



Flight Opportunities



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Dear Flight Opportunities Community,

Our newsletter is now in its second issue, and we're excited to Thank you for opening this month's issue of the newsletter—we have many exciting developments to tell you about!

In particular, I want to draw your attention to the solicitations that are currently accepting proposals. Be sure to check out the details in our **Opportunities** section.

This issue also includes:

- An overview of the **SpaceTech-REDDI-2016 F1 proposal selections**
- A spotlight on **Southwest Research Institute's (SwRI's) Solar Instrument Pointing Platform (SSIPP) technology**, scheduled for a high-altitude balloon flight with World View Enterprises next month
- **A profile of World View**, one of Flight Opportunities' high-altitude balloon flight providers



Ronald Young, Program Manager

We hope you enjoy reading!

Ronald Young, Program Manager
NASA's Flight Opportunities Program

"We were very impressed by the proposals submitted for this solicitation. We look forward to seeing the technology demonstrated and then used by NASA programs and industry."

— Robert Yang, program executive, NASA's Flight Opportunities program

Payload Selections

SpaceTech-REDDI-2016 F1 Selections Announced

NASA's Flight Opportunities program has announced the selection of 13 payloads as part of the SpaceTech-REDDI-2016 F1 solicitation. These payloads will be used on parabolic, suborbital, or balloon launch vehicles to demonstrate new technologies, vehicle capability enhancements, and onboard research facilities. Proposers will be coordinating with U.S. commercial providers to conduct flights in 2016 and 2017.

Steve Ord, Technology Manager for Flight Opportunities, was pleased with the submissions received for this solicitation. "We are excited about the level of response and quality of the proposals received for the REDDI 2016 F1 solicitation. This round, we were able to select considerably more proposals than we have in past REDDI Appendix F1 solicitations."

Two topics were included in the solicitation. The following payloads were selected for the first topic,

Demonstration of Space Technology Payloads:

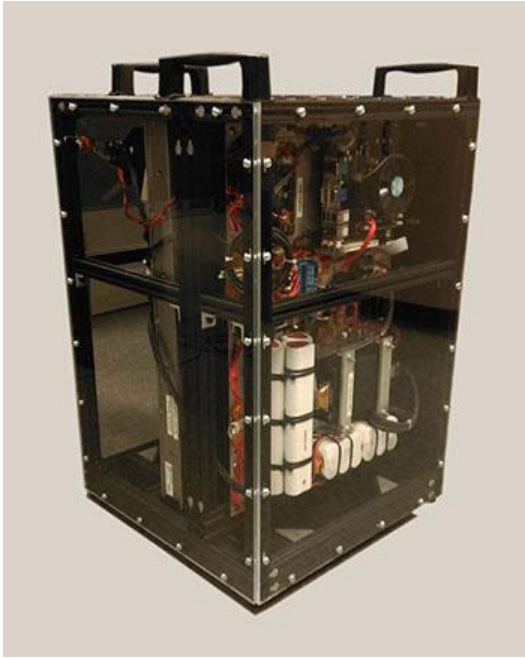
- "Ground-Based Study of Gravity Effects on Flow Boiling Heat Transfer in Preparation for an ISS Flight Experiment" - PI Jungho Kim, University of Maryland
- "Static Vapor Feed Electrolyzer for Life Support Oxygen" - PI Meagan Rich, Giner, Inc.
- "Microgravity Testing of CSSR Sample Verification System" - PI Risaku Toda, Jet Propulsion Laboratory
- "Microgravity Propellant Gauging Using Modal Analysis: Phase II" - PI Kevin Crosby, Carthage College
- "MOJO-Micro: Multi-Orthogonal Jaunting Robot in Microgravity" - PI Neil Gershenfeld, Massachusetts Institute of Technology
- "Development of a Revolutionary Approach for Efficient Microgravity Transfer Line Chillover" - PI Jacob Chung, University of Florida
- "Orbital Technologies Corporation (ORBITEC) Water Capture Device (WCD) Parabolic Flight Test" - PI David Hoerr, Orbital Technologies Corporation
- "Honeybee Robotics PlanetVac on Masten Lander" - PI Kris Zacny, Honeybee Robotics
- "Zero-g Condensation Droplets and Flow in Phase-Change Loops" - PI Steven Collicott, Purdue University
- "Automated Radiation Measurements for Aerospace Safety - High Altitude (ARMAS-Hi)" - PI Kent Tobiska, Space Environment Technologies

The following payloads were selected for the second topic, ***Demonstration of Vehicle Capability Enhancements and Onboard Research Facilities for Payload Accommodation:***

- "A Novel Approach to Balloon Altitude Control for the Purpose of Stratospheric Balloon Trajectory Control" - PI Iain Beveridge, World View Enterprises, Inc.
- "A New Spin on Suborbital Microgravity Research: Developing a Centrifuge for Blue Origin's New Shepard" - PI Mariel Rico, Nanoracks
- "Modification of ISS TangoLab-1 Facility for Use on New Shepard Capsule to Enable Seamless Transfer Between Microgravity Platforms" - PI Twyman Clements, Kentucky Science & Technology Corp.

For more information read the full NASA announcement online.

SwRI's Solar Instrument Pointing Platform



SwRI's SSIPP technology. Image courtesy SwRI.

