National Aeronautics and
Space Administration



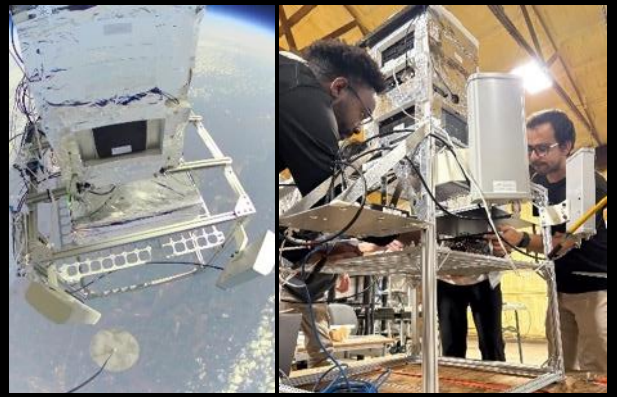
University SmallSat Technology Partnerships (USTP) Initiative

Mike Gaunce
Project Manager
NASA Small Spacecraft & Distributed Systems
NASA Ames Research Center

August 26, 2026

USTP Overview

- Started in 2013 under Small Spacecraft Technology Program.
- Selected via competitive solicitation.
- Combines NASA's experience and facilities with academic research to bridge technology gaps promoting utilization of small spacecraft.
- University teams work with a NASA partners to mature university-owned smallsat technology.
- Current award level: $450K/2 years.



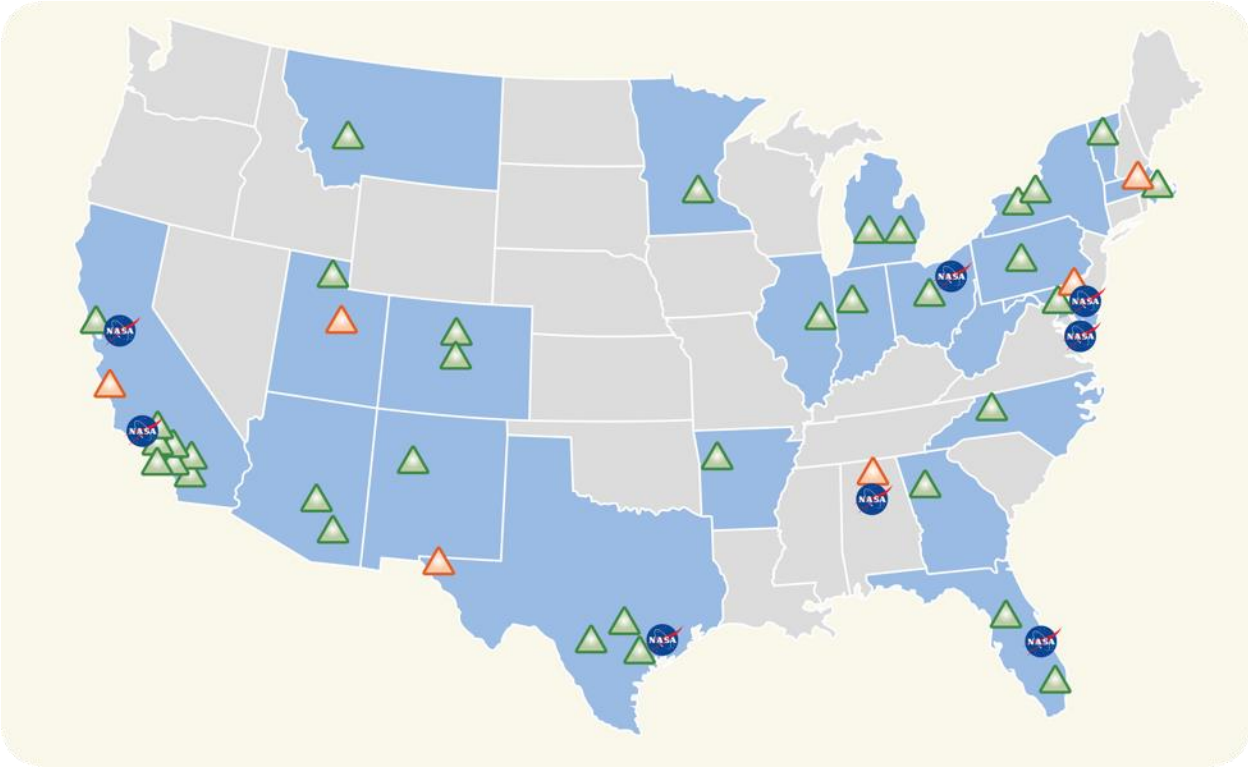
UCLA testing 3-axis OMA at 98,000 ft September 2025.
Credits: Aerostar and NASA



AMDROHPSat USTP team - Cal Poly + CSULA

USTP Awards

- 6 cohorts to date (2013-2023).
- Over 500 proposals reviewed.
- 54 awards at 42 US institutions.
- Over $35M awarded.
- 8 of 11 NASA center partners.
- 14 flight demos completed.



