

## **Carbon cycling in a well-constrained southeastern US salt marsh**

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Salt marshes form an important filter between terrestrial and marine environments along much of the temperate eastern US. Such marshes exhibit highly complex interactions between tides, insolation, temperature, rainfall, and biology. Unraveling these interactions is critical to understanding how marshes function in the local and global carbon cycle. The Groves Creek salt marsh, near Savannah, GA, has been instrumented to continuously measure physical, optical, and chemical properties. Additional discrete measurements were collected for chemical, stable isotopic, and microbiological analyses. Together with previous work mapping the topography of the study site to within ~2 cm, and a Delft 3-D hydrodynamic model, the influence of residence time under different environmental conditions upon carbon composition and fluxes can be examined.

Early results indicate that summertime rainstorms in 2013 strongly affected the carbon composition within marsh waters and, more subtly, the quality of organic carbon exported by the marsh. Respired organic carbon, represented by low  $\delta^{13}\text{C}$ -DIC values, remained high well after water column bacterial and phytoplankton levels declined, suggesting a switch between dominant processes effecting marsh C outflow. The influence of the 2014 'polar vortex' cold events on carbon export will also be discussed.