

Community Engagement

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Support current users
Facilitate research / create research opportunities
Engage dialogue with a wider community
Keep in touch / inform the community

Support of current users

- Support of Help Desk (Calls for proposals, data analysis and reprocessing, funding...)
- Inform GOs about their project scheduling status before series
- Produce annual user surveys to understand needs and wants
- Maintain online information about calls for proposals, capabilities, data formats, publications, flight schedules, events...

▪ Fall 2021: delivered improved website

The screenshot shows the SOFIA website homepage. At the top is a dark navigation bar with white text for 'About SOFIA', 'Proposing & Observing', 'Data', 'Instruments', 'Publications', 'Events', and 'Multimedia', along with a search icon. Below the navigation bar is a large banner image of a sunset over a landscape. The banner text reads 'Atomic Oxygen in Earth's Upper Atmosphere' and 'These results from SOFIA help solidify some of the basic science around how solar energy is exchanged between the Earth's surface and space.' Below the banner is a row of small grey dots. Underneath is a section titled 'About SOFIA' with a blue underline. The text describes SOFIA as an 80/20 partnership of NASA and the German Aerospace Center (DLR), consisting of a modified Boeing 747SP aircraft carrying a 2.7-meter reflecting telescope. It also mentions the SOFIA Program Office at NASA Ames Research Center and the German SOFIA Institute (DSI). To the right of the 'About SOFIA' section is a 'Featured Video' section with a blue header. The video thumbnail shows a nebula and is titled 'SOFIA: Science from the Stratosphere'. Below the video title is the name 'Dr. James De Buizer', his title 'Senior Manager and Senior Scientist', and 'SOFIA-USRA'.

Renewed focus on data analysis documentation (cookbooks)

- Cookbooks linked from website, but hosted on GitHub (SOFIAObservatory) for easier maintenance and feedback
- General updates
- For Jupiter notebooks - new automated monthly testing for most platforms/configs
- Conversion to mostly Jupiter notebooks
- New cookbooks in the works: EXES, data retrieval including astro.query
- FAQ instrument-specific in the works

SOFIA Cookbook Recipes

Python package passing

These documents provide simple "recipes" (i.e., descriptions and guided examples) for common data analysis objectives using SOFIA processed data. They are generally written for a graduate student audience and are intended to be used with the [SOFIA Data Handbooks](#).

Some of the recipes are `jupyter` notebooks designed for a researcher with a working knowledge of the [numpy/scipy/matplotlib stack](#) as well the [astropy](#) modules.

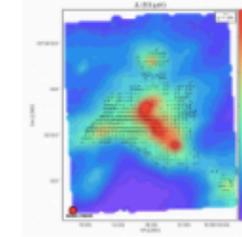
The first notebook in the series (30 Dor/HAWC+) walks the user through downloading SOFIA data through the Infrared Science Archive ([IRSA](#)) and demonstrates basic analysis techniques with `python` using a public data set on 30 Doradus.

30 Doradus/HAWC+ Recipe

SOFIA performed far-infrared imaging polarimetric observations of [30 Doradus](#) using the High-resolution Airborne Wideband Camera-plus (HAWC+) at 53, 89, 154, and 214 micron. We present the status and quality of the observations, an overview of the SOFIA data products, and examples of working with HAWC+ polarimetric data that will enhance the scientific analysis of this, and future, data sets. These observations illustrate the potential influence of magnetic fields and turbulence in a star-forming region within the Tarantula Nebula.

Create research opportunities: Archival data

- Promoting high-value underused public archival data
- Total of 21 ‘archival data highlights’ (with support from SOFIA postdocs)
- Inclusion of ‘archival data highlights’ on e-newsletter, new dedicated searchable web-page

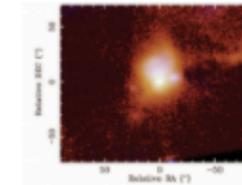


A Testbed for Starburst Activity: 30 Doradus

30 Doradus is an ideal laboratory for studying massive star-forming regions. To better understand these processes, multiple SOFIA instruments have mapped 30 Doradus at a variety of infrared bands. These include FIFI-LS maps of the [CII], [OI], [NII], and [OIII] lines, GREAT maps of the [13CII] isotope transition, and HAWC+ polarization maps at 53, 89, 154, and 214 μm .

