

Welcome!

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



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

- Your SOFIA science is exciting and compelling.
- SOFIA advances Astro2020 science by directly addressing **one half** of the decadal science priorities in all three science themes
 - Cosmic EcoSystems,
 - Worlds and Suns in Context,
 - New Messengers and New Physics.

https://www.sofia.usra.edu/sites/default/files/2022-01/SOFIA_Traceability_Matrix.pdf



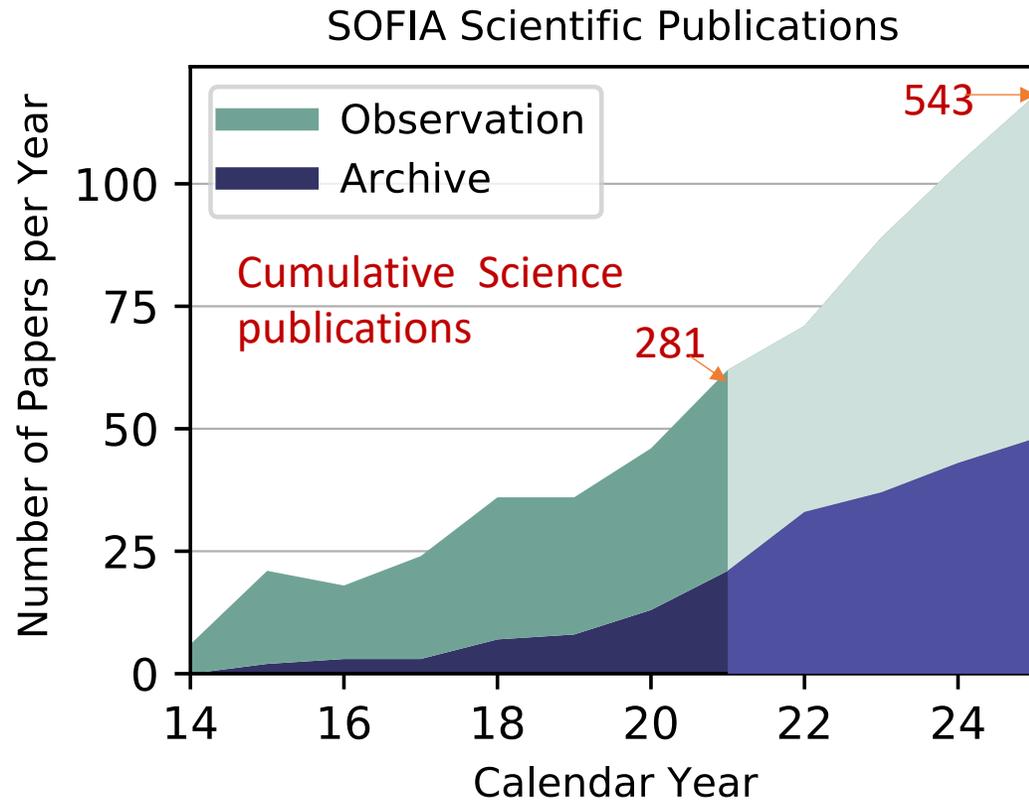
SOFIA SCIENCE TRACEABILITY MATRIX

Decadal Science Questions †	Key Measurements	SOFIA Instruments	SOFIA Observations
HOW DID WE GET HERE? COSMIC ECOSYSTEMS			
F-Q1: How do star-forming structures arise from, and interact with, the diffuse interstellar medium?	[C II] 158 μ m, [O I] 63 & 145 μ m, light hydrides, kinematics & Far-IR polarimetry	GREAT, FIFI-LS, HAWC+, *THzMap	FEEDBACK, HyGal, LMC+, GalMag, C+SQUAD
