

Plum Island Ecosystems (PIE LTER)

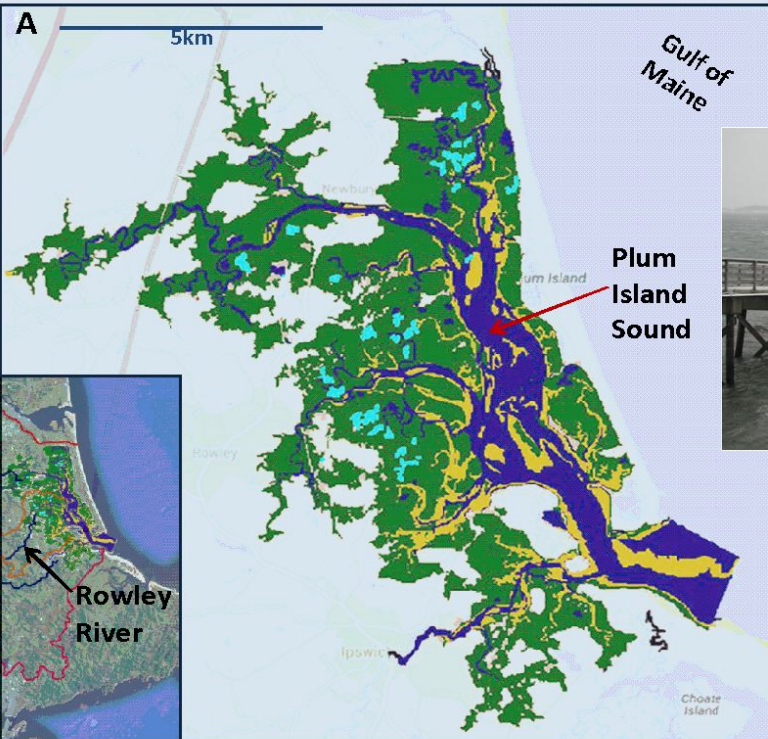
Changing connectivity is altering ecosystem functioning



