S 2015.1.00274.S 2015.1.00658.S 2015.1.00732.S 2015.1.01133.S 2016.1.00215.S 2016.1.00292.S 2016.1.00481.S 2016.1.01285.S 2017.1.00028.S 2017.1.00161.L 2017.1.00433.S 2017.1.00895.S 2017.1.01101.S 2018.1.00162.S 2018.1.00294.S 2018.1.00765.S 2018.1.01321.S 2018.1.01358.S 2018.1.01395.S 2019.2.00236.S
SGR B2(M)	EXES		2011.0.00017.S 2012.1.00012.S 2013.1.00111.S 2013.1.00269.S 2013.1.00332.S 2013.1.00940.S 2013.1.01194.S 2016.1.00074.S 2016.1.00550.S 2017.1.00114.S 2017.1.01185.S 2017.1.01252.S

Supporting Resources: Joint workshops

- Summer 2021 joint ALMA series
- Workshops co-sponsored by
 - IRTF (“Planetary Surfaces”) and
 - JCMT (Magnetic fields in the Filamentary ISM”), and
 - Partnering with SMA scientists.
- Lake Arrowhead Conference co-organized with ALMA

Supporting Resources for SARP 3



SOFIA Science Center presents the Summer seminar series 'Synergies within the Infrared Archive'. The series, supporting the latest [SARP Call](#) (deadline July 8th, 2022), consists of online talks by members of the community, spanning a large range of astrophysical topics and highlighting how infrared archival data from different instruments can be used together to leverage scientific information. The five-week series features a 45-minute talk, followed by Q&A, on Fridays at 12:00pm EDT/9:00am PDT, starting 13 May and concluding on 10 June 2022.

Click on a title below for more information and to join.

Synergies Within the Infrared Archive			
Event	Event date	Speaker	Affiliation
The rate, Amplitude, and Duration of Outbursts from Class 0 Protostars in Orion using Spitzer, WISE, SOFIA, and Herschel	Fri, May 13 2022, 9 - 10am	Wafa Zakri	U. Toledo
Synergies within the infrared archive: circumstellar environments	Fri, May 20 2022, 9 - 10am	Ed Montiel	SOFIA/USRA
Synergies within the infrared archive: AGNs	Fri, May 27 2022, 9 - 10am	Irina Smirnova-Pinchukova	MPIA
Synergies within the infrared archive: PAHs	Fri, Jun 3 2022, 9 - 10am	Collin Knight	UWO
Synergies within the infrared archive: Nearby Galaxies	Fri, Jun 10 2022, 9 - 10am	Fiorella Polles	SOFIA/USRA

The SMO has and is organizing a number of supporting events and facilities.

- A summer series of virtual webinars running May 13- June 10 will explore Synergies with and within the Infrared Archive
- A winter school on SOFIA analysis
 - (Video) Talks available at: <https://sofia-school-2022.constantcontactsites.com/schedule-and-talks>
- Cookbooks for data analysis with the instruments:
 - <https://sofia-data-analysis-cookbooks.readthedocs.io/en/latest/index.html>

Collaborative efforts with other observatories

- Joint proposals with GBT and IRTF
- Joint (DDT) projects with HST
- Agreed joint proposal opportunity with ALMA in, notional, Cy 11
- Workshops and Conferences co-organized/sponsored with IRTF and ALMA.

