Setting Salinity Targets for Restoration in South Florida's Estuaries

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Background

Salinity target for restoration

- No agreement among stakeholders
- Lack of available tools
- Need for common physical or ecological "currency"

Targets

Types

- Best Professional Judgment (BPJ) targets
- Modeled targets

Goal

- Pre-drainage
- Paleo-ecological
- Restoration

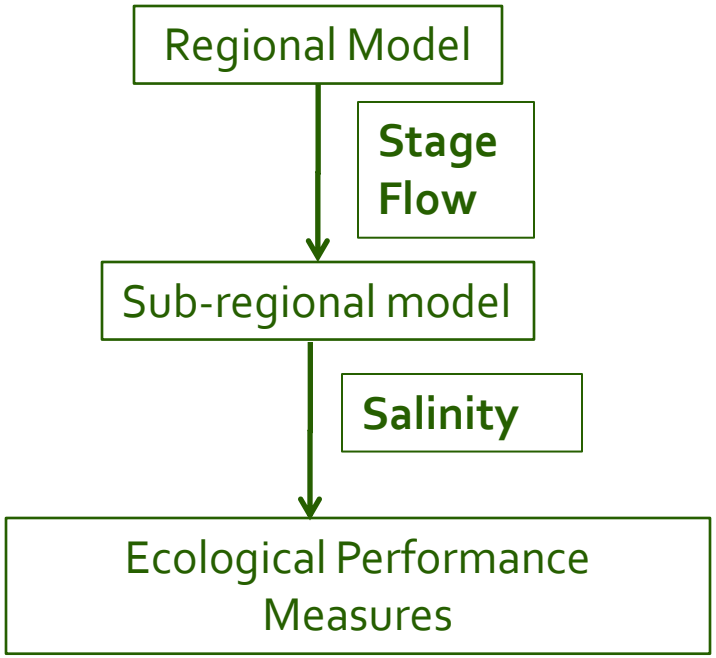
Workshop

- Requested participants from all RECOVER stakeholders
  - 14 Federal, State, Local, and Tribal agencies

- Agreement on:
  - Tools used to set targets
  - Goal of target

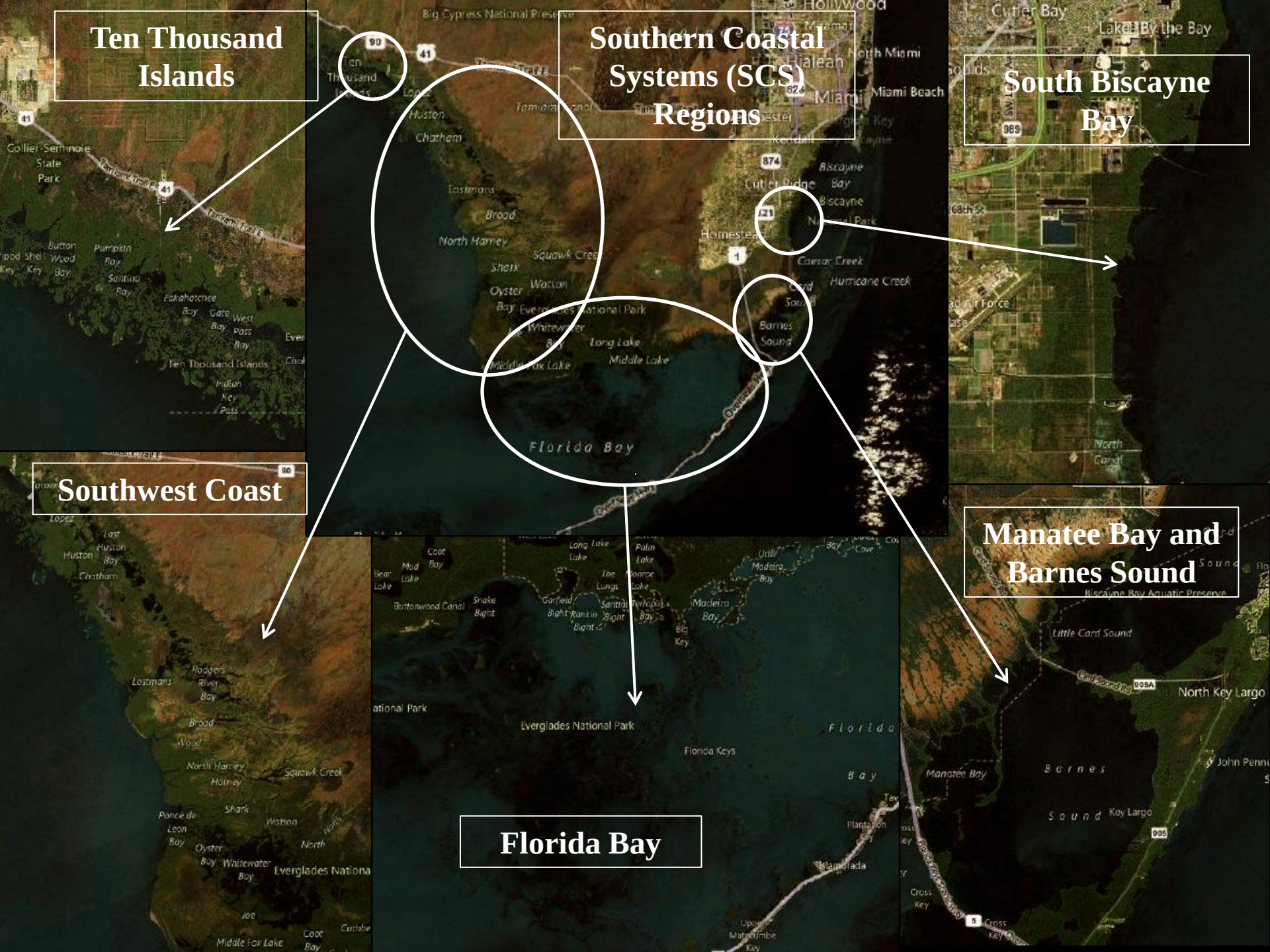
- Outcome would feed into performance measure refinement

