Flight Opportunities

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Happy Holidays!
The Flight Opportunities team

NASA, Partners Continue to Advance Space Tech on Suborbital Flights

Living and working in space requires getting ready a bit closer to Earth. Through a suborbital flight test on Tue., Dec. 19 with industry provider Blue Origin, NASA's **Flight Opportunities** program is helping 14 research payloads move one step toward future space missions and commercial applications. The flown technologies aim to address some of the opportunities and obstacles presented by humanity's sustained presence in space.

New Shepard launch in 2021. Credits: Blue Origin

Launched aboard Blue Origin's New Shepard reusable suborbital rocket from the company's Launch Site One in West Texas, the payloads reached an altitude of 351,248 feet. During the flight, those payloads experienced about three minutes of microgravity, providing insight into the effect of reduced gravity on both technologies and living things.

"NASA relies on emerging commercial spaceflight capabilities to rapidly test disruptive solutions for space applications," said Danielle McCulloch, program manager for Flight Opportunities at NASA's Armstrong Flight Research Center in Edwards, California. "Working with commercial flight providers like Blue Origin allows the agency to make space exploration and commerce more accessible to a broader range of researchers."

A strong commercial space industry also helps NASA move forward with scientific exploration of the moon, Mars, and beyond. In addition to the NASA-supported research teams, this flight was also a significant milestone for Blue Origin, serving as the return to flight with their New Shepard rocket.

Read the NASA feature about the flight test.

Community of Practice

NASA TechLeap Prize: Universal Payload Interface Challenge

Wednesday, January 10, 2024
10:00-11:00 a.m. PST

Attend the **Jan. 10 Community of Practice webinar** to hear about the **Universal Payload Interface Challenge**. To change the pace of space by moving technologies into flight testing and between different flight environments as quickly as possible, NASA's **Flight Opportunities** program is asking businesses, academic institutions, entrepreneurs, and other innovators to develop a flight-ready universal payload interface for its third **NASA TechLeap Prize**. A maximum of three winners will receive up to $650,000 each to build their system plus the opportunity to flight test it at no cost.

Representatives from Flight Opportunities and Carrot, the organization that administers the challenge, will provide an overview and answer questions.

Microsoft Teams meeting

Join on your computer, mobile app or room device
Click here to join the meeting

Meeting ID: 253 796 098 526 • Passcode: Pe4iTh
Or call in (audio only): +1 256-715-9946
Phone Conference ID: 426 889 492#

Read NASA's announcement of the TechLeap Universal Payload Interface Challenge.

Opportunities

TechLeap Q&A Recording, Registration Deadline Approaching

Flight Opportunities recently held a Q&A for the latest **TechLeap Prize – the Universal Payload Interface Challenge** – and a recording is available for those who missed it.

Listen to the recording of the Dec. 13 Q&A webinar here.

Learn more about the challenge, eligibility criteria, and more.

- Registration deadline: Feb. 1, 2024, at 2:00 p.m. PST
- Application deadline: Feb. 22, 2024, at 2:00 p.m. PST

Note: The program's Jan. 10 Community of Practice webinar will focus on the TechLeap Universal Payload Interface Challenge. **Read more.**

NASA MSI Incubator: Wildfire Climate Tech Challenge

Credits: U.S. National Park Service/Noah Daniels

NASA's Wildfire Climate Tech Challenge seeks innovative solutions for wildfire prevention and climate technology from students and employees of minority-serving institutions (MSIs). Up to three winners will be invited to join a startup incubator program and compete for a prize of $100,000. This initiative also offers a platform for participants to present their ideas to venture capitalists and NASA experts.

Submission deadline: Feb. 2, 2024, at 5:00 p.m. PST

Other NASA Funding Opportunities

The **Funding Opportunities** section of NASA's TechPort website provides a useful filtering tool for identifying solicitations that might be relevant to your organization, technology maturity, or funding needed. **Visit NASA TechPort funding opportunities page**.

Technology Transitions

Improving Storm Prediction from Space with Flight Opportunities–Tested Technology

The two TROPICS mission launches in May 2023 (one of which is shown here) carried CubeSats that incorporate a technology tested in its early stages on Flight Opportunities–supported parabolic flights in 2013. Credits: Rocket Lab

NASA's TROPICS (Time-Resolved Observations of Precipitation Structure and Storm Intensity with a Constellation of SmallSats) mission launched in May 2023. The mission's four CubeSats are gathering data to understand the evolution of tropical cyclone intensity. The TROPICS CubeSats incorporate a technology that was tested in its early stages on Flight Opportunities–supported parabolic flights in 2013.

