



Remote Sensing Harmful Algal Bloom Workshop

CHESAPEAKE AND COASTAL BAYS REGION

Thursday, May 1, 2014

O'Callaghan Hotel, 174 West Street, Annapolis, Maryland



REMOTE SENSING HARMFUL ALGAL BLOOMS POTENTIAL PRODUCTS

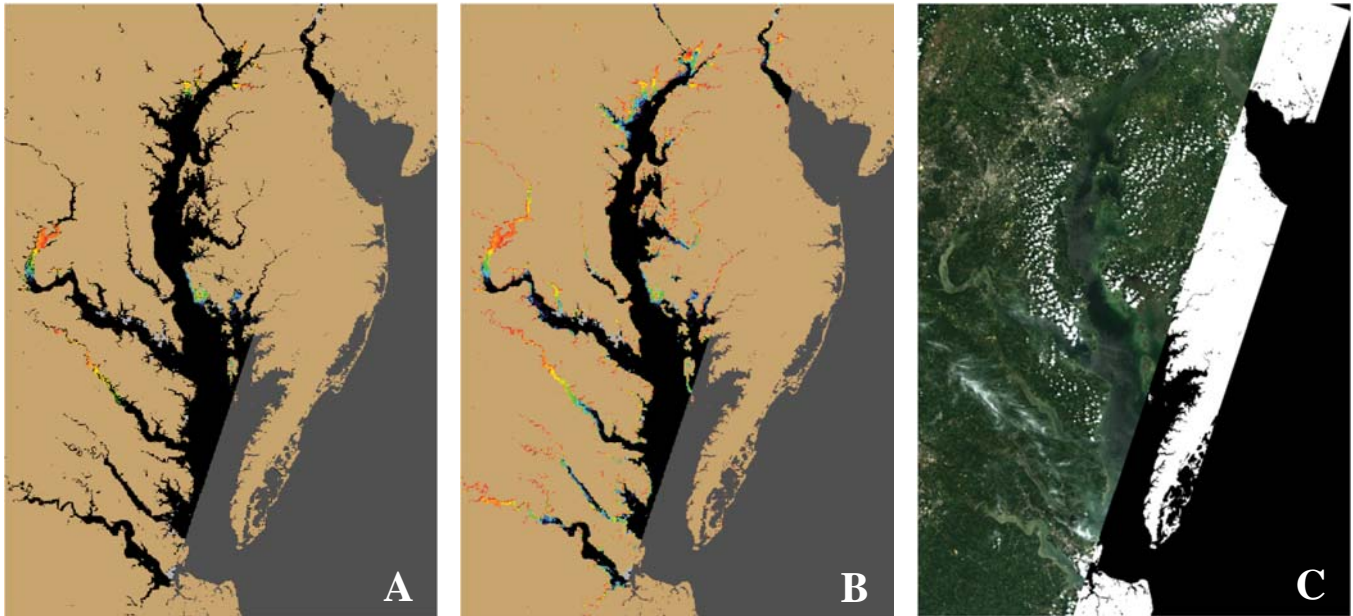
NATIONAL CENTERS FOR COASTAL OCEAN SCIENCE (NCCOS)

SCIENCE SERVING COASTAL COMMUNITIES

Satellite imagery can help in monitoring for harmful algal blooms (HABs), especially cyanobacteria species and high concentration events for other bloom taxa. Satellite imagery data collected from the European Space Agency's MERIS instrument has been particularly effective with its 300 m resolution, 2-day repeat orbit, and sufficient spectral bands to estimate biomass and detect cyanobacteria blooms in estuaries and lakes. While MERIS data ceased in 2012, the Ocean Land Colour Imagery (OLCI) instrument will replace this capability when its host satellite is launched next year. MERIS-calibrated products should be directly transferable to OLCI. In addition, the Moderate Resolution Imaging Spectrometer (MODIS) sensor is available and provides a chlorophyll product. However, due to the limitations in spatial (1,000 m resolution) and spectral resolution, MERIS is more suitable for use in the Chesapeake and coastal bays.

