Coastal Wetland Soil and Carbon

Paula Torres
Cheng Lab
BUEE 2019

Coastal Wetlands

- Coastal protection
- Prevents shoreline erosion
- Habitat for organisms such as fishes
- Water filtration
- Carbon sequestration

https://www.fisheries.noaa.gov/coastal-wetlands-too-valuable-lose

https://eos.org/research-spotlights/coastal-wetlands-effectively-sequester-blue-carbon

Threats to Wetlands

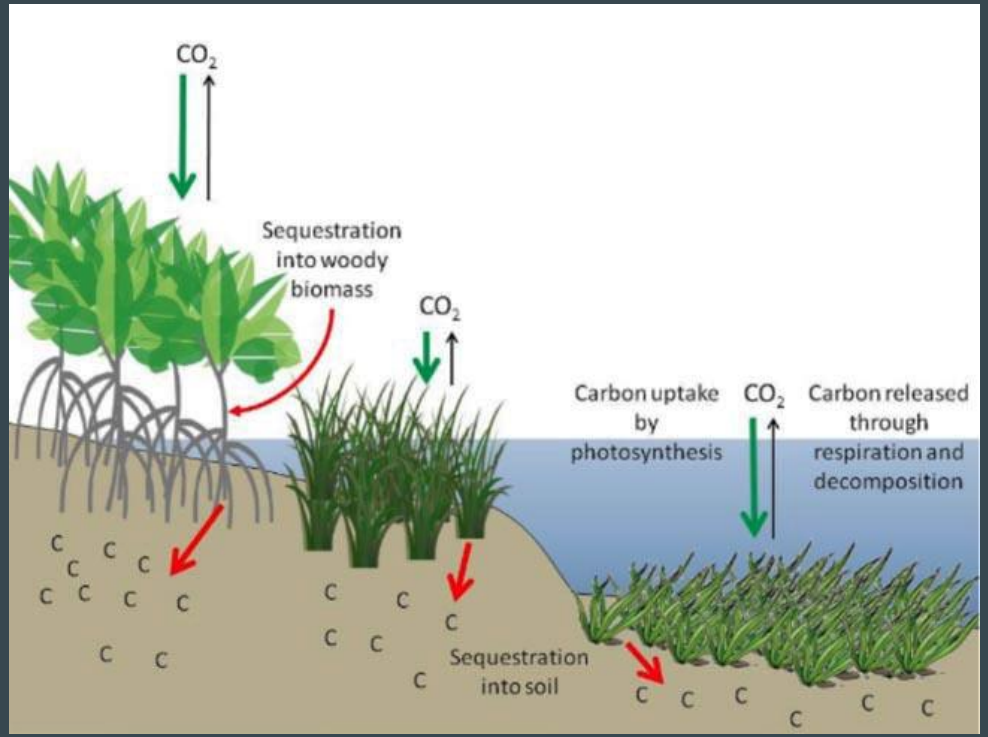
- Urbanization!
- Increased pollution
- Overpopulation
- Infrastructure
- Sea level rise
- Roads
- Canals
- Invasive species

https://www.environment.nsw.gov.au/topics/water/wetlands/protecting-wetlands/threats-to-wetlands

https://bolsachica.org/restore-2/pollution-prevention/

Carbon Sequestration

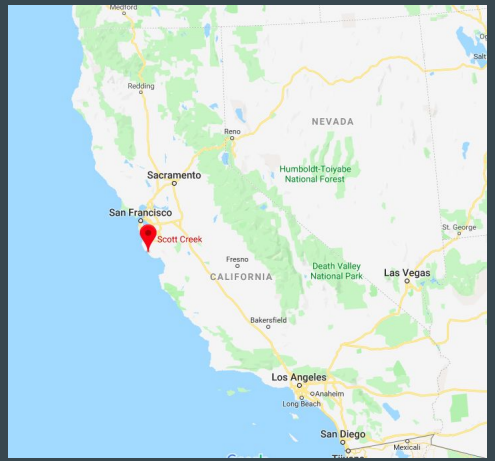
- Process of carbon being removed from the atmosphere are stored into soils or other liquids
- Wetland Soils→ 33% of the worlds soil organic carbon
- ***But since Wetlands are decreasing in rapid rates, what can we do?***



Research Site: Scott's Creek Marsh

- its unique swell activity creates a sandbar turning the site into a short term, seasonal lagoon with increased microbial activity
- Can be considered anthropogenically altered

https://sccrtc.org/rtc-receives-grant-for-scotts-creek-lagoon-and-marsh-restc
n-planning/



Halophytes of Interest

-Saltgrass (*Distichlis spicata)* - Higher elevations, higher concentration of salts

- Broad-Leaf Cattail (*Typha latifolia*)- lower elevations

- Common Saltrush (*Juncus lesueurii*)- midrange of marsh

Which sequesters the most carbon?

