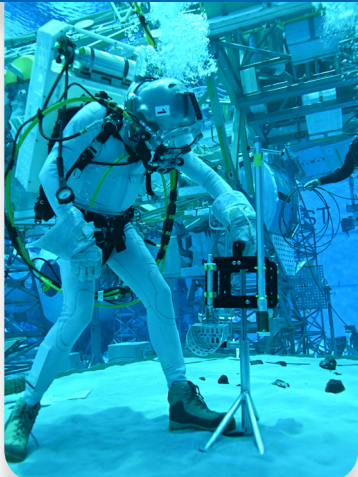


# NASA STEM Engagement

# 2024



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# NASA STEM Engagement



## NASA's Office of STEM Engagement

NASA and the nation need a highly skilled and competitive science, technology, engineering, and mathematics (STEM) workforce today and in the future. NASA is committed to engaging, and attracting these future generations of explorers. NASA's work in STEM engagement is a collaborative endeavor that encompasses efforts across NASA's Office of STEM Engagement (OSTEM), the mission directorates, and the field centers. The agency is building its future STEM workforce through student work experiences and internship opportunities, student engagement activities, and products that connect students to NASA's mission, work, and people.

OSTEM's \$143 million budget in FY 2024 funded these efforts through four projects managed by the office: the National Space Grant College and Fellowship Project (\$58 million), the Established Program to Stimulate Competitive Research (\$26 million), the Minority University Research and Education Project (\$45.5 million), and the Next Gen STEM project (\$13.5 million).

- **\$143 million budget in FY 2024**
- **592 active multiyear awards**

Astronaut Reid Wiseman poses for a photo with a guest dressed as an astronaut at the Kerrville eclipse festival in Kerrville, Texas, April 8, 2024. Credit: NASA

# Space Grant

NASA initiated the National Space Grant College and Fellowship Project (Space Grant) in 1989. Space Grant is a national network of colleges and universities. These institutions are working to expand opportunities for Americans to participate in NASA's aeronautics and space projects by supporting and enhancing science and engineering education, research, and student engagement efforts.

The Space Grant national network includes over 1,250 affiliates from universities, colleges, industry, museums, science centers, and state and local agencies. These affiliates belong to one of 52 consortia in all 50 states, the District of Columbia, and the Commonwealth of Puerto Rico. The 52 consortia fund internships, fellowships, and scholarships for students pursuing STEM careers, as well as STEM learning enhancements and faculty development.



- **Awarded \$49.1 million to 53 institutions in FY 2024**
- **123 active multiyear awards**

A researcher works in the Crop Food Production Research Area of the Space Station Processing Facility at the agency's Kennedy Space Center in Florida. Credit: NASA



# EPSCoR

NASA's Established Program to Stimulate Competitive Research (EPSCoR) forges partnerships with government, higher education, and industry that are designed to affect lasting improvements in a state or region's research and development infrastructure, capacity, and national competitiveness. EPSCoR is directed at those jurisdictions that have not participated equitably in competitive aerospace and aerospace-related research activities. Twenty-five states, the Commonwealth of Puerto Rico, the U.S. Virgin Islands, and Guam currently participate.

EPSCoR supports science and technology research and development in areas that are directly applicable to NASA's missions and long-term goals. These investments strengthen the research capabilities of EPSCoR jurisdictions and awarded institutions while advancing human and robotic space exploration, aeronautics, and science.

Two early-career scientists from the University of Vermont and Goddard Space Flight Center take snow measurements north of the Brooks Range during Alaska SnowEx field campaign Credit: S. Stuefer



- Awarded \$21.1 million to 32 institutions in FY 2024
- 235 active multiyear awards

# MUREP

NASA's Minority University Research and Education Project (MUREP) makes investments via competitive awards to Minority Serving Institutions and community colleges in compliance with legislation. Through multiyear cooperative agreements, MUREP investments enhance the research, academic, and technology capabilities of institutions preparing students to join the skilled technical workforce that's essential to the nation's space and aviation goals.

Awards assist faculty and students in research and provide authentic STEM learning opportunities related to NASA missions. These opportunities provide NASA-specific knowledge and skills. MUREP investments assist NASA in building a competitive workforce through student participation in internships and fellowships at NASA centers and the Jet Propulsion Laboratory (JPL).

