



Flight Opportunities



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Dear Flight Opportunities Community,

As the end of the year approaches, we're looking back on some recent flight successes and looking ahead to upcoming events and opportunities for new proposals. This month's newsletter features:

- **Highlights of recent flights** by Near Space Corporation, Masten Space Systems, and Zero Gravity Corp.
- A **technology spotlight** highlighting the 6U CubeSat Canisterized Satellite Dispenser technology from Planetary Systems Corporation
- News about **recent opportunities** and **upcoming solicitations**
- **Upcoming event announcements**, including the American Geophysical Union (AGU) Fall Meeting, coming up next week



Ronald Young, Program Manager

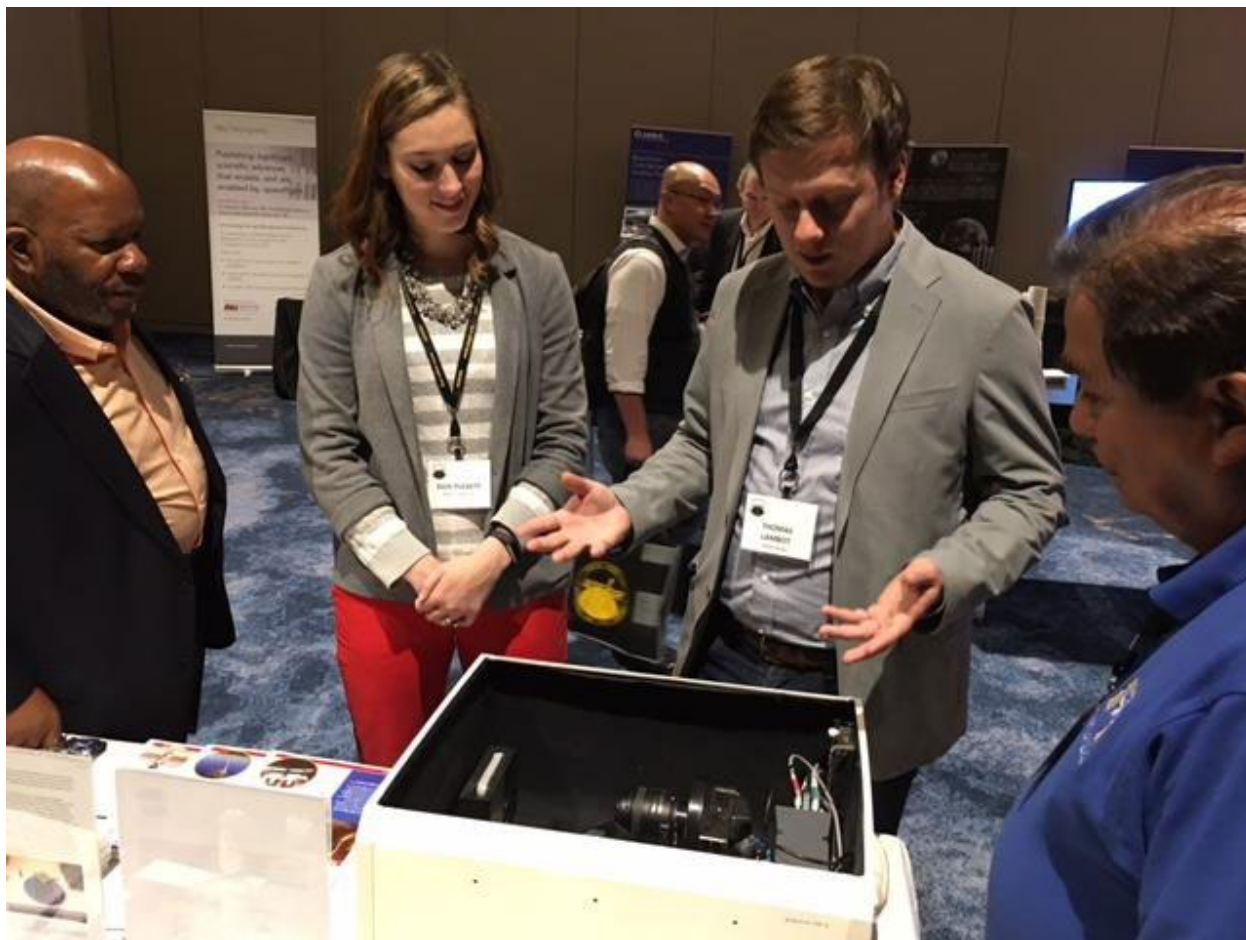
Best wishes for the holiday season, and many thanks from our team to you for following our flight news and opportunities this year. We look forward to bringing you more in 2017!

