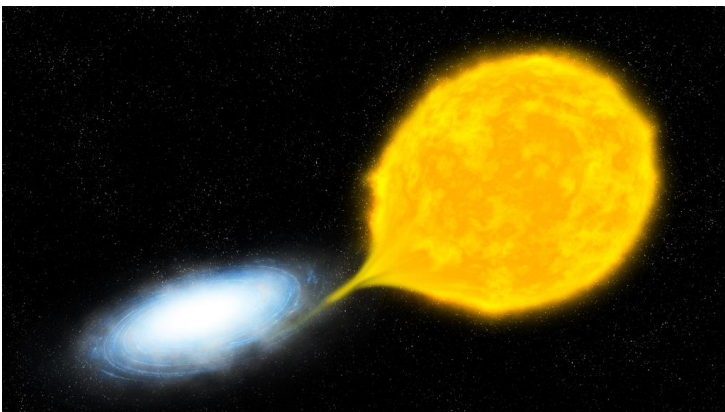


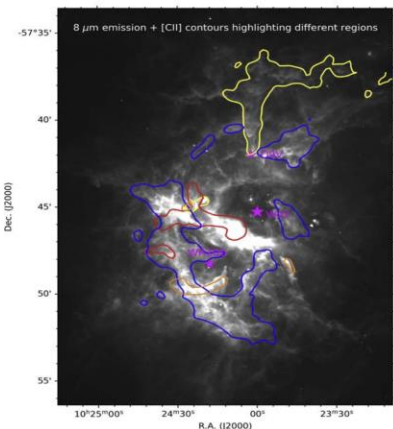
[SOFIA Spies a New Type of Stellar Outburst](#)

Astronomers using SOFIA, the Stratospheric Observatory for Infrared Astronomy, discovered something unique: a new type of stellar outburst that had never been seen before in the type of system under study.



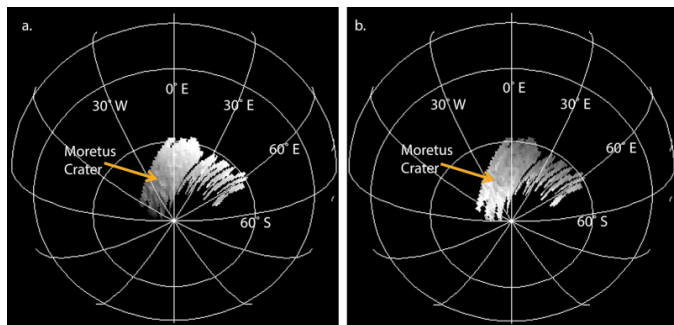
Caption: Artist's rendition of a cataclysmic variable in which a white dwarf (white/blue) is accreting material from its nearby Sun-like companion (yellow). The material forms a disk around the white dwarf until an instability causes an explosion and a bright outburst of light, known as a nova. Credit: NASA/SOFIA/L. Proudfit

[SOFIA FEEDBACK Survey: PDR Diagnostics of Stellar Feedback in Different Regions of RCW 49](#)



8 μ m emission image is overlaid with SOFIA [C II] emission contours highlighting key regions. Spectra from these regions is shown in the next panel

FORCAST Science Results: [Water on the Moon 2022](#)

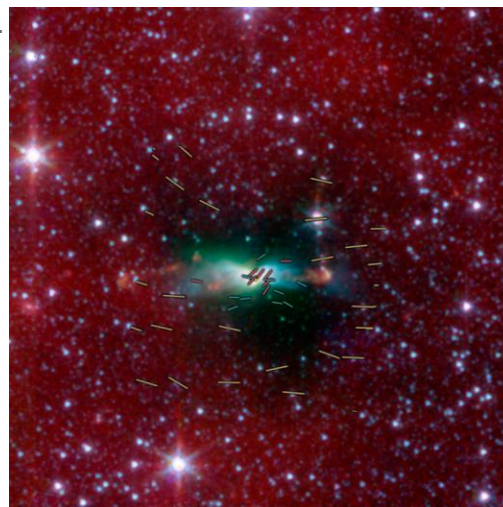


[The SOFIA/EXES Mid-IR High Spectral Resolution Library](#)