Abigail Reigner, a systems engineer at NASA's Glenn Research Center in Cleveland, stands beside a 25% scale model of the agency's SUBsonic Single Aft eNginE (SUSAN) Electrofan Aircraft Concept. Credit: NASA



- **Awarded \$23.6 million to 58 institutions and 25 other recipients in FY 2024**
  - Includes \$1.6 million to five community colleges
- **193 active multiyear awards**



# Next Gen STEM

NASA's Next Gen STEM project leverages a strategic combination of student engagement programming and opportunities, student access to NASA experts, and collaborative partnerships designed to attract and engage students and contribute toward building the nation's skilled technical workforce. Next Gen STEM's integrated portfolio provides nationwide opportunities for students from ages 5 to 18 to engage with STEM in meaningful ways by bringing the students into direct contact with NASA's STEM experts and its work in exploration and discovery, creating both immediate and lasting pathways for the next generation of skilled technical workers and STEM leaders.

Next Gen STEM's Teams Engaging Affiliated Museums and Informal Institutions (TEAM II) competitive awards support STEM projects such as interactive exhibits, staff engagement activities, and community-based programs that engage students, teachers, and learners of all ages in NASA's missions. These strategic public and private partnerships help amplify Next Gen STEM's efforts to ensure access to high-quality resources in critical and emerging technology areas, evidence-based STEM learning opportunities, and support through expert training. Ultimately, Next Gen STEM seeks to foster long-term student interest in STEM fields, broadening pathways to STEM and aerospace careers while providing pivotal life-changing experiences.



- **Awarded \$3.7 million to 17 institutions in FY 2024**
- **41 active multiyear awards**

Inside the Space Vehicle Mock-Up Facility at NASA's Johnson Space Center in Houston, two middle school students get an up-close look at a prototype rover designed as a concept for getting around on the Moon. Credit: NASA

# NASA STEM Engagement Impacts

\*Metrics are verified data reported for FY 2023.

NASA provides an exciting array of STEM experiences and opportunities to immerse students in the agency's missions and projects. By maintaining a steadfast focus on engaging students and supporting educational institutions, NASA STEM Engagement seeks to bolster America's aerospace industry and research capabilities, and to prepare tomorrow's STEM workforce.

## Internships, Fellowships, and Other Opportunities



9,584

internships, fellowships, research opportunities, student challenges and other college/pre-college STEM engagement opportunities

\$44.3M

in investments in students representing K-12 and higher education institutions, including two- and four-year colleges and universities

## Research and Development

3,544

peer-reviewed publications, technical papers, and presentations reported by Space Grant, MUREP, and EPSCoR grantee and awardee institutions

61%

of peer-reviewed publications were authored or coauthored by students

51

patents awarded to higher education institutions as a direct result of their NASA STEM Engagement grants or cooperative agreements



## Student Participants

768K+

students participated in NASA STEM engagement activities



## Other Participants

4.5M+

uncategorized students of all ages, parents, and adult participants



# Bolstering America's Aerospace Industry

## Investing in Research and Infrastructure at U.S. Colleges and Universities

Every year, NASA fuels the frontier of scientific and technological discovery, investing in research that not only propels its own ambitious missions, but also fortifies the backbone of our nation's academic infrastructure. These investments are building research capacities that will empower future generations of skilled technical workers, scientists, engineers, and innovators. With direct investments in student and faculty research, NASA is shaping tomorrow's pioneers who will tackle the grand challenges of space exploration and aviation.

Through Space Grant, EPSCoR, and MUREP, NASA creates competitive opportunities for universities across the country to fund visionary projects that spark new ideas and possibilities. These collaborations fuel NASA's success and cultivate the next wave of STEM workers and leaders, ensuring that the next generation of researchers, scientists, technologists, and engineers are equipped and ready to push boundaries and redefine what's possible.



# \$33.9M

awarded in support of  
research in FY 2024

# 117

institutions  
received  
research funding  
in FY 2024

# 243

active  
research-based  
awards



# Growing Impact Through Partnerships

## Cultivating and Engaging Students With Industry Partners

Over the past several years, NASA OSTEM has developed a track record of collaborations with external organizations to leverage and utilize large footprints to reach students, fostering innovative student experiences that leverage the agency's unique missions, people, and facilities. OSTEM has built a solid track record of results and impact through an established strategic partnerships function that stimulates and creates public-private partnerships with external organizations on mutually beneficial goals, engaging students across the United States in learning opportunities connected to NASA missions, themes, or STEM engagement projects. Partnership objectives include building the nation's future STEM workforce; bolstering external outreach and engagement efforts that contribute to federal STEM goals; and attracting students to STEM and supporting students on STEM pathways through broadening participation of students through existing networks and platforms at scale from all across the country. These efforts reach a wide range of students, from pre-kindergartners through university undergraduates.

In FY 2024, NASA conducted over 60 national collaborations and partnerships in the area of student STEM engagement. This work resulted in over 10 million plus engagements, including video views and product interactions.

