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Carbon cycling in a mangrove-dominated estuary of Everglades National Park, Florida, USA

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Carbon source-sink dynamics across a land surface-aquatic continuum are difficult to quantify. Here, we use a combination of water column SF_6 deliberate tracer releases, pCO_2 mapping, discrete measurements of pH, TAlk, DIC, and DOC, and autonomous measurements of CDOM, pCO_2, and pH to determine air-water CO_2 exchange and the sources and sinks of DIC and DOC to investigate the carbon balance of Shark River, which originates in the freshwater marshes of Everglades National Park. Shark River is tidal in its lower reaches and passes through the largest continuous mangrove forest in North America before discharging to the Gulf of Mexico. Our measurements provide a means to determine the fate of mangrove-derived carbon in Shark River, and serve as a model for applying similar methods in other aquatic systems.