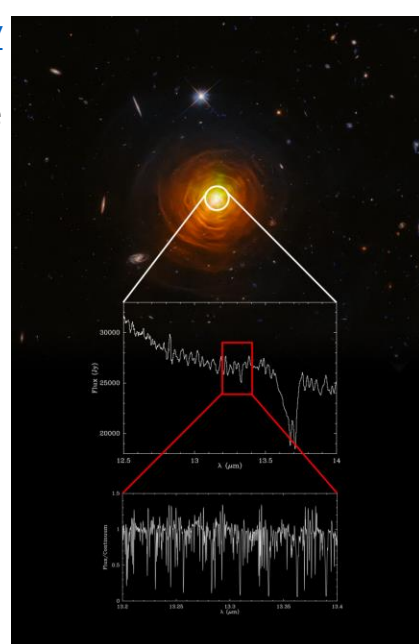
The EXES instrument on SOFIA is a valued partner for JWST. Its high-spectral resolution spectroscopy can separate the lines of the vibrational bands and reveal the weak signals of low-abundance molecules that would otherwise be hidden among a forest of stronger lines from other species.

[Twisted Magnetic Fields Can Reveal How Protobinary Systems, Tatooine Planets Form](#)

shown here as a comparison of scales. Near the center of the image is a small yellow dot indicating the location of the binary protostars. The combined fields show a twist as they approach the protostellar envelope, though they are parallel on larger scales.



A subset of polarization vectors are overlain atop a Spitzer Space Telescope image of Lynds 483. The SOFIA data is shown in red, and the orange vectors were obtained by Pico dos Dias Observatory. The green vectors show data obtained by SHARC C-II Polarimeter at the Caltech Submillimeter Observatory in previous work. Credit: L483: NASA/JPL-Caltech/J. Tobin; Vectors: Cox et al. 2022, Chapman et al. 2013



(Image Credit: ESA/Hubble, NASA, and Toshiya Ueta (University of Denver), Hyosun Kim (KASI); Cernicharo et al., 1999; Montiel et al. (in prep); Fonfría et al (in prep))

SOFIA PROJECT UPDATE

NASEEM RANGWALA

SOFIA PROJECT SCIENTIST

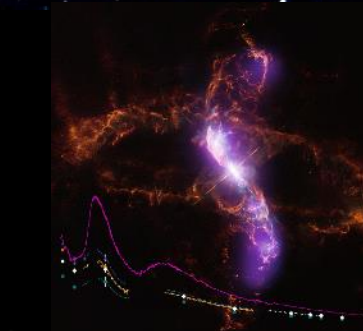
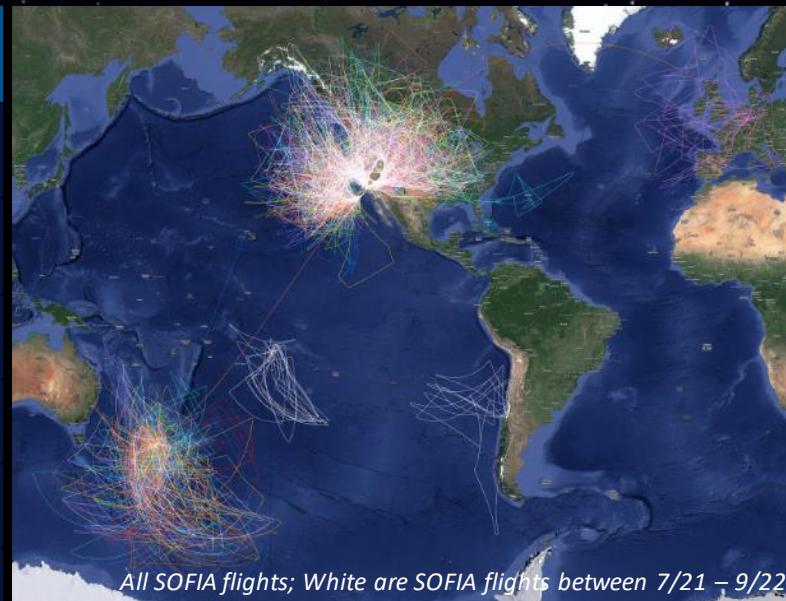
NOVEMBER 4, 2022

SOFIA Finishes Strong!



