

SOFIA Present and Future



Margaret Meixner
Director
Science Mission Operations

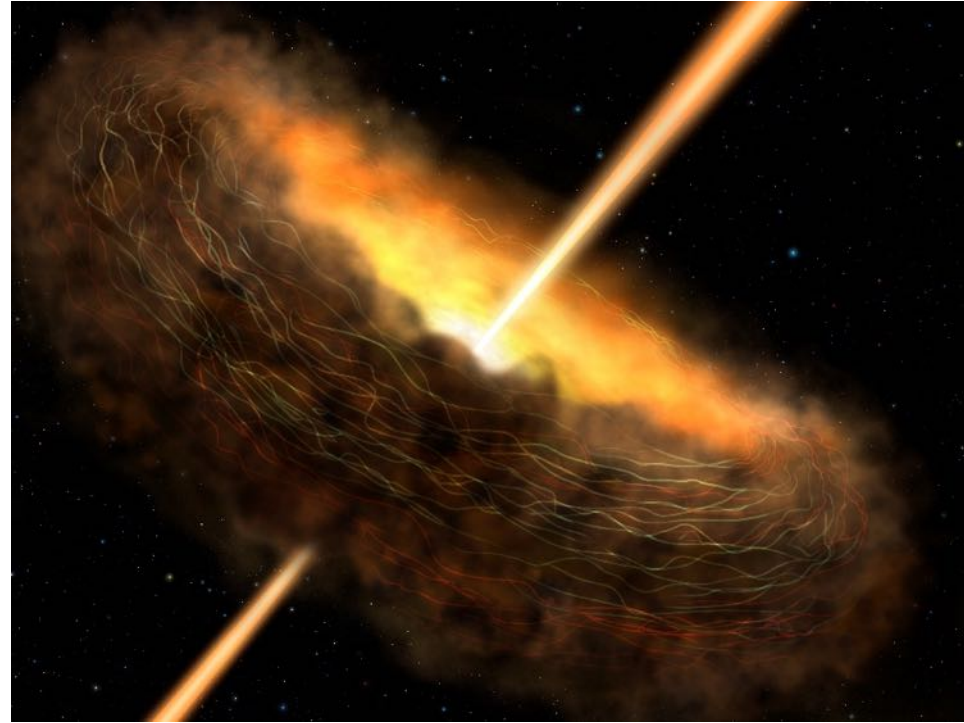
August 12, 2020

SOFIA's HAWC+ view of galaxies



**Magnetic Fields May Be Keeping
Milky Way's Black Hole Quiet**

Image credits: Dust and magnetic fields: SOFIA
Star field: Hubble Space Telescope



