



U.S. Fish & Wildlife Service

Leopoldo Miranda, Chesapeake Bay Field Office (leopoldo_miranda@fws.gov)
 Louise Hinds, Refuge Manager, Chincoteague NWR (louise_hinds@fws.gov)
 Bill Wilen, National Wetlands Inventory, (bill_wilen@fws.gov)

Visualizing Sea Level Rise on Coastal Marshes

Climate change contributes to sea level rise which affects coastal and wetland habitats critical to fishery and bird resources. Increased storm surges may severely degrade or destroy coastal barrier beaches. Habitat loss from sea level rise could disrupt seasonal food patterns of migrating shorebirds. These biological potential affects are often hard to visualize.

The U.S. Fish and Wildlife Service's user-friendly internet tool, Sea Level Affecting Marshes Model (SLAMM-View), that allows anyone to view simulations of sea level rise and understand the potential impacts of climate change on sea levels. SLAMM-View is a web browser-based application that displays map pairs of the same area, each at different sea levels.

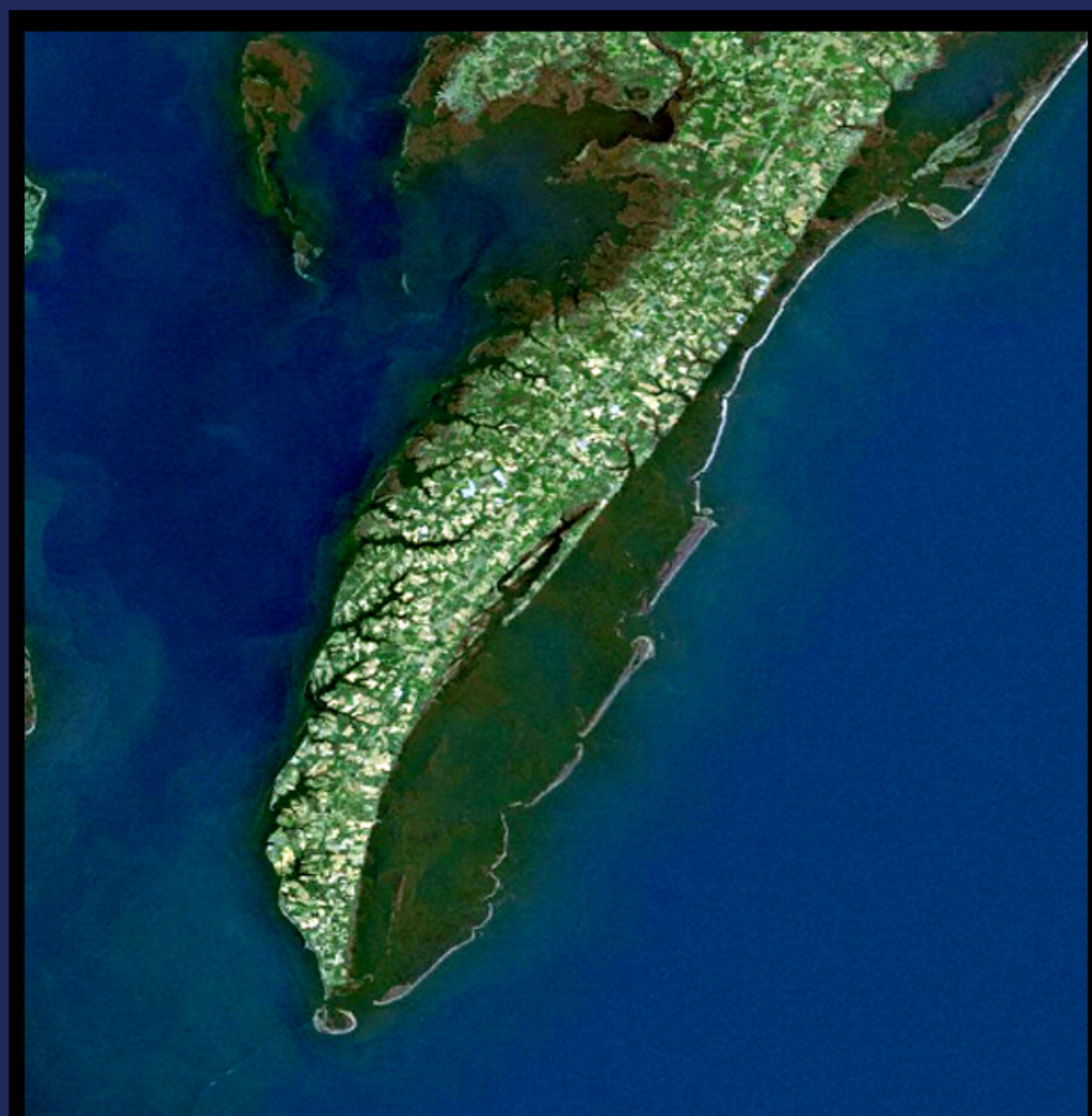
Most sea level rise models examine inundation but do not take into account the biological impacts. SLAMM also looks at sediment and organic matter accumulation on the marshes, as well as erosion, to predict changes in coastal wetlands and shorelines.

