

Sensors more accurately map the Chesapeake Bay's forested wetlands

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Two U.S. Department of Agriculture (USDA) scientists have created new maps of Chesapeake Bay forested wetlands that are about 30 percent more accurate than existing maps.

Agricultural Research Service (ARS) soil scientist Greg McCarty and USDA Forest Service ecologist Megan Lang did this by merging two remote sensing devices: an airborne LiDAR (light detection and ranging) laser sensor with an advanced "synthetic aperture radar" (SAR) satellite sensor. McCarty is at the ARS Hydrology and Remote Sensing Laboratory in Beltsville, Md., where Lang is a visiting scientist. ARS is the chief intramural scientific research agency of USDA.

Wetlands are critical to the health of bodies of water like the [Chesapeake Bay](#). But many wetlands are forested, and it can be hard to see the wetlands on aerial photography because the view is blocked by the trees. Also, maps drawn from aerial photographs are subjective, causing more loss of accuracy.

With the combined data from the two types of remote sensing devices, the scientists can see whether water flows without filtration into the Bay, or whether it flows first through a forested wetland that might filter out possible pollutants.

The maps show previously unknown connections between some wetlands, drainage ditches, intermittent streams and ponds. Because forested wetlands had been thought to be isolated from each other and

the Bay, the Clean Water Act did not offer them the same regulatory protections as other wetlands.

The maps also show changes in wetlands caused by drainage ditches, other construction, farming and weather. The maps can be used to predict flooding and effects of climate change.

The scientists use advanced computer software and models to process data from the latest versions of the two different sensors.

With recent advances in the technologies and the spreading of LiDAR topographic mapping from state to state, it won't be long before this research adds much more information vital to Chesapeake Bay cleanup efforts and state and national wetland conservation debates.

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