Predrainage Water Depths Everglades

“New science”

Multiple lines of evidence available

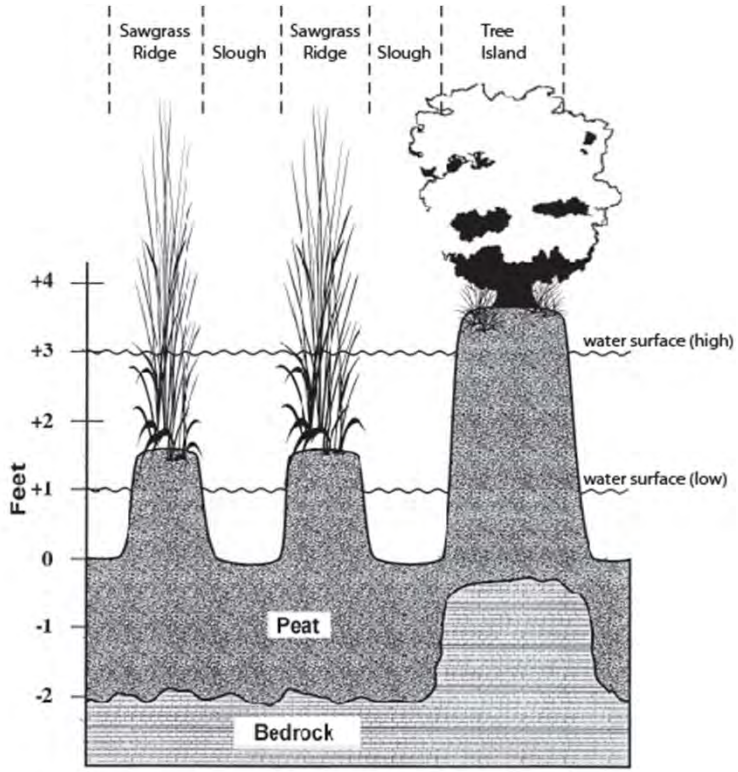
- historical observations
  - recorded depths
  - indicator plants
  - outflows

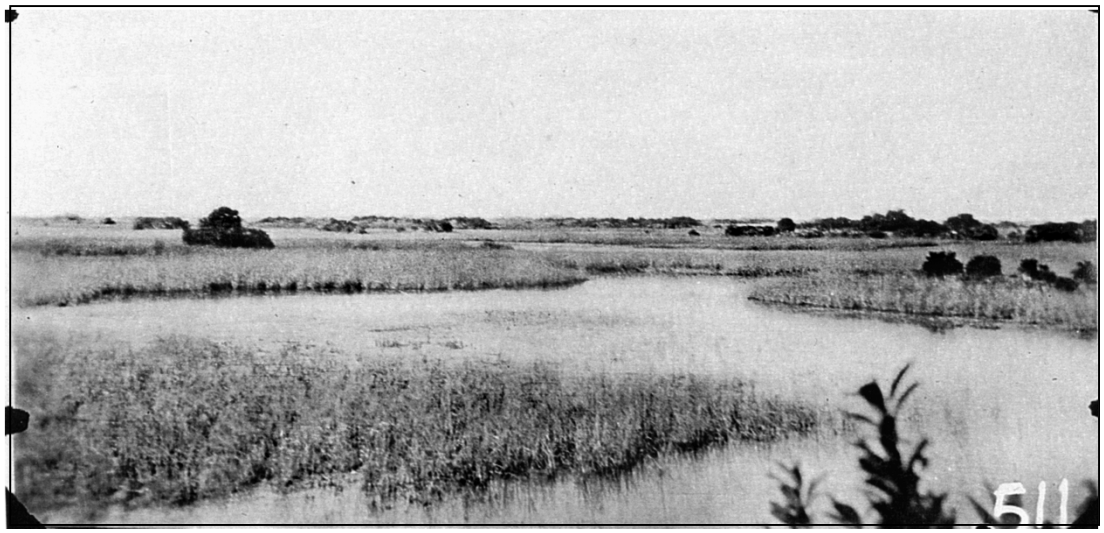
- paleoecology (soil core studies)
  - pollen, seeds, plant fragments
  - dating from PB210, C14, bomb spikes

