

West-Central Florida Coastal Transect # 3: Sand Key

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Introduction

A major goal of the West-Central Florida Coastal Studies Project was to investigate linkages between the barrier-island system along the west coast of Florida and offshore sedimentary sequences.

Methods

The primary data sets used in this study were collected from 1993 to 1998. Geophysical surveys included high-resolution single-channel "boom" seismic data and 100-KHz side-scan sonar imagery.

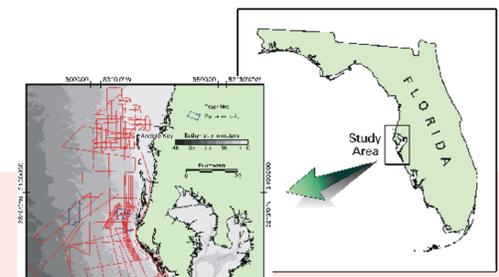
Geologic History and Morphodynamics of Barrier Islands

Barrier islands on the west-central Gulf coast of Florida display a wide range in morphology along the most diverse barrier-island coast in the world (Davis, 1994).

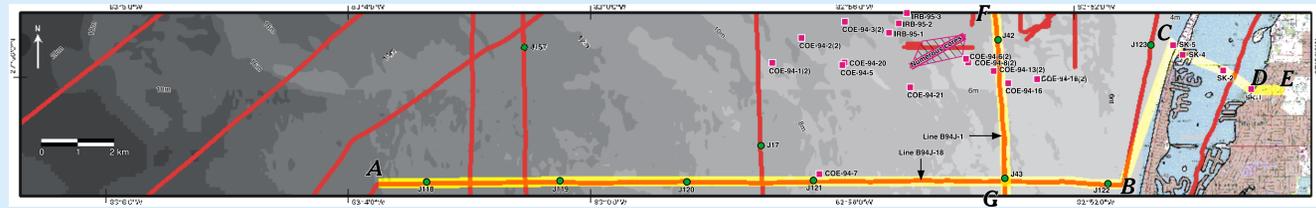
Sand Key

Sand Key is the longest barrier island in the study area and is distinctly wave-dominated. Its gross morphology is similar to that that emanates both the north and south from the Indian Rocks headland.

The stratigraphy of the northern part of Sand Key (Yale, 1997) shows a discontinuous Pleistocene (Stage 5e) muddy sand overlying the Miocene limestone.

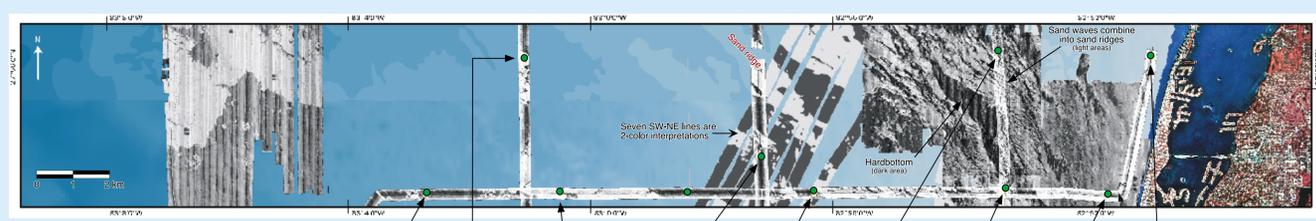


Location of study area along the west-central Florida coastline showing cruise-track coverage in red. Data types include high-resolution seismic-reflection data, side-scan sonar imagery, surface-sediment samples, and vibrocores.



Location map

Location map showing bathymetry, cruise-track coverage, core and bottom sample locations, and location of figures.