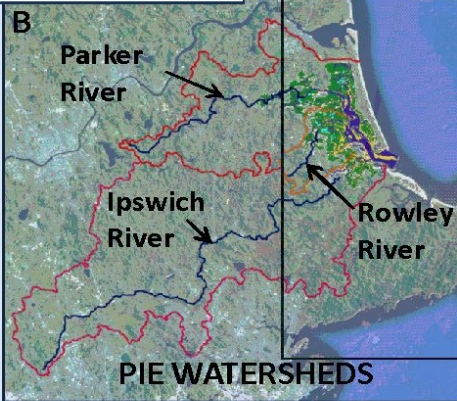
Sea

Land

- Marsh ■
- Marsh Ponds ■
- Intertidal Flats ■
- Open Water ■



Atmosphere



PIE MARSH-ESTUARY

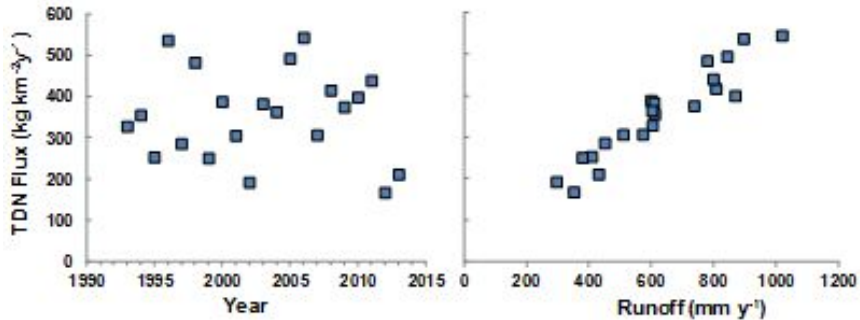


ANNE GIBLIN

SCIENCE COUNCIL MEETING

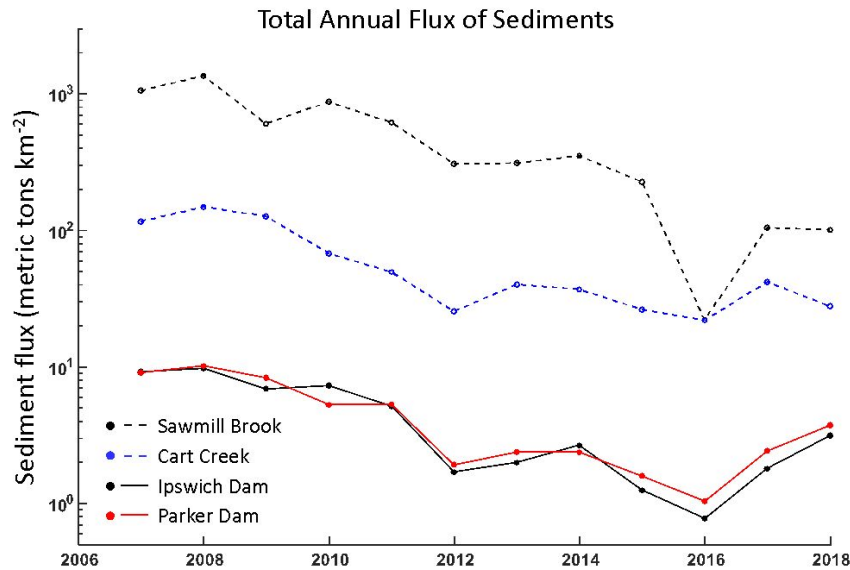
RIO MAR PR

Landconnections change with climate and human activities

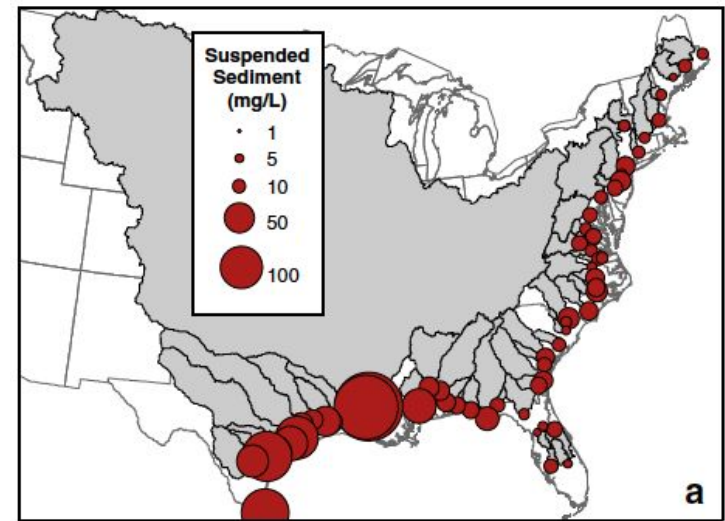


Nutrients are highly retained in PIE watersheds but fluxes increase with increased precipitation - climate so far has overwhelmed trends in development

Sediment fluxes, which are already low, have been decreasing (beavers?)