F-Q2: What regulates the structure and motions within molecular clouds?	[C II] 158 μ m, light hydrides, Far-IR polarimetry at 0.1 pc	HAWC+, GREAT, *THz-Map	SIMPLIFI, GalCen, HyGal
F-Q3: How does gas flow from parsec scales down to proto-stars and their disks?	Far-IR polarimetry at 0.1 pc, Mid/Far-IR variability & high-res spectroscopy	HAWC+, EXES, GREAT, FORCAST, FIFI-LS, *DirectDet	FIELDMAPS, SIMPLIFI, HyGal
D-Q2: How do gas, metals, and dust flow into, through, and out of galaxies?	[C II] 158 μ m, light hydrides, [O III] 88 μ m, Far-IR polarimetry <200 pc	GREAT, FIFI-LS, HAWC+, *THzMap, *DirectDet	HyGal, GalMag, LMC+
D-Q4: How do the histories of galaxies and their dark matter halos shape their observable properties?	[C II] & [O III] in galaxies (< 200pc), [¹³ C II]	GREAT, FIFI-LS, *THzMap	M51, LMC+, Galaxies

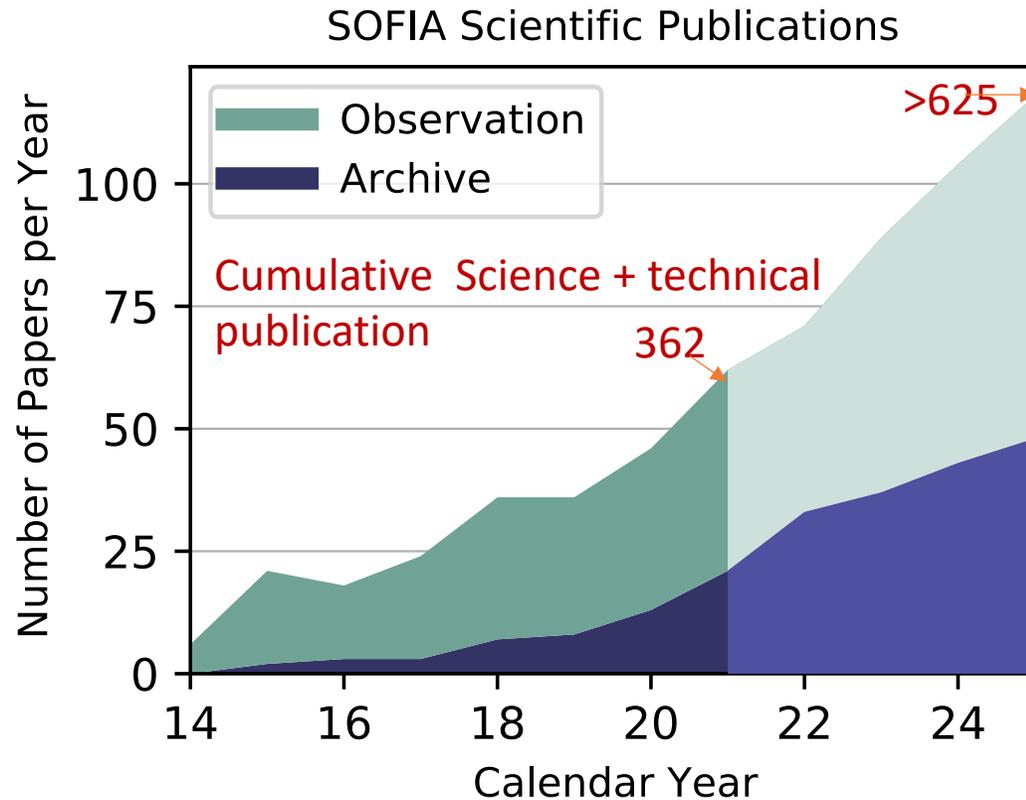
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SOFIA Publications

- *SOFIA is currently at an inflection point of its growth in science publications, similar in gradient to the early years for space missions.*

