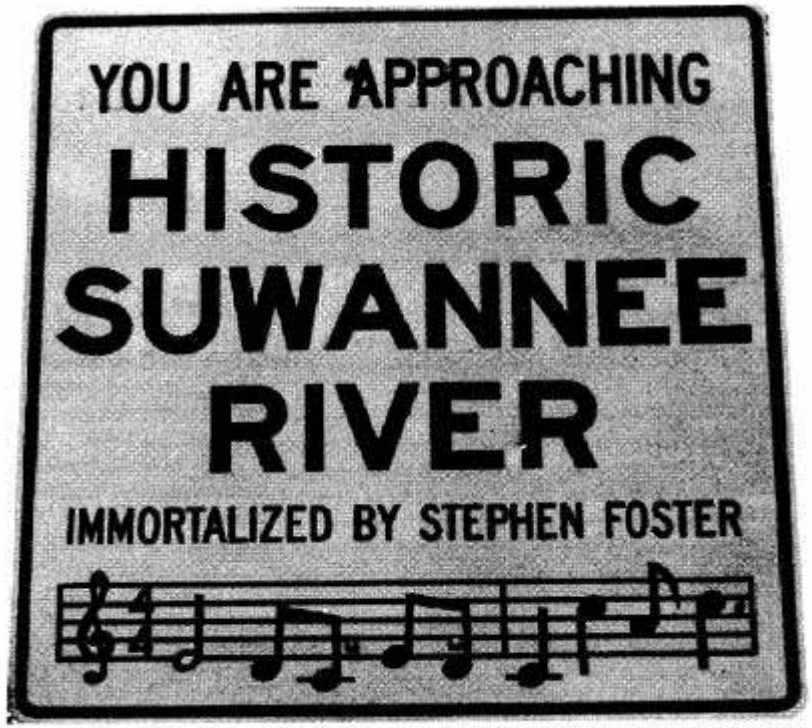
Who are we?

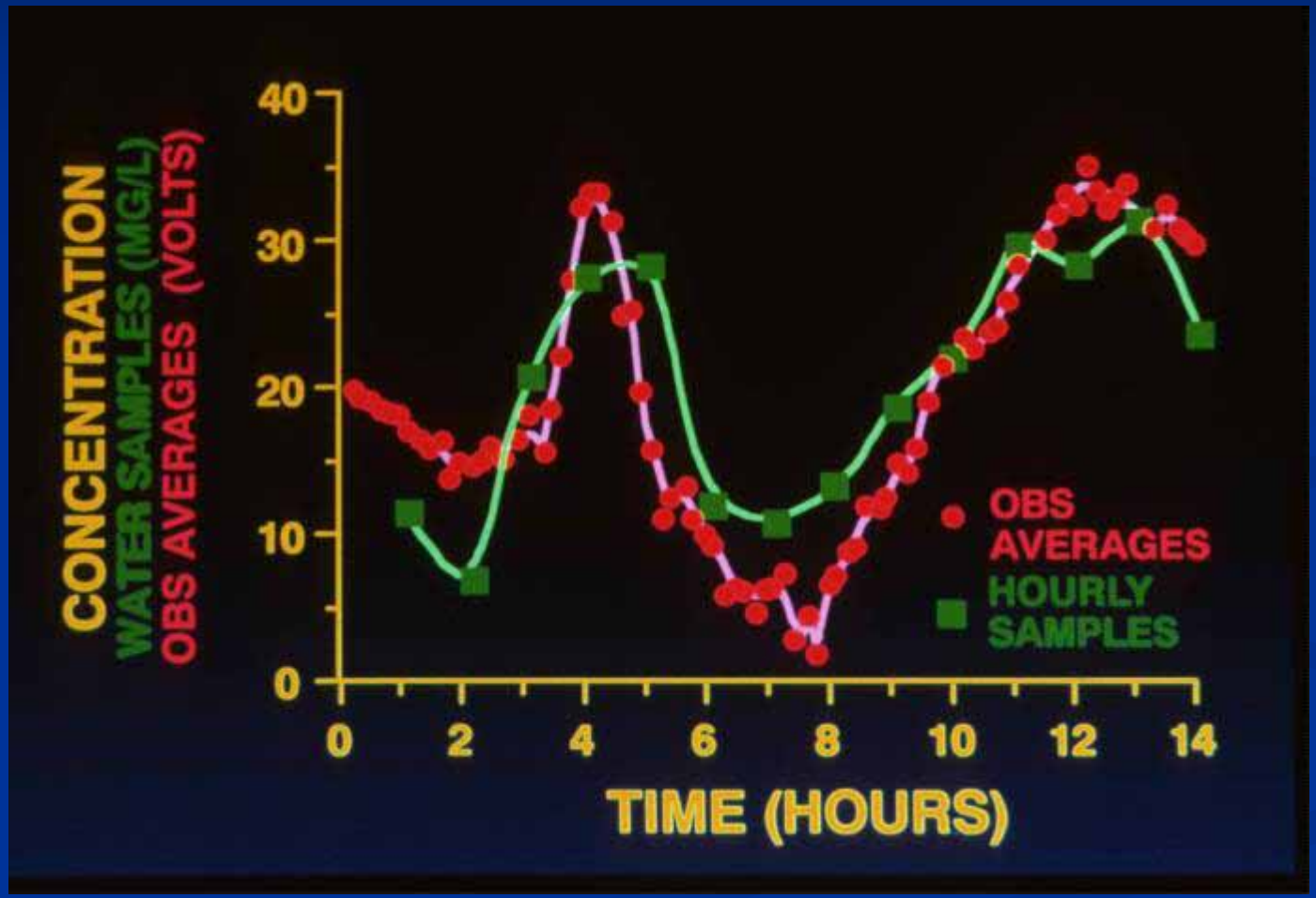
- Geological oceanographers
- Use geophysical tools to obtain images of seafloor and its subsurface.
- Use geological tools to groundtruth these images.



