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SULI General Audience Abstract (300 words)

Coastal ecosystems such as estuaries are highly dynamic regions responsible for a large amount of dissolved organic matter (DOM) processing. Plant and animal inputs to soils are broken down by microbes and then transported downslope with water discharge. These compounds reach wetland areas where further decomposition can occur before DOM is delivered to streams and rivers and ultimately the ocean. Previous research has explored the influence of many landscape features on the concentration and composition of the DOM that reaches aquatic ecosystems, but there are few studies that investigate DOM biogeochemical processing during transport and how this impacts nearby waterways. We extracted water-soluble organic matter (WSOM) from Great Lakes, Chesapeake Bay, and Delaware Bay soils across a gradient from upland forests to wetlands at ten different sites as an estimate for soil DOM pools. We measured WSOM and surface water concentration and composition and compared them. We found that soil WSOM concentrations are not significantly different across the gradient. However, WSOM composition changed systematically from upland soils to coastal waters, which suggests high levels of connectivity between all gradient locations.

I am so grateful that I gained such invaluable experience as a SULI intern this fall term while researching DOM biogeochemistry. Starting two summers ago when COVID-19 shattered all semblance of “normal”, I continuously missed out on opportunities to gain experience in earth and environmental science research that allowed me to step away from the computer. Over the past couple of months working with PNNL, I have gained skills in the laboratory and in experiment planning/preparation, but I have also grown personally while working in a collaborative team environment for the first time. I feel more confident in my abilities as a researcher and am excited to apply all that I’ve learned in my next position and in graduate school.