Geophysical Research Abstracts
Vol. 18, EGU2016-10083, 2016
EGU General Assembly 2016

Carbon cycling in salt marsh dominated estuaries along the US Atlantic coast

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Salt marshes are effective carbon sinks, because they rely on vertical accretion of organic and inorganic matter to keep their relative position to sea level. They are also described as 'carbon pumps' that fix atmospheric carbon but deliver organic and inorganic carbon to estuarine and coastal waters. These fluxes are still highly uncertain due to their temporal and spatial variability.
Here, we present observations on atmospheric CO_2 exchange and lateral DIC exchange measured at two salt marsh dominated estuaries along the US Atlantic coast. Atmospheric exchange was measured with the eddy covariance method supplemented by measurements of DIC concentrations and discharge in tidal creeks during selected tidal cycles. Together with estimates of long-term carbon burial, this allows us to constrain their export potential. Since the Plum Island Ecosystems LTER and Georgia Coastal Ecosystems LTER are located along a temperature gradient, we will use the data to assess the temperature effect on ecosystem productivity and respiration.