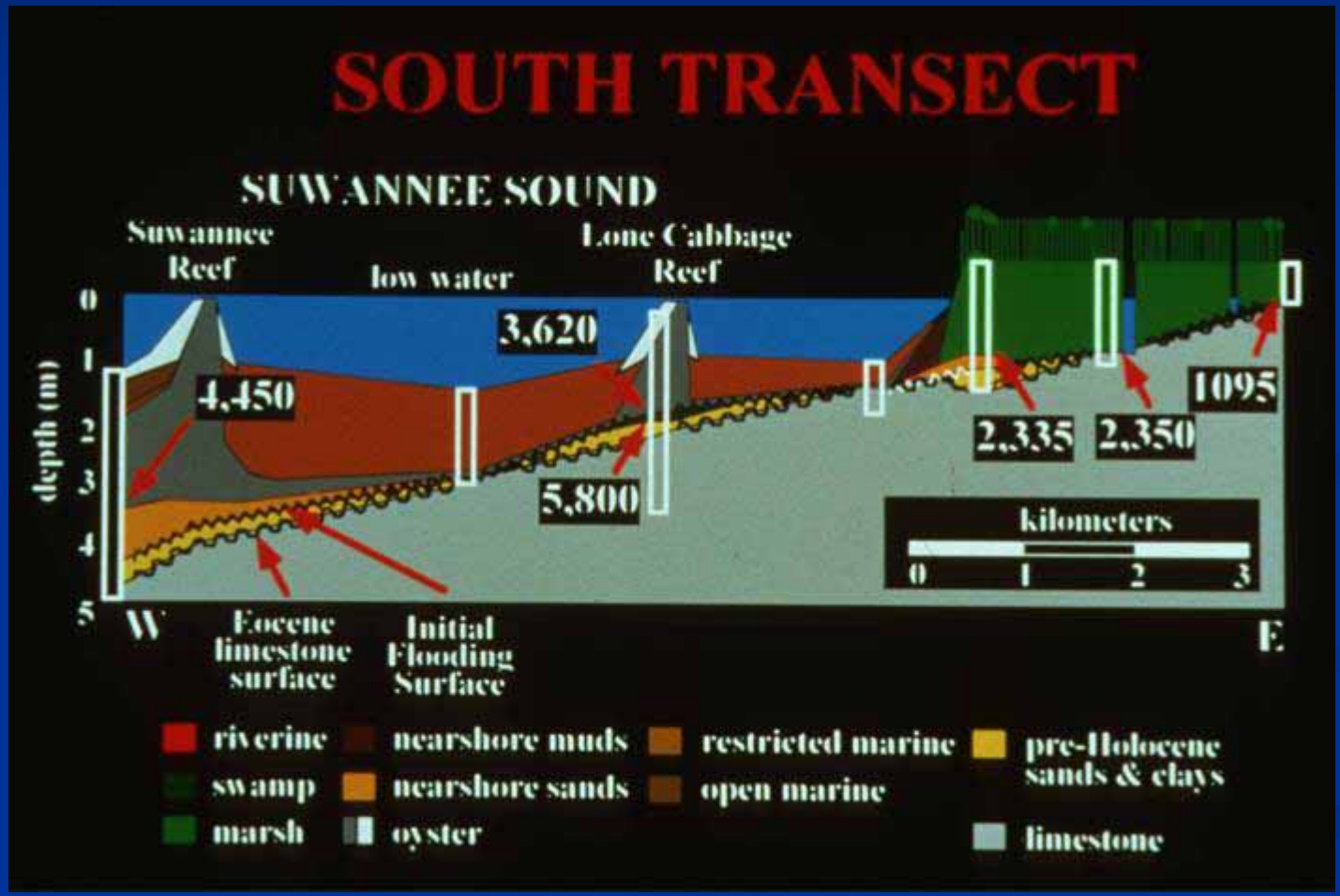
Sign on Route 19/98 bridge spanning the Suwannee River between Fanning Springs and Old Town.


Gulf
Of
Mexico
STUDY AREA
Horseshoe
Point
Suwannee
River
Cedar
Keys
GULF
OF
MEXICO
Waccasassa
River
Crystal
River
N
kilometers
0
50

