

**UNIVERSITY GRADUATE SCHOOL BULLETIN
ANNOUNCEMENT**

Florida International University
University Graduate School

Master's Thesis Defense

Abstract

Developing Ocean Color Algorithm Using Moderate Resolution Imaging
Spectroradiometer (MODIS) Sensor for Shallow Coastal Water Bodies

by

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The purposes of the study were to analyze the spatial and temporal variability of chlorophyll-a in Chesapeake Bay; assess the performance of Ocean Color 3M (OC3M) algorithm; and develop a novel ocean color algorithm to estimate chlorophyll-a for coastal shallow water.

The chlorophyll-a concentration in the major part of the Bay was above the threshold level. The OC3M algorithm yields accurate estimate of chlorophyll-a concentration for deep ocean water (RMSE=0.016) but it failed to perform well in coastal water system (RMSE=23.17) of Chesapeake Bay. A novel algorithm was developed which utilizes green and red bands of the Moderate Resolution Imaging Spectroradiometer (MODIS) sensor. The novel algorithm derived chlorophyll-a concentration more accurately in Chesapeake Bay (RMSE=4.20).

The study indicated that algorithm that uses red bands could improve the satellite estimation of chlorophyll-a in coastal water system by reducing the noise due to bottom reflectance and CDOM.

Date: June 20, 2018

Time: 10.00 a.m.

Place: University Park, AHC5 300

Department: Earth and Environment

Major Professor: Dr. Assefa Melesse