Dual-Anonymous Peer Review at NASA

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Making Peer Review Better

NASA's Science Mission Directorate (SMD) is strongly committed to ensuring that the review of proposals is performed in an equitable and fair manner.

To this end, and motivated by a successful study conducted for the Hubble Space Telescope, SMD is adopting dual-anonymous peer review (DAPR) for numerous programs.

Under this system, not only are proposers unaware of the identity of the members on the review panel, but the reviewers do not have explicit knowledge of the identities of the proposing team during the scientific evaluation of the proposal.

Overview

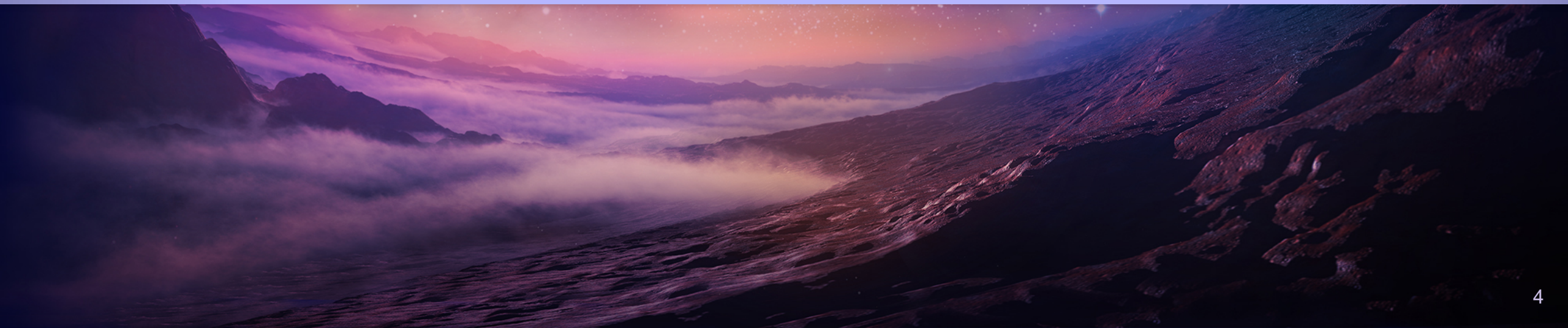
WHAT IS DUAL-ANONYMOUS PEER REVIEW?

WHICH PROGRAMS ARE CONVERTING TO DUAL-ANONYMOUS PEER REVIEW?

