



Announcement M13AS00014: Hurricane Sandy Coastal Recovery and Resiliency - Resource Identification, Delineation and Management Practices

Agreement M14AC00004 Florida Cooperative Agreement

Modernizing the Reconnaissance Offshore Sand Search (ROSS) database and a review and synthesis of existing geophysical data from selected areas on the outer continental shelf (OCS Region) along Florida's central Atlantic coast.

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Summary Report

Cooperative Agreement Outputs including Project Deliverables:

Regional Offshore Sand Source Inventory (ROSSI) <http://rossi.urs-tally.com/>

This project implements various improvements, updates, and enhancements to the ROSSI database (formerly ROSS/OSSI), in addition to populating ROSSI with data from Florida's coastal counties. The implementation is twofold; encompassing modernization involving system updates and enhancements to the ROSSI database, and populating ROSSI with more comprehensive data of existing and potential borrow areas. The modernization of the ROSSI webpage and application programming interface (API) mapping utility provides coastal scientists and managers with a user-friendly, reliable database to describe existing borrow areas and geotechnical and geophysical data.

Multiple enhancements were included in the website modernization and upgrade. Included in this effort were the following:

- All internal and external links have been verified and updated.
- The reports page has been updated and linked to available reports.
- Search and query capabilities have been expanded to allow multiple selections and data export.
- A secure file upload and delivery system for Joint Coastal Permits deliverables has been created.
- The ROSSI site has received an overall cosmetic redesign – including a rotating photo gallery of FDEP permitted coastal restoration and dredging activities (Figure 1).
- Population of ROSSI with data for all coastal counties and borrow areas has been accomplished (Figures 2a, 2b, 2c, 2d, and 2e).

Through ROSSI, it has been possible to identify regions within both state and federal waters offshore Florida where geotechnical data does not exist on a reconnaissance level. As such, regional data collection will continue to be a part of maintaining and modernizing the ROSSI database. Maintenance of the ROSSI project includes the incorporation of new data from delineated borrow areas being utilized for beach nourishment. This will be used to build on previous studies between the Florida Geological Survey (FGS), the Bureau of Ocean Energy Management's (BOEM) Marine Minerals Program (MMP) – formerly the Marine Minerals Service (MMS), the U.S. Army Corps of Engineers (USACE), and the Florida Department of Environmental Protection (FDEP).

Data within ROSSI can be used to quantify and qualify the extent to which beach-compatible sand resources may exist throughout previously investigated state and federal waters. The existing geophysical and geological data can be correlated with existing and future vibracores using an interactive seismic workstation approach to create top of rock and sediment thickness maps and potentially identify future sand sources. These sand deposits can be used to maintain the beaches along the Florida Atlantic coast and help coastal communities recover from future storm impacts by protecting the infrastructure.

Updates on the work performed on the ROSSI online database was presented by Dr. Jennifer Coor or Dr. Jennifer Steele at a number of meetings and conferences. These presentations included the BOEM Gulf of Mexico Area (GOMA) meeting in October 2015, a relaunch webinar for the ROSSI website in July 2015, the Southeastern Geologic Society meeting in June 2015, Coastal Sediments 2015 in May 2015 (abstract included below), and the

BOEM Florida Sand Management Working Group meeting in February, 2016. Except for the Coastal Sediments 2015 conference, these presentations were PowerPoint presentations. The BOEM meetings also involved discussions of the ROSSI database, along with the BOEM MMP GIS database under construction.

ROSSI

Regional Offshore Sand Source Inventory



Map Data Resources Help

Our purpose is to enable users to make the most informed decision possible when it comes to management of our Florida beaches and coastlines. Data that is both current and easily accessible are the key ingredients that facilitate the management process. Two basic types of data will be used in this effort. Spatial data will be used because the environment is geographic in nature. Tabular data will be used to store information about events which take place at locations stored as spatial data and referred to as spatial features.

The database stores information about sand samples. Information associated with sand samples includes, but is not limited to, granulometric data, bathymetry, seismic and sidescan sonar images, core photos, core logs, core descriptions, Munsell Color, metadata (information about the original data), and associated project information.





ROSSI Map

Query, analyze and create a customized view of a large range of geoscientific data.

[View Map](#)



Preliminary Inventory Report

A report organized by Borrow Area type and subdivided by county that lists in tabular format selected information from the ROSS database.

[View Report](#)



Submit Your Own Data

Authorized users can now provide project data directly via the website.

[View My Projects](#)

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Figure 1. Regional Offshore Sand Source Inventory homepage (<http://rossi.urs-tally.com/>)

