



Flight Opportunities

Testing and maturing promising exploration technologies at the edge of space

NASA's Flight Opportunities program invests in the growth of the commercial spaceflight market by facilitating flight testing of space exploration and utilization technologies on commercially available flight platforms. These opportunities in relevant flight environments enable technology maturation, validate feasibility and reduce technical risks for future missions.



Suborbital Reusable Launch Vehicles (sRLVs)

sRLVs include various rocket sizes, payload capacities and flight profiles.

- Evaluate response to microgravity
- Demonstrate medical, biological, robotics, manufacturing, electronics/IT, and atmospheric sampling experiments (among others)
- Validate entry, descent, and landing systems



High-Altitude Balloons

Balloon systems can accommodate a range of payload sizes depending on the platform and typically sustain the longest duration of the suborbital vehicles.

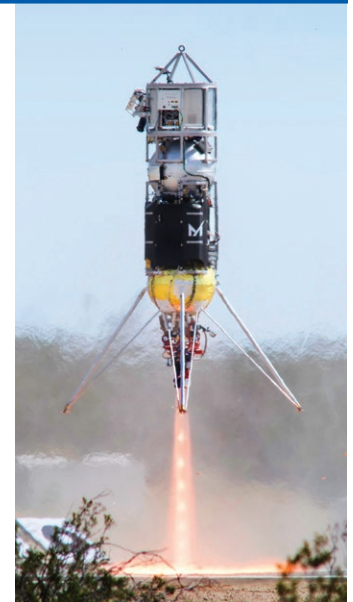
- Evaluate exposure to high-altitude atmospheric conditions
- Facilitate observations both to ground and into space
- Enable drop tests
- Demonstrate space-based sensors and instruments



Parabolic Aircraft

These modified commercial airplanes perform a series of parabolas to provide brief periods of reduced gravity.

- Evaluate response to microgravity
- Demonstrate medical, plant and biological systems, robotics, manufacturing, and electronics/IT experiments (among others)



Vertical Takeoff Vertical Landing (VTVL) Rockets

The vertical landing capability of these vehicles make them ideal for evaluating entry, descent, and landing systems.

- Evaluate planetary surface exploration methods
- Test landing vehicle and navigation capabilities
- Demonstrate hazard avoidance methods

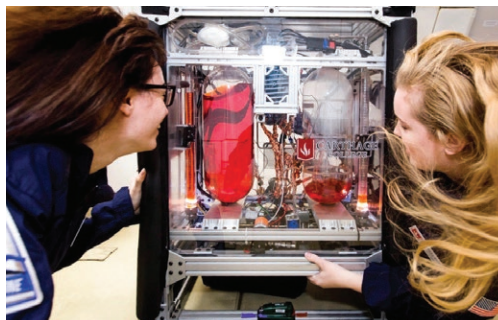
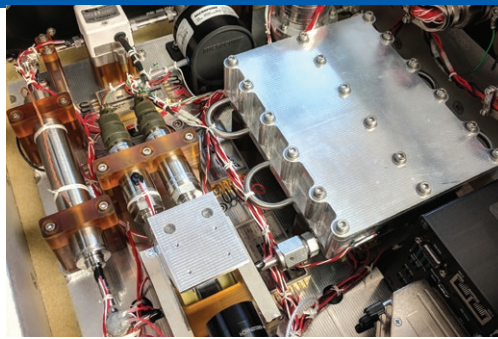
Getting to Know Flight Opportunities

What is a “relevant environment”?

Flight Opportunities provides access to relevant testing environments up to the edge of space (approximately 80–100 km above sea level). These environments are relevant because they replicate some of the conditions encountered on orbital missions and beyond, such as extreme temperatures, microgravity conditions, radiation, and other factors. These conditions are difficult, and in some cases impossible, to replicate in ground-based laboratory testing.

What is the value of these flights?

- Mature technologies faster (and farther) than ground-based laboratory testing alone
- Obtain data to refine and prepare technologies for spaceflight
- Demonstrate technologies in advance of an orbital mission, such as a CubeSat, International Space Station, or lunar mission



What types of technologies is NASA looking for?

Promising technologies and experiments that will enable NASA's future exploration missions to the moon, Mars, and other planetary bodies are well qualified to apply for flight testing through Flight Opportunities. Examples include:

- Avionics and navigation
- Entry, descent, and landing
- Human health, life support, and habitation systems
- Thermal management systems
- Information technology
- In-space manufacturing
- Space power and energy storage
- Communications and surveillance
- Robotics
- Fluid physics
- Propulsion

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How do I get my technology on a flight?

Researchers from U.S.-based **industry, academia, and other non-NASA organizations** can compete for funding through NASA's Tech Flights solicitations. Awardees receive a grant or collaborative agreement allowing them to purchase flights directly from a U.S. commercial flight vendor that best meets their needs. Separate funding opportunities may also be available for **NASA researchers**, who are encouraged to contact Flight Opportunities directly for details. Sign up for the Flight Opportunities newsletter to stay up to date on solicitations: <https://go.nasa.gov/32jXl9s>