

Tiffany Troxler, PhD
Sea Level Solutions Center, Institute of Environment
and Department of Earth and Environment,
Florida International University



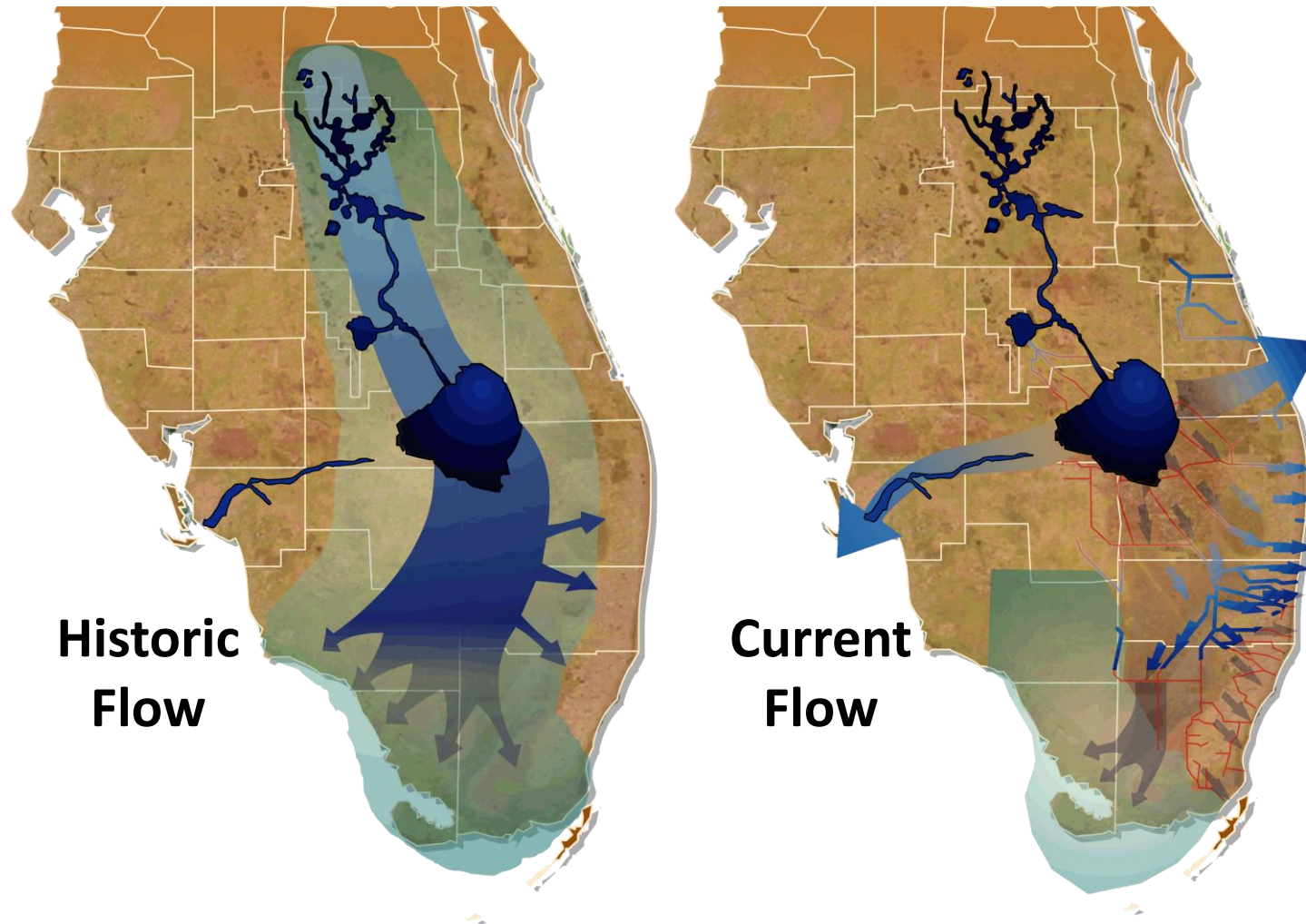


Biscayne Bay early 1900s

- Clear water estuary
- Separated from the Everglades by Miami rock ridge (high ground)
- Transverse glades: low elevation extensions of the Everglades
- Diffuse surface water inflow with groundwater seeps and springs
- Abundance of shoreline vegetation, wetlands, seagrasses, and oyster beds