60+ national collaborators in FY 2024

10M+ engagements





# Partnering With Informal Institutions

NASA seeks to attract and engage today's K-12 students to envision the role they can play in making the nation's future spaceflight and aviation goals a reality, and to support students in pursuing STEM pathways through connections to NASA's missions and resources. Museums, science centers, libraries, and other youth-serving and out-of-school focused organizations, are integral to the agency's efforts to meet students where they are, even in communities without close proximity to a NASA field center. NASA's mission directorates and OSTEM support these institutions and the students they serve through competitively funded opportunities to create projects, platforms, exhibits, engagement and learning activities for students and their families all across the country.

Next Gen STEM offers a multitiered competitive award program that invests in projects designed by institutions to bring NASA-based activities and resources into their communities. Additionally, a virtual community of practice enables institutions across the country to access and use NASA resources, connect with NASA experts, and share experiences and ideas. Working together, NASA and these institutions connect students to the agency's missions and discoveries—and help them discover their own STEM abilities.

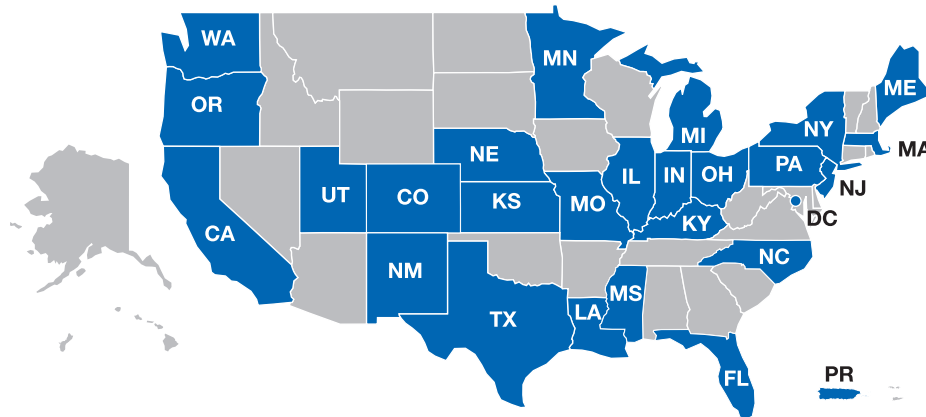
# \$3.7M

awarded through 17 new awards in FY 2024 by Next Gen STEM to informal institutions



# 41

active awards across 27 states and territories to museums, science centers, planetariums, and other informal education institutions through the Teams Engaging Affiliated Museums and Informal Institutions (TEAM II) program



States/Territories with Active TEAM II Awards in FY 2024

# Preparing Tomorrow's STEM Workforce

NASA is committed to building the future STEM workforce by engaging students and investing in opportunities designed to prepare them for entering the STEM workforce. NASA's STEM engagement work is vital to ensuring the next generation has the skills needed to continue our nation's work and leadership in aeronautics and space into the future.

NASA offers a broad variety of opportunities for students preparing for STEM careers. The agency's internships, fellowships, and student challenges and competitions provide avenues for tomorrow's aerospace pioneers to be immersed in the agency's work and to contribute to its missions. These experiences give students essential elements of career readiness, such as career exploration, technical skills, mentorship from agency experts, and more.

Over 1,000 middle school, high school, and collegiate students from across the U.S. and Puerto Rico launched high-powered, amateur rockets on April 13, 2024, just north of NASA's Marshall Space Flight Center in Huntsville, Alabama, as part of the agency's annual Student Launch rocketry competition. Credit: NASA





# Internship and Fellowship Opportunities

The future of space exploration is taking shape, and it demands a workforce brimming with creativity, diverse perspectives, and exceptional STEM skills. NASA's innovative engagement programs are fueling this transformation by offering students unparalleled opportunities to dive deep into the world of space science and technology.

Through internships, fellowships, and high-impact challenges and competitions, students collaborate with NASA experts, immerse themselves in cutting-edge design, development and research environments, and actively contribute to solving some of the most complex challenges in space exploration. Through these transformational experiences, students refine their STEM abilities, navigate the iterative nature of engineering, and gain firsthand exposure to innovation and the life cycle development process. By offering these dynamic pathways, NASA is crafting the next generation of aerospace technical workers and leaders—equipped, confident, and ready to lead humanity's next giant leap into the unknown.

