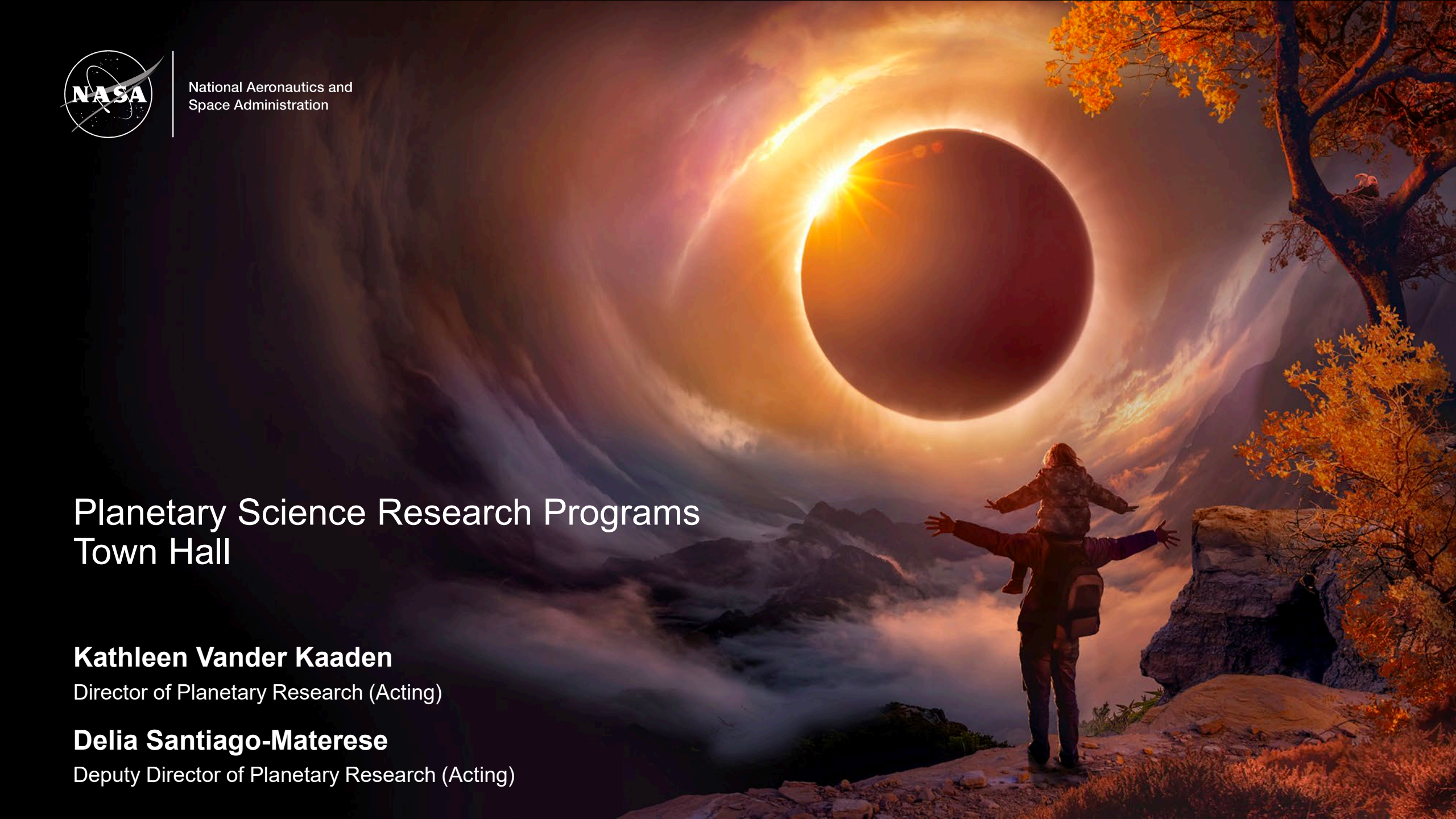
National Aeronautics and Space Administration



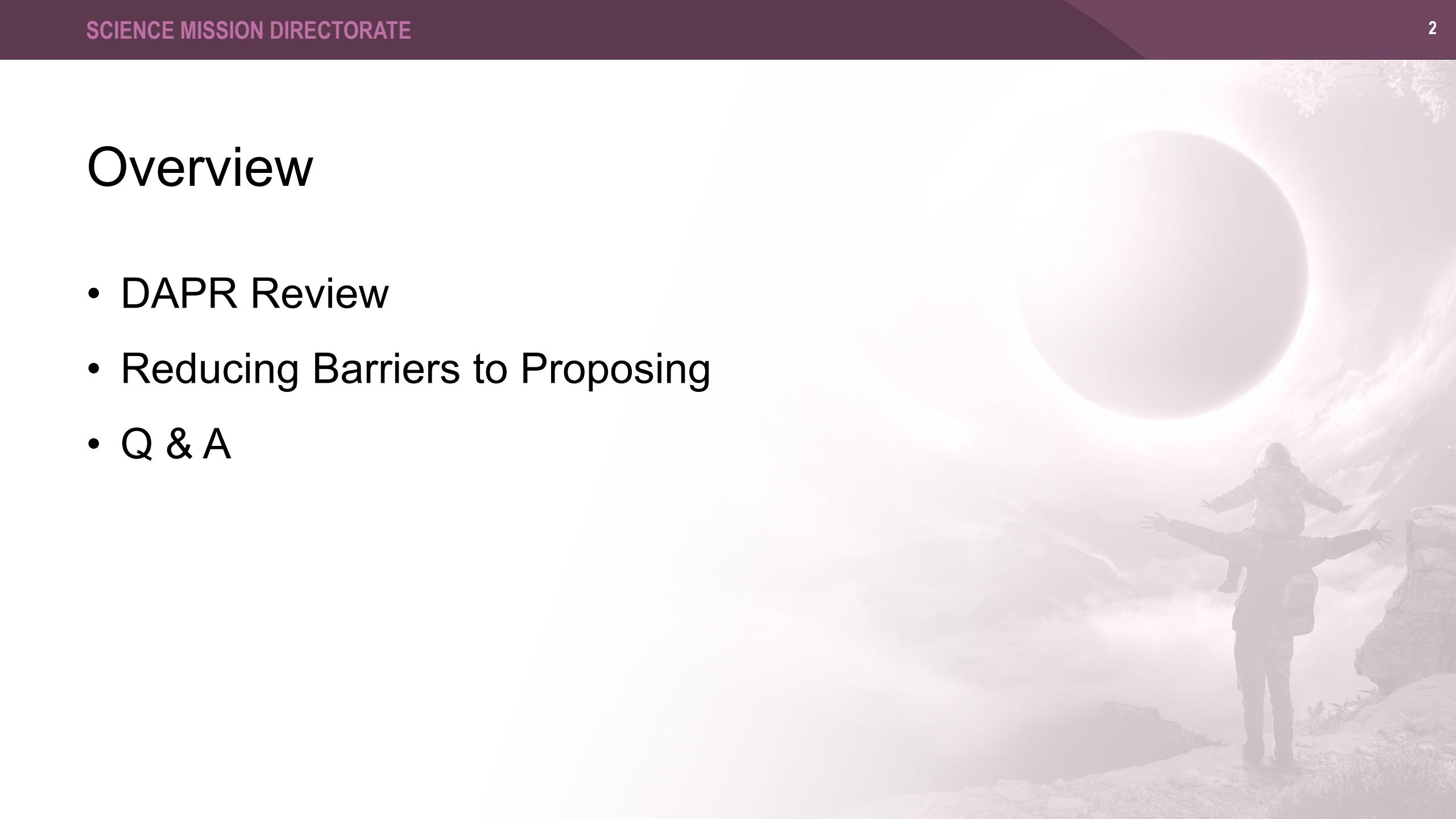
Planetary Science Research Programs Town Hall

Kathleen Vander Kaaden
Director of Planetary Research (Acting)

Delia Santiago-Materese
Deputy Director of Planetary Research (Acting)

Overview

- DAPR Review
- Reducing Barriers to Proposing
- Q & A



DAPR Overview and Background

Overview of Dual-Anonymous Peer Review (DAPR)

Goal: Reduce implicit (unconscious) bias in the evaluation of the intrinsic / scientific merit of proposals.

Approach: In addition to the proposers being unaware of the review panel member identities, now the reviewers are also not told the identities of the proposers until after the evaluation of intrinsic / scientific merit.

Process for Proposers:

- Proposals are written to exclude any personally or organizationally identifying information of the proposers.
- Proposers must upload a separate "Expertise and Resources - Not Anonymized" document, which contains all of the personally or organizationally identifying information.

Process for Reviewers:

- Reviewers evaluate intrinsic / scientific merit of anonymized proposals without knowing proposing team qualifications.
- After the scientific evaluation is finalized for all proposals, panels review "Expertise and Resources - Not Anonymized" documents to assess whether qualifications / capabilities of team are sufficient to successfully execute proposed work.

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

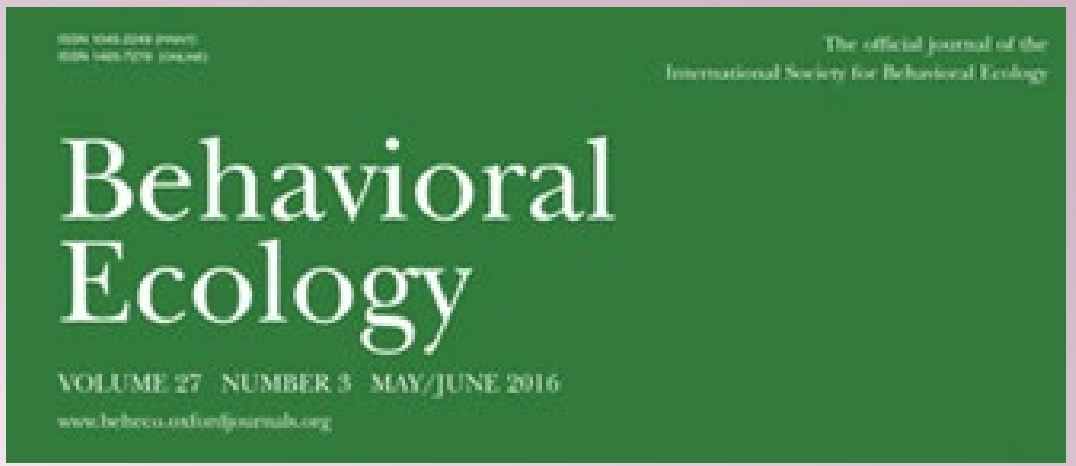
Unconscious Bias and the Peer Review Process

- Unconscious biases are psychological “filters” that the human brain has developed to help us rapidly identify key information in the torrent of data our senses are constantly feeding to our brains.
- Unconscious biases are neither automatically good nor bad—everyone possesses unconscious biases of one sort or another. As a whole, they shape each person’s unique “worldview. ”
- However, unconscious biases have a detrimental effect on the peer review process by making it less rational and more subjective. We would like the evaluation of proposals to be an objective process, independent of the worldview of each reviewer.

