



Flight Opportunities

ISSUE: 67 | November 2023

In This Issue

News

- Greg Peters Named Flight Opportunities Acting Deputy Program Manager

Recent Flights

- NASA Supports Tests of Dust Sensor to Aid Future Lunar Landings

Opportunities

- NASA TechLeap Prize Seeks Easy Integration of Diverse Technology Payloads for Flight Testing
- Space Tech Catalyst Prize Targets Inclusive Community Building for Tech Development
- Who Let the Gas Out? NASA Challenge Aims to Reduce Propellant Tank Venting
- [More Opportunities](#)

Community of Practice

- Nov. 15 Small Spacecraft Systems Virtual Institute webinar: Lessons Learned from a Primarily Undergraduate CubeSat Project (RADSAT-SK)

Events

- Annual Meeting of the American Society for Gravitational and Space Research (ASGSR), Nov. 14-18, 2023
- American Geophysical Union Annual Meeting, Dec. 11-15, 2023

Enjoy!

The Flight Opportunities team

Greg Peters Named Flight Opportunities Acting Deputy Program Manager

NASA's Flight Opportunities program is excited to announce Greg Peters as the team's new acting deputy program manager. Since [we first introduced Greg back in 2020](#), he has held several titles within the program, including technologist and campaign manager. We recently sat down with Greg to discuss how he is applying his wide breadth of experience to his new leadership role.

Tell us a little bit about your background.

My early background was pretty blue collar. College was not something that was available to me right out of high school, so I found work with a mining company. One of my jobs there was to help set up an in-house quality control capability. This led to me learning a great deal about geotechnical testing and geology. Through a series of fortunate events, this experience eventually led to an opportunity to manage the Extraterrestrial Materials Simulation Laboratory (EMSiL) at NASA's Jet Propulsion Laboratory (JPL). In the role, I worked with teams tasked with developing systems that interact with the Martian surface, like sample acquisition and subsurface access tools. While working at JPL, I was also able to earn a degree in geoscience.

As part of my career adventure, I also spent a four-year stint with a startup company located at the Mojave Air & Space Port developing advanced propulsion systems. While I still love geology and planetary science, I also love innovation and technology development. The promise of an emerging commercial space industry led me to Flight Opportunities.

How has your unique background impacted your work with Flight Opportunities?

When I first came to the program, I served on the technology team. This involves working with researchers developing cutting-edge tools, helping them reduce risks for those new tools via flight testing. I drew on my geology background to help the program flight test more systems that operate in regolith simulants – an important area of development for lunar and planetary exploration. (**Editor's note:** See the *Recent Flights* story below.)

I've also served as a campaign manager, stewarding technologies through the flight-testing process with our commercial flight providers. Campaign management is where the rubber meets the road for Flight Opportunities. Having led propulsion development operations at a small business, I was able to enhance the program's operations in pursuing our "fly, fix, fly" ethos. I look forward to doing more of that as deputy program manager.



Greg Peters — Flight Opportunities Acting Deputy Program Manager

What have been the highlights of your work with the program so far?

I'm really proud of what we've accomplished with the [TechLeap Nighttime Precision Landing Challenge](#), which will have flight tests in the coming months. I led the development and implementation of that competition, which challenged innovators to design and demonstrate precision landing technologies for small lunar spacecraft. We pushed on the edge of technology and crowdsourced solutions, engaging with a broad range of researchers. I believe it's important to seek solutions from new innovators – space clubs, makerspaces, and small scrappy businesses – who have incredible ideas.

What are you most looking forward to as deputy program manager?

Helping Flight Opportunities continue to thrive is exciting for me. My goal is to drive the program to have the greatest impact. I'm looking forward to championing innovations and new technologies to advance space exploration and expand space commerce.

And how does that work toward achieving the program's mission?

NASA understands how important commercial space is to the nation and to humanity in general. If we're going to become space-faring people, we'll need a vibrant commercial space market to get there. Flight Opportunities is playing a role in making that happen by engaging the commercial space market for flight test services to de-risk promising technologies for NASA and the nation.

Recent Flights

NASA Supports Tests of Dust Sensor to Aid Future Lunar Landings

A research team from the University of Central Florida (UCF) recently tested an instrument designed to measure the size and speed of surface particles kicked up by the exhaust from a rocket-powered lander on the Moon or Mars. Supported by NASA's [Flight Opportunities](#) program, researchers evaluated the instrument in a series of flight tests on Astrobotic's Xodiac rocket-powered lander in Mojave, California.

When spacecraft land on the Moon or Mars, the rocket exhaust plume creates regolith ejecta – abrasive dust and large particles moving at high speeds – that can damage the lander and surrounding structures. Understanding how a rocket engine's exhaust affects this ejecta will help mission designers plan more effectively for lunar landings by allowing them to model the soil erosion rate, the particle size distribution, and the velocities associated with plume-surface interaction.

To learn more about the laser-based instrument developed by UCF and watch video of the flight test, check out [the NASA feature here](#).



Astrobotic's Xodiac rocket-powered lander during [the flight tests](#) of University of Central Florida technology in Mojave, California, Sept. 12 through Oct. 4, 2023. Credits: Astrobotic

NASA TechLeap Prize Seeks Easy Integration of Diverse Technology Payloads for Flight Testing

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.