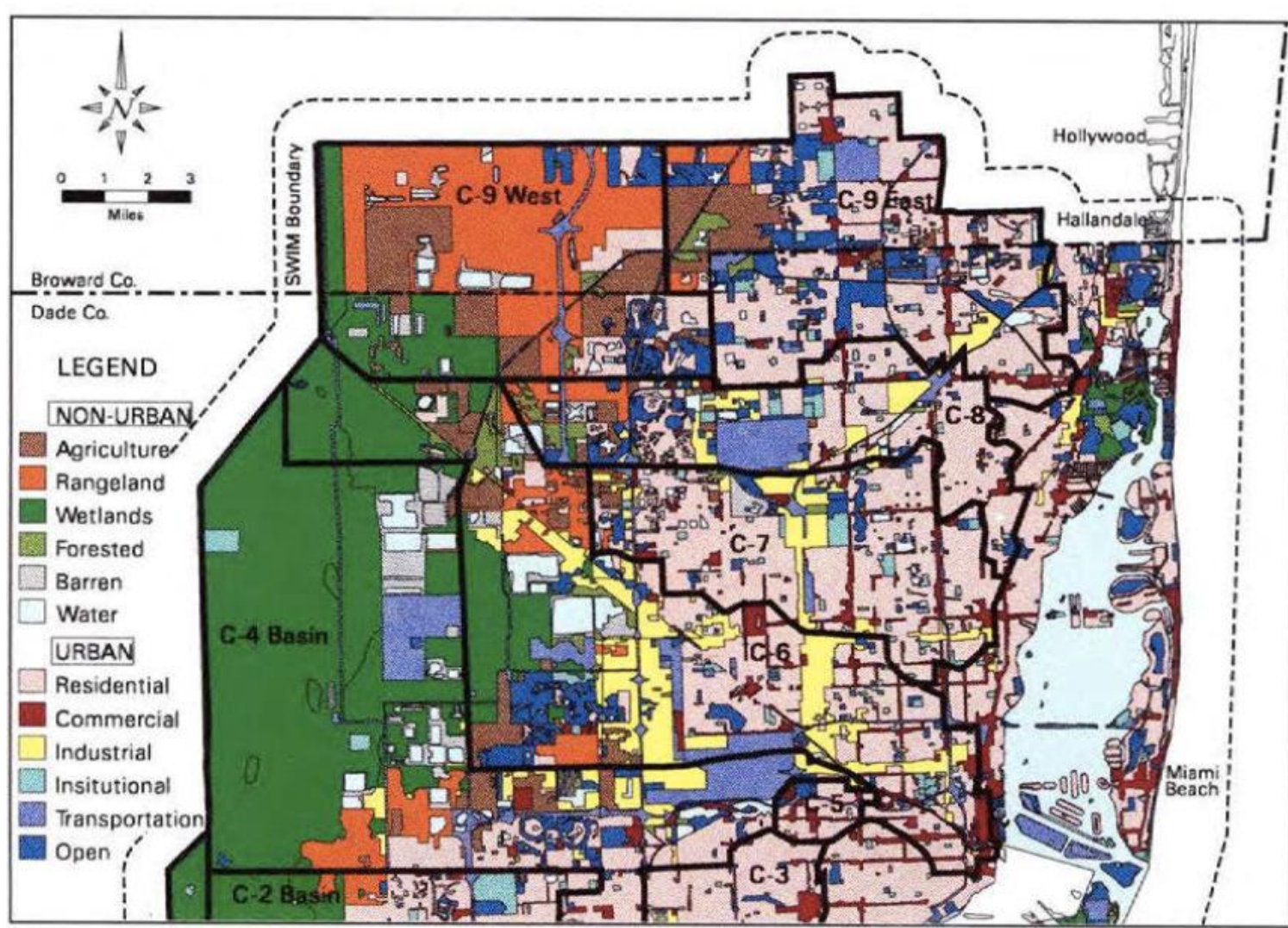
Map Source: P. Harlem in Thomas Lodge's *The Everglades Handbook*