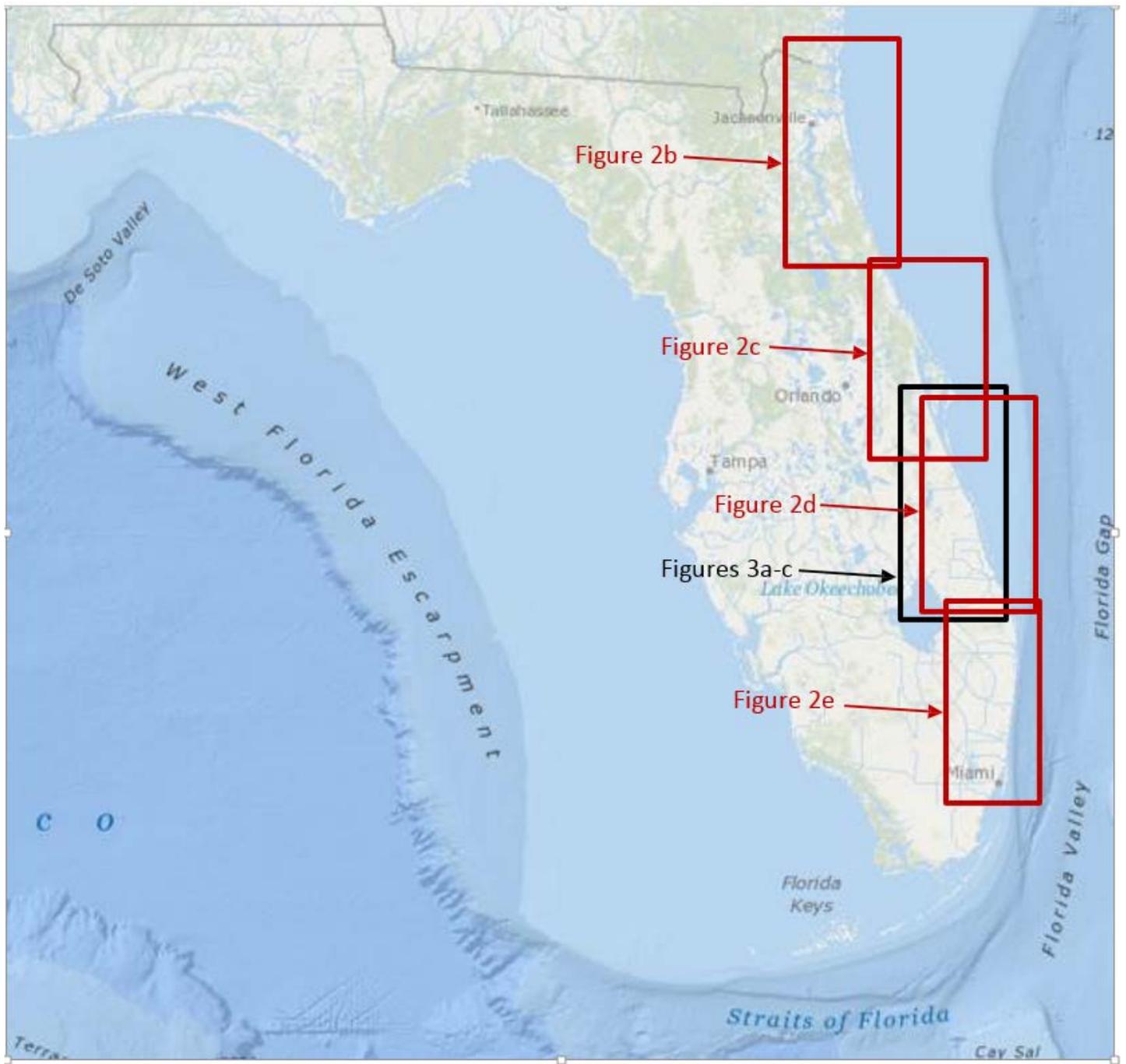


Figure 2a. Reference map for Figures 2b-e showing a portion of the data available on the east coast of Florida through the Regional Offshore Sand Source Inventory MapViewer page (<http://rossi.urs-tally.com/Map>)