Preview:

- generally deeper than previously thought
- good correspondence between historical and paleo sources
- annual rise and fall
- water surface parallel to ground surface
- interannual variability
- buffering from upstream watershed

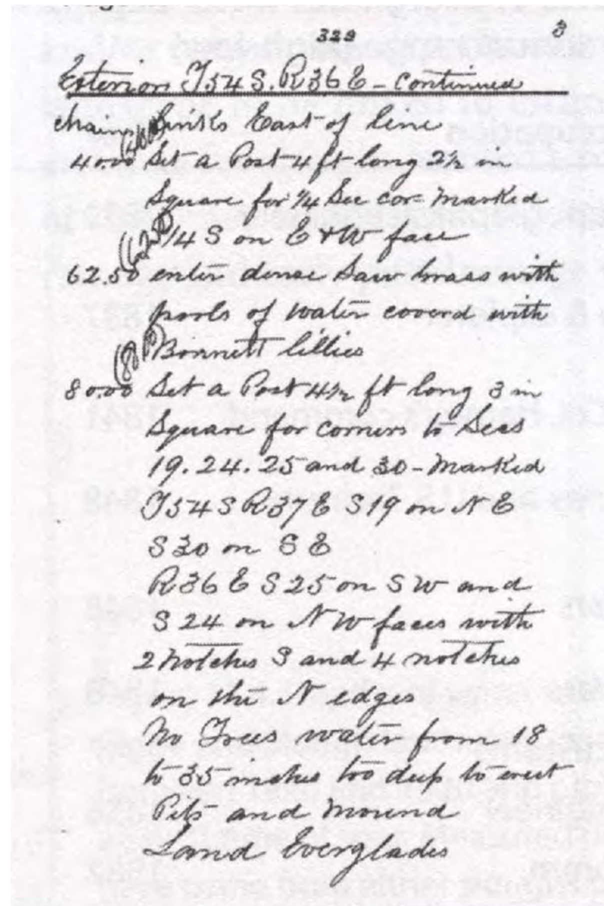
Microtopogaphy





Sources of Water Depth Information

- Don’t have:
    - quantitative measure of interannual variance
- Do have:
    - hundreds of firsthand observations
        - multiple observers
        - multiple professions
    - indirect evidence:
        - vegetation
        - soils
        - outflows
        - navigation
    -

