

## **Carbon Composition and Dynamics at the Marsh-Estuary Interface**

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Recent studies have advanced our understanding of major terms in the carbon budget of the coastal ocean, including riverine input to estuaries, exchange between the major aquatic reservoirs, sediment burial, air-sea exchange, primary production and respiration. However, gaps remain in quantifying carbon fluxes and associated uncertainties at key interfaces in the coastal zone such as the marsh-estuary interface. This study measured the amounts, sources, and composition of dissolved and particulate organic carbon exchanged at the marsh-estuarine interface of a representative temperate system, Taskinas Creek, VA. Water samples were collected over a tidal cycle on a monthly basis from Taskinas Creek over ~2 years, to determine the concentrations and sources of carbon pools over a range of timescales (e.g., tidal, monthly, seasonal). Concentrations of three carbon pools were determined: particulate organic carbon (POC), dissolved organic carbon (DOC), and dissolved inorganic carbon (DIC). Sources of POC were determined using lipid biomarkers, stable isotopes, and C:N ratios, while optical properties and C:N ratios were used to study the source, composition, and degradation state of DOC. Results from this study reinforce the need to better understand variations in carbon exchange in marsh and estuarine environments in order to estimate their roles as sources and sinks for carbon.