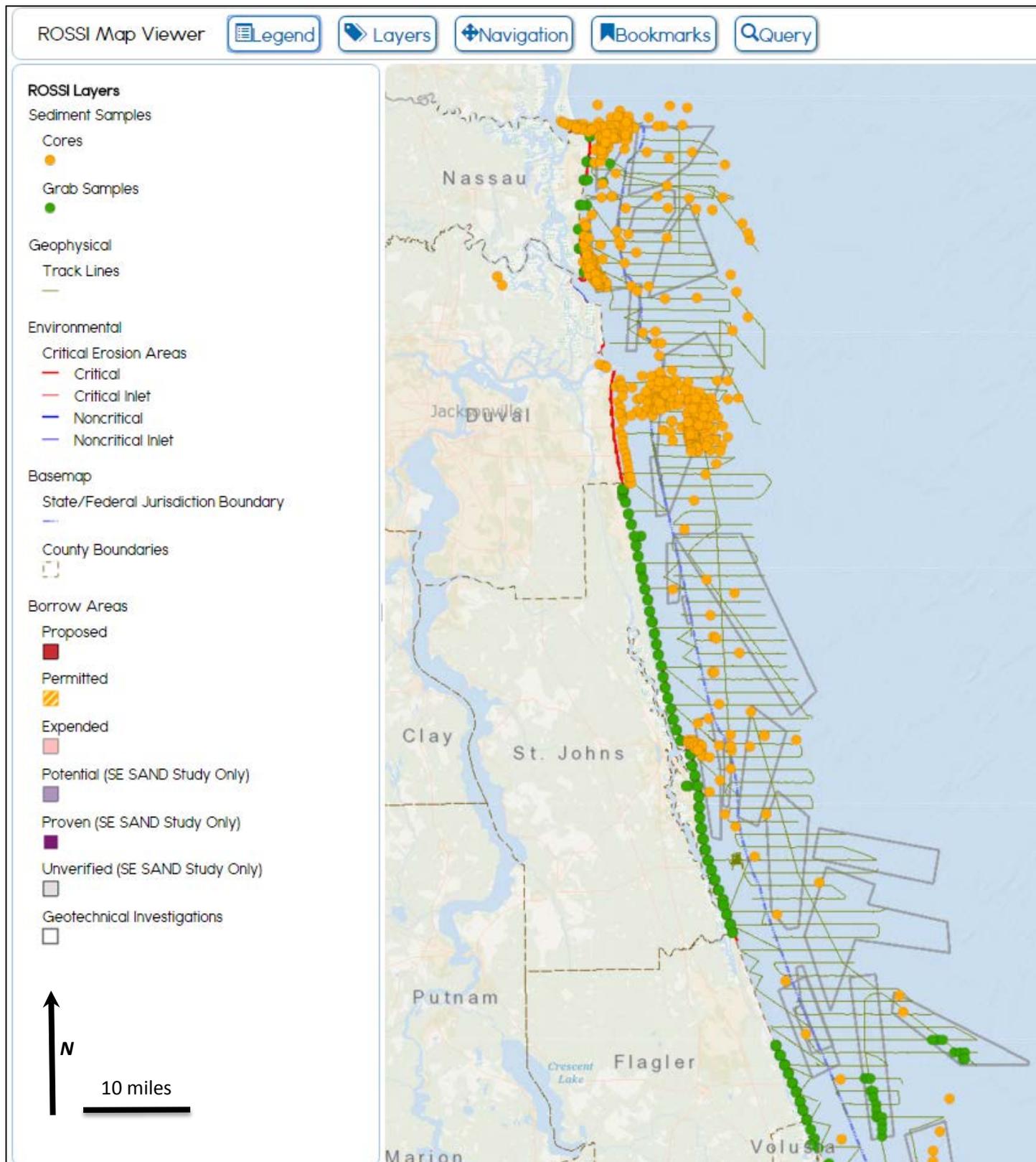


Figure 2b. Portion of data available on the east coast of Florida through the Regional Offshore Sand Source Inventory MapViewer page (<http://rossi.urs-tally.com/Map>)