General Flow of Models to Performance Measures



Biscayne Bay
- Mangrove fish
- Pink shrimp and associated epifauna
- Seagrass

Florida Bay
- Juvenile Seatrout
- Pink shrimp and associated epifauna
- Seagrass


Ten Thousand Islands
Southern Coastal Systems (SCS) Regions
South Biscayne Bay
Southwest Coast
Manatee Bay and Barnes Sound
Florida Bay
Florida Bay
Everglades National Park
Florida Keys
Big Cypress National Preserve
Collier-Seminole State Park
Ten Thousand Islands
Biscayne Bay
Biscayne National Park
Cutler Ridge
Homestead
Miami
Miami Beach
North Miami
Hialeah
Hollywood
Cutler Bay
Lake By the Bay
Caesar Creek
Hurricane Creek
Barnes Sound
Long Lake
Middle Lake
Little Card Sound
North Key Largo
Key Largo
Manatee Bay
Barnes Sound
Biscayne Bay Aquatic Preserve
Madeira Bay
Big Key
Snake Bight
Buttonwood Canal
Coot Bay
Mud Lake
Bear Lake
Palm Lake
Long Lake
Garfield Bight
Rankin Bight
Santini Bight
Terrapin Bay
Lostmans
Rodgers River Bay
Broad
North Harney
Shark
Watson
Oyster Bay
Whitewater Bay
Everglades National
Middle Fox Lake
Coot Bay
Cuthbe
Joe
Ponce de Leon Bay
Lopez
Huston
Chatham
Last Huston Bay
Fakahatchee Bay
Gate Bay
West Pass Bay
Pumpkin Bay
Santina Bay
Button Wood Bay
Indian Key Pass
Ten Thousand Islands
Squawk Creek
Tamiami Canal
Tamiami Trail
Overseas Highway
Card Sound Rd