Users can select different scenarios by combining time, in 25-year intervals, at different severities (0.5 meters to 1 meter increase in sea level). One unique aspect of SLAMM is that the dual maps are geographically-linked: zooming or panning in one map causes an identical alteration in the other map.

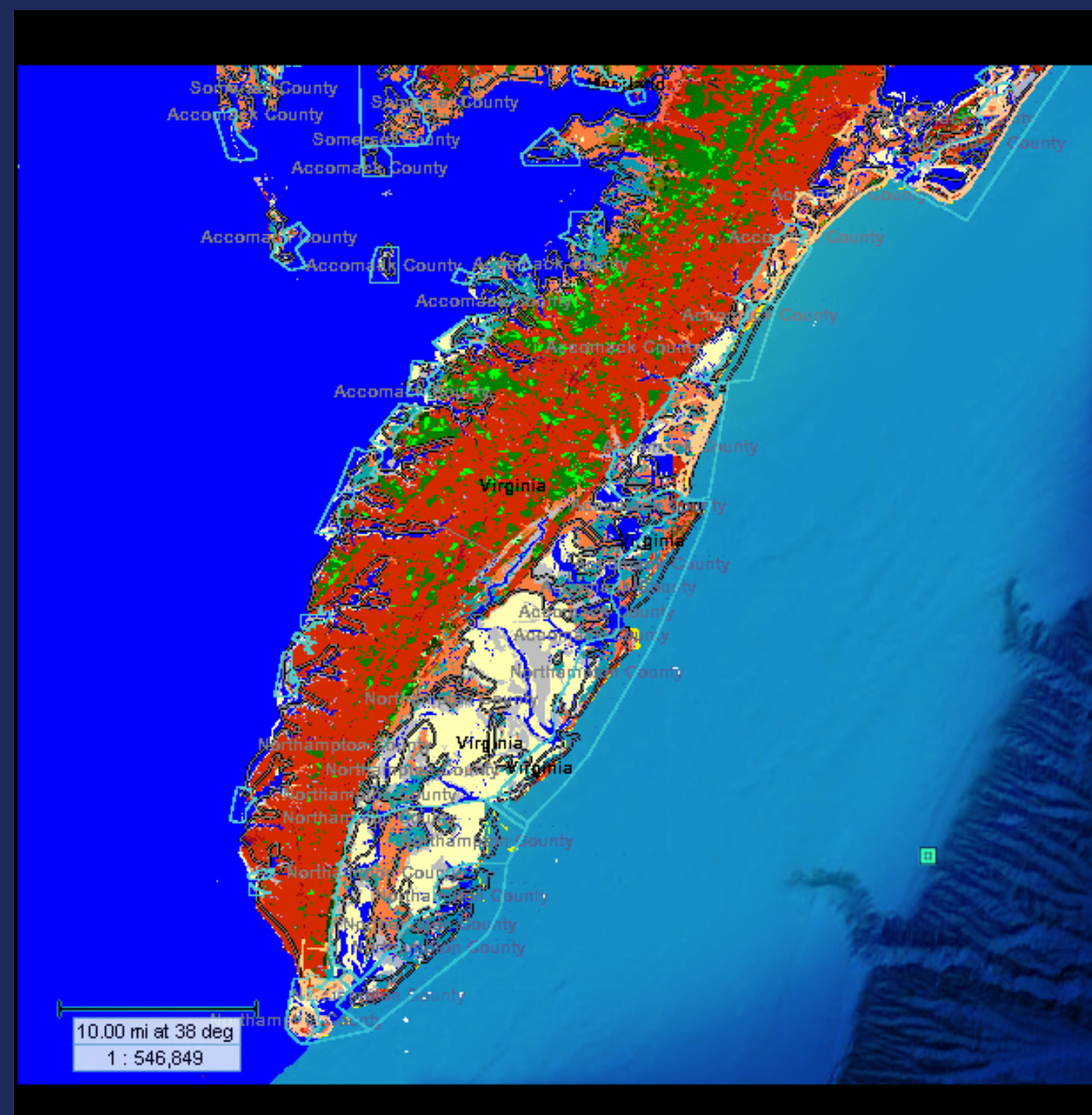
Regional simulations have been posted on SLAMM-View for a number of important estuaries, including Chesapeake Bay, Delaware Bay, coastal South Carolina, coastal Georgia, and Puget Sound. And recently, site-specific results for the Chincoteague National Wildlife Refuge and surrounding area have been made available through SLAMM-View.