SOFIA Fiscal Year 2022 Metrics

METRIC	TOTAL	Delta from FY21 / NOTES
Science Flights Offered	176	27% ↑ ; two southern deployments
Flown Science Flights	127	50% ↑
Flown Research Hours	1000	43 %↑
Science Programs Competed	>60%	Including Legacy programs
Publications	69	20%↑
Citations to SOFIA Papers	1276	28%↑
Archival Data Downloads (science community)	13,176 GB	
Press Releases / Media Stories	>50	
Community Outreach - Events	82	55% ↑; in the US and overseas both science and public
# Scientists Reached	>500	



M51



Centaurus A



Antennae Galaxies



NGC 3627



NGC 2146



M83



NGC 7331

SOFIA Legacy Program

NASA and DLR at SOFIA Mission Brief and Tour Observatory

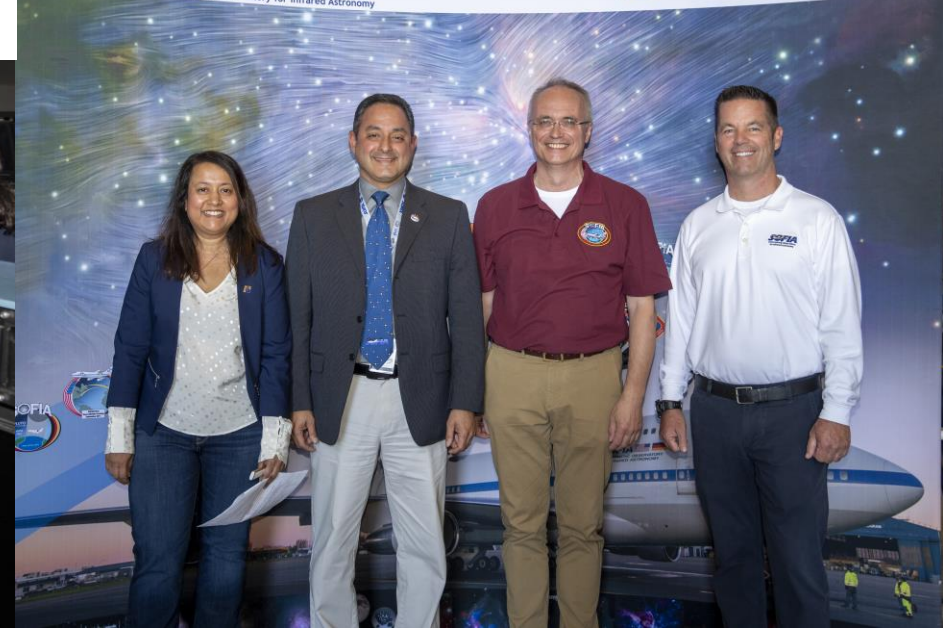
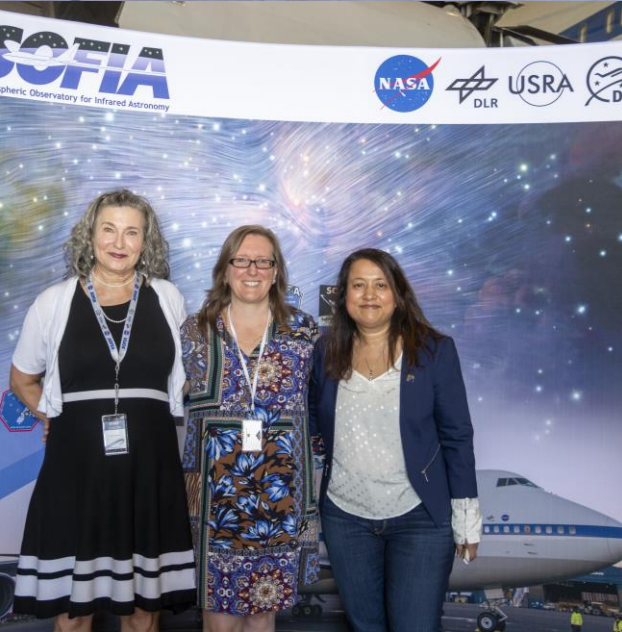
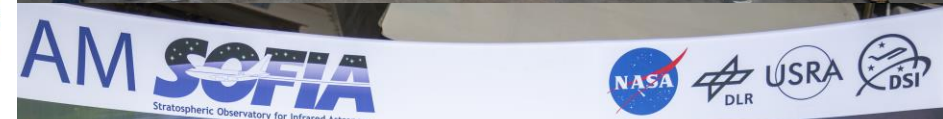
Credit: NASA/J. Fischer



