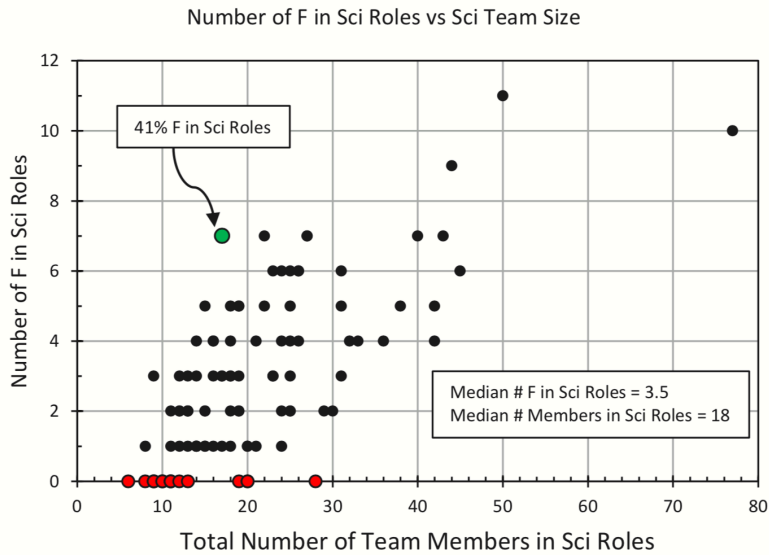


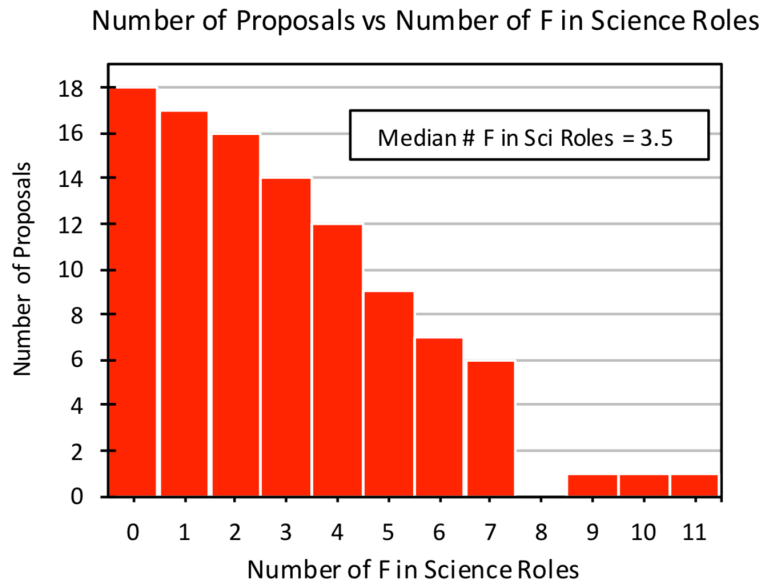


Prof. Erika Hamden  
University of Arizona  
Steward Observatory, Astronomy Department