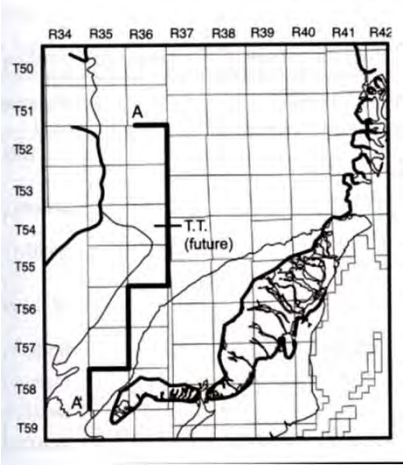


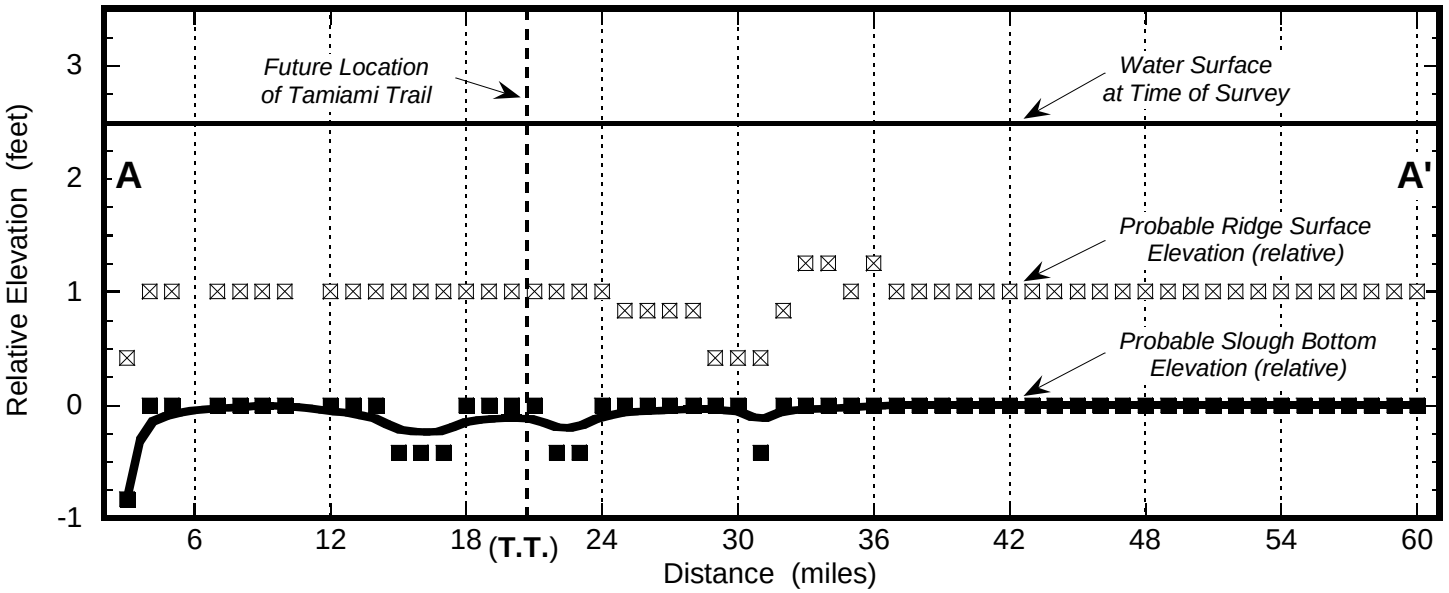
329 3

Exterior T54 S. R36 E – Continued

chains links East of line
40.00 Set a Post 4 ft long 2½ in
Square for ¼ Sec cor marked
¼ S on E & W face
62.50 enter dense Saw grass with
pools of water covered with
Bonnett lillies
80.00 Set a Post 4½ ft long 3 in
Square for corners to Secs
19. 24. 25 and 30 – marked
T54 S R37 E S19 on N E
S30 on S E
R36 E S25 on S W and
S24 on N W faces with
2 notches 3 and 4 notches
on the N edges
No Trees water from 18
to 35 inches too deep to erect
Pits and mound
Land Everglades

