Monday, October 8
Poster Session 1
16:00–18:00

Poster 133

ADAPTING CURRENT STATE OF ART: A MULTI-SENSOR APPROACH FOR MONITORING CYANOBACTERIAL HARMFUL ALGAL BLOOMS ALONG FRESHWATER-MARINE CONTINUUM

Cyanobacterial Harmful Algal Blooms (CyanoHABs) have become a major water quality and public health issue in aquatic environments where they can degrade habitats through fish kills, and potentially affect human and animal health via their toxins. Despite their significant economic impacts, major risks posed to environment, ecosystem, human and animal health there is no established rapid monitoring program to periodically evaluate the spatial distribution of CyanoHABs in inland and coastal waters. This study investigated the potential of synergistic use of multiple satellite sensors (Sentinel 3- OLCI, Sentinel 2-MSI, Terra/MODIS, Landsat 8-OLI) for identifying the occurrence, extent, intensity, and duration of CyanoHABs along freshwater-marine continuum. A case study of historic CyanoHAB event in Lake Okeechobee and St. Lucie River Estuary (SLRE) was analyzed, which caused state of emergency in many counties of Florida during summer 2016. The analysis involved a novel way to utilize multi-platform data to track the bloom pattern using floating algal index, normalized difference chlorophyll index, and cyanobacteria cell density maps. Spatio-temporal maps from multiple sensors revealed that, the bloom was transported from Lake Okeechobee towards SLRE through a C-44 canal. The significantly large amount (237 billion gallons) of discharged water from Lake Okeechobee might have reduced the salinity level of SLRE and supported the bloom formation in this estuarine system. The multi-sensor approach presented in this study will allow accurate, inexpensive and rapid monitoring of CyanoHABs and help water resource, environmental and human health managers to identify potential areas of concern to take necessary action in advance.

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