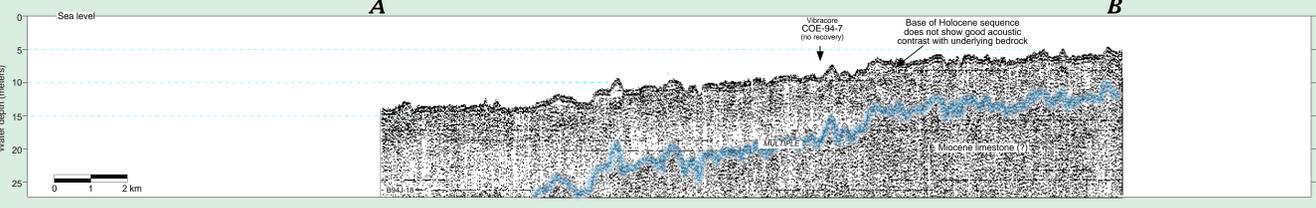
Side-scan sonar data

Side-scan sonar imagery available in this area includes reconnaissance surveys (Locker and others, 2001), sand resource surveys (Gelfenbaum and others, 1995) and mosaics collected from 1995-1996 (Harrison, 1996, 1999).



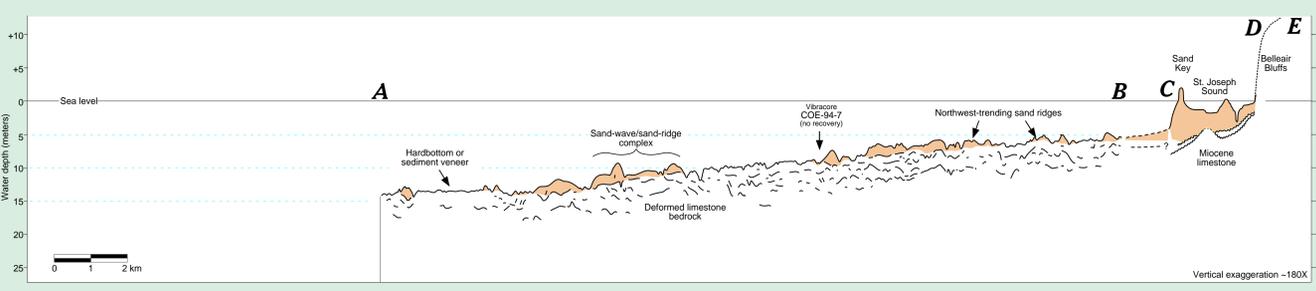
Surface sediments

Grain-size and composition data for bottom grab samples are presented below the sonar imagery. Samples generally consist of quartz-rich sand nearshore with increasing amounts of gravel and mud offshore.



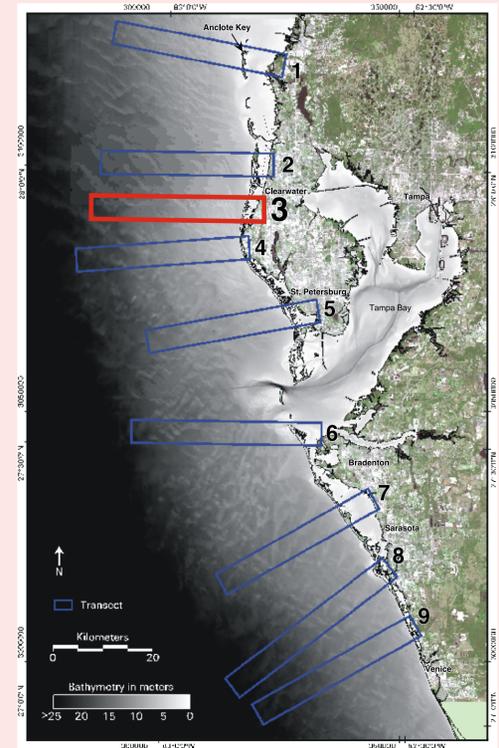
Seismic-profile data

Uninterpreted "boom" seismic profile illustrates the poor acoustic contrast between the Holocene sediment cover and the Pleistocene exposure surface.



