Goddard's IceCube SmallSat Ready for Launch, Space Station Deployment

CSAB Discussion
March 30, 2017

Launch to the ISS.

- IceCube, which will measure cloud ice levels using a radiometer, is the first small satellite project managed by Goddard Space Flight Center's Wallops Flight Facility.
- After two years in the making, the 10-pound, breadloaf-sized satellite is poised to take flight on Orbital ATK's seventh contracted commercial resupply services mission to the International Space Station
  - Scheduled to launch March 19, 2017, from Cape Canaveral Air Force Station, Florida.

Global Map of Cloud Induced Radiances

- IceCube measures 10 by 10 by 30 centimeters. Despite its relatively small size, IceCube is a bonafide spacecraft complete with three-axis attitude control, deployable solar arrays and a deployable UHF communications antenna.
- Once launched and deployed from the ISS, the IceCube team will spend about two weeks conducting various check-outs on the satellite before starting the spacecraft's operational mission, which is to perform cloud ice measurements using an 883-Gigahertz radiometer.
  - IceCube will collect the first global map of cloud-induced radiances at 883-Gigahertz.

Technology Readiness Level (TRL)

- The overall objective of IceCube is to raise the TRL of the radiometer to measure cloud ice levels.
- NASA uses nine TRLs to assess the maturity level of a particular technology ranging from TRL 1, meaning basic principles have been observed, expanding up to TRL 9, which means a particular technology or system is flight-proven and successful.
- The radiometer capability for intermediate altitude cloud ice measurements is currently at TRL 6. The goal is to get to TRL 9 with IceCube.