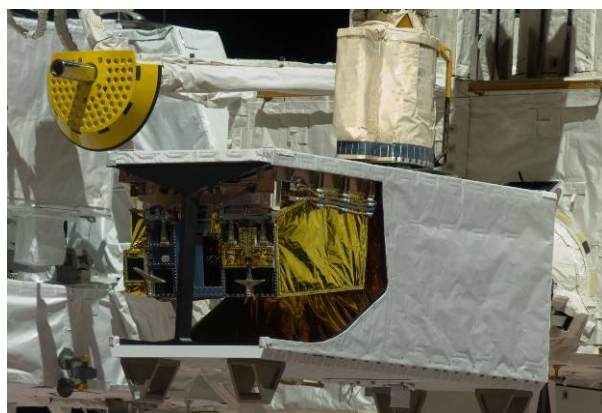
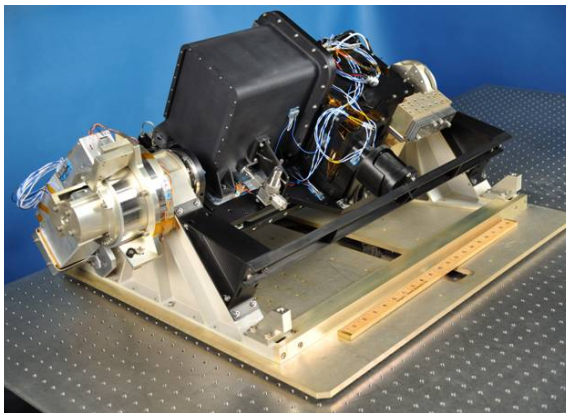


The Hyperspectral Imager for the Coastal Ocean (HICO)

The Hyperspectral Imager for the Coastal Ocean (HICO; Corson et al. 2008) is an imaging spectrometer based on the PHILLS airborne imaging spectrometers (Davis et al. 2002). HICO is the first spaceborne imaging spectrometer designed specifically to sample the coastal ocean. HICO will sample selected coastal regions at approximately 90 m with full spectral coverage (380 to 900 nm sampled at 5.7 nm) and a high signal-to-noise ratio to resolve the complexity of the coastal ocean. HICO is sponsored by the Office of Naval Research as an Innovative Naval Prototype (INP), and will demonstrate coastal products including water clarity, bottom types, and bathymetry and on-shore vegetation maps. As an INP, HICO also demonstrates innovative ways to reduce the cost and schedule of this space mission by adapting proven PHILLS aircraft imager architecture and using Commercial Off-The-Shelf (COTS) components where possible.

The HICO program was initiated in February 2006. In January 2007 HICO was selected to fly on the Japanese Experiment Module Exposed Facility (JEM-EF) on the International Space Station. Construction began following the Critical Design Review on November 15, 2007. HICO was completed in July 2008 and it was integrated into the HICO and RAIDS Experimental Payload ([HREP](#)) in August 2008. HICO is integrated into HREP and flown with support and direction from DOD's Space Test Program. HREP has also received support from NASA and JAXA as the first US experiment payload on the JEM-EF. Environmental testing of HREP was completed at NRL and NASA's Marshall Space Flight Center and HREP was shipped to Japan on April 9, 2009. HREP was launched on the H-2 Transfer Vehicle (HTV) September 10, 2009. The HTV rendezvoused with the ISS on September 17, 2009. The first HICO imagery was collected on September 25, 2009. HICO is operating normally and Image quality is excellent as indicated by the image of the waters off Hong Kong. HICO is currently in the on-orbit calibration and data checkout phase.

Left, the completed HICO instrument before it was integrated into HREP (NRL photo). Right, HREP installed on the JEM-EF on the International Space Station. RAIDS is the gold foil covered instrument in the left front and HICO is in the back right looking down through a slit. (NASA Photo ISS020E041992).





RGB image of the Waters off Hong Kong, China made from three channels of HICO data (NRL image). Hong Kong is in the upper left of the image the orientation is from SW on the left to NE on the right.

Corson, M. R., D. R. Korwan, R. L. Lucke, W. A. Snyder and C. O. Davis, 2008, The Hyperspectral Imager For The Coastal Ocean (HICO) On The International Space Station, IEEE Proceedings of the International Geoscience and Remote Sensing Symposium, 978-1-4244-2808-3/08.

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