



Climate Change and Water Management in South Florida

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Key West Climate Change Adaptation Working Group
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SFWMD White Paper

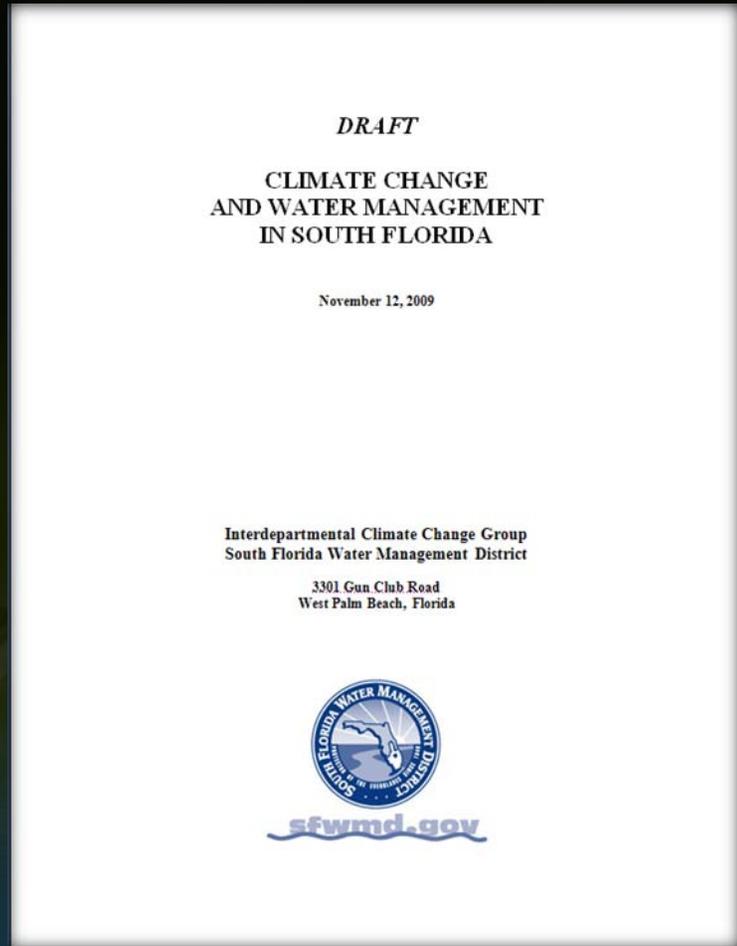


Table of Contents

Executive Summary.....1

I. Introduction:
 Confronting Change2

II. Climate Change and Water Management:
 Historical Climate Variability3

III. The Global Climate Change Quartet and
 Implications for Water Management.....5

 A. Rising Seas.....6

 B. Temperature and Evapotranspiration.....13

 C. Rainfall, Floods & Droughts.....15

 D. Tropical Storms & Hurricanes.....18

IV. Conclusion19

References.....20

Includes: What is known, What is probable, What is possible, and Information gaps

Change: Types and Potential Impacts

Climate Change Type

Natural Cycles
 El Nino...(3-7yrs)
 AMO* (multi-decadal)
 Solar Cycle
 Glacial (~thousands of years)