SOFIA Team Appreciation Day



Credit: NASA/J. Fischer



SOFIA Team Appreciation Day



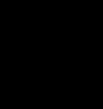
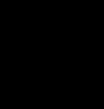
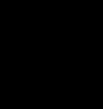
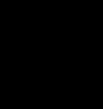
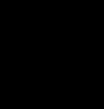
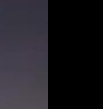
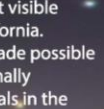
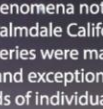
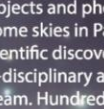
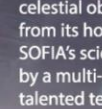
CERTIFICATE OF APPRECIATION



National Aeronautics and Space Administration



Stratospheric Observatory for Infrared Astronomy (SOFIA) began development in 1996, saw first light in 2010, and achieved full operational capability in 2014. In the eight years since, SOFIA's observations of the Moon, planets, stars, star-forming regions, and nearby galaxies has made a major impact in our understanding of the universe. Flying into the stratosphere between 38,000-45,000 feet above 99 percent of Earth's infrared-blocking water vapor, allowed astronomers to study the solar system and beyond in ways that are not possible with ground-based telescopes. SOFIA deployed to different parts of the world to observe celestial objects and phenomena not visible from its home skies in Palmdale California. SOFIA's scientific discoveries were made possible by a multi-disciplinary and exceptionally talented team. Hundreds of individuals in the United States and Germany have contributed to the SOFIA mission over its lifetime and we appreciate each one of you who contributed to SOFIA's success over the years!



PRESENTED TO



Credit: NASA/Monika R.

SOFIA Impact Worldwide in FY22



SOFIA Bi-lingual event with Chilean university students. US Ambassador, Richard Glenn (Top Right), introduced the event and the SOFIA team.



CONVERSATORIO VIRTUAL
SOFIACHILE@NASA

OBSEVATORIO ESTRATOSFERICO DE ASTRONOMIA INFRARROJA (SOFIA) ATERRIZA EN CHILE

PARTICIPAN

 DRA. NASEEM RANGIVALA SOFIA PROJECT SCIENTIST, NASA	 NADINE FISCHER INGENIERA DE SOFTWARES DE SOFIACHILE	 FIORELLA LUCIA POLLES CIENFICA POSTDOCTORAL DE SOFIA, NASA/UGR	 SKARLETH MOTINO FLORES CIENFICA POSTDOCTORAL DE SOFIA, NASA/UGR
 DIEGO RUIZ PICTO DE INVESTIGACION, NASA/INTEGRATION INNOVATION, INC.	 DIANA LESSI PICTO DE INVESTIGACION, NASA/INTEGRATION INNOVATION, INC.	 PAUL MARTINEZ JEFE DE OPERACIONES DE SOFIA	