Sources – Transect of Depths



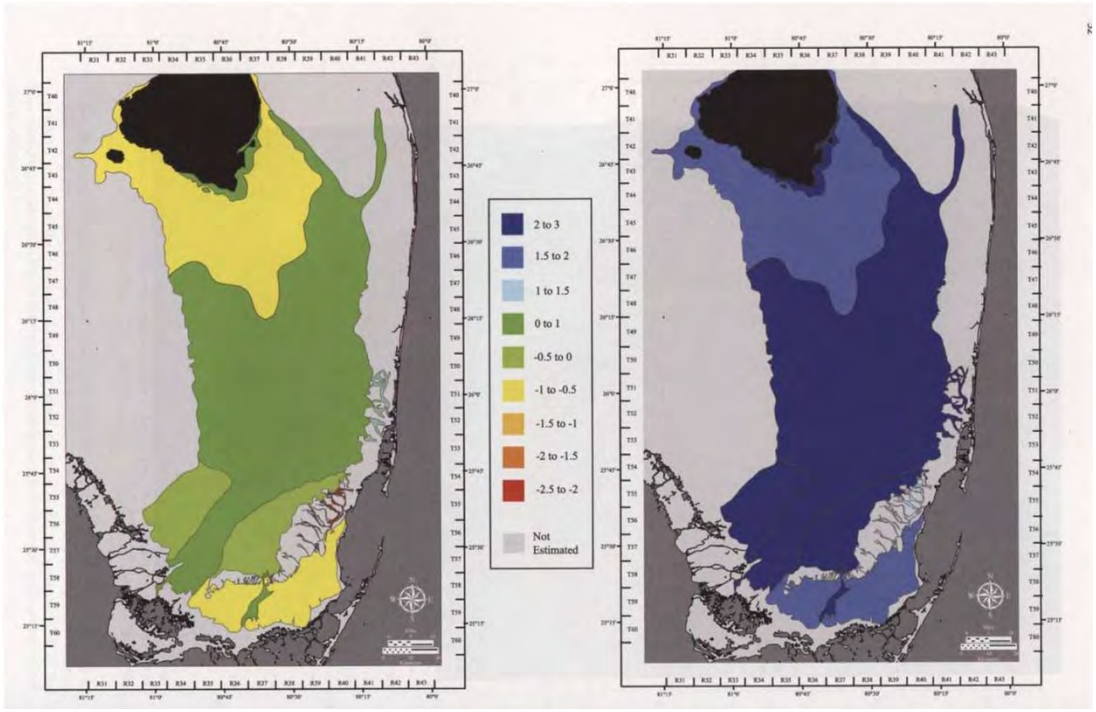


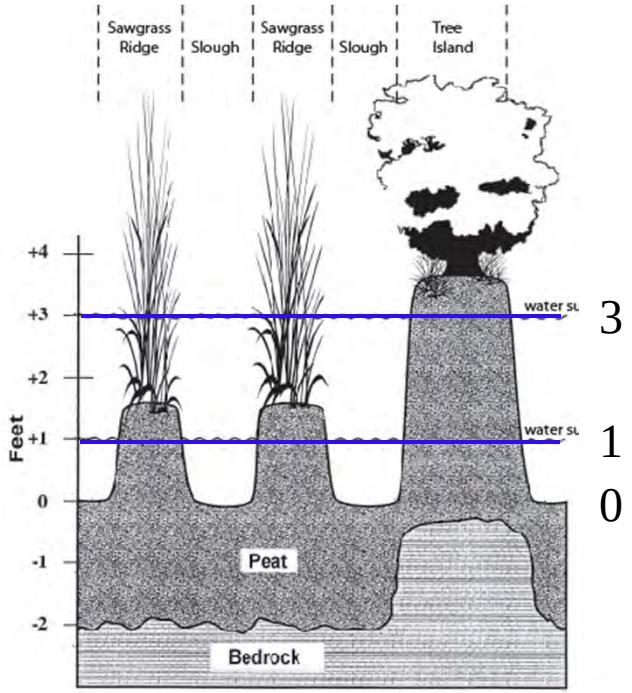
Water Depths

Table 11.4. Estimated predrainage (pre-1880s) long-term average annual water depths and hydroperiods

Everglades Landscape	Average Annual Low (feet)	Average Annual High (feet)	Average Hydroperiod (months)
Custard Apple Swamp	0	2	11–12
Sawgrass Plains	-0.5[a]	1.5	9–10
Ridge and Slough (sloughs)	1	3	12
Ridge and Slough (ridges)	-0.5	1.5	9–10
Ridge and Slough (landscape average)	(0.2)[b]	(2.2)[b]	n/a
Rockland Marl Marsh[c]	-0.5	2	8–9
Ochopee Marl Marsh[c]	-0.5	2	8–9
Perrine Marl Marsh[d]	-1	1.5	8–9

Notes: a. Negative values indicate distance below ground surface.