# Astrophysics Explorer Proposals 2008-2016

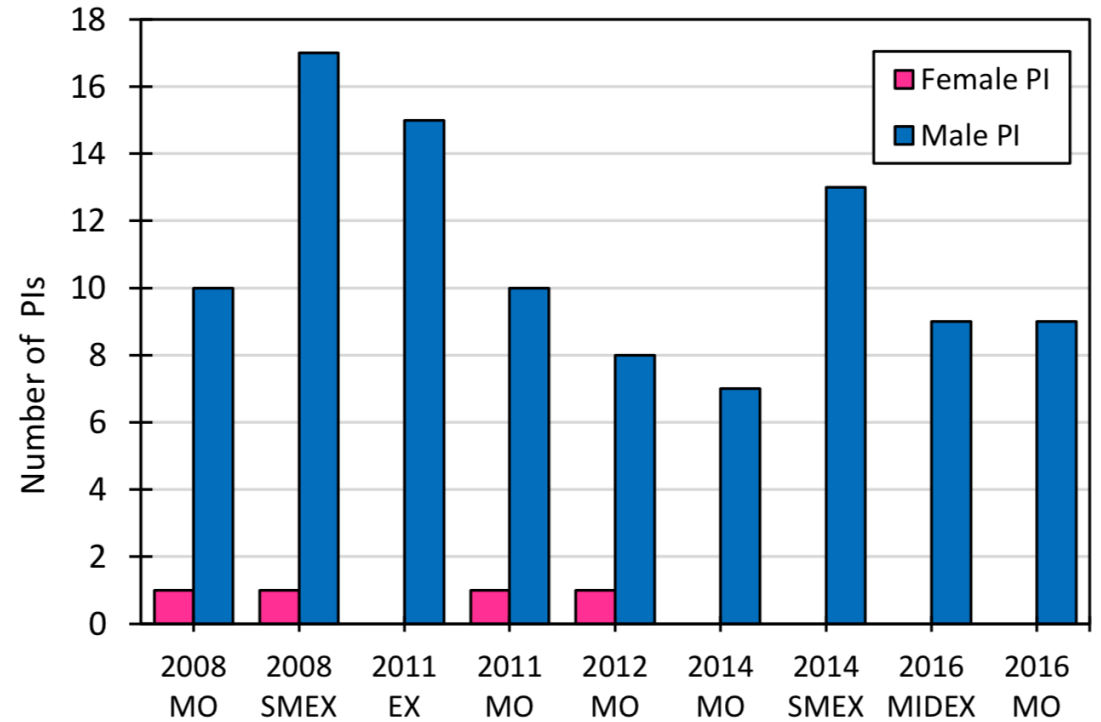


**Figure 5.** The number of females in science roles is shown against the size of the science team for all 102 Ex/MO proposals submitted during 2008–2016. Note the presence science teams with as many as 28 members that have zero females (red dots). The proposal with the highest percentage of females, 41%, is shown by the large green dot; this was submitted by a PI at a university to the 2008 SMEX AO.



**Figure 4.** The number of proposals versus the number of females in science roles is shown. Note that 18% of the submitted Ex/MO proposals have zero females in science roles; this is the peak of the distribution.

Submitted Astro Ex/MO Proposals 2008 - 2016 by PI Gender



**Figure 1.** Distribution of PIs for proposals submitted to Astrophysics Ex/MO AOs during 2008–2016 by number and gender.

# How can this be made easier?

- This is a complex problem- at issue are multiple stakeholders, each making choices about what mission and PI they should invest in to maximize their likelihood of success. NASA HQ has some *limited* influence in setting priorities, but is in fact at the very end of a long chain of decisions made by other groups.
- But, asymmetry of information could be fixed relatively easily.
  - Timelines! When to start building a team
  - Contacts! Who should you talk to at NASA Centers and at Industry partners
  - How to talk about a science case which is necessarily still evolving
  - Being comfortable with uncertainty and the iterative nature of the process.

# A workshop

- Planned by myself, Prof. Erika Hamden, with Dr. Michael New & Ellen Gertsen from SMD.
- The Heising-Simons Foundation contributed around 100K, NASA another 30K
- We hired a STEM-Equity consultant, Dra. Nicole Cabrera Salazar, who provided assistance in creating the application questions, rubric, and agenda.
- Application was necessary since we wanted to fund everyone who attended to make the workshop accessible.

# Application Questions:

- 5 questions focused on science, leadership, teams, decision making, and diversity, equity, inclusion, and accessibility (DEIA) work.
- Submitted to NSPIRES as an NOI
- Nearly 200 applicants, 130 of which were compliant
- 40 applicants selected
- Flights, Accommodation, Meals, Transportation paid for by the foundation grant for all attendees

# Workshop

- Over 2.5 days in November, 2019 in Tucson
- 39 participants- 2/3 were women, 50% Planetary Science, 25% astrophysics, remainder Helio and Earth Science
- Around 25 mentors/speakers/industry partners
- Agendas and workbooks now on the website-
  - Emphasis on interactive activities as much as possible
  - Speed Networking session was cited as most useful
- In addition, we have held shorter sessions at AGU and AAS meetings in the last year to describe some steps of the process. Planning 1/2 or full day workshops for next meetings.