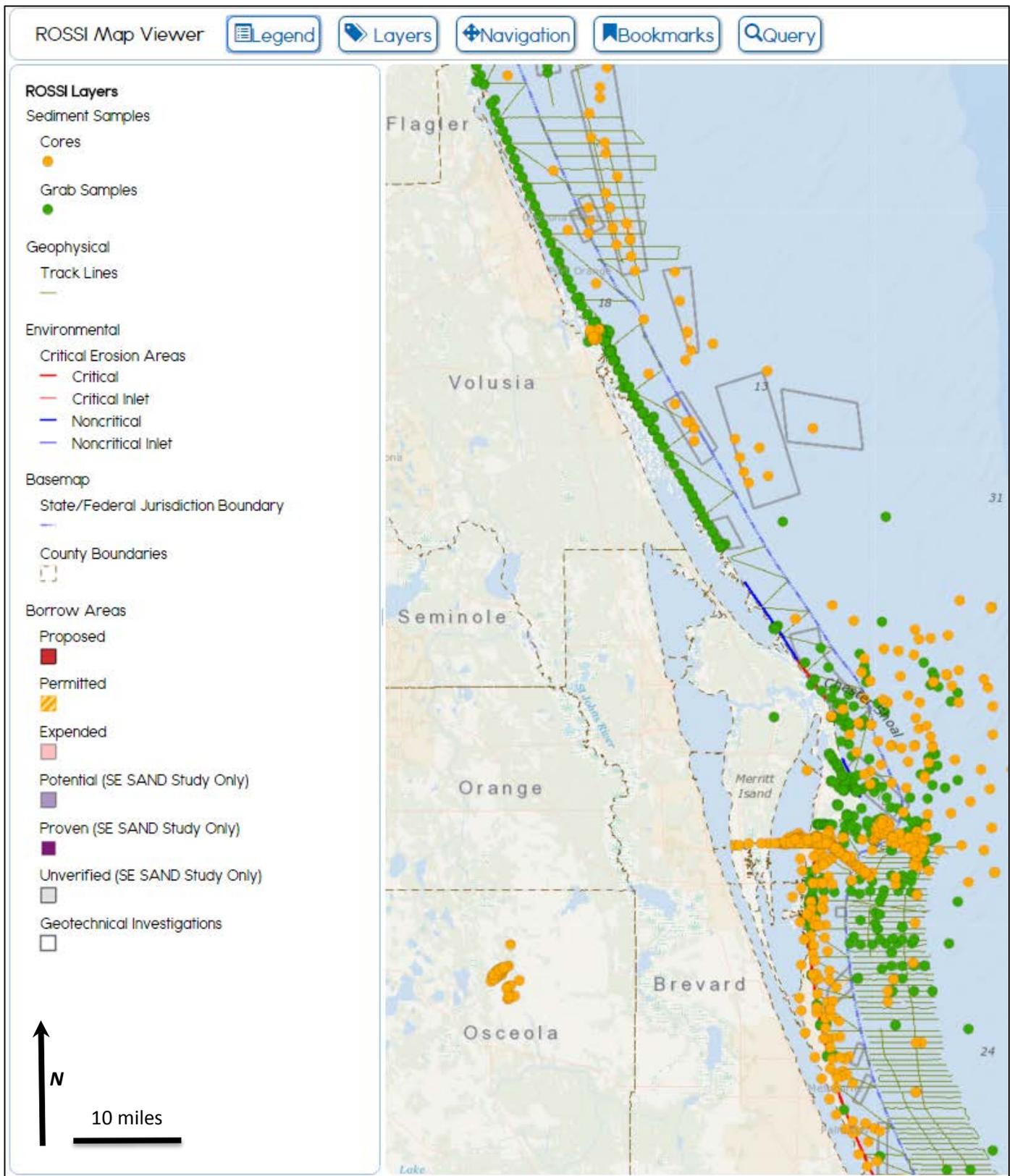


Figure 2c. Portion of data available on the east coast of Florida through the Regional Offshore Sand Source Inventory MapViewer page (<http://rossi.urs-tally.com/Map>)

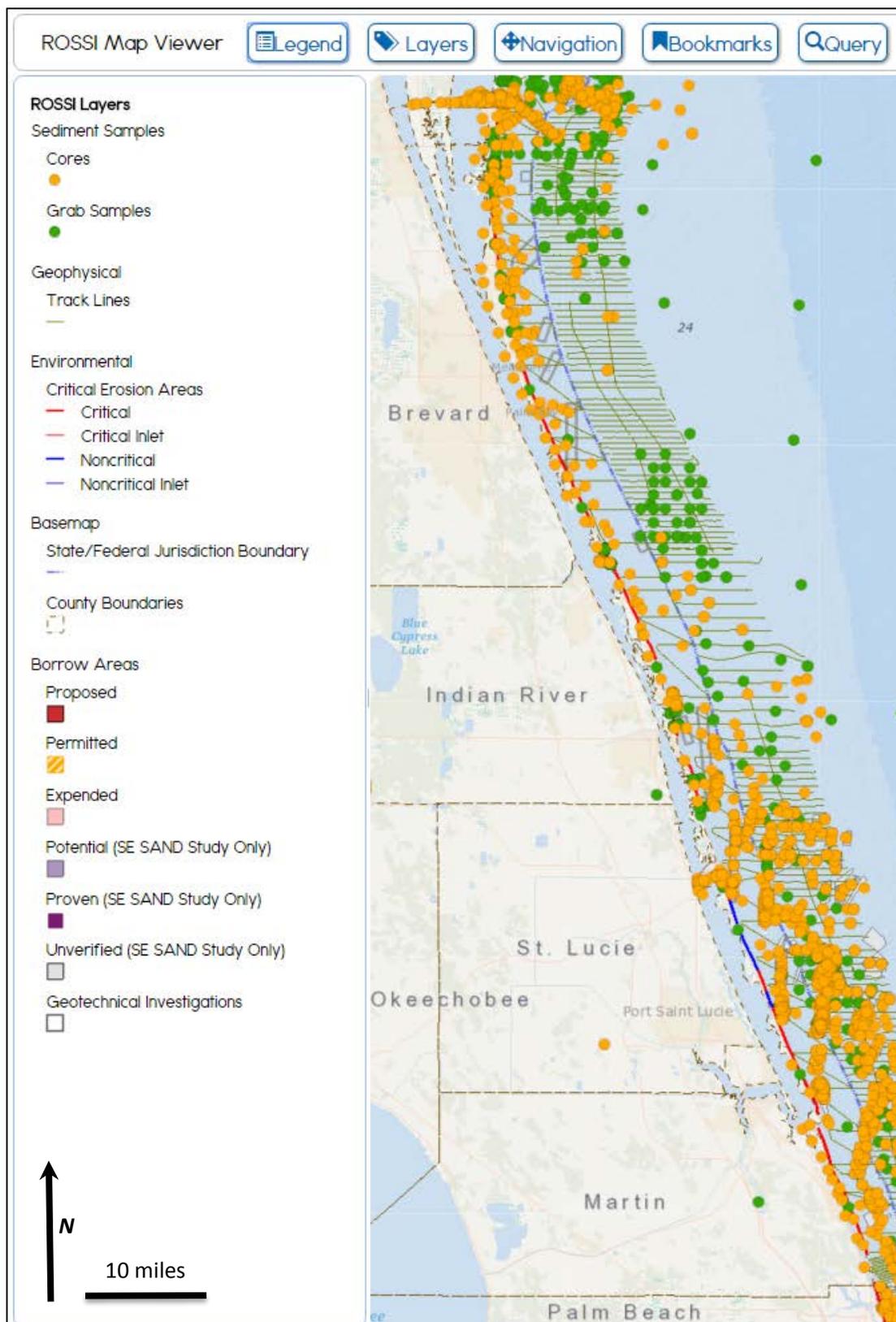


Figure 2d. Portion of data available on the east coast of Florida through the Regional Offshore Sand Source Inventory MapViewer page (<http://rossi.urs-tally.com/Map>)