Keywords:

FIFI-LS GREAT HAWC+ star formation starburst
HII regions Emission lines Interstellar medium
Spectroscopy Magellanic Clouds
Read more

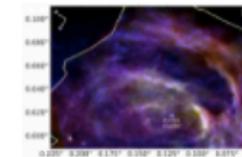


The Multi-phase Envelope of NGC 7538 IRS1

To study the early stages of star formation, the SOFIA archive hosts a wealth of data on the young protostellar object NGC7538 IRS1. These include: images at 7.7, 19.7, 25.3, 31.5 and 37.1 μm from FORCAST, spectral maps covering 75-95 μm and 135-155 μm from FIFI-LS, and high-resolution spectra from 5.5 to 27 μm from EXES. These rich datasets provide key tracers of young stellar envelopes and are currently processed and available through IRSA.

Keywords:

EXES FIFI-LS FORCAST HII region
star formation multiwavelength study Spectroscopy dust
imaging interstellar and intergalactic medium massive stars
Emission lines stellar evolution and models
Young stars and protostellar objects
Read more



Exploring the CMZ: the Arches Cluster

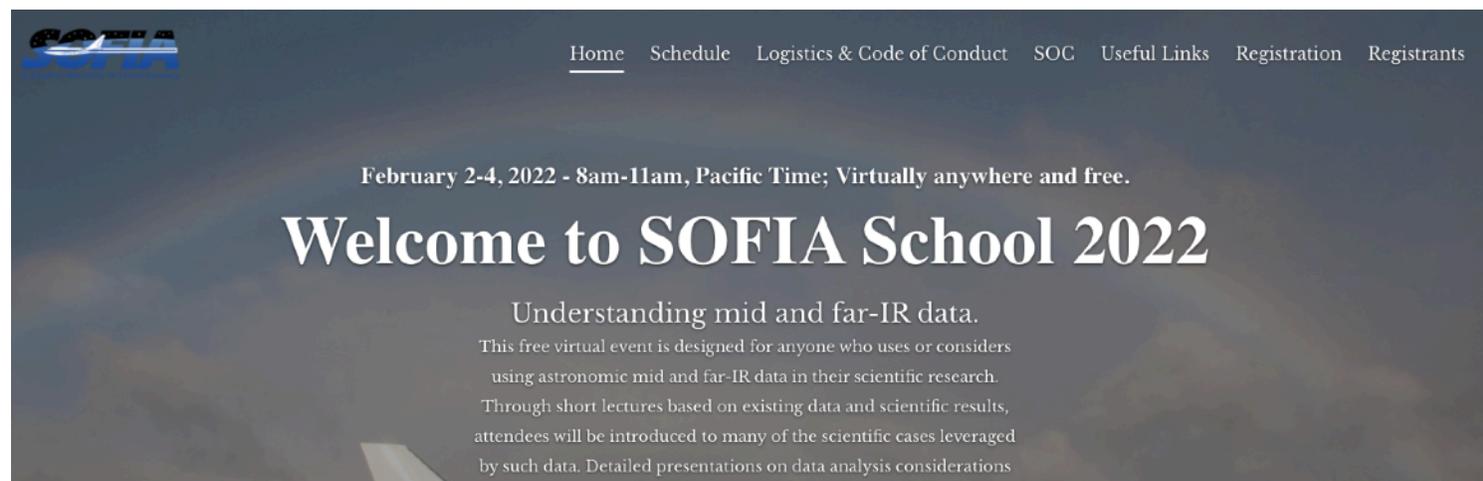
The Arches Cluster, one of the densest star cluster in our galaxy, is located within the Galactic Center's Central Molecular Zone, just about 25 pc from Sagittarius A*. Maps of this cluster are available through the SOFIA archive, including: spectrally-resolved maps of the [CII] line from GREAT, wide-field maps of the [CII] and [NIII] 57 μm lines from FIFI-LS, and 25 μm and 37 μm FORCAST maps.