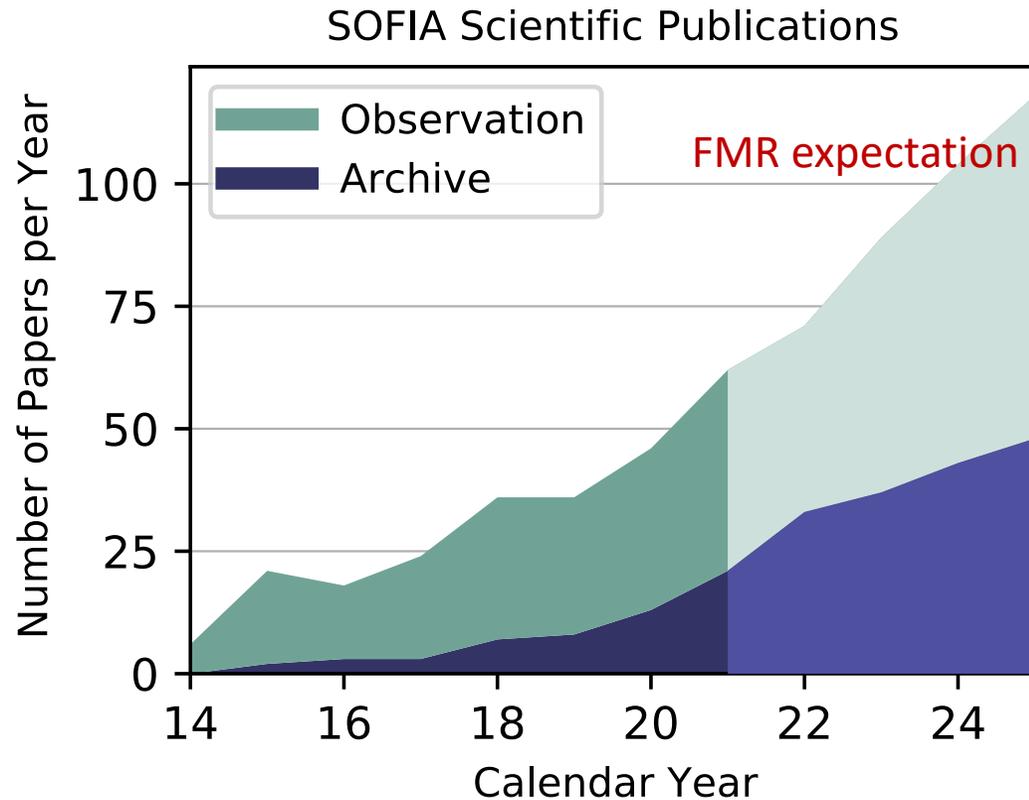


SOFIA Publications



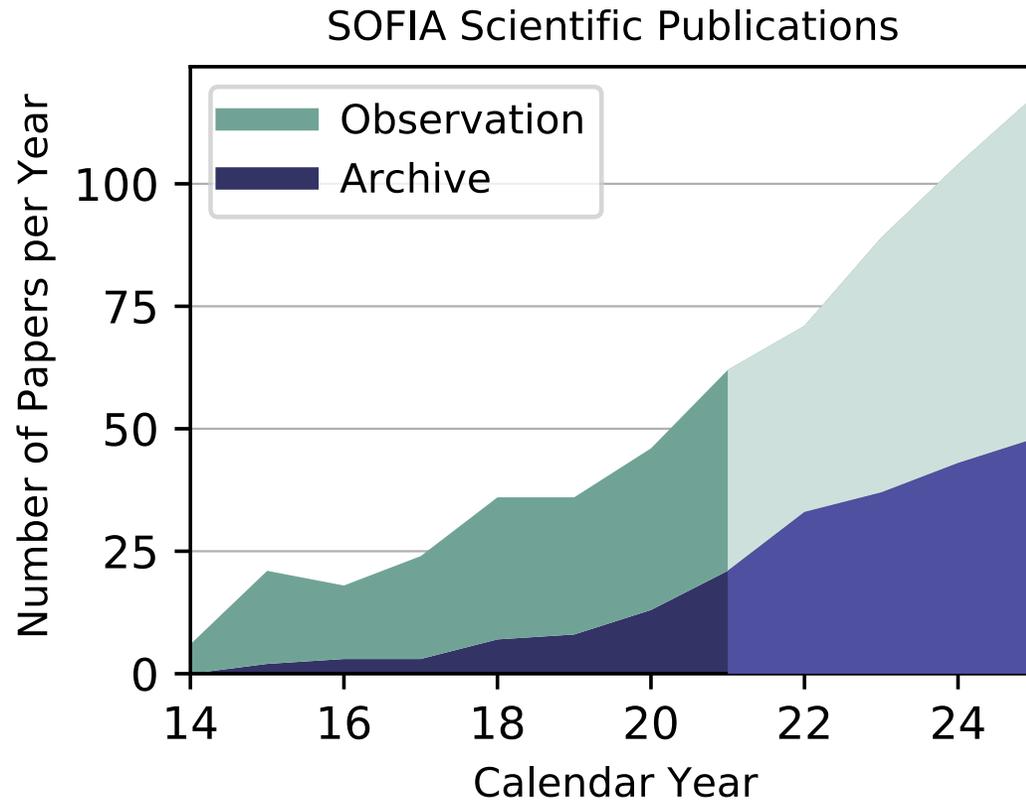
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- Technical publications (81) are almost one third the science publications (281), which demonstrates the value of SOFIA to the astronomical community in far-IR technology and instrument development.