Referred to as a dual-spinning CubeSat bus, the technology developed at MIT (Massachusetts Institute of Technology) enabled the use of microwave radiometers – previously used only on large satellites – on CubeSats about the size of a two-liter bottle. The Flight Opportunities testing was the first effort to demonstrate the CubeSat-sized spinning mechanisms in a microgravity environment. Now this capability is enabling TROPICS to demonstrate that Earth science data can be obtained with improved resolution, greater flexibility and reliability, and extremely low-cost launches.

"The testing through Flight Opportunities was the first time we saw how well our technology worked in microgravity," said MIT's Kerri Cahoy, who served as the principal investigator on the bus's development. "It gave us the findings we needed to eventually incorporate it on a CubeSat mission."

NASA Selects Universities to Support Small Spacecraft Technologies

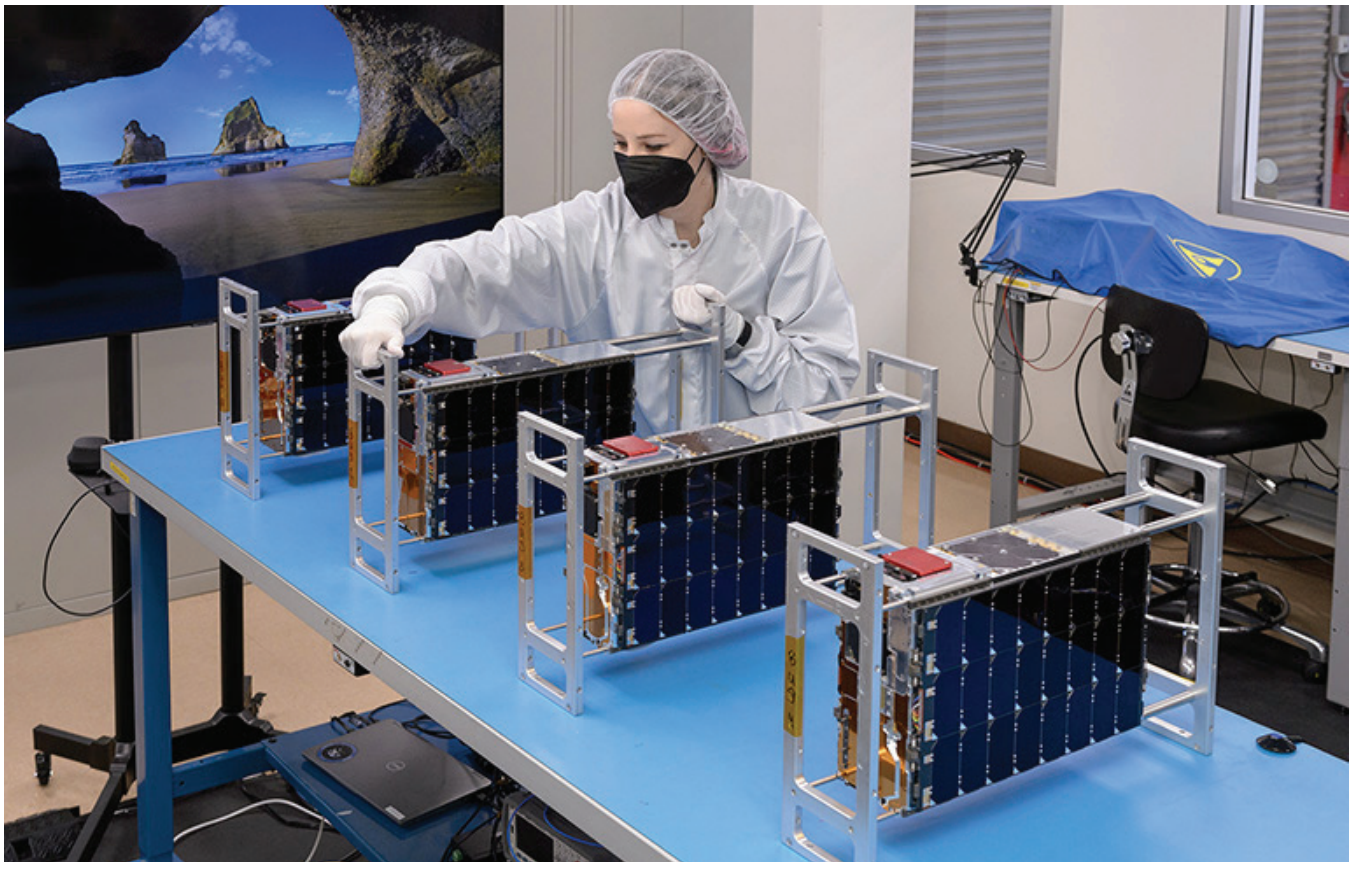
Eight U.S. university teams are partnering with NASA to advance technologies for small spacecraft, increasing their capability to support NASA's science and exploration missions within the Earth, cislunar, and deep space domains. As **announced on Dec. 8**, the University SmallSat Technology Partnerships (USTP) initiative within **NASA's Small Spacecraft Technology program** selected the projects.

