Inter-annual variation in marsh CO$_2$ exchange

Inke Forbrich
The Ecosystems Center, MBL, Woods Hole, MA
Eddy Covariance measurements

\[ F_s = \overline{w'} \rho_s' \]
Inter-annual variation in NEE

Annual Sum:
-211 (2013)
-118 (2014)
-195 (2015)
-156 (2016)

CO$_2$ release
CO$_2$ net uptake

F$_{CO2}$ (umol m$^{-2}$ s$^{-1}$)
More net CO$_2$ uptake corresponds to increased biomass production
Main driver: Seasonal Rainfall variation
Thank you!
Long-term driver: Sea level

![Graph showing correlation between primary production and mean high water level. The graph includes error bars and a linear regression line with a slope of 31 g m\(^{-2}\) yr\(^{-1}\) cm\(^{-1}\). The coefficient of determination, \(r^2\), is 0.37 and the p-value is 0.02.]

![Graph showing oscillations in amplitude over time, with a periodic pattern indicating possible seasonal variations or other cycles.]