Card Sound Bridge
Cross Key
Islamorada
Plantation
Upper Matecumbe Key
Tavernier
John Penn
Cutler Bay
Lake By the Bay
Miami Beach
North Miami
Hialeah
Hollywood
Miami
Kendall
Key Biscayne
Biscayne National Park
Homestead
Caesar Creek
Hurricane Creek
Card Sound
Barnes Sound
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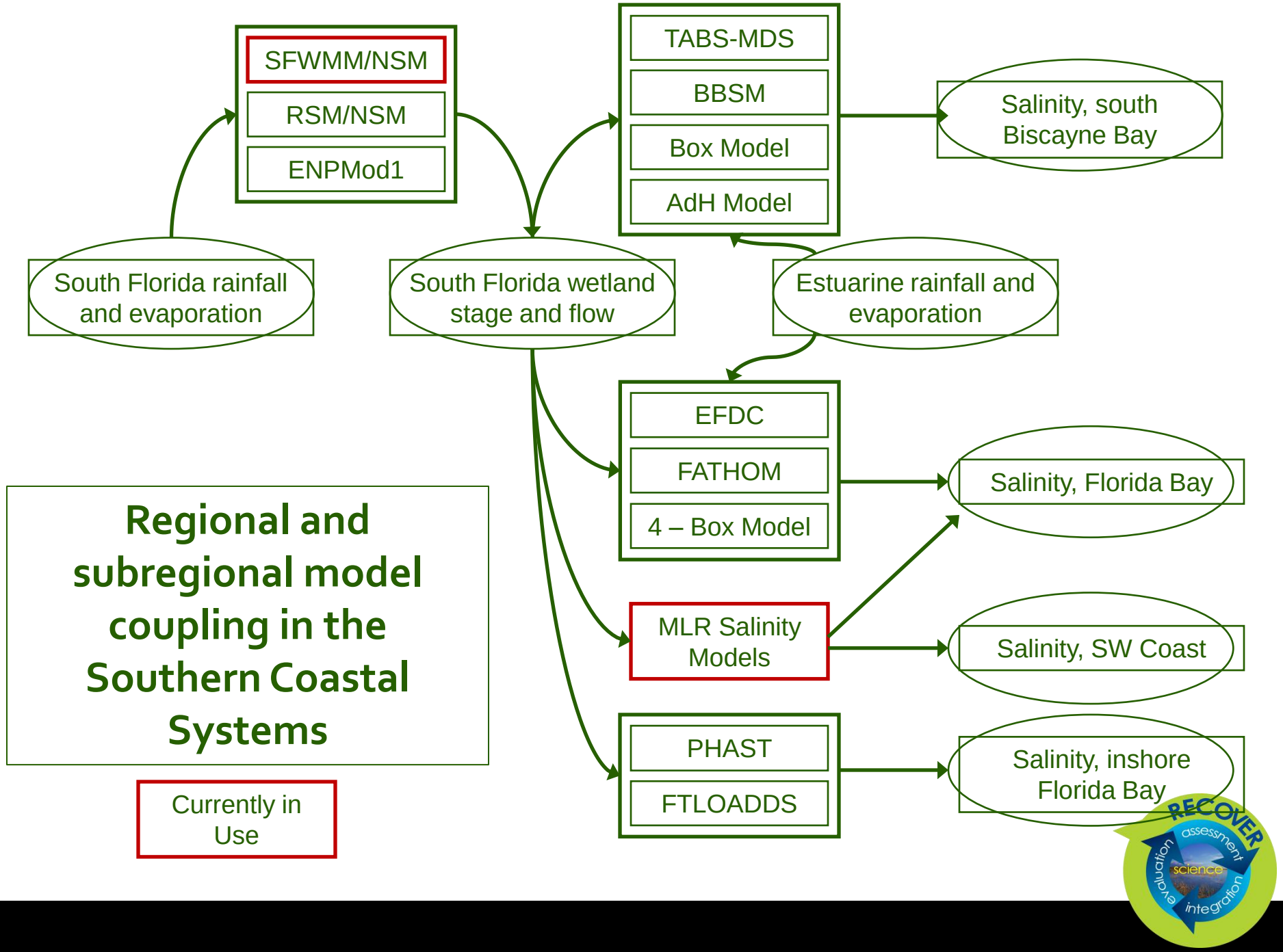

SFWMM/NSM
RSM/NSM
ENPMod1
TABS-MDS
BBSM
Box Model
AdH Model
Salinity, south Biscayne Bay
South Florida rainfall and evaporation
South Florida wetland stage and flow
Estuarine rainfall and evaporation
EFDC
FATHOM
4 – Box Model
Salinity, Florida Bay
MLR Salinity Models
Salinity, SW Coast
PHAST
FTLOADDS
Salinity, inshore Florida Bay
Regional and subregional model coupling in the Southern Coastal Systems
Currently in Use
RECOVER
assessment
science
integration
evaluation

Performance Measure Metrics

- **Regime**
  - **Salinity Envelope**: desired range for a given basin/embayment
  - **Mean offset**: how far predicted/observed range is from target
- **Hypersalinity** – Frequency of hypersaline events

Application

The same metrics are used for both evaluation and assessment purposes

- For **evaluation:** model output from the CERP regional model for different scenarios are compared to the target at site specific locations.

