Mangrove Forests Response to Climate Change and Sea-level Rise

Donny Smoak, Josh Breithaupt, Halime Etemadi, Tom Smith, Ryan Moyer, and many others
How does burial and storage of carbon respond to sea-level rise and climate changes? Do these systems become a source of carbon to the atmosphere and therefore a positive feedback to climate change?
Soil Coring
Age, Accumulation and Accretion

Accumulation = \text{mass} / \text{time}

Organic Matter
Inorganic Matter
Organic Carbon
Carbonate etc.

\sim 50 \text{ yrs old}

Accretion = \text{depth} / \text{time}

\sim 100 \text{ yrs old}

\text{\textsuperscript{210}}Pb Dating Method
Organic Carbon and Accretion Rates

OC Sink

Keep up with SLR
OC Contribution to Accretion in ENP

$y = 2.0462x + 0.0205$

$R^2 = 0.79894$
Accretion Rate ENP
2.7 ± 0.4 mm/yr

Key West, FL  2.24 +/- 0.16 mm/yr

Source: NOAA
Timescale and Spatial Variability
Accretion Rate Wolf Branch
2.4 mm/yr last 10 years
1.6 mm/yr last 60 years
Wolf Branch 1947-2004