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

Poster 232

DETECTION OF HARMFUL ALGAL BLOOMS THROUGH THE COMBINATION OF (SENTINEL-3) OPTICAL SATELLITE DATA WITH ECOLOGICAL ASSOCIATIONS

High frequency monitoring through satellite remote sensing has been beneficial in protecting public and environmental health in several key US waterways. In most instances, the success of these tools relies on strong optical signatures of some high biomass harmful algal bloom species (HABs). Some nearly monospecific blooms, like Karenia in the Gulf of Mexico and Microcystis in Lake Erie, so dominate their environment at certain times that they are readily identifiable with optical satellites. In Chesapeake Bay, a variety of dense algal blooms appear. While these can be detected from satellite, they cannot necessarily be distinguished only with satellite data. Examples range from mono-specific blooms of Alexandrium monilatum and Margalefidinium polykrikoides in the southern bay, to both monospecific and mixed assemblage blooms of dinoflagellates and diatoms in the northern bay. However, these mixed assemblages may be identifiable by combining satellite algorithms with additional ecological data. An approach using optical detection combined with ecological associations may aid in further classification of blooms (e.g., Heterocapsa blooms during the winter). Several algorithms applied to the Sentinel-3 Ocean and Land Colour Imager (OLCI) have improved our ability to detect and characterize algal blooms at higher resolution. Heuristic models constructed with information regarding the ecological niche of individual species (time of year; bloom succession; salinity, temperature and nutrient regimes), can enhance the satellite data, leading to the potential for a real-time monitoring system for HAB events in Chesapeake Bay.

Richard Stumpf, NOAA, richard.stumpf@noaa.gov, https://orcid.org/0000-0001-5531-6860
Michelle Tomlinson, NOAA, michelle.tomlinson@noaa.gov
Danielle Dupuy, CSS, danielle.dupuy@noaa.gov
Kimberly Reece, Virginia Institute of Marine Science, kreece@vims.edu
Todd Egerton, Virginia Department of Health, todd.egerton@vdh.virginia.gov
Jennifer Wolny, Maryland Department of Natural Resources, jennifer.wolny@maryland.gov