Flight Opportunities

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Enjoy!
The Flight Opportunities team

News

ICYMI: TechLeap Prize Winners Announced

On June 4, NASA's Flight Opportunities program announced three winners of the Universal Payload Interface Challenge:

- **Aegis Aerospace:** Easy-to-Use Payload Interoperable Integration Carrier (EPIIC)
- **Ecoatoms:** Apparatus for Nominal Integration with Minimal Adaptations (ANIMA)
- **UCLA SPACE Institute - ELFIN Student Team:** Software-Defined Payload Interface (SDPI)

NASA TechLeap PRIZE

This TechLeap Prize challenge invited 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. The goal is to seamlessly adapt a wide range of small space payloads—such as technologies, laboratory instruments, or scientific experiments—for flight testing.

Learn more about the challenge and the winners

Recent Flights

Flight Test Sheds New Light on In-Space 3D Printing, Propellant Slosh

A June 8 flight test aboard Virgin Galactic's VSS Unity sent **two university payloads** on suborbital flight tests supported by NASA's Flight Opportunities program. The reusable suborbital spaceship reached an altitude of more than 54 miles and provided approximately three minutes of microgravity. These conditions provided research teams the opportunity to advance payloads that align with critical technology needs that NASA has identified in pursuit of the agency's space commerce and exploration goals.

Payloads from Purdue University (top) and the University of California, Berkeley, integrated aboard VSS Unity. Credits: Virgin Galactic.

SpaceCAL Additive Manufacturing System: University of California, Berkeley
The phrase "do me a solid" has new meaning when it comes to in-space manufacturing. Rather than printing in layers, UC-Berkeley's SpaceCAL (where CAL stands for computed axial lithography) uses light to solidify liquid and gel materials in a single step in microgravity.

"We're looking to print a range of things in space, from mechanical engineering tools to clips for closing wounds," said principal investigator Hayden Taylor. "We're also looking into restorative dental applications. So, if an astronaut chips a tooth on a long mission and we have a scan of their mouth, this machine could print a crown on demand."

Recent Flights *(cont)*

Study of Liquid Propellant Slosh: Purdue University
Rapid, accurate spacecraft pointing maneuvers require advance knowledge of the time needed for propellant sloshing to settle to a sufficiently small level in reduced gravity. However, precise modeling of slosh in microgravity is not possible computationally or through testing on Earth. This flight test enables Purdue University researchers to gather data that may lead to precise models of liquid response and deliver reduced-gravity measurements to update existing models.

Read more about these payloads and this flight test

Flights for TechRise 2023-24 Begin

On the morning of June 21, 15 student payloads flew above a simulated lunar surface aboard Astrobotic's Xodiac rocket-powered lander. This flight — the first of three TechRise flights planned for this summer — gave students in grades 6–12 the opportunity to test their payloads just like other Flight Opportunities researchers.

Future issues of this newsletter will include more details. In the meantime, check out **the TechRise website** for more information about the 2023-24 TechRise Student Challenge and sign up for alerts about the 2024-25 challenge, which opens in August.

Astrobotic validated the TechRise flight trajectory of its Xodiac rocket-powered lander over the Lunar Surface Proving Ground in May 2024. Credits: Astrobotic

Read more about the TechRise Student Challenge for 6–12 graders

Community of Practice Webinar

No July Webinar; Mark Your Calendar for August 7

The Flight Opportunities Community of Practice webinar series will take a "summer holiday" in July. Our next webinar is scheduled for August 7 at 10 a.m. PDT. It will feature principal investigators whose payloads progressed from Flight Opportunities to the **IM-1 lunar mission**. Details will be provided through this mailing list in the coming weeks.

We're also planning the sessions for our fiscal year 2025 series.

If you have suggestions or feedback on past webinars, please email us at: **nasa-flightopportunities@mail.nasa.gov**.

Watch past Community of Practice webinars

Lessons from the Launchpad

Preparing for Parabolic Flight Testing

During our **past Community of Practice webinars**, researchers have shared their insights on conducting flight tests on aircraft flying parabolic profiles.

Researchers from the SEADS team test their payload while experiencing short periods of microgravity aboard an aircraft flying a parabolic profile. Credits: Zero Gravity Corporation/Steve

Consider the following:

- **Plan for the environment:** Practice your experiment with the in-flight environment in mind. Consider simulating the challenges you expect to encounter. **» Hear more about practicing for parabolic flight testing**.
- **Practice in-flight communication with your team:** Consider using brief, clear call-outs during flight. Also, ask the flight provider how they will communicate with you and your team during flight. **» Hear more about communication during parabolic flight testing.**
- **Get your timing down:** Consider the timing of each step and rehearse those timings carefully with the researchers involved to make sure that they are accurate.

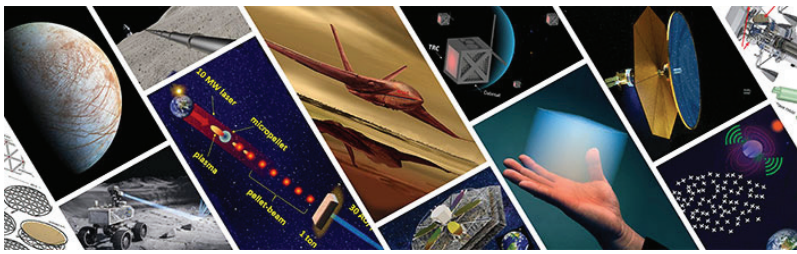
More **tips for preparing for parabolic flight testing** are available in our Lessons Learned Library.