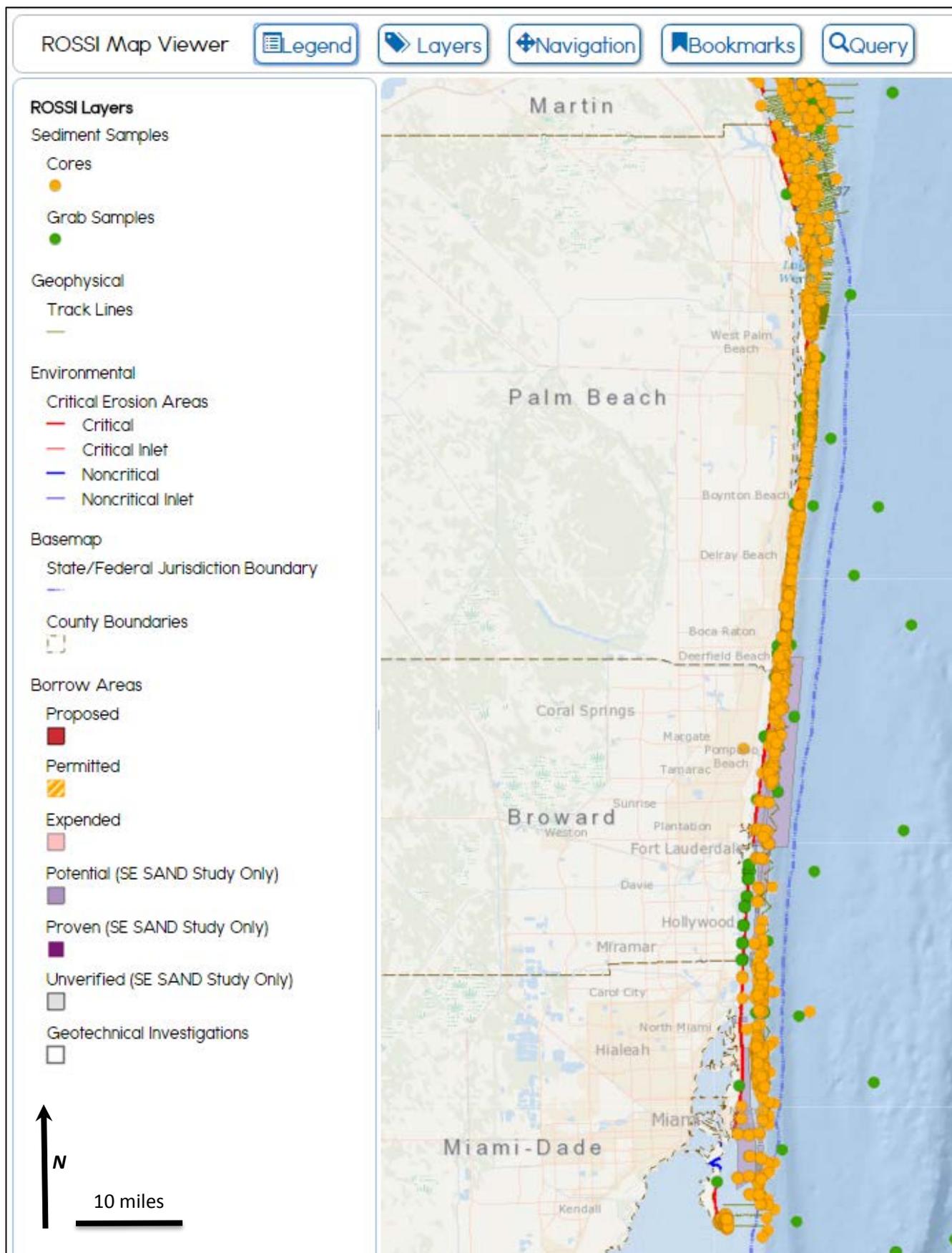


Figure 2e. Portion of data available on the east coast of Florida through the Regional Offshore Sand Source Inventory MapViewer page (<http://rossi.urs-tally.com/Map>)

Geological and Geophysical Mapping:

Phelps D.C., Bassett, S. and Baker, A., A geophysical delineation of the seafloor, top of rock and thickness of the unconsolidated sediments in selected areas on the outer continental shelf offshore of the northeast and central east coast of Florida: Florida Geological Survey, Report of Survey in progress.

All readily available sub-bottom profiler data collected offshore of the east coast of Florida from the Florida-Georgia State line south to the Martin-Palm Beach County border, were processed using Chesapeake Technology SonarWiz5[®] software. Digitization of the seafloor and the identification of the interpreted "top of rock" horizon for the areas north and south of Cape Canaveral has been completed. In the vicinity of Cape Canaveral, insufficient data were available to perform these analyses.

Identification of "top of rock" was accomplished by: 1) correlating seismic data to individual vibracores, 2) analyzing variations in seismic reflection intensity, and 3) seismic stratigraphic analysis. From the digitized surfaces of the seabed and "top of rock," the thickness of unconsolidated sediments in the study area has been and will continue to be tabulated line by line. Maps of seabed, "top of rock" and unconsolidated sediment thickness for the regions north and south of Cape Canaveral have been completed. Maps of the seafloor, the interpreted "top of rock" and the sediment thickness between those two surfaces are shown in figures 3a, 3b, 3c, 3d, 3e and 3f below.