## NASA Internships Program – FY 2024

\$23M awarded to 2,172 interns

- Space Grant funded \$2.8 million to 323 interns
- MUREP funded \$3 million to 252 interns
- NASA Mission Directorates funded \$17.2 million to 1,597 interns

## NASA Fellowships – FY 2024

\$205K awarded by MUREP to 9 fellows  
5 Master's students  
4 Ph.D. students





# NASA's Student Challenges

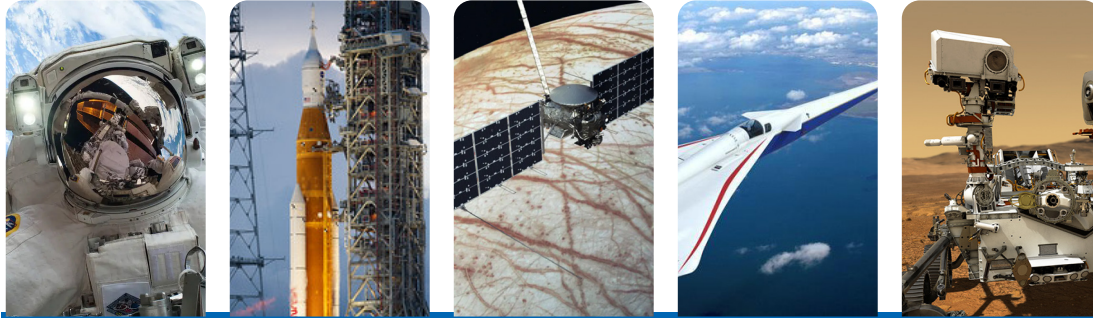
When students experience the creativity and problem-solving mindset of the iterative engineering process, they learn new skills and gain confidence in their capabilities that they'll carry for a lifetime. NASA's student challenges provide today's students with authentic opportunities to contribute their ideas and technological solutions to the agency's most pressing needs—all while investing in tomorrow's STEM workforce.

OSTEM and the agency's mission directorates host an array of challenges for students in middle school through higher education, including challenges specifically for community colleges. Through these hands-on experiences, student teams devised new technologies for use through the Artemis missions, launched science payloads on sounding rockets and high-altitude balloons, designed and fabricated a new tool for astronauts aboard the International Space Station, innovated commercial uses for NASA technologies, and more.

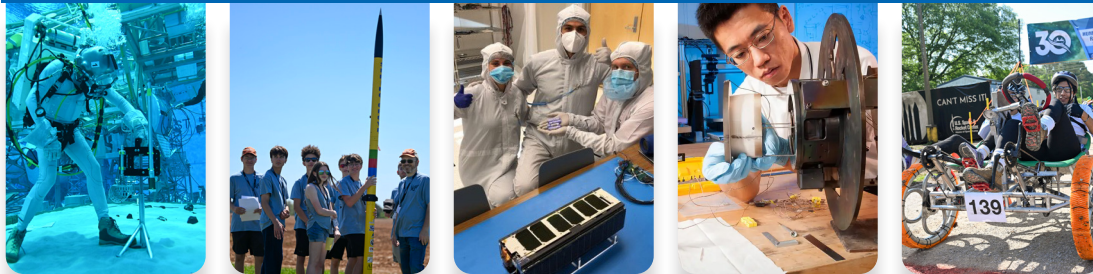




# Connect With NASA STEM Engagement



[stem.nasa.gov](https://stem.nasa.gov)



Learn more about  
NASA STEM Engagement  
efforts and opportunities



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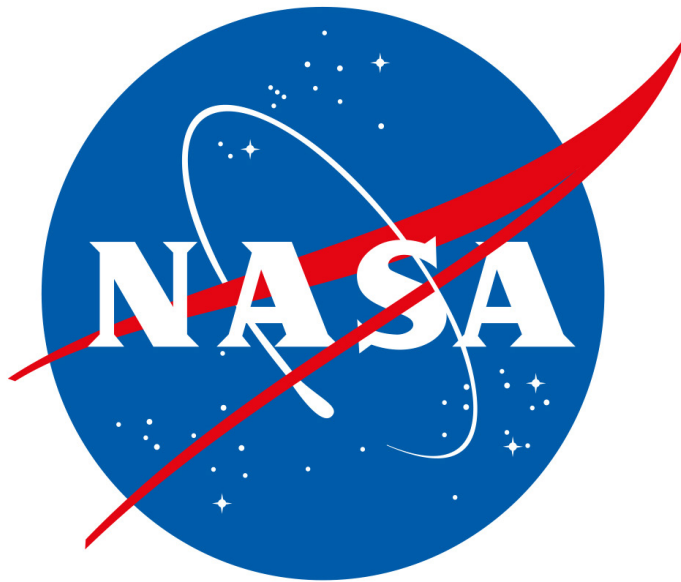
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