

**CIOSS: Cooperative Institute  
for Oceanographic Satellite Studies**  
*Capabilities in Ocean Remote Sensing*

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*GOES-R Science Week:  
2011 Risk Reduction Annual Meeting*

# CIOSS – Oregon State University

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## Ocean Remote Sensing:

- \* Direct Down-Link Station –X-Band, L-Bank: Primarily VIIRS, MODIS and International POES – **Multi-Platform Cal/Val** ←
- Cal/Val: Ocean Color/Optics – VIIRS, MODIS, Int’l Satellites
- Product Evaluation: SST (POES/GOES Blended Products)
- Product Development: Coastal Extensions of Satellite Fields
- \*\* Product Development: Assimilate SST into Ocean Forecast Models (See posters)

## Atmospheric Remote Sensing:

- Integrated Model/Data Analysis
- Stratus Decks off Peru-Chile: VOCALS
- High-Resolution Equatorial Convection Model/Data Analysis

## “Terrestrial” Remote Sensing:

- Ice, Forestry/Agriculture Applications, GIS

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## Example of Capabilities: GOES-R HES Coastal Imager:

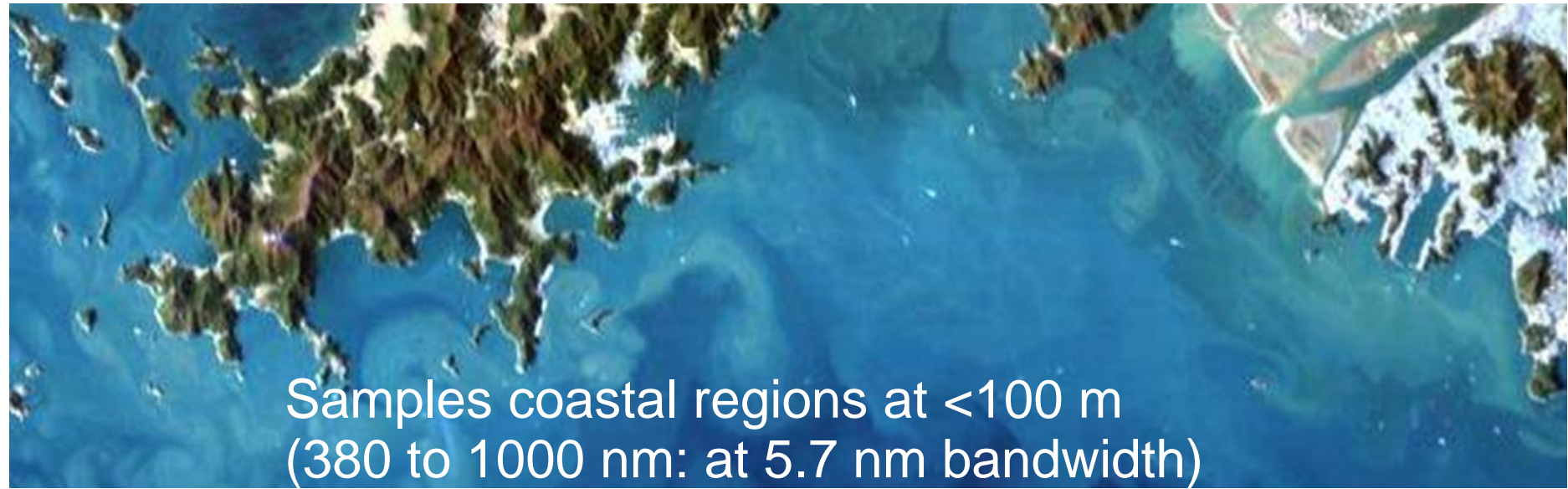
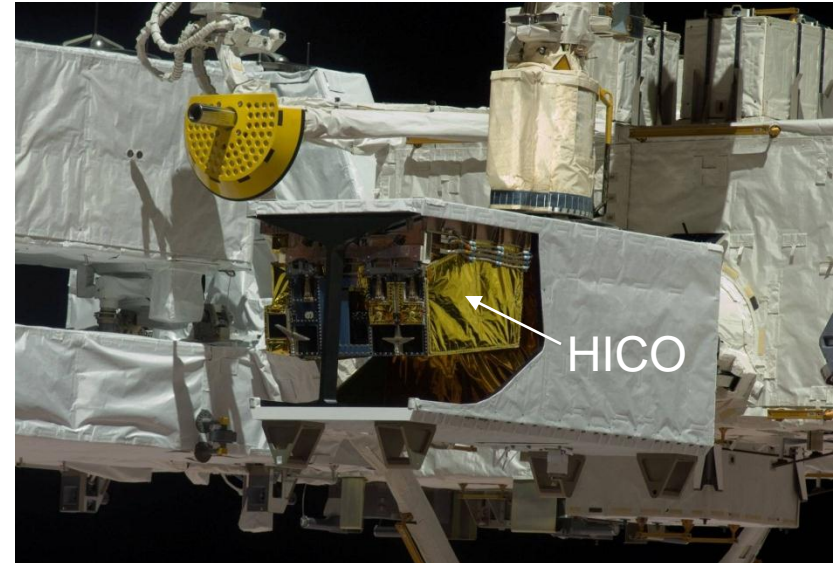
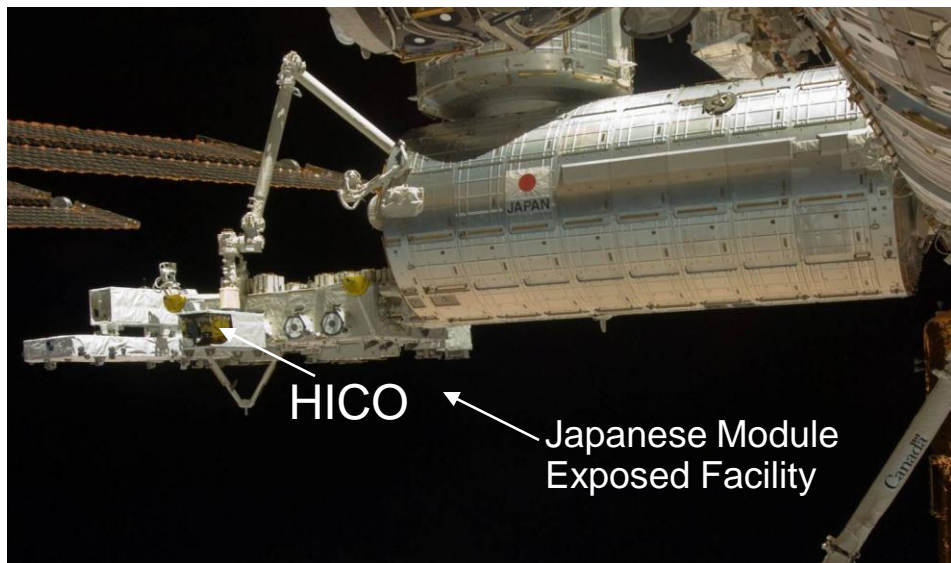
2004: GOES-R3 National team of ocean optics experts was assembled. It quickly developed the requirements for a geostationary hyperspectral sensor that would provide high resolution spatial fields of ocean bio-optics in coastal regions. Resolution of the diurnal changes in bio-optics is necessary for a number of applications, including harmful algal bloom development and coastline impacts, water quality, fisheries and marine spatial planning.