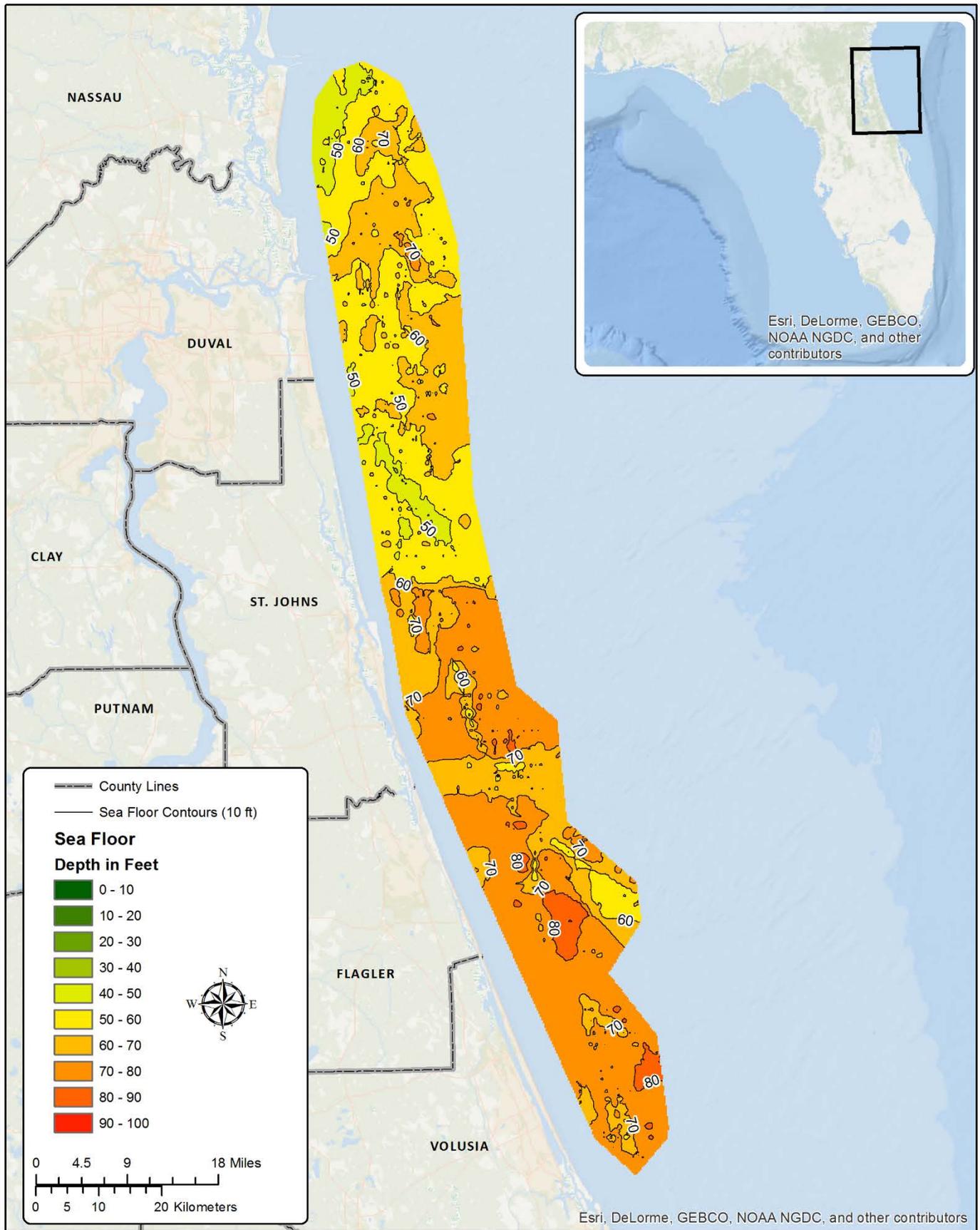


Figure 3a. Bathymetric map of the seafloor north of Cape Canaveral at the time data were collected.

