

The OSIRIS-3U satellite is a three unit CubeSat, measuring approximately 10x10x30 cm. It has been built and designed by undergraduate and graduate students at the Pennsylvania State University's Student Space Programs Lab. The OSIRIS-3U satellite will provide *in situ* and remote sensing measurements of the spatial characteristics of stimulated ionosphere. These measurements will be correlate with ground-based measurements to better understand variable space weather. Measurements will be taken using three scientific instruments. Scientific instruments include a Pulsed Langmuir Probe, the Coherent Electromagnetic Radio Tomography (CERTO) beacon, and the Compact Total Electron Content Sensor (CTECS). The Pennsylvania State Student Space Programs Laboratory will be coordinating with Arecibo Observatory in Puerto Rico. At predefined times the Arecibo will activate their atmospheric heaters; the OSIRIS-3U satellite will pass through the heated region and take measurements using devices described above. The OSIRIS-3U mission address NASA Strategic Goal 2.2 "Understand the Sun and its interactions with Earth and the solar system" and NASA Education Outcome and Objective Hierarchy Objectives 1.1-1.3 consisting of fostering student involvement, student support, and faculty research.

The OSIRIS-3U CubeSat will be delivered to the ISS via the SpaceX 12, where it will be put into orbit via the NanoRacks CubeSat Deployer (NRSCD). SpaceX 12 will be launched from Cape Canaveral at the Kennedy Space Center. The latitude and longitude of the launch facility is as follows, 28.488113, -80.572992. The CubeSat's elevation will be 400 km, and its inclination will be 51.6 degrees. OSIRIS-3U will be operating for approximately a year following deployment. OSIRIS-3U will be launched on June 1<sup>st</sup>, 2017 and will be deployed via NRSCD shortly after.

For command and control of the OSIRIS-3U satellite a wireless telemetry and command link is necessary. The satellite will be using the Astronautical Development Lithium-1 radio and a half-wave dipole. Both commands and telemetry will transmitted at 437.505MHz using GMSK modulation. Communications will be done in half-duplex mode.

OSIRIS-3U will communicate with earth stations located at The Pennsylvania State University in University Park, Pennsylvania and at The University of Michigan in Ann Arbor, Michigan. The Penn State earth station is located on top of the Deike building in University Park Pennsylvania at 40°47'39.2"N and 77°51'55.5"W. The University of Michigan's earth station is located atop the Francois-Xavier Bagnoud Building at 42°17'36.2"N and 83°42'43.5"W.