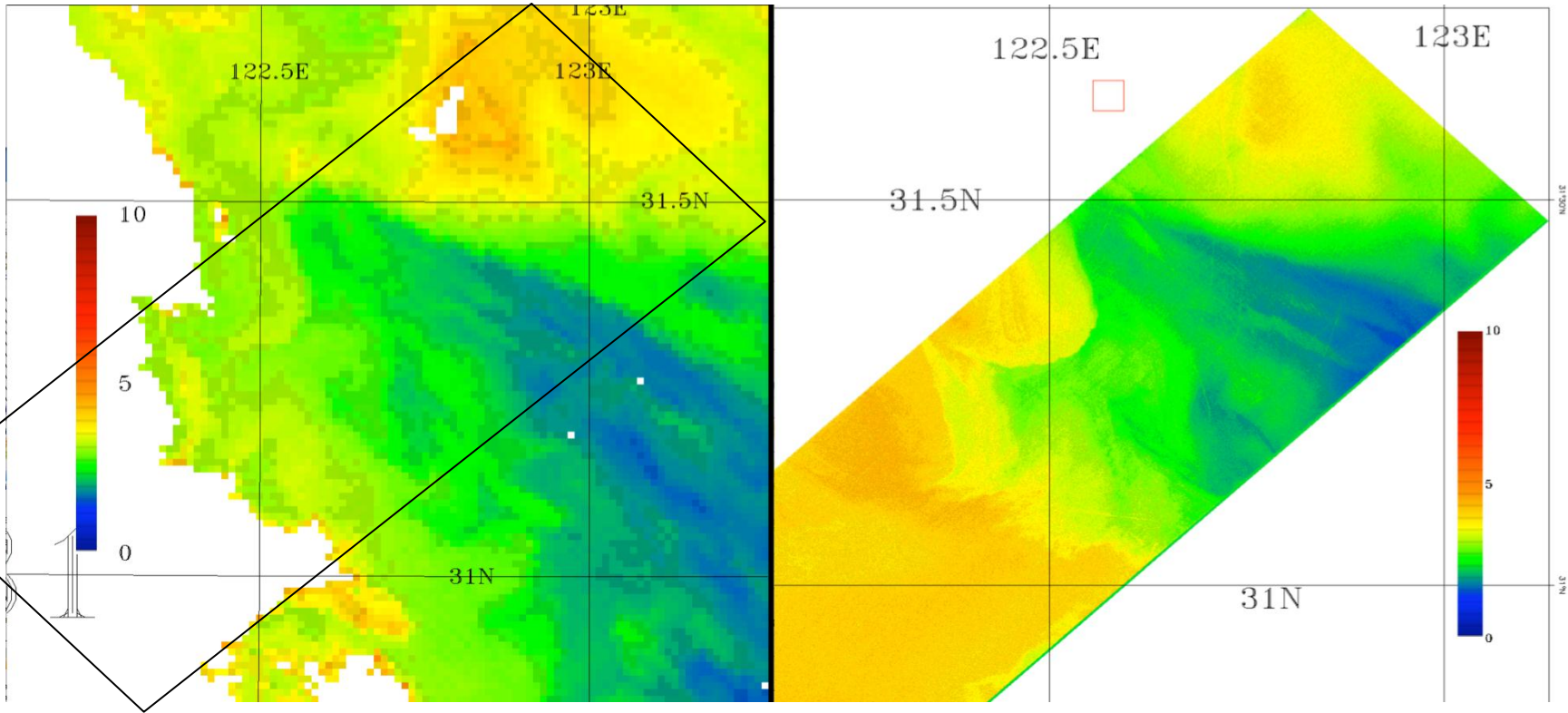
2006: HES was cancelled. Members of the team then proposed, developed and worked with ONR to launch HICO, presently flying on the International Space Station. Curt Davis (CIOSS) and Bob Arnone (ONR) are the PI's on the project. Follow-on hyperspectral sensors are being proposed now.



