

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

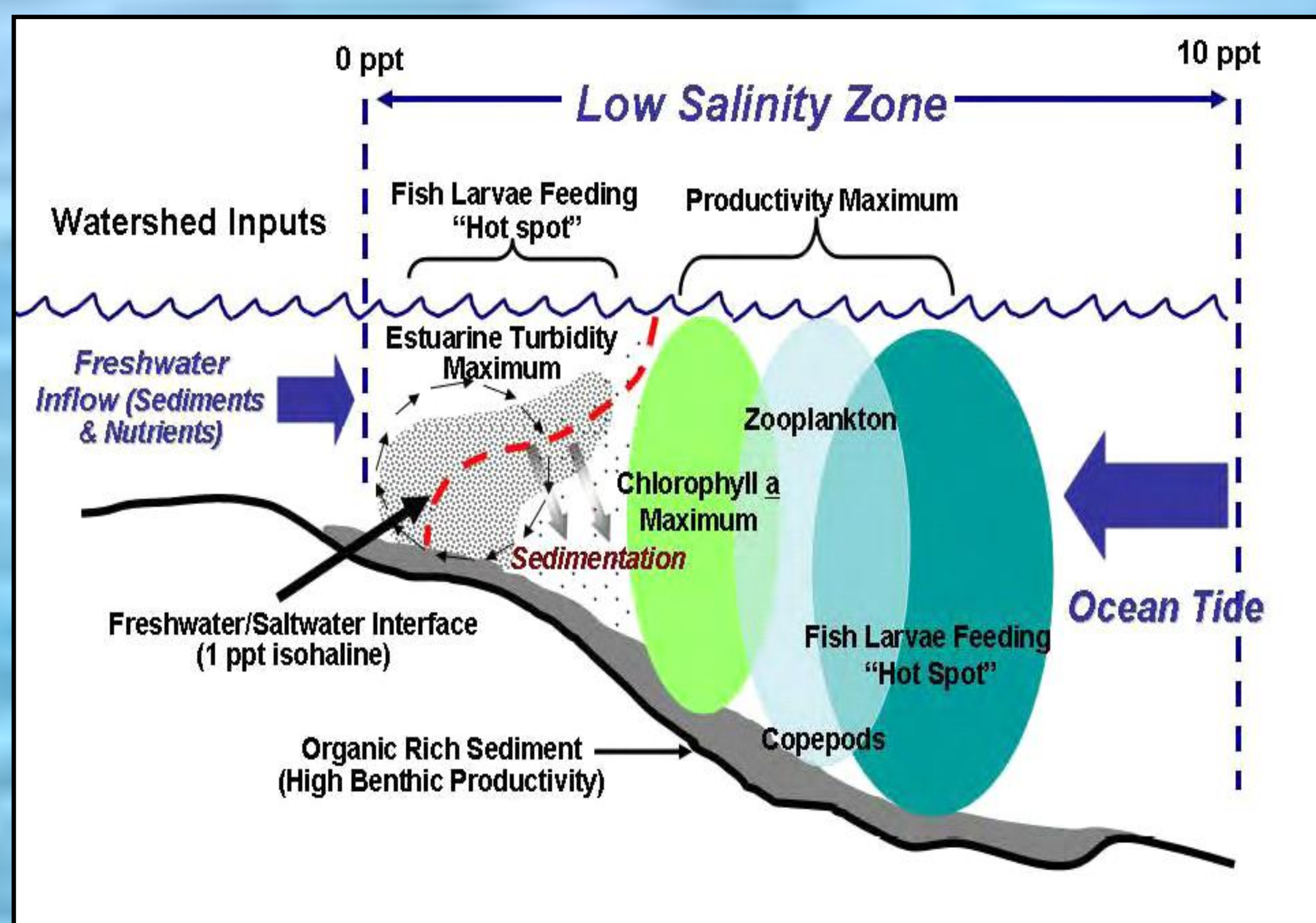
Surveying Estuary Responses to Freshwater InflowS (SERFIS): An Ecosystem Monitoring Tool For Rapid Assessment Of Estuarine Habitat Response To Freshwater Inflow Management

