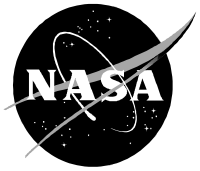

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National Aeronautics and
Space Administration

March 21, 2024

Committee on Science, Space,
and Technology

United States House of Representatives

Statement by:

Dr. Nicola J. Fox, Associate Administrator, Science Mission Directorate

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Statement of
Dr. Nicola J. Fox
Associate Administrator, Science Mission Directorate
National Aeronautics and Space Administration
before the
Subcommittee on Space and Aeronautics
Committee on Science, Space, and Technology
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Chairman Babin, Ranking Member Sorensen, and distinguished Members of the Subcommittee, thank you for the opportunity to appear today to discuss NASA's Science program. NASA science programs address fundamental research about the universe and humanity's place in it, and also informs human exploration of the Moon, Mars, and the solar system. NASA's efforts have advanced the United States' role as a global science leader. We hope that the science NASA enables today will inspire our Nation's future engineers and scientists, while also making life better for humanity here on Earth today.

As you know, NASA recently released our fiscal year (FY) 2025 budget request, which includes $7.565 billion for the Science Mission Directorate. This request supports over 125 space science missions, including 54 that are preparing for launch and over 70 currently in operation. The request funds U.S. scientists in universities, industry, and government labs through more than 4,000 openly competed research awards.

The missions and science undertaken by NASA are informed by the priorities laid out by the National Academies of Science, Engineering, and Medicine but funded through laws passed by you – the Congress – on behalf of the American people. We are grateful for the Congress's continued support of earth and space sciences, which has produced some stirring successes. I would like to highlight a few:

As we enter its second year of operation, the James Webb Space Telescope (JWST) continues to provide breathtaking results, with each captivating new image leading us closer to unlocking the greatest secrets of our cosmos. JWST has discovered galaxies created shortly after the Big Bang, challenging our understanding of how these grand structures are formed.
Recently OSIRIS-Rex delivered samples from the asteroid Bennu to the Johnson Space Center. These pristine samples are effectively time capsules from the earliest days of our solar system, 4.5 billion years ago, and will offer insight into our own planet's history, including whether asteroids colliding with ancient Earth delivered water and other key ingredients for life. Results from this mission may also help further NASA's exploration goals, potentially using asteroids or other solar system objects for future resources.

NASA is adding two missions to its Earth Science fleet this year. First, the Plankton, Aerosol, Cloud, ocean Ecosystem (PACE) mission, to study our atmosphere, oceans, and their ecosystems, was successfully launched from Kennedy Space Center in February 2024. Second, a mission co-developed by NASA's Jet Propulsion Laboratory and our partners at the Indian Space Research Organization (ISRO), the NASA-ISRO Synthetic Aperture Radar (NISAR), is being prepared for launch to scan the Earth in minute detail using a first-of-its kind dual band radar. We hope that the science NASA enables today will inspire our Nation's future engineers and scientists, by meeting our world's needs today and tomorrow with unique, trustworthy, accurate and validated information that enhances knowledge and

directly supports a wide range of actions, decisions, and policymaking across sectors at global, national, regional, and local scales.

Our investments in Commercial Lunar Payload Services (CLPS), which began in 2018, are beginning to bear fruit, as we recently witnessed the first successful lunar soft landing by an American company carrying NASA and commercial payloads to the Moon's South Pole region. We look forward to welcoming additional CLPS providers as they build a commercial ecosystem in which NASA can participate as a customer. The science and technology payloads sent to the Moon's surface as a part of CLPS will help lay the foundation for human missions and create a sustainable human presence on the lunar surface.

This has also been a big year for Heliophysics, as NASA supports education efforts around the country centered on two major solar eclipses: an annular eclipse that crossed from Oregon to Texas last October and a total eclipse expected to be witnessed by millions of Americans from Texas to Maine on April 8. Later this year, the Parker Solar Probe will make its closest approach to the Sun, the closest any spacecraft has ever come to a star. We are also approaching a solar maximum, the peak of the Sun's 11year activity cycle, which offers opportunities for science that will help us understand better how to protect the Earth from space weather hazards.

We look forward to the launch of Europa Clipper later this year. Clipper will search Jupiter's moon, Europa, for what we believe is a vast ocean that may hold evidence of life. The budget request also continues NASA's important work to protect the planet from asteroids, with funding for NEO Surveyor, which launches in 2028 to detect, track, and characterize asteroids and comets that could impact Earth, and Osiris-APEX, which will visit the asteroid Apophis. Both Europa Clipper and NEO Surveyor include work conducted by NASA Centers and the Jet Propulsion Laboratory in concert.

Work continues at Goddard Space Flight Center on the Roman Space Telescope, a NASA observatory designed to settle essential questions in the areas of dark energy, exoplanets, and infrared astrophysics, as the top ranked large space mission in the 2010 Astronomy and Astrophysics Decadal Survey.

As NASA works to explore the secrets of the Universe for the benefit of all, we must remain vigilant of the challenges that we will be required to overcome, staying focused on improving operations in order to launch science missions on schedule and on budget. Our current architecture to return samples from the surface of Mars has proven to be more costly than expected. In September, an independent review of the Mars Sample Return (MSR) program provided sobering analyses of the costs and challenges associated with this mission. Given that the Mars Sample Return effort is a major part of NASA's planetary science budget, the budget request enables NASA's internal assessment of mission architecture options to be completed before providing final details for the planetary science budget in FY 2025. This assessment will be used by NASA leadership to inform the determination of a path forward.

The portfolio of missions within NASA's Science Mission Directorate addresses a diverse set of scientific objectives and is implemented with a range of configurations, from large spacecraft to small CubeSats. NASA takes seriously our responsibility to manage these projects within cost and schedule commitments and our obligation to report regularly to our stakeholders on the status of these projects. We perform multiple independent analyses of cost and schedule before deciding to proceed into development and we use these estimates to ensure we have adequate budget and schedule margins to successfully complete development of these technically challenging missions.

Of the last 21 major missions NASA has launched, 11 came in under their development budget commitment. The average cost variance of all these missions was -1%, indicating that overall, we are able to manage risk across a balanced portfolio. We continue to learn from our experiences on these difficult missions and have instituted new policies to ensure we are equipped to manage cost and schedule.

It is our willingness to acknowledge these challenges and overcome them to conduct science in ways that have been barely imagined that makes us NASA. Thank you once again for inviting me to appear before you today. I would be pleased to respond to any questions the Members of the Subcommittee may have.