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

2. Structural changes are also needed.

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 dual anonymous, resulting in a significant increase in female first-authored publications

Structural Changes to Address Unconscious Bias

- In keeping with NASA's core value of Inclusion, SMD is strongly committed to ensuring that the review of proposals is performed in an equitable and fair manner that reduces the impacts of any unconscious biases.
- Since cognitive biases are manifested as short-cuts in the decision-making process, making the evaluation process as explicit as possible helps to mitigate them. To this end, we instruct reviewers to:
  - Apply clear requirements/criteria/factors (merit, relevance, cost).
  - Emphasize the use of those criteria in panel discussions.
  - Present clear reasoning tied to those criteria to support the findings captured in the written panel evaluation.
  - However, unconscious biases cannot be interrupted simply through training. Structural changes in the way proposals are written and reviewed are needed.

→ the Dual-Anonymous Peer Review provides a framework for change.

What is Dual-Anonymous Peer Review (DAPR)?

In dual-anonymous peer review, 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.

- We want to create a change in the tenor of discussions, away from the individuals on the proposing team, and toward the proposed science.
- The goal is not necessarily to make it impossible to guess who might be on that team.
- It is *not* a silver bullet.

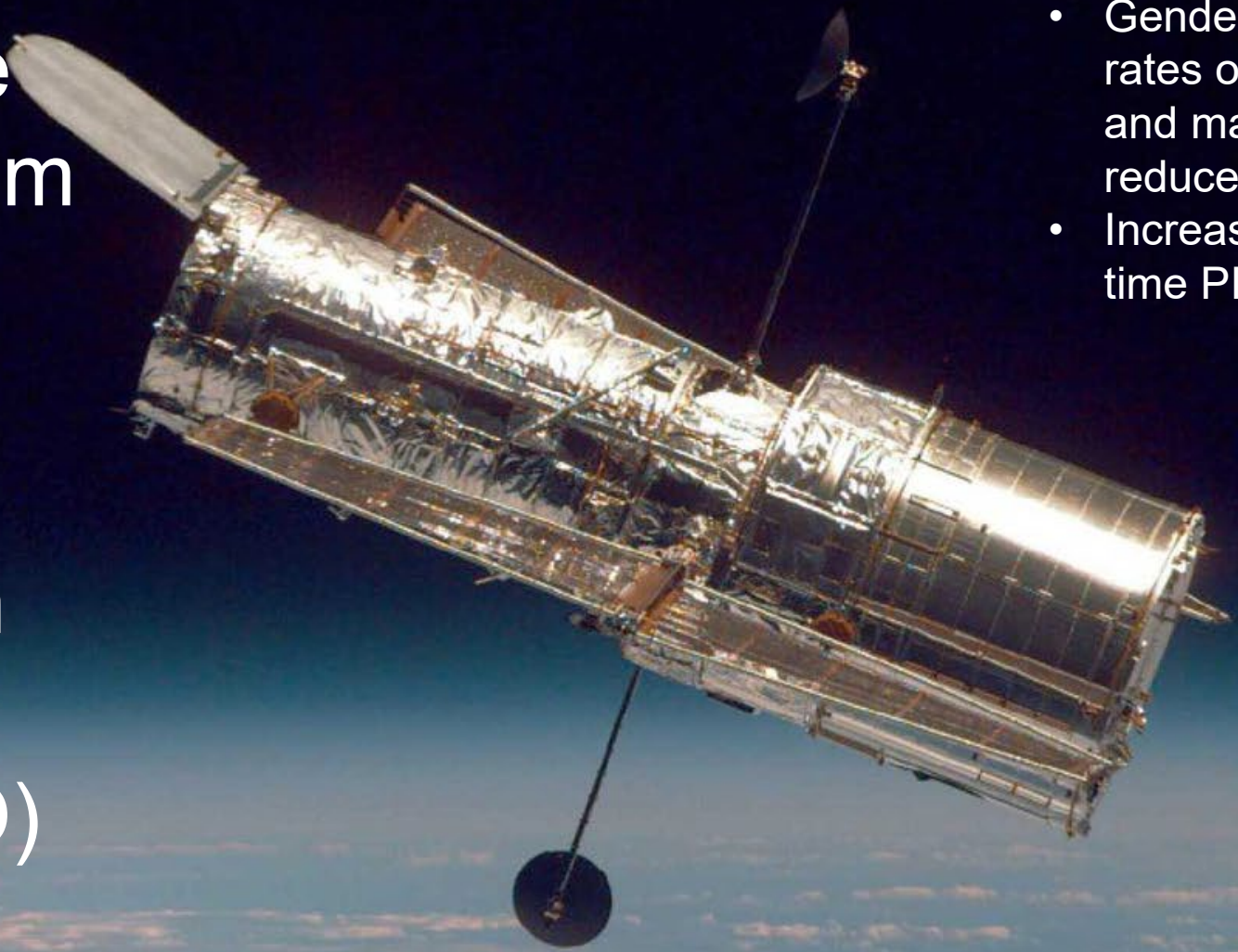
Dual-anonymous peer review is not completely an "anonymous" process.

Proposers submit (1) an anonymized proposal, and (2) a not-anonymized “Expertise and Resource” document.

The “merit” of the proposal (assessed anonymously) will be determined separately from the (not-anonymized) qualifications of the team.

Nevertheless, the qualifications, track record, and access to unique facilities will form part of the evaluation.

Thanks to the Hubble Space Telescope team for pioneering dual-anonymous peer review in their General Observer (GO) program.



Post-DAPR:

- Gender disparity in success rates of female-led and male-led proposals reduced from ~Δ5% to Δ1%.
- Increase in selection of first-time PIs (over double).

What is the Status of DAPR at NASA to Date?

SMD DAPR Status

- Started as a "trial" under ROSES-2020.
  - Overwhelming positive feedback from reviewers.
  - Pre-defined success metrics met.
- Today, over 30 programs within SMD are currently using DAPR.
- Preliminary analysis for some programs shows:
  - The percentage of inferred-female-led proposals selected under DAPR more closely approximates the percentage of inferred-female-led proposals submitted.
  - Increased selections from proposals from MSIs and primarily undergraduate institutions.
- Comprehensive DAPR metrics being compiled and analyzed by the office of the Deputy Associate Administrator for Research (DAAR).

➢ **DAPR will become standard practice for SMD reviews in the ROSES-2025, with an opt-out option overseen by the DAAR. SMD is currently bolstering technical capabilities to facilitate this expansion of DAPR.**

ROSES-2023 Dual-Anonymous Programs

Astrophysics

D.2 Astrophysics DAP
D.4 Astrophysics Theory Program
D.5 Neil Gehrels Swift Observatory GI Cycle 20
D.6 Fermi GI Cycle 17
D.9 NuSTAR GO Cycle 10
D.10 TESS GI Cycle 7
D.11 NICER GO Cycle 6
D.13 Astrophysics Pioneers
D.16 Astrophysics Decadal Survey Precursor Science
D.17 IXPE GO Cycle 1

Non-ROSES GO/GI programs

Earth Science

A.15 Cryospheric Science
A.22 Soil Moisture Active-Passive Mission Science Team
A.26 CYGNSS Competed Science Team
A.27 NISAR Mission Operations Science Team
A.28 Global Navigation Satellite System Research
A.30 SAGE III/ISS Science Team
A.33 Understanding Changes in High Mountain Asia
A.59 Technology Development for Support of Wildlife Science, Management, and Disaster Mitigation

Heliophysics

B.2 Heliophysics Supporting Research
B.4 Heliophysics Guest Investigator-Open
B.16 Heliophysics Artificial Intelligence/ Machine Learning-Ready Data

Planetary

C.7 New Frontiers DAP
C.8 Lunar DAP
C.9 Mars DAP
C.10 Cassini DAP
C.11 Discovery DAP
C.15 Planetary Protection Research
C.22 Precursor Science Investigations for Europa
C.25 Hera PSP

Past:

- Artemis III Geology Team
- MMX PSP
- MSL PSP
- OSIRIS-REx PSP

New for ROSES-2024:
C.12 PICASSO

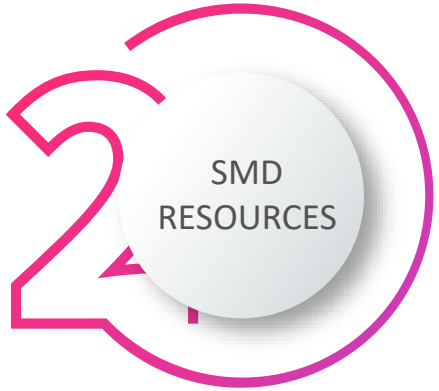
Cross-Divisional

F.3 Exoplanets Research Program
F.4 Habitable Worlds
F.15 High Priority Open-Source Science
F.22 Research Initiation Awards

DAPR Proposal Preparation

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

What is submitted

In general, a proposal submitted to a ROSES DAPR program element will include three components:

1. An anonymized proposal document
2. A separate “Expertise and Resources Not Anonymized” document
3. A “Total Budget” document**

** The submission of a separate “Total Budget” document is a general requirement for all ROSES program elements, DAPR or non-DAPR. The “Total Budget” document is not seen by reviewers and need not be anonymized.

In general, the anonymized proposal document encompasses the following components:

1. Scientific/Technical/Management (S/T/M) section
2. Reference section
3. Open Science Data Management Plan (OSDMP)
4. Table of personnel and Work Effort
5. Redacted Budget and Budget Justification

As with all ROSES program elements, requirements vary, so please read the program element carefully.

