Carbon Composition and Dynamics at the Marsh-Estuary Interface in a Temperate System


Poster on Tuesday
High-resolution sampling of multiple C pools
Tidal variations in C ~ seasonal variations
Taskinas Creek VA is a sink for estuarine POC
Carbon Measurements at Taskinas Creek VA and Kirkpatrick Marsh MD

**Time series:** October 2013 – present

**Carbon pool concentrations:**
25-hour tidal cycle; samples every 2.5 hours
DOC, DIC and POC

**Bulk carbon sources:** chl a, C:N ratios, $\delta^{13}$C$_{POC}$

**Carbon composition (high vs. low tide):**
**POM:** Lipid Biomarker Composition
Concentration of Carbon Pools at Taskinas Creek VA
Tidal and Seasonal Differences

Seasonal:
POC: ↑ Spring and Summer
DIC: ↑Fall
DOC: n/s

Tidal:
POC: HT > LT (estuary source)
DIC: LT > HT (marsh source)
DOC: HT ~ LT

Tidal variation as great (or greater than) seasonal.
**Fatty Acid Composition of POC**

POC Sources:
*FA consistent with estuarine source for POC*

Aquatic microbes (SCFA)
Marsh (C$_{18}$ fatty acids)

Tidal Effects: HT ~ LT
%C$_{18}$ FA (marsh): LT > HT
Structural Equation Modeling

POC

Chi a

Phaeo

TSS

Salinity
Temperature
PAR
Tide

positive
negative

P < 0.05