Keywords:

Read more

Facilitate Research : 2022 SOFIA School

- February 2,3 and 4 - 3.5 hours in the morning each day
 - 150 registrants
 - Goal is to encourage and facilitate the use of SOFIA data
 - Will cover the mid/far IR landscape, calibration considerations, basic data analysis techniques, modeling strategies for a variety of cases
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- Format: short lectures based on papers (mostly from community members)/ lectures on understanding data quality
 - Live personal support from SOFIA staff through Slack



The screenshot shows the website for the SOFIA School 2022. At the top left is the SOFIA logo. To the right is a navigation menu with links for Home, Schedule, Logistics & Code of Conduct, SOC, Useful Links, Registration, and Registrants. The main content area features the text: "February 2-4, 2022 - 8am-11am, Pacific Time; Virtually anywhere and free." followed by a large heading "Welcome to SOFIA School 2022". Below this is a sub-heading "Understanding mid and far-IR data." and a paragraph: "This free virtual event is designed for anyone who uses or considers using astronomic mid and far-IR data in their scientific research. Through short lectures based on existing data and scientific results, attendees will be introduced to many of the scientific cases leveraged by such data. Detailed presentations on data analysis considerations".

Engage dialogue with a wider community

Goals: identify untapped scientific strengths, inform the communities about recent results and opportunities/capabilities, increase awareness and participation in SOFIA, strengthen relationships with current users

- 3d SOFIA Science series Workshop “Evolved Stars and their Circumstellar Environments”
- 200 registrants, ~ 40 talks including 8 invited
- 4 moderated discussions, 1 panel discussion, 1 intro to SOFIA Cycle 10 CFP



Engage dialogue with a wider community

- Splinter Session at Winter 2022 meeting, focusing on Synergies: (chair: T. Wiklind)
- 4th SOFIA Science Series in Summer 2022: Topic TBD (Astrochemistry / Topics addressed by SOFIA Legacy programs)



- Identification of partner for a new Talks Summer series, following the success of SOFIA/ALMA series in 2021
- Engagement with the IRSTIG activities
- Engagement with communities of interested identified from decadal survey priorities

Keep in touch / inform the community

- E-newsletter: ~ monthly communication of news, opportunities, and general information to 4000+ recipients
- Large advertisement of Call For Proposals
- Bi-monthly Tele-Talks series, weekly Virtual Colloquia
- Social media posting
- Support of ad-hoc community meetings



The image shows the cover of the SOFIA Science Newsletter for October 2021. The top section features the title 'SOFIA Science Newsletter' in white text against a dark background with a starry sky and a white SOFIA aircraft in flight. Below this, the date 'October 2021' is printed in the top right corner. A section titled 'In this issue:' lists several articles: 'Stellar Feedback and Triggered Star Formation in RCW 120', 'Registration Open for 'Evolved Stars and their Circumstellar Environments' Workshop', 'EXES Becomes Facility Instrument', 'New Public Data Pipeline: FLITECAM', 'New SOFIA Archive at IRSA Release', 'Featured Archival Data Set: Proplyds of Orion - [OI] and OH', and 'Upcoming Events'. The bottom section is titled 'Science Spotlight' and features a colorful nebula image. Below the title is the article title 'Stellar Feedback and Triggered Star Formation in RCW 120' in red text, followed by a paragraph of text and a 'Read more' link.

