

NASA Research Advances Space Science and Innovation on Behalf of the American People

NASA unravels the mysteries of the cosmos, innovates for American aerospace leadership, and generates knowledge for real-world innovations that boost economic growth and improve our lives. Since 1958, NASA has led hundreds of missions that have paved the way for human space exploration and technological breakthroughs while creating opportunities for the next generation of aerospace innovators. Most recently, that work has continued through the Artemis program, which is returning humans to the Moon and preparing for future missions to Mars. Achieving these goals will take robust funding of NASA research and education programs carried out at universities in the United States, whose faculty, students, training, and facilities play a critical role in enabling flagship efforts like Artemis.

How can Congress support NASA research and education?

Congress must act now to invest in NASA research, technology development, and training opportunities that advance space exploration, discovery, innovation, and inspiration. The Association of American Universities (AAU) urges Congress to reject the president's FY27 budget request appropriate at least the following for NASA research and education programs in FY27:

- \$9 billion for the Science Mission Directorate.
- \$1.1 billion for the Space Technology Mission Directorate.
- \$1 billion for the Aeronautics Research Mission Directorate.
- \$65 million for Space Grant within the Office of STEM Engagement.

Why should Congress support NASA research and education?

NASA Science expands knowledge of the universe while driving innovation.

The Science Mission Directorate (SMD) advances the frontiers of space science through competitively selected missions guided by decadal surveys that identify NASA's strategic priorities across five domains:

- **Astrophysics** missions, including the Nancy Grace Roman Space Telescope, generate snapshots of the universe, igniting human curiosity and pioneering applications in communications, imaging, data science, and next-generation materials.
- **Planetary science** missions, including Perseverance Mars Rover, study nearby worlds – including our closest terrestrial neighbors, the gas and ice giants, and their moons – while also tracking near-Earth objects as potential threats or sources of rare minerals.
- **Earth science** missions have direct impact on our daily lives, producing data about the atmosphere, oceans, land, and ice to inform weather forecasting, disaster preparedness, agriculture, critical minerals mapping, and national security.
- **Heliophysics** missions such as DAVINCI provide insights about the sun, solar radiation, and space weather, all of which affect communications, satellites, and power grids on Earth.
- **Biological and Physical Sciences** projects advance knowledge on the relationship between biological organisms, physical materials, and the space environment, yielding important insights for human space travel and habitation.



NASA research programs provide fertile training ground for the aerospace workforce.

NASA deeply invests in training the **next generation of aerospace innovators** by supporting university research programs at the graduate, postgraduate, and early-career level, including:

- **Space Grant**, a national network of colleges and universities that provides opportunities for science and engineering education, research, and public outreach in all 50 states, District of Columbia, and Puerto Rico. Space Grant is overseen by NASA's Office of STEM Engagement.
- The **University Leadership Initiative**, which provides funding for innovative aeronautics research, including top priorities for the aviation industry such as high-speed flight, advanced air mobility, and airspace management and safety.
- **NASA Space Technology Graduate Research Opportunities** (NSTGRO) provides support for graduate students pursuing master's or doctoral degrees whose research furthers NASA's goal of creating new innovative space technologies.
- **NASA Postdoctoral Program** (NPP) supports postdoctoral researchers for projects at NASA, NASA Centers, or NASA-affiliated research institutes for up to three years.

NASA research yields tangible benefits for human health, industry, and security.

NASA missions are a vital source of **innovations that improve life here on Earth**. NASA space mission science and technology has benefited food production, climate and weather forecasting, disaster preparedness and emergency response, medical diagnostics and treatments, generating significant economic returns and spinoff companies.

- Nearly every aspect of commercial aviation and safety is rooted in NASA aerospace research. A foremost example is **digital fly-by-wire technology** that replaced manual flight controls with computerized systems that pilots can more easily control.
- NASA space technology research has developed **durable coatings and materials** that can withstand extreme heat and pressure, wear, erosion, and have a variety of real-world applications.
- **Landsat satellites** generate Earth observation data for farmers and agricultural producers to monitor crops, weather patterns, and water availability – essential for protecting food supplies.
- A portable and implantable medical device that extends life for cardiac patients originated as **sensor technology** developed for monitoring astronauts' vital signs 25 years ago.

NASA space technology research informs the emerging space economy.

Maintaining U.S. leadership in the **\$1.8 trillion global space economy** will require advances in propulsion, robotics, sensing, space manufacturing, and other technologies. Universities are critical partners to NASA and private industry in driving research and development in these areas.

- NASA's **Space Technology Research Grant** program supports technological innovation to make space exploration more effective, affordable, and sustainable.
- This program also supports **early career faculty** who are developing technologies to make commercial space travel more accessible.
- **Space Technology Research Institutes** convene researchers from multiple institutions and disciplines to conduct research and technology development critical to NASA's future.

