

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).



- **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**

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

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.

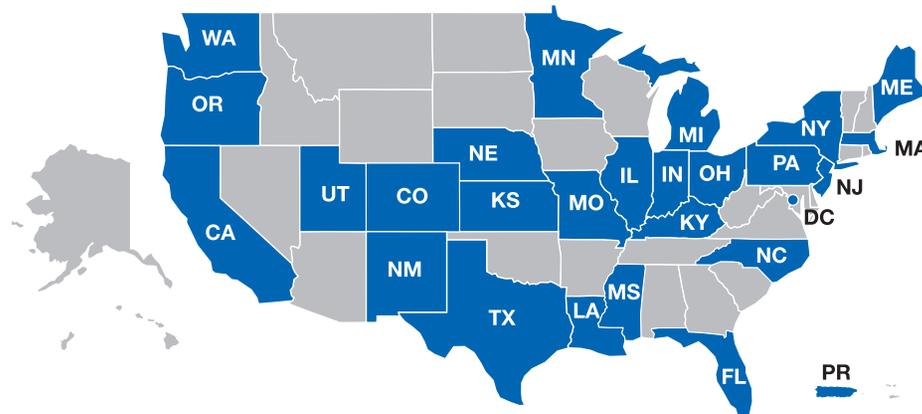
\$3.7M

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



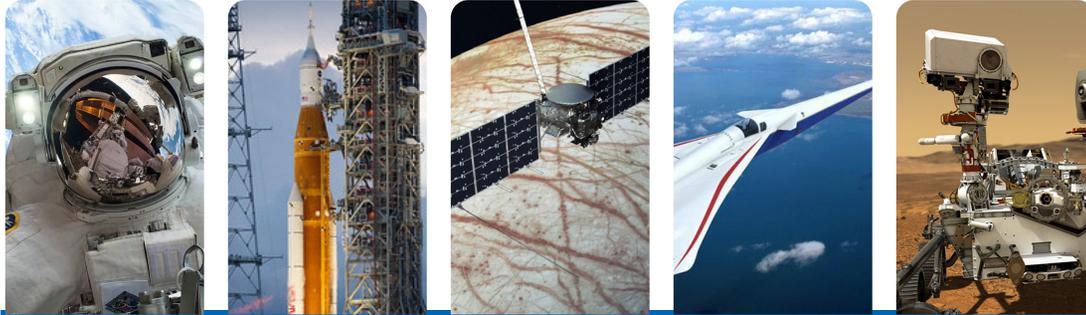
NASA's Student Challenges

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



Learn more about
NASA STEM Engagement
efforts and opportunities



stem.nasa.gov

Follow our NASA STEM
Engagement social accounts



www.youtube.com/@NASASTEM



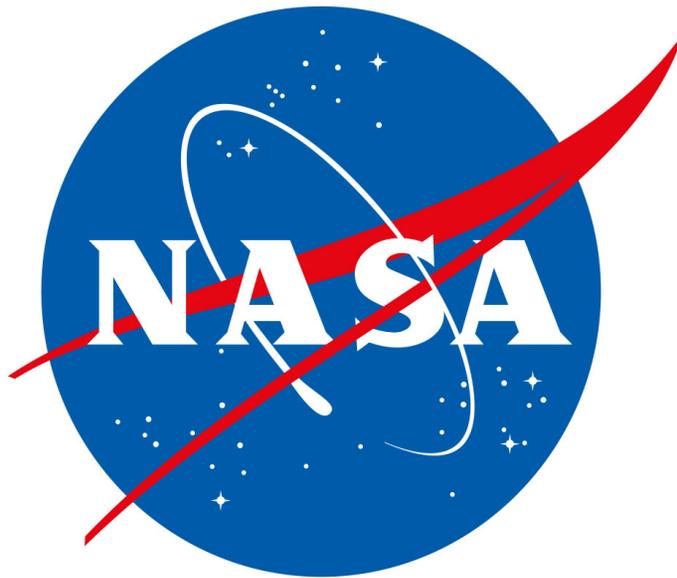
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NP-2025-01-3308-HQ

Addendum

02/20/26 - FY 2024 Office of STEM Engagement performance metrics and information from the STEM Engagement Impacts web pages have been added to the posted FY 2024 Office of STEM Engagement Executive Summary Highlights PDF to archive the metrics and information which were not included in the original released document. This also allows the STEM Engagement Impacts web pages to be updated annually to display the most current verified and validated performance metrics and information online.