Sea level rise is one of the most pressing issues that many coastal communities and National Wildlife Refuges will face in the future. SLAMM will be used by many coastal land managers to create conservation plans that incorporate these potentially dramatic changes due to climate change and rising sea levels.

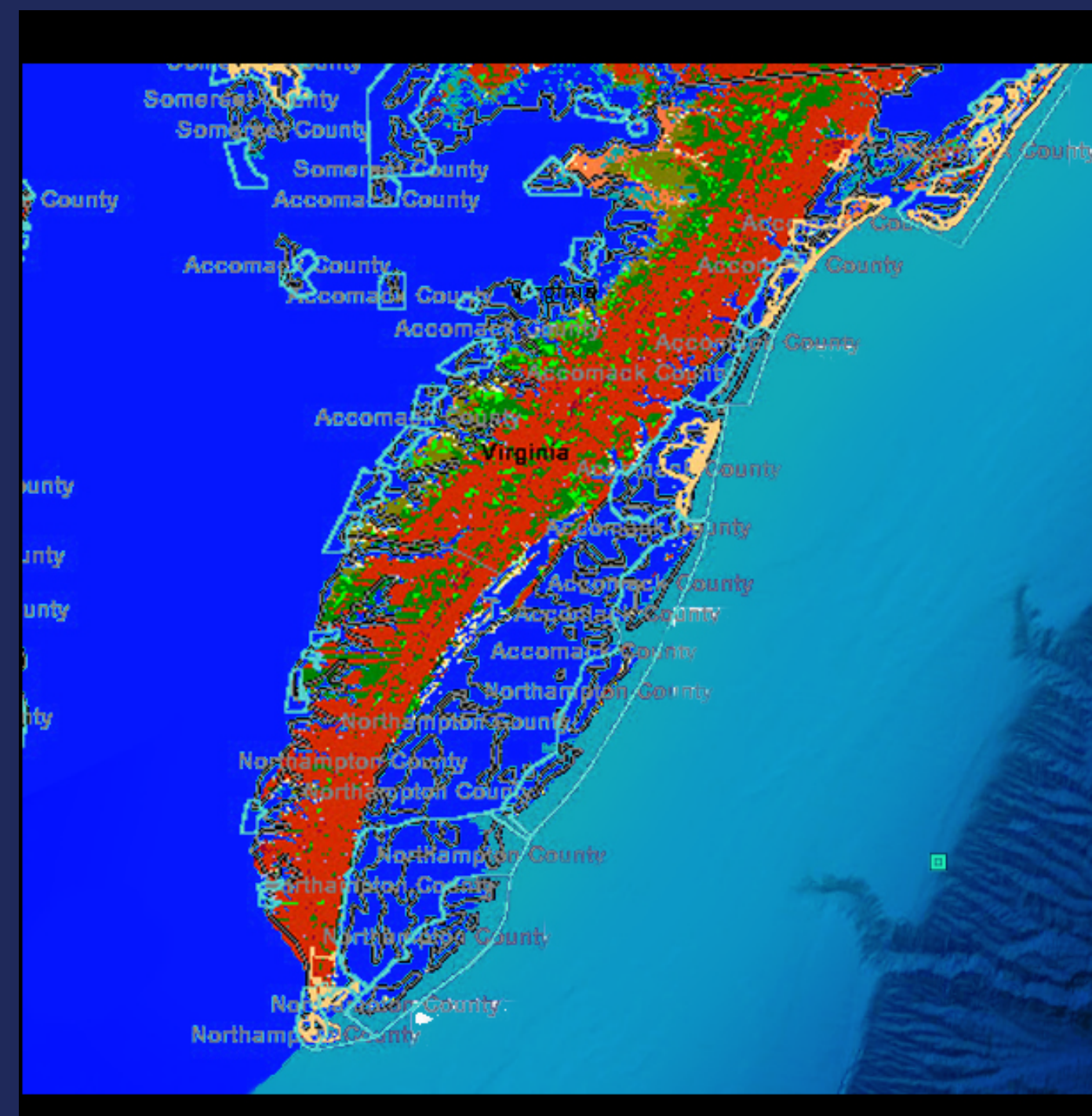
- Developed dry land
- Swamp
- Inland fresh marsh
- Trans. salt marsh
- Estuarine beach
- Ocean beach
- Inland open water
- Estuarine open water
- Open ocean
- Freshwater shoreline
- Undeveloped dry land
- Cypress swamp
- Tidal fresh marsh
- Reg. flooded marsh
- Tidal flat
- Rocky intertidal
- Riverine tidal open water
- Tidal creek
- Irreg. flooded marsh
- Tidal swamp