Sedimentary process studies



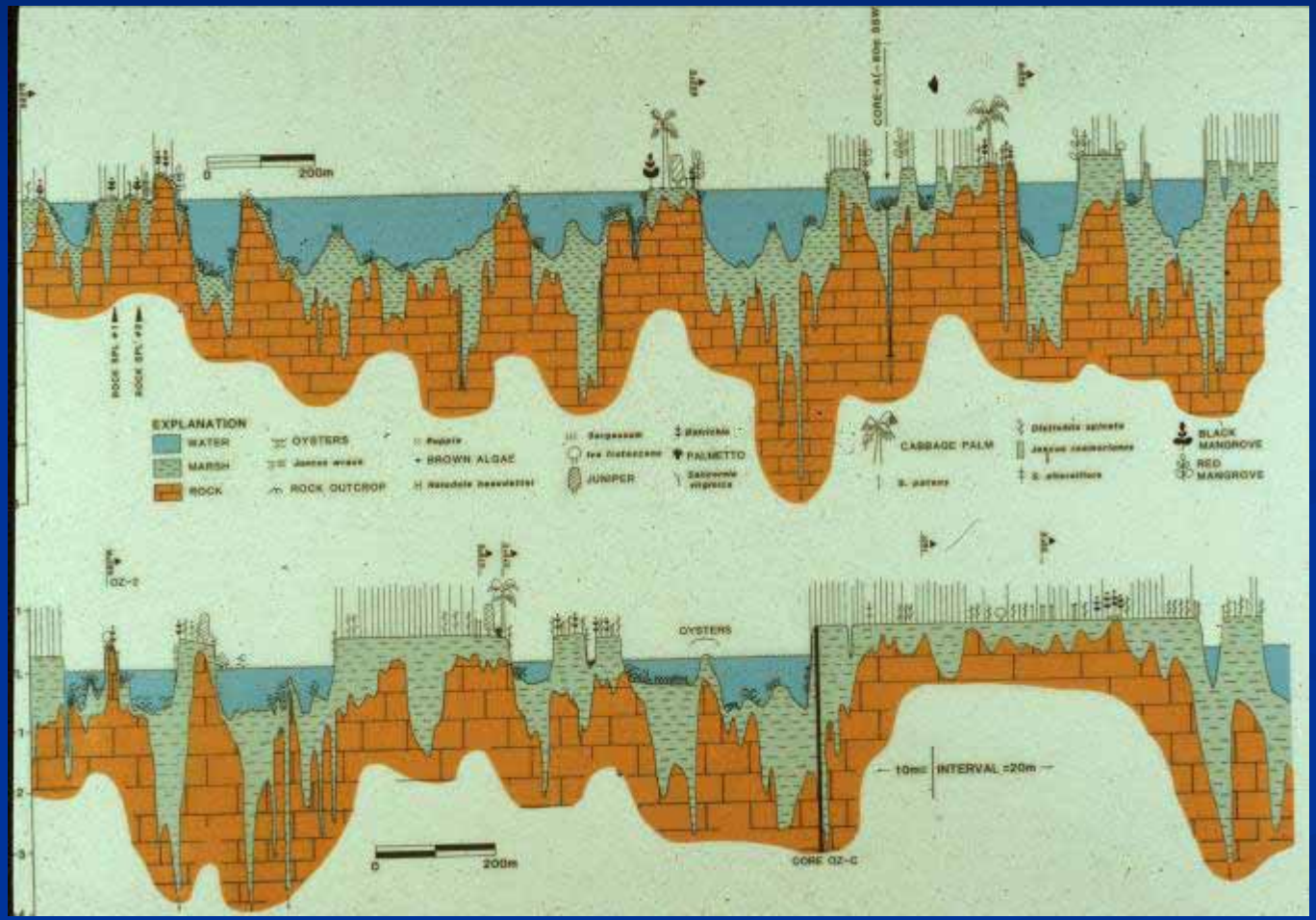
Geologic framework studies

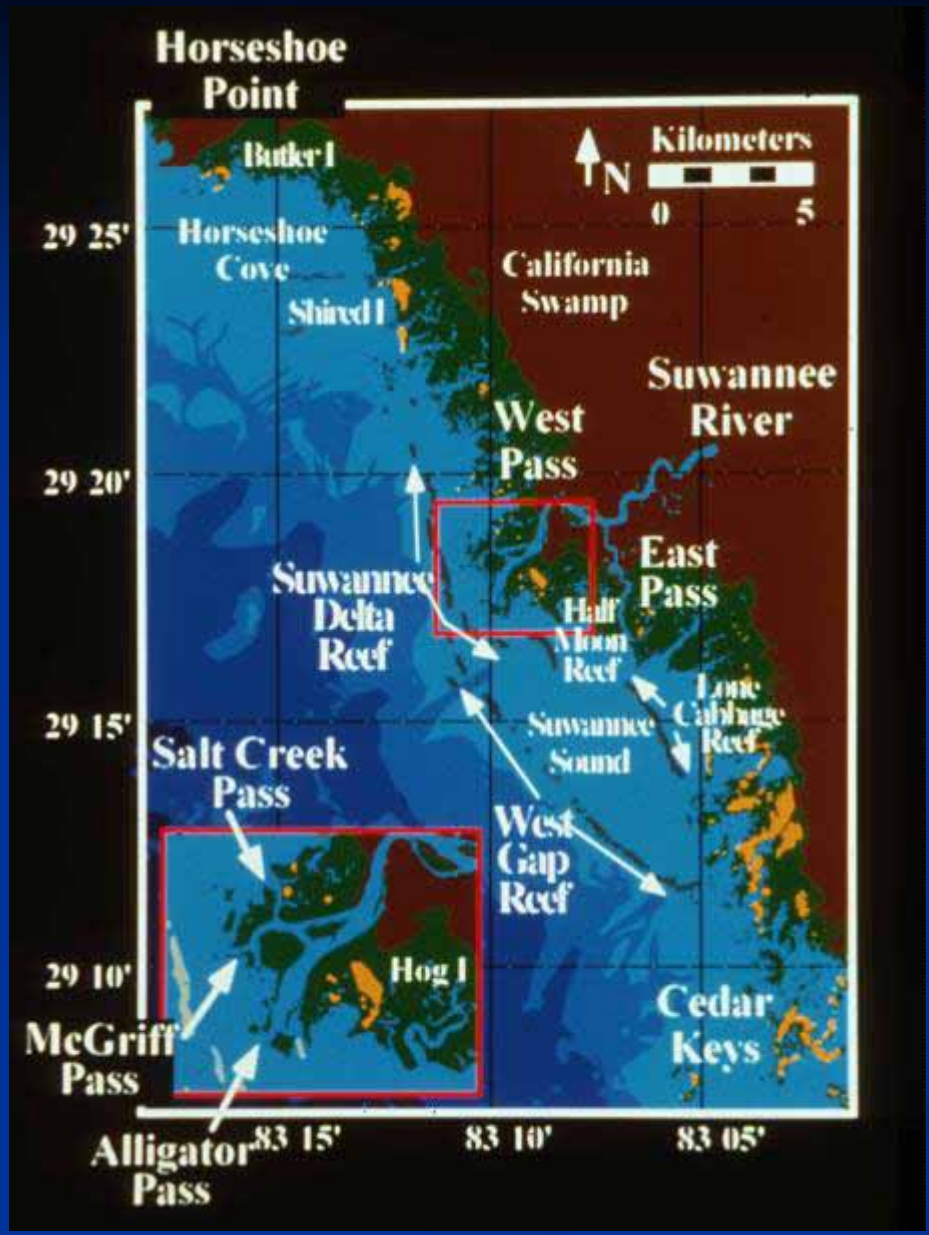


Karstified Eocene Limestone Surface

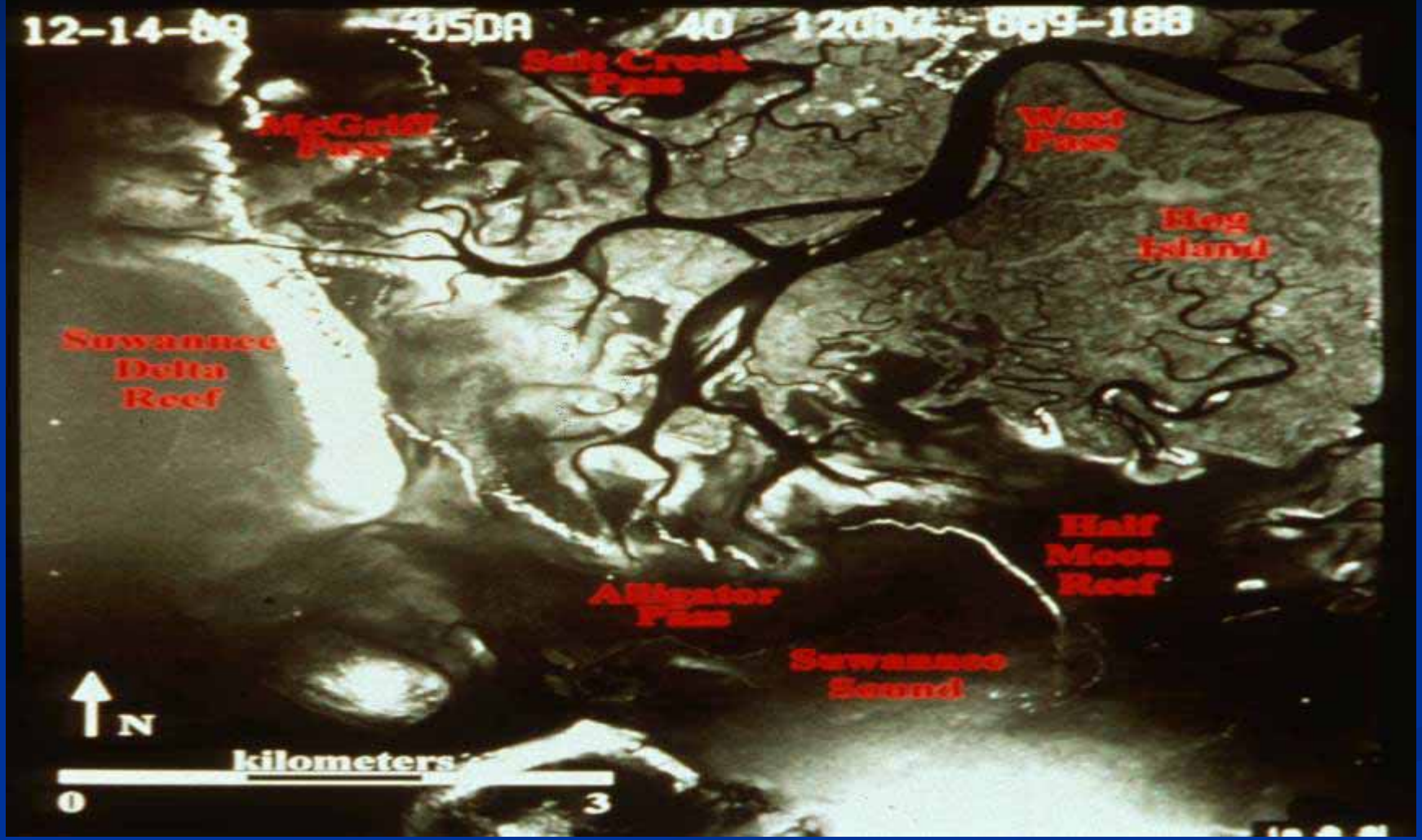
Marsh Hammocks

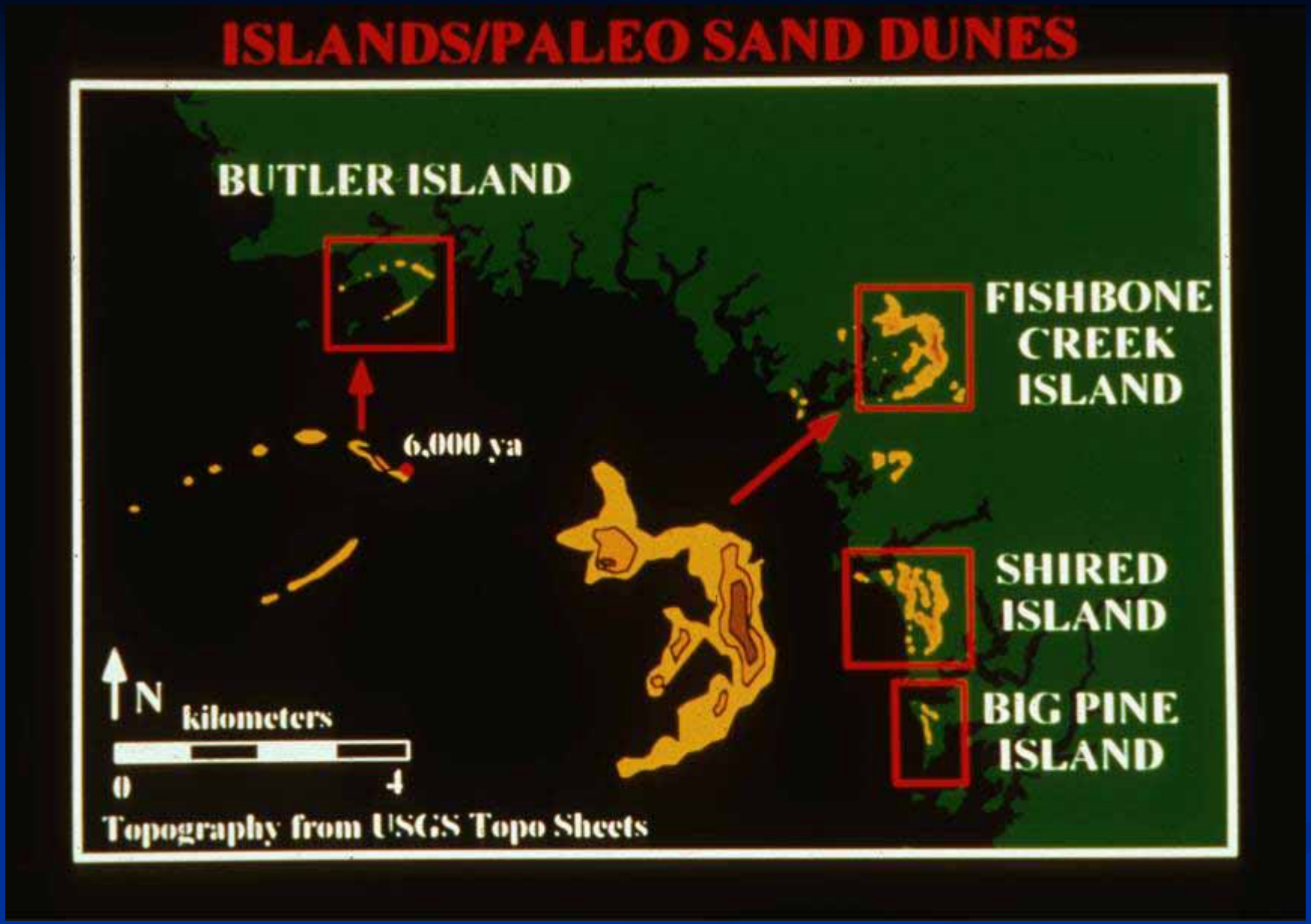
Bedrock Control on Marsh Hammocks

