



Backgrounder

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New Technologies from the Virginia Institute of Marine Science Supporting Bay Watershed Restoration

New water quality criteria and designated uses are being developed that will support Bay restoration efforts and further protect the living resources of Virginia's tidal waters. The Chesapeake Bay Program's *Chesapeake 2000* agreement commits the Bay Program partners to adopt protective levels of dissolved oxygen, water clarity, and chlorophyll into their respective state-level water quality standards.

Implementation of the new water quality standards will require innovative approaches to assess the success of Bay restoration efforts. In collaboration with the Virginia Department of Environmental Quality (DEQ), two new technologies are being tested for their effectiveness in monitoring the new water quality criteria over varying scales of time and space.

DATAFLOW

The DATAFLOW system provides large-scale, fine resolution monitoring of water clarity and chlorophyll in the shallow and open waters of the Virginia Bay and tributaries.

A continuous flow of near-surface water is provided to instrument sensors on board a high-speed boat as it traverses shallow and open water.

These data are converted into two-dimensional maps of water clarity and chlorophyll levels, which can easily be evaluated with respect to water quality standards. The products of this new enhanced monitoring technology provides water quality managers the information to evaluate the effectiveness of efforts to reduce both point and non-point source pollution to Virginia's coastal waters.

ACROBAT

Scientists are evaluating new technology that may improve monitoring efforts in the future. Detrimental levels of dissolved oxygen typically occur in the deep regions of Virginia's tidal waters and cannot be detected with surface-mapping instruments.

The ACROBAT provides comprehensive, three-dimensional mapping of water quality parameters, in particular dissolved oxygen distribution, in Virginia's tidal waters.

Multiple instruments, including a rapid-response, dissolved oxygen sensor are attached to the ACROBAT, a winged platform which that can be "flown" through the water column to measure various water quality parameters at any depth.

Instruments send high frequency water quality data back to computers on the vessel, which can be converted into three-dimensional maps of dissolved oxygen and other measured parameters.