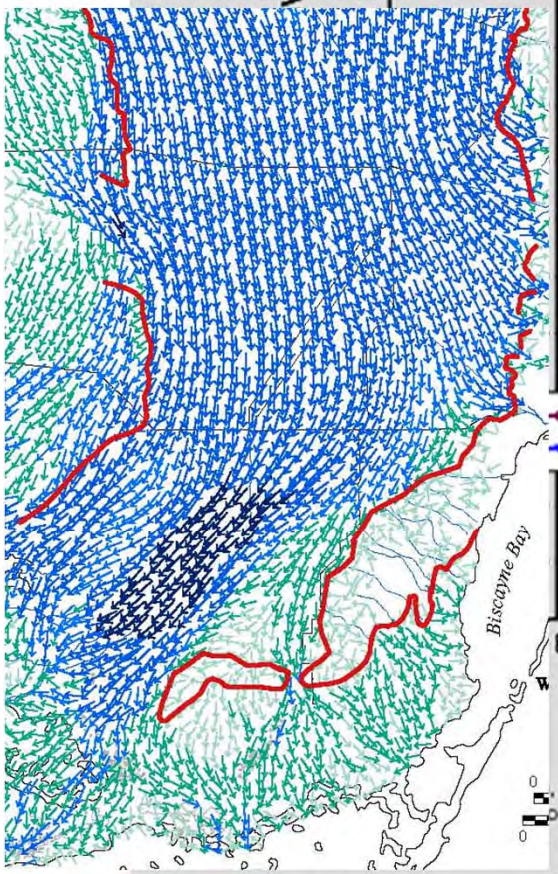
3

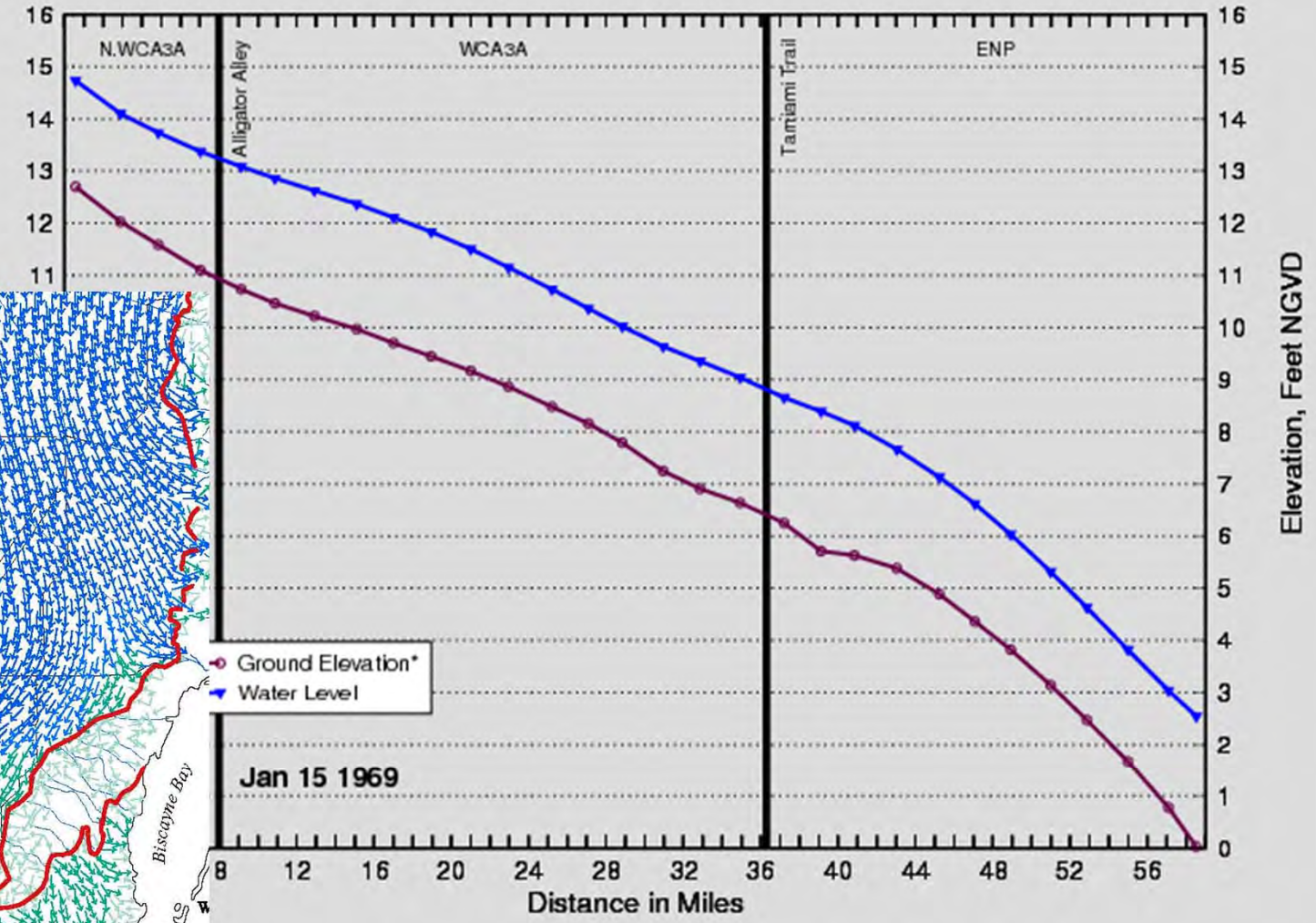
1

0

Water Depth Viewing Window

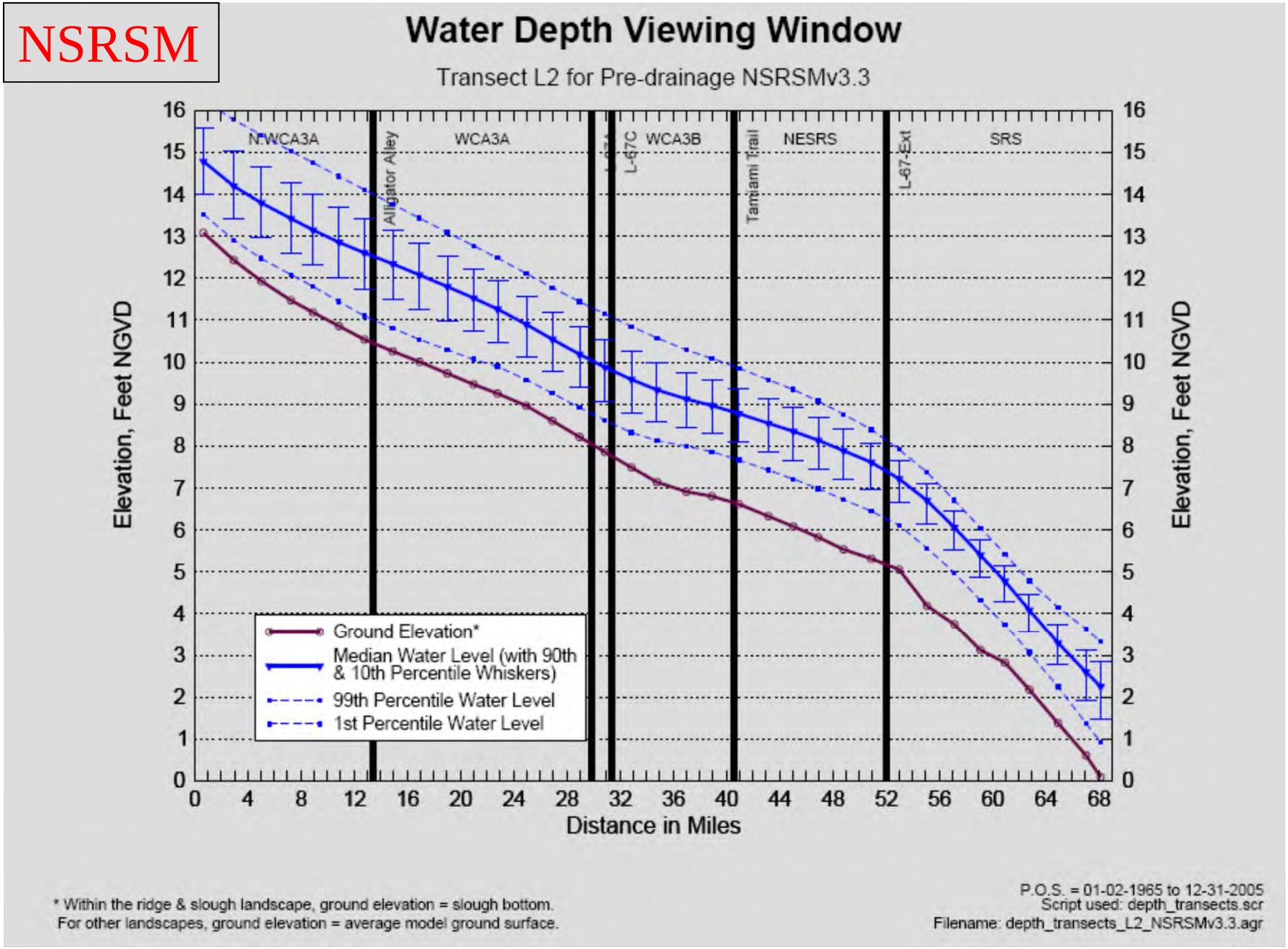
Transect L1 for Pre-drainage NSRSMv3.3





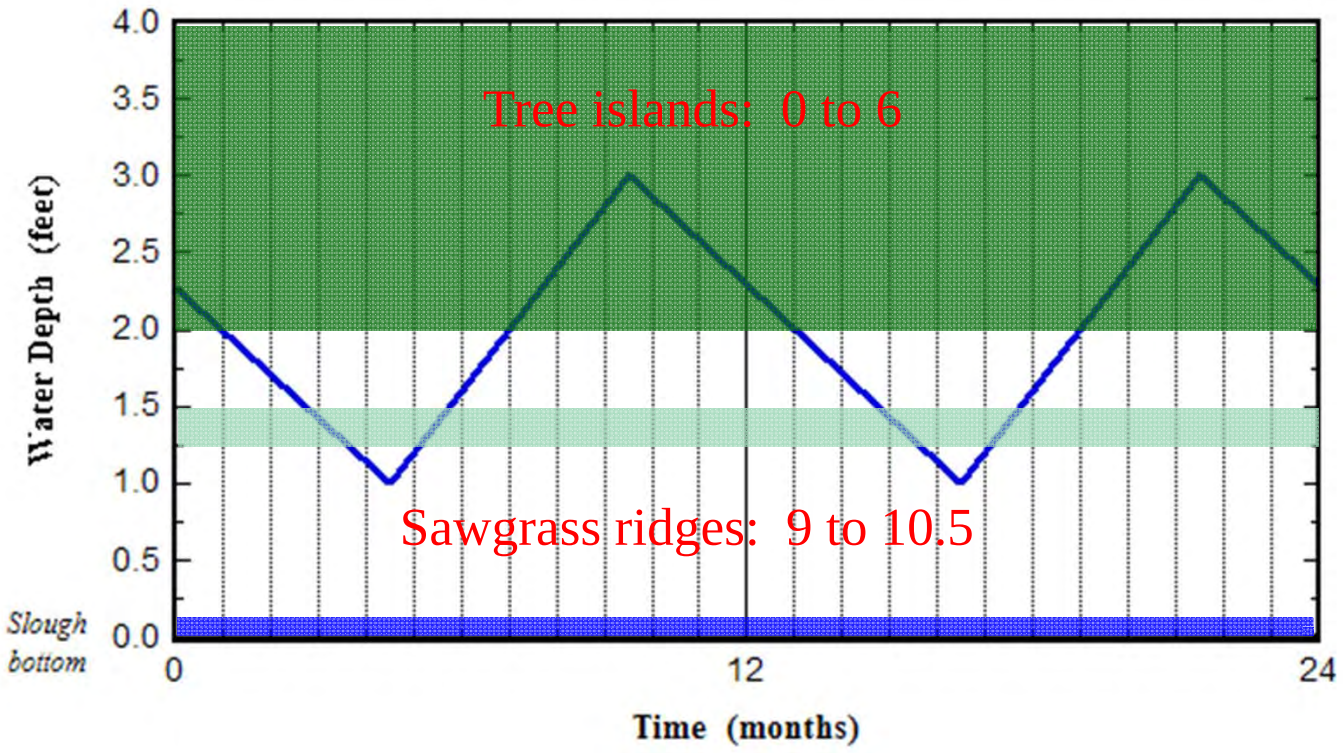
Script used: depth_transects.scr
Filename: depth_transects_L1_NSRSMv3.3_ANIM.agr

NSRSM


Water Depth Viewing Window
Transect L2 for Pre-drainage NSRSMv3.3
N.WCA3A
Alligator Alley
WCA3A
L-67C
WCA3B
Tamiami Trail
NESRS
L-67 Ext
SRS
Elevation, Feet NGVD
Distance in Miles
Ground Elevation*
Median Water Level (with 90th & 10th Percentile Whiskers)
99th Percentile Water Level
1st Percentile Water Level
* Within the ridge & slough landscape, ground elevation = slough bottom.
For other landscapes, ground elevation = average model ground surface.
P.O.S. = 01-02-1965 to 12-31-2005
Script used: depth_transects.scr
Filename: depth_transects_L2_NSRSMv3.3.agr