36 Universities, 22 States
6 Supporting Universities (Co-I)
8 NASA Centers

USTP Technology Development

Advanced technology maturation for smallsat applications (TRL 3-6):

- GNSS-independent navigation
- Edge computing & machine-learning
- Deployable thermal radiators
- Advanced phase change materials
- Compact x-ray spec for PNT
- Node cross-link networks
- Oscillating heat pipes
- Cubesat instrument miniaturization
- Nanosatellite swarming w/ RF & optical nav
- Ultra high perf mini computer boards
- Chip-scale laser accelerometers
- Autonomous swarm reconfiguration
- Surface feature optical navigation
- Dual mode propulsion (CP+EP)
- Ultrastable microphotonic clocks
- Film-evaporation micro-scale thrusters
- On-orbit prox ops learning and planning
- Electrically steerable phased array antennas
- Ionic liquispray propulsion
- Magnetoshell aerocapture for smallsats

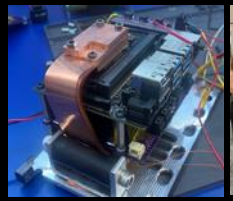
USTP Accomplishments and Impact

- Over 200+ students at 42 universities.
- 10 PhD and 5 MS theses.
- 70+ conference presentations, 150+ papers published.
- 6 patents granted (1 applied).
- 8 new aerospace companies founded by USTP alumni
- *14 flight demonstrations orbital or suborbital performed. 7 additional demos planned for 2027-2028.*



UCLA PNT balloon launch prep
Sioux Falls, SD - Sept 2025

USTP Teams




SCALES prototype; California State Polytechnic University, Pomona USTP team at SmallSat Conference 2025.

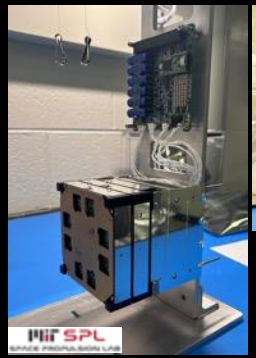



UT-Austin SCOPE-1 project team; detector result illustrate the contour and bounding box of all correctly identified and detected islands in the image of Okinawa taken from orbit.



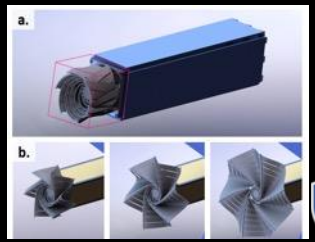


ODIN prototype. Georgia Institute of Technology USTP team.





STEP-1 project team integrating propulsion payload in testing configuration: MIT



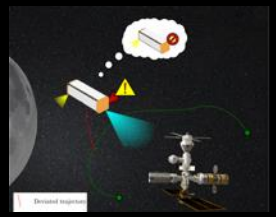


Deployable radial radiator CAD images - Pennsylvania State University

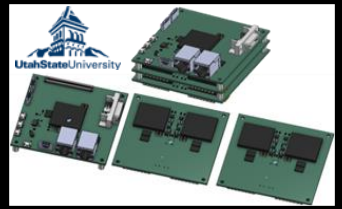




University of Dayton deployable radiator fin.

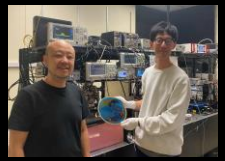
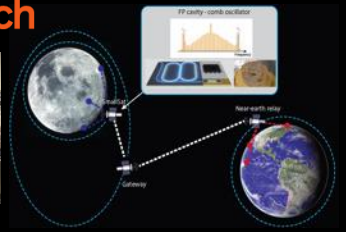



Smallsat Steward; University of Michigan + JPL USTP team.

Utah State University team members in lab; proposed FPGA stack.

Caltech

California Institute of Technology USTP team members in laboratory; microphotonic clock design architecture.

For more information:

www.nasa.gov/smallspacecraft/university-smallsat-technology-partnership-initiative




NASA