30 DE MARZO
UNIVERSITARIOS 19:00 HS

Logos: USA, Chile, SOFIA, AAST, TALECA



SOFIA Lake Arrowhead Conference: Galactic Ecosystems



Evolved Stars and their Circumstellar Environments

December 14-17, 2021 - 7am-11am, Pacific Time

Virtually anywhere and free

SOFIA in New Zealand July – Aug 2022



Credit: NASA/N. Rangwala/C. Thomas



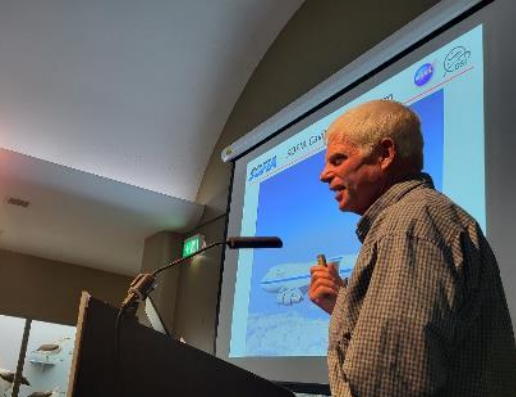
Women Of SOFIA



Rose Swears, Naseem Rangwala and Sophie Ineson



Canterbury Museum



Science Closeout – Summary



- Science operations closeout (USRA) – to be concluded by September 30, 2023 except for the GO grant administration
 - GO grants administration will continue through FY 24
 - Early Career funding (FY23)
 - Retention funding for science and mission ops staff (FY23)
- Mission operations closeout (USRA) – 100% complete over 4 months in FY23
 - Science instruments & labs handover to NASA
- Project Science oversight in FY 23 and FY 24 but at a lower effort level commensurate with the amount of closeout tasks and complexity
 - Deputy Project Scientist (Doug Hoffman) will be more heavily involved in day-to-day oversight and support
- Public Outreach support from Ames for science publications in FY23, FY24, & FY25
- Infrared Science Archive transition (90% complete in FY23) – responsibility transfers to NASA HQ in FY 24



➤ Data Reduction, Data Archiving and Transition to IRSA

- Reducing data from the final flight series
- Archiving of all SOFIA science data at IRSA
 - including from German PI Inst. GREAT (Statement of Intent signed between NASA, DLR, and the GREAT PI)
- Archiving of all housekeeping/engineering data at IRSA
- Updating & Archiving data pipelines
- Reprocessing cycles 5-9 data

➤ Performance documentation for each science instrument

➤ User Support for the community / transition to IRSA

- Guest Observers grant distribution (FY 23 & FY 24)
- Data reduction documentation, tools, & cookbooks
- Website transition to IRSA
- Informing the community
 - IR data workshop, webinars, & newsletters

➤ Mission Operations

- Science instruments, Labs, Documentation, Mirror Coating facility



- ✓ Data
- ✓ Documentation
- ✓ Tools
- ✓ User Support





➤ Aircraft disposition

- Going through the established GSA process

➤ Telescope Assembly and associated parts (DLR)

➤ Science Instrument disposition

- EXES and FIFI: not NASA property; will be returned to the PI as per prior agreement / MOU
- HAWC+ and FORCAST will go through the NASA artifacts screening process
- GREAT is the responsibility of the GREAT PI team. They will pack and ship the instrument
- FLITECAM was retired in 2018 and has been transferred to Ames for reuse
- HIRMES parts are at GSFC and we have identified reuse for some of them for another government agency

➤ Property and spare parts disposition

➤ Record Retention

SOFIA Farewell: Ames, Armstrong, & Christchurch



SOFIA with telescope door open at Edwards Air Show Oct 15th and 16th



Credit: NASA/C. Thomas

SOFIA at ARC Oct 14th



Credit: NASA/D. Richey

SOFIA farewell low-altitude flight over Christchurch and Canterbury, Aug 10th



Student drawing from 9 July 2014 Facebook post

SOFIA Project thanks the SOFIA Users Group support, guidance, & contributions