**PREMIS: A multidisciplinary approach to understanding the terrestrial-aquatic interface**

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Disturbances such as sea level rise, increased extreme weather events, and climate change can have lasting impacts on the ecosystem carbon and water cycles. Monitoring sap flux and greenhouse gas fluxes offers a way to quantify the stability and resilience of terrestrial ecosystems in a stressed environment. We present the first year of results for soil respiration and sap flux measured from a coastal forest on a tributary of Chesapeake Bay in Maryland, as part of a multi-disciplinary effort to understand terrestrial-aquatic interface ecosystems stressed by climate change. The study design includes transplanted soil cores along natural salinity and elevation gradients to measure soil respiration, and 30 trees with sap flux measurements. Soil respiration is measured every 7-10 days and sap flux every 30 minutes, allowing us to examine how these processes are coupled over the growing season. We speculate that inundation and saltwater intrusion are dominant regulatory agents in the cycling of Carbon and nutrients.