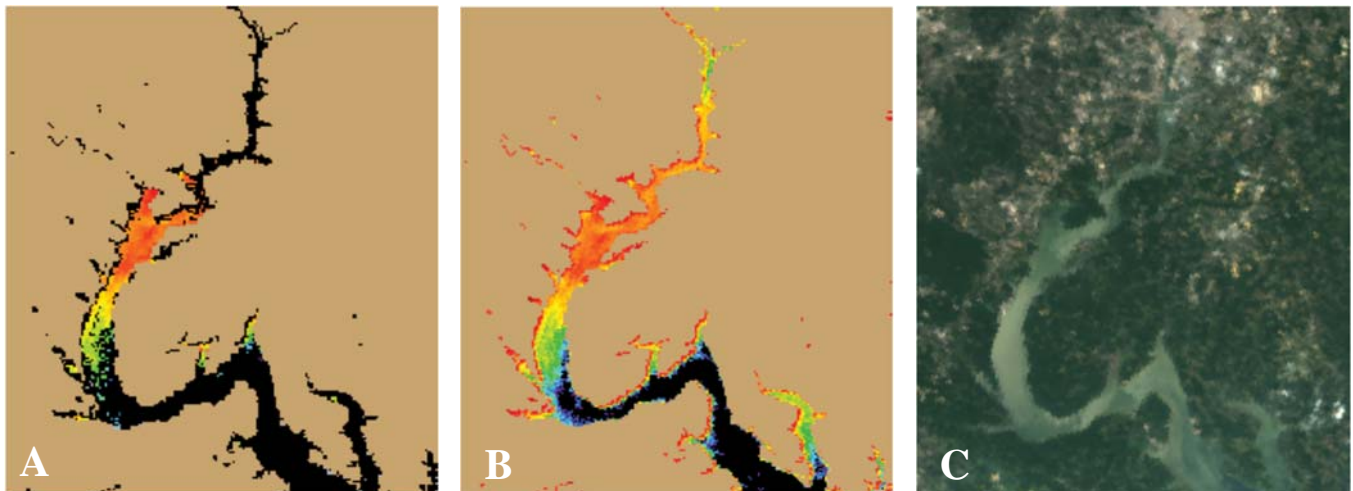
Example remote sensing products for the Chesapeake and coastal bays could include materials such as the GIS format images, as seen below. Additionally, bulletins, similar to those disseminated for Lake Erie and Florida, could be developed to disseminate remote sensing products and information. Example bulletins are included in the workshop materials for both Florida and Lake Erie. The bulletins are distributed via email to subscribers once-to-twice a week during active HAB periods. The subscriber list often includes members from public health, natural resources, and scientific fields. The bulletins can contain information regarding forecasts, field operations, public health information, buoy data, models, and analyses of ocean color satellite imagery. More information regarding these bulletins can be found on NOAA's tides and currents website, www.tidesandcurrents.noaa.gov/hab/bulletins.html. *Note: The lower resolution MODIS sensor has provided adequate data to continue the Lake Erie bulletin in summers of 2012 and 2013.*

AUGUST 23, 2011 EXAMPLE CHESAPEAKE BAY IMAGERY



MERIS high resolution (300m) images for Chesapeake Bay on August 23, 2011. (A) Cyanobacterial Index (CI_{multi}) image showing location of cyanobacterial blooms throughout the Chesapeake Bay. A large confirmed *Microcystis aeruginosa* bloom is visible in the Potomac River. (B) A more general Bloom Index (CI) product showing all blooms detected in the CB for the day. In both (A) and (B) warmer colors indicate higher biomass. (C) True color image. *Note: True color imagery is not conducive to monitoring blooms.*

AUGUST 12, 2011 EXAMPLE POTOMAC RIVER IMAGERY



MERIS high resolution (300 m) images for the Potomac River on August 12, 2011. (A) Cyanobacterial Index image showing location of *M. aeruginosa* bloom. (B) Bloom Index product showing all blooms. (C) True color image.

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