# Launchpad 2019 Agenda

## Day 1

- Creating a Science Case (Panel)
- Requirements (short talks)
- Science Traceability Matrix
- Proposal Process: What to expect

## Day 2

- How to build a science team (Panel)
- How to get support from your home institution (Panel)
- Speed Networking with industry and centers
- Pitch development

## Day 3

- Proposal timelines
- How to tell a story
- Wrap-up

Talks, panel participation, & mentors from:

NASA HQ

GSFC

JPL

APL

ARC

LASP

Ball Aerospace

Lockheed Martin

Northrop Grumman

University of Arizona

ASU

University of Iowa

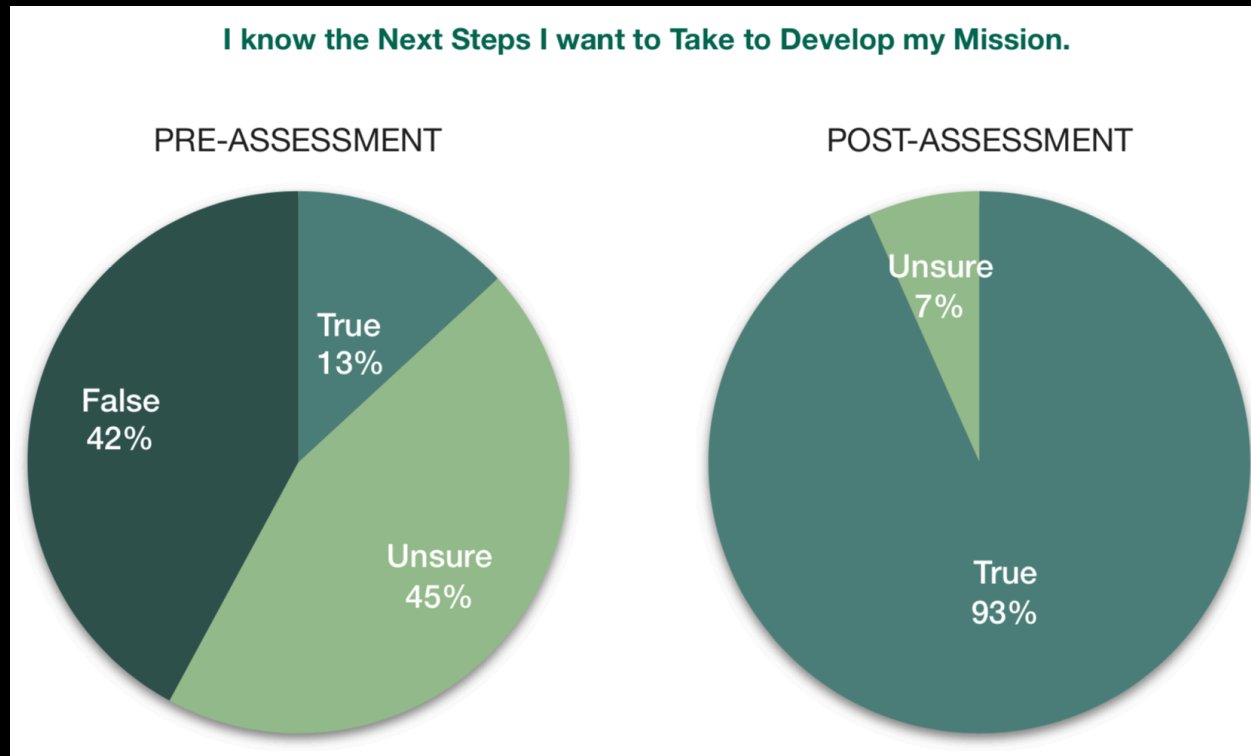
SSL

# Key Takeaways

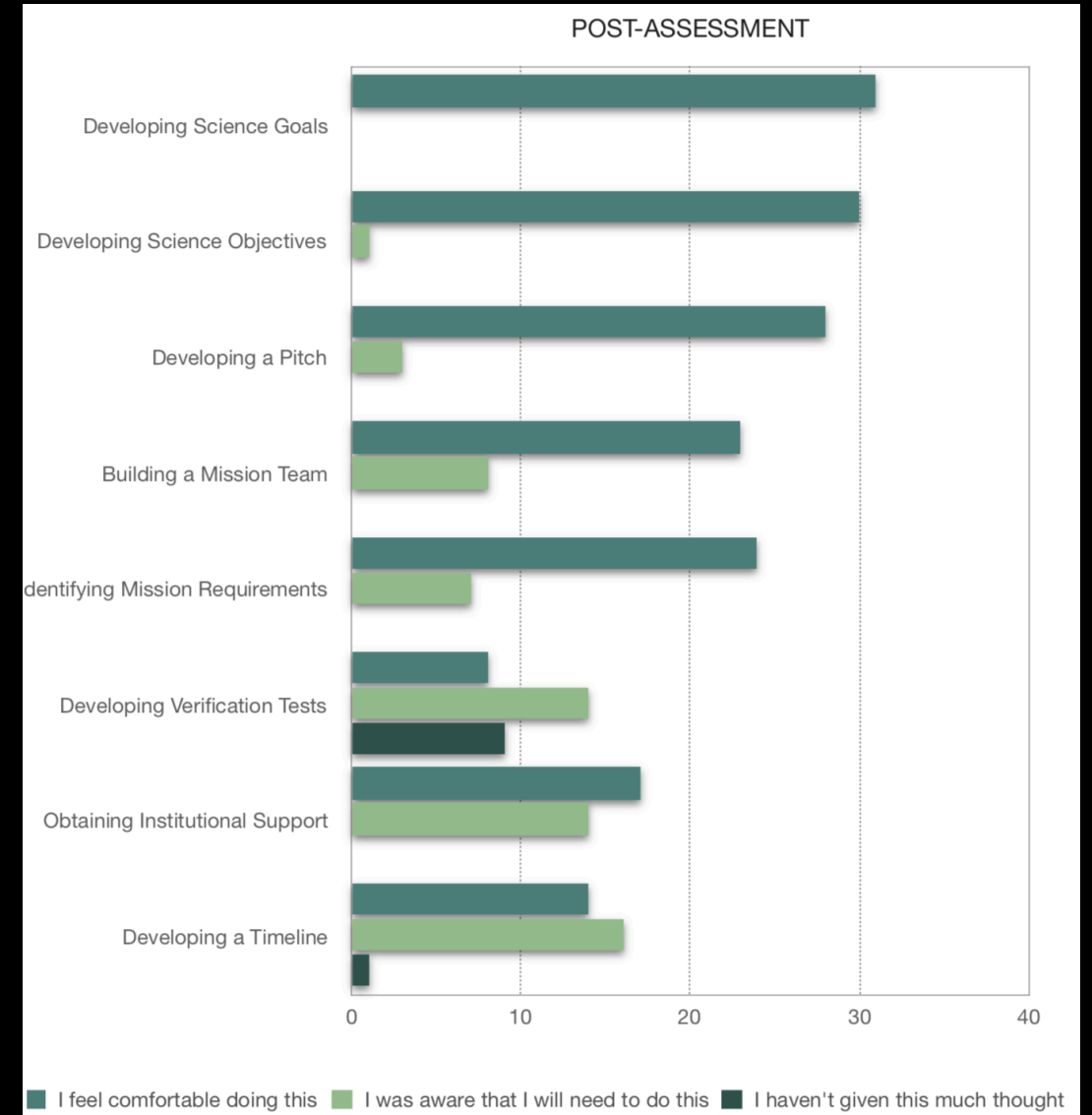
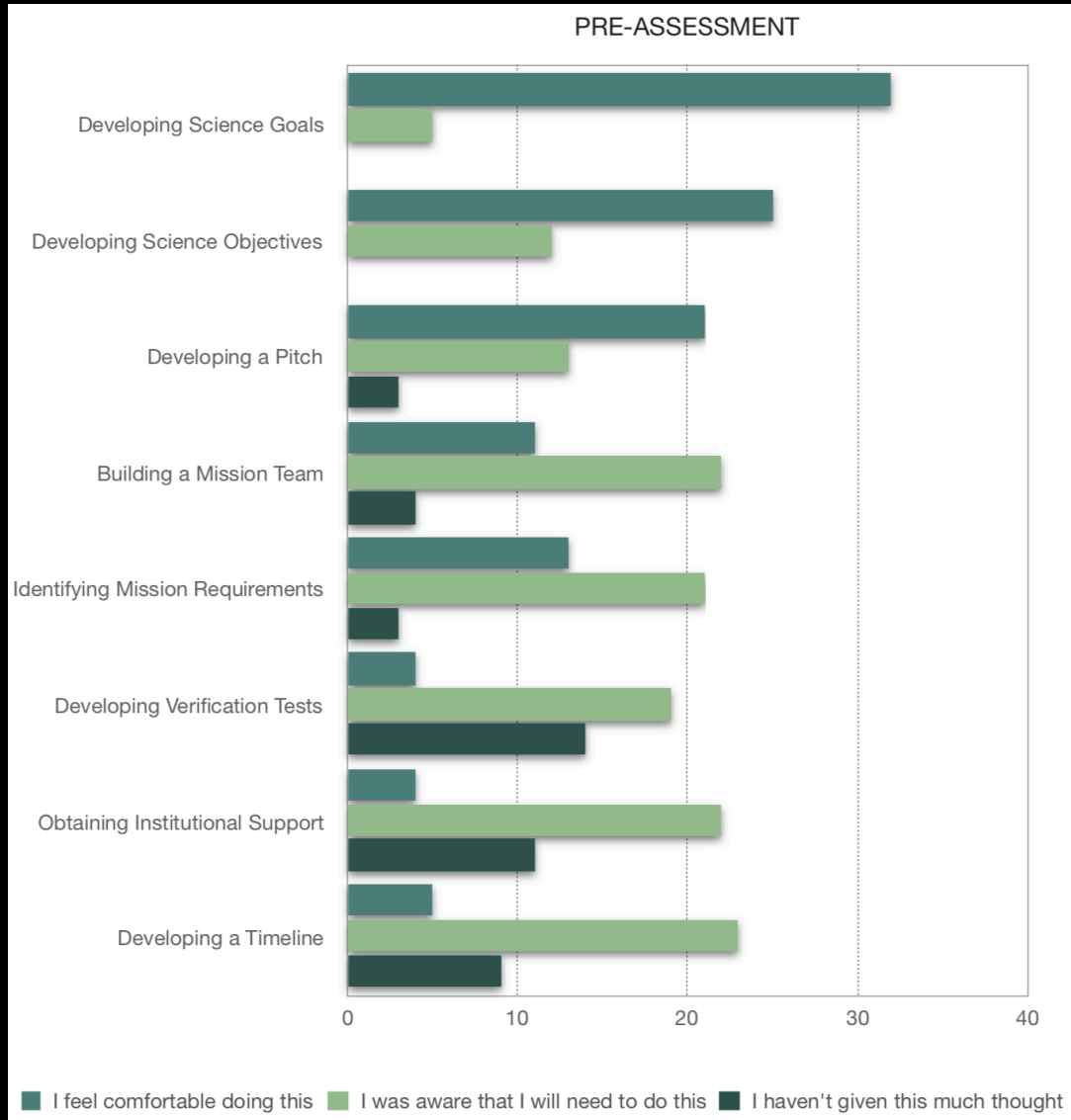
- Participants were generally appreciative of the time and effort taken to develop the Launchpad
- Several participants noted that the workshop exceeded their expectations, especially in terms of networking, gaining the confidence to submit proposals, and demystifying the process
- 93% of participants said that the Launchpad was a good use of their time
- 86% of participants reported feeling comfortable, welcome, heard, valued, and respected
- After the conclusion of the Launchpad, 93% of participants feel they know the next steps they need to take to develop their mission, compared to 13% prior to the Launchpad
- Prior to the workshop, only 6 participants reported knowing someone in the industry that they felt comfortable asking to be on their team. After the workshop, this number increased to 26 participants.
- As a result of the Launchpad, 14 participants reported feeling comfortable obtaining institutional support, compared to only 3 participants prior to the Launchpad.