Human Induced
 Greenhouse
 Gases
 Global Warming

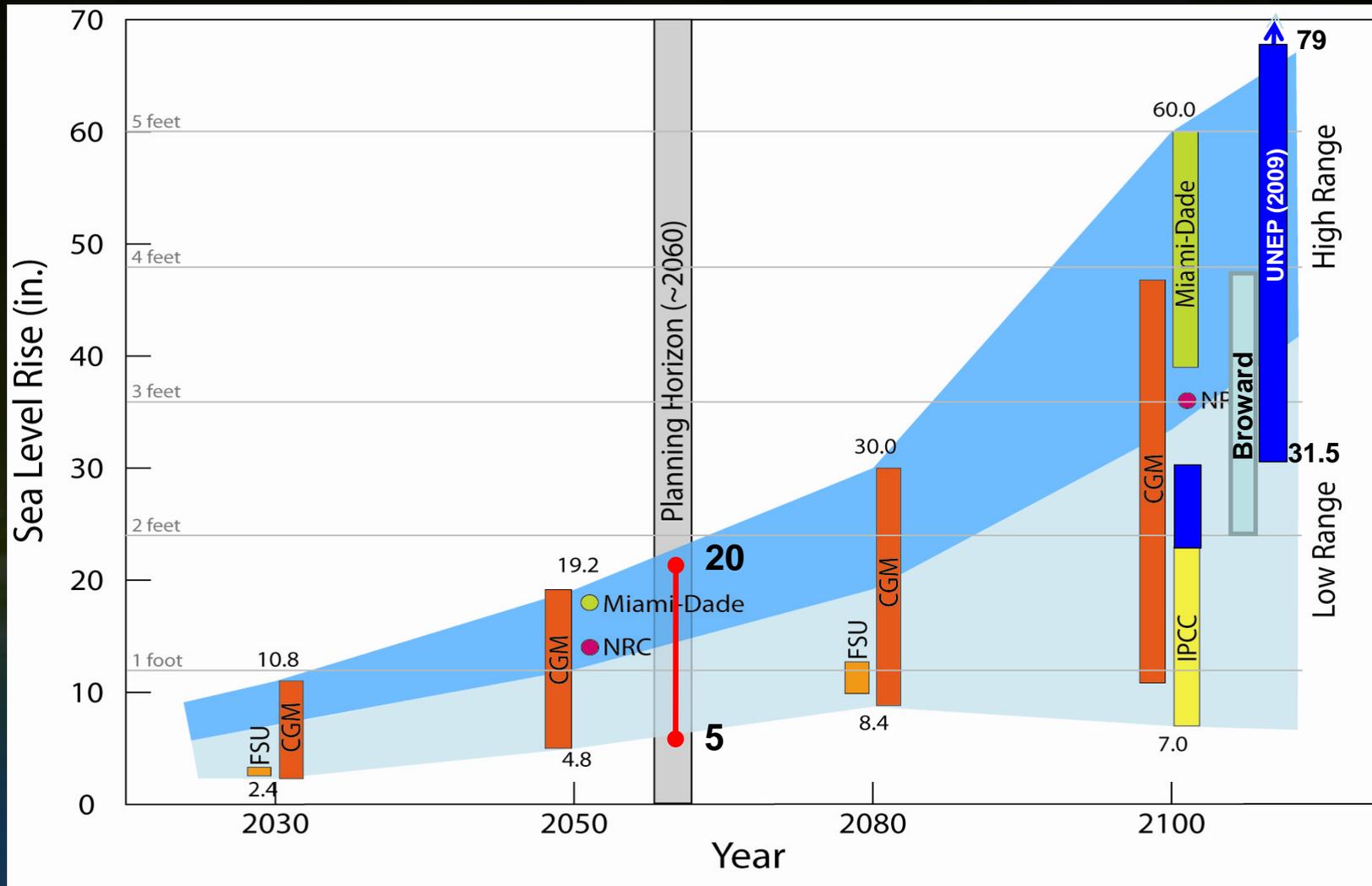
Quartet of change (Drivers)

- Rising Seas
- Temperature
- Rainfall, floods, and droughts
- Tropical Storms & Hurricanes