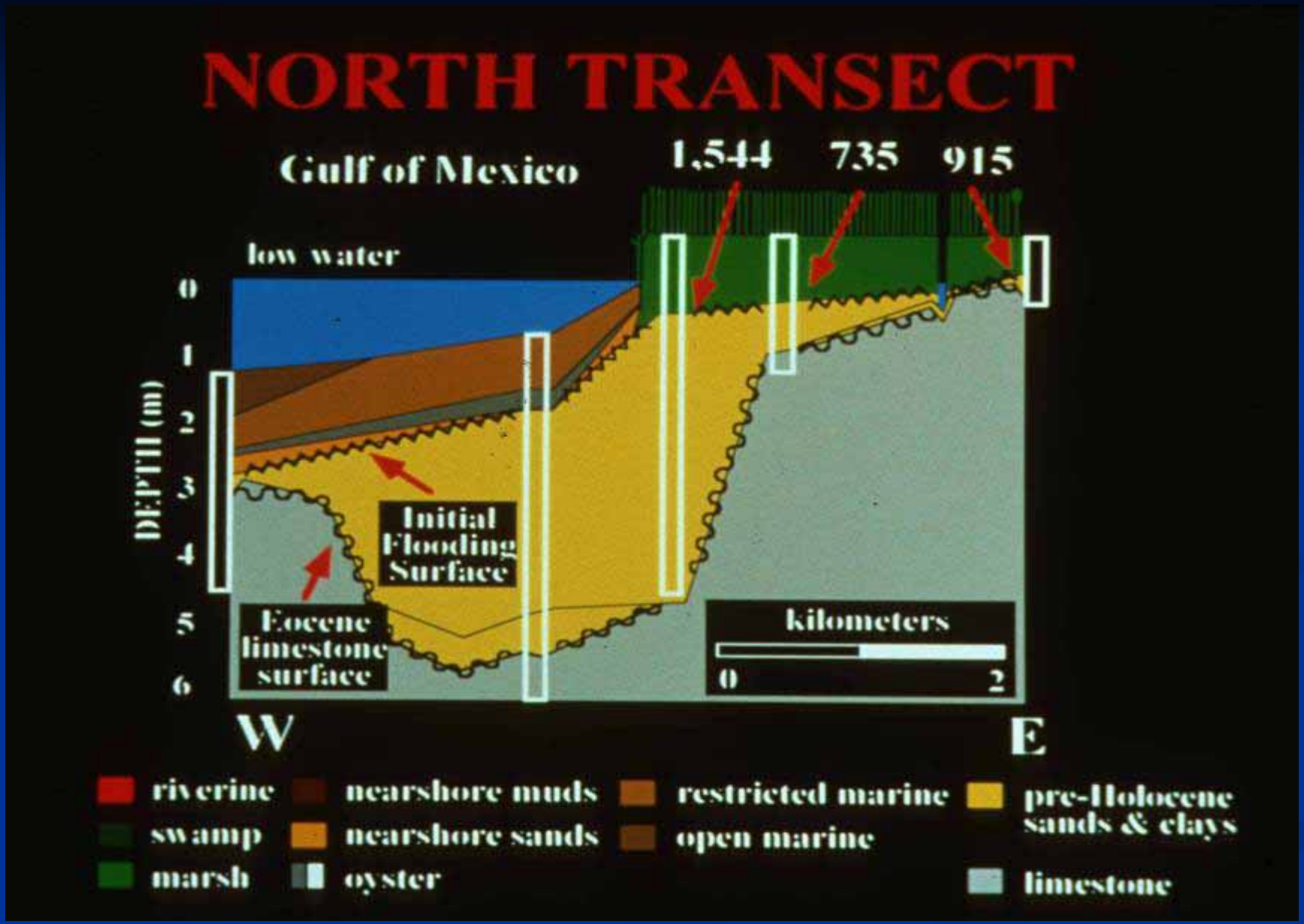



Horseshoe Point
Butler I
Horseshoe Cove
Shired I
California Swamp
N
Kilometers
0
5
29 25'
29 20'
29 15'
29 10'
Suwannee River
West Pass
East Pass
Suwannee Delta Reef
Half Moon Reef
Long Cabbage Reef
Suwannee Sound
Salt Creek Pass
West Gap Reef
Hog I
Cedar Keys
McGriff Pass
Alligator Pass
83 15'
83 10'
83 05'

