

National Aeronautics and  
Space Administration



# EXPLORESCIENCE

**State of the Profession**

*Decadal Survey Supplemental Presentation*

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# Introduction

This input to the Decadal Survey presents high-level information on the current state of the profession, as applicable to NASA. The intent of these slides is to assist the Committee in the beginning of their deliberations, and NASA welcomes the opportunity to speak further to the Committee on this topic.

The final slide of this presentation includes specific requests from NASA for the Decadal Survey Committee.



# Introduction

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## Decadal Survey Statement of Task, Study Approach

*Assess the state of the profession, encompassing, but not limited to:*

- a. Identifying the workforce expertise and capabilities [...];*
- b. Evaluating the health and vitality of the community [...]*
- c. Identifying issues of concern regarding diversity, equity, accessibility, and inclusion; and*
- d. Recommend [...] actions to improve the health and vitality of the community.*

*The report should produce recommendations for Agency actions that address needs identified in its assessment of the State of the Profession. Recommendations should be directed towards a particular agency as appropriate for that Agency's mandates and responsibilities. [...]*

[Additional details present in the Statement of Task and Study Approach are included in Backup slides.]





# Overview

- Heliophysics State of Profession Activities
  - Recent National Academies Report
  - Research Programs
  - Mission Participation
  - Community Development
- State of Profession Requests
  - Requests for the Decadal Survey

The background of the slide is a composite of two cosmic images. The top half features a dark blue and black space filled with numerous small stars and a prominent, bright blue nebula on the right side. The bottom half shows a similar starry field but with a warm, golden-yellow and greenish glow, suggesting a different spectral filter or a different region of space. The text 'Recent, On-going Activities' is centered in a white, sans-serif font across the middle of the slide.

# Recent, On-going Activities



# Recent National Academy Reports

- [Advancing Diversity, Equity, Inclusion, and Accessibility in the Leadership of Competed Space Missions](#) [2022]
  - Fostering diverse and inclusive teams that are highly skilled, innovative, and productive is critical for maintaining U.S. leadership in space exploration. In recent years, NASA has taken steps to advance diversity, equity, inclusion, and accessibility (DEIA) in their workforce by releasing its equity action plan, emphasizing how diverse and inclusive teams help maximize scientific returns, and requiring DEIA plans as part of announcements of opportunities. To further its efforts to advance DEIA, the Agency requested the National Academies undertake a study to evaluate ways NASA can address the lack of diversity in space mission leadership.
- [Foundation for Assessing the Health and Vitality of the NASA Science Mission Directorate's Research Communities](#) [2022]
  - This study will define the data that NASA needs to collect to enable each decadal survey to analyze its research community's health and vitality. The committee will also recommend actions to improve the researcher communities' health and vitality to aid in accomplishing NASA research objectives.
- Within ~90 days of the *Foundation* report's release, NASA will publish a response to both reports
  - NASA will alert the Committee to the response's release
  - Reports and the response should be incorporated into the Committee's deliberations



# Research Programs

- [Dual Anonymous Peer Review](#)
  - Introduced in ROSES-2020, based on a study for the Hubble Space Telescope
  - Impact: Addressing bias proposal evaluation system by removing identifying information of the PI and team so that the science can be evaluated.
- Inclusion Plans requirement in ROSES
  - Introduced in SMD by the Astrophysics Division
    - [Astrophysics Advisory Committee R&A Presentation](#) [March 2022], Slides 19-36
  - Piloted in Heliophysics R&A by [Space Weather Centers of Excellence](#) [ROSES-2022]
- Inclusive R&A code of conduct: the Science Mission Directorate has adopted a Code of Conduct for panelist and Chairs in order to ensure that the peer-review panels are conducted with integrity, inclusion and professional respect.
- Executive Secretary positions, R&A review panels
  - Early-career researchers serve as the executive secretary for review panels
  - Enables early-career individuals to gain insight into the proposal process, meet community members to build a professional network