Transect cross-section A-E

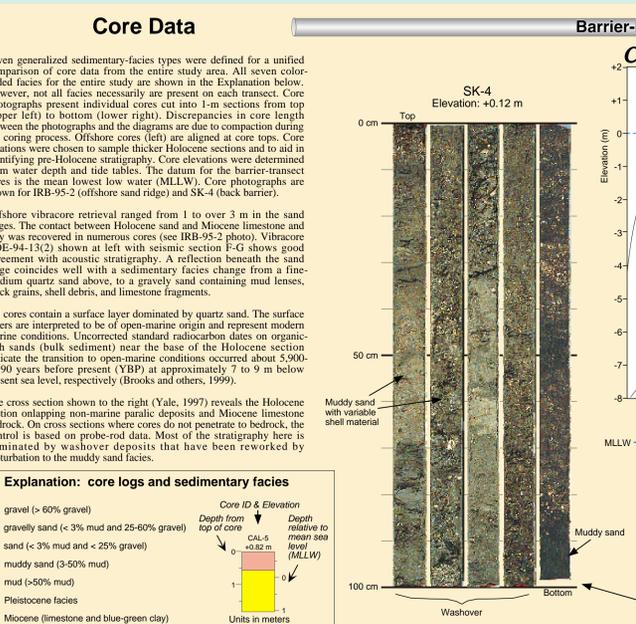
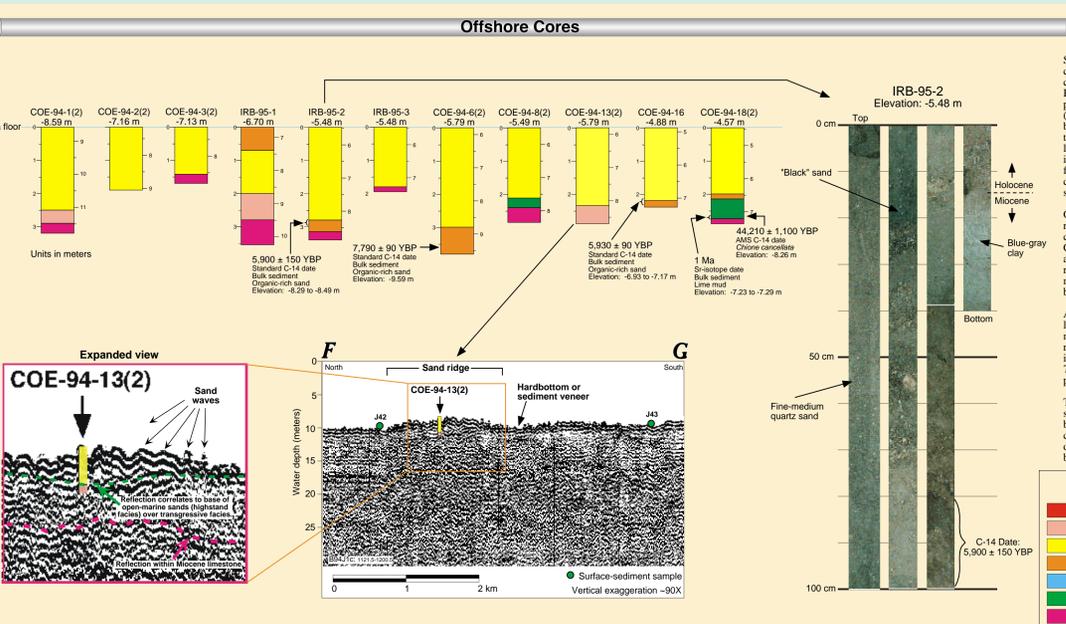
Integrated stratigraphic cross-section combining line-drawn interpretation of seismic data, ground truthed by coring, with a coastal cross section based on vibrocores.



Location of west-central Florida coastal-transect maps with Transect #3 shown in red. 1997 LANDSAT TM imagery of Florida's west coast is merged with a bathymetric-surface model.



Oblique aerial photograph of Sand Key taken in 1983. Note that the beach has eroded back to the seawall, which extends beyond the width of the photo.



References Cited

Brooks, G.R., Doyle, L.J., Suthard, B.C., and DeWitt, N.T., 1999. Inner West-Central Florida continental shelf: Sedimentary facies and facies associations...

Acknowledgments

The large field program and combination of data sets brought to this compilation are the result of significant efforts by many people.

Data references:

Color Infrared Digital Orthophoto Quarter Quadrangles (CIR DOQQ), (1994, 1995), USGS ERDS Data Center, Sioux Falls, SD 57198, CD-ROMs.