

National Aeronautics and
Space Administration

Mary W. Jackson NASA Headquarters
Washington, DC 20546-0001



Reply to Attn of: Astrophysics Division

Dr. Margaret G. Kivelson
Space Studies Board
National Academies of Science, Engineering, and Medicine
500 5th Street, NW
Washington, DC 20001

Dear Dr. Kivelson,

I would like to express my appreciation for the November 2022 delivery of the pre-publication report of the 2020 Decadal Survey in Astronomy and Astrophysics, Pathways to Discovery in Astronomy and Astrophysics for the 2020s. I thank you, the members of the Steering Committee, the members of the Science Panels, the members of the Program Panels, and the members of the Panel on State of the Profession and Societal Impacts, for an inspiring and ambitious decadal vision. The report recommends a coherent, balanced, and implementable program of activities for NASA to undertake over the next ten years (and beyond). I am particularly grateful for the specific, actionable, and practical recommendations regarding the state of the profession and the future vitality and capability of the astronomy and astrophysics workforce. Please express my appreciation to the Co-chairs, Drs. Fiona A. Harrison and Robert C. Kennicutt, Jr., the Co-Study Directors, Mr. Gregory Mack, and Ms. Abigail A. Sheffer, and to all the volunteers and staff who worked to bring this complex and comprehensive project to such a successful conclusion.

In the attachment to this letter, I provide initial acknowledgement and preliminary assessments and responses to the Survey's NASA-focused recommendations. Please do not hesitate to contact Dr. Paul Hertz, who can be reached at (202) 256-7306 or at paul.hertz@nasa.gov, with any questions.

Sincerely,

Thomas H. Zurbuchen, Ph.D.
Associate Administrator
Science Mission Directorate

Enclosure(s)

cc:

NASEM/C. Hartman, F. Harrison, R. Kennicutt
NASA/SMD/P. Hertz, E. Smith, S. Cauffman, M. New

Attachment: Preliminary response to Decadal Survey report recommendations.

The report of the 2020 Decadal Survey on Astronomy and Astrophysics, *Pathways to Discovery in Astronomy and Astrophysics for the 2020s*, provided 22 recommendations addressed to NASA. NASA takes all these recommendations seriously and will address all of them, some of them immediately.

In Chapter 3, the Decadal Survey report provided 7 recommendations for NASA on advancing the Foundations of the Profession. NASA is committed to strengthening the profession. Our core value of Inclusion aligns the Agency with the priorities expressed in the Decadal Survey report. Our immediate responses include the following.

- NASA has proposed to start a Bridge Program within the Science Mission Directorate in FY22, with \$5M requested for FY22 and increasing amounts planned for in future years. A senior scientist has been brought on detail to NASA Headquarters to manage the Bridge Program. This activity is responsive to the recommendation on page 3-22.
- NASA conducted an independent review of the NASA Hubble Fellowship Program in 2021. The review was conducted to assist NASA in increasing the effectiveness of the program and bolstering its excellence, with a focus on diversity, equity, and inclusion of the program. The report of the review is publicly available¹ and NASA is working on an implementation plan that is responsive to its 32 recommendations. This activity is responsive to the second recommendation on page 3-23.
- NASA has charged the National Academies with conducting a study² that will enumerate the types of data that NASA should be collecting to enable future assessments of the health and vitality of the scientific work force and any statutory, regulatory or policy impediments to collecting those data. NASA, NSF, and DOE have also engaged with the Astronomy and Astrophysics Advisory Committee (AAAC) to assess the Agencies' current practices in collecting, evaluating, and publicly reporting demographic data. These activities are responsive to the recommendation on page 3-29.
- In 2021, NASA required an inclusion plan from all proposers to the Astrophysics Theory Program. The plans were evaluated, and feedback was provided to the proposers, but the inclusion plans had no role in selection. Based on lessons learned from that pilot³, NASA is expanding the inclusion plan requirement to 6 astrophysics elements and 4 additional elements of ROSES in 2022. In 2022, the evaluation of inclusion plans will not contribute to the adjectival ratings or selection recommendations. However, a proposal determined to be selected or selectable for

¹ [The NASA Hubble Fellowship Program: A Review of 30 Years of Promoting Excellence in Astrophysics](#)

² [Foundation for Assessing the Health and Vitality of the NASA Science Mission Directorate's Research Communities](#)

³ [The Astrophysics Division Inclusion Plan Pilot Program](#)

funding may not be funded until an adequate inclusion plan is submitted and approved by NASA. In 2023, proposals with unacceptable inclusion plans will not be eligible for selection, no matter how meritorious the science. These activities are responsive to the recommendation on page 3-30.

In Chapter 4, the Decadal Survey report provided 4 recommendations for NASA on advancing the Research Foundation. Our immediate responses include the following.

