
The background features a dark blue gradient with faint, glowing circular patterns and lines, suggesting astronomical data or maps. A prominent circular scale with numerical markings (40, 150, 160, 170, 180, 190, 200, 210, 220, 230, 240, 250, 260) is visible on the left side. The text is centered in the upper right quadrant.

EXPLORING THE MID-IR GALACTIC CENTER WITH **SOFIA** LEGACY MAPS

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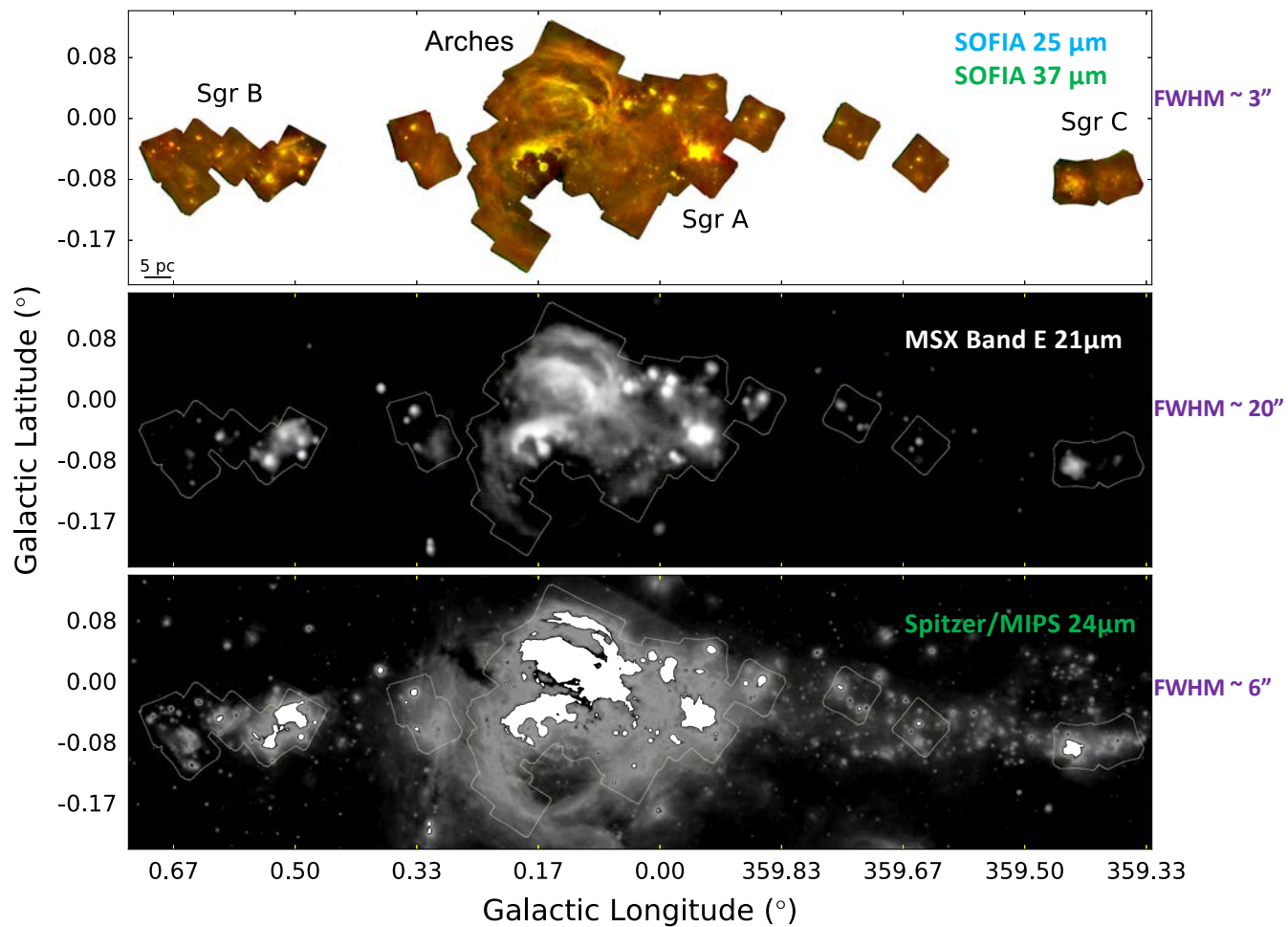