The **Universal Payload Interface Challenge** invites applicants to propose an optimized “system of systems” to enable easy integration of diverse technology payloads onto various commercial suborbital vehicles, orbital platforms, and planetary landers. This TechLeap challenge calls for universal payload interfaces that can seamlessly adapt to a wide range of small space payloads – be they technologies, laboratory instruments, or scientific experiments.

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.

Live Q&A webinar: Dec. 13, 2023, at 1:00-2:00 p.m. PST (watch the [website](#) for details)

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

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

[Learn more about the challenge, eligibility criteria, and the Q&A webinar.](#)

[Read the NASA announcement.](#)

Space Tech Catalyst Prize Targets Inclusive Community Building for Tech Development

A new **NASA Space Tech Catalyst Prize** sets out to expand NASA's network of proposers and foster effective engagement approaches within the agency's Early-Stage Innovations and Partnerships (ESIP) portfolio. Through this prize, NASA will recognize U.S. individuals and/or organizations that share effective best practices on approaches and methods for how they successfully engage underrepresented and diverse space technology innovators, researchers, technologists, and entrepreneurs.



Numerous individuals and/or teams will each be awarded \$25,000, and the cohort of winners will be invited to an in-person event at NASA's Goddard Space Flight Center in Greenbelt, Maryland. During the event, NASA aims to learn industry best practices for engaging and building a diverse community of space technology research and development professionals to inform future NASA plans and grow partnership potential.

Interested applicants should register online by Feb. 8, 2024. Applications must be completed and submitted by Feb. 22, 2024.

[Watch the Flight Opportunities webinar.](#) | [Learn about eligibility criteria.](#) | [Read the NASA feature.](#)

Who Let the Gas Out? NASA Challenge Aims to Reduce Propellant Tank Venting

As space travel extends to greater duration and distance, missions may require a propellant refill in space. To achieve this, spacecraft may require larger tanks and efficient refueling along with tanks that have the capability of isolating propellant from ullage fluid (a gas and vapor mixture) during a vent. The goal of the **Who Let the Gas Out? NASA Tank Venting Challenge** is to develop a novel solution for the venting of ullage contents from a partially full propellant tank, in microgravity, with minimal loss of propellant.



Although all concepts will be considered, solutions that are external to the propellant tank are preferred, as they could use existing (heritage) propellant tanks and avoid development costs related to designing and qualifying a new (or modified) tank.

Participants should be prepared to submit a complete concept design of their tank venting solution to win a share of the \$80,000 prize.

Submit ideas by Feb. 22, 2024.
[Learn more about the challenge.](#)

Community of Practice

Small Spacecraft Systems Virtual Institute (S3VI) Webinar

Join our friends at S3VI for their monthly webinar!

Lessons Learned from a Primarily Undergraduate CubeSat Project (RADSAT-SK)

Wed., Nov. 15, 2023

10:00-11:00 a.m. PST

Flight Opportunities is taking a break from our own Community of Practice webinar in December, but [watch our website for details on our January session!](#)

Do you have ideas or suggestions for a future Community of Practice topic? We'd love to hear your thoughts. Email us at NASA-FlightOpportunities@mail.nasa.gov to tell us what you'd like to see.

Annual Meeting of the American Society for Gravitational and Space Research (ASGSR)
November 14-18, 2023
Washington, D.C.



The ASGSR annual meeting brings together the biological and physical space sciences community to share research, build collaborations, and discuss emerging issues in the field. ASGSR welcomes scientists and engineers from all career stages. The Flight Opportunities team will lead a panel with representatives from the Suborbital Crew (SubC) Office and the Commercially Enabled Rapid Space Science Project (CERISS) initiative from the Biological & Physical Sciences (BPS) Division. This cross-agency collaborative session will feature a large Q&A section and help researchers understand how flight testing can be impactful and the ways in which NASA is making it more accessible to researchers.

Details:

- **NASA Flight Opportunities Session**
- Thur., Nov. 16, 2023
- 12:30-2:00 p.m. EST
- Capital Hilton: Presidential Ballroom

American Geophysical Union Annual Meeting
December 11-15, 2023
San Francisco, California

The AGU annual meeting convenes 25,000 attendees from 100+ countries to share research and connect with scientists and colleagues. Scientists, educators, policymakers, journalists, and communicators attend AGU to better understand our planet and environment and collaborate on solutions for global challenges. This year's conference theme is: Wide. Open. Science.

Flight Opportunities will be supporting a session on advancing science and technology through commercial suborbital flight testing. Details:

- **Opportunities for Advancing Science and Technology on Commercial Suborbital Vehicles I**
- Tues., Dec. 12, 2023
- 2:10-4:10 p.m. PST
- 301-302 - South (Level 3, South, Moscone Center)

[Subscribe](#)

[Visit our Web site](#)

Have ideas or feedback for the Flight Opportunities newsletter?

Drop us a line at:

NASA-FlightOpportunities@mail.nasa.gov

STAY CONNECTED:



NASA Flight Opportunities Program

Flight Opportunities is part of NASA's Space Technology Mission Directorate.