

The logo for CUNY CAT features the letters 'CUNY' in white on a blue square background, followed by 'CAT' in large black letters. To the right of the logo, the text 'Technology Opportunity' is written in blue, and 'Remote Sensing Laboratory at CCNY' is written in black.

Technology Opportunity Remote Sensing Laboratory at CCNY

The CUNY Center for Advanced Technology In Photonics Applications (CUNY CAT)
Designated by NYSTAR, the New York State Foundation for Science, Technology and Innovation

Introduction

The Ocean Group of the Remote Sensing Laboratory at CCNY works on the development, testing and validation of algorithms for the remote sensing of ocean water quality. Water quality information is obtained through the retrievals of its optical properties, both for open ocean and coastal waters. Primary sensing is by means of satellite observations and in-situ measurements from boats. The work involves field measurements and analysis of satellite imagery from US and international satellites and extensive analysis and processing typically involving radiative transfer simulations. During the last 5 years, the laboratory has developed extensive experience in observation techniques and the development of specialized instrumentation used on several cruises in Puerto Rico, the Chesapeake Bay, Georgia waters, Peconic Bay, Hudson River, Long Island Sound, etc. together with multiple partners from other universities and government agencies (NASA, NOAA, NERR).

Capabilities of the Ocean Group at CCNY

The current measurement suite used includes: Depth profilers for the water's optical properties using an instrument package consisting of an AC-S, which measures water absorption and attenuation spectra (82 spectral channels from 400 to 750 nm); a BB9, which measures backscattering at 7 wavelengths and chlorophyll and CDOM fluorescence (proportional to [Chl] and CDOM concentrations) at 2 other channels and a CTD, which measures temperature, salinity and depth. Depth profiles of the reflectance spectra are measured with a Hyperspectral Profiler with underwater radiance and irradiance sensors (137 channels from 350 nm to 800 nm) and an additional irradiance sensor for down-welling irradiance. Additional reflectance spectra from water are measured by a GER spectroradiometer. These field data are complemented by a sampling component which includes the physical collection of water samples. These give us [Chl] and concentrations of organic and inorganic particulate components in accordance with NASA protocols. We are also in the process of developing hydrodynamic models which incorporate remote sensing data for better monitoring of water components and pollutions. Additionally, since the signal from the ocean surface is very low in comparison with signals from atmospheric molecules and aerosols, atmospheric correction is a critical part of satellite retrieval algorithms especially for coastal waters. The lab has made significant advances in this area.

Possible Areas Of Collaboration

Include instrumentation development, providing analytical and evaluation capabilities, these can be related to both theoretical and experimental aspects, including simulations and field testing, joint field campaigns etc. Intellectual property includes a polarization discrimination technique, and an instrument which may be of interest for commercialization.

This technology opportunity sheet describes continuing efforts in this area. Several patents may have been issued or are pending and which may be available for licensing.

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