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Introduction

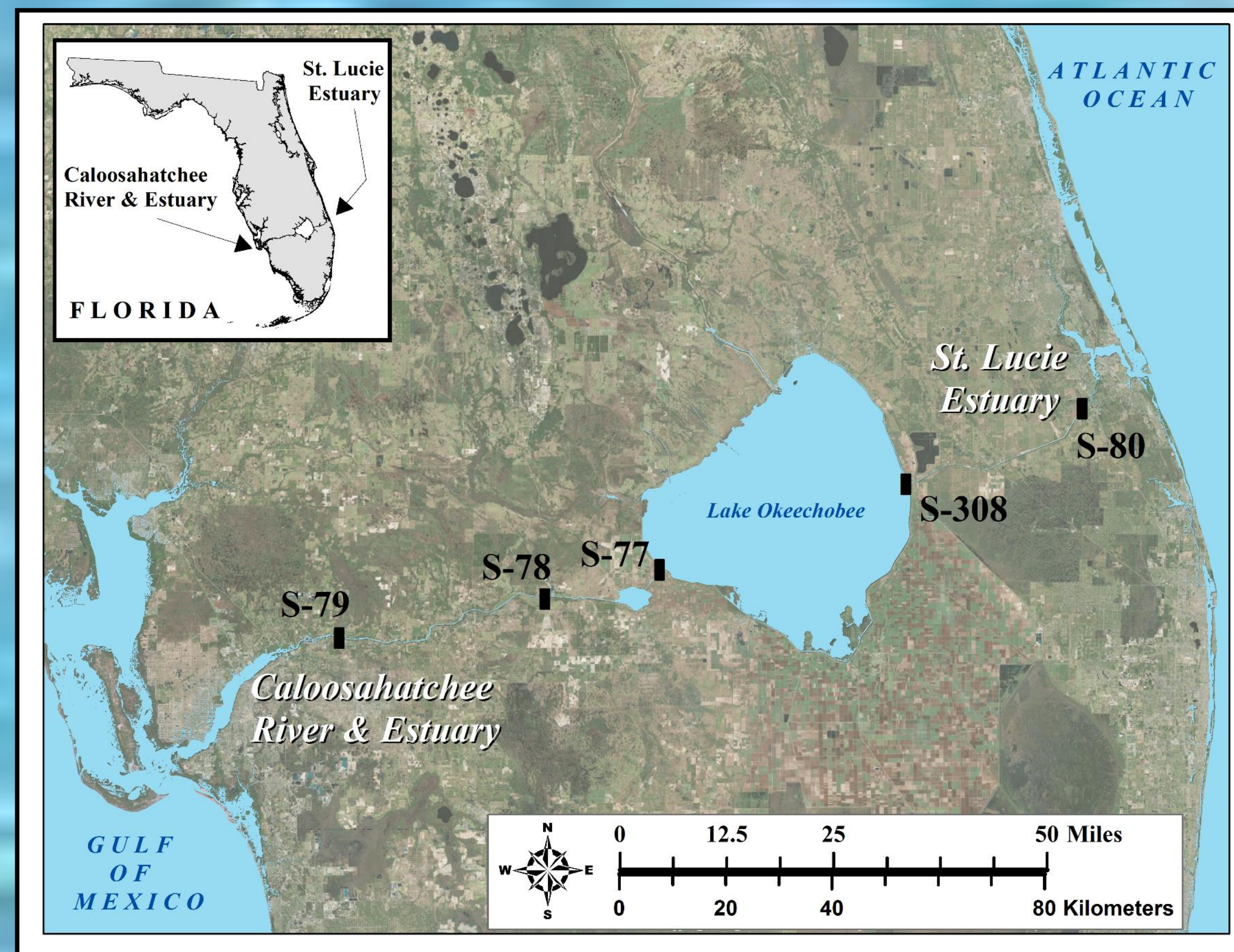
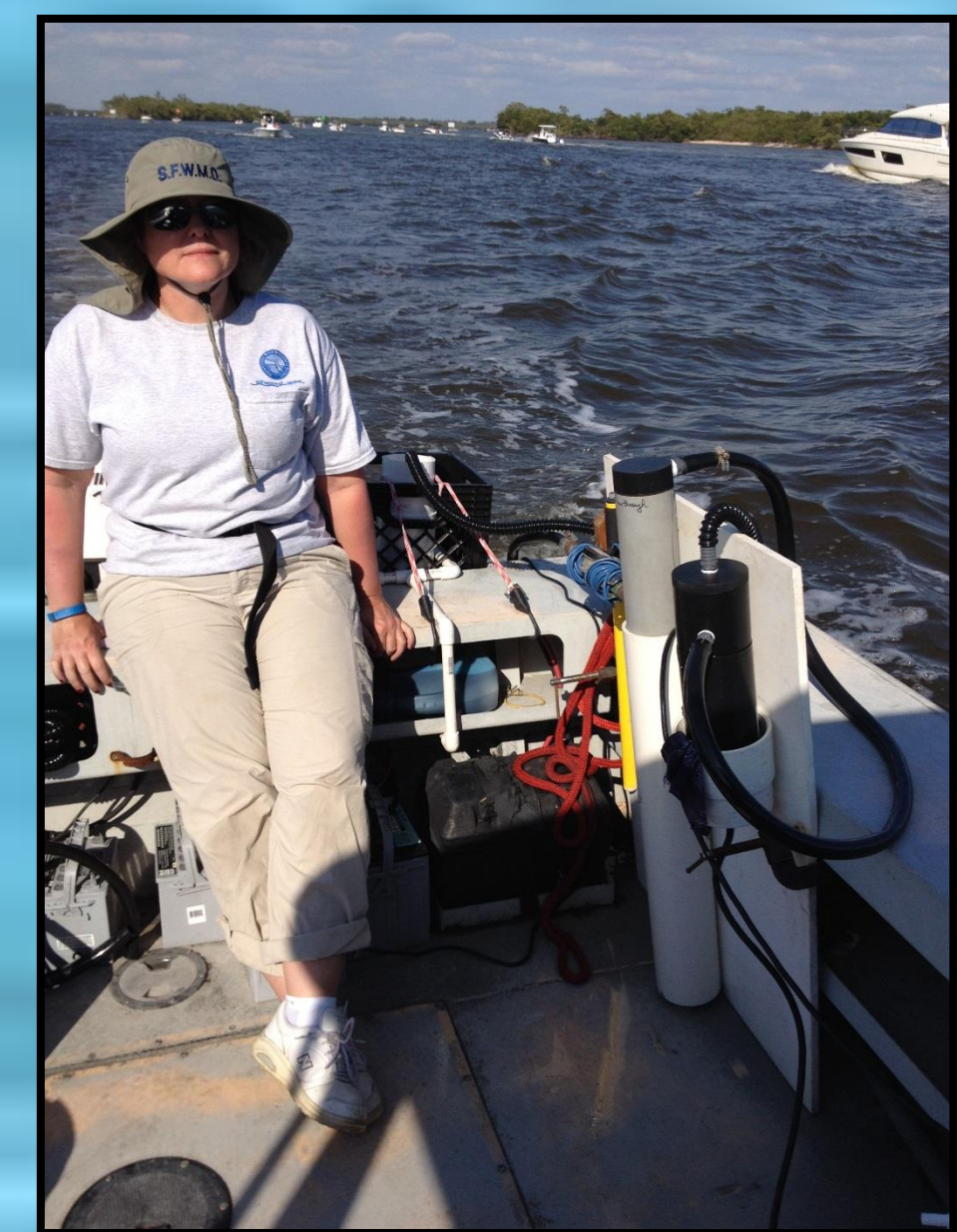
As part of the Greater Everglades Ecosystem Restoration effort by the South Florida Water Management District (SFWMD), Lake Okeechobee water releases to the St. Lucie and Caloosahatchee rivers is a key element. It is important to understand how freshwater flows affect estuarine health and critical nursery function.