Submission of Anonymized Proposals

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

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 (details later on).

How Do I Reference Unpublished Work or 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 citable.

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. Do NOT identify with whom the personal communication took place.

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.

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.

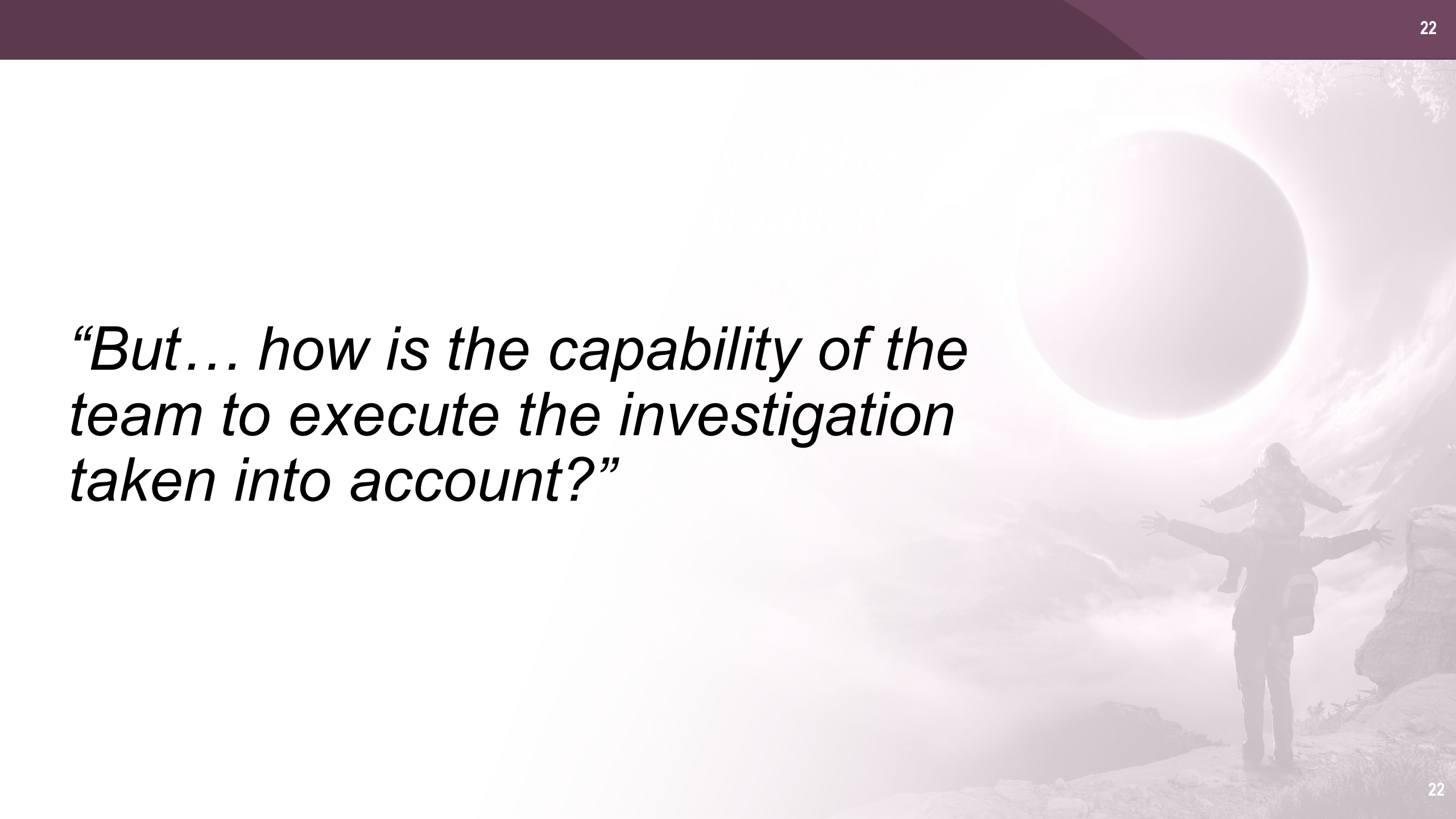
Instrument work (e.g. PICASSO)

When using products from a vendor, should the vendor identity be revealed?

✅ If a product or components are commercially available, the proposal can identify the vendor and discuss relevant qualification testing and flight heritage (though NOT the proposer's involvement in any testing).

❌ If the product or components are proprietary, and only available to select parties including the team involved in qualification testing and activities leading to flight heritage, then the vendor should NOT be identified. Proposers can still discuss the operational characteristics of the components, including the results of testing and performance in flight applications that underpins the assessed TRL, but they have to do so in terms that do not uniquely identify the people and institutions involved.

“But… how is the capability of the team to execute the investigation taken into account?”



Proposers are also required to upload a separate "**Expertise and Resources – Not Anonymized" document**, which is not anonymized. It will be distributed to panelists for a subset of proposals (typically the top third, according to the distribution of assigned grades and the projected selection rates.)

Again, requirements vary, so please read the program element carefully.

Common Pitfalls

Carefully review the "Guidelines for Anonymous Proposals" in the program element you are applying to.

1. **Improper redaction!!** Don't just cover over text, use a redaction tool which removes data.
2. Avoid associating personnel with named teams or collaborations, e.g., "the PI is a member of the EAGLE collaboration." (*MAY* be OK if large collaboration and team-member role is not specified—check with your program officer!)
3. Claiming ownership of past work (e.g., "our previous analysis", "PI has an established record").
4. Including metadata (e.g., PDF bookmarks) that reveal the name of the PI.
5. Recycling proposals prepared prior to dual-anonymous peer review and not carefully anonymizing the text. Providing the names of investigators on the contents page.
6. Providing the origin of travel for professional travel (e.g., conferences).
7. Mentioning the institution name in the Budget Narrative.
8. Including the PI or co-I names in budget tables. **Talk to budget people at ALL orgs contributing budget documents.**
9. Failure to follow the reference numbering scheme laid out for DAPR (number in a square bracket, e.g. [1], which will then correspond to the full citation in the reference list.
10. Accidental inclusion of names (inconsistently): (e.g. in one place in the proposal, it says "Co-I XX", while elsewhere it says "A co-I" or similar).
11. Using gendered pronouns. Avoid he/she/his/hers, and use they/theirs instead.

Final DAPR Compliance Check

1. ROSES Compliance Checking Tools:
   https://github.com/nasa/ROSES-Compliance-Checking-Tools

2. Final Check for ENTIRE proposal

DAPR Proposal Review

Flow of the Review

Reviewers have access only to the anonymized proposal documents while conducting the merit evaluation of each proposal. All merit assessments are complete, grades finalized, and panel summaries written.

The “Expertise and Resources – Not Anonymized” document is distributed to panelists for a subset of proposals. Panelists assess the team and resource capability to execute the proposed investigation.

SMD's policy on DAPR is available here:
https://science.nasa.gov/wp-content/uploads/2024/01/spd-40a-dual-anonymous-peer-review-final-signed-tagged.pdf

Instructions to Panelists

1. Consider proposals solely on the scientific merit of what's proposed.
2. Do not spend any time attempting to identify the PI or the team. Even if you think you know, discuss the science and not the people.
3. Keep in mind that language can be very important in discussing proposals.
    - Utilize the appropriately neutral pronouns (e.g., "what they propose", or "the team has evaluated data").
    - Wherever possible, talk in terms of the work proposed, not in terms of the people doing the work.

➢ NASA-appointed levelers are present to ensure that the panel discussions focus on scientific merit and not on the perceived attributes of the proposer(s). Levelers have the authority to stop the discussion.

Validation of “Expertise and Resources - Not Anonymized” Document

1. Scientific evaluation of the all proposals is completed.
2. The “Expertise and Resources – Not Anonymized” document is distributed to panelists for a subset of proposals (typically the top third, according to the distribution of assigned grades and the projected selection rates).
3. Panelists assess team capability to execute proposed investigation using a three-point scale, e.g.:

Vote	Overall Team and Resources Capability	
	Uniquely qualified	A comment from the panel must be written that clearly justifies the choice of this grade.
	Qualified	NASA sets the expectation that the vast majority of proposals will fall into this category.
	Not qualified	A comment from the panel must be written that clearly justifies the choice of this grade.

4. If the E&R Document for a proposal is evaluated by the panel, the associated E&R Validation form should be returned to the proposer together with the written panel evaluation form.
5. Neither the written findings in the panel evaluation form not the overall rating of the proposal can be changed as a result of the E&R Validation process.