SOFIA Publications



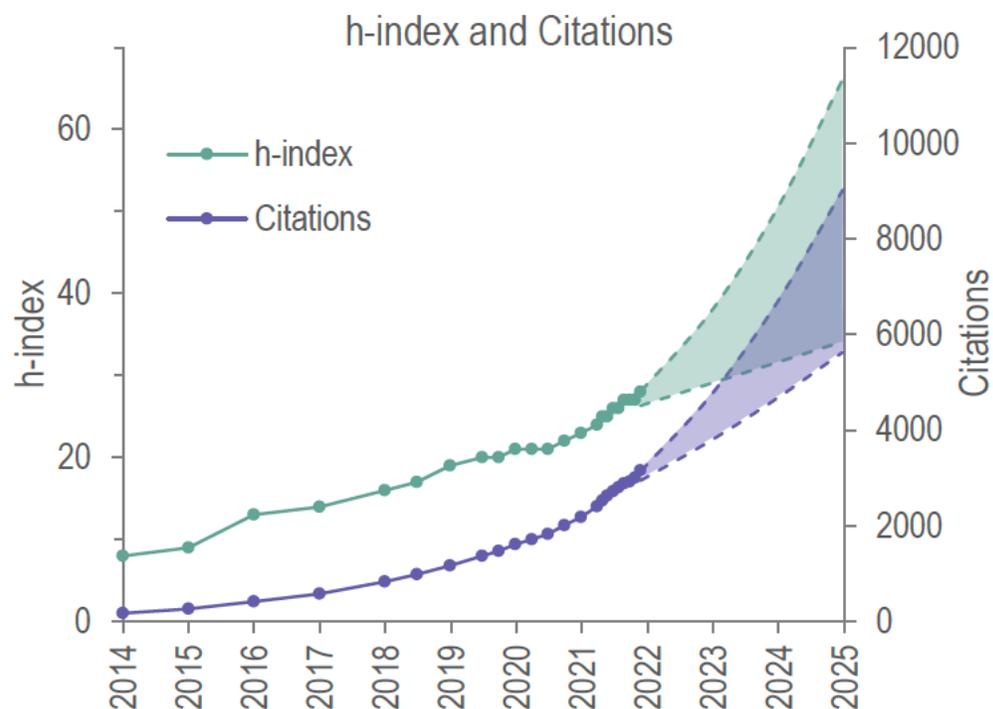
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- Conservative projections indicate that SOFIA will reach over 100 publications per year by 2024 *in line with expectations from its flagship mission review.*
- Your SOFIA publications are vital to the SOFIA's success.
- Every paper counts!