ANONYMIZED PROPOSALS

ANONYMIZED REVIEWS

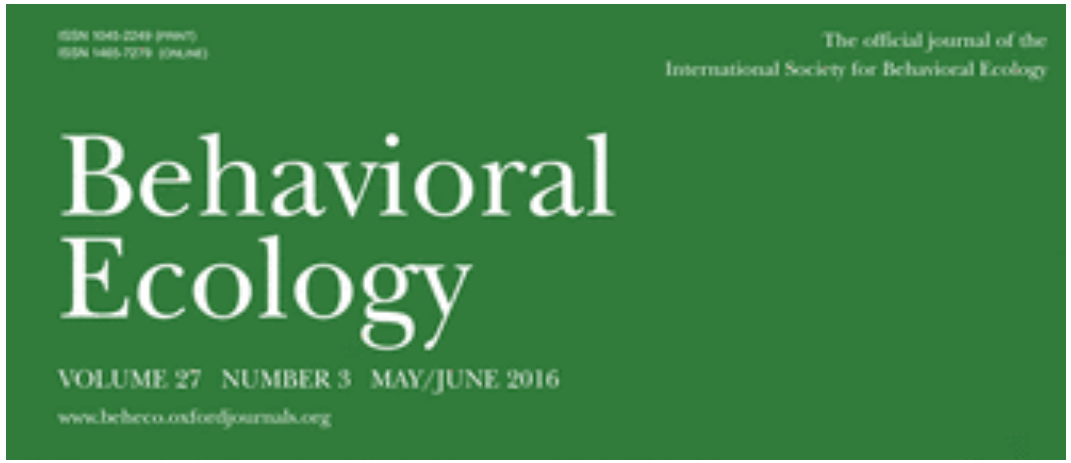
Motivation



1. It is difficult to completely interrupt bias through training.

2. Structural changes are also needed.

Double-Blind, aka Dual-Anonymous Review

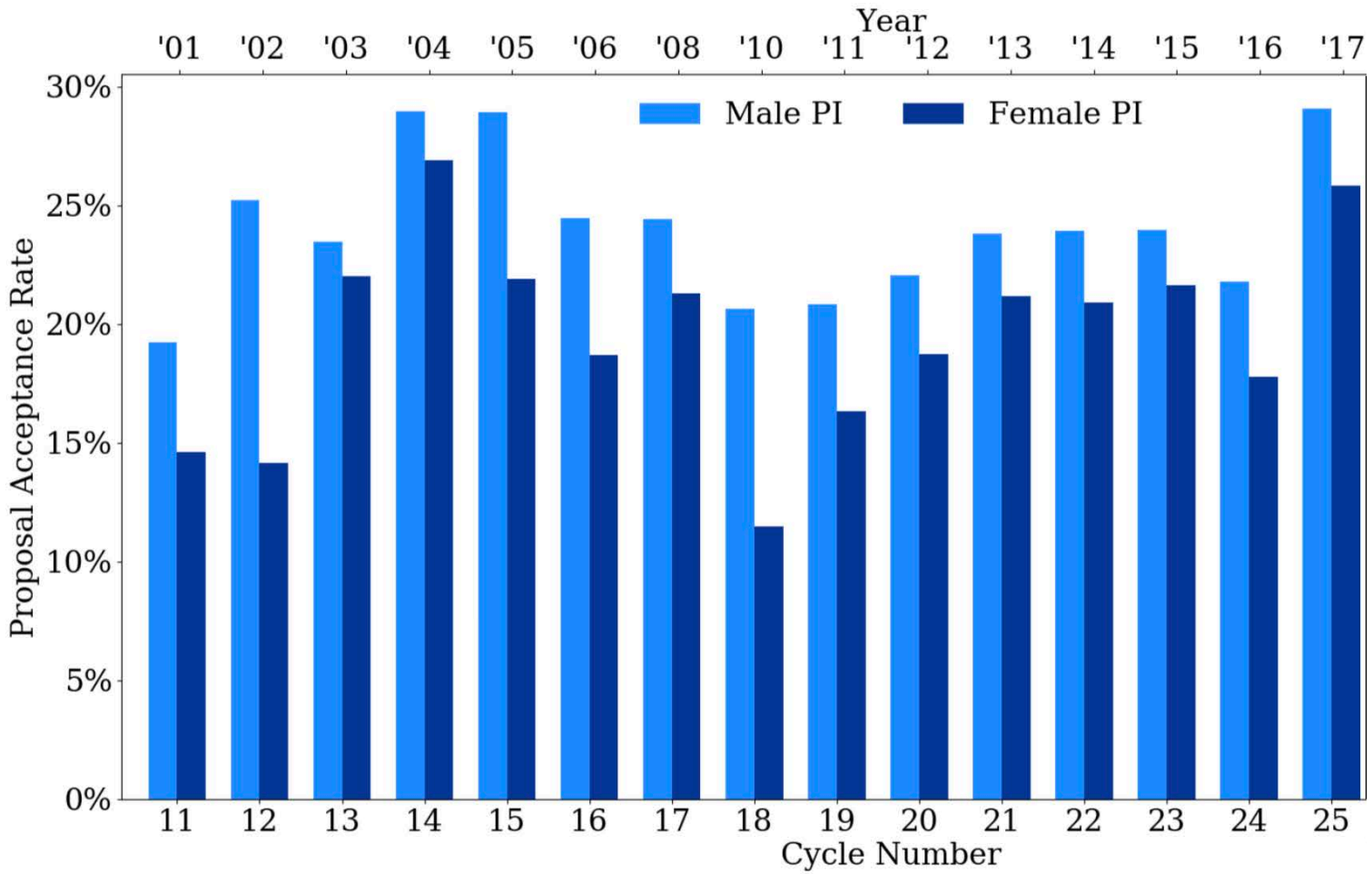


"In 1970, the top five orchestras in the U.S. had fewer than 5% women. Today, some… are well into the 30s."

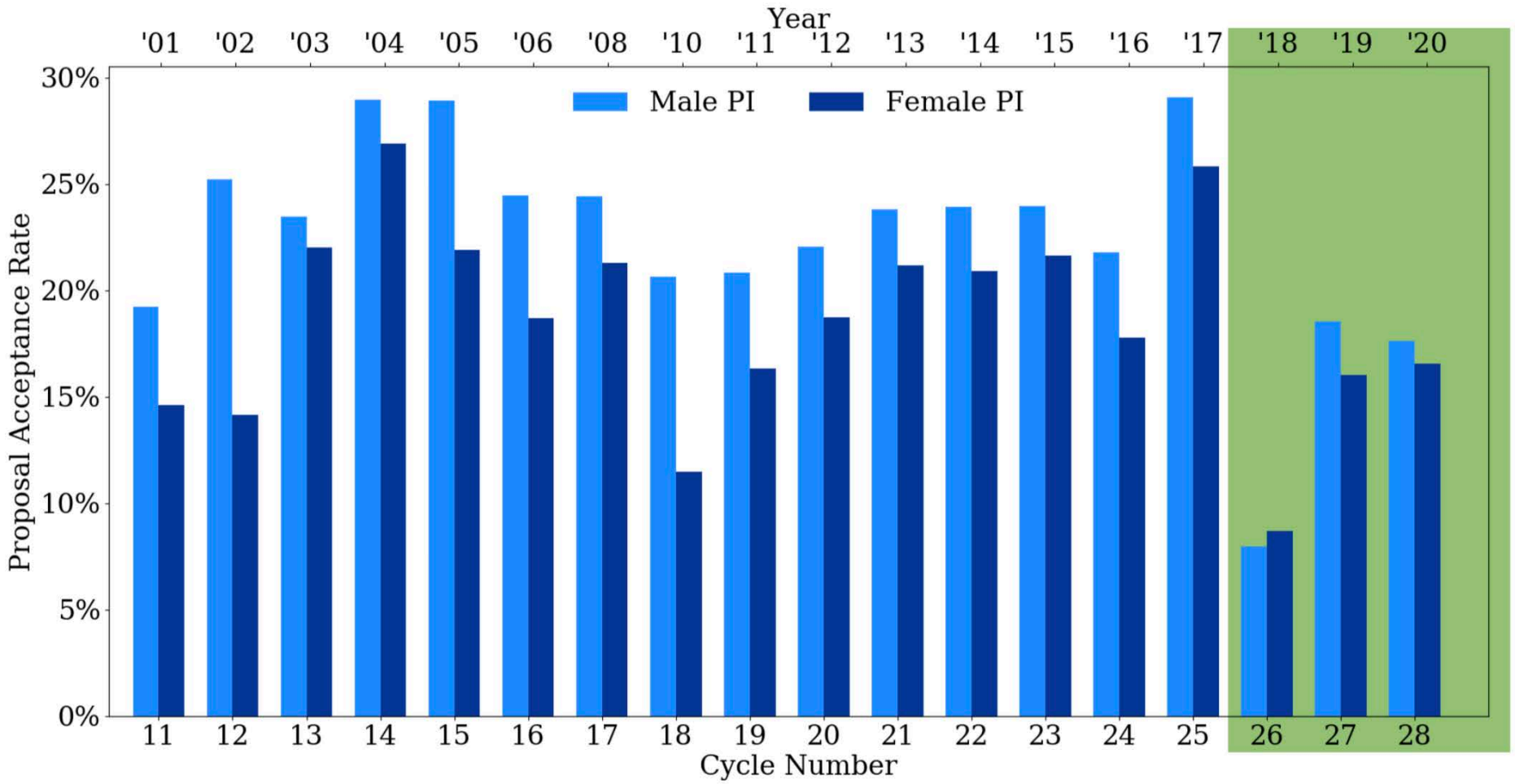
Behavioral Ecology switched to double-blind review, resulting in a significant increase in female first-authored publications