Return without Review for Non-Anonymized Proposals

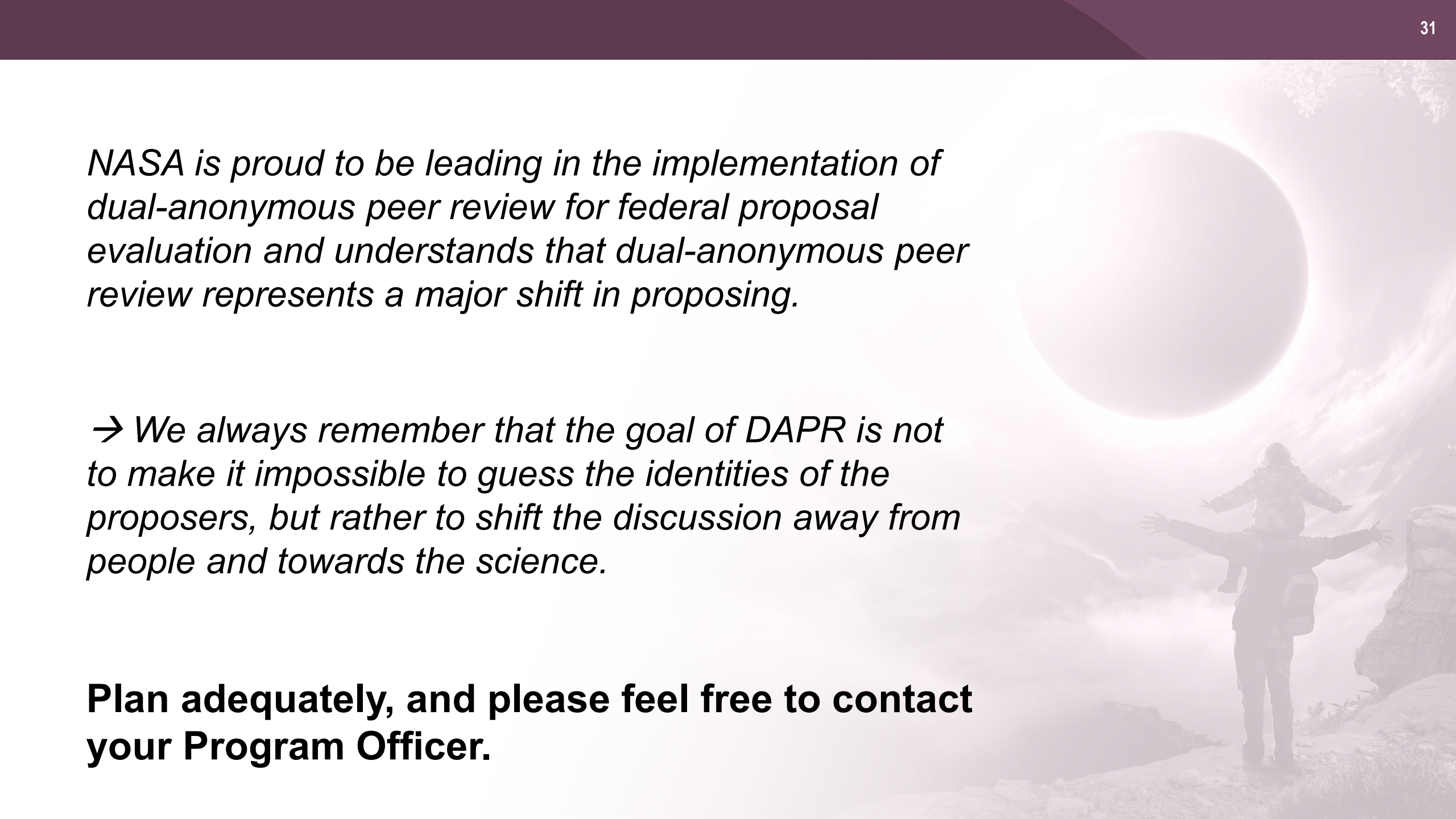
NASA understands that dual-anonymous peer review represents a major shift in the evaluation of proposals, and as such there may be occasional slips in writing anonymized proposals. However, NASA reserves the right to return without review proposals that are particularly egregious in terms of the identification 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 discernible. As long as the guidelines are followed, NASA will not return these proposals without review.

NASA is proud to be leading in the implementation of dual-anonymous peer review for federal proposal evaluation and understands that dual-anonymous peer review represents a major shift in proposing.

→ We always remember that the goal of DAPR is not to make it impossible to guess the identities of the proposers, but rather to shift the discussion away from people and towards the science.

Plan adequately, and please feel free to contact your Program Officer.



How Do We Reduce Barriers to Proposing?

Background

- At the start of the COVID pandemic, proposers communicated with various PSD staff members about decreased life flexibility considering various challenges, including increased caretaking responsibilities and change in work patterns. Others shared experiences of challenges submitting proposals from small institutions when one staff person was out, or if a natural disaster hit.
- No Due Date (NoDD) programs in PSD R&A was started in response to these reported challenges to allow flexibility in submission due dates, which are strictly enforced.
  - The NoDD experiment is still underway and will be analyzed more fully beginning in Fall 2024.
- SMD is looking at ways to reduce barriers:
  - The DAAR recently had an RFI entitled "Improving the Usability of the Research Opportunities in Space and Earth Science (ROSES)" NASA Research Announcement (NRA) (Due Feb. 23, 2024).
- PSD is examining other ways to reduce barriers to proposing. This includes removing unnecessary barriers between programs.

EW-SSW-SSO

C.2 Emerging Worlds (EW)

This program solicits investigations that address compelling scientific questions into the evolution of our Solar System from the collapse of the molecular cloud up to the time that large planetary bodies were in or near their modern configurations

C.3 Solar System Workings (SSW)

This program solicits investigations that address compelling scientific questions into the evolution of our Solar System from the time that large planetary bodies were in or near their modern configuration up to the present day

C.6 Solar System Observations (SSO)

This program solicits investigations that primarily use Earth-based observations our Solar System

*Proposals focus areas may include planetary bodies and/or their satellites and rings, including their interiors, surfaces, atmospheres, exospheres, and magnetospheres

*Proposals may also concentrate on specific processes as they occur within the Solar System (e.g., orbital dynamics, astrochemistry, plasma interactions), and involve terrestrial analogs

Challenges

Limiting Opportunities for Interdisciplinary Science 01

Three separate programs limit ability to conduct interdisciplinary science while remaining relevant and within scope of program.

Increased Difficulties in Proposal Submission 02

Barriers created for PIs to determine which program is most appropriate. Different programs have different requirements.

Overburdening Community with Review Process 03

Overburdening the community with requests to review for multiple programs that cover their expertise. From 2017-2022 37% of EW reviewers and 45% of SSO reviewers also reviewed for SSW.

Decreasing Proposal Submissions 04

Significant decrease in proposal pressure since 2020.

Opportunities

01 Merge Programs

Merge EW-SSW-SSO into single program element (Solar System Science). Programs already have topical overlap.

02 Increase Clarity of Program Element

A single program element will have a single set of requirements for proposers to follow. Minimize restrictions on scientific creativity.

03 Co-Review Topical Proposals

Allows ability to expand panel topics and minimize requests on community members time for peer review.

04 Decrease Program Barriers

Encourage interdisciplinary science, expand collaboration opportunities, facilitate new ideas

Benefits of a Merged Program

1. Benefits to Proposers
    1. Easier for PIs to propose interdisciplinary/innovative research topics (breaking down programmatic barriers)
    2. Fewer program-specific requirements to follow (reduced likelihood of non-compliance)
    3. Standardized evaluation criteria, allowing proposers to understand and improve proposals after peer review
    4. Notification times may be reduced
    5. More available expertise on shared, standing panels and fewer External Reviews (reduces burden on community)
2. Benefits to the Review Process
    1. More consistency across programs (solicitation language) and with overall review process
        a) For reviewers and Group Chiefs (GCs)
        b) For NRESS support team
    2. Increased efficiency in putting together right expertise for panel (and minimize overlapping requests for individual reviewers) and leveraging program officer technical expertise
    3. Leveraging common tools - sorting/etc
    4. Sync on scheduling/cadence to reviews (even with NoDD)

Benefits of a Merged Program – Addressing Decadal

- *Progress on these topics (e.g. Q1.2c) will require an interdisciplinary approach that combines astronomical observations of young stellar objects, numerical modelling, and geochemical analyses of chondrites and samples returned from primitive bodies. (OWL p. 4-12)*
- *Since the 2014 reorganization, there has also been an increased hardening of defined boundaries between the R&A programs, which further constrains the ability to perform cross-cutting science. Accommodating proposals that address systems level scientific questions, whether for individual bodies or for phenomena or properties that are common to some or many exploration targets, would allow scientists to explore foundational solar system processes more fully… (OWL p. 17-11)*

BOX 17.1: Organizing Theme for Issues in Research and Analysis

The committee's ASPIRE concept encapsulates key factors crucial for R&A:

Augment	the R&A budget to ensure that NASA PSD gets the science it needs
Survey	the community to identify existing expertise, capability and knowledge gaps, and research trends
Promote Integrate	cross-cutting research that tackles systems-level science questions multiple disciplines such as: data analysis, theory, laboratory studies, field work, and ground-based observations to enable the best systems-level science
Revise	the review and proposal process to make it more accurate and efficient
Equalize	access and opportunity to ensure no pockets of excellence are left untapped

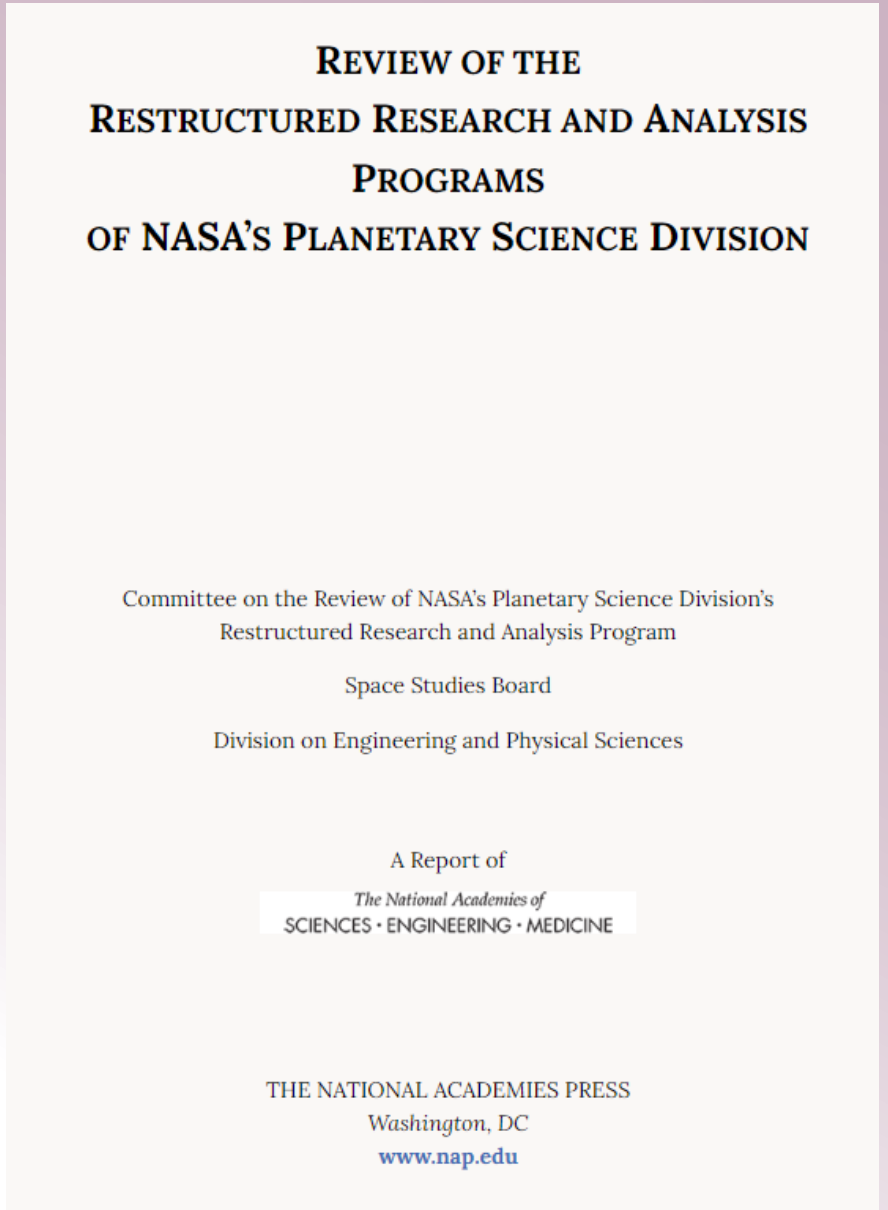
Together, these factors provide a framework for NASA's PSD to enact necessary changes to its R&A investments to support and enhance its overall mission. The ASPIRE concept addresses the key current issues facing the PSD R&A landscape: very low proposal selection rates, a portfolio of programs that may not be fully responsive to NASA's needs, and ensuring an efficient and fair proposal review process that maximizes open access and innovation.