Map showing a satellite image of southern Delmarva Peninsula/Chincoteague NWR



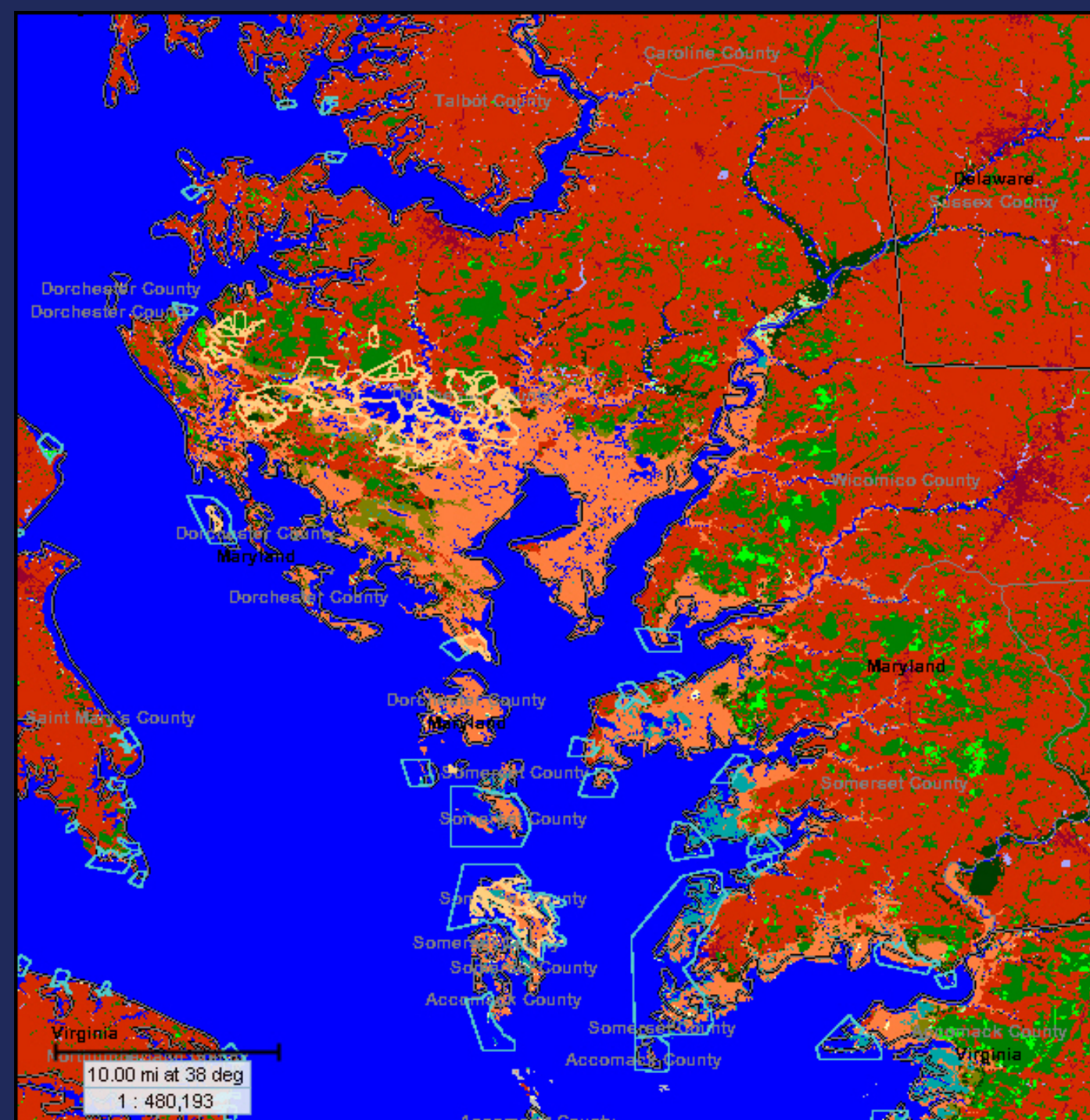
Map showing southern Delmarva Peninsula/Chincoteague NWR using baseline Scenario 3 SLAMM map