# Hyperspectral Imager for the Coastal Ocean HICO

Installed on the ISS on September 24, 2009





Nearly coincident MODIS and HICO™ images of the Yangtze River, China taken on January 18, 2010. Left, MODIS image (0500 GMT) of Chlorophyll-a Concentration (mg/m<sup>3</sup>) standard product from GSFC. The box indicates the location of the HICO image relative to the MODIS image. Right, HICO™ image (0440 GMT) of Chlorophyll-a Concentration (mg/m<sup>3</sup>) from HICO™ data using ATREM atmospheric correction and a standard chlorophyll algorithm. (Preliminary Results by R-R Li and B-C Gao.)

# New Receiving Station in 2011

- New receiving station and antenna being installed this year to receive:
  - MODIS –replacement antenna
  - NOAA and NASA are completing agreements with the Indian space Agency ISRO to receive OCM-2 full resolution (250m) data at US receiving sites
    - OSU station being modified to be the West Coast site for OCM-2 data under NOAA funding
  - VIIRS on NPP and JPSS satellites
- • antenna and software to collect VIIRS data after launch on NPP in 2011
- Intensive cal/val program for NPP VIIRS to
  - Make best use of data
  - Prepare for future VIIRS instruments
  - OSU providing in situ data for Oregon Coast and Hawaii Ocean Time series
- • Developing software for automated match up of VIIRS, MODIS, MERIS, HICO and in situ data.
- • Could be used for multi-platform GOES/POES multi-spectral (using HICO data) comparisons and Cal/Val analyses: SST, Cloud product development/evaluation?



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