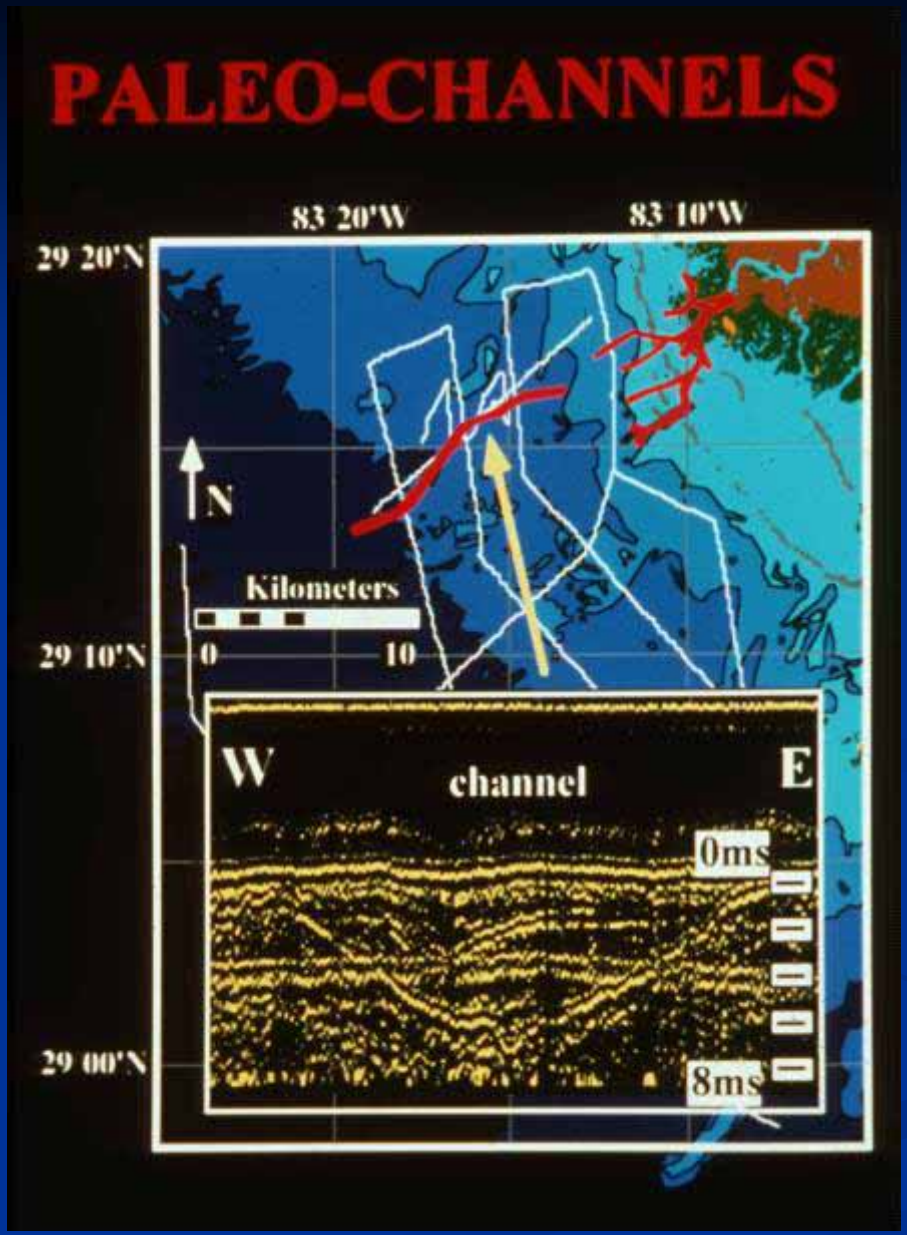
THE DELTA


12-14-89
USDA
Salt Creek Pass
McGrath Pass
West Pass
Hog Island
Suwannee Delta Reef
Half Moon Reef
Alligator Pass
Suwannee Sound
N
kilometers
0
3


ISLANDS/PALEO SAND DUNES
BUTLER ISLAND
6,000 ya
FISHBONE CREEK ISLAND
SHIRED ISLAND
BIG PINE ISLAND
N
kilometers
0
4
Topography from USGS Topo Sheets


NORTH TRANSECT
Gulf of Mexico
1,544
735
915
low water
DEPTH (m)
0
1
2
3
4
5
6
Initial Flooding Surface
Eocene limestone surface
kilometers
0
2
W
E
riverine
swamp
marsh
nearshore muds
nearshore sands
oyster
restricted marine
open marine
pre-Holocene sands & clays
limestone

PALEO-CHANNELS



The past…

- Widely spaced track lines producing incomplete benthic maps
- Poor navigation
- Analog, limited digital acquisition and processing
- Map products hand constructed on computers
- Labor intensive