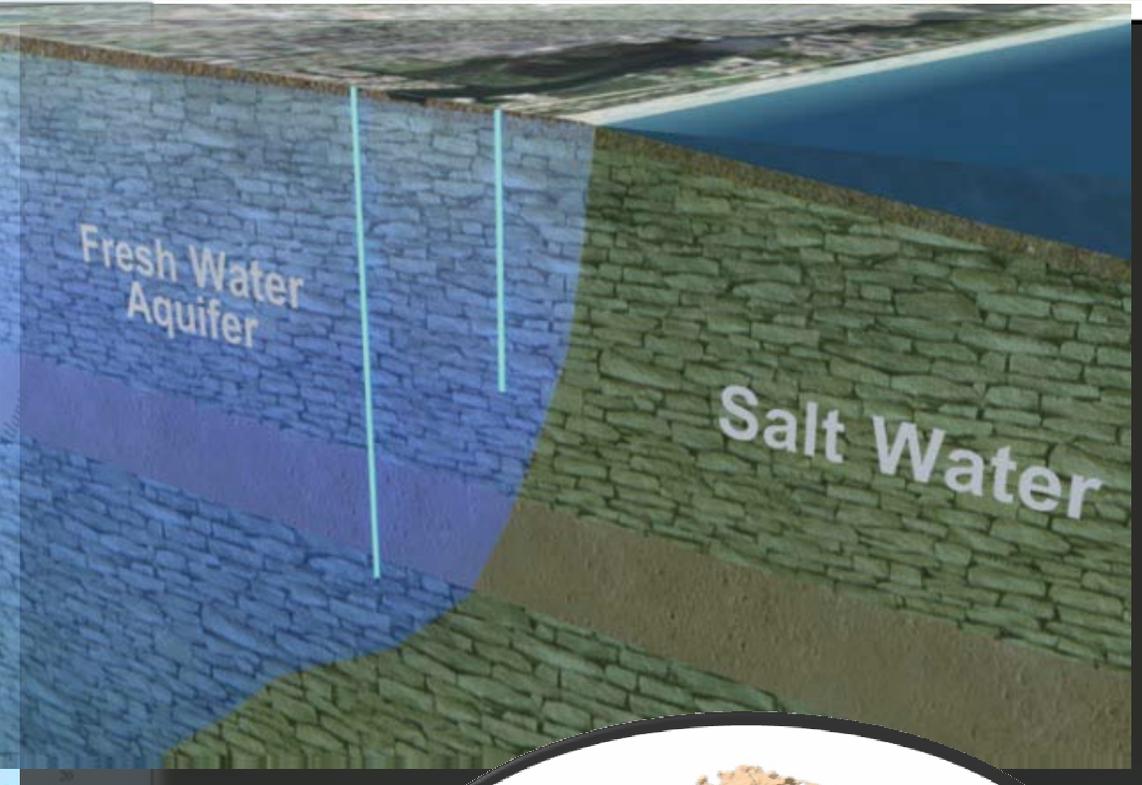
Water Management Impacts

- Direct landscape impacts (e.g. storm surge)
- Water Supply (e.g. droughts, saltwater intrusion)
- Flood Control (e.g. urban flooding, hurricanes)
- Restoration (e.g. ecosystem impacts, both coastal and interior)

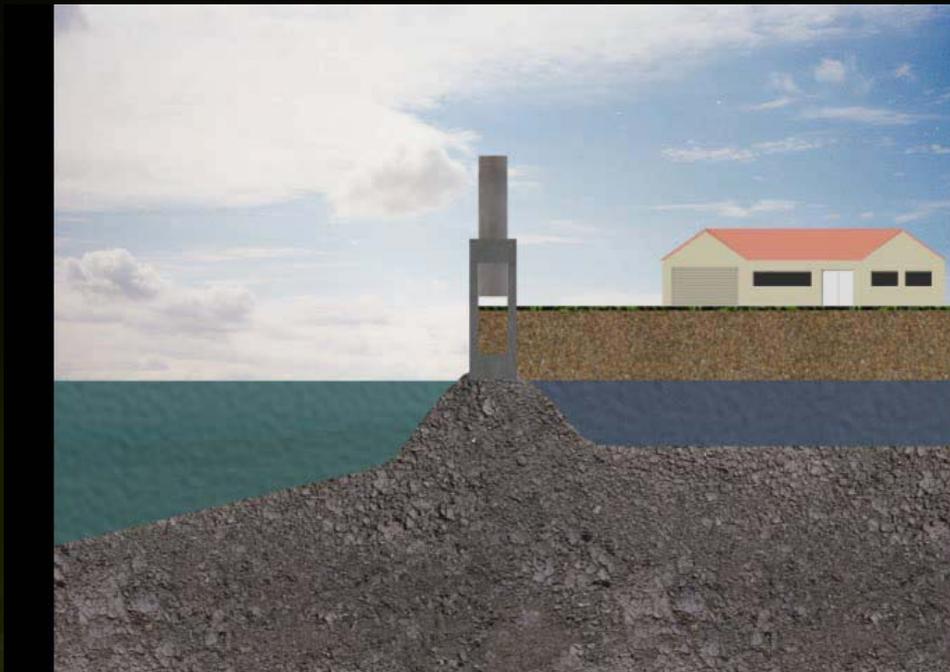
Future Projections: Considerable Spread



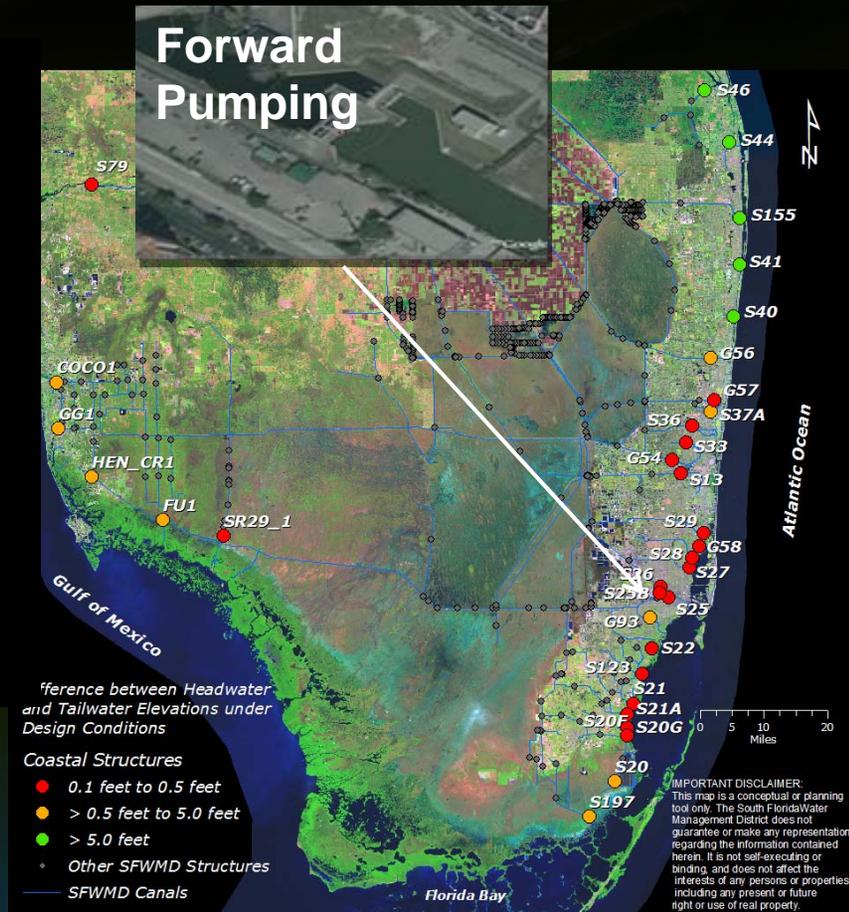
Rising Seas: Water Supply Impacts Saltwater Intrusion



