**Salinity and Inundation Alter Biogeochemistry and Carbon Fluxes in two Coastal Forests**

VL BAILEY[1*], A SENGUPTA[1], A MYERS-PIGG[2], S. PENNINGTON[3], A HOPPLE[1,4], B BOND-LAMBERTY[3], N MCDOWELL[5], P MEGONIGAL[4], J STEGEN[1], Z TAN[5], N WARD[2], S YABUSAKI[6], J ZHENG[1]

[1]Biological Sciences Division, Pacific Northwest National Laboratory, Richland, WA (*correspondence: vanessa.bailey@pnnl.gov)
[2]Coastal Sciences Division, Marine Sciences Laboratory, Pacific Northwest National Laboratory, Sequim, WA
[3]Joint Global Change Research Institute, Pacific Northwest National Laboratory, College Park, MD
[4]Smithsonian Environmental Research Center, Edgewater, MD
[5]Atmospheric Sciences and Global Change Division, Pacific Northwest National Laboratory, Richland, WA
[6]Earth Systems Sciences Division, Pacific Northwest National Laboratory, Richland, WA

Coastal terrestrial-aquatic interfaces are an important continuum that play a disproportionately large role in transforming carbon (C) as it is exchanged between land and sea. The biogeochemical reactions that occur along the continuum from the water, through sediments and soils, and into the coastal forest are largely presumed to be redox-driven, but must also include the influence of salts from seawater intrusion. These coastal systems are subject to regular tidal inundations and vulnerable to both sea level rise (SLR) and extreme storm events; inundation and water chemistry changes are generally expected to alter biogeochemical cycles and fluxes of material across coastal TAIs. We describe research efforts recently established at two coastal watersheds differing in tidal magnitude and SLR: the Smithsonian Environmental Research Center in Chesapeake Bay (low tidal variation, rapid SLR) and at Beaver Creek on the Pacific Northwest coast (high tidal variation, slow SLR). Seawater levels and treatments, coupled to real-time measurements of tree sapflow, GHG emission, and microbiology all provide insight into the ecosystem impacts of water chemistry and salinity changes. Our program integrates modeling, field observations, lab experiments, and field manipulations to understand and predict the impacts of coastal inundation events at these two sites, providing a robust framework for future experiments and model benchmarking.