Big changes in the Biscayne Bay watershed – regional hydrologic system



Big changes in Biscayne Bay watershed

- watershed land-use change

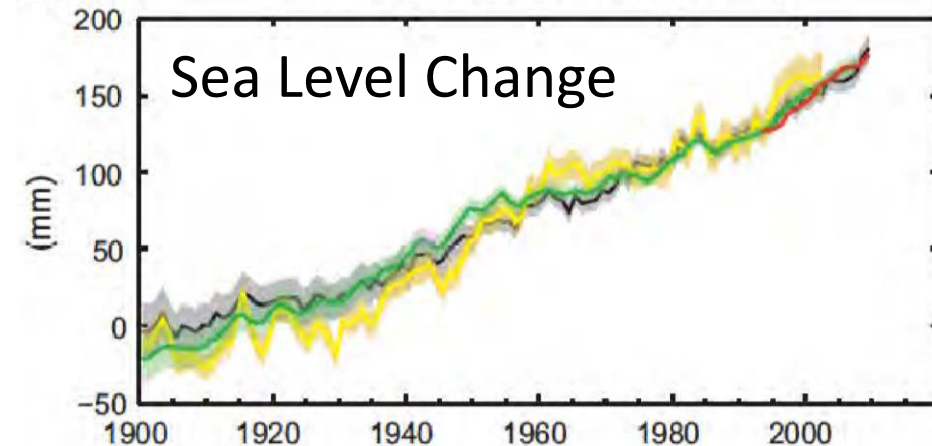
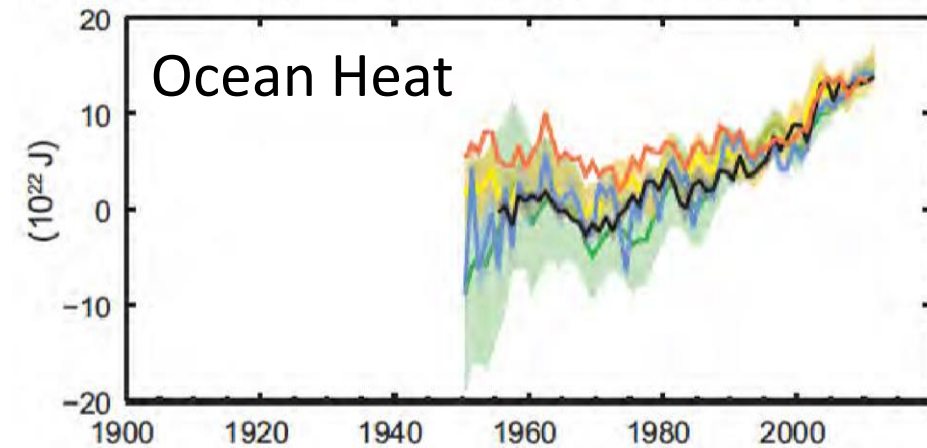
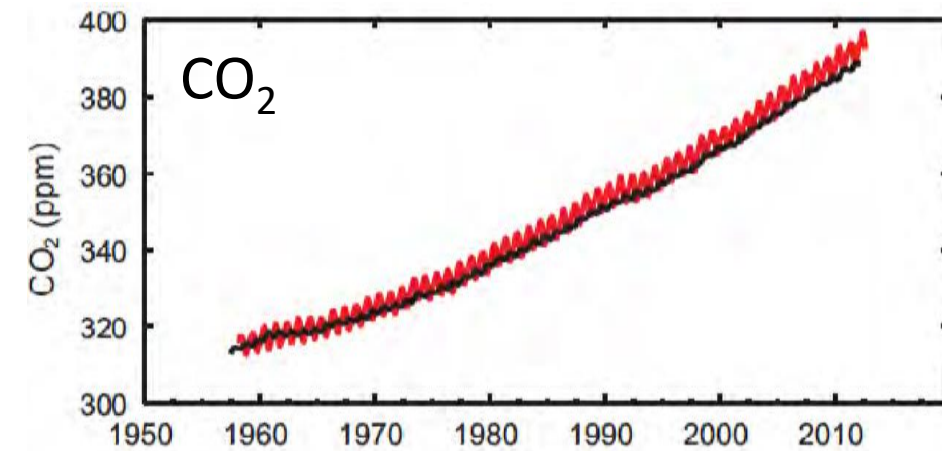