Additional Motivation

Finding: The new R&A structure is properly aligned with scientific priorities of the decadal survey and the Planetary Science Division's 2014 science goals and is consistent with the recommendations of the 2009 National Research Council report "An Enabling Foundation for NASA's Earth and Space Science Missions" (NAS, 2017)

Finding: The committee finds that keyword analyses of the type of task, target body, and science discipline revealed no evidence that restructuring is leading to deleterious effects on the planetary science R&A program or on specific segments of the community (NAS, 2017)

Recommendation: A formal assessment by NASA of how well the program structure and funding are aligned with the Planetary Science Division's science goals should be conducted at least every 5 years, appropriately phased to the cycle of the decadal surveys and midterm reviews (NAS, 2017)


REVIEW OF THE
RESTRUCTURED RESEARCH AND ANALYSIS
PROGRAMS
OF NASA'S PLANETARY SCIENCE DIVISION

Committee on the Review of NASA's Planetary Science Division's
Restructured Research and Analysis Program

Space Studies Board

Division on Engineering and Physical Sciences

A Report of

The National Academies of
SCIENCES · ENGINEERING · MEDICINE

THE NATIONAL ACADEMIES PRESS
Washington, DC
www.nap.edu

Addressing Community Concerns

As the amalgamation of multiple programs, SSW has received a plurality of all PSD R&A proposals… This has posed a considerable logistical challenge to PSD program officers as they organize review panels and work to avoid conflicts of interest. Given these constraints, the value to NASA of a single, expansive program -- instead of multiple, thematic programs that together are just as responsive to the NASA's Science Plans as SSW - is not evident. (OWL p. 17-10, condensed)

- NASA continues to follow SPD-01A Peer Review Conflicts-of-Interest which has never limited the ability to hold unconflicted review of proposals, even in larger programs like SSW
- NASA continually works to broaden the reviewer pool. Volunteer here: https://science.nasa.gov/researchers/volunteer-review-panels/
- Most R&A programs including SSW now receives 1/4 the proposals they did at the time of the writing of the Decadal Survey, making panel logistics *not* the challenge described in the OWL
- In fact, many current review panels in these programs are small and larger panel sizes would allow NASA to evaluate proposals faster and/or more efficiently
- NoDD review process further reduces conflict-of-interest issues
- Virtual review panels reduce conflicts even further

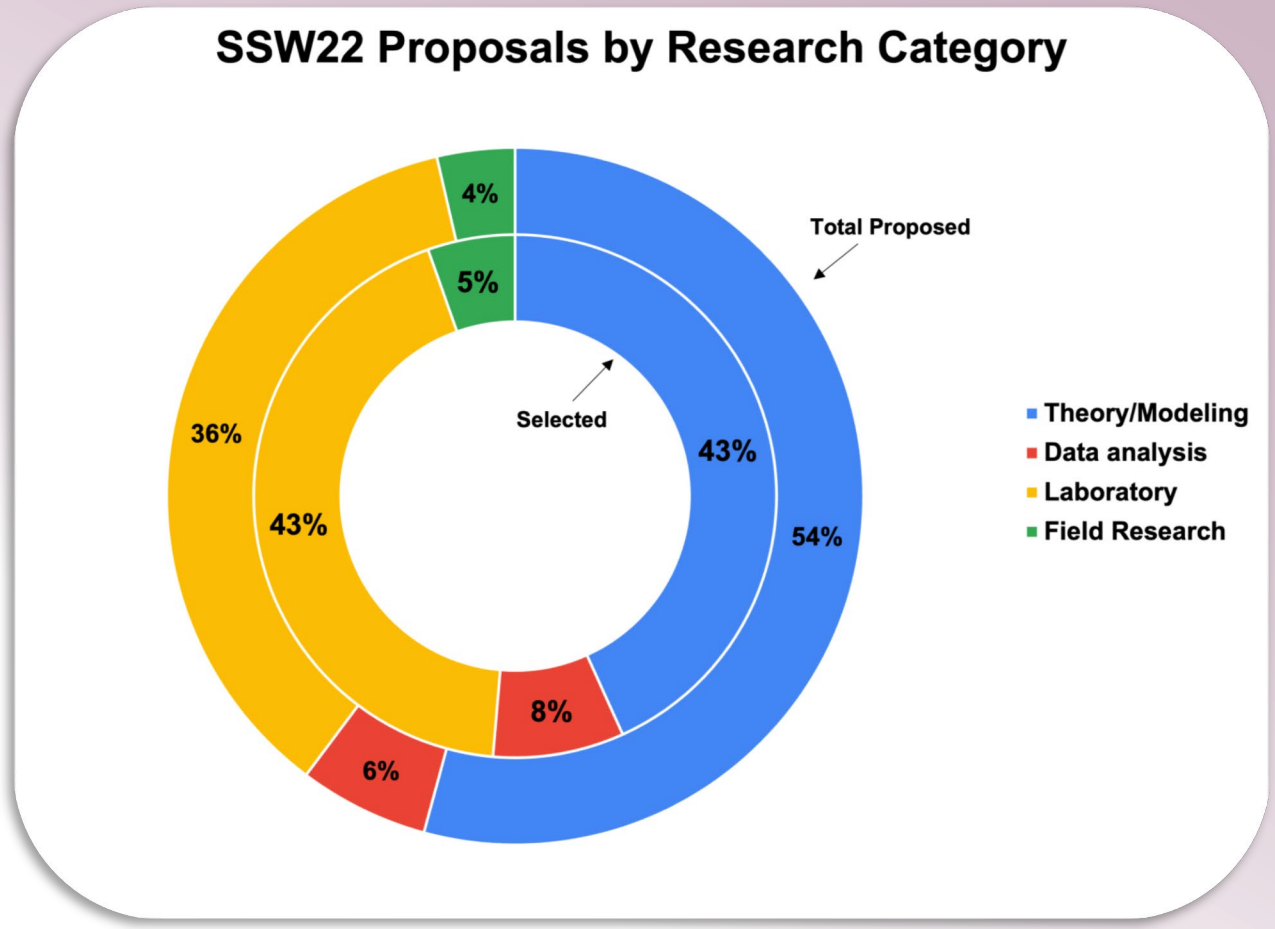
Addressing Community Concerns

[SSW has] a lack of explicit focus on fundamental research… beyond those available from analyses of spacecraft data alone… NASA's focus on interdisciplinary science would be enhanced by supporting and encouraging fundamental research within SSW or a new dedicated program. (OWL p. 17-11, condensed)

- SSW strongly supports fundamental research. SSW is really topic-agnostic: SSW selects fundamental research at ~same rate as it selects all other proposals
- Analysis of current & recent spacecraft data are by the DAPs, which allows SSW to focus on fundamental research
- What used to be Mars fundamental research program (MFRP) is part of SSW
- Fraction of proposals that would advance strategic goals of more than one SMD division were 30% (2021), 25% (2022), and 30% (2023)
- Merging of these three programs further enhances interdisciplinary science opportunities

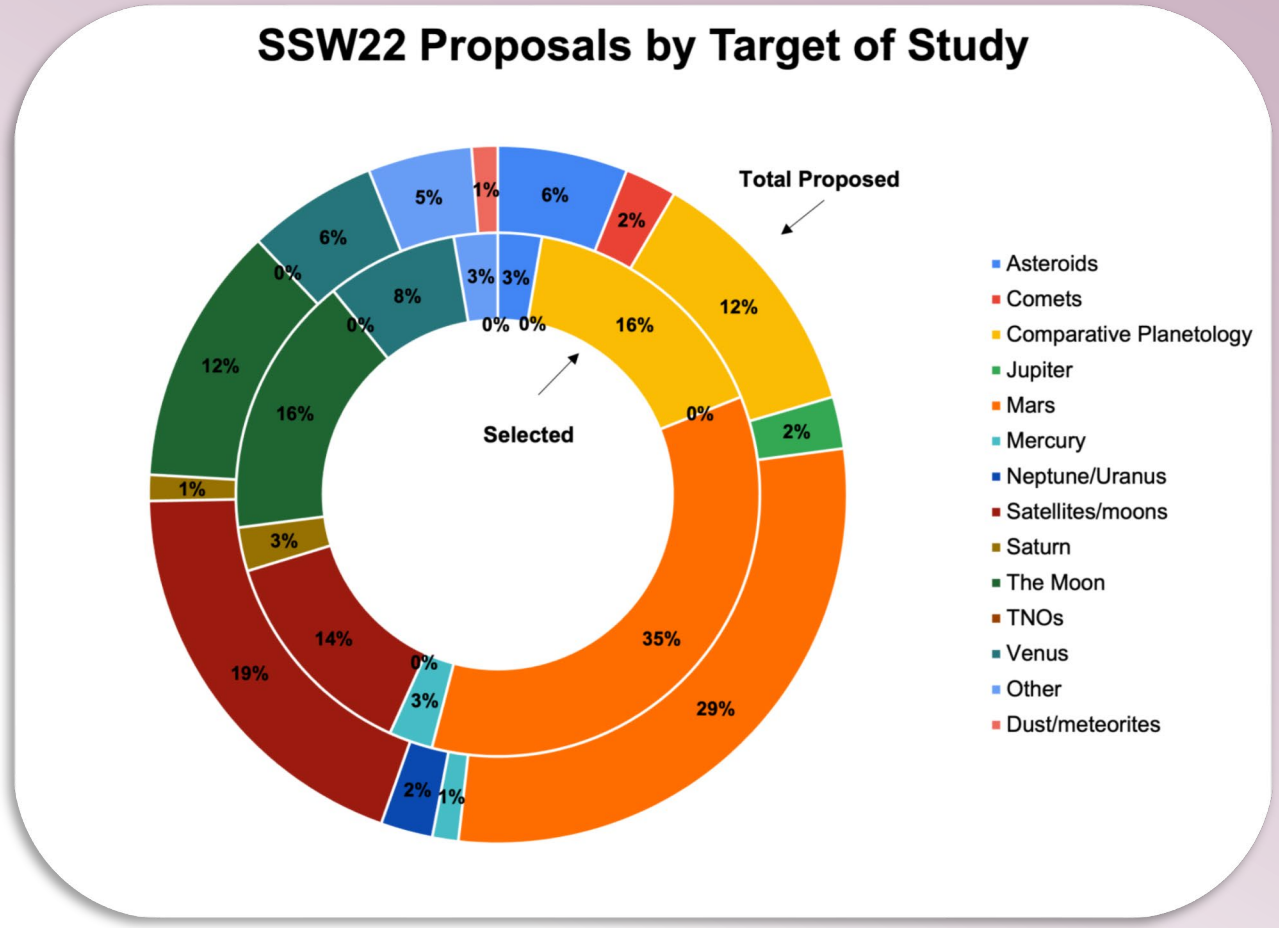
Continue Monitoring Successes and Challenges