Bedforms on Suwannee River Bottom

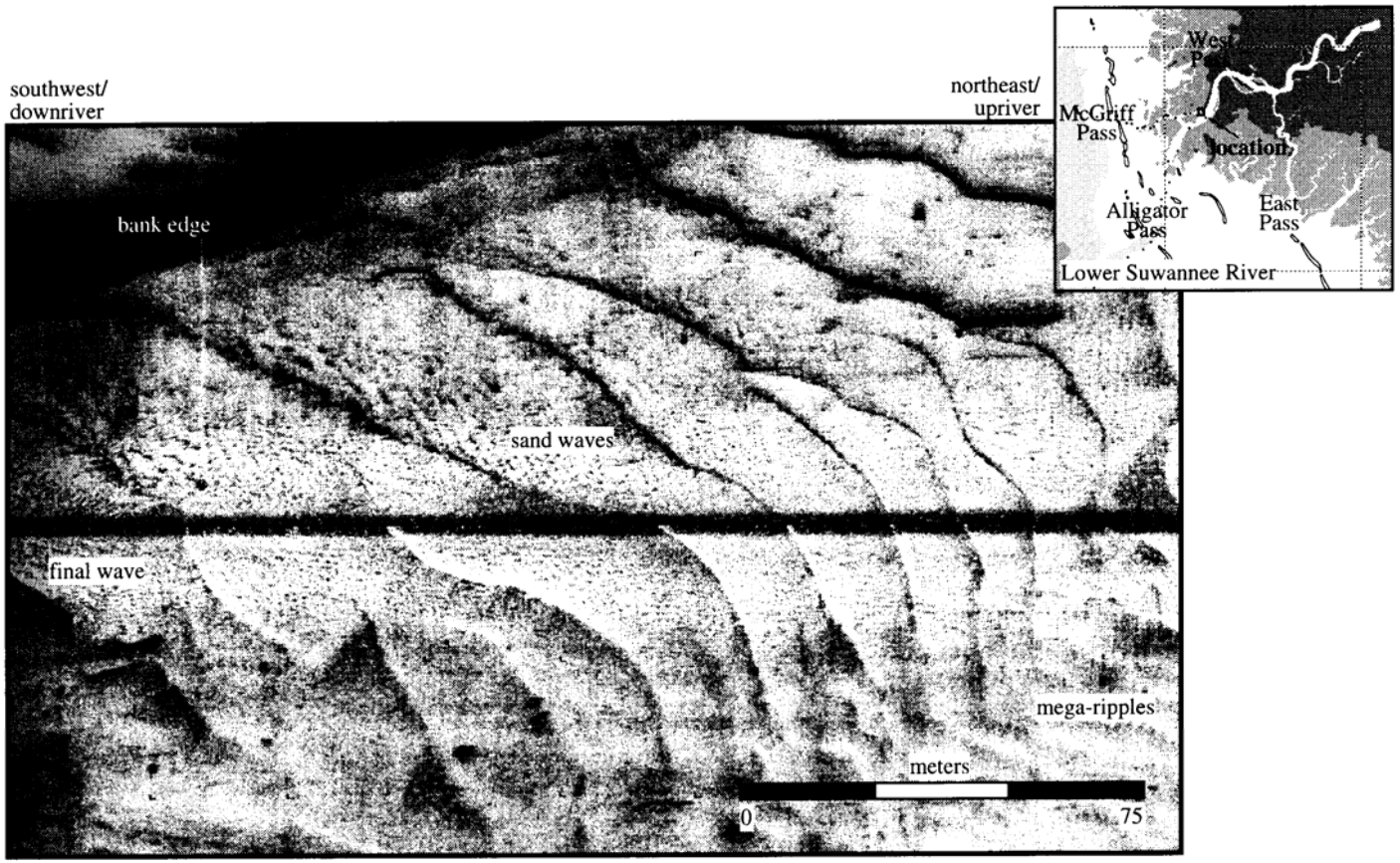
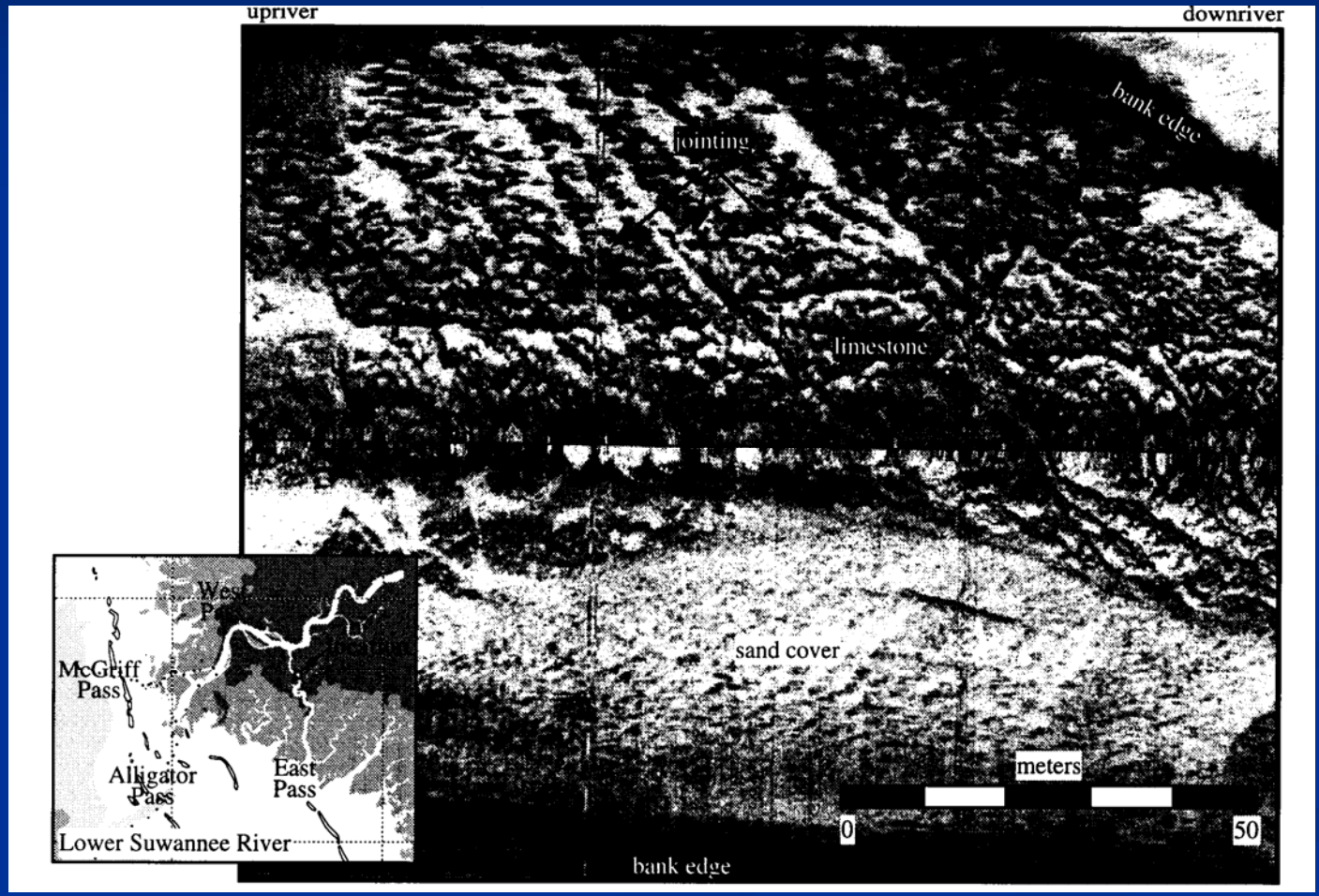


Figure 33. Side-scan sonagraph (slant-range corrected) of sand waves ending into McGriff Pass.

