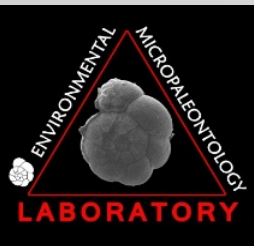


LEVELS OF HEAVY METALS AND PESTICIDES IN APALACHICOLA BAY

Adebayo Solanke, PhD (candidate)
Michael Martínez-Colón, PhD



FLORIDA AGRICULTURAL AND MECHANICAL UNIVERSITY

INTRODUCTION

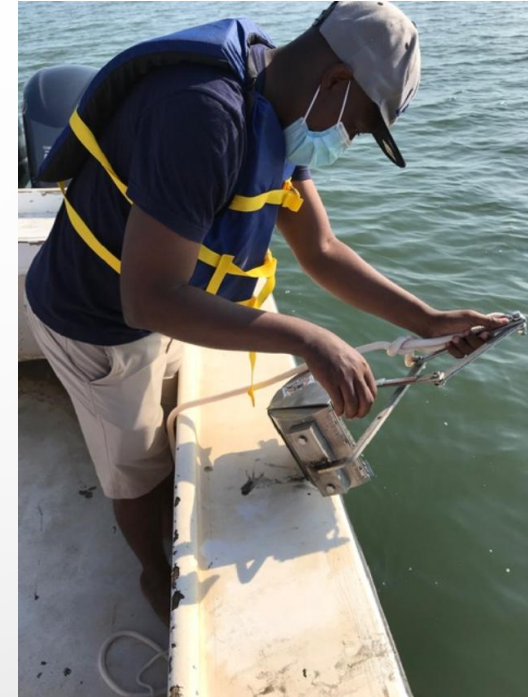
- Estuaries are transitional environments between marine and freshwater systems
- These aquatic zones receive 80%-90% of all waste released from numerous point- and non-point sources as a result of overpopulation, industrialization, and farming among others
- Unfortunately, estuaries function as “natural reservoirs” of heavy metals, pesticides, microplastics, etc.

INTRODUCTION (CONT)

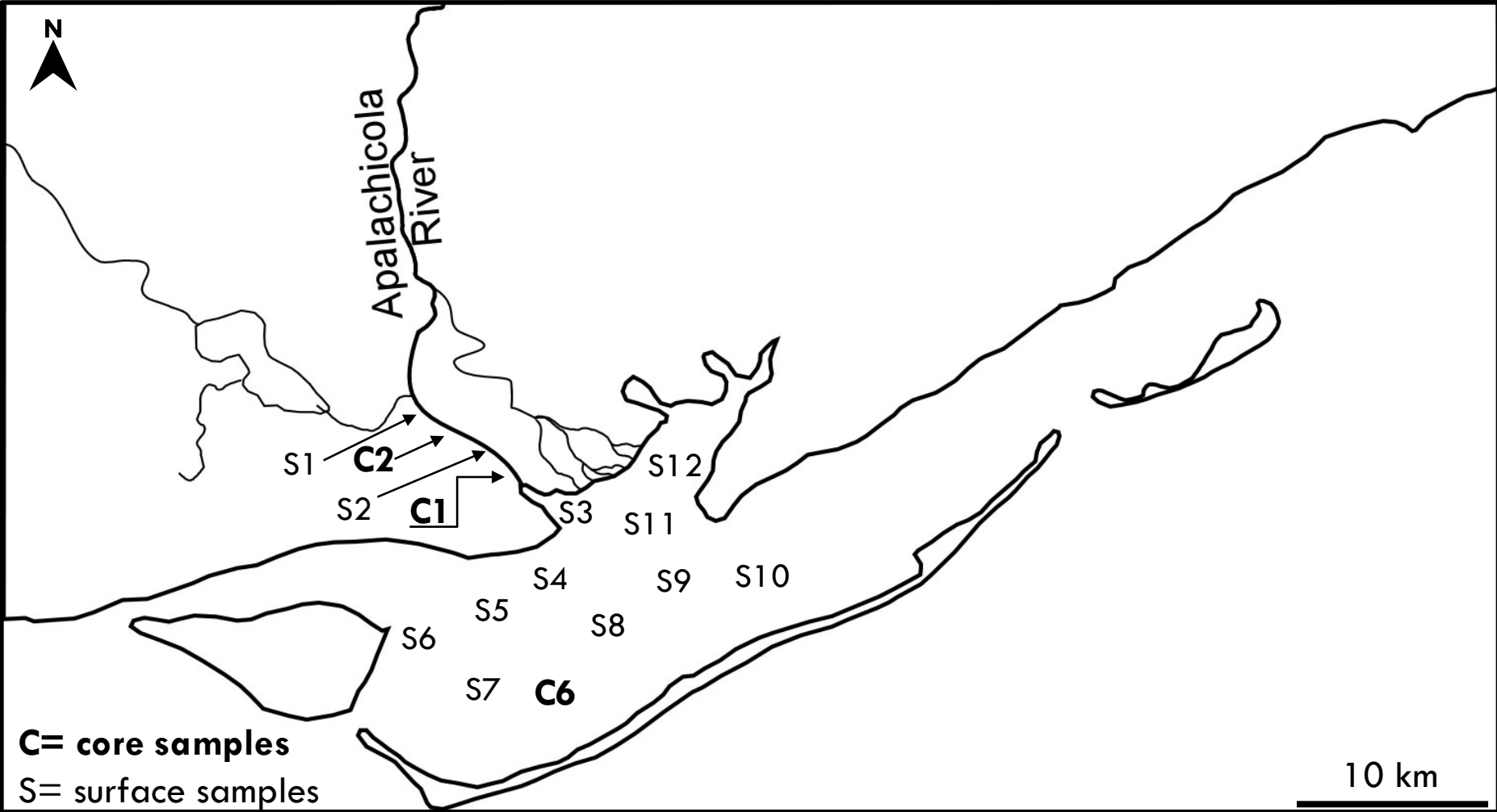
- Apalachicola Bay, part of the National Estuarine Research Reserve system, is known for its high oyster yields and commerce
- In 2020, a five-year moratorium was placed on wild oyster harvest to allow oyster population recovery
- It is unclear what environmental stressors (e.g., salt-water intrusion, droughts, river runoff, nutrients, heavy metals, and pesticides) have contributed to the decline in oysters