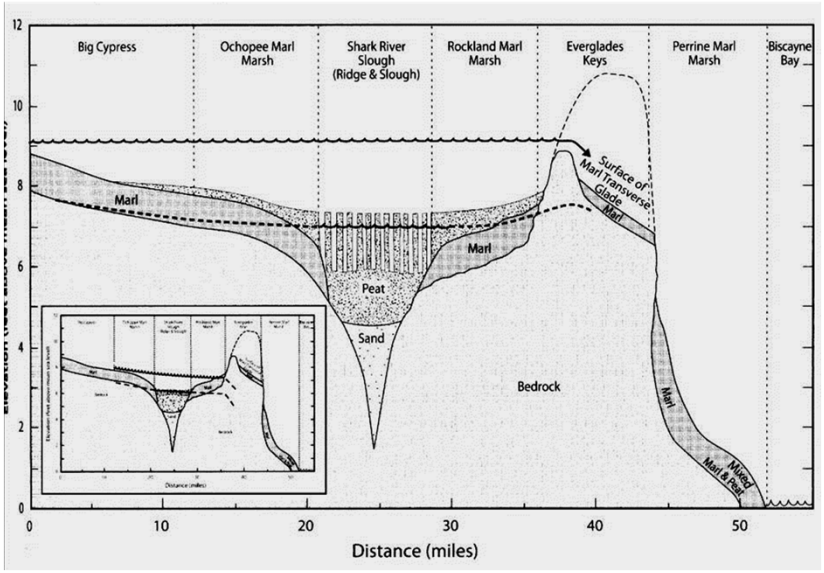
Tree Island Hydrology

Pre-drainage hydroperiods (months)

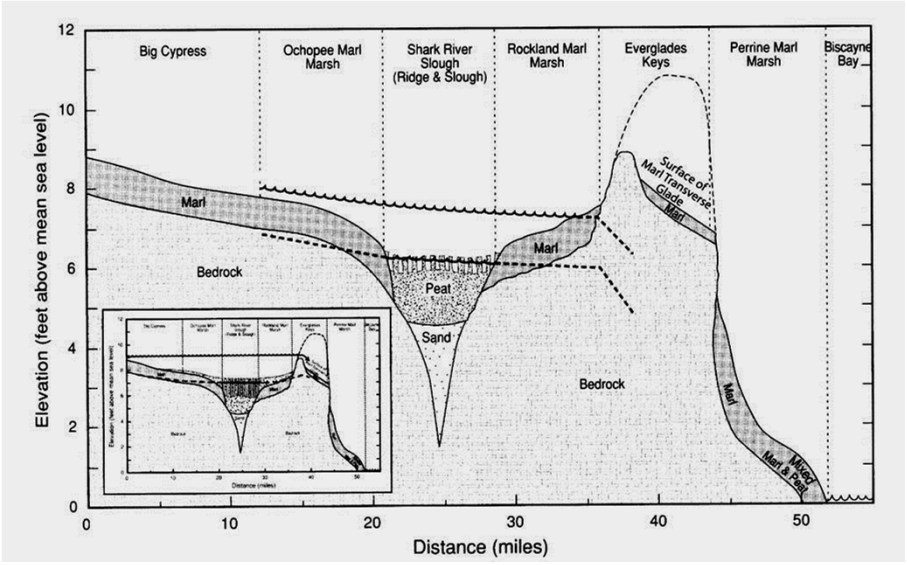


Shark Slough and the Marl Marshes

Predrainage



Current



"V" accentuated

Summary

- Predrainage (i.e., not current)

- Free flowing system (sheet flow)
- Water surface parallel to sloped ground surface - “hillslope wetland”
- Dynamic, water always seeking to run out
- Pulsed: annual rise and fall
- *But*: annual minimum typically left 1 ft of water in sloughs
  - supporting fish, water lilies, landscape geomorphology
- Generally deeper than previously thought
- Peat microtopography (ridges, sloughs, tree islands) - critical to understanding

- Good correspondence between historical and paleo sources
- Interannual variability
- Buffering from upstream watershed