

National Aeronautics and Space Administration

Headquarters

Washington, DC 20546-0001



June 4, 2025

Reply to Attn of: SMD/ Director, Astrophysics Division

SUBJECT: NASA Response to the 2025 Astrophysics Senior Review of Operating Missions

Background

The NASA Science Mission Directorate (SMD) conducts comparative reviews of operating missions within each division to maximize the scientific return from these missions within finite resources. The Senior Review, held every three years, assists NASA in maximizing the scientific productivity from its operating missions within a constrained budget. This is consistent with Section 304(a) of the NASA Authorization Act of 2005 (P.L. 109-155), and the NASA Transition Authorization Act of 2017 (P.L. 115-10), which modifies Section 51 U.S.C. §30504 to read:

- (a) *Assessments.* —
 - (1) *In general.* —
The Administrator shall carry out triennial reviews within each of the Science divisions to assess the cost and benefits of extending the date of the termination of data collection for those missions that exceed their planned missions' lifetime.
 - (2) *Considerations.* —
In conducting an assessment under paragraph (1), the Administrator shall consider whether and how extending missions impacts the start of future missions.
- (b) *Consultation and Consideration of Potential Benefits of Instruments on Missions.* —
When deciding whether to extend a mission that has an operational component, the Administrator shall—
 - (1) *consult with any affected Federal agency; and*
 - (2) *take into account the potential benefits of instruments on missions that are beyond their planned mission lifetime.*
- (c) *Reports.* —
The Administrator shall submit to the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Science, Space, and Technology of the House of Representatives, at the same time as the submission to Congress of the Administration's annual budget request for each fiscal year, a report detailing any assessment under subsection (a) that was carried out during the previous year.

These reviews of operating missions are NASA's highest form of peer review, as the subject is not a single science investigation, or even a single space mission, but rather a

portfolio of operating missions. The reviews of operating missions are referred to as Senior Reviews, in recognition of the high level of the peer review.

NASA uses the findings from the 2025 Senior Review to:

- Provide programmatic direction to the missions and projects concerned for FY26, FY27 and FY28; and
- Issue initial funding guidelines for FY29 and FY30 (to be revisited in the 2028 Senior Review); and
- Understand where any funding that becomes available in excess of the in-guide budgets could most effectively be applied.

Missions in the 2025 Astrophysics Senior Review include strategic missions, Explorers missions led by Principal Investigators, and foreign-led missions in which the U.S. is a minor partner (for foreign-led missions, the NASA Senior Review assesses only U.S. funding). The 2025 Senior Review included the following missions (in alphabetical order):

- Chandra X-ray Observatory (Chandra);
- Fermi Gamma-ray Space Telescope (Fermi)
- Hubble Space Telescope (HST)
- Imaging X-ray Polarimetry Explorer (IXPE)
- Neil Gehrels Swift Observatory (Swift)
- Nuclear Spectroscopic Telescope Array (NuSTAR)
- Transiting Exoplanet Survey Satellite (TESS)
- X-ray Multi-Mirror Mission-Newton (XMM-Newton, an ESA mission).

The Neutron Star Interior Composition Explorer (NICER) was excluded from this Senior Review due to the recent mission and International Space Station (ISS) investments to repair damage to several sunshades of X-ray concentrators. The NICER Light Leak Repair was conducted during Extra-Vehicular Activity from ISS in January 2025, returning it to nearly full capacity.

The 2025 Senior Review Report, along with supporting documentation from the review, may be accessed at <https://science.nasa.gov/astrophysics/2025-senior-review-of-operating-missions/>

NASA Response

The Senior Review Report emphasizes that “each mission under review continues to be capable of producing important, impactful science in a cost-effective manner and would do so if allowed to continue operations into the next extended mission cycle.” Furthermore, “many of the most insightful science results arise from combining the observations of more than one mission in NASA’s fleet, leveraging complementary capabilities” so that the “portfolio’s value continues to be far more than the sum of its parts.” Every mission received the highest possible rating for potential of scientific return in the three-year period of FY2026 through FY2028, and each mission also shows strong alignment with the scientific goals of the community and NASA SMD.

NASA and the Astrophysics Division are taking the panel ratings and recommendations of the 2025 Senior Review Report into consideration as detailed budget plans are formulated. Under the President’s Budget Request for Fiscal Year 2026, NASA expects to continue at least five of these eight missions.

A handwritten signature in black ink, reading "Shawn Domagal-Goldman". The signature is fluid and cursive, with the first name "Shawn" being the most prominent.

Dr. Shawn Domagal-Goldman
Acting Director, Astrophysics Division
Science Mission Directorate