Big changes in the climate system

- Greenhouse gases are high and rising
- Oceans are warming
- Sea levels are rising



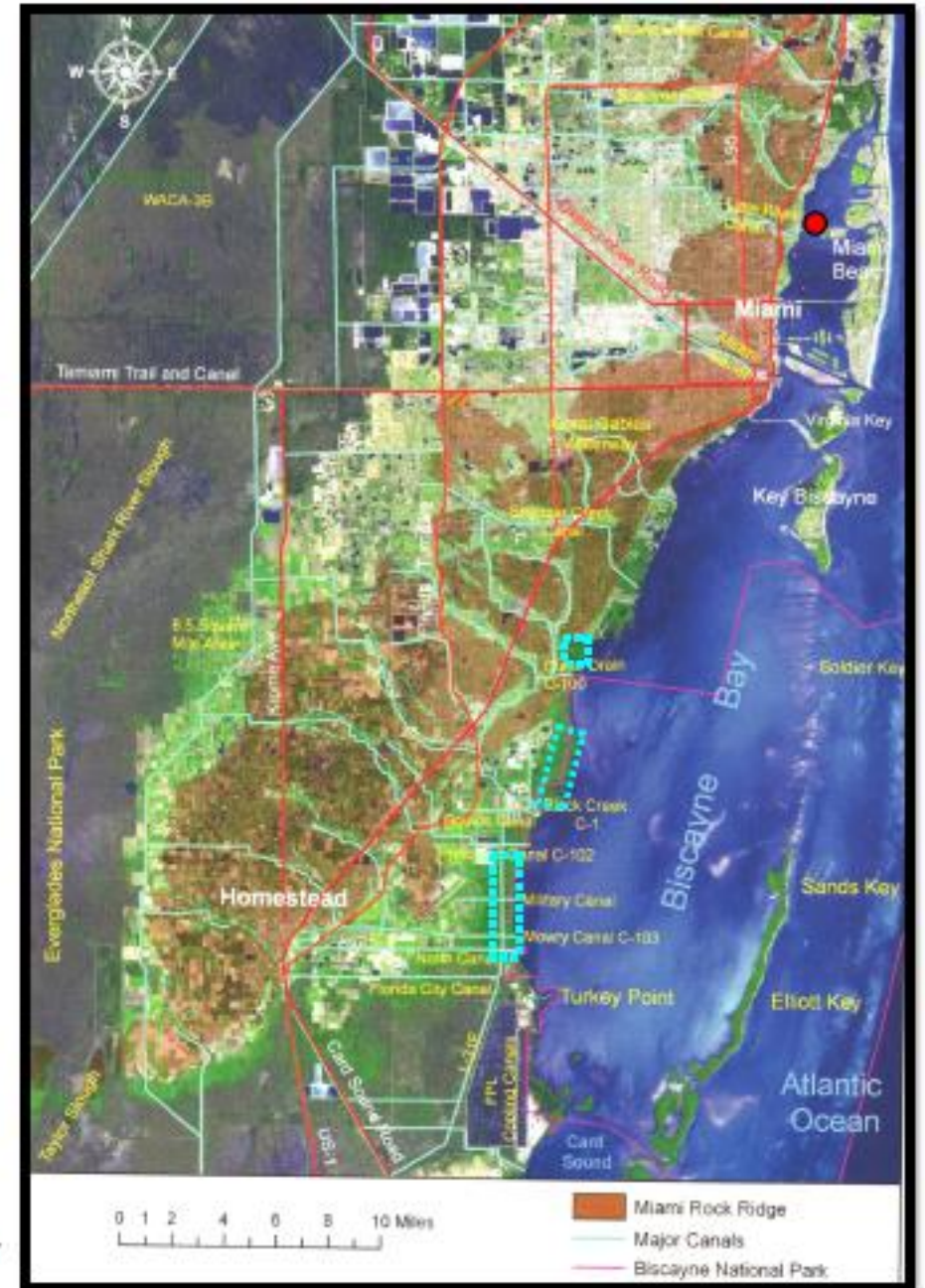
(Source: Climate Reality)



