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SULI Technical Abstract (200 words)

The coastal terrestrial-aquatic interface (TAI), where nearshore terrestrial and coastal aquatic ecosystems meet, is a significant biogeochemical hot spot. Hydrologic flow through TAI soils, especially during precipitation events and tidal extremes, leads to the delivery of terrestrially-derived materials to waterways, where microbes can rapidly process this dissolved organic matter (DOM). Previous research demonstrates that watershed-level landscape features such as topography, soil type, land cover, and hydrology are strongly related to coastal aquatic DOM concentration and composition. However, less is understood about the biogeochemical processing that occurs during soil DOM transport and how this impacts the DOM in adjacent waters. To estimate which DOM pools could be exported to coastal waters and how DOM is transformed across the TAI gradient (from upland forests to wetlands), we extracted water-soluble organic matter (WSOM) from Great Lakes, Chesapeake Bay, and Delaware Bay soils at ten different sites. We measured WSOM concentration and composition and compared the metrics with those of surface water DOM. We found that soil WSOM concentrations across the TAI gradient are not significantly different, but WSOM composition changed systematically from upland soils to coastal waters. This suggests that there are linkages in WSOM across the coastal TAI in our study regions.