PURPOSE AND OBJECTIVES

- Provide information to stakeholders on the levels of heavy metals and pesticides from temporal (sediment cores) and spatial (surface samples) perspectives
- Establish historical (<100 years) reference conditions to help ANERR stakeholders assess pre-polluted and/or pre-management conditions



SAMPLED SITES



PARAMETERS OF INTEREST

- Grain size analysis + Total organic carbon (TOC)
- Heavy metals:

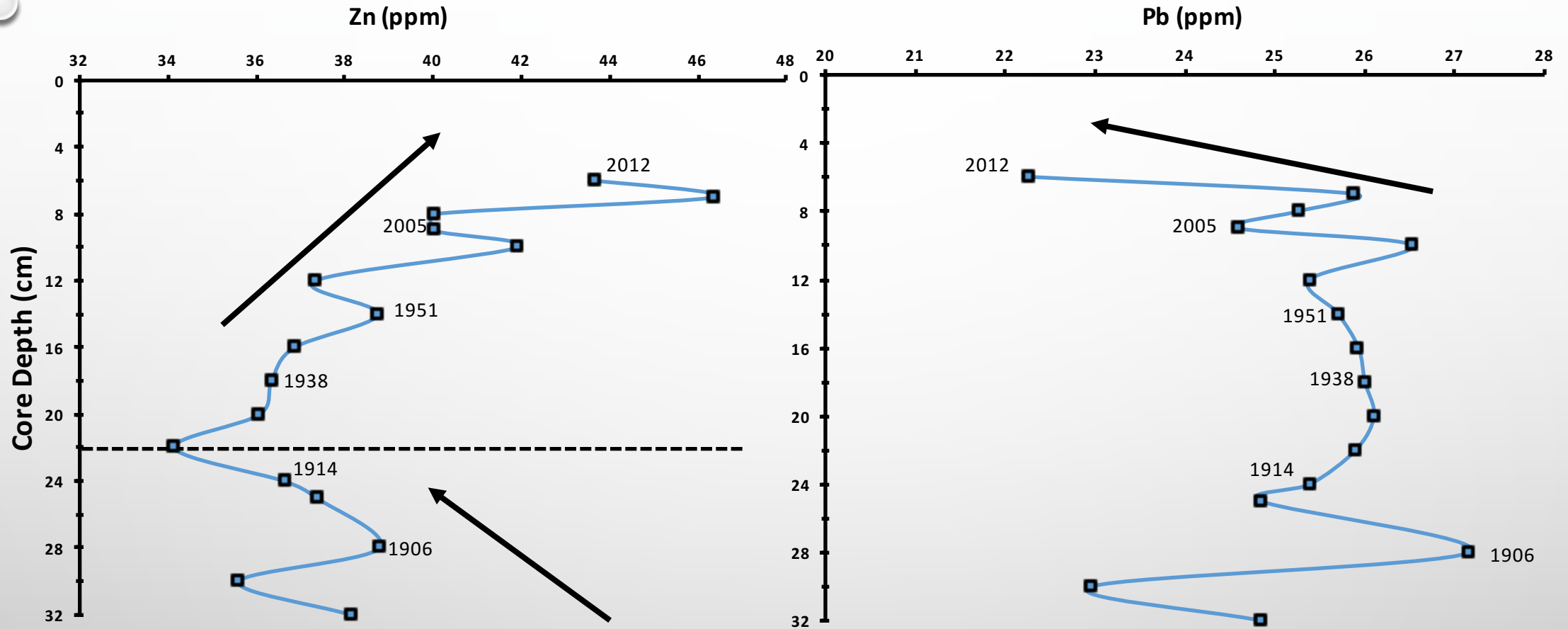
Pollutants	Oxygenation Indicators
Co (Cobalt)	Th (Thorium)
As (Arsenic)	U (Uranium)
Se (Selenium)	Mo (Molybdenum)
Pb (Lead)	Re (Rhenium)
Fe (Iron)	
Cu (Copper)	
Cd (Cadmium)	
Ni (Nickel)	
Zn (Zinc)	

- Organochlorine (OC) pesticides: aldrin, dieldrin, endosulfan, endrin, heptachlor, and methoxychlor

PROGRESS UPDATE

Sample	Sampling	Grain size	TOC	Heavy Metals	Pesticides	Radiometric Dating
Surface	Complete	Yet to start	Almost done		Yet to start	N/A
Core 6			Almost done			N/A
Core 2			Yet to start		N/A	
Core 1			Yet to start			N/A

PROGRESS UPDATE (SEDIMENT CORE)



ACKNOWLEDGMENT

I want to thank the following funding sources:

- Apalachicola Bay System Initiative (ABSI)
- FAMU-Title III
- National Academies of Sciences-Gulf Research Program
- College of Marine Science (U. of South Florida) for radiochemistry

I want to thank Jason Garwood, Ethan Bourque, and Dr. Josh Breithaupt for their help during field work.