Biscayne Bay present

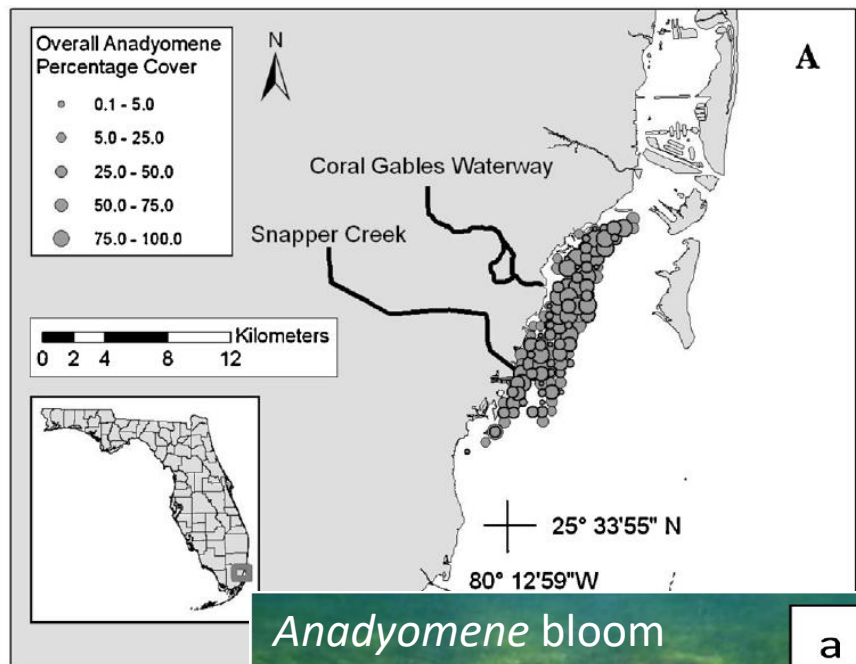
- Flood control system allowed for westward development
- No longer connected to the Everglades
- Canal discharge into bay, nutrient and organic matter loading
- Loss of shoreline vegetation
- North Biscayne Bay is particularly vulnerable (site of recent fish kills)
- Everglades Restoration project benefits nearshore area of South Biscayne Bay

Map Source: P. Harlem in Thomas Lodge's *The Everglades Handbook*



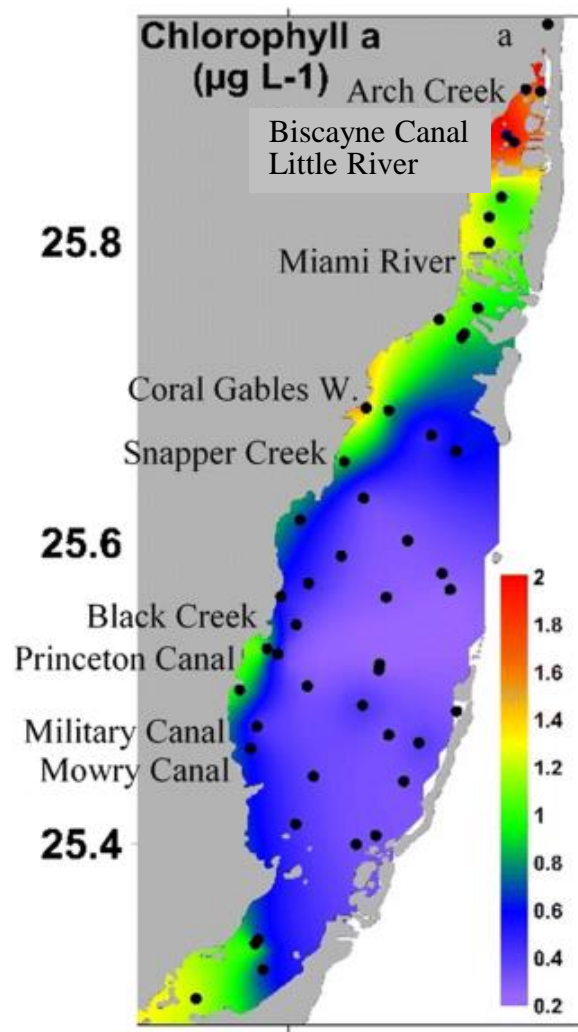
All of these drivers make water quality a difficult issue to manage