Hubble

Hubble Switch to Dual-Anonymous



Hubble Switch to Dual-Anonymous



Cycles 11-25
$\langle\Delta\rangle = 5\%$

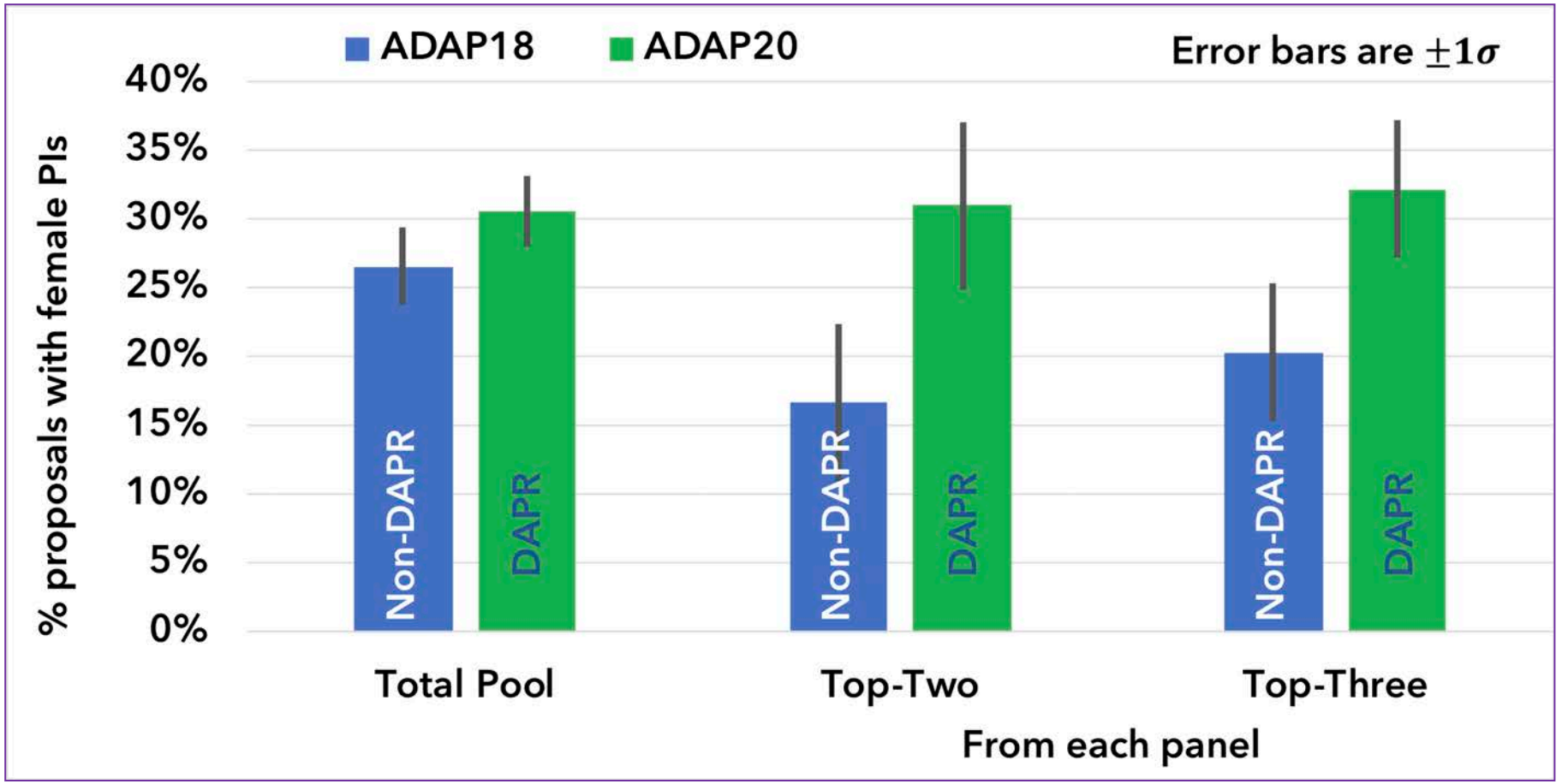
Cycles 26-28
$\langle\Delta\rangle = 1\%$

2020 NASA Group Achievement Award

“For outstanding effort in strengthening the review of Hubble Space Telescope observing proposals, sparking a revolution in the evaluation of proposals in space science”, the 2020 NASA Group Achievement Award is made to Hubble Space Telescope Dual-Anonymous Peer Review Team.

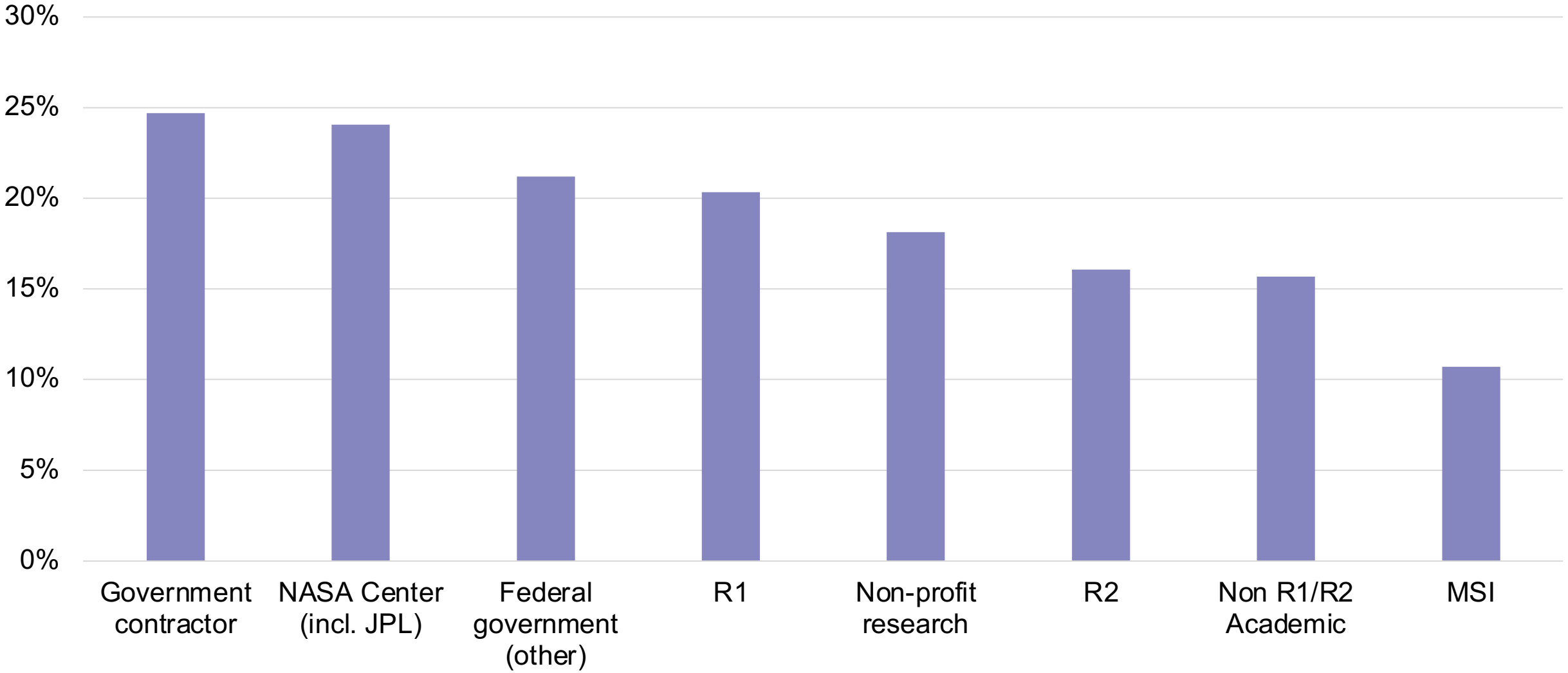
Congratulations to: Tom Brown, Peter Garnavich, Stefanie Johnson, Jessica Kirk, Mercedes Lopez-Morales, Andrea Prestwich, Neill Reid, Christina Richey, Ken Sembach, Paule Sonnentrucker, Michael Strauss, Lou Strolger, and Brian Williams.

