

Title: HYPERSENSPECTRAL REMOTE SENSING PROTOCOL
FOR SUBMERGED AQUATIC VEGETATION IN
SHALLOW WATERS

PI: DR. CHARLES BOSTATER

Award: \$440,000.00 TO FIT

NASA Center: STENNIS SPACE CENTER
(CO-OPERATIVE PROJECT: KENNEDY SPACE
CENTER & ST. JOHNS WATER MANAGEMENT
DISTRICT -\$880.000 TOAL NASA STENNIS
AWARD.

Aircraft, satellite and ground based hyperspectral remote sensing (active & passive) techniques pioneered by Dr. Charles Bostater and his graduate research team will be used to demonstrate techniques for detection of submerged land features using a combination of aircraft, satellite and ground based measurement reflectance signatures. The purpose of the project will be the demonstration of a protocol for detection of submerged aquatic vegetation in shallow waters such as Indian River Lagoon, and other coastal and estuarine waters in the United States. The research involves the application of hyperspectral radiative transfer models developed by Dr. Bostater, to optically shallow water types for development of scientifically based remote sensing algorithms. The spectral signatures and synthetic hyperspectral images generated on the FIT Beowulf supercomputer form the basis of testing the synthetic image generation techniques and testing of the submerged target algorithms for application to airborne imagery collected in the Indian River Lagoon. The project will compare and assess the capability of existing digital hyperspectral remote sensing systems to high resolution aerial photography (1 meter pixel resolution) for detection of submerged land types and associated target identification purposes. The techniques being used are also applicable for use in water quality monitoring and associated activities by state and federal agencies.