Trends indicate nutrient rich discharge likely driving macroalgal blooms in near shore waters of the Bay



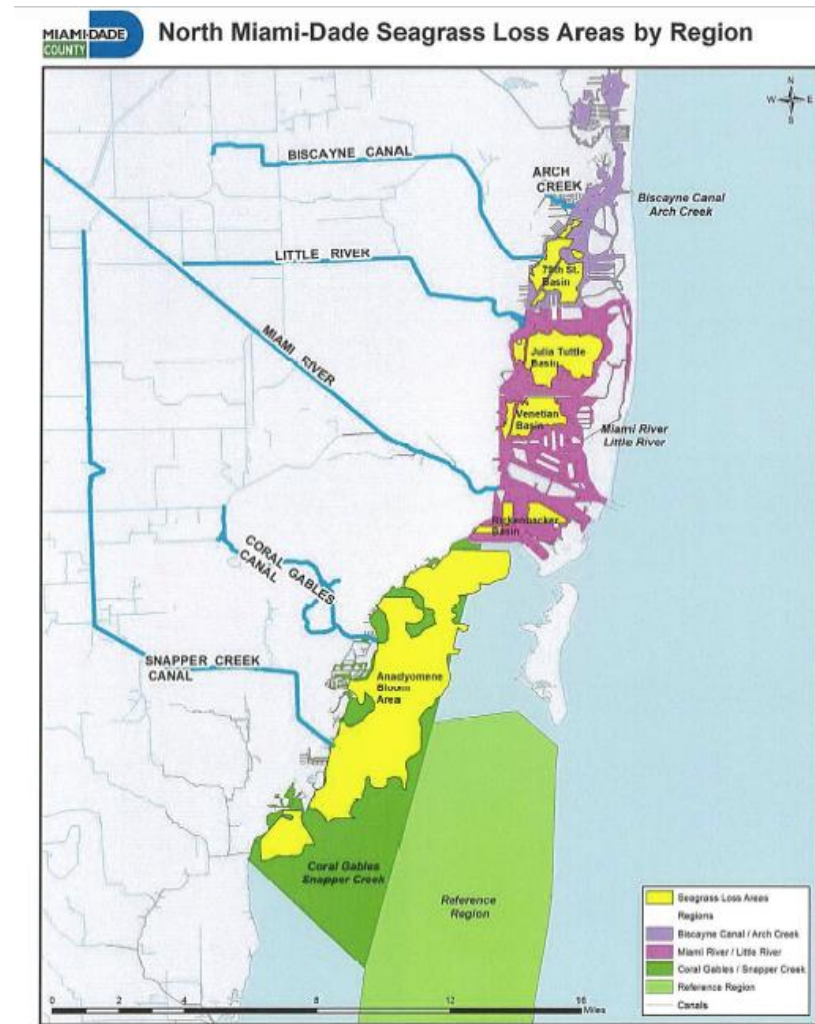
Collado-Vides et al, 2013

Poorest water quality in North North Bay and getting worse over time (1995-2014)