SOFIA
Science Newsletter

October 2021

In this issue:

- Stellar Feedback and Triggered Star Formation in RCW 120
- Registration Open for 'Evolved Stars and their Circumstellar Environments' Workshop
- EXES Becomes Facility Instrument
- New Public Data Pipeline: FLITECAM
- New SOFIA Archive at IRSA Release
- Featured Archival Data Set: Proplyds of Orion - [OI] and OH
- Upcoming Events

Science Spotlight

Stellar Feedback and Triggered Star Formation in RCW 120

Recent SOFIA observations show that the high-mass star-forming region RCW 120 is expanding extremely fast. The rapid expansion causes molecular material at the outskirts of the region to pile up and be compressed, which leads to the formation of new stars around the region. While this process – known as positive stellar feedback – has been studied in a variety of environments, these new observations demonstrate for the first time that this type of feedback can operate on very short timescales, potentially shedding light on the star formation history of the universe. [Read more.](#)

Keep in touch / inform the community: Winter AAS meeting

- Booth and printed materials
 - FORCAST data clinic / other booth events TBD
 - Special session: “Mid and Far-IR observations: leveraging science across the spectrum - 6 speakers
 - SOFIA Townhall
 - Developed of communication points
- 5 Theater presentations:
 - "The New SOFIA”
 - "Best SOFIA thesis: The formation and dispersal of dense gas in star forming regions"
 - "SOFIA Science: Remarkable Results”
 - 'Archival research opportunities with SOFIA’
 - “SOFIA Open Calls for Proposals: what you need to know’

SOFIA Conference: Galactic Ecosystems

- SOFIA conference, ‘Galactic Ecosystems: Far Infrared Diagnostics and Opportunities’, on Feb 28-March 4, 2022 , at Lake Arrowhead in California.
- In partnership with ALMA
- Secluded venue to encourage informal discussion and build opportunities for collaboration.
- opportunities for current users to present their data, eventually helping project to get closer to the level of maturity needed for a publication



New: SOFIA blog on blogs.nasa.gov

- Started in June 2021
- 13 posts published to date
- Effective way to communicate about milestones, scientific results

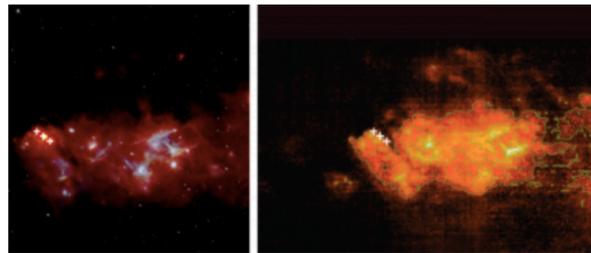
SOFIA Observes Star Formation Near the Galactic Center

November 15, 2021



Looking at the ionized carbon emission from Sagittarius B provides critical information about star formation in our own galaxy and beyond.

Sagittarius, or Sgr B, a cloud of gas and dust near the center of the Milky Way is one of the brightest sources in the Central Molecular Zone – a massive, dense area of gas in the center of our galaxy, home to very high star formation rates and turbulent molecular gas clouds. At less than 27,000 light-years away, Sgr B is a relatively close neighbor, making it a useful region to study, both as a proxy for understanding other galaxies throughout the universe and also for understanding our own galactic center.



A New Springboard to the Southern Sky: SOFIA Deploys to French Polynesia

July 20, 2021



NASA's Stratospheric Observatory for Infrared Astronomy, or SOFIA, landed at Fa'a'a International Airport, outside Papeete, Tahiti, French Polynesia, July 19, 2021, to study celestial objects best observed from the Southern Hemisphere. SOFIA regularly deploys to the Southern Hemisphere to observe objects only visible from this part of the world. Typically, SOFIA flies from Christchurch, New Zealand. However, due to COVID-19 travel restrictions, French Polynesia was identified as the right location to continue groundbreaking science to better serve the scientific community.



Creation and diffusion of highlights brochure

- Developed on a short timeline to address current communication needs
- Distributed by email and hard prints to ~200 identified community leaders
- Shows the breadth and impact of science results in the past couple of years