Low Salinity Zone Hypothesis



Freshwater inflows bring nutrients to the estuary creating areas of high primary and secondary productivity, resulting in fish larvae feeding zone "hot spots". The magnitude of freshwater inflow can impact if and how the high productivity areas are established.

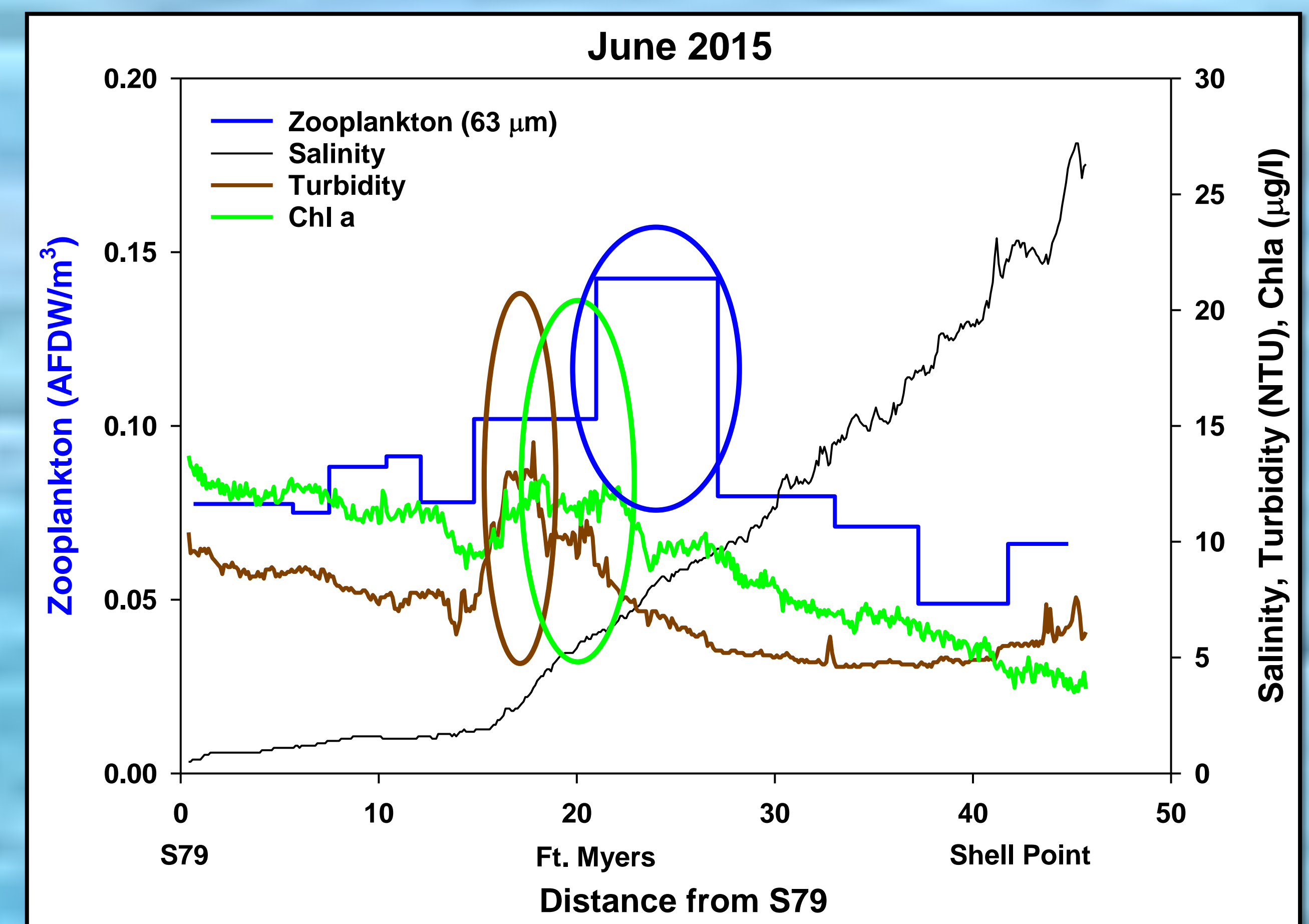
Methods



A flow-through system collects spatially continuous water quality data and concurrent collection of zooplankton through the outflow pipe along salinity gradient transects.