# Mission Participation

- [PI Launchpad Workshop](#): A multi-day event to introduce interested community members to the process of and requirements for proposing and developing a mission. Held in 2019 and 2021, with all material is available online.
- [Heliophysics Mission Design School \(HMDS\)](#): A three-month program for early-career community members to learn about the development of a robotic space mission through design, life cycle, costs, and schedule. The culminating week results in a mission point design that is assessed by a review board.
- Mission IDEA Plan, Senior Review requirement: Starting with 2023 Senior Review, missions will submit an IDEA Plan for evaluation with their extended mission proposal.
  - IDEA Plan description and evaluation criterion are at the end of this slide deck
- Diversity and Inclusion Plan, AO requirement: SMD is implementing an Announcement of Opportunity requirement for Diversity and Inclusion Plans (see [precursor RFI](#)).
  - [2022 Heliophysics SMEX](#), [Astrophysics Probe](#)
- Mission engagement: NASA incentivizes mission engagement plans with IDEA as a major focus (e.g., [PUNCH](#), [IMAP](#)).
  - These activities are negotiated post-selection to leverage the mission science for focused outreach.





# Community Development

- [Mentoring 365](#): A platform for the community to increase professional connections and enhance mentorship opportunities. (In partnership with AGU and other professional organizations.)
- [NASA Internship Programs](#): Engaging, substantive, and inclusive internship opportunities at all NASA Centers (including HQ). Eligibility at NASA HQ for high school through graduate level interns.
- [Heliophysics 2050 Workshop](#): A NASA- and NSF-enabled, community-led workshop to facilitate whole-community discussions on a strategic, multi-decadal framework. (May 3-7, 2021)
  - Short-, medium-, and long-term science objectives
  - State of the field, as a community and a scientific discipline
- Early- and Mid-Career Roundtables: Series of Division-hosted roundtables (~150 participants across seven events in 2021) to discuss issues inside the community, including impacts of the COVID-19 public health situation



# Within NASA

- NASA activities outside of Heliophysics Division may be available for leveraging and partnering.
  - [NASA Mission Equity](#)
    - [NASA Equity Action Plan](#)
    - [NASA Strategic Plan for Diversity, Equity, Inclusion, and Accessibility](#)
  - [NASA Office of STEM Engagement](#)
  - [SMD Science Activation](#)
  - [SMD Bridge Program](#)
  - [SMD Citizen Science](#)
  - SMD IDEA Working Group
- These collaborations would be best suited for those Division activities that align with SMD and Agency strategic goals on inclusion and diversity.

The background of the slide is a cosmic scene. The top half features a dark blue and black space filled with numerous small stars and a prominent, bright blue nebula on the right side. The bottom half transitions into a warmer color palette, with a golden-yellow and greenish glow, also containing stars and nebulae. A light blue horizontal band is centered across the image, containing the title text.

# State of Profession Requests





# Request for the Decadal Survey

Charge to the Decadal Survey Committee: *The report should produce recommendations for Agency actions that address needs identified in its assessment of the State of the Profession.*

- Identify community-specific challenges and concerns that NASA could be able to address
  - Do not prescribe implementations of recommended actions
    - Leave NASA flexibility to optimize responses to recommended actions
  - Do provide background, context for challenges
  - Do discuss potential studies that the agencies might consider conducting
    - Study objectives, motivations
    - Potential pitfalls
  - Do discuss potential metrics for desired improvements
- Incorporate discussions in recent National Academies reports, with appropriate tailoring to the heliophysics community
- Consider discussions included in other recent decadal surveys
- Discuss augmenting existing and potential new partnerships
  - Including NASA, Government, non-Government

*[Additional details present in the Statement of Task and Study Approach are included in Backup slides.]*

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#HelioRocks



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# Backup





# Senior Review

# 2023 Senior Review, IDEA Plan Requirement

*Appendix A11. Required Document: Mission Inclusion, Diversity, Equity, and Accessibility (IDEA) Plan (up to 5 additional pages)*

One of the strategic goals from the NASA 2022 Strategic Plan is fulfilling Presidential Executive Orders 13985 and 14041 through supporting participation by underserved communities in its technology programs and executive orders. NASA will continuously promote the incorporation and transformation of Inclusion, Diversity, Equity, and Accessibility (IDEA) into HPD culture and business practices.