- NASA will continue to release data on proposal success rates, both aggregated and by program element, at every AAS Town Hall and at meetings of the Astrophysics Advisory Committee (APAC). These activities are responsive to the recommendation on page 4-3.
- Currently ATP has a 22% selection rate with biannual calls (consistent with the report's numbers on page 4-10). Increasing the budget by 30% would result in a 28% selection rate for biannual calls, but only a 14% selection rate for annual calls. Keeping in mind that the Decadal Survey states on page 4-10 that a 22% success rate "remains low," NASA will consider options for restoring an annual cadence for the Astrophysics Theory Program (ATP). These considerations will be responsive to the recommendation on page 4-10.
- NASA, NSF, and DOE have established a cross-agency working group to improve coordination among U.S. archive centers for astronomical and astrophysical data. In addition, NASA is implementing policies that expand its open data policy⁴. These activities are responsive to the recommendation on page 4-20.
- NASA and NSF have discussed with the AAAC plans to establish a task force (or similar subordinate group) of the AAAC to report on prioritized needs for laboratory astrophysics as well as appropriate funding mechanisms for addressing those priorities. These activities are responsive to the recommendation on page 4-28.

In Chapter 5, the Decadal Survey report provided 1 recommendation for NASA on Sustaining the Operating Portfolio. Our immediate responses include the following.

- NASA has removed the Stratospheric Observatory for Infrared Astronomy (SOFIA) mission from the 2022 Senior Review of Operating Missions. NASA and the German Space Agency (DLR) are working together to determine a joint response to the recommendation that SOFIA operations be terminated at the end of the current mission extension. These activities are responsive to the recommendation on page 5-12.

In Chapter 6, the Decadal Survey report provided 4 recommendations for NASA on advancing the Technological Foundations. Our immediate responses include the following.

- NASA amended the ROSES 2021 NASA Research Announcement on July 8, 2021, to expand the scope of the Strategic Astrophysics Technology (SAT) program element to include intermediate level technology maturation targeted in strategic areas identified for the competed Probe class missions⁵. This activity is responsive to the recommendation on page 6-5.
- NASA will be discussing the formation of a Balloon Program Review task force with the APAC at its Spring 2022 meeting. This activity is responsive to the recommendation on page 6-8.

⁴ [SPD-41: Scientific Information Policy for the Science Mission Directorate](#)

⁵ [Amendment No. 26 to the ROSES 2021 NASA Research Announcement](#)

- NASA has maintained a cadence of Astrophysics Explorer AOs every 30 months (4 per decade) since 2011. The NASA budget request for FY22 and its out-year planning budget guidelines fully support maintaining that cadence of Astrophysics Explorer AOs. This activity is responsive to the recommendation on page 6-9.

In Chapter 7, the Decadal Survey report provided 6 recommendations for NASA on Realizing the Opportunities with Medium- and Large-Scale Programs. Our immediate responses include the following.

- NASA conducted a study of lessons learned from the development of large space missions in the past. This Large Mission Study and its implementation plan set new standards for NASA in formulating and developing large space missions, such as the Roman Space Telescope and future astrophysics great observatories⁶. Many of the practices that NASA has committed to in the Large Mission Study Implementation Plan match elements of the Great Observatory Mission and Technology Maturation Plan recommended in Section 7.5.1 of the Decadal Survey Report.
- NASA will undertake a three-step plan leading to a decision to begin formulation of NASA's next great observatory. The first step, which has already been initiated, is a program of precursory science and technology development. A precursor science workshop is planned for late April 2022. In the second step, NASA will begin implementing the practices in the Large Mission Study Implementation Plan. These activities are responsive to the recommendation on page 7-11.
- NASA is committed to realizing the science of the recommended Time Domain Astronomy and Multi Messenger Astrophysics (TDAMM) program. A TDAMM workshop is planned for August 2022. NASA has begun conversations with international partners about establishing an international time domain portfolio of missions. NASA is already engaged with negotiations and studies for two new time domain missions. These activities are responsive to the recommendation on page 7-19.
- NASA issued a community announcement on January 11, 2022, with details regarding a planned 2023 AO for an Astrophysics Probe mission that is responsive to the priority areas identified in the Decadal Survey report⁷. These activities are responsive to the recommendation on page 7-20.
- NASA has asked the Committee on Astronomy and Astrophysics (CAA) to conduct a non-advocate review of the Roman Space Telescope's science program. The National Academies appointed a CAA working group to conduct the review, and the working group held its first meeting in February 2022⁸. This activity is responsive to the recommendation on page 7-35.

⁶ [SMD Large Mission Study](#)

⁷ [Astrophysics Probe Announcement of Opportunity Community Announcement NNH22ZDA008L](#)

⁸ [CAA Study on the Roman Space Telescope](#)