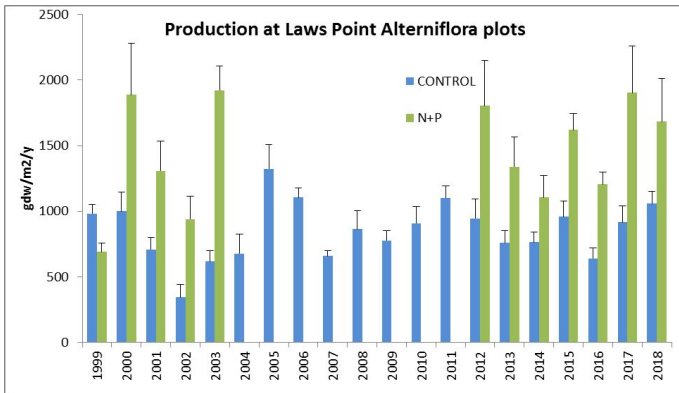


Data from Wollheim and students

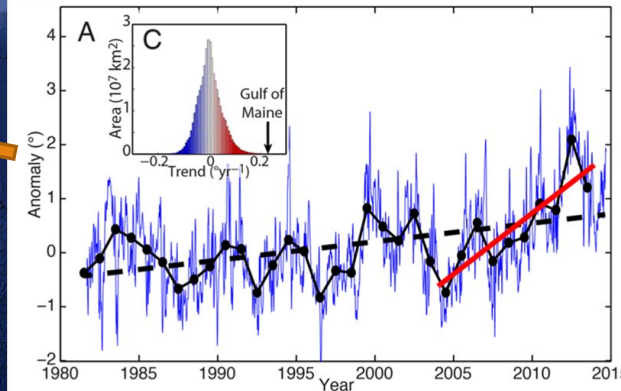
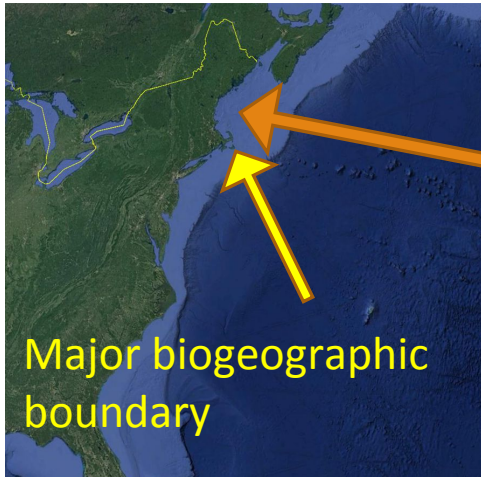
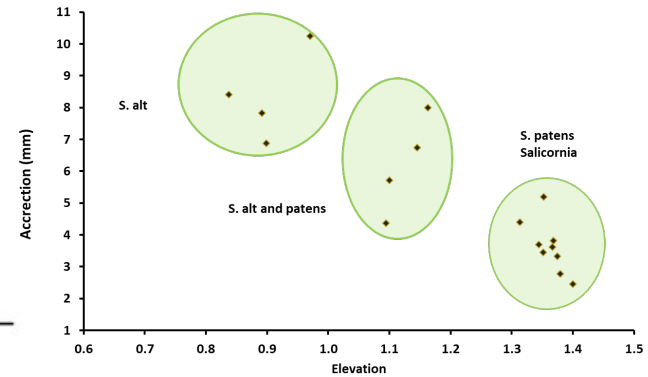
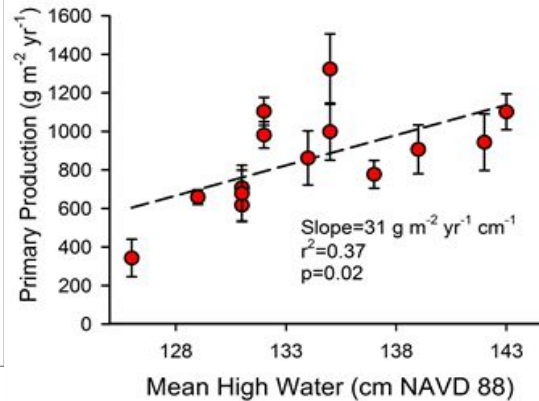


Weston 2014

Sea - Increased connection to the ocean and southern species from rising sea-levels and warming ocean temperatures - changing biotic communities



Data from Morris



Pershing et al 2015



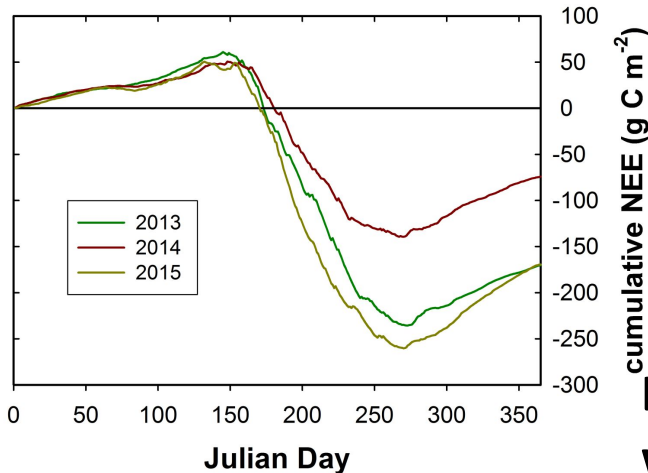
Atmosphere - changing climate, storms...



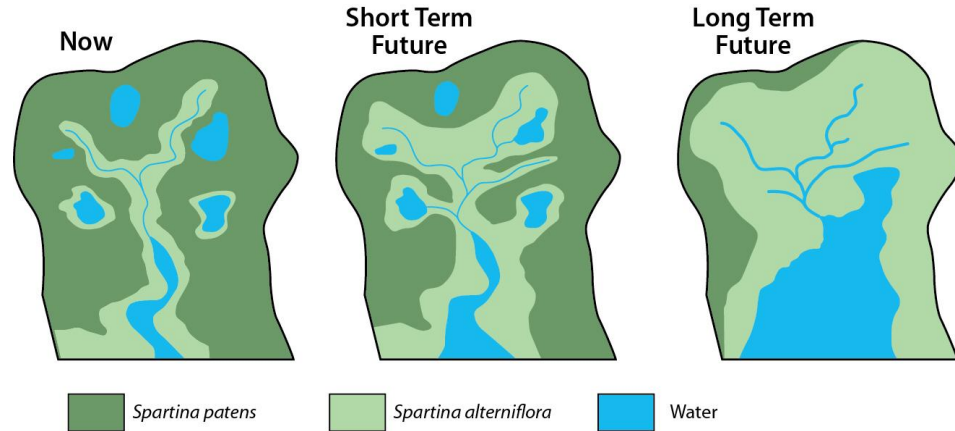
Sediment is lost at the marsh edge by lateral erosion, redeposited on the marsh – ice rafting may be quite important.



Forbrich



For the high marsh, precipitation appears to be important in C storage and hence accretion



Low and decreasing connection to the watersheds and increased oceanic conductivity as well as climate change may greatly alter the marsh over the next century