**Magnetic Fields May Be Feeding
Active Black Holes – Cygnus A**

Illustration credit: NASA/SOFIA/Lynette Cook

SOFIA's HAWC+ view of galaxies



Magnetic field alignment over an entire galaxy, NGC 1068

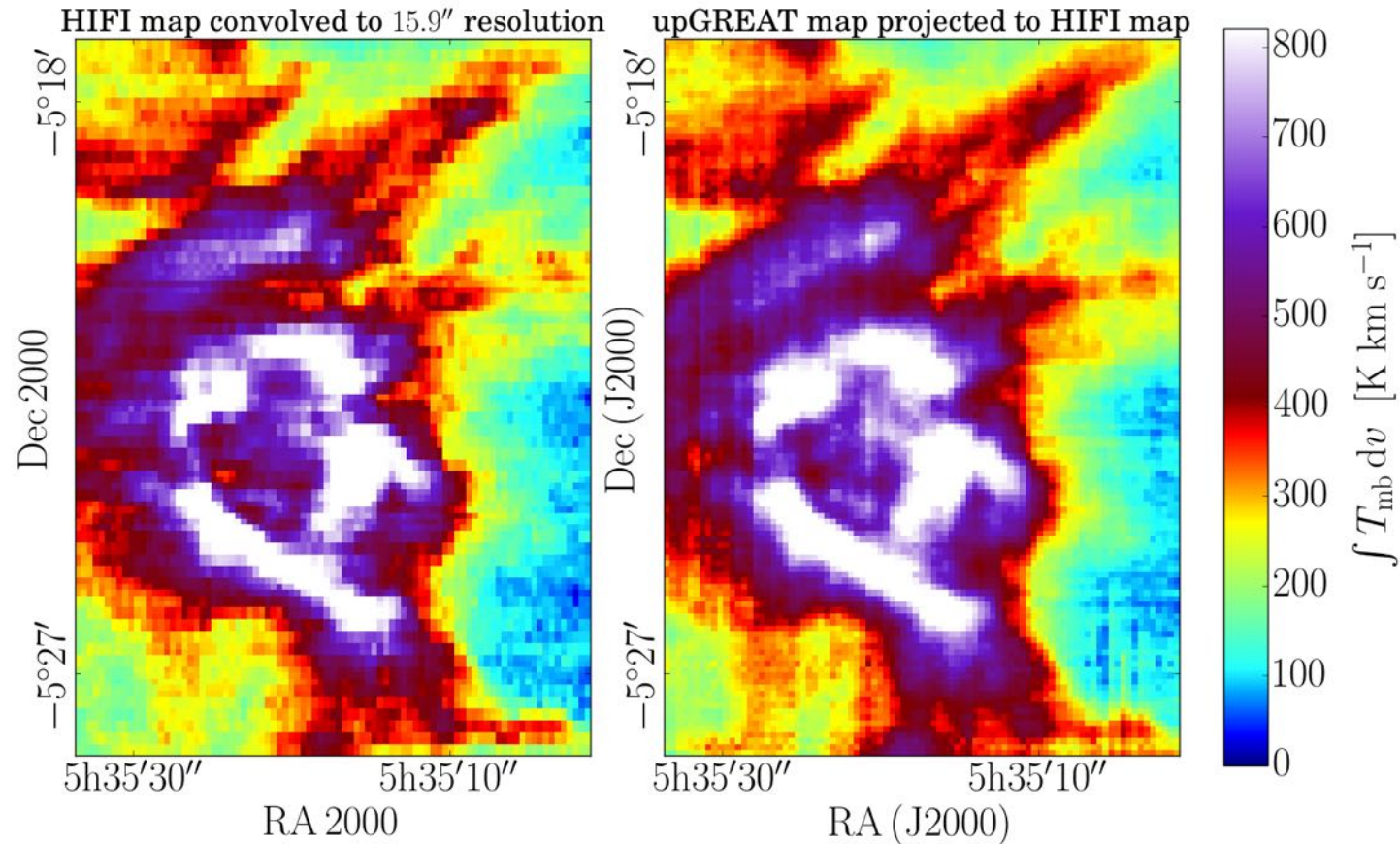
Image credits: NASA/SOFIA; NASA/JPL-Caltech/Roma Tre Univ.