- For **assessment:** the site specific targets are compared to hi-resolution salinity data collected at those same locations.

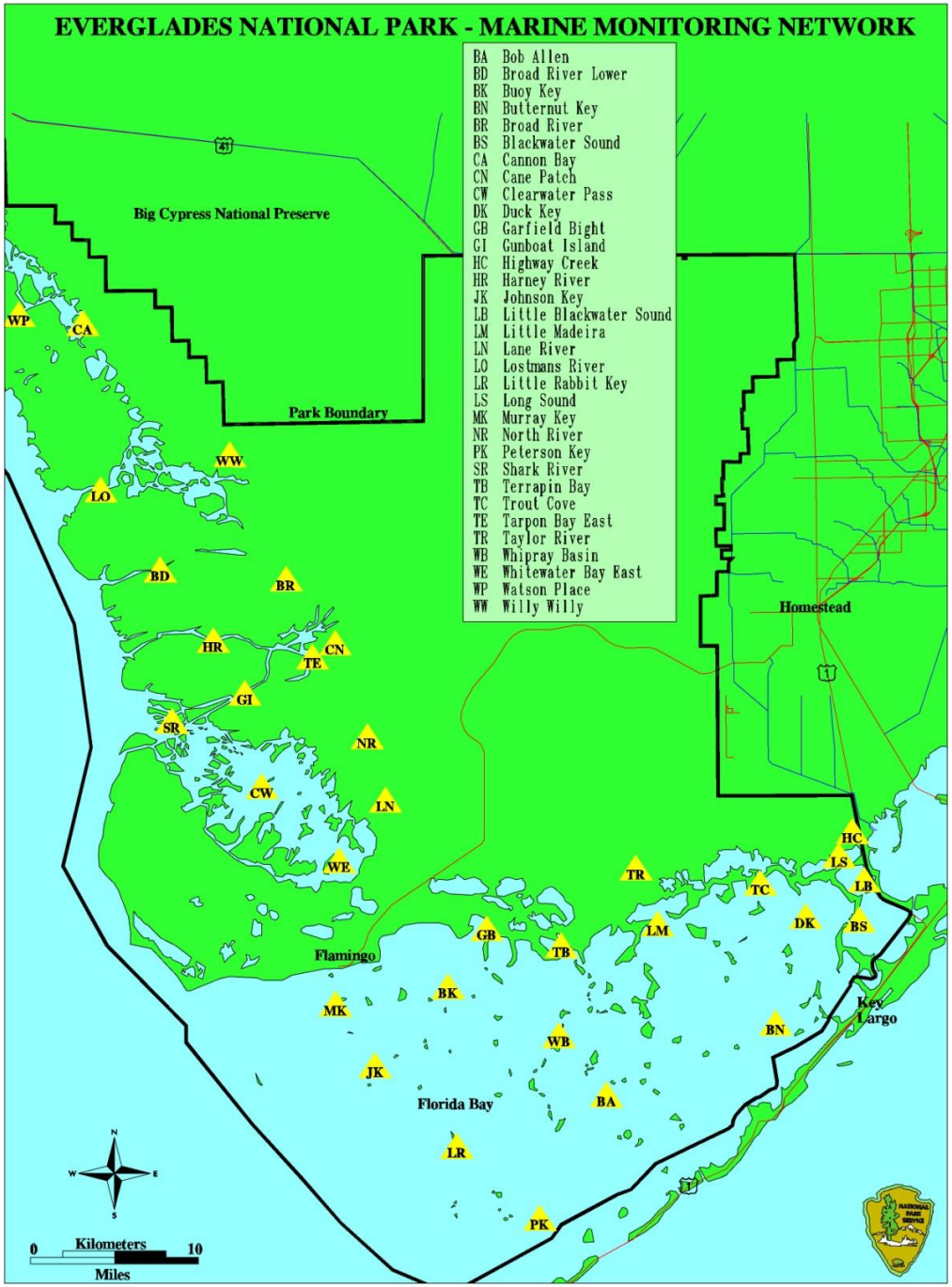
Regime Metric – Salinity Envelope

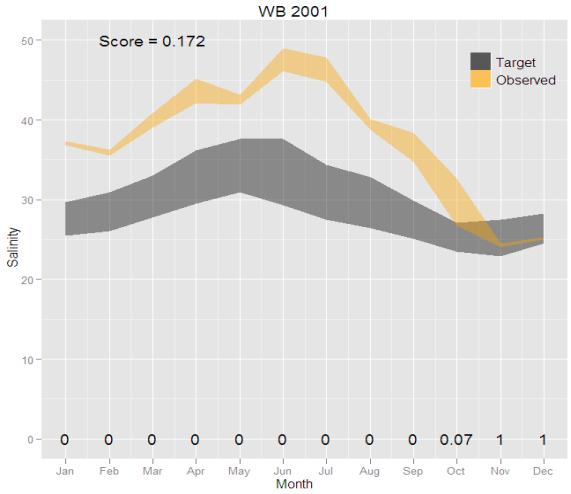
The target is the "mid-range" (25th to 75th percentile) of the full 36 year POR NSM/selected sub-regional model.

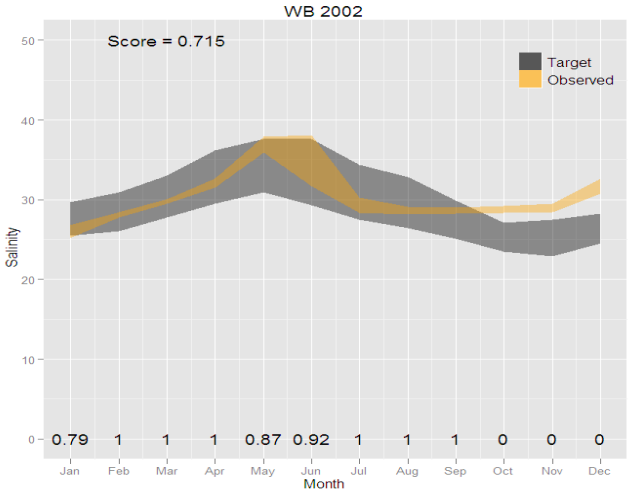