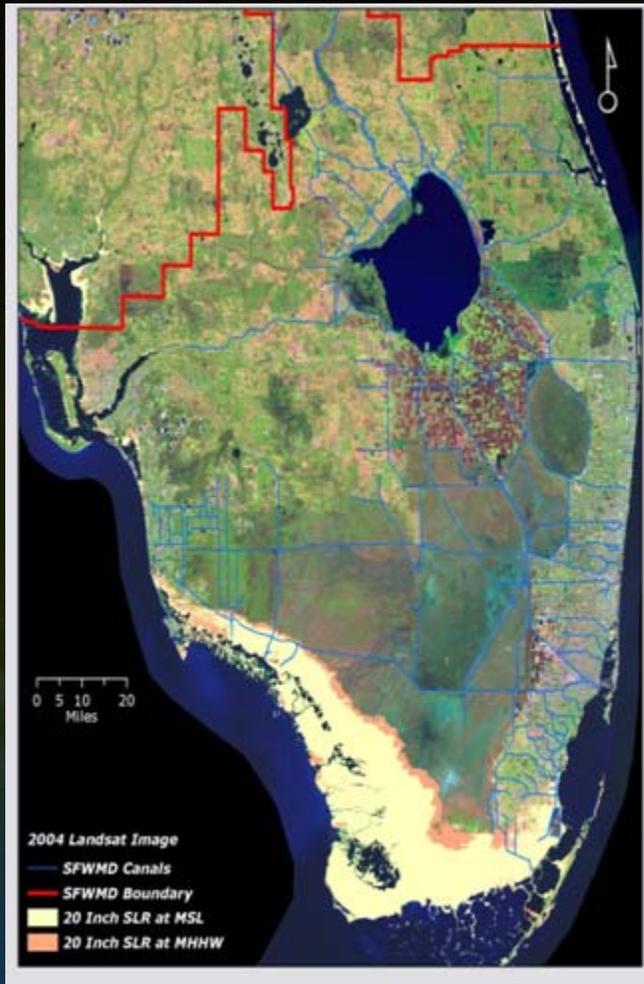
Rising Seas: Flood Control Concerns



- Small water level difference across coastal structures during high tides and local storms
- Flooding during high tide and storm surge



Rising Seas: Southern Everglades Restoration



- Relocation and possible reduction of mangrove forests
- Forced migration of wading birds north
- Potential peat collapse, coastal erosion, and redistribution of sediments
- Salinity intrusion into freshwater marshes can: discharge toxic hydrogen sulfide, cause coastal fish kills, and increase habitat loss

Conclusions

- History is not sufficient to make predictions.
- Sea Level Rise is more certain but significant uncertainties exist in projections.
- Current Climate Change projections:
 - 5 to 20 inches of sea levels by 2060. Need regional information and coordination with other agencies
 - Increase in temperature up to 7° F and Evapotranspiration up to 15%
 - Change in rainfall up to ±20 percent
 - Changes in the strength and frequency of tropical storms and hurricanes. Exact extent is uncertain

Preliminary Recommendations

TASK	FY10	FY11	FY12	FY13	FY14
Continue to analyze historical trends & uncertainties of regional climate projections	█				
Jointly with other agencies develop modeling tools, and agree on planning parameters	█				
Understand vulnerabilities		█	█	█	█
Develop & implement <u>Type I</u> adaptation strategies	█	█	█	█	█
Develop & implement <u>Type II</u> adaptation strategies					█