Spitzer 4.5 μm
SOFIA 25 μm
SOFIA 37 μm
HERSCHEL 70 μm

Composite image of the Galactic Center at 25 and 37 μm using the FORCAST instrument on SOFIA. This survey was one of the inaugural Legacy Programs from SOFIA Cycle 7 (PLANID=07_0189), observing a total area of 403 arcmin² (2180 pc²), including the Sgr A, B, and C complexes. Mosaic was combined with previous data (PLANID=70_0300, 70_0400) observed in Cycle3 & 4 containing the Arches complex. Legacy proposal: <https://www.sofia.usra.edu/science/data/legacy-programs/constraining-recent-star-formation-galactic-center>

Full mosaics can be downloaded at (IRSA <https://irsa.ipac.caltech.edu/Missions/sofia.html>) searching for PLANID = 07_0189 and LEVEL 4 data. Individual fields can be found searching for LEVEL 3.

More information see paper [Hankins et al. 2020 ApJ 894 55H](#)



Why Galactic Center? (observational)

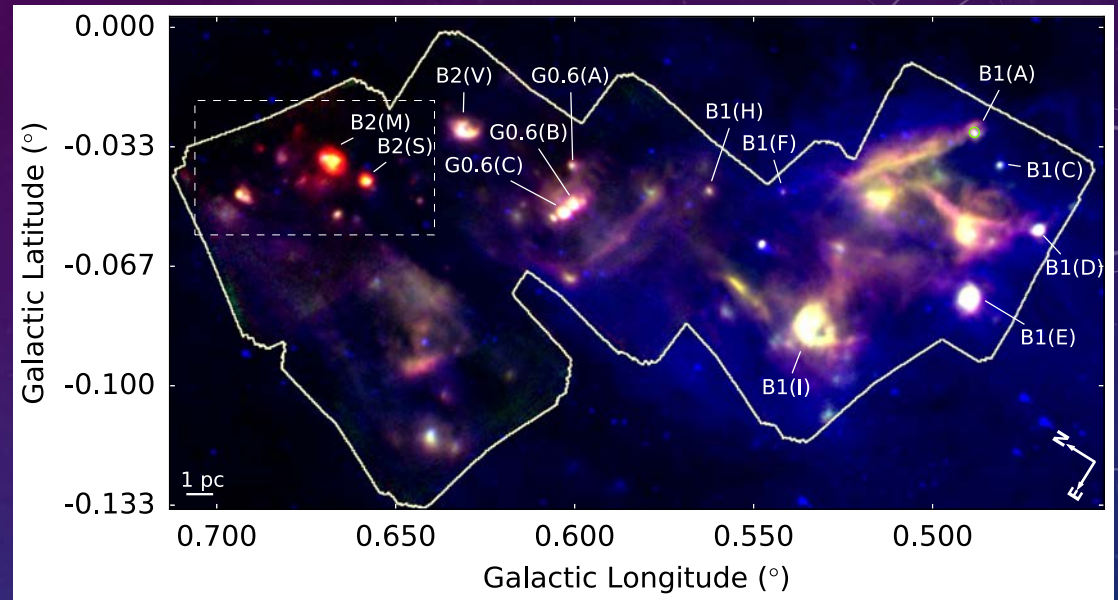
- Improved resolution
- Covers important saturated regions (missing data)

Why Galactic Center? (scientific)

- Similar to the center of LIRGs near the peak of star formation epoch but closer and easier to study.
- Significant fraction of SFR in our galaxy over a very small volume
- Question about SFR lower than expected based on dense molecular gas

Why Mid-Infrared? (scientific)

