

NOAA SENTINEL SITE PROGRAM

Chesapeake Bay Sentinel Site Cooperative

Website:

<http://oceanservice.noaa.gov/sentinelsites/welcome.html>

NOAA Sentinel Site Program: The NOAA Sentinel Site Program (SSP) utilizes existing assets, programs, and resources in a place-based, issue-driven approach to ask and answer questions of local, regional, and national significance that affect both NOAA Trust Resources and the surrounding communities.

Abstract

The Chesapeake Bay area, located in NOAA's Northeast Region, showcases the benefit of integrating existing sentinel stations and sentinel sites into NOAA's Sentinel Site Program. The Chesapeake Bay Sentinel Site Cooperative functions within a coherent geography providing integrated observations across a host of environmental monitoring programs. The Cooperative provides information to Chesapeake Bay communities and managers who need to address challenges such as storm flooding, long-term sea level rise, local sea level rise, barrier island movement, degraded water quality, and wetland loss. The information is also useful to federal and state restoration planners and living resource managers who are addressing these challenges.



Available Assets

- 20 NOAA tide stations, including 14 National Water Level Observing (NWLON) system gauges with long term sea level trends available
- Numerous historic tide gauge datasets and water level observations from other agencies (e.g. USGS, USACE, the Smithsonian Institution, US Fish & Wildlife Service, National Park Service)
- Over 30 active Continuously Operating GPS Reference Stations (CORS) within 20 miles of the coast or coastal estuaries, including one co-located at a NWLON tide station (Solomon's Island)
- Over 50 surface elevation table (SET) datasets connected to the National Spatial Reference System for monitoring wetland elevation change (over 200 SET datasets available through sister agencies, including over one hundred sites within Blackwater National Wildlife Refuge)
- Chesapeake Bay Operational Forecast System II (CBOFS II): a full 3D coastal hydrodynamic model for tides, currents, and storm surge developed by NOAA Office of Coast Survey (OCS)
- Nested hydrodynamic model for Poplar Island: based on a nested grid within the CBOFS II, Poplar Island is a model for how local sea level rise impacts can be included within a cutting edge physical hydrodynamic model
- NOAA VDatum: sea surface topography model defined for entire Chesapeake Bay and Atlantic coast, used to estimate locally defined tidal datums such as mean sea level
- Local high accuracy geodetic control networks with permanent survey markers within 7 sites across the Bay (4 in VA, 3 in MD)
- NOAA Chesapeake Bay Interpretive Buoy System (CBIBS): a network of Integrated Ocean Observing System (IOOS) based observing platforms that transmit information using wireless technology



- Chesapeake Bay Observing System (federal, state, university, bay-wide collaborative effort)
- Wetland elevation monitoring along fire management regimes at Blackwater NWR (U.S. Fish and Wildlife Service in collaboration with NOAA, using GPS technology)
- Southern Chesapeake Bay Shallow Water Quality Monitoring Program
- Virginia Estuarine and Coastal Observing System (VECOS): website designed to distribute water quality data sampled from the Chesapeake Bay and associated tributaries within Virginia• Marsh community assessments (e.g. species distribution, abundance, and diversity) in numerous wetland habitats, from coastal salt marshes to tidal fresh marshes.
- Marsh productivity (e.g. above and below ground biomass) and Submerged Aquatic Vegetation surveys within 7 National Estuarine Research Reserve (NERR) sites
- Extensive benthic habitat survey data
- Nekton productivity (e.g. recruitment)
- Ground water dynamics in seven wetland NERR sites
- NOAA Coast Watch (East Coast Node): disseminating satellite imagery data, including models of chlorophyll, turbidity, and water temperature
- Watershed-scale habitat mapping and change analysis at Virginia and Maryland Chesapeake Bay NERRs
- Enhancement of local U.S. Geological Survey (USGS)/Virginia Institute of Marine Sciences (VIMS) York River sea level rise and salt intrusion hydrodynamic model
- Vital signs monitoring of estuarine conditions at three Virginia National Park Service Parks
- Historical analysis of wetland change: GIS study quantifying wetland change/loss over time (Chesapeake Bay NERR)
- Comprehensive assessment of areas sensitive to coastal flooding
- Poplar Island case study for including sea level rise predictions in wetland creation/restoration – a multi- agency collaboration to address this critical need in the restoration community

Internal and External Partners Currently Involved

- NOAA: National Centers for Coastal Ocean Science (NCCOS), Office of Coast Survey (OCS), Coastal Services Center (CSC), Office of Ocean and Coastal Resource Management (OCRM), Emergency Response Division (ERD), National Estuarine Research Reserve (NERRS), NOAA Chesapeake Bay Office (NCBO), National Environmental Satellite, Data, and Information Services (NESDIS; CoastWatch), Center for Operational Oceanographic Products and Services (CO-OPS)
- Other Agencies: U.S. Fish and Wildlife Service, National Park Service, U.S. Geological Survey, U.S. Army Corps of Engineers, State of Maryland, Commonwealth of Virginia
- Academia: University of Maryland, Virginia Institute of Marine Science, Old Dominion University

Management Goals Addressed

Long term monitoring of sea level rise, inundation, storm impacts, water quality, and habitat suitability.

Point of Contact

Christine Gallagher
NOAA National Geodetic Survey
christine.gallagher@noaa.gov