Recent ADAP Results




Gender

Success Rate by Institution Type for ROSES Programs in SMD Pilot (ADAP + Earth USPI + Habitable Worlds + Heliophysics Guest Investigator)

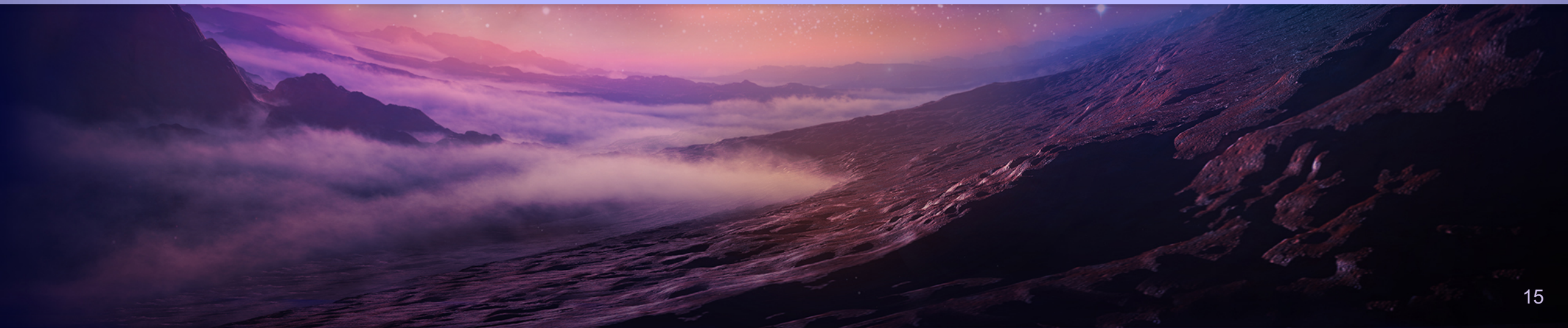


A key goal of dual-anonymous peer review is to level the playing field for everyone.

We want to create a change in the tenor of discussions, away from the individuals on the proposing team, and toward the proposed science.

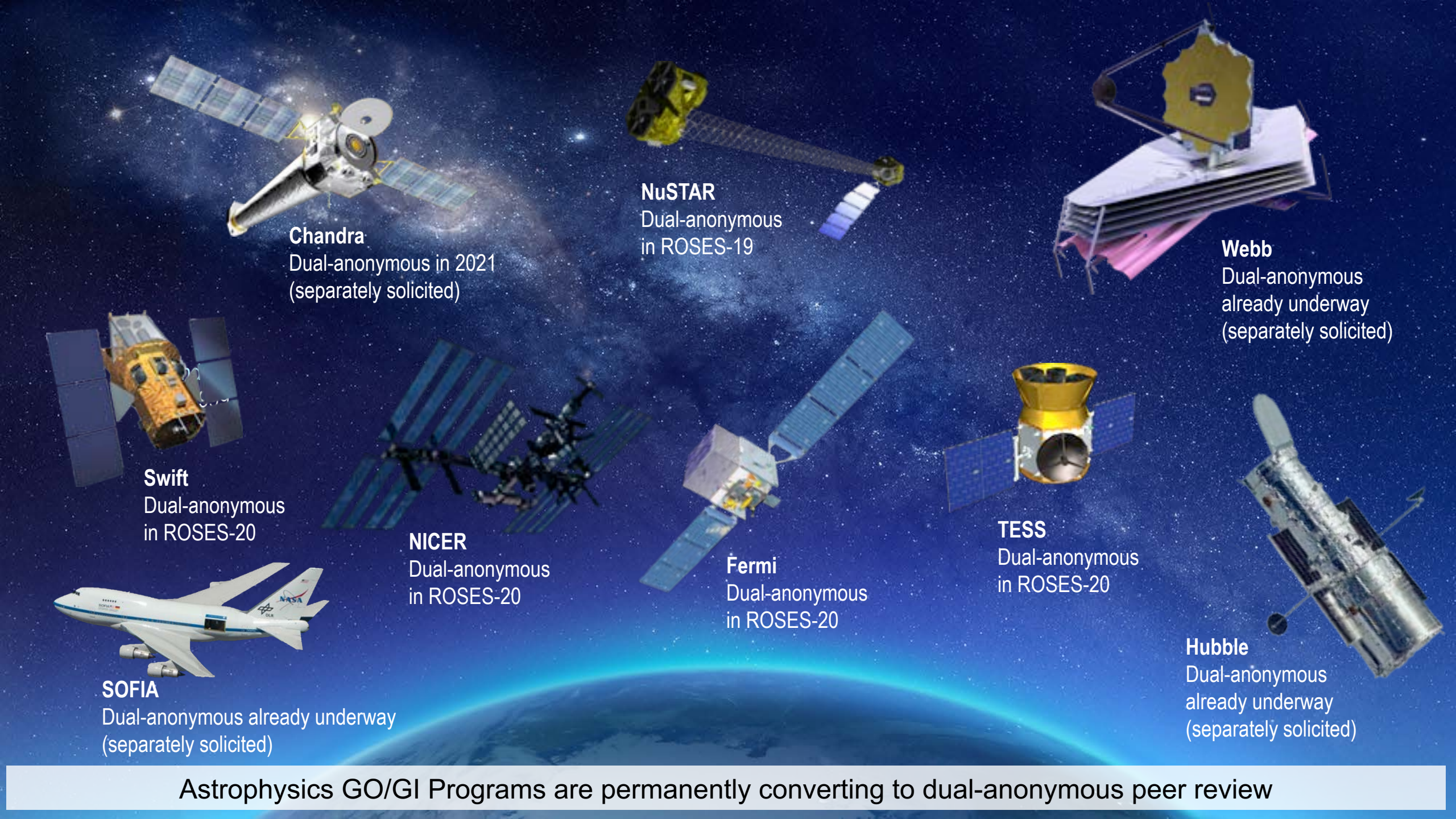
However, dual-anonymous peer review is not a silver bullet.

Which Programs Are Converting to Dual-Anonymous Peer Review?