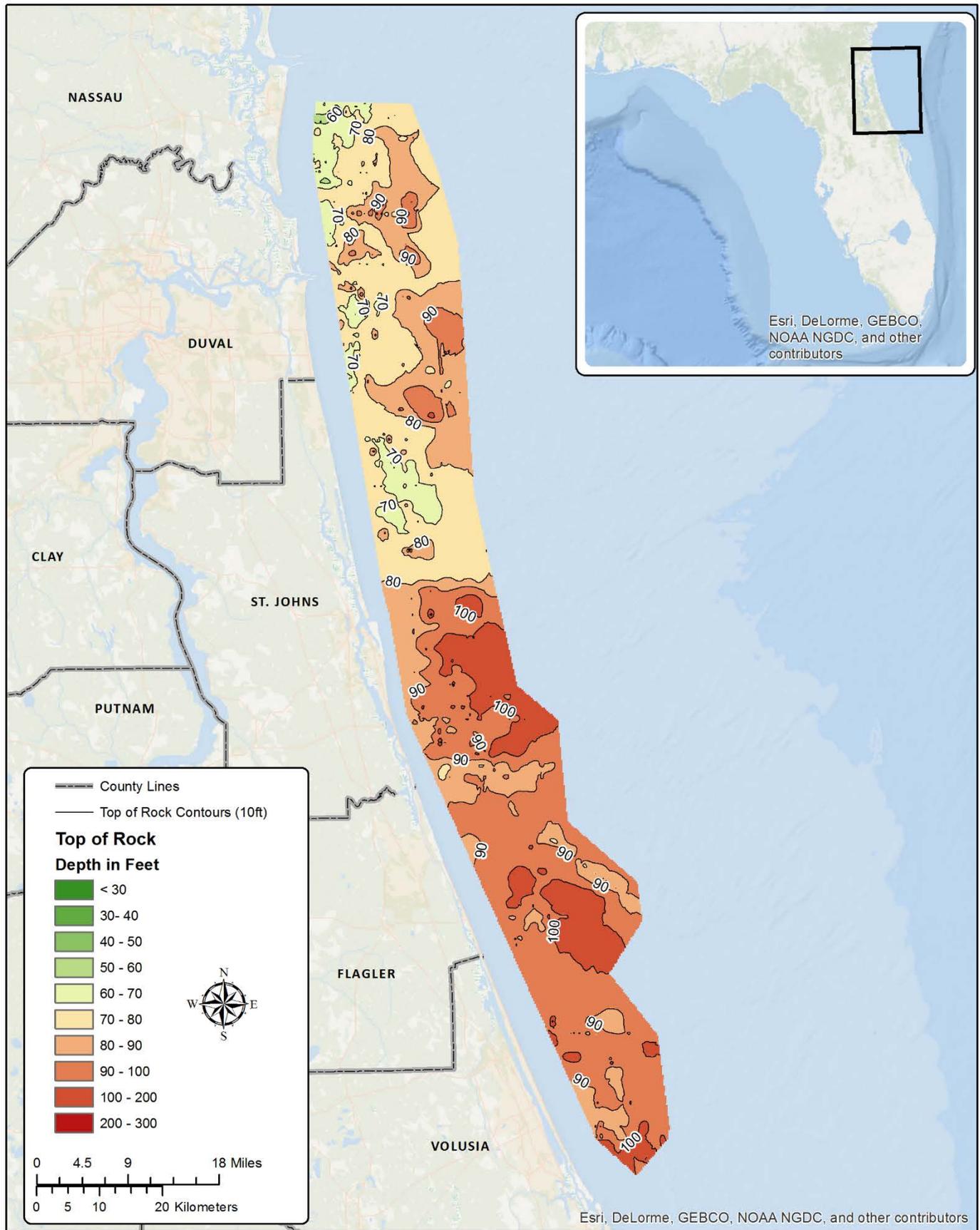


Figure 3b. Map of interpreted top of rock north of Cape Canaveral.

