HICO-RAIDS experiments ready for payload integration

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The Hyperspectral Imager for the Coastal Ocean (HICO) and the Remote Atmospheric and Ionospheric Detection System (RAIDS), both developed at the Naval Research Laboratory (NRL), are ready for payload integration following a fast-paced program of development and test. HICO, built by NRL's Remote Sensing Division, will be the first spaceborne hyperspectral imager optimized for characterization of the coastal environment.

RAIDS, built by NRL's Space Science Division and the Aerospace Corporation, is a hyperspectral sensor suite for global remote sensing of the Earth's thermosphere and ionosphere. HICO and RAIDS have been manifested by the DoD Space Test Program to fly aboard the International Space Station (ISS). The combined HICO-RAIDS Experiment Payload (HREP) is scheduled to launch on the demonstration flight of the Japanese H-II Transfer Vehicle in September 2009 and to be deployed as the first U.S. payload on the Japanese Experiment Module–Exposed Facility. The payload will launch from the Tanegashima Space Center located off the southern coast of Japan.

The HICO instrument design is based on aircraft hyperspectral imagers optimized for the coastal zone that have been built and flown by the Remote Sensing Division for over a decade. The HICO team, led by Mike Corson, head of NRL's Coastal and Ocean Remote Sensing Branch, designed, built and tested HICO in only 16 months. The HICO instrument incorporates Commercial Off The Shelf (COTS) components, including a CCD camera, rotation mechanism, and

computer to reduce schedule and cost.

The RAIDS Team, led by Scott Budzien in NRL's Space Science Division, Solar Physics Branch, pursued a very aggressive schedule to refurbish and refit, test, and deliver the experiment hardware for HREP payload integration in just over 13 months. Researchers have completed sensor modifications to achieve refocused science goals, thermal and mechanical accommodations for the ISS orbit, and safety-related changes.

Environmental qualification testing for both instruments was performed on-site at NRL in the Naval Center for Space Technology facilities. Vibration testing and thermal vacuum testing of RAIDS concluded successfully July 20, and the experiment was delivered to HREP on August 12. Environmental qualification of HICO paid special attention to the COTS components, and HICO was delivered for integration on August 13.

The RAIDS experiment was originally developed through the support of the Office of Naval Research and the DoD Space Test Program to fly aboard the NOAA-J satellite, and both organizations provided support to refit and integrate the experiment for this new ISS mission opportunity. HICO was designed and built under the sponsorship of the Office of Naval Research, as part of ONR's Innovative Naval Prototype program.

Source: Naval Research Laboratory