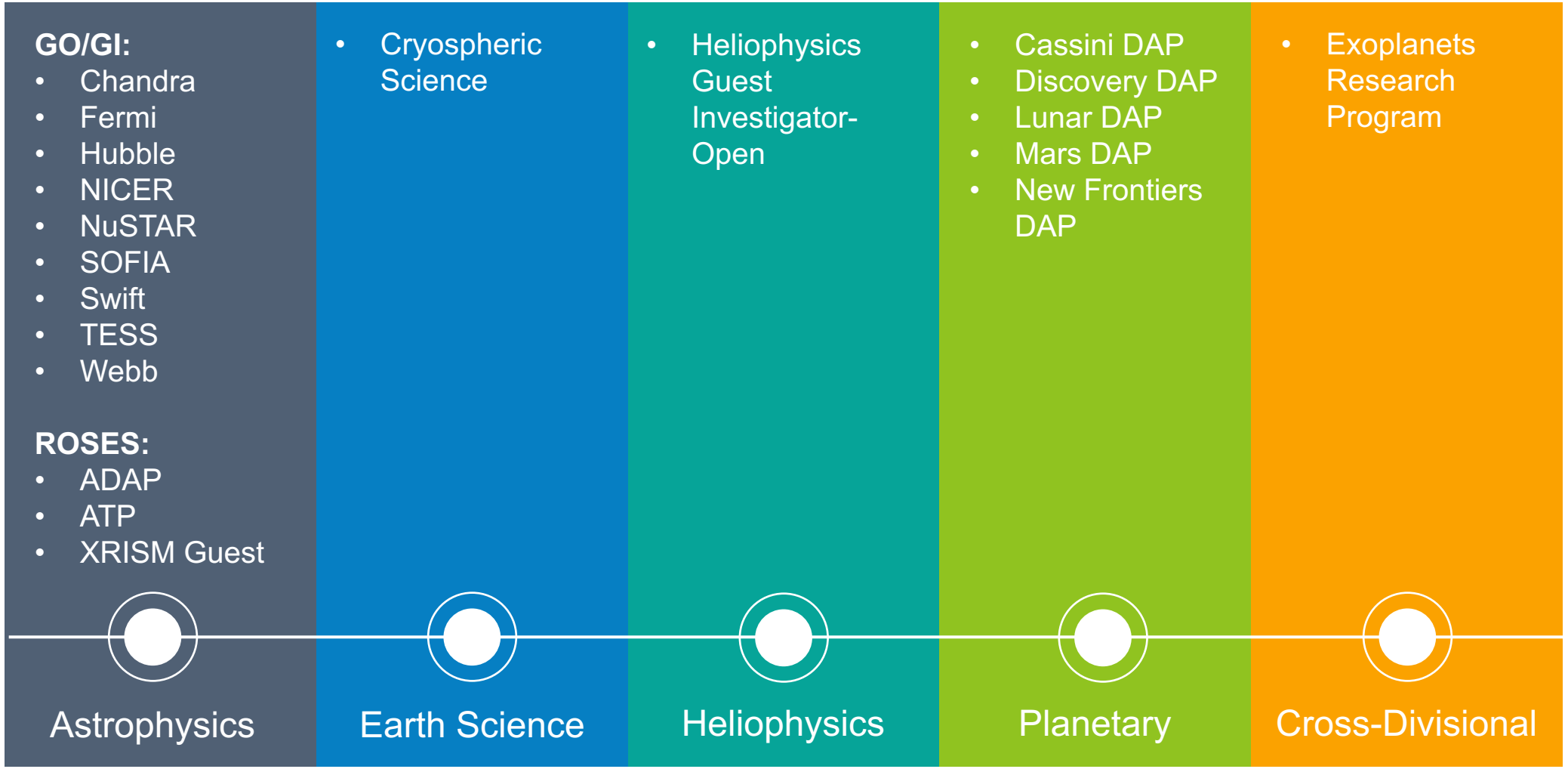
2020 NASA SMD Pilot

- Astrophysics Data Analysis (ADAP)
- Earth Science US Principal Investigator
- Habitable Worlds (only Step-2 proposals will be anonymized)
- Heliophysics Guest Investigator (Step-1 and Step-2 Proposals will be anonymized)

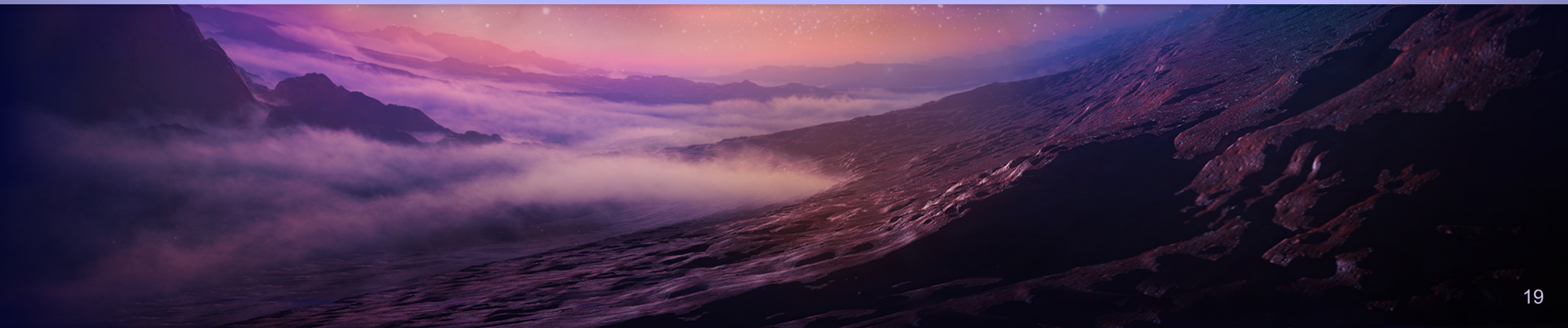


Astrophysics GO/GI Programs are permanently converting to dual-anonymous peer review

2021 Dual-Anonymous Programs



Proposal and Review Process



Detailed Guidance

The program element text contains specific instructions on how to prepare an anonymized proposal for that program. In addition, the NSPIRES page of each program element contains a document entitled “Guidelines for Anonymous Proposals” describes in detail the specific requirements of anonymous proposals.

A quick-start tutorial, as well as frequently asked questions, may be found at:

https://science.nasa.gov/researchers/dual-anonymous-peer-review

Submission of Anonymized Proposals

Exclude names and affiliations of the proposing team, including in figures and references to personal websites.

Do not claim ownership of past work, e.g., “my previously funded work...” or “our analysis shown in Baker et al. 2012...”

Cite references in the passive third person, e.g., “Prior analysis [1] indicates that …”.

Do describe the work proposed, e.g., “We propose to do the following...” or “We will measure the effects of...”

Include a separate not-anonymized “Expertise and Resources” document.

References to Unpublished Work and Proprietary Results

It may be occasionally important to cite exclusive access datasets, non-public software, unpublished data, or findings that have been presented in public before but are not citeable

Each of these may reveal (or strongly imply) the investigators on the proposal

In these instances, proposers must use language such “obtained in private communication” or “from private consultation” when referring to such potentially identifying work

Recall that the goal of dual-anonymous is to shift the tenor of the discussion, not to make it absolutely impossible to guess the team members

Institutional Access to Unique Resources

Another common situation that occurs in proposals is when a team member has institutional access to unique facilities (e.g., an observatory or laboratory) that are required to accomplish the proposed work. An anonymized proposal does not prohibit stating this fact in the Scientific/Technical/Management section of the proposal; however, the proposal must be written in a way that does not identify the team member. Here is an example:

> *"The team has access to telescope time on the W. M. Keck Observatory, which will enable spectroscopic follow-up of the galaxies in the sample."*

Note: in this situation, NASA recommends that the team provide detailed supporting information to validate the claim in the "Expertise and Resources – Not Anonymized" document (see later).

Example of Anonymization

In Rogers et al. (2014), we concluded that the best explanation for the dynamics of the shockwave and the spectra from both the forward-shocked ISM and the reverse-shocked ejecta is that a Type Ia supernova exploded into a preexisting wind-blown cavity. This object is the only known example of such a phenomenon, and it thus provides a unique opportunity to illuminate the nature of Type Ia supernovae and the progenitors. If our model from Rogers et al. (2014) is correct, then the single-degenerate channel for SNe Ia production must exist. We propose here for a second epoch of observations which we will compare with our first epoch obtained in 2007 to measure the proper motion of the shock wave.

Here is the same text, again re-worked following the anonymizing guidelines:

Prior work [12] concluded that the best explanation for the dynamics of the shockwave and the spectra from both the forward-shocked ISM and the reverse-shocked ejecta is that a Type Ia supernova exploded into a preexisting wind-blown cavity. This object is the only known example of such a phenomenon, and it thus provides a unique opportunity to illuminate the nature of Type Ia supernovae and the progenitors. If the model from [12] is correct, then the single-degenerate channel for SNe Ia production must exist. We propose here for a second epoch of observations which we will compare with a first epoch obtained in 2007 to measure the proper motion of the shock wave.