FY 2024 PERFORMANCE METRICS

In Fiscal Year 2024 (October 1, 2023 – September 30, 2024), NASA Office of STEM Engagement (OSTEM) projects provided 592 awards to institutions and other recipients across 50 states plus the District of Columbia, Guam, Puerto Rico, and U.S. Virgin Islands; engaging 59K+ educator, 970K+ student, and 7.5M+ other participants in NASA STEM engagement activities.

STEM Engagement Metric (FY 2024)	EPSCoR	NGS	MUREP	Space Grant
Institutional Award Data				
Total # of Institutional Awards	32	17	58 (and 25 other recipients)	53
Total # of Active Awards	235	41	193	123
Total Institutional Awards Funding Provided	\$21.1M	\$3.7M	\$23.6M	\$49.1M

Institutional Award Data Definitions:

- **Institutional Awards** represent STEM Engagement investments awarded to lead/primary award institutions (both formal and informal), via a grant/cooperative agreement solicitation and challenge competition processes
- **Active Awards** represents awards active/operational during the fiscal year
- **Institutional Awards Funding Amount** represents the amount of funding awarded to lead/primary award institutions (both formal and informal), via grant/cooperative agreement solicitation and challenge competition processes

STEM Engagement Metric (FY 2024)	EPSCoR	NGS	MUREP	Space Grant	Other STEM Engagements	Totals
Participant Data						
Total # of Student Participants	1136	283347	21952	632094	31811	970340
Total # of Educator Participants	911	7684	1817	47308	1538	59258
Total # of Other Participants	0	7284683	1048	21751	1276	7504578

Participant Data Definitions:

- **Student Participants** represent students reached through STEM Engagement investments
- **Educator Participants** represent educators reached through STEM Engagement investments
- **Other Participants** represents general public participants (e.g., uncategorized students of all ages, parents, educators, and adult participants) reached through STEM engagement investments

Additional FY 2024 Key Data Points:

- Space Grant, MUREP, and EPSCoR grantee and awardee institutions reported 3,704 peer-reviewed publications, technical papers and presentations representing opportunities for learners to contribute to NASA’s aeronautics, space and science missions and work
- *Notably, 58% percent of the peer-reviewed and other technical publications were authored or coauthored by students*
- Over 8.5K students received internships, fellowships, research opportunities, educator professional development, challenges, and other college/pre-college STEM engagement opportunities
- Over \$46.9M in direct financial support to higher education participants

Office of STEM Engagement Internships:

- NASA engaged 1795 unique interns in the OSTEM Internship program
- *Notably, 58% percent of the peer-reviewed and other technical publications were authored or coauthored by students*
- Engaged interns in over 900K total contact hours.

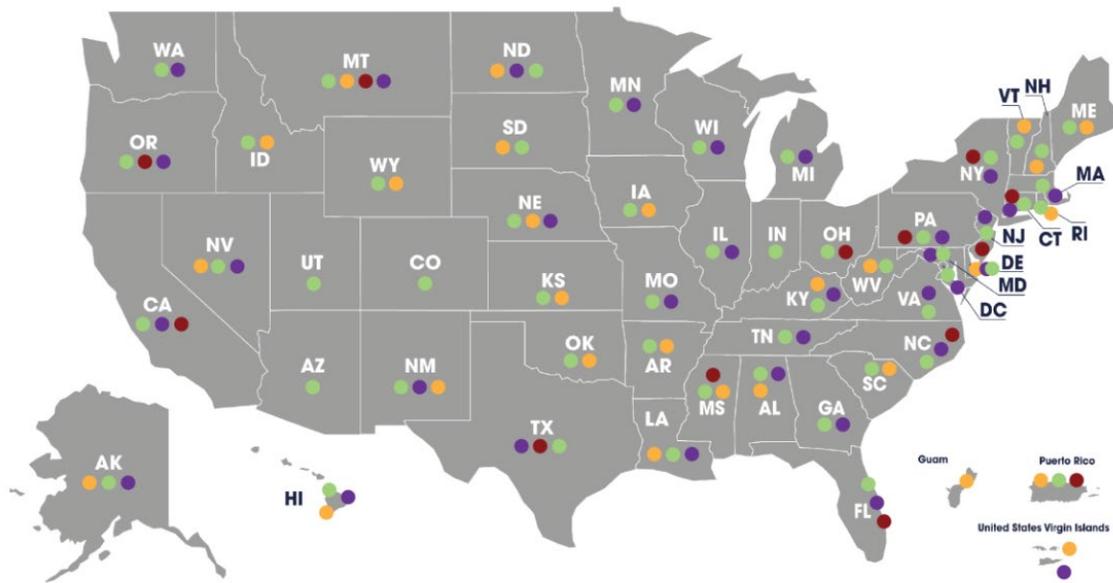
OSTEM Fellowships:

- 36 Total Active Fellows

Jet Propulsion Laboratory (JPL) Internships and Fellowships:

- 379 Total Interns

In Fiscal Year 2024, NASA's Office of STEM Engagement (OSTEM) reached students and educators through institutional awards in all 50 states plus the District of Columbia, Guam, Puerto Rico, and U.S. Virgin Islands.



Next Gen STEM • \$13.5 million

NASA's Next Gen STEM project is an integrated portfolio of grants, partnerships, activities, educational products, and student opportunities designed to engage K-12 students nationwide in the agency's missions, people, and resources. The project's efforts aim to inspire the STEM workforce of tomorrow by bringing the excitement of NASA to students, whether in the classroom, at home, in afterschool programs, or in informal education settings.

Space Grant • \$58 million

NASA's National Space Grant College and Fellowship Project (Space Grant) brings together partners from across academia, industry, and government to invest in STEM education and research. Space Grant's 52 consortia — one in each state as well as Puerto Rico and the District of Columbia — connected to 1,250 affiliated institutions to fund fellowships and awards and create enriching STEM opportunities for Americans to understand and participate in NASA's aeronautics and space projects.

EPSCoR • \$26 million

The Established Program to Stimulate Competitive Research (EPSCoR) establishes partnerships with government, higher education, and industry that are designed to effect lasting improvements in a state or region's research infrastructure, research and development capacity, and its national research and development competitiveness. The NASA EPSCoR project 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.

MUREP • \$45.5 million

NASA's Minority University Research and Education Project (MUREP) expands the agency's reach in communities historically underrepresented in STEM. MUREP offers opportunities for college students at Minority Serving Institutions to contribute to the agency's exploration goals and also boosts these schools' research capacity and infrastructure. NASA invests in the Artemis Generation and a diverse future workforce through MUREP's competitive awards, research opportunities, and engagements at career fairs and conferences.

This site supports the information NASA provided in the [2024 CoSTEM Annual Report](#). In FY24, NASA's portfolio of STEM engagement activities and opportunities was supported by seven investments highlighted in the CoSTEM Annual Report:

Investments Funded by NASA's Office of STEM Engagement

- MUREP, The Minority University Research and Education Project
- Next Gen STEM
- Space Grant, The National Space Grant College and Fellowship Project

Investments Funded by NASA's Science Mission Directorate

- GLOBE, The Global Learning and Observations to Benefit the Environment Program
- Robotics Alliance Project
- Science Activation

Investments Funded by NASA's Space Technology Mission Directorate

- NASA's TechRise Student Challenge

NASA's Investments in STEM Engagement

NASA's investments in STEM engagement are able to collect and report information about the organizations and individuals they support in varying ways. Below are brief descriptions of each investment, along with additional information about the impact of these investments and the stakeholders/participants they serve.

[About NASA STEM Engagement](#)



NASA's TechRise Student Challenge

NASA's TechRise is a student design challenge that invites teams of students (Grades 6-12) to design, build, and launch 2U science and technology experiments on commercial suborbital flights. From researching Earth's environment to designing experiments for lunar and planetary exploration, schools are invited to join NASA in its mission to inspire the world through discovery. TechRise experiments have included research about Earth, space, and planetary and lunar exploration. Flight opportunities have included suborbital rockets, sounding rockets, rocket-powered landers, and high-altitude balloons. Winners of up to 60 teams are chosen to build their payloads and receive a \$1,500 stipend, mentorship, and an assigned spot on a NASA-sponsored commercial suborbital flight.