SOFIA Citations and H-index

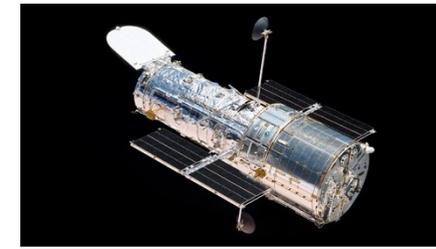
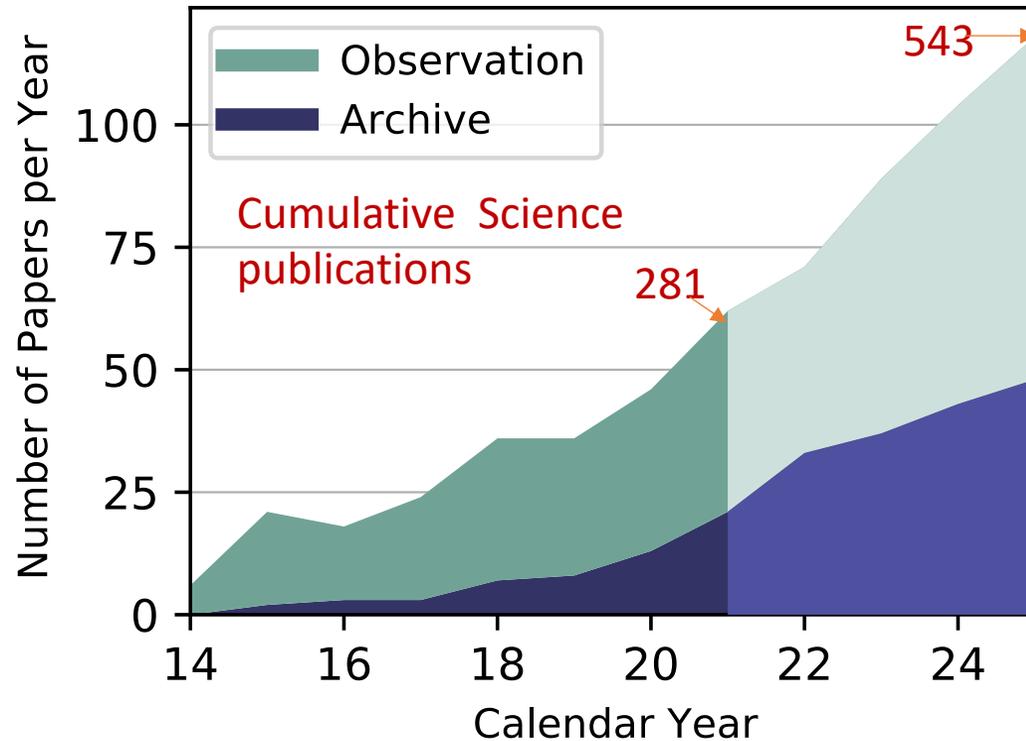


- SOFIAs impact is growing.
- Projections of impact will lie in the shaded region.
- The upper line reflects an extrapolation from the last two years of stats.

SOFIA vs. space missions



SOFIA Scientific Publications



- SOFIA's science publications (281) are significantly higher than the science return from far-IR balloon programs (8).
- SOFIA has been compared to Hubble, a mature robotic space mission (~30 years) with a substantial archive.
- A better comparison is with Herschel, a recent far-IR mission that provided 22,000 observing hours and produced 900 publications. SOFIA has observed for 4000 hours and produced 281 science publications.
- SOFIA has already passed Herschel in paper-writing efficiency, and over its operational lifetime, SOFIA will provide a similar number of observing hours and publications.

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Let's maximize SOFIA's Science Return!