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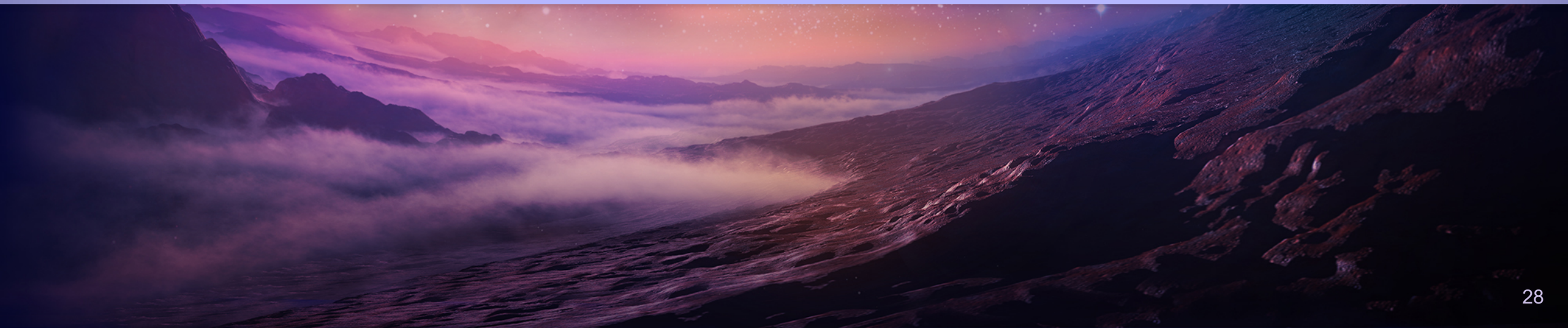
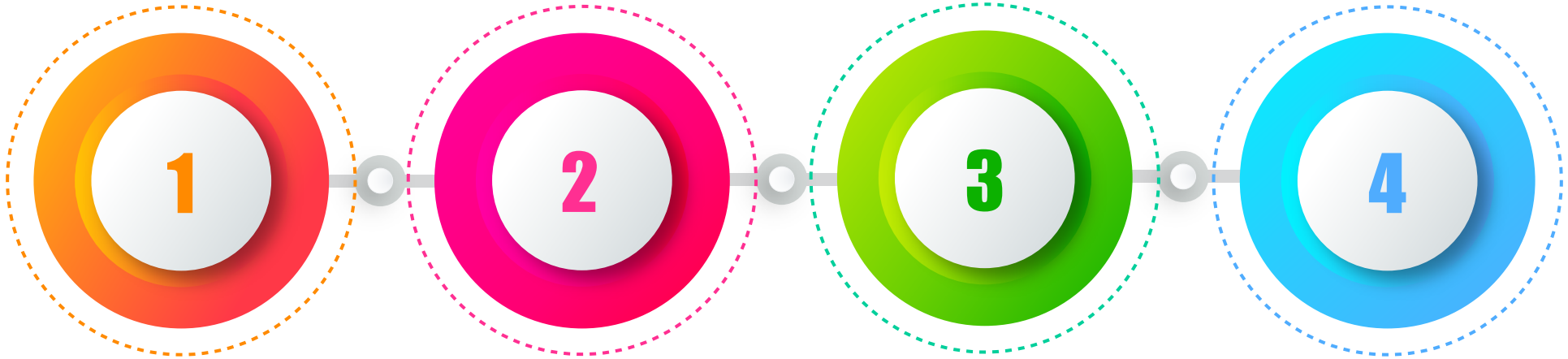
Q. But… how is the capability of the team to execute the investigation taken into account?


LIST OF TEAM MEMBERS
DESCRIPTIONS OF EXPERTISE
SPECIFIC CONTRIBUTIONS FROM MEMBERS
SPECIALIZED RESOURCES (E.G. FIELD SITES)
EXPERTISE & RESOURCES – NOT ANONYMIZED DOCUMENT
SUMMARY OF WORK EFFORT
BIO SKETCHES
CURRENT AND PENDING SUPPORT
LETTERS OF RESOURCE SUPPORT

Success Metrics and DAPR Experience So Far



Success Metrics



99% OF PROPOSALS SUBMITTED ARE COMPLIANT

POSITIVE REVIEWER SURVEYS

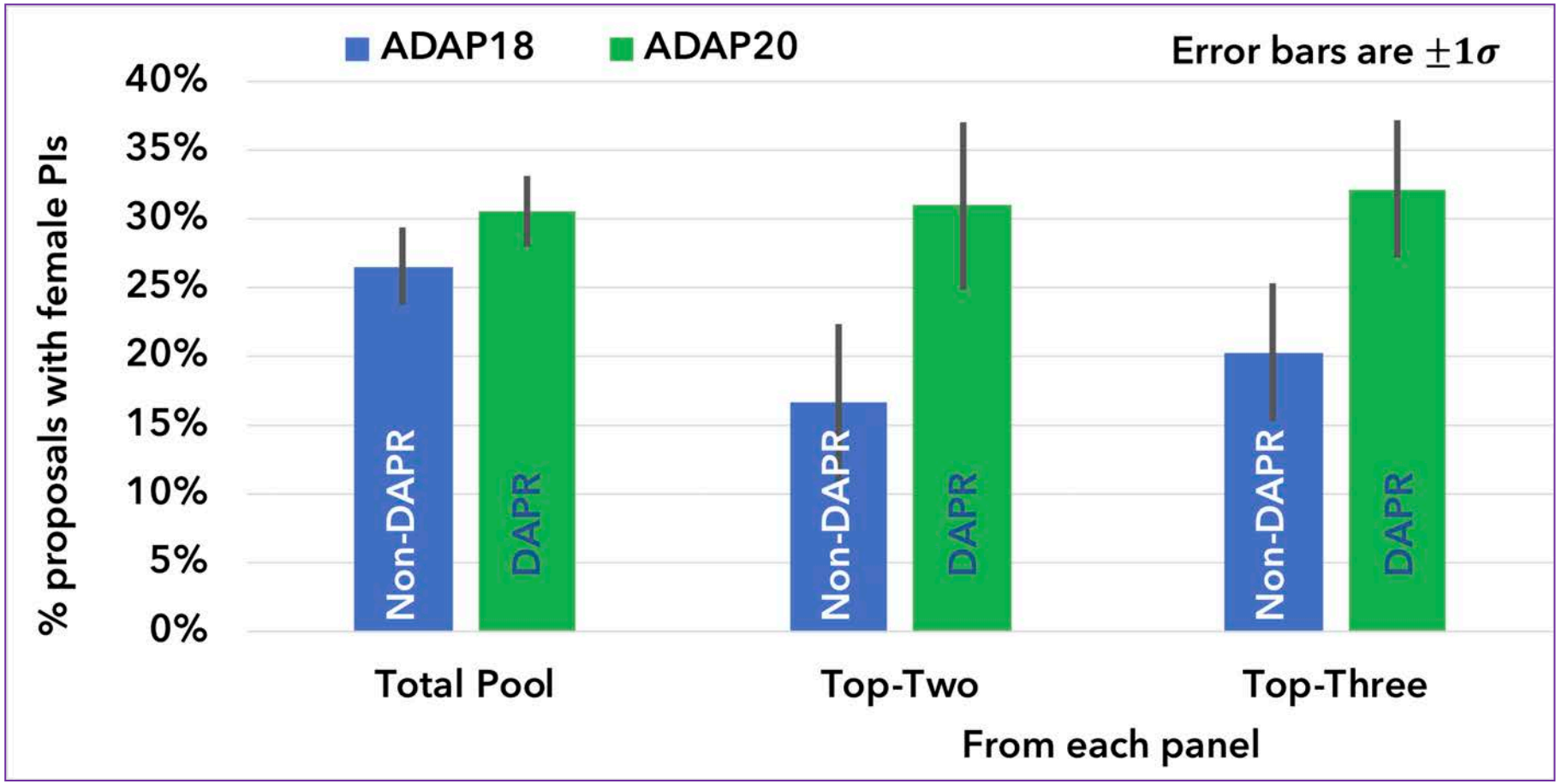
CONSULTANTS SAY REVIEWS ARE FOCUSED ON SCIENCE

