

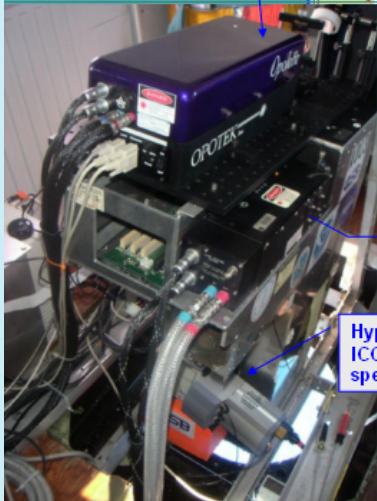


## NASA Prototype Fluorescence

### Excitation/Emission LIDAR

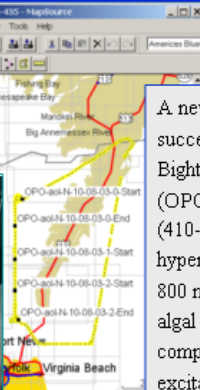
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Opolette optical  
parametric  
oscillator



YAG  
laser

Hyperspectral  
ICCD  
spectrometer



A new prototype NASA airborne LIDAR system was built and successfully tested in the Chesapeake Bay and Middle Atlantic Bight. It uniquely combines an optical parametric oscillator (OPO) for wavelength-tunable remote fluorescence excitation (410-670 nm) and an intensified CCD (ICCD) spectrometer for hyperspectral analysis of the backscattered LIDAR signal (400-800 nm). This provides potential for remote identification of algal species and characterization of phytoplankton pigment composition. The OPO/ICCD system is also utilized as a laser excitation/emission matrix (LEEM) 3D fluorometer for laboratory and shipboard pigment analysis.