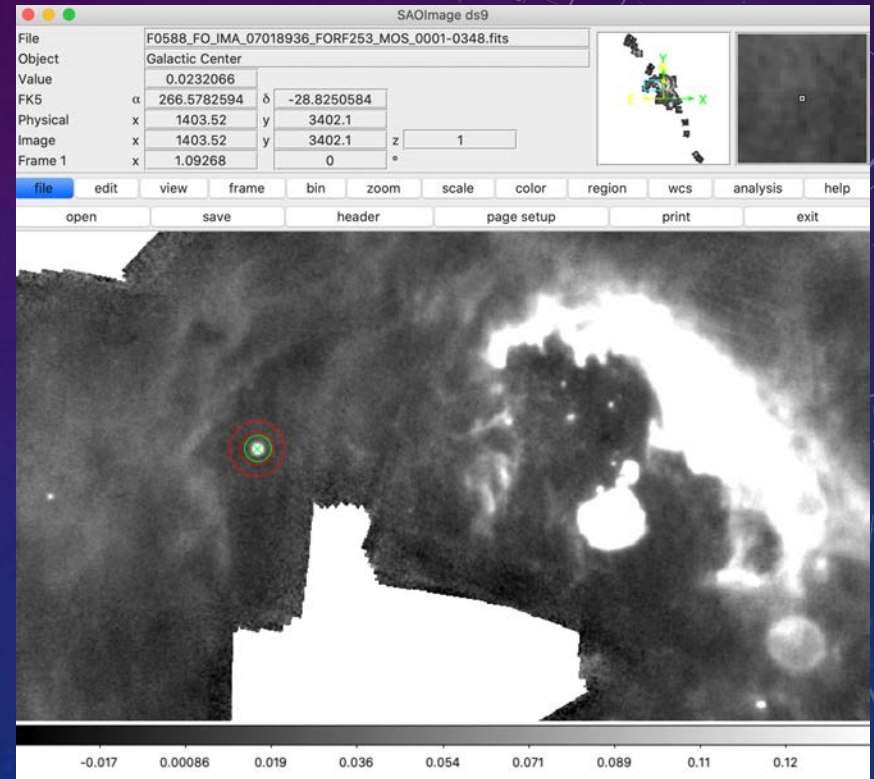
- Less extinction
- Traces peak of emission of young stars
- Helps distinguish models (massive stars)



A false-color map of the Sgr B complex using Spitzer/IRAC 8 μm (blue), SOFIA/FORCAST 25 μm (green), and 37 μm (red) data. Sources of interest are labeled throughout the region following the naming convention of Mehringer et al. (1992, 1993) with the exception of Sgr B2 Main and South. Sources in the G0.6-0.0 region are abbreviated 'G0.6', and the location of the massive YSO, SSTGC 726327, in Sgr B1 is marked with a green circle. The footprint of the SOFIA/FORCAST survey is also shown as a solid white outline for reference.

ANALYZING THE DATA


- <https://www.sofia.usra.edu/science/data/data-documents>
- Handbook and Jupyter Notebook examples of reduction and aperture photometry
- Images are in Jy
- 3D cube (image, noise, exposure)
- Calibration uncertainties 5-10%



Frame	Peak	X	Y	RA	Dec	FWHM (px)	FWHM (")	Ellip.	PA	Flux	BG	BG Std.
1	0.6386	1146	3417	266.641	-28.82179	4.875	3.744	0.05547	-1.645	24.24	0.01307	0.004807

Important DATA Notes

- FORCAST Pipeline going forward will slightly change fits format (IDL→Python) Current data and Mosaic in old format (will need to update any personal analysis software)
 - FITS format more compatible
 - Change of planes (variance to sigma etc...)
- Possible follow-up of a few missing Galactic Center regions
- Some astrometry issues with FORCAST and distortion (few pixels/arcseconds)
 - Working on solutions for future data
- Some smearing in Galactic Center fields due to chop/nod issues
- Details of data and issues discussed in [Hankins et al. 2020 ApJ 894 55H](#)



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Archival Funding Proposal <https://www.sofia.usra.edu/science/proposing-and-observing/proposal-calls/sofia-archival-research-program> (with webinar on Wednesday 1pm Eastern)

Other Legacy Programs <https://www.sofia.usra.edu/science/data/legacy-programs>

Questions?