Ronald Young, *Program Manager*
NASA's Flight Opportunities Program

Recent Events

Flight Opportunities at the ASGSR Annual Meeting

In October, Flight Opportunities personnel attended the **American Society for Gravitational and Space Research (ASGSR)** Annual Meeting, where we had the distinct pleasure of seeing and meeting many researchers and flight providers. We had the opportunity to speak with biologists and other scientists about how Flight Opportunities may be of value to the research that they are doing.



Thomas Lambot, Technology Support for Flight Opportunities, discusses with prospective researchers how flight testing aided the development of the University of Florida's biological fluorescent imaging technology ([T0053](#)).

"We made so many new, valuable connections at ASGSR--new faces both within NASA and in the external research community. These relationships are helping to pave the way for current and future discussions about potential partnerships and opportunities."

— Stephan Ord, Technology Manager, NASA's Flight Opportunities program

Flight Highlights

Three Campaigns Fly in Fall 2016

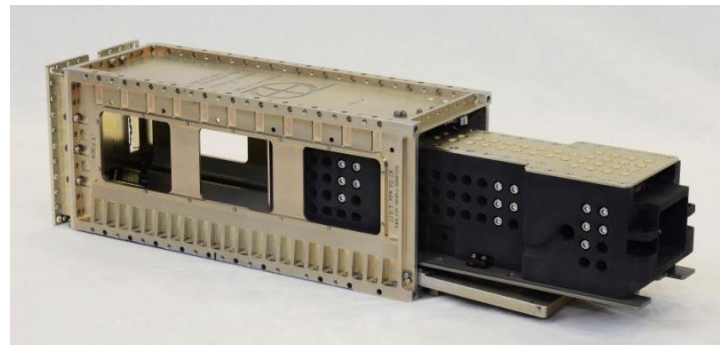
Flight Opportunities has facilitated three flight campaigns since late September, in what has been a very full season for commercial flight providers and researchers alike. In all, seven payloads were flown, helping mature important technologies from medical devices to propellant advances and more. The flights included:

- **Flights by Zero Gravity Corporation on November 15-16**, testing five payloads on flights carried out over 2 days:
 - Advancing Diaphragm Modeling Technology for Propellant Management from Purdue University (**T0150**)
 - Evolved Medical Microgravity Suction Device from Orbital Medicine, Inc. (**T0162**)
 - Modal Propellant Gauging in Microgravity from Carthage College (**T0147**)
 - MOJO-Micro: Multi-Orthogonal Jaunting rObot in Microgravity from MIT (**T0163**)
 - Water Capture Device from Orbital Technologies Corporation (**T0167**)
- **A free-flight by Masten Space Systems on November 2**, testing Electromagnetic Field Measurements (**T0015**) from Johns Hopkins University Applied Physics Laboratory
- **A flight by Near Space Corporation on September 26**, which demonstrated basic proof of concept for use of its high-altitude balloon as a “flying test bed” for Federal Aviation Administration (FAA) NextGen technologies (e.g., ADS-B) for winged commercial suborbital reusable launch vehicles (sRLVs) (**T0106**)

Tech Spotlight

Flights in Microgravity Provide Performance Validation for Satellite Dispenser Technology

Launching CubeSats to orbit can be prone to failure, even as the rise in the number of technology payloads bound for CubeSat missions demands cost-effective and successful launch methods. A new Canisterized Satellite Dispenser (CSD) (**T0133**) technology developed by **Planetary Systems Corporation (PSC)** is addressing this challenge. Developed under an Air Force Research Laboratory Small Business Innovation Research (SBIR) effort, the CSD holds 3U-, 6U-, or 12U-sized CubeSats, enabling missions to carry more experiments or reducing the cost of integrating a large experiment into a smaller package.