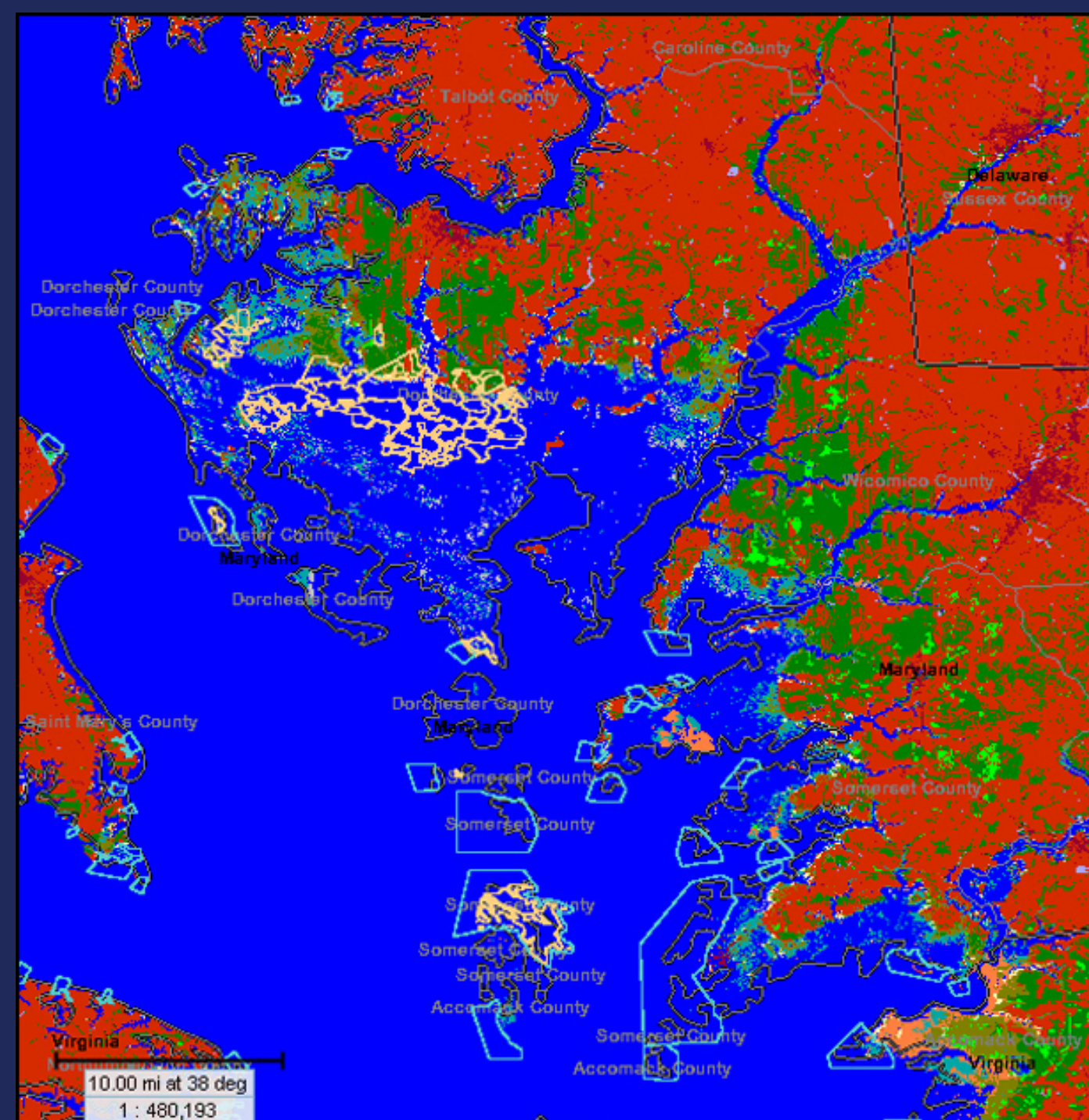
Map showing southern Delmarva Peninsula/Chincoteague NWR using the 2100 projection of Scenario 3 SLAMM map



Map showing a satellite image of Blackwater NWR



Map showing Blackwater NWR using baseline Scenario 3 SLAMM map



Map showing Blackwater NWR using the 2100 projection of Scenario 3 SLAMM map

For more information: go to <http://www.fws.gov/slamm/>