Weighing a Galactic Wind Provides Clues to the Evolution of Galaxies

Image credits: NASA/SOFIA; NASA/JPL-Caltech

SOFIA's upGREAT View of Orion

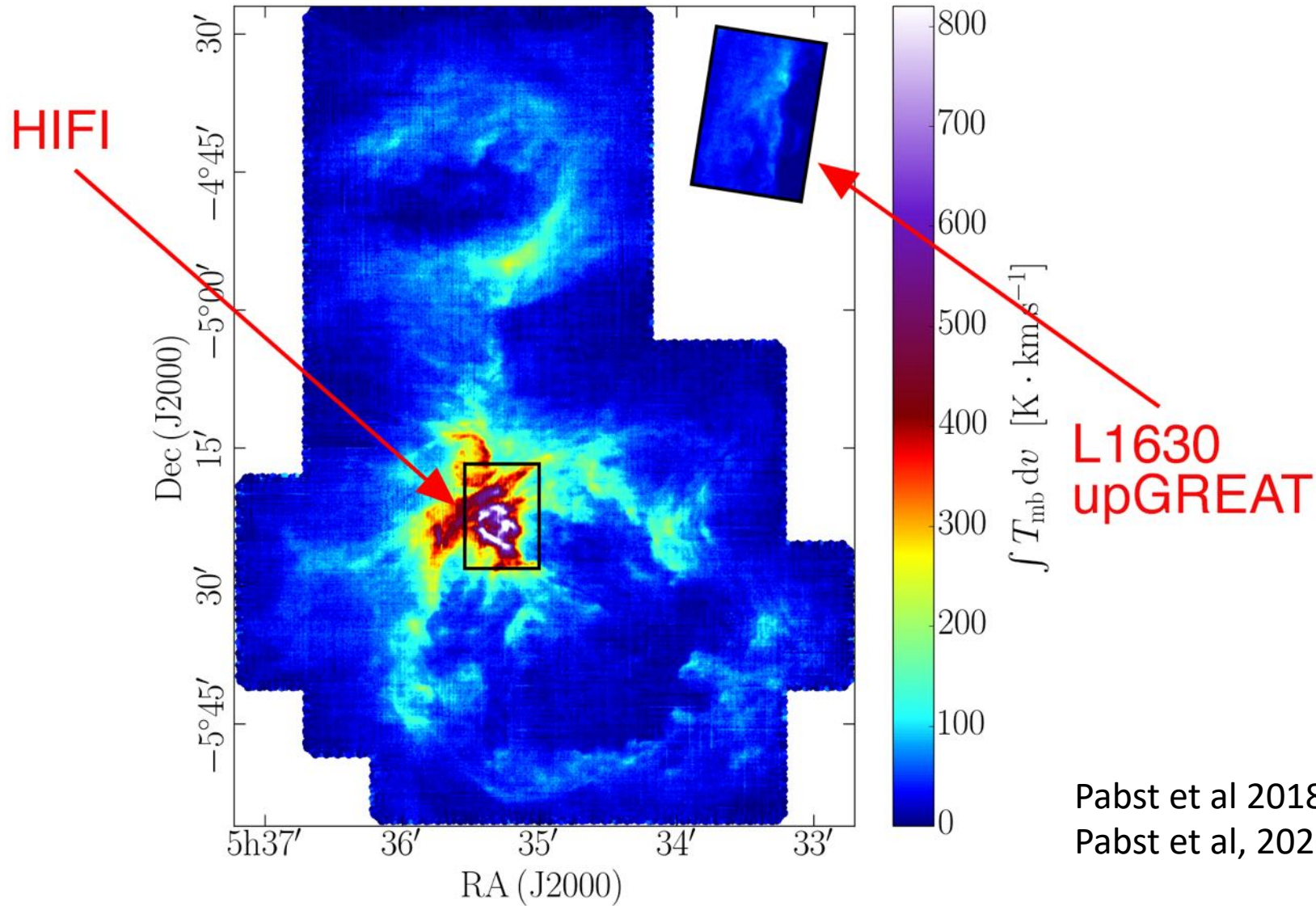


HIFI/Herschel
9 Hours

upGREAT/SOFIA
~35 minutes

Goicoechea et al, 2015, ApJ, 812, 75
Higgins et al 2020, to be submitted

SOFIA's upGREAT View of Orion



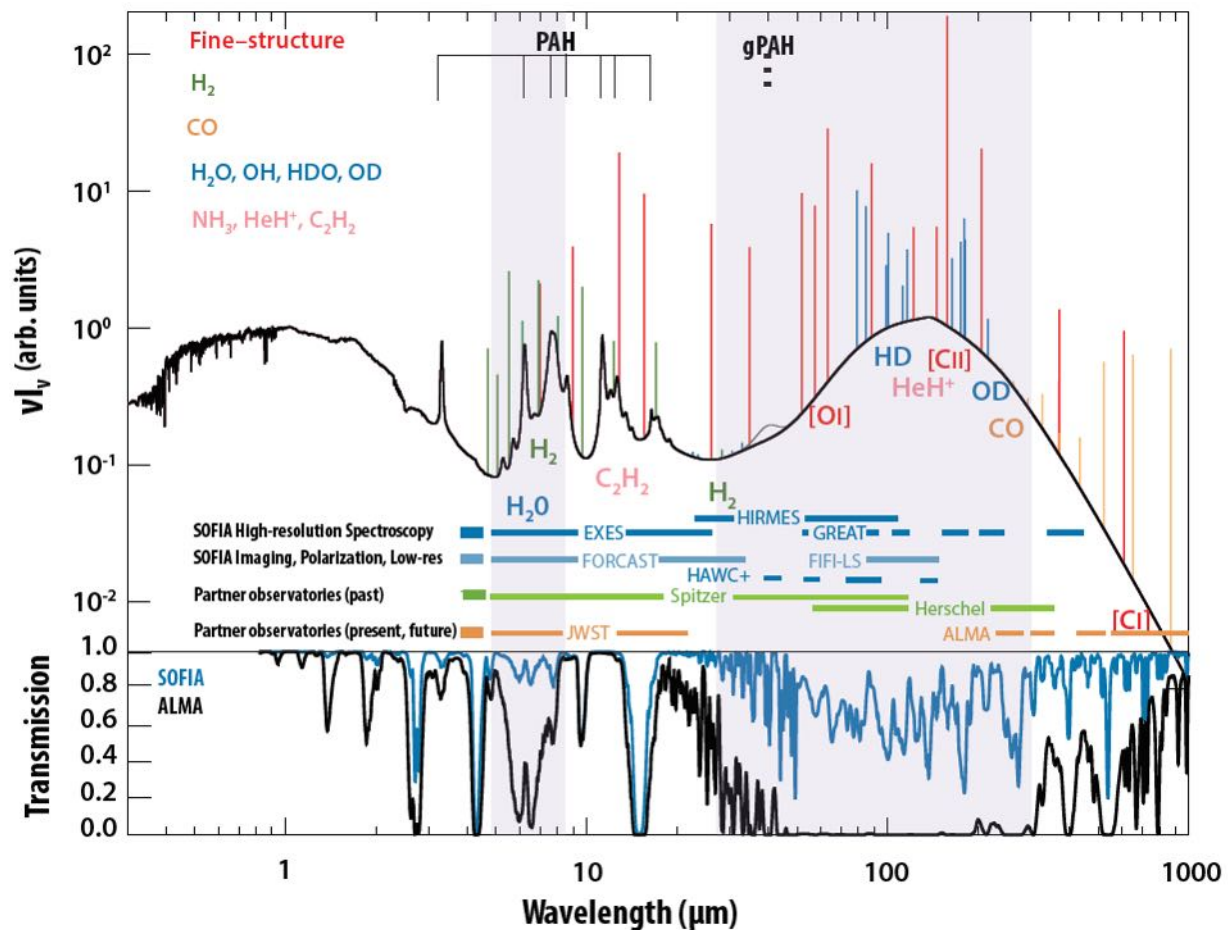
Pabst et al 2018, Nature, 565, 618
Pabst et al, 2020, A&A, in press

SOFIA Legacy Programs: Galactic Center mapping Matt Hankins



Vision for SOFIA's Science Mission

- SOFIA holds a critical unique science capability for astronomers



Vision for SOFIA's Science Mission

- SOFIA has a hard working and dedicated staff – operational protocols are in place for operation this complex observatory



