Chemistry of surface waters: Distinguishing fine-scale differences in sea grass habitats of Chesapeake Bay

Dorval, Emmanis, Cynthia M. Jones, Robyn Hannigan

Limnol. Oceanogr., 50(4), 2005, 1073-1083 | DOI: 10.4319/lo.2005.50.4.1073

ABSTRACT: We tested the hypothesis that the physical and chemical processes acting in sea grass habitats of the lower Chesapeake Bay are spatially structured and that dissolved elemental chemistry of sea grass-habitat surface waters have their own unique identity. We sampled surface waters from July to September 2001 in five sea grass habitats of the lower bay: Potomac, Rappahannock, York, Island (Tangier-Bloodsworth), and Eastern Shore. Dissolved Mg, Mn, Sr, and Ba concentrations were measured by sector field inductively coupled plasma-mass spectrometry. As expected, Mg, Sr, and Ba exhibited conservative behavior, but Mn exhibited nonconservative behavior along the salinity gradient. Spatial differences in the chemistry of surface waters over sea grass habitats were fully resolvable independently of time. Moreover, classification accuracy of water samples was low in Rappahannock, moderate in Potomac and Eastern Shore, and high in the York and Island habitats. The chemistry of York was distinct because of the effects of physical mixing, whereas Island chemistry was unique, potentially because of the influence of Coriolis acceleration and river discharges from the Susquehanna River. The results of this study show that sites so close to one another in physical space maintain distinct chemical differences.

Article Links

Download Full-text PDF

Return to Table of Contents