REDUCTION IN GENDER GAP MEASURED OVER ~3 CYCLES

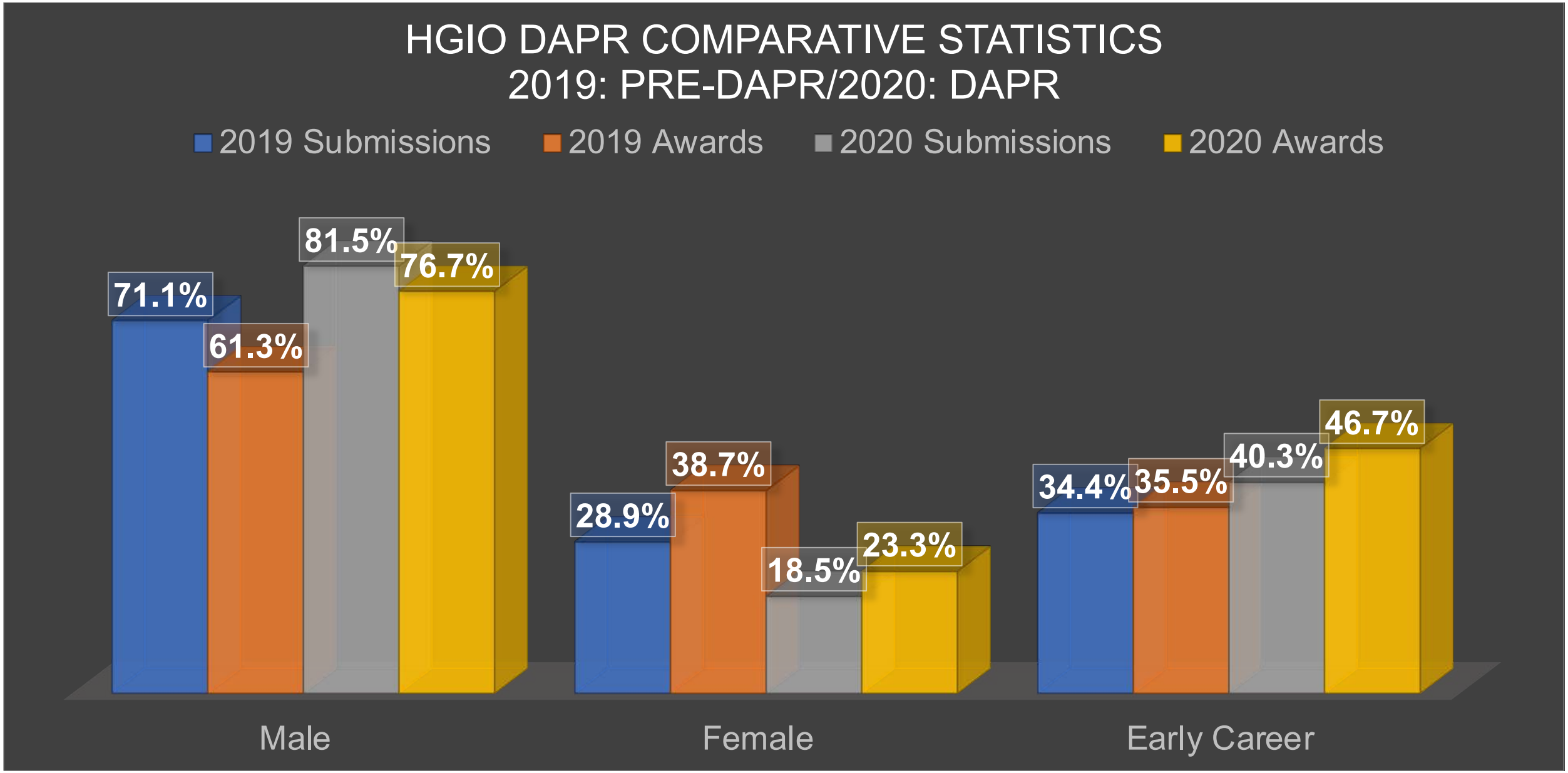
DAPR Experience So Far

- Only one egregious violation of anonymization guidelines, which resulted in the proposal being returned without review.
- Common (minor) pitfalls we see in proposals about 10-15% of the time:
  1. Claiming ownership of past work (e.g., "our previous analysis", "PI has an established record").
  2. Including metadata (e.g., PDF bookmarks) that reveal the name of the PI.
  3. Recycling proposals prepared prior to dual-anonymous peer review and not carefully anonymizing the text.
  4. Providing the names of investigators on the contents page.
  5. Providing the origin of travel for professional travel (e.g., conferences).
  6. Mentioning the institution name in the Budget Narrative.
  7. Including the PI or co-I names in budget tables.