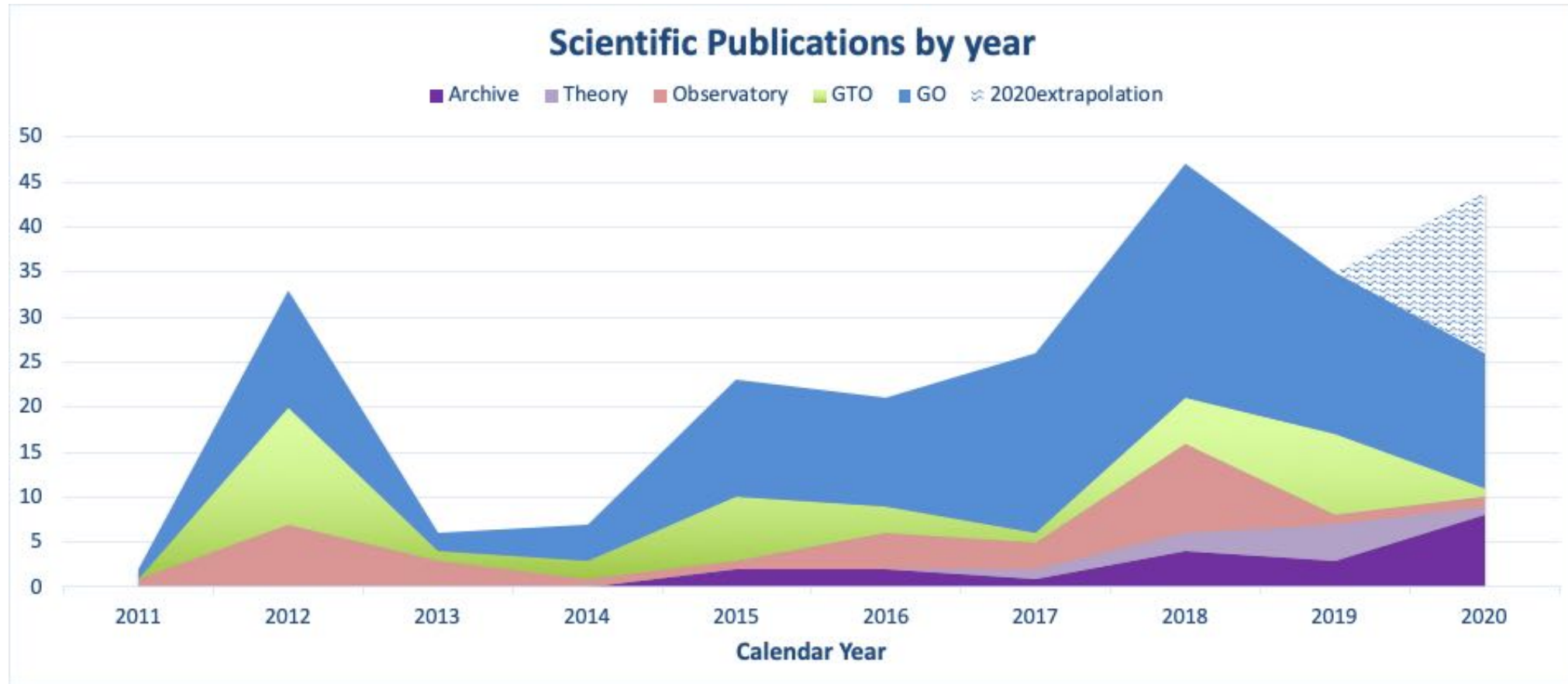
Vision for SOFIA's Science Mission

- Flagship Mission Review provides some clear guidance on where to make improvements
- SOFIA needs to invest in and emphasize science, science, science
- Community building is essential to SOFIA's future
- Partnerships on science with other NASA great observatories and assets to improve community engagement
 - Cycle 9 supports JWST Early Release Science Programs
- Partnerships with ground base observatories:
 - Cycle 9 call has joint programs with GBO