Southwest Research Institute has made a significant achievement with its Solar Instrument Pointing Platform (SSIPP), offering a flexible, optical table-based system that locks onto a solar limb and delivers an arcsecond-grade pointed beam to an instrument. The instrument can be built up on the compact table or attached to the SSIPP unit itself. This technology effectively creates a novel suborbital science observatory, reducing complexity for researchers so that the effort required is comparable to testing an instrument in a ground-based observatory.

What makes the instrument significant compared to the current state of the art? According to SwRI principal investigator Craig DeForest, "For the measurements we want to make, we need to have arcsecond-class stability--and preferably sub-arcsecond stability--of the pointing technology so we can resolve features that are smaller than 100 miles across. And this requires an active pointing system to stabilize the inherently dynamic test flight." Existing balloon gondolas capable of this level of

stability have cost well over \$10M, says DeForest. By contrast, SSIPP's price tag from conception to flight is coming in at just over \$700K.

"The triumph that we feel is that from the very beginning of the project to our upcoming test flight, we have spent well under one million dollars to develop this observatory from scratch," says DeForest.

Poised to flight test the instrument next month on [a high-altitude balloon provided by World View Enterprises](#), SwRI credits the flight provider and Flight Opportunities with offering an avenue to help them lower barriers to near-space science.

"The process of preparing SSIPP for balloon flight has been enabled by World View. We've been able to augment SSIPP for stratospheric flight thanks, in no small part, to their cooperation and collaboration," says DeForest, who notes World View's hands-on approach of sending personnel to the field office to help run hang tests in advance of the actual flight.

"This flight would not be possible if it weren't for the Flight Opportunities and Game-Changing Technology programs at NASA," says DeForest. "Demonstrating that you can do science more cheaply and more effectively than before is very challenging. In particular, these technology programs help overcome the tremendous barrier of proving that the new approach can work: otherwise they would be too risky to incorporate into complete science programs. Being able to flight-prove new instrument technologies is absolutely critical to advancing science in the long run."

For now, SwRI is working with World View to make final adjustments to its payload in preparation for its first balloon test scheduled for August 24.

[Learn more about the SSIPP technology and upcoming flight test.](#)

“Anything that we can do to lower barriers is an important step toward advancing technology, and is really enabling what I see as a coming renaissance of suborbital rocket and suborbital balloon flights.”

—Craig DeForest, principal investigator for SSIPP, Southwest Research Institute

Flight Provider Profile

World View Enterprises

World View Enterprises (based in Tucson, AZ) offers an innovative high-altitude balloon flight platform, providing innovators accessible and affordable options for flight testing their payloads in near-space environments. The company has spent the last several years refining its high-altitude balloon platform, with plans to ultimately provide space tourists with a unique view of Earth from near space. Along the way, the company has emerged as a trusted and professional partner for scientific payload testing.

World View has a contract with Flight Opportunities for NASA internal payloads. Its first balloon flight through Flight Opportunities lifted off on March 8, 2015, helping the University of Central Florida test its **Planetary Atmospheres Minor**

Species Sensor technology and Gannon University test its **Cosmic-Ray Calorimeter**. This first flight with NASA garnered praise from Flight Opportunities campaign manager Paul DeLeon: “I was very satisfied with the payload integration effort and overall flight performance provided by World View. The World View team was very professional and accommodating to the payload provider’s needs.”

Now on the cusp of its next Flight Opportunities launch, **World View is supporting SwRI’s Solar Instrument Pointing Platform (SSIPP) technology** through a balloon test next month. The company has worked closely with SwRI over the last 2 years in anticipation of the flight test.

Visit the **World View website** to learn more about platforms to consider for testing your payload.



The stratollite high-altitude balloon flight platform from World View Enterprises. Photo courtesy World View.

“We’re thrilled to be part of NASA’s Flight Opportunities program—helping drive innovation and increasing access to space, while at the same time fueling industry growth in the commercial space sector.”

— Andrew Antonio, director of marketing, World View Enterprises

Opportunities

NASA Internal Call for Payloads

The NASA Internal Call for Payloads applies to internally funded NASA development activities seeking maturation advancement beyond Technology Readiness Level (TRL) 4. With proposals due July 29 th, the call is open to NASA and other U.S. government researchers. Principal Investigators (PIs) must be from a NASA center, or the PI can be from an external entity if the research is a NASA funded activity (e.g., SBIR/STTR). For more information, [download the solicitation document](#).

SpaceTech-REDDI-2016 F1(B)

The SpaceTech-REDDI program seeks proposals to demonstrate cross-cutting space technologies in relevant space-like environments using currently available U.S. commercial reduced-gravity, high-altitude balloon, and suborbital reusable flight opportunities. The SpaceTech-REDDI 2016 F1(B) solicitation is now open, and applications are due September 9th. More information can be found on [NSPIRES](#).

Tipping Point

A few weeks ago, we sent out a special announcement about NASA's recent release of the "Utilizing Public-Private Partnerships to Advance Tipping Point Technologies" Draft Appendix. Flight Opportunities is involved with this appendix as part of its continuing efforts to expand public-private partnerships that create new commercial capabilities to serve the orbital and suborbital launch communities. You can find more information about this opportunity on [NSPIRES](#).

Upcoming Conferences & Events

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

- **August 6-11: Small Satellite Conference**
- **September 13-16: American Institute of Aeronautics and Astronautics Space Forum & Exposition**
- **October 12-13: International Symposium for Personal and Commercial Spaceflight** (ISPCS)
- **October 26-29: Annual Meeting of the American Society for Gravitational and Space Research** (ASGSR)
- **November 15-17: Space Commerce Conference and Exposition** (SpaceCom)



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.