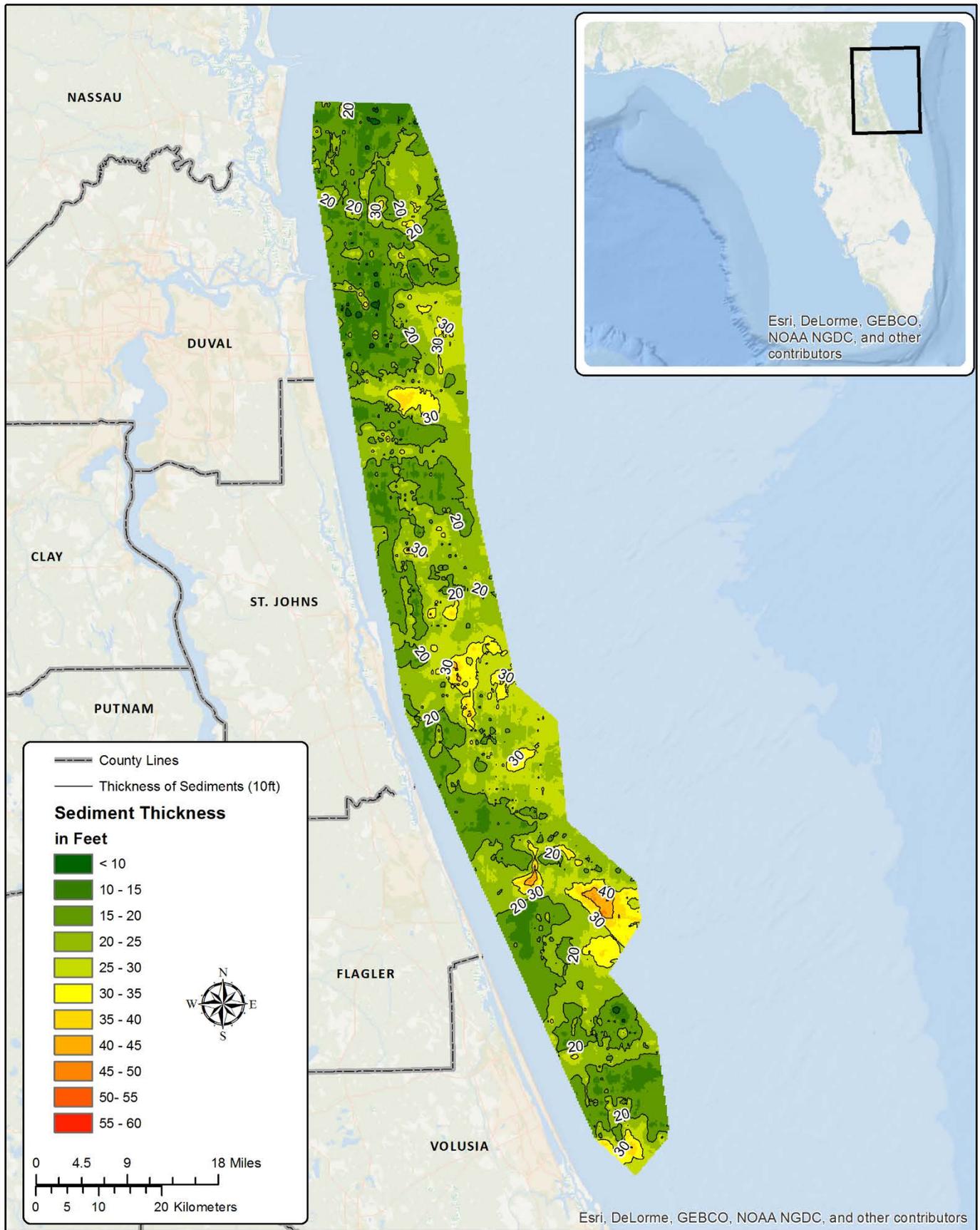


Figure 3c. Bathymetric map of the sediment thickness north of Cape Canaveral at the time data were collected.

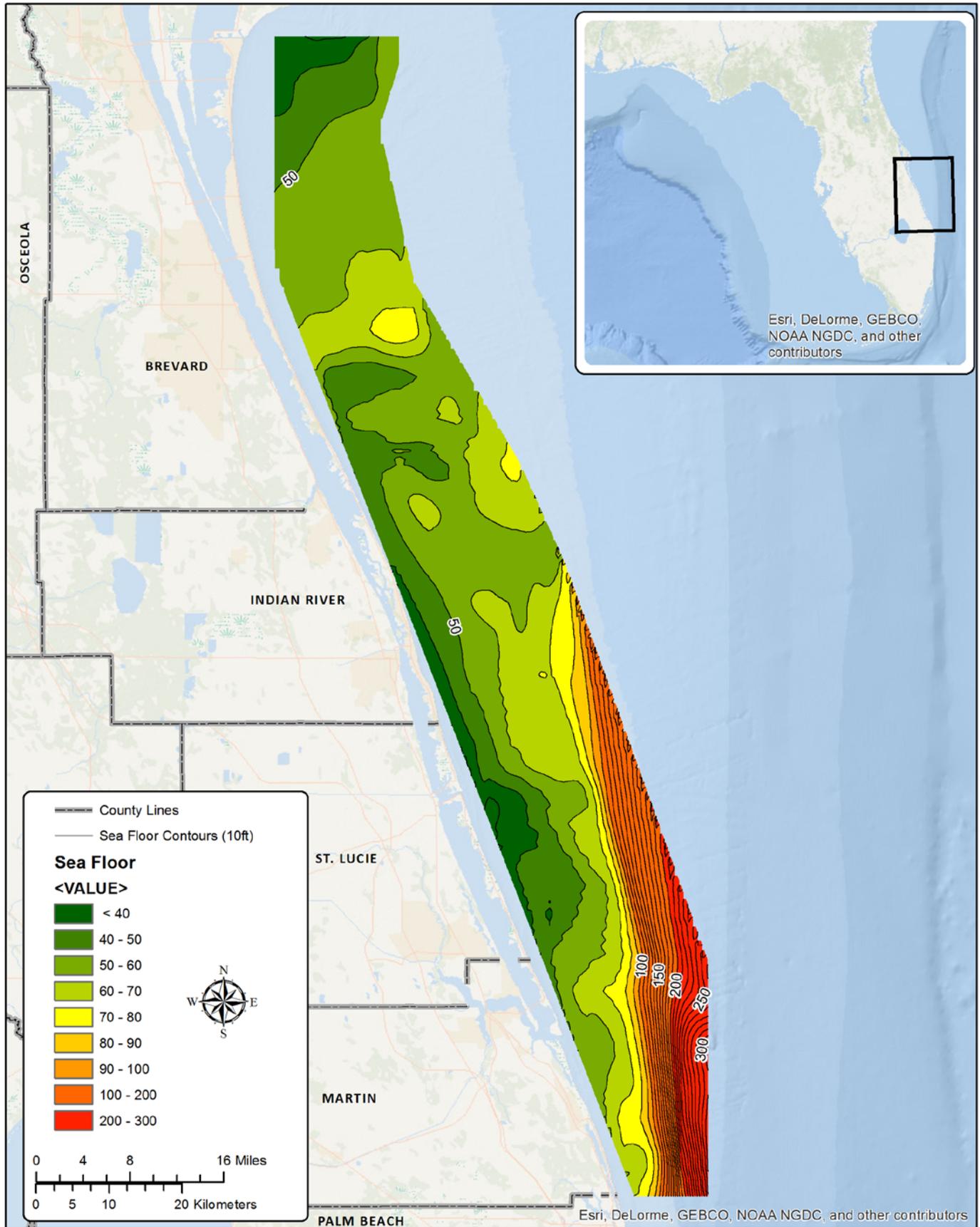


Figure 3d. Bathymetric map of the seafloor south of Cape Canaveral at the time data were collected.