Millette et al. 2019

1998 Die-Off in 79th St Basin – 90% loss, more recent die-off in Julia Tuttle; also area of recent fish kill

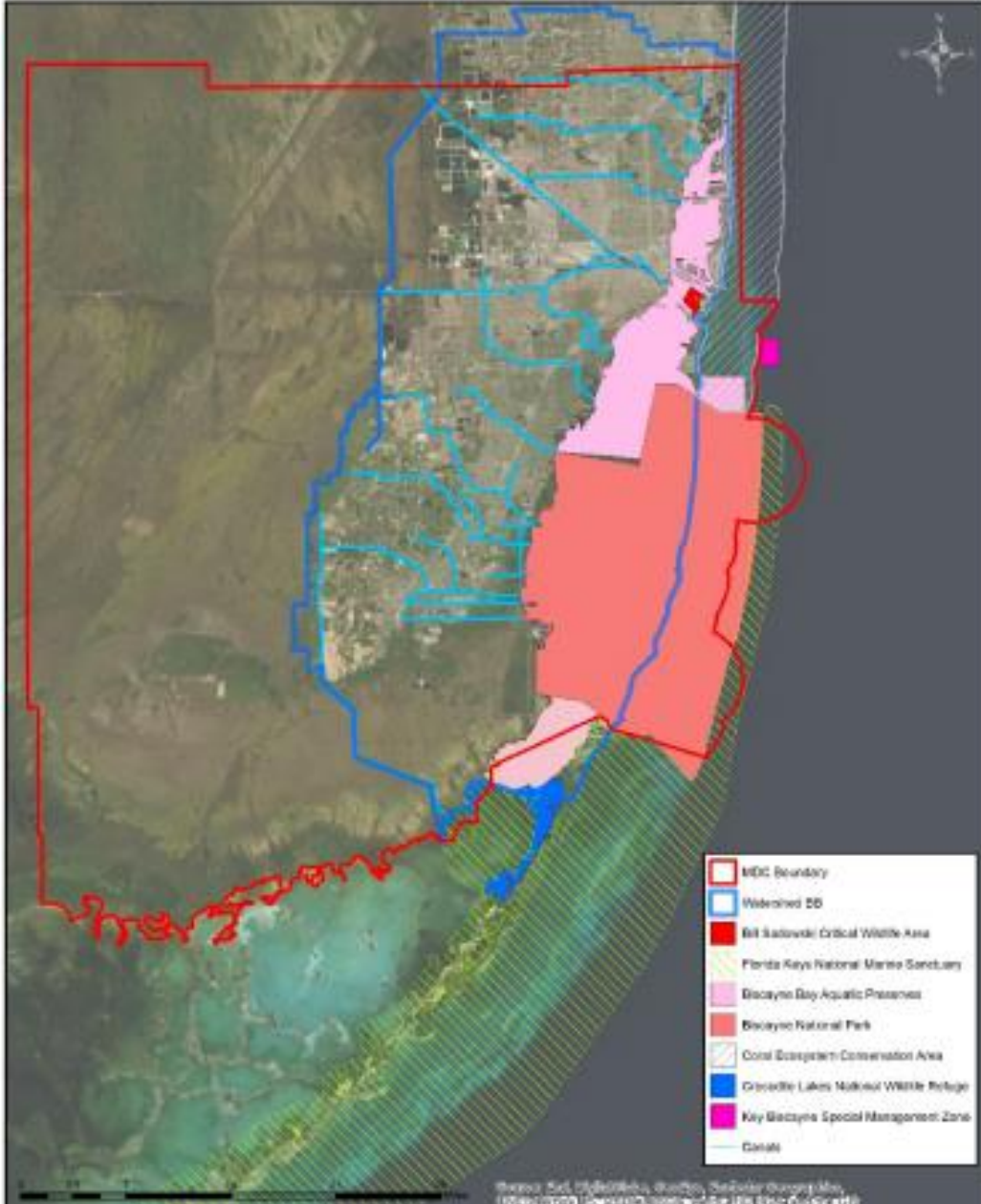


Miami Dade County 2018

A watershed approach to achieving deep reduction in pollutant loads
for restoration of seagrass meadows to historic coverages