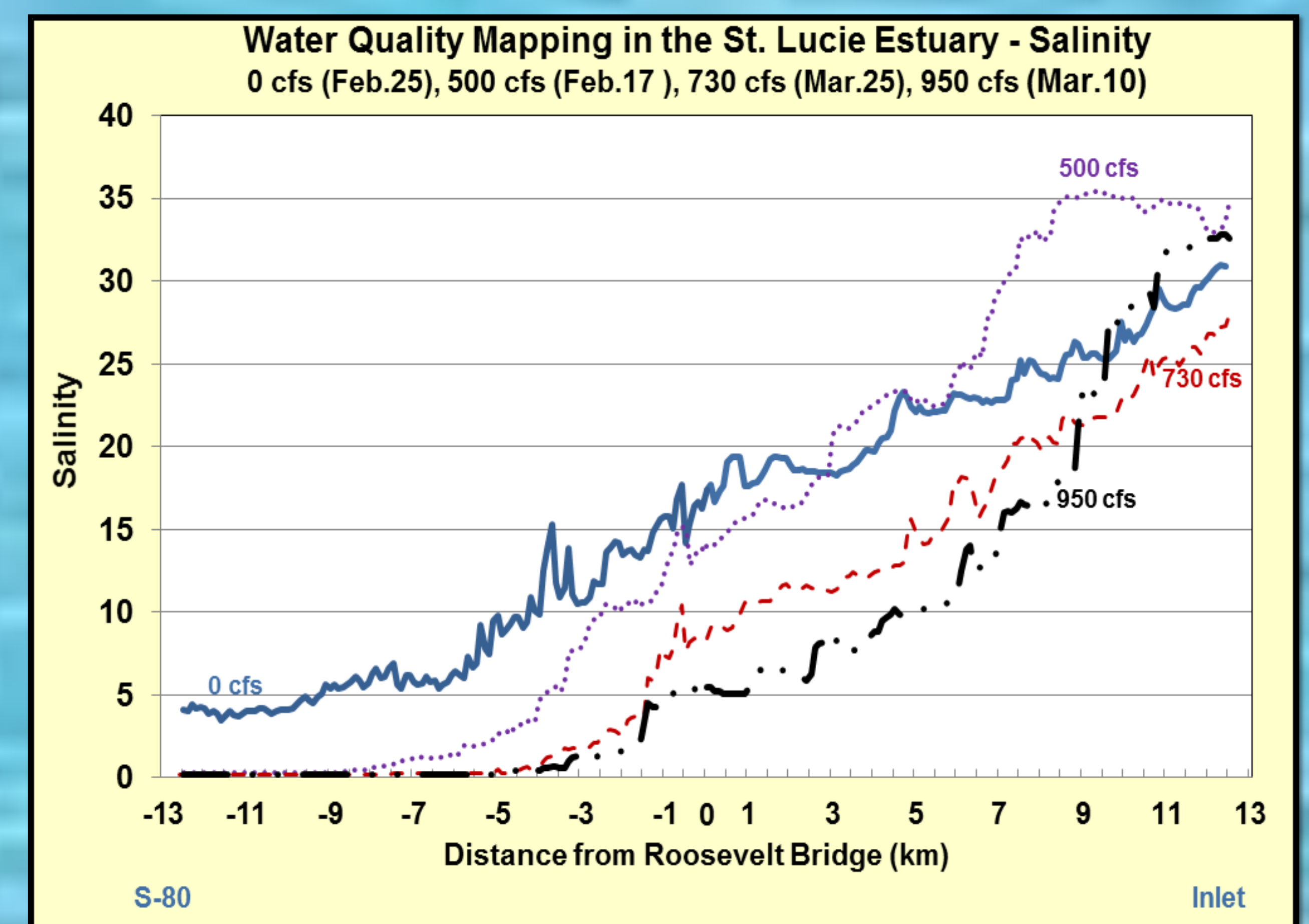
The system allows for spatially continuous sampling of entire estuaries that can be replicated quickly (within the same day for smaller estuaries) with minimal post-processing of the data.

Spatial Data (Caloosahatchee example)



Caloosahatchee Estuary – Wet Season 2015: Turbidity, chlorophyll, and zooplankton maxima (indicated by circled areas of graph) aligned spatially as hypothesized.

Temporal Data (St. Lucie example)



St. Lucie Estuary – Dry Season 2015: Water quality impacts of different freshwater release scenarios during the dry season are demonstrated by changes to the resulting estuarine salinity gradients.

Water Management Relevance

Results from this study will provide baseline data for multiple estuaries under different freshwater flow and climatic conditions to help guide Lake release decisions and understand success of SFWMD projects.