At the present time, small spacecraft, or SmallSats, primarily operate in low Earth orbit. Through these collaborative partnerships, technology advancements will expand the potential of SmallSats as they extend their capabilities to more complex Earth, lunar, and deep space science and exploration missions.

Selected university teams had proposed projects to mature new systems and capabilities – with support from a NASA center of their choice – in one of three technology topic areas for small spacecraft:
Earth- and Global Navigation Satellite System (GNSS)-independent position navigation and timing
Edge computing and machine-learning architectures, software, platforms, and devices
High specific power systems and thermal control

Selected research teams might also have the opportunity to further advance their technologies through flight tests, including suborbital testing supported by **Flight Opportunities**.

Read NASA's announcement of the USTP selections.



NASA's Starling mission includes technologies that have received USTP support. Krystine Carrington of Axient-MEIS, Starling integration and testing engineer, prepares Starling spacecraft for testing at NASA's Ames Research Center in California's Silicon Valley ahead of the mission's launch. Credits: NASA/Dominic Hart

Events

AIAA SciTech Forum

Jan. 8-12, 2024 • Orlando, Florida

The AIAA SciTech Forum's 2024 theme, "Outside-In: Expand the Boundaries," encourages interdisciplinary approaches and collaboration among diverse organizations. Flight Opportunities will present a "HUB" talk with the Small Spacecraft Technology program and the Small Spacecraft Systems Virtual Institute. This session will help researchers understand how to engage with NASA's portfolio of commercial suborbital and orbital flight test options.

Details:

- HUB-05: Advancing Space Technologies Through Suborbital and Orbital Flight
- Wed., Jan. 10 • 9:15-9:45 a.m. EST • Exposition Hall

Space Exploration Educators Conference (SEEC)

Feb. 8-10, 2024 • Houston, Texas

SEEC invites educators to experience a three-day STEM-based learning experience. Participants can attend in person or virtually and can watch on-demand content to engage with a wide variety of STEM-based sessions led by SEEC educators and aerospace professionals. Flight Opportunities will participate in a virtual session with Future Engineers about **NASA's TechRise Student Challenge**. Administered by Future Engineers, the challenge invites student teams (grades 6-12) to design, build, and launch experiments on a suborbital flight test. Hear from TechRise mentors, learn about the flight vehicles, brainstorm experiment ideas, and explore resources to get your team ready!

Details:

- **Fly with NASA's TechRise Student Challenge**
- Fri., Feb. 9 • 9:30-11:00 a.m. CST • virtual presentation

NASA Human Research Program Investigators' Workshop

Feb. 13-16, 2024 • Galveston, Texas

The Human Research Program Investigators' Workshop is a venue for reporting progress and results of scientists and principal investigators researching safe, productive, and efficient human spaceflight. Flight Opportunities and NASA's Commercially Enabled Rapid Space Science initiative (part of the agency's Biological and Physical Science Division) will present on accessing flight tests to advance technologies that meet U.S. space exploration priorities and support the expanding space economy, including those that support sustained human presence in space.

Details:

- Leveraging Suborbital Flight Testing to Advance Science and Technology in the Expanding Space Economy
- Tues., Feb. 13 • 4:30-6:00 p.m. CST • Exhibit Hall A

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