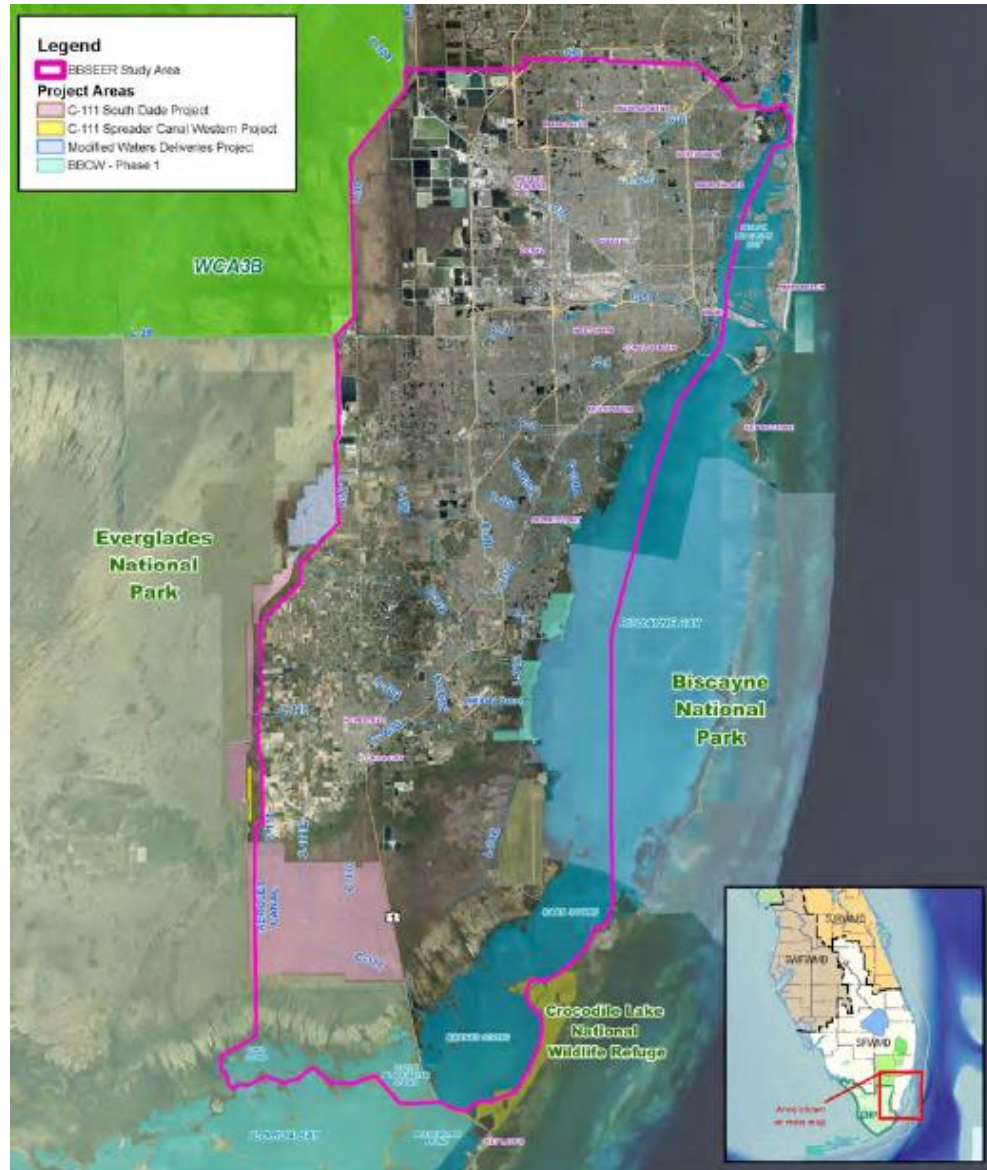
**The Miami-Dade County Biscayne Bay Task Force specific
recommendations to the County are a roadmap to Biscayne Bay
recovery.**



A watershed approach is key to achieving deep reduction in pollutant loads for restoration of seagrass meadows to historic coverages

The Miami-Dade County Biscayne Bay Task Force specific recommendations to the County are a roadmap to Biscayne Bay recovery

CERP Biscayne Bay and Southeastern Everglades Ecosystem Restoration



The **CERP Biscayne Bay and Southeastern Everglades Ecosystem Restoration (BBSEER)** Project is a **combination** of the Biscayne Bay Coastal Wetlands Phase II Project and the C-111 Spreader Canal Eastern Project.

The **purpose** of the project is to improve the quantity, potential quality, timing and distribution of freshwater to Biscayne Bay, including Card Sound and Barnes Sound and Biscayne National Park, to improve of natural coastal glades habitat in the Model Lands and Southern Glades, and to improve resiliency of these coastal habitats in light of sea level change.

Performance measures currently under development