- **Evaluation** compares mid-range of target to the mid-range of the predicted CERP alternative.

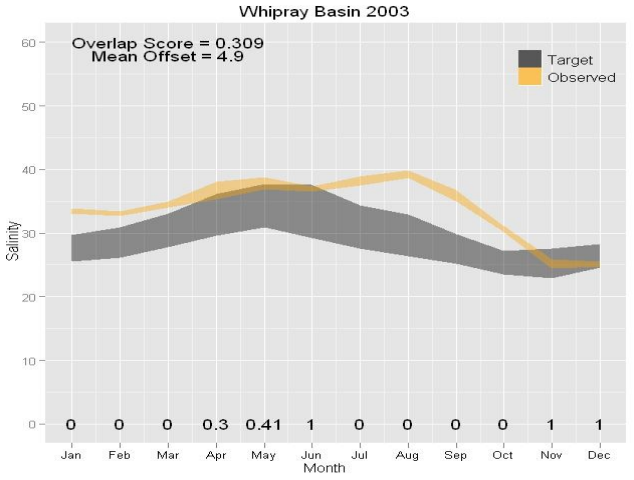
- **Assessment** compares mid-range of target to observed data.

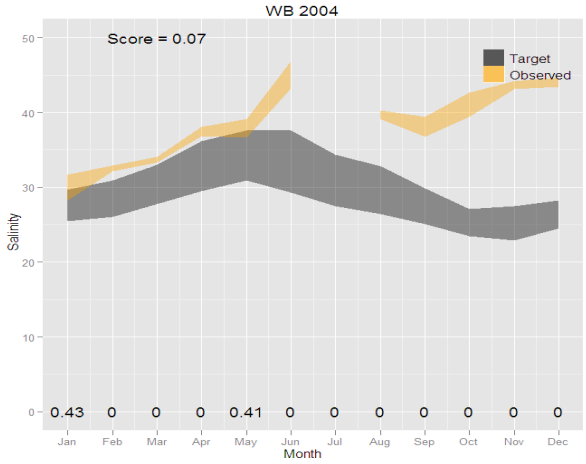
- **Score** = the percentage of the mid-range values per month that the observed /predicted data falls within the mid-range of the target.