Access and download the entire Lessons Learned Library

Opportunities

July 1 Deadline for NASA Innovative Advanced Concepts (NIAC) Phase I

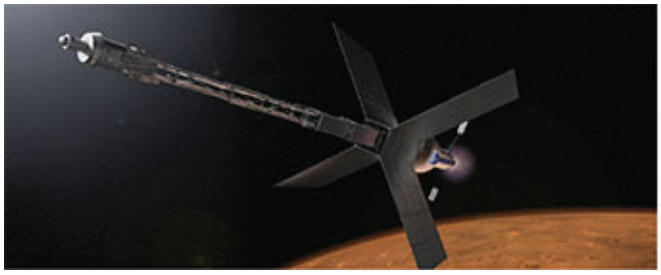
The **NIAC program** supports innovative research designed to “Change the Possible” in aerospace and aeronautics missions. Phase I provides up to $175,000 for efforts lasting up to 9 months to explore the overall feasibility and viability of visionary concepts for a specific representative mission. The **Phase I NIAC solicitation** is open to all categories of U.S. organizations. (Non-U.S. organizations may partner in, or lead, NIAC studies on a no-exchange of funds basis. See the solicitation for details.)



Step A proposals — essentially a 1-page overview chart plus a 3-page technical and management summary — are due July 1. Step B proposals are by invitation only.

Learn more about submitting your NIAC Step A proposal by July 1 on NSPIRES

July 15 Deadline for Early Career Faculty Opportunity



Part of **NASA's Space Technology Research Grants program**, this solicitation is for new faculty members at accredited U.S. universities who intend to develop academic careers related to space technology. Principal investigators must be untenured assistant professors on the tenure track at the time of award (May 2025).

The **Early Career Faculty solicitation** seeks proposals that are responsive to one of two topics:

1. Transformational Advanced Energetic Propulsion
2. Power Systems to Enable Small System Operations in Permanently Shadowed Lunar Regions

Mandatory preliminary proposals (MPP) are due July 15; full proposals are by invitation only.

Learn more about submitting your MPP by July 15 on NSPIRES

Attn. Non-R1 Faculty/Researchers! Apply for ROSES Research Initiation Awards by August 15

Faculty/Researchers at higher education institutions **classified as non-R1s** — particularly from minority-serving institutions and community colleges — are encouraged to apply for a **Research Initiation Award (RIA)**. Under RIA, NASA is seeking proposals for 2-year research awards of up to $300,000.

Part of ROSES (Research Opportunities in Space and Earth Sciences), RIA is for individuals who are rebuilding or starting a research program. Therefore, principal investigators (PIs) who have been the PI on current or previous federal research awards in the last 5 years are ineligible. **See the solicitation** for more information.

Proposed projects must include funding for undergraduate students and be relevant to one of the research goals of NASA's Science Mission Directorate. **Proposals are due August 15.**

Learn more about this opportunity for non-RI researchers on NSPIRES

Opportunities *(cont)*

Nominations for ASGSR Fellows Due August 16

The **American Society for Gravitational and Space Research** (ASGSR) is accepting nominations for their Fellows Program, which recognizes distinguished scientific and social contributions to the advancement of gravitational and space research. Awardees may be from academia, industry, non-profit organizations, and government agencies.

Any current ASGSR member may nominate a colleague who has demonstrable contributions of high achievement and significance. Nomination letters, along with the nominee's résumé, are due to **fellows@asgsr.org** by **August 16**.

Learn more about nominating an ASGSR Fellow

Events

NSMMS & CRASTE Joint Symposia
June 24-27, 2024 • Madison, Wisconsin

The National Space & Missile Materials Symposium (NSMMS) and Commercial and Government Responsive Access to Space Technology Exchange (CRASTE) will co-locate events for the 12th year to discuss key technology issues related to space, missile, hypersonic systems, and other commercial space topics. Flight Opportunities Deputy Program Manager Greg Peters will present on how to engage with Flight Opportunities and the ways in which the program creatively leverages industry to accelerate the pace of technology development.

Details:

- NASA's Flight Opportunities Program: Increasing the Pace of Space (in the System Architecture Studies track)
- Thursday, June 27 • 8:05-8:30 a.m. CDT

ASCEND
July 30-August 1, 2024 • Las Vegas, Nevada

ASCEND attendees from the civil, commercial, and national security space sectors and adjacent industries discuss the opportunities and challenges that come with increased activity in space through technical exchanges, debates, and collaboration. NASA's Flight Opportunities and Small Spacecraft Technology programs will host a panel to discuss how the agency can leverage its relationships with commercial partners and other stakeholders to close technology shortfalls more quickly.

Details:

- Evolving with Industry: Leveraging Nascent Commercial Capabilities to Accelerate Technology Development and Testing
- Thursday, August 1 • 4:30-5:30 p.m. PDT • Forum Ballroom 137

Events *(cont)*

ISSRDC

July 30-August 1, 2024 • Boston, Massachusetts

Attendees at International Space Station Research & Development Conference (ISSRDC) learn how harness the International Space Station and the unique conditions of space to help solve pressing research and technology development challenges. Technical sessions, panel discussions, and lightning talks will highlight space station research. The conference will explore how academia, industry, and government agencies are advancing fundamental science research, technological innovation, in-space manufacturing, and workforce development to drive commercialization and a sustainable space economy. Join Flight Opportunities team members and others from across NASA at this conference. Stay tuned for more updates!

Small Satellite Conference

Aug. 3–8, 2024 • Logan, Utah

This year's SmallSat theme is automation and how it enables new capabilities. Attendees will explore how automation is being integrated into small satellite systems across the space, launch, ground, and user segments, making them smarter and more effective. Hear from Flight Opportunities leadership and other NASA representatives at the town hall, panel sessions, and lightning talks as well as in the exhibit area. Stay tuned to future issues of this newsletter for more information!

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NASA Flight Opportunities Program

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