# Impact-



# Impact- TBD



# Impact-

- One Astrophysics AS3 (Small Sat Investigation) proposal was a direct result of the workshop.
- Several other proposals are moving forward.
- Website with conference materials complete
- My original paper remains to be written
- This was a highly idiosyncratic workshop based, primarily, on MY own experiences writing an Astrophysics SMEX proposal. Need to expand the scope and generalize
- Important to distinguish between what NASA HQ can do vs. what decisions NASA centers or Industry Partners make at earlier stages in the process

# Lanchpad 202?

- Planning for 2020 workshop, tentatively in early/mid August at the University of Michigan, Ann Arbor. Prof. Michael Liemohn joining the planning team. This was disrupted by COVID-19
- Fully funded by Heising-Simons Foundation. Moving to 3 full days instead of 2.5
- Anticipating funding another 40 participants
- 8 weeks from posting of call on NSPIRES to due date, with more precise questions and shorter answer word count.
- More focus on applicant pool diversity, especially recruitment from smaller universities/underrepresented populations
- Feedback from 2019 will inform changes in agenda and scope.

# Suggestions for future Launchpads

- Additional study by inclusion experts on the lack of PI diversity across SMD and expert suggestions for improvement
- Create an SOC and develop a funding strategy for long term sustainability of the Launchpad
- Possible development of a PI incubator- a longer term process closer to the Planetary Science Summer School
  - Over multiple weeks with work via webinar
  - In-person workshop as culmination of incubator
- Post all Launchpad materials online for easy access by people unable to attend or not accepted



# For Researchers

Overview

FAQ

Grant Funding

ROSES Blog

NAC Science Committee

Team

PI Resources

Science Data

Help & Support

## PI Launchpad Workshop Content

### About the PI Launchpad

Are you interested in developing your first flight mission proposal but have no idea where to start? NASA Science Mission Directorate (SMD), the Heising-Simons Foundation, and the University of Arizona have teamed up to make this process more transparent and accessible.

In the Fall of 2019, the University of Arizona hosted the first PI Launchpad. This workshop occurred over 3 days, covering a range of topics relevant to mission development.

Attendance was limited due to budget constraints and many more people applied or expressed interest than we were able to accommodate. As a public service, we are posting all of the content developed for the PI Launchpad here. In addition to the workbook used by participants throughout the workshop, below we post videos and pdfs for all panels and presentations.

Any information contained in this or any linked pages is meant for general use and not for

### PI Launchpad

- > [PI Launchpad Workshop Content](#)
- > [Workshop Sessions](#)
- > [Resources](#)

# Upcoming Opportunities!

- PIONEERS- SmallSat with total cost < 20M. Due this Fall, expect to be annual
- MoO- SmallSat with total cost < 40M, as part of the Explorer AO's. Due end of 2021
- APRA- due end of 2020
  - SmallSat with total cost < 5M, typically annual solicitation
  - Rockets and Balloons, also annual solicitation
- AS3- SmallSat Concept studies. Most recent solicitation was December 2019, announced last month. Will likely be recurring

# So you want to be a PI?

## Steps:

1. Decide what your science question is.
2. Start building a science team
3. Reach out far and wide to ask for guidance from people who are PIs
4. Build a technical team
5. Don't give up



# Questions?