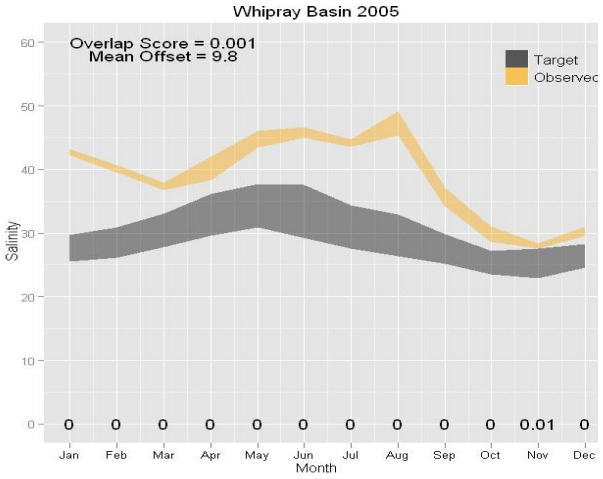

EVERGLADES NATIONAL PARK - MARINE MONITORING NETWORK
BA Bob Allen
BD Broad River Lower
BK Buoy Key
BN Butternut Key
BR Broad River
BS Blackwater Sound
CA Cannon Bay
CN Cane Patch
CW Clearwater Pass
DK Duck Key
GB Garfield Bight
GI Gunboat Island
HC Highway Creek
HR Harney River
JK Johnson Key
LB Little Blackwater Sound
LM Little Madeira
LN Lane River
LO Lostmans River
LR Little Rabbit Key
LS Long Sound
MK Murray Key
NR North River
PK Peterson Key
SR Shark River
TB Terrapin Bay
TC Trout Cove
TE Tarpon Bay East
TR Taylor River
WB Whipray Basin
WE Whitewater Bay East
WP Watson Place
WW Willy Willy
Big Cypress National Preserve
Park Boundary
Homestead
Flamingo
Florida Bay
Key Largo
0 Kilometers 10
Miles