The Canisterized Satellite Dispenser is shown here with a CubeSat inside. Photo credit: Planetary Systems Corporation

PSC engineers spent a week in August 2014 testing the CSDs in weightless environments aboard parabolic flights on NASA's C-9 Jet. Four successful flights over 5 days helped researchers measure the rotation, velocity, and acceleration of dispensed CubeSats under orbital conditions,

helping to further mature the technology for commercialization and increase its technology readiness level (TRL) to 8.

PSC has seen significant sales of its CSDs due, in part, to the performance validation provided by the successful flight tests. The company is now using the data gathered to guide future product development and is making plans for additional 3U, 6U, and 12U CSD testing.

“Flight testing is truly superior to ground-based experiments when you have a new mechanism that has to work in microgravity but you aren’t sure how it will function due to issues with fragility and sensitivity—and it also allows you to discover elements you had no idea might be an issue. NASA’s support was amazing; this group is really good at what they do and their knowledge of creating microgravity experiences was instrumental to the success of the parabolic flights.”

— Walter Holemans, chief engineer, Planetary Systems Corporation

Opportunities

NASA Internal Call for Payloads

The [NASA Internal Call for Payloads](#) (NTRNL-Oct-16) closed October 31 and payload reviews are underway. The next internal call (NTRNL-Jan-17) is expected to open in early January with proposals due January 31.

REDDI Solicitations

[SpaceTech-REDDI-2016 F1\(B\)](#) selections are underway and are expected to be announced near the end of the calendar year. The REDDI-2017 F1(A) call is expected to be released in January.

Tipping Point Proposals in Review

Proposals submitted in response to the NASA Draft Appendix entitled, “Utilizing Public-Private Partnerships to Advance Tipping Point Technologies” are currently being reviewed. Watch future issues of this newsletter for updates.

2017 SBIR/STTR Phase 1 Solicitation

Flight Opportunities partners with other NASA programs, including the Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs, to maximize the benefits for the community. SBIR/STTR funded firms are eligible to submit a proposal in response

to the Flight Opportunities Internal Calls for payloads (held quarterly) to obtain access to flight platforms for testing.

Flight Opportunities is involved in three sub-topics for the latest **2017 SBIR/STTR Program Solicitation**:

- H8.01 - ISS Utilization and Microgravity Research (SBIR Focus Area 22)
- Z9.01 - Small Launch Vehicle Technologies and Demonstrations (SBIR Focus Area 21)
- T1.01 - Affordable Nano/Micro Launch Propulsion Stages (STTR Focus Area 1)

We encourage researchers to investigate these options for advancing your technologies.

“The Flight Opportunities program has provided critical research and testing opportunities for many SBIR/STTR awardees in the past. Many companies that have continued their research through FO have told me repeatedly how important it was to the development of their technology. Through increased collaboration, the SBIR/STTR and FO programs are hoping to make more of those transition and testing opportunities available to more companies in the future.”

— Jenn Gustetic, SBIR/STTR Program Executive

Upcoming Conferences & Events

Don't forget to check out these upcoming events...

- December 12-16: **American Geophysical Union (AGU) Fall Meeting**
- February 6-8: **SmallSat Symposium • Silicon Valley 2017**
- February 7-8: **20th Annual FAA Commercial Space Transportation Conference**



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

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Flight Opportunities is part of the Commercial Partners Portfolio of NASA's Space Technology Mission Directorate.