- Track proposal relevant information via NSPIRES cover page questions (decadal survey priority topic, most relevant discipline, target body, …).
- Track PI, reviewer, and topical area overlap with the Science Management System (SMS)
- Track Work Breakdown Structures (WBS's) pertaining to programmatic funding lines



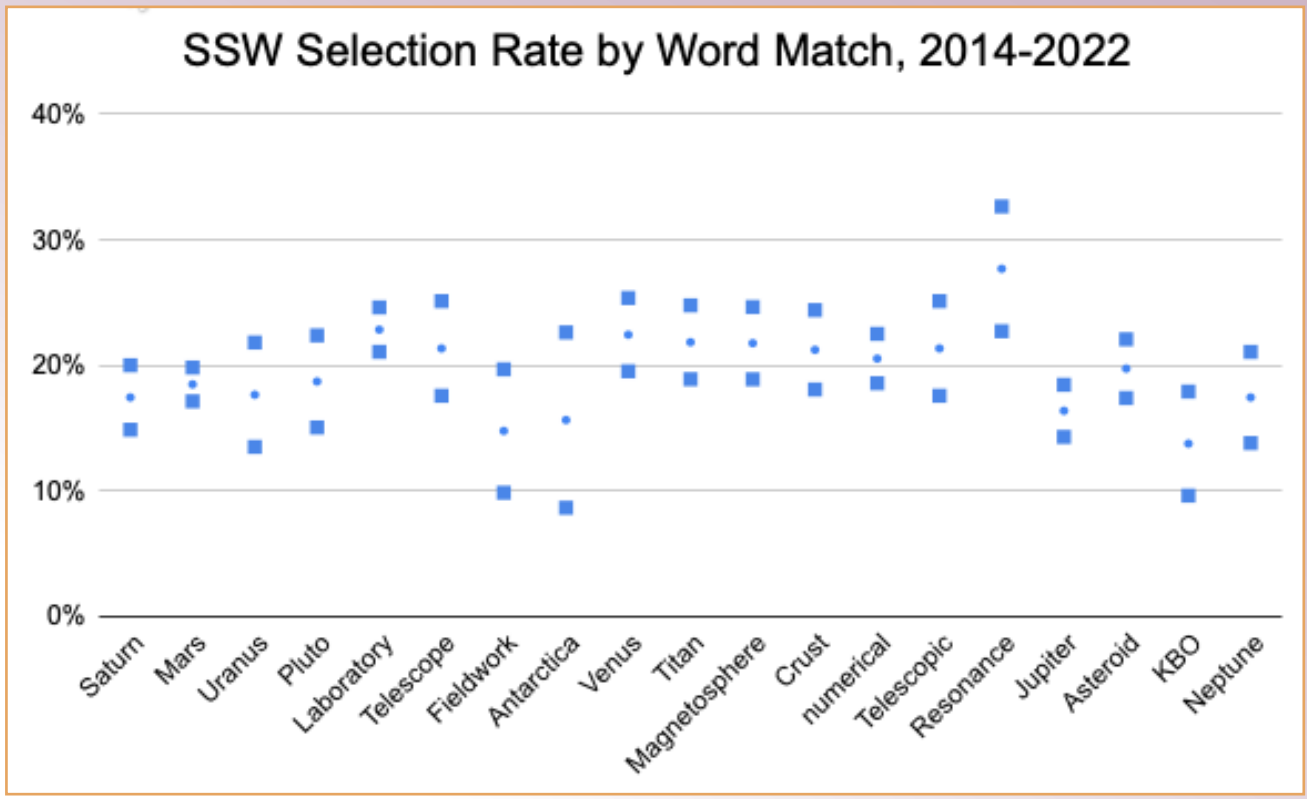
Continue Monitoring Successes and Challenges

- Track proposal relevant information via NSPIRES cover page questions (decadal survey priority topic, most relevant discipline, target body, …).
- Track PI, reviewer, and topical area overlap with the Science Management System (SMS)
- Track Work Breakdown Structures (WBS's) pertaining to programmatic funding lines



Continue Monitoring Successes and Challenges

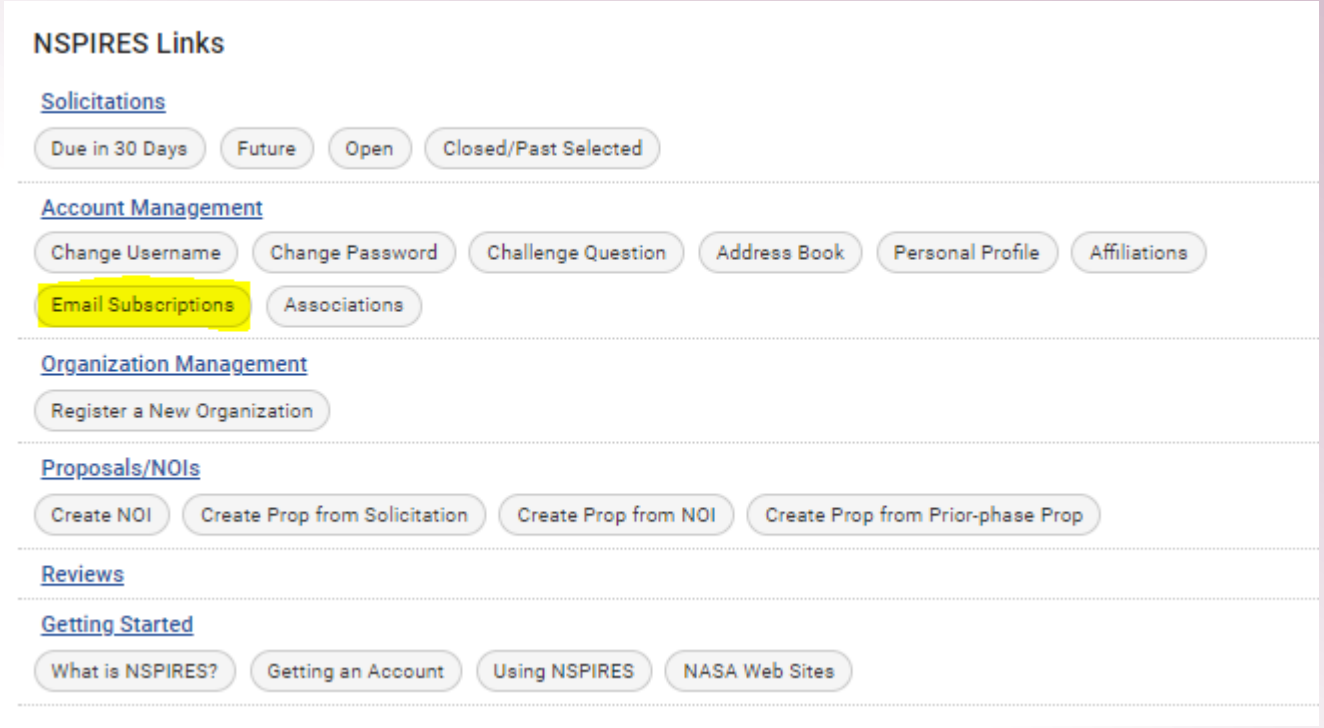
- Track proposal relevant information via NSPIRES cover page questions (decadal survey priority topic, most relevant discipline, target body, …).
- Track PI, reviewer, and topical area overlap with the Science Management System (SMS)
- Track Work Breakdown Structures (WBS's) pertaining to programmatic funding lines



SSW for last 9 years has funded essentially all sub-disciplines at ~20% selection rate.

Stay up to date on PSD R&A

- Planetary Science Advisory Committee
  - July 9-11, 2024
  - https://science.nasa.gov/researchers/nac/science-advisory-committees/pac/
- Register for Email Subscriptions
  - www.Nspires.nasaprs.com



Few Final Words

- Increasing the accessibility of our proposing process is extremely important to us.
- We have an incredible team of program scientists who work tirelessly to continuously improve our systems and processes while supporting community needs.
- We appreciate your feedback and we are listening. We appreciate your trust as we modify our programs and processes to best serve the needs of the community and the agency.

Submitted Qs, and As

Has DAPR significantly shifted the demographic makeup of funded teams?

- At this point in time, the only analyses done for DAPR SMD programs have examined the relative selection rate by PI gender and institution type, as discussed earlier.
- The DAAR's office is doing additional analyses, which will be included in future R & A Yearbooks.
  - We must abide by federal regulations that determine how we can analyze and present data, and how data can be grouped to protect individuals' privacy.
- Expected analyses will be focused on PI demographics and institutional demographics (not *team makeup* demographics), but there is the possibility of additional analyses.