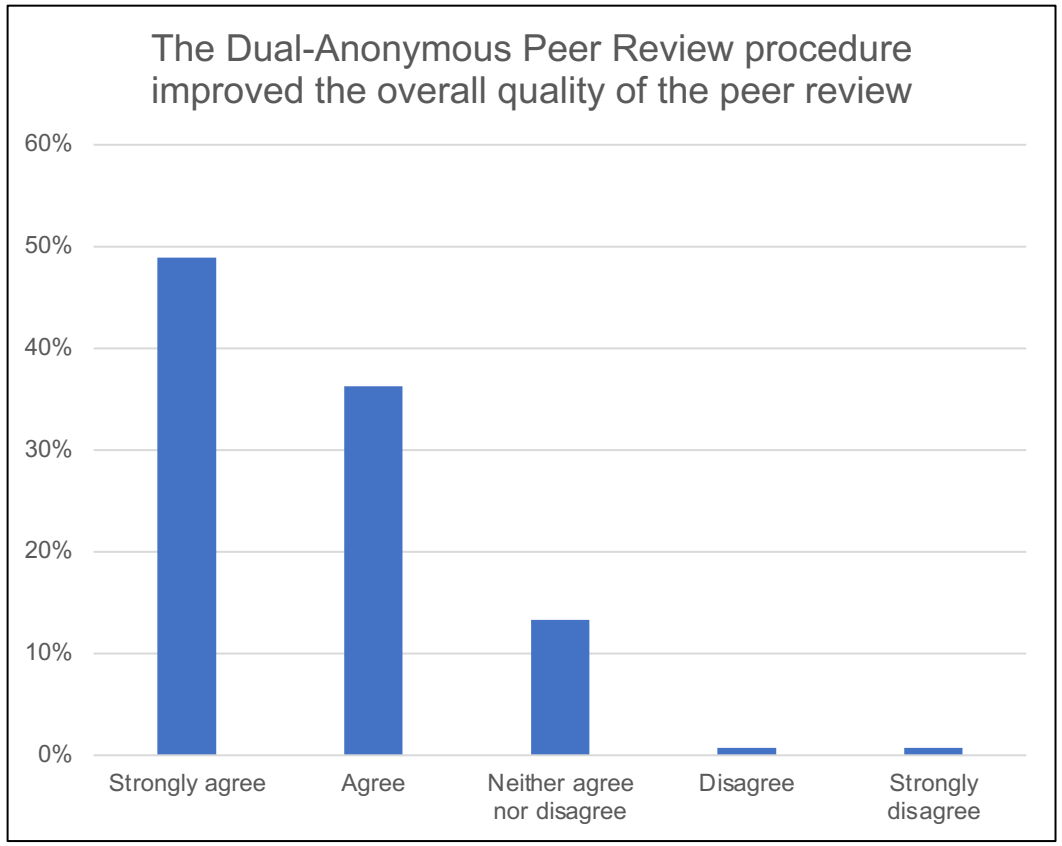
Recent ADAP Results

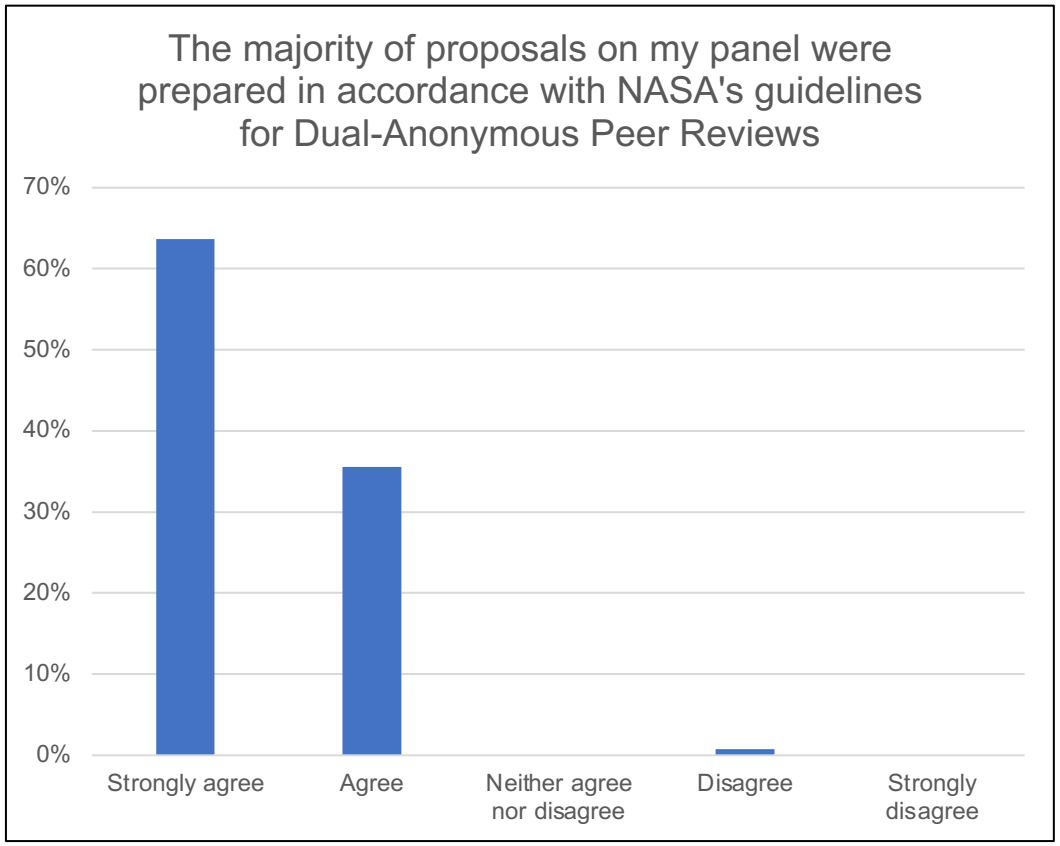


HGIO DAPR COMPARATIVE STATISTICS
2019: PRE-DAPR/2020: DAPR

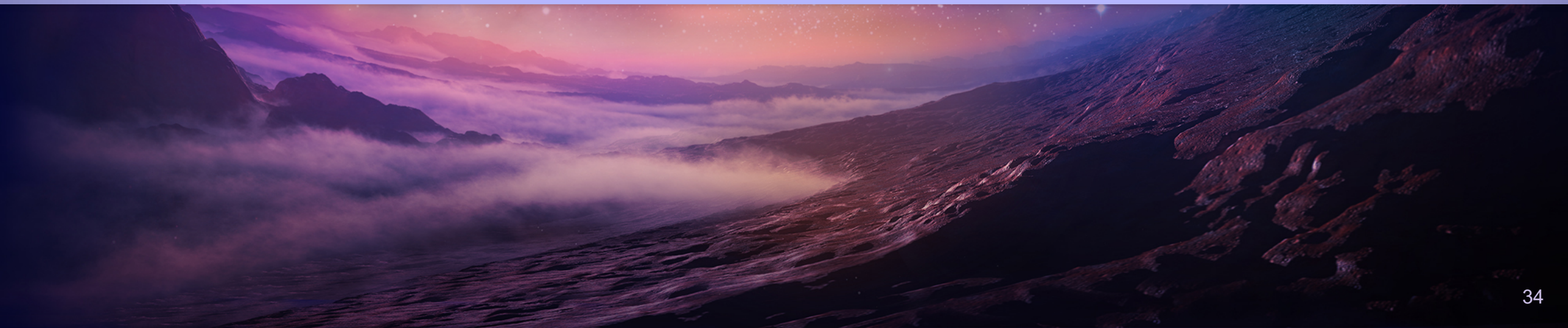


Reviewer Surveys





Final Remarks



Final Remarks

- NASA is proud to be leading in the implementation of dual-anonymous peer review for federal proposal evaluation.
- NASA understands that dual-anonymous peer review represents a major shift in the evaluation of proposals, and as such there may be occasional slips in writing anonymized proposals. However, NASA reserves the right to return without review proposals that are particularly egregious in terms of the identification of the proposing team.
- NASA further acknowledges that some proposed work may be so specialized that, despite attempts to anonymize the proposal, the identities of the Principal Investigator and team members are readily discernable. As long as the guidelines are followed, NASA will not return these proposals without review.
- We look forward to expanding dual-anonymous peer review in 2021 and beyond.