

# Small Satellite Capabilities

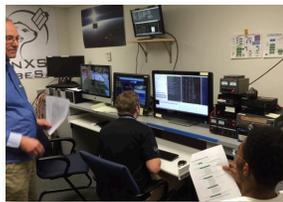


*LASP's small satellite ground station facilities are located in-house and across the globe. This extensive and expanding network allows us to serve multiple programs simultaneously and to collaborate with partners requiring communication-support capabilities.*

Having the facilities to develop, test, and operate spaceflight hardware onsite is a key ingredient to LASP's success. By developing small satellites and operations capabilities to support a broad range of scientific investigations, LASP is able to increase access to space for university researchers and private sector partners, and to train the next generation of scientists and engineers. The LASP Small Satellite Operations Center will continue a legacy of superior on-orbit performance for LASP and our partners' CubeSat and small satellite programs.

## LASP Mission Operations

The LASP Mission Operations & Data Systems (MO&DS) group staffs several Mission Operations Centers and Science Operations Centers for the day-to-day operations of spacecraft and instrument missions. LASP is one of only a few university-based mission operations centers. We train and certify undergraduates to perform mission and instrument operations. Our unique mix of professional and certified student staff is a core strength for LASP.



*Small Satellite Mission Operations Center*

Our skilled mission operators monitor and control spacecraft and their on-board scientific instruments. Our software engineers and scientists process, analyze, distribute, and archive the mission data, and create the software to support MO&DS activities.

Each day, more than 2 TB of data come through LASP servers to support ongoing space missions and the scientific data that scientists from all over the world rely on. LASP experts ensure fast and accurate data transfer, management, archiving, and the development of software tools that support scientific data users.

## Small Satellite Operations

LASP has a proven record of successful small satellite operations, having designed, built, and operated the Colorado Student Space Weather Experiment (CSSWE), which operated from 2012-2014, and the Miniature X-ray Solar Spectrometer (MinXSS-1), which operated from 2016-2017. MinXSS-1 was awarded "Mission of the Year" at the 2016 AIAA Small Satellite Conference.

LASP engineers and scientists are currently designing and building the following CubeSat programs:

- Compact Solar Irradiance Monitor (CSIM)
- Colorado Ultraviolet Transiting Experiment (CUTE)
- CubeSat: Inner Radiation Belt Experiment (CIRBE)
- INSPIRESat
- MinXSS-2

In addition to operating our own small satellites, LASP is now seeking opportunities to collaborate and partner with other university-based space programs, as well as private commercial CubeSat and small satellite enterprises.

## Small Satellite Capabilities

LASP currently maintains UHF uplink and downlink (@9.7 Kbps) capabilities with antennas in Boulder, CO and Fairbanks, AK, as well as an S-band downlink (@1.0 Mbps) in Boulder. Our ground stations are controlled through LASP's Small Satellite Operations Center in Boulder. Future plans include connecting our operations center with external ground assets in Singapore and Taiwan as part of the INSPIRE program.

To read more about Small Satellite Capabilities at LASP, visit <http://lasp.colorado.edu/home/SmallSats>, or contact us at [SmallSats@lasp.colorado.edu](mailto:SmallSats@lasp.colorado.edu).