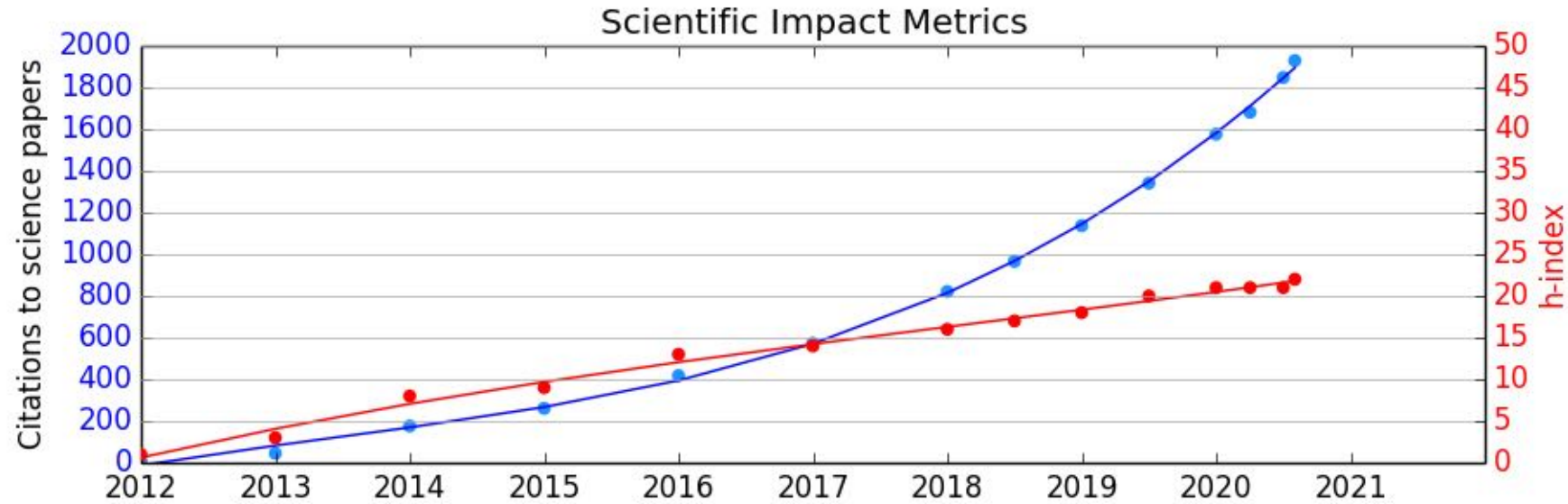
Science Metric Goals for SOFIA by 2022

Science Metric	Goal, stretch	Science Metric	Goal
Publications: Science: Archival: (per year)	$\geq 75, 100$ $> 55, 70$ $> 20, 30$	Completion Rate High-Priority Programs	$> 80\%$
Scientific Impact Citation H-Index: Citations per year	$> 30, 44$ $> 750, 1000$	Fraction of Completed High-priority Programs Resulting in Publications	$> 80\%$
Oversubscription:	> 5	High-quality Observing Time % research hours at precipitable water vapor $< 15 \mu\text{m}$ on-sky efficiency at precipitable water vapor $< 15 \mu\text{m}$	$> 90\%$