Limestone Outcrop on Suwannee River Bottom



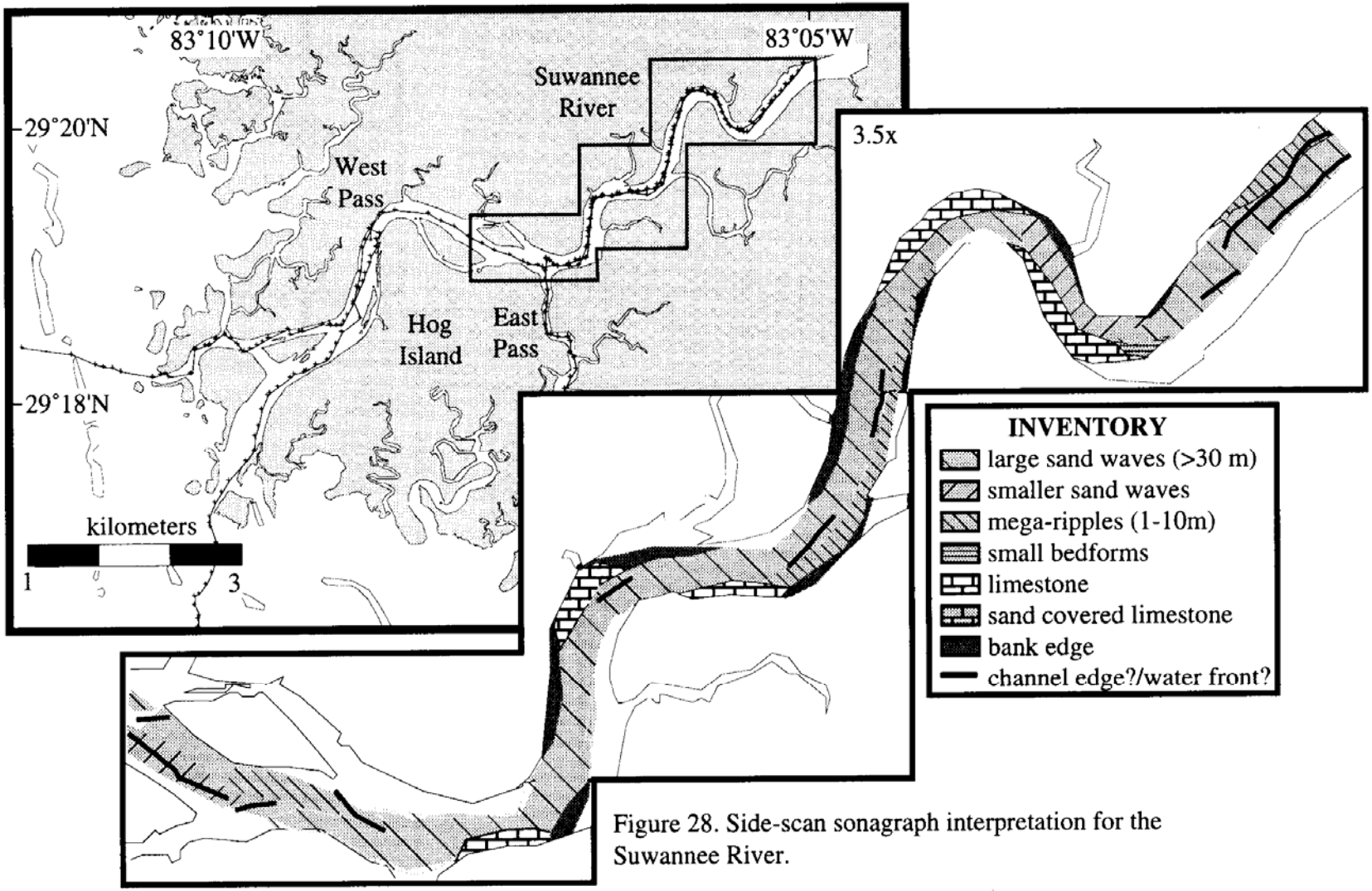
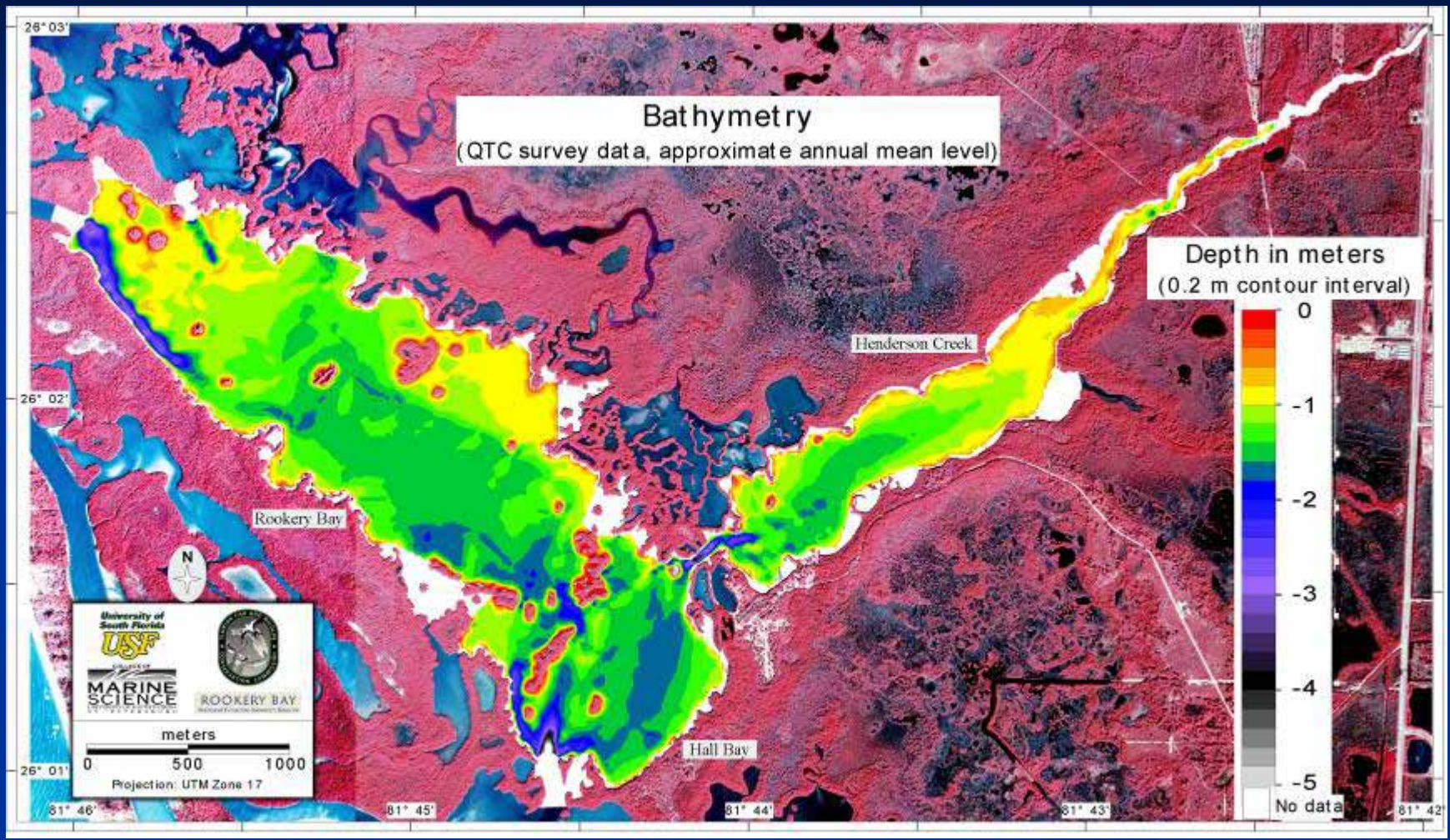
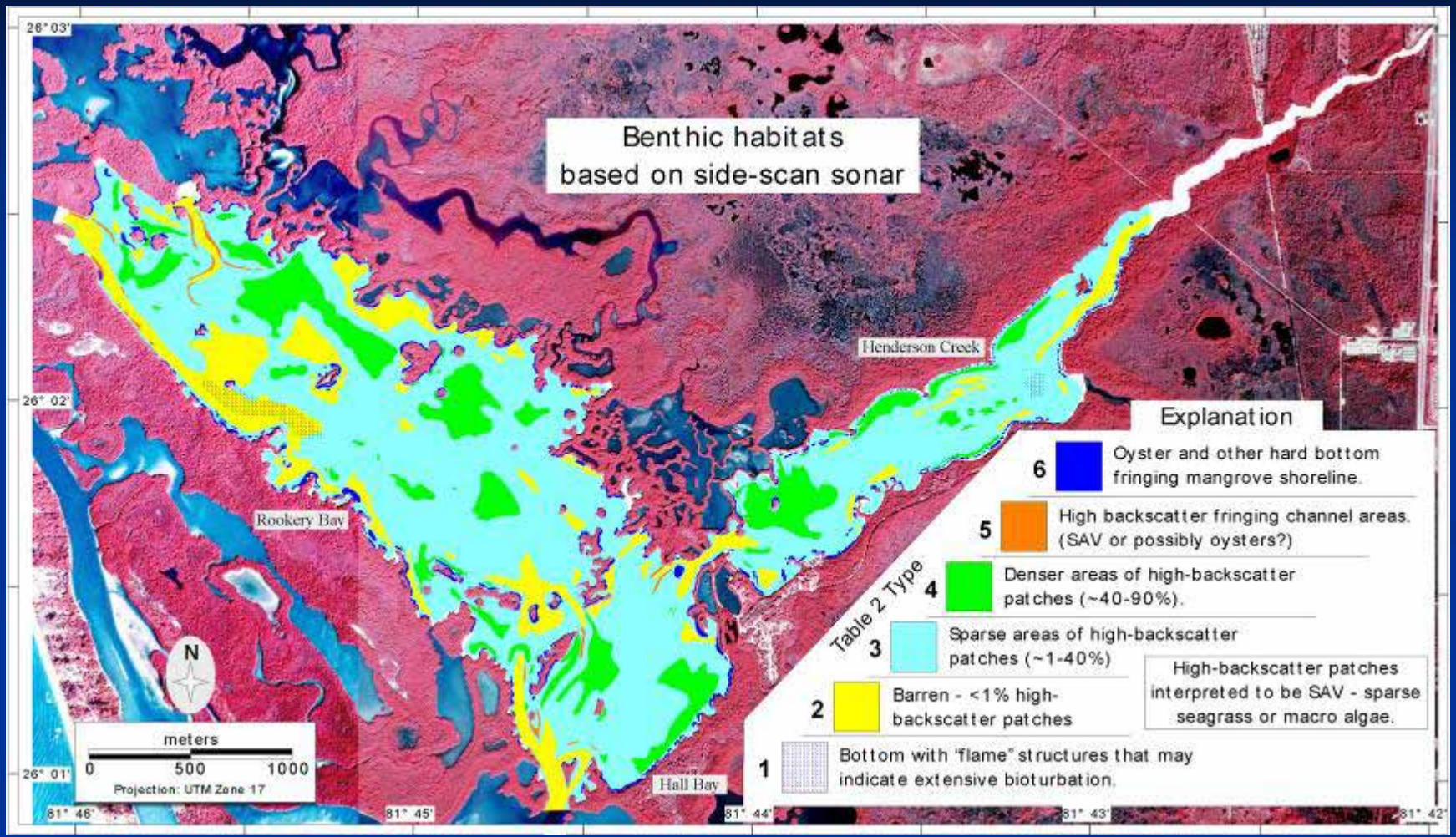