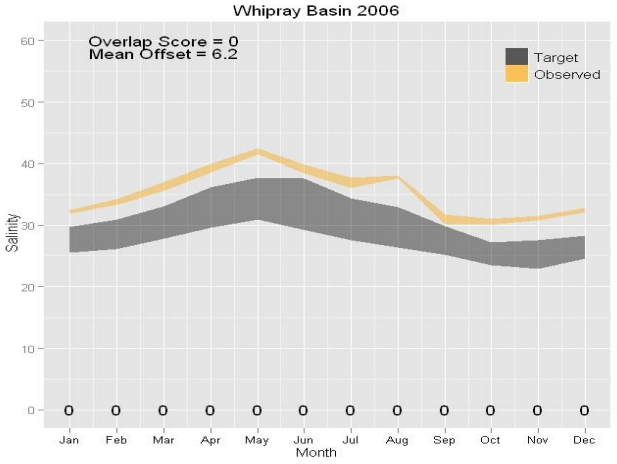






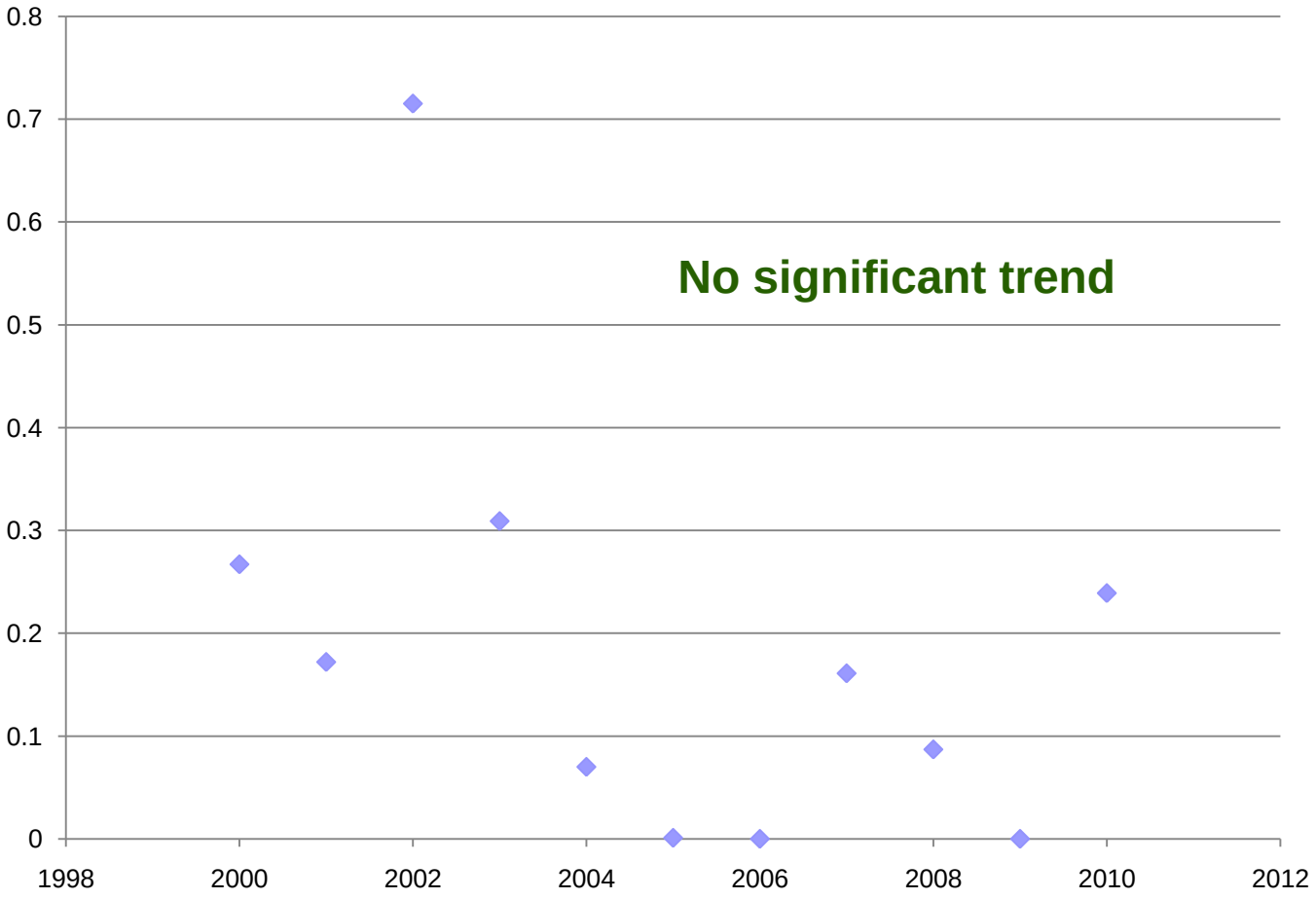




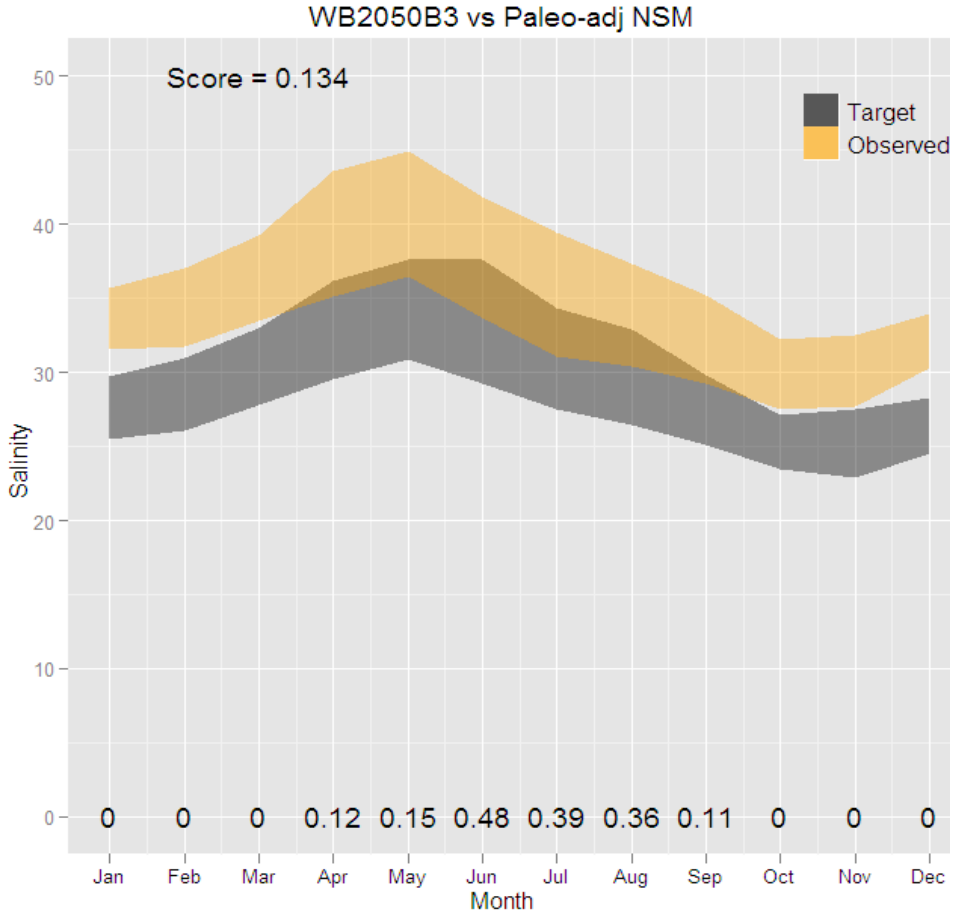


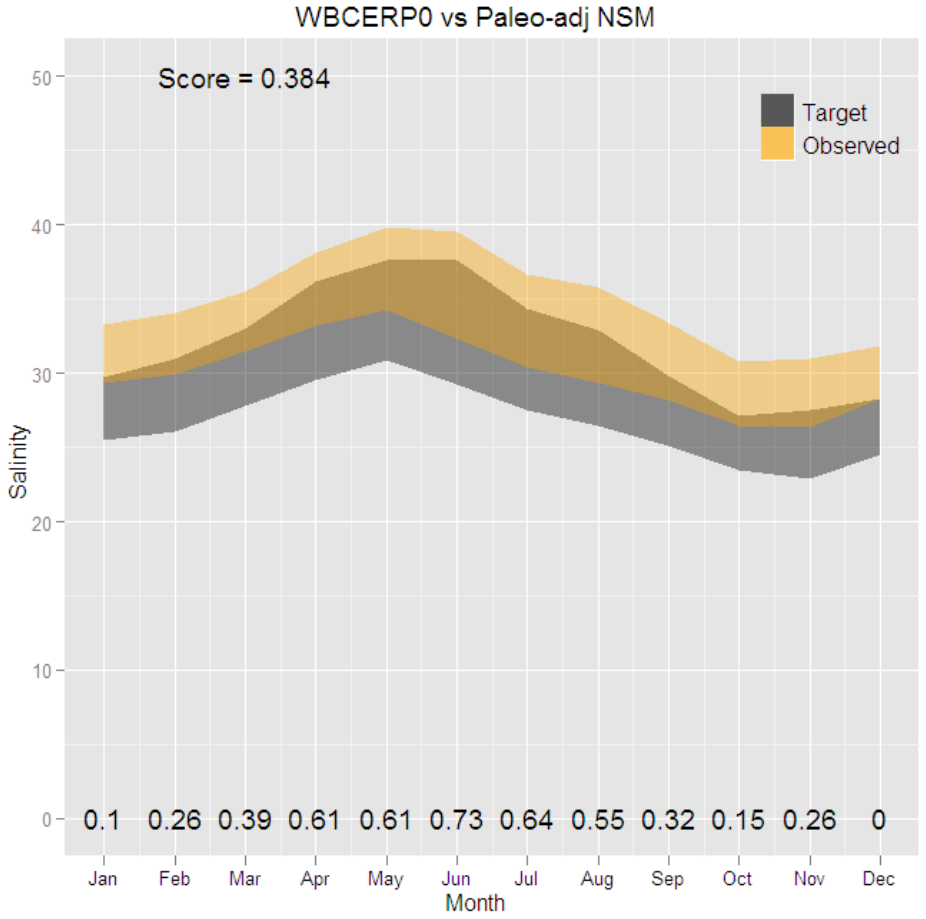
Annual results from 2001 through 2006

Regime Annual Scores



Example of PM Regime Metric used for Evaluation of CERP Alternative





Questions?

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Shark River looking out into Florida Bay at moonrise