Science Metrics: number of refereed publications

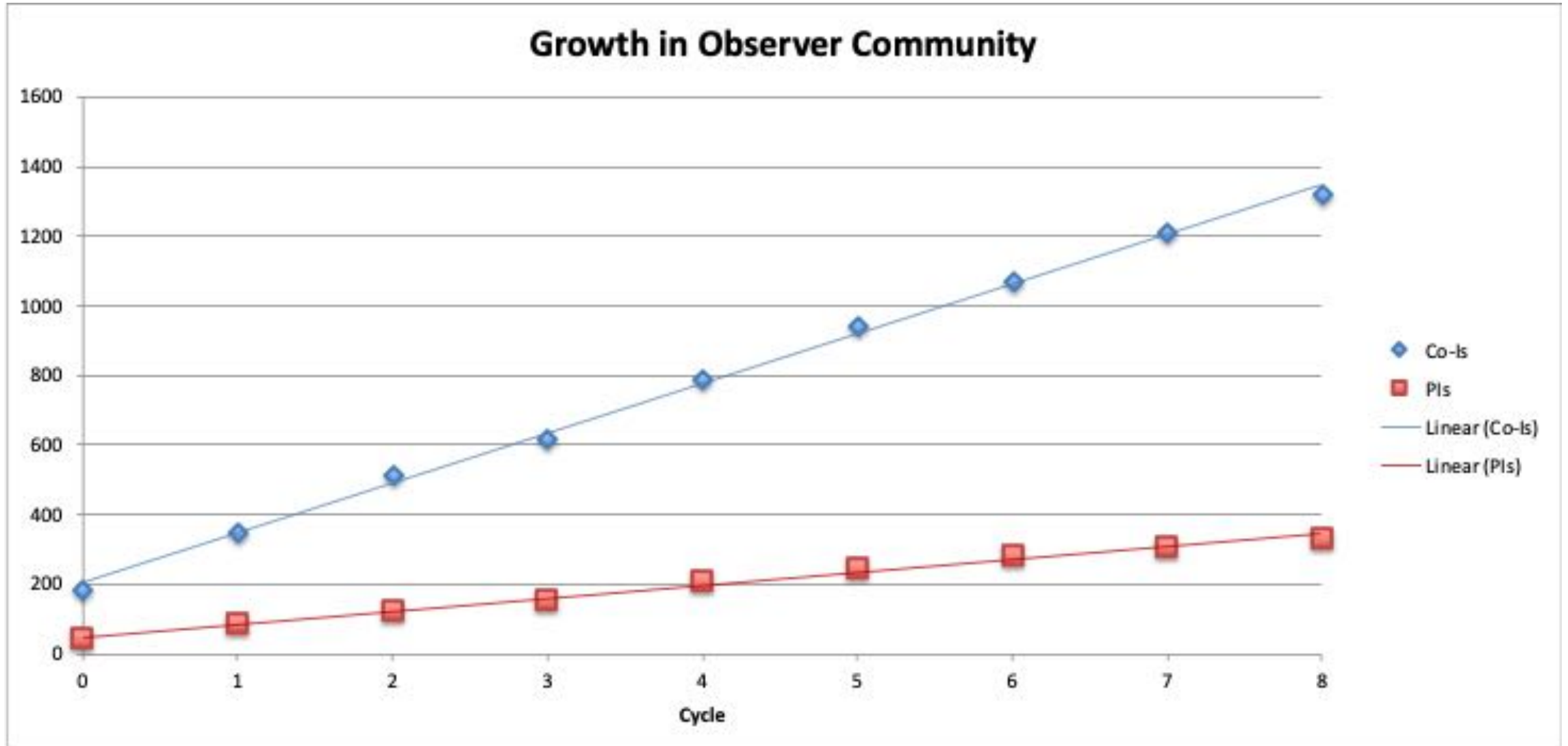


Science Metrics: impact



	1/1/12	1/1/13	1/1/14	1/1/15	1/1/16	1/1/17	1/1/18	1/1/19	1/1/20	3/30/20	6/30/20	7/31/20
Citations	8	45	176	261	418	573	821	1137	1576	1681	1848	1929
h-index	1	3	8	9	13	14	16	18	21	21	21	22

Unique PIs and Co-Is have increased



Community participation is essential

- Make SOFIA data publication your number one priority
 - Tell your colleagues to do the same
- Write papers with archival SOFIA data
- Write papers using SOFIA data in combination with ALMA, Chandra, Hubble....
- Cite yours and other papers about SOFIA data
- Invite people to conferences to talk about their SOFIA results
- Science Organizing Committee members: Give SOFIA results talk slots, not just posters

Community participation is essential

- What are your ideas to
 - Expand the SOFIA community
 - Increase SOFIA publications
 - Increase citations for SOFIA papers
 - Increase impact of SOFIA science in astronomy

Cycle 9 Call for Proposals: Key Dates

Milestone	Date
Release (US GO)	June 2, 2020
Update on Website	July 24, 2020
Proposals Due	September 4, 2020 (9:00 pm PDT)
US TAC	October 7-10, 2020
Selections Announced	December 2020
Observing Period	July 6, 2021 – September, 2022