Gormley 2019

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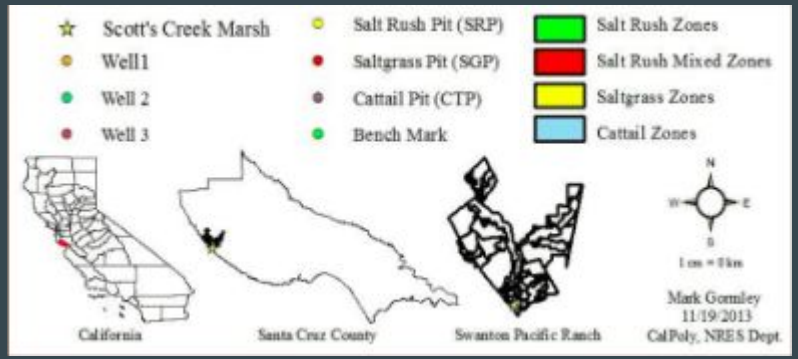
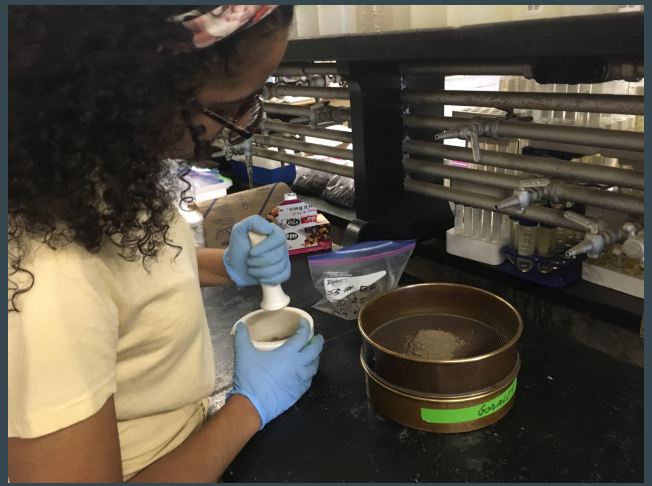


Gormley 2019

Soil Analysis

- 50 soil core samples from each site are analyzed
- Dry samples are crushed and sieved
- Placed in small vials of 5 grams
- Focus on 0-10 cm (Critical Layer)- most microbial activity
- Organic Carbon rates→ LOI Analysis
- Inorganic CO_2→ CHN Analyzer



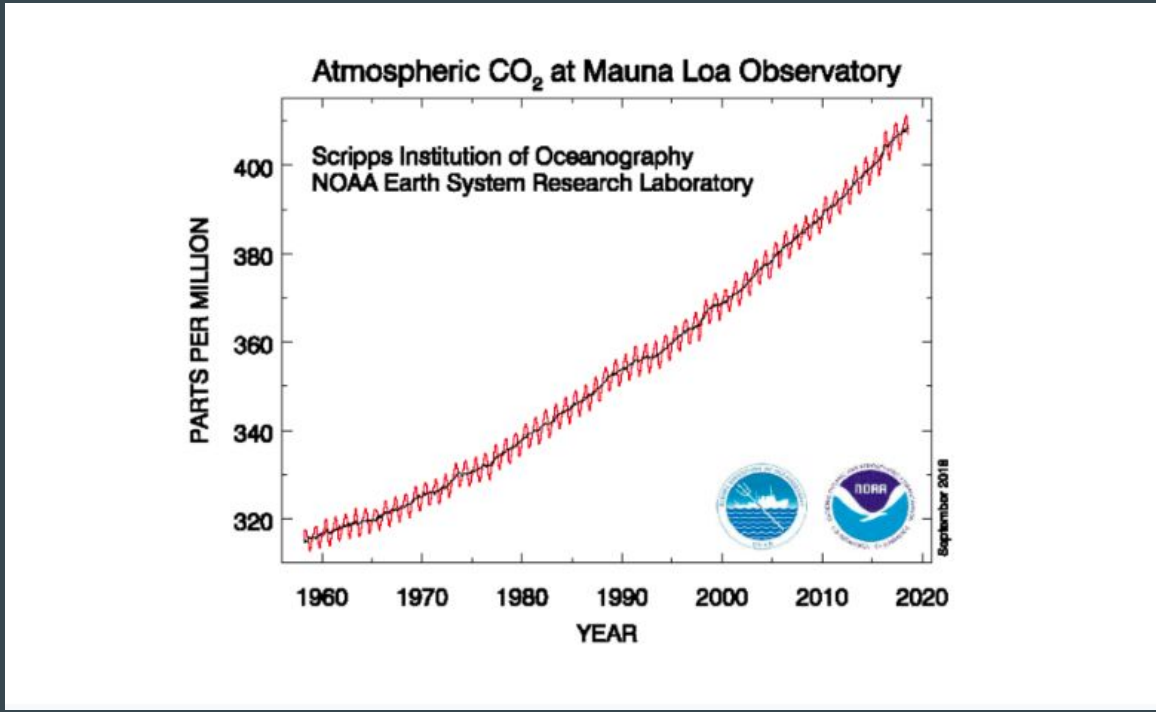
Richards 2019

Further Implications/Conclusions

“man-made wetlands”

- trap carbon

- restore wetlands



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