[Read More](#)



Robotics Alliance Project

NASA's Robotics Alliance Project (RAP) is dedicated to increasing interest in engineering, technology, science, and mathematics disciplines among youth in the United States. RAP's goal is to create an inspired, experienced, technical workforce for the aerospace community. RAP's activities and events expose students to challenging applications of engineering and science. The RAP supports national robotics competitions in which high school students team with engineering and technical professionals from government, industry, and universities to gain hands-on experience and mentoring. In fiscal year 2022, RAP sponsored 308 FIRST (For Inspiration and Recognition of Science and Technology) Robotics Competition (FRC) teams

(approximately 8,000 students), 50 VEX robotics teams (approximately 500 students), and sponsored and/or supported 15 FIRST Robotics Competition events (affecting approximately 50,000 students).

[Learn More](#)



GLOBE (The Global Learning and Observations to Benefit the Environment Program)

The GLOBE Program is a worldwide science and education program that provides opportunities to better understand, sustain, and improve Earth's environment at local, regional, and global scales. GLOBE provides opportunities for students, educators, scientists, members of the public, and partners to participate in data collection and the scientific process. Through activities such as measurement campaigns using GLOBE's 40+ scientific protocols, GLOBE participants contribute to our understanding of the Earth system and the global environment. The GLOBE Program provides support for data storage and visualization, as well as curated educational materials in multiple languages. The program also dedicates resources for student research symposia, meetings, and learning expeditions, all of which enable the exchange of ideas, collaboration, and mutual understanding and appreciation among participants in 125+ GLOBE countries around the world.

[Learn More](#)



Minority University Research and Education Project

Through MUREP activities, NASA supports Historically Black Colleges and Universities (HBCU), Hispanic Serving Institutions (HSI), Asian American and Native American Pacific Islander Serving Institutions (AANAPI), Tribal Colleges and Universities (TCU), and other minority serving institutions, through multi-year research grants. Additionally, MUREP provides internships, scholarships, fellowships, mentoring, and tutoring for underserved and underrepresented learners in K-12, informal, and higher education settings.

[STEM Impacts](#)



Next Gen STEM

Next Gen STEM is a project of NASA's Office of STEM Engagement whose mission is to spark and sustain interest in STEM in students in grades K-12, by connecting students and their formal and informal educators to NASA's endeavors in exploration and discovery. Next Gen STEM creates, delivers and curates NASA STEM products and experiences that make connections to NASA and fuel STEM learning and identity.

[STEM Impacts](#)



Science Activation

The Science Activation (SciAct) program provides opportunities for diverse learners of all ages across the Nation to engage in authentic science experiences using NASA Science content, supported by NASA science experts, and offered through community-based learning providers. SciAct's main program objectives include enabling STEM education, improving U.S. scientific literacy, advancing national education goals, and leveraging efforts through partnerships, each of which is supported by a set of mid-level objectives developed in response to guidance from a rigorous National Academies of Science, Engineering, and Medicine (NASEM) assessment of the SciAct program in 2019.

[Learn More](#)



National Space Grant College and Fellowship Project

Space Grant is a national network of colleges and universities. These institutions are working to expand opportunities for Americans to understand and participate in NASA's aeronautics and space projects by supporting and enhancing science and engineering education, research, and public outreach efforts. The Space Grant national network includes over 1000 affiliates from universities, colleges, industry, museums, science centers, and state and local agencies. The 52 consortia fund fellowships and scholarships for students pursuing careers in STEM, as well as curriculum enhancement and faculty development. Member colleges and universities also administer precollege and public service education projects in their states.

[STEM Impacts](#)

The America COMPETES Reauthorization Act of 2010 (Public Law. No. 111-358) established a mandate for the development of a Federal Government-wide strategy for STEM education investments. NASA submits annually a [COMPETES Act progress](#) report on key investments' participant data and evaluation information.

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Investments Funded by NASA's Space Technology Mission Directorate

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