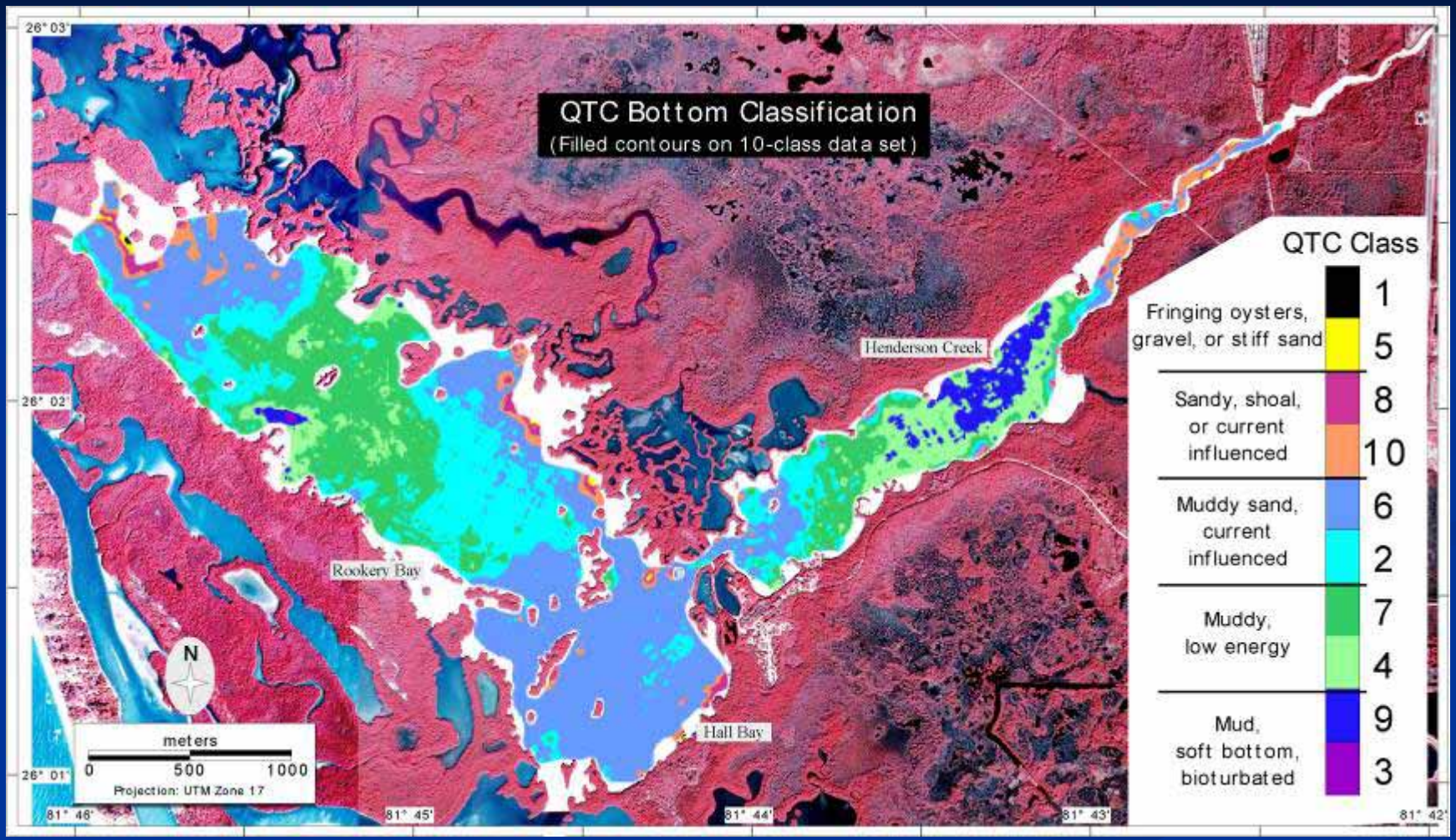
Figure 28. Side-scan sonagraph interpretation for the Suwannee River.

The present, future…

- Precise navigation
- Digital acquisition and processing
- Computer generated maps
- Precise bathymetry
- Seafloor classification systems
- Map benthic habitats


Bathymetry
(QTC survey data, approximate annual mean level)
Depth in meters
(0.2 m contour interval)
0
-1
-2
-3
-4
-5
No data
Henderson Creek
Rookery Bay
Hall Bay
N
University of South Florida
USF
MARINE SCIENCE
ROOKERY BAY
meters
0
500
1000
Projection: UTM Zone 17
26° 03'
26° 02'
26° 01'
81° 46'
81° 45'
81° 44'
81° 43'
81° 42'


Benthic habitats
based on side-scan sonar
Henderson Creek
Rookery Bay
Hall Bay
Explanation
Table 2 Type
6 Oyster and other hard bottom fringing mangrove shoreline.
5 High backscatter fringing channel areas. (SAV or possibly oysters?)
4 Denser areas of high-backscatter patches (~40-90%).
3 Sparse areas of high-backscatter patches (~1-40%)
2 Barren - <1% high-backscatter patches
1 Bottom with "flame" structures that may indicate extensive bioturbation.
High-backscatter patches interpreted to be SAV - sparse seagrass or macro algae.
N
meters
0 500 1000
Projection: UTM Zone 17
26° 03'
26° 02'
26° 01'
81° 46'
81° 45'
81° 44'
81° 43'
81° 42'


QTC Bottom Classification
(Filled contours on 10-class data set)
QTC Class
Fringing oysters, gravel, or stiff sand
1
5
Sandy, shoal, or current influenced
8
10
Muddy sand, current influenced
6
2
Muddy, low energy
7
4
Mud, soft bottom, bioturbated
9
3
Henderson Creek
Rookery Bay
Hall Bay
N
meters
0
500
1000
Projection: UTM Zone 17
26° 03'
26° 02'
26° 01'
81° 46'
81° 45'
81° 44'
81° 43'
81° 42'

We propose…

- Baseline bathymetric, benthic habitat, and seafloor mapping for the lower Suwannee River and the adjacent inner continental shelf.
- These tools are essential in ecosystem management; can be used to ask more fundamental questions.