The mission IDEA Plan is a strategy describing planned efforts to increase inclusion, diversity, equity, and accessibility. The Plan must include the following elements:

- Description of the mission's ideal IDEA state, including but not limited to
  - Mission team structure and activities;
  - Mission team participation, including movement of individuals into, out of, and within the team.
- Actions taken since the last Senior Review to make progress on the mission IDEA strategy, if a mission IDEA strategy was developed before this Senior Review.
- Metrics and milestones for mission activities to make progress on the mission IDEA strategy. These shall include expected dates and outcomes for steps taken to make progress on the IDEA strategy.
- Narrative on the implementation of the mission's IDEA strategy within the in-guide budget and justification of any requested over-guide budget.

Where a mission draws upon a participating organization's IDEA strategy, the Plan shall tailor that overarching strategy to the mission and provide mission-specific details for the other required elements.

It is understood that missions are at various stages of maturity with regards to an IDEA Plan and the accompanying implementation. Missions should present an assessment of their situation and present a plan with metrics and milestones for progress. It is not expected that a mission could reach its ideal state before the next Senior Review, but specific methods for progress shall be planned.

NASA expects to periodically review mission IDEA Plans (including but not limited to at future Seniors Reviews) to assess achievement of the milestones described.

# 2023 Senior Review, IDEA Plan Evaluation

## *Criterion E: Inclusion, Diversity, Equity, and Accessibility*

- Factor E-1:** Mission Inclusion, Diversity, Equity, and Accessibility (IDEA) Plan. This factor applies to the mission's ideal state of IDEA, including in terms of mission activities, mission team structure, movement of individuals in/out of and within the mission team and succession planning. This factor includes any tailoring of institutional IDEA strategies to the mission's Plan.
- Factor E-2:** Recent progress against the mission IDEA Plan. This factor assesses the mission's recent actions that have addressed and made progress against the mission IDEA strategy. This factor applies only to those missions that had developed an IDEA strategy before this Senior Review.
- Factor E-3:** Planned progress against the mission IDEA Plan. This factor assesses the mission's plan to advance towards its ideal state of IDEA by the next Senior Review. This includes planned metrics and milestones, and the ability for upcoming actions to meet those metrics/milestones and to enable further progress after the next Senior Review.
- Factor E-4:** Cost reasonableness of the mission IDEA activities.





# Statement of Task Guidance

## Statement of Task

- Assess the state of the profession, encompassing, but not limited to:
  - Identifying the workforce expertise and capabilities needed to implement the scientific and technical priorities identified by the survey, including the identification of paths for entry into the community, needs for professional development, and challenges to workforce retention;
  - Evaluating the health and vitality of the community working in the solar and space physics subfields, which includes:
    - Assessing, to the greatest extent possible, the subfields against the metrics for health and vitality established by the Foundation for Assessing the Health and Vitality of the NASA Science Mission Directorate's Research Communities [study report due to be published Q1 2022], and
    - Identifying challenges to the community responding to new and emerging scientific fields;
    - Identifying issues of concern regarding diversity, equity, accessibility, and inclusion; and
  - Recommend, using established best practices, actions to improve the health and vitality of the community.

## Study Approach (outside the Statement of Task)

The report should produce recommendations for Agency actions that address needs identified in its assessment of the State of the Profession. Recommendations should be appropriate for the mandates and responsibilities of the Agency to which they are directed.

When possible, recommendations should include either specific metrics for success or potential issues or concerns for consideration in the Agency's generation of those metrics.

The survey should discuss challenges to individuals outside of major research institutions in responding to Agency solicitations and participating in Agency projects, with a focus on Minority Serving Institutions and Primarily Undergraduate Institutions.

The survey should identify where Agency support of existing or potential new programs would ensure the continued development of scientific and technical capabilities necessary for the report's science strategy. This should include discussion of challenges of access to these programs for members of underrepresented communities.

The Survey Committee is also encouraged to discuss potential studies that the decadal survey can not complete but that the Agencies might consider conducting. Effective discussions would include the specific study objectives and motivations, anticipated outcomes, any metrics or guidelines for metrics, and potential challenges.