It was stated that DAPR will be the default format for all proposals submitted to the Science Mission Directorate (SMD) under ROSES-2025 (with rare exceptions). What are those rare exceptions and why?

Program elements where the identity of the proposer is key to evaluating the proposal may be exempted from the DAPR process. Program Officers will be responsible for supporting their request to use “classical” peer review through discussions with the Selecting Official and the DAAR, Dr. Michael New. The use of DAPR may be waived if the Selecting Official believes that the identities of the proposers and their institutions are intimately connected to the merit of the proposals and this information cannot be evaluated separately.

To what extent do panels seem to infer the identities of team members despite redaction? Does it vary by program?

We instruct panelists to not make an effort to guess the identities of the team members. Levelers ensure that this occurs. Reviewers sometimes infer identities prior to the panel. In those cases, only the Program Officer (not the Group Chief or the rest of the panel) will be a part of the discussion to address any concerns.

Structural changes de-emphasize this whole problem

Because of this, and the structure of the review which de-emphasizes identities, it has been rare that panels infer the identities of the team members during the panel discussion of the proposal (with no noticeable difference between programs).

Have there been shifts in the distribution of evaluations (E/VG/G etc) after DAPR implementation?

The office of the DAAR will be assessing various metrics associated with the implementation of DAPR and including this in future ROSES R & A Yearbooks.

Typically, DAPR analytics have focused on identifying the top two or three proposers, which directly measures the competitive ranges of the various proposals. Score distributions can be more panel-specific.

NASA had a restriction on funding involving China, has that changed?

There has been no change to NASA's congressional funding restrictions with China under the Wolf Amendment. The Chang'e-5 lunar samples are a limited exemption that has been certified with Congress (in November 2023).

Please see these FAQs on NASA's restrictions with China.

Overall, how satisfied is the NASA scientific community with the current DAPR process? What changes, if any, are under consideration?

DAPR panelists have been favorable of the process, as described earlier. For example, one reviewer stated, *"DAPR was terrific. We really focused only on the science, and it was clear which proposals were the best before the 'reveal' step. This made clear that knowing who authors the proposal is really unnecessary, and that DAPR works!"*.

DAPR reviews are presently being conducted in the same way as since they began in SMD. However, SMD recently began allowing an alternative to how the "Expertise and Resources" document is treated:

- Currently and continuing for most programs going forward, the "Expertise and Resource" document undergoes the **"Expertise and Resources" Validation process,** which as shown earlier involves simply confirming that the documentation provided supports that expectation that the team can successfully execute their proposed investigation.
- For some programs, the anonymized proposal may not be sufficient to establish the likelihood that a proposed investigation can be executed successfully. In those cases, the Program Officer may elect to adopt a more rigorous assessment, called the **"Expertise and Resources" Evaluation process**.
    - The decision to implement this enhanced assessment should be taken strategically and sparingly, and only with the written concurrence of the DAAR for his/her designee.

How is the OSDMP treated under DAPR?

The OSDMP is part of the anonymized proposal, and as such should not include personal or institution identifying information (for example, an institutional archive name that is NOT openly available for contributions). If an institutional archive is open for all to contribute to, this would not be considered institution-identifying.

Proposers can refer to an institutional archive that meets OSDMP requirements by referring to it generically as an "institutional archive" and outlining any key features of the archive that are relevant to the archiving plan.

Proposals are a lot of work, and we are all facing low selection rates. Would the idea of a real two-step process ever be considered, where budgets are not required until the scientific merit has been assessed? This would save proposers and their institutions a lot of unnecessary headaches.

This process, termed “Just In Time,” is already underway in both the Discovery Data Analysis Program (DDAP) and the Here 2 Observe program. Example text from the DDAP-24 program element is below:

“In lieu of a detailed budget, only a budget justification will be needed. Typically, this can be accomplished in a single page, although up to three (3) pages is allowable. No NSPIRES-based budget will be submitted, and no Total Budget file will be uploaded. Proposals submitted to this element do not need to include a detailed budget but must identify the planned duration and cost range under which the proposal is submitted as either small (<$125K/year), medium ($125-175K/year), or large ($176-300K/year).”

At this time, there is no plan to expand this Just in Time approach, as preliminary data appear to show that PIs save little time overall, although we are continuously assessing the needs of the community and implementing changes as we can and additional data is needed to assess the impact fully.

Is the total budget allocated for the 3 programs going to be the same for the one combined program, or is it being reduced?

The current plan is to combine the anticipated budgets for the 3 individual programs (EW, SSW, and SSO) into a single budget for the merged program (SSS). There is no plan at this time to reduce the total budget of these three programs, noting that we are in an extremely tight budget environment and flexibility in program budgets is a necessity.

PIs were allowed one proposal per year per program. PIs have fewer opportunities per year with a merged program. Will PIs be limited to one SSW+SSO+EW proposal per year?

This is not a restriction that is currently in place. The restrictions in place apply only to duplicate proposals and resubmission of revised proposals. If a proposer has numerous unique research ideas that would be submitted to the newly merged program, they are welcome to submit as many proposals as they would life.

Per ROSES Appendix C.1: “A proposal is considered "duplicate" if it consists of the same, or essentially the same, work as another proposal submitted to any program element of ROSES or any other solicitation supported by PSD. Duplicate proposals have shared objectives, methodology, and key team members (regardless of the PI). Proposals that share these properties are duplicates, even if they differ in their relevance statements or any materials outside the S/T/M section such as budget, OSDMP, biographical sketches, current and pending support, etc. Certain tasks in proposals are also subject to these duplicate proposal restrictions. Two proposals are considered duplicates if both contain the same independent task, even if part of a broader workplan in one or both proposals. An independent task is one that, in and of itself, constitutes a science project that could reasonably be submitted on its own for peer review. A "resubmitted" proposal is one that was declined for funding for any reason (with exceptions noted below) by any program covered by C.1 and then submitted again to any program covered by C.1. Revisions may be significant, including methodology, team members, resources to be used, and workplan. However, the goals and objectives are largely the same as in the previous declined proposal. If an independent task from a proposal that was declined for funding is incorporated into a later proposal, the entire second proposal is considered to be "resubmitted".”

For mid-hi level TRL advancement tech proposals, past experience of the team is essential. How is this evaluated with DAPR?

The technology development proposal's DAPR process will include reviewing the proposing team's expertise after the proposal reviews have been completed, which includes intrinsic merit, relevance, and cost reasonableness. Under the DAPR process, the standard review of technology development proposals is split into two parts: a technical evaluation and a validation of the proposer's expertise and resources. After reviewing the proposing team's experience (as part of the Expertise and Resources documents), the panel will be asked to evaluate the proposing team's experience and identify if based on that experience there are any concerns of the proposer's ability to complete the proposed work. If the panel finds during the review of the E & R documents that the team does not contain the expertise and resources to successfully carry out the proposed investigation, they will mark the team as "Unqualified" and be required to justify this statement. This will be presented to the selecting official as part of the information from the review panel.

Can you provide a Word and LaTeX templates to make DA proposals easier to write? (e.g., automatically numbering references, correct margins/font-sizes)

We do not have Word and LaTeX templates for DAPR proposals available at this time. This recommendation/request will be provided to the DAAR's office for review.

The previous combination of multiple programs into SSW caused a lot of problems (e.g., finding unconflicted reviewers & reviewers with the appropriate expertise). Were the lessons-learned from that merger taken into account when this decision was made, and how will those challenges be addressed by this even-larger merger?

We have an incredible team of program officers that are willing and able to work through and address any challenges that may arise from the merging of these programs. We have discussed lessons-learned across our PSD R&A programs at length and will implement various lesson learned to ensure a smooth transition with this merger. We will continue to review the progress of this new program and make changes as necessary to maximize the success of this newly merged program.

Thank you for your efforts here. Proposals are a lot of work. Any change requires more effort from proposers. Is there an effort to simplify the proposal process somewhere else to account for the extra work this will create, at least at first?

The DAAR recently had an RFI entitled "Improving the Usability of the Research Opportunities in Space and Earth Science (ROSES)" NASA Research Announcement (NRA) (Due Feb. 23, 2024). We are continuously assessing our processes and procedures to simplify the proposing process, increase the accessibility of information, and decrease barriers to proposing.

An “Expertise and Resources” document detailing the expertise each team member brings is part of DAPR proposals. How is this information used in determining selections?

The “Expertise and Resources Not Anonymized” document is distributed to the panel for a subset of proposals (typically the top third, according to the distribution of assigned grades and the projected selection rates). This is to allow the reviewers to assess the team capabilities required to execute a given proposed science investigation. This assessment does not affect the intrinsic merit rating and is used by the Selection Official to help determine whether there would be any risks in funding the proposal.

How frequently do panels see the expertise and resources and decide that a highly rated proposal is no longer achievable?

The “Expertise and Resources Not Anonymized” document is distributed to the panel for a subset of proposals (typically the top third, according to the distribution of assigned grades).

There have been instances where the panel did provide feedback to the Program Officer re. Expertise, expressing concern or questions on the contents of the "Expertise and Resources – Not Anonymized" document; this type of feedback is most welcome. However, to date no highly rated proposal has been deemed Unqualified.

By combining 3 programs into one (SSS), it's not clear how this will reduce reviewer pressure…the number of proposals and thus the number of reviewers needed should remain the same?

Currently, with three separate programs, given their expertise members of the community are being overburdened to review on multiple review panels across programs which frequently have a low number of proposals. From 2017-2022 37% of EW reviewers and 45% of SSO reviewers also reviewed for SSW. Given that the number of proposals on review panels has significantly decreased, by combining these three programs, it will allow for larger panels and minimize the taxing of reviewers time by requesting they serve on a single panel with multiple proposals rather than multiple panels with far fewer proposals.

Why doesn’t the NSPIRES system strip metadata from the uploaded documents/PDFs and/or check for the PI’s name in the main doc?

This is not a capability of the NSPIRES system. Relying on post-submission software editing of a proposal would also constitute editing of content directly submitted by an organization, which is outside the purview of NASA.

If inferred gender is an issue (slide 14), what is preventing collection of more accurate self-identified information?

Earlier analyses used inferred gender (from first names, using publicly available software) as a proxy for gender. We are moving away from that as 1) it presents gender as a binary, and 2) because inferred gender is not accurate.

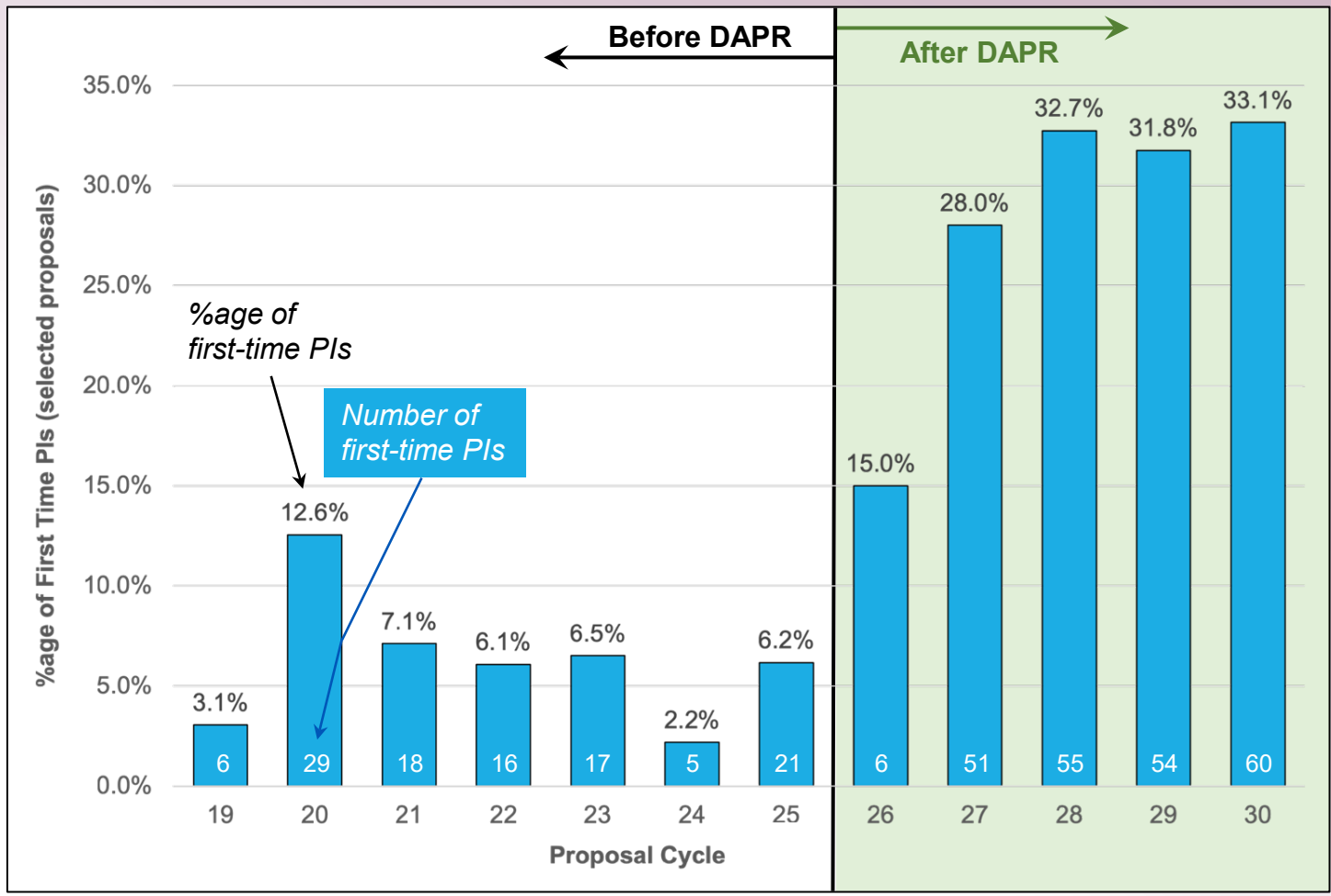
NSPIRES does include the option to include self-identified information. The access to this data is strictly controlled. The office of the DAAR uses this information for the R & A Yearbook.

Do note, even if an individual shares this information, SMD follows the "Office of the Chief Scientist Suppression Guidelines for Public Presentation of Self-Reported Demographic Data". As such, dividing data into smaller categories will result in more of the data being labeled as "Not Reportable", because with smaller numbers of people within certain demographic categories, the data could be considered identifying.

In addition to gender parity, there are other potential advantages to DAPR including awarding more grants to early career researchers; my experience on DAPR panels to date, suggests that early career researchers may now be doing better under DAPR reviews than they were when their identifies were known. Is this the case, and if you don't yet know, are you able to analyze existing data to assess this potential outcome?

This has not been formally assessed by SMD but may be assessed in a robust manner by the DAAR in future R & A Yearbooks.

However, since the adoption of the DAPR approach to their proposal review, the Hubble GO program has seen a sharp increase in the percentage of selected proposals that are led by first-time PIs (see right; Neill Reid, personal correspondence).



Assuming DAPR functions as intended, how does the subsequent assessment of team capability avoid subconscious bias?

NASA's SMD's DAPR process is not entirely "anonymous".

While unconscious bias could potentially be present when assessing the "Expertise & Resources – Not Anonymized" document, the intrinsic merit rating of the STM portion of the proposal **cannot** be changed after the reveal step. Additionally, NASA Program Officers require the panel to explicitly explain any deficits in expertise or resources to find the team "Unqualified", so the bar is very high for this to be the case. The expectation is set that the vast majority of proposal teams will be "Qualified", and no written response is required in those cases under the standard “Expertise and Resources” Validation process.

Based on the subset of proposal Expertise and Resources appendixes that are reviewed, what percentage of proposal teams are deemed “Not Qualified”? And what percentage are deemed “Uniquely Qualified”?

This data is not consistently collected at this time. Anecdotally, there are no known cases of a team being found "Unqualified" for a highly rated proposals, and less than a handful of teams found to be "Uniquely Qualified".

Can SSW and other programs please allow HST as a valid data source for projects? STScI funding is too small for science.

At this time, funding for Hubble Space Telescope (HST) observations and funding for archival research and theoretical research programs is solicited through NASA and the Space Telescope Science Institute. The proposal process can be found here: https://www.stsci.edu/hst/proposing. Discussions are underway between PSD and the Astrophysics Division to ensure proper funding is available for this research.

What processes do you use to assess award outcomes with respect to what was proposed, and how is this fed back into the proposal evaluation process?

All awards are required to submit progress reports on a yearly basis which are reviewed by the program officers and approved prior to sending an additional year of funds. At the end of each award, a final report describing the progress made is required. This information is not fed back into the proposal evaluation process.

NSF requires a section on “Results from previous NSF support” which prevents anonymity, what is NASA position on this aspect?

NASA does not require a section on “results from previous support”. The track records of the proposing team are addressed in the “Expertise and Resources – Not Anonymized” document and voted on using a three-point scale (Uniquely Qualified; Qualified; Unqualified).

For proposal review, how are conflicts assessed while under DAPR?

The NASA program scientists check the names of the team members and participating organizations, as identified in NSPIRES. During the discussion of the anonymized proposal, if the identities of the team members become evident to a reviewer, the reviewer must disclose to NASA if any strong biases exist that prevent the reviewer from delivering an objective assessment.

What is the understanding about why the number of proposals have reduced to ¼ of what was anticipated in the decadal?

We have seen a significant decrease in proposal submissions starting in 2020, coincident with the start of the COVID-19 pandemic. At this time, we only have anecdotal evidence as to why we have seen a reduction in proposal submissions. Additional analysis are planned for Fall 2024 in an effort to address this potential concern.

DAPR will be the default for proposals submitted to SMD under ROSES-2025, is that only under planetary or all of SMD?

DAPR will be the default for proposals submitted to all SMD divisions starting in ROSES-2025.

For NoDD programs, what is the roll-over date between ROSES-24 and ROSES-25 when DAPR goes universal?

There is not technically a roll-over date between ROSES-24 and ROSES-25 for NoDD programs.

For submissions to elements under ROSES-2024, proposals to NoDD programs can be submitted until March 29, 2025

For submissions to elements under ROSES-2025, proposals to NoDD programs can be submitted starting February 14, 2025

During the time period between February 14, 2025 and March 29, 2025, for proposals submitted to NoDD programs, proposers must select the ROSES year (2024 or 2025) they are submitting to and follow the requirements of that ROSES year.

How is funding distributed between R1 and non-R1 universities?

This information is assessed by the DAAR. You can see analyses on proposals submitted under ROSES-2021 within the first R & A Yearbook.

Can we cite classic papers/models in our field without numbers for clarity? E.g., E = mc^2 by Einstein and not [2], or Dungey Cycle at Earth instead of [5]'s cycle?

Per the Guidelines for Anonymous Proposals, references must be written in the form of a number in a square bracket, e.g. [1], which will then correspond to the full citation in the reference list. When citing references, use third person neutral wording. This especially applies to self-referencing. For example, replace phrases like "as we have shown in our previous work [17], …" with "as previously shown [17], …"

YORPD was isolated from the precedents of SSO & SSW because reviewers were deprecating the effort to survey for hazardous asteroids, saying it wasn't science. Will YORPD be again merged with the programs that count peer-reviewed journal papers instead of contributions to overall knowledge of the asteroid population?

YORPD is established for competed research to support Congressional tasking to NASA's Planetary Defense Program and to implement attainment of goals and objectives in the U.S. National and NASA strategies for planetary defense. Some activities involve scientific research to meet these objectives but the overall objectives are not solely science-driven, and so YORPD is solicited and reviewed separately from science programs.

Would LARS ever be incorporated into this larger program? Proposing to work only or mainly on returned samples can often feel limiting for science ideas.

At this time, we do not plan to incorporate LARS into this newly merged program. However, we continue to assess the needs of the community and the alignment with our research programs. There is always a possibility that LARS would be incorporated into this larger program in the future.

When will the solicitations for PRISM/SALSA and LTVI be released?

It is currently anticipated that these program elements will be released as part of ROSES-2024.

Kathleen Vander Kaaden
Director of Planetary Research (Acting)
Kathleen.E.Vanderkaaden@nasa.gov

Delia Santiago-Materese
Deputy Director of Planetary Research (Acting)
Delia.L.Santiago-Materese@nasa.gov

Doug Hudgins
SMD DAPR Lead
Douglas.M.Hudgins@nasa.gov