

Flight Opportunities

Testing and maturing space technologies with commercial providers

Flight Opportunities rapidly demonstrates promising technologies for space exploration, discovery, and the expansion of space commerce through suborbital testing with industry flight providers. The program matures capabilities needed for NASA missions and commercial applications while strategically investing in the growth of the U.S. commercial spaceflight industry.



Rocket-Powered Vehicles

This category includes both suborbital reusable launch vehicles (sRLVs) that reach high altitudes and may include periods of microgravity, as well as lander vehicles that specialize in entry, descent, and landing (EDL) technologies. Both of these classes of vehicles are typically recoverable and reusable after launch. They can be used for testing:

- EDL and navigation systems
- Atmospheric and surface sampling
- Biological experiments
- Robotic systems
- In-space manufacturing methods
- Electronics and information technology systems



High-Altitude Balloons

Large balloon systems reach a nominal altitude of 30 km and can also typically sustain the longest duration of the suborbital vehicles—hours, days, or even weeks at a time. This makes them ideal for payloads that benefit from extended periods of data collection. These systems are ideal for testing:

- Sun-sensitive and solar instruments
- Earth-observation instruments
- Other instruments and technologies that may benefit from high-altitude observations (both to ground and into space) and drop tests



Parabolic Flights

These airplanes achieve brief periods of reduced gravity through a series of maneuvers called parabolas. These flight profiles can be used for testing technologies that need to operate in the technologies that need to operate in zero or reduced gravity, such as:

- Space-based medical experiments
- Biological experiments
- Robotic systems
- In-space manufacturing methods
- Electronics and information technology systems



Flight Opportunities is also partnered with NASA's Small Spacecraft Technology program to provide access to commercial hosted orbital payload opportunities for technology flight testing.

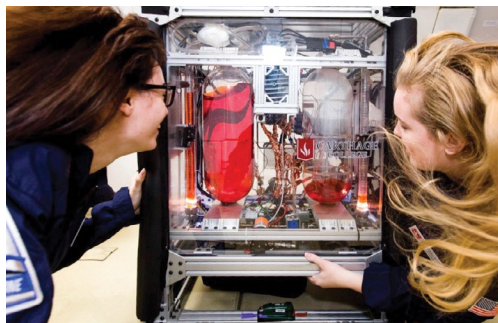
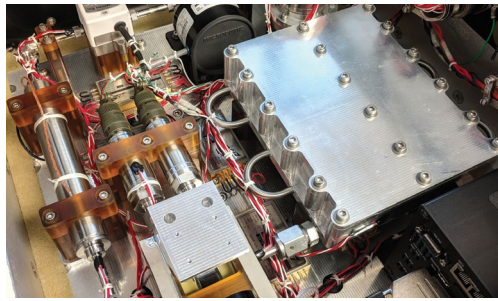
Getting to Know Flight Opportunities

What is a “relevant environment”?

Flight Opportunities provides access to relevant flight test environments for space technologies. 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 space missions, such as small spacecraft, International Space Station, or lunar missions



What is NASA looking for?

Technologies and experiments that fit the four “thrusters” of NASA’s Strategic Technology Framework and will enable NASA’s future exploration missions are well-suited for flight testing through Flight Opportunities. Examples include:

- **GO:** Nuclear propulsion, cryogenic fluid management, and advanced propulsion
- **LAND:** Entry, descent, landing; precision landing
- **LIVE:** Advanced power; in-situ resource utilization; advanced thermal management; advanced materials, structures, and construction; advanced habitation systems
- **EXPLORE:** Avionics; communications and navigation; robotics; autonomous systems; satellite servicing and assembly; advanced manufacturing; small spacecraft rendezvous, proximity operations, and capture; sensors and instrumentation

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 TechFlights** 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.

U.S.-based researchers can also compete for payload development funding and access to flights through **NASA’s TechLeap Prize**. Separate funding opportunities may also be available for **NASA and NASA-supported 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, prizes, and challenges: <https://go.nasa.gov/32jXI9s>

The Space Technology Mission Directorate is strongly committed to ensuring that proposal review is performed in an equitable and fair manner that reduces the impacts of any unconscious biases. In addition to other techniques, Flight Opportunities uses a dual-anonymous peer review (DAPR) process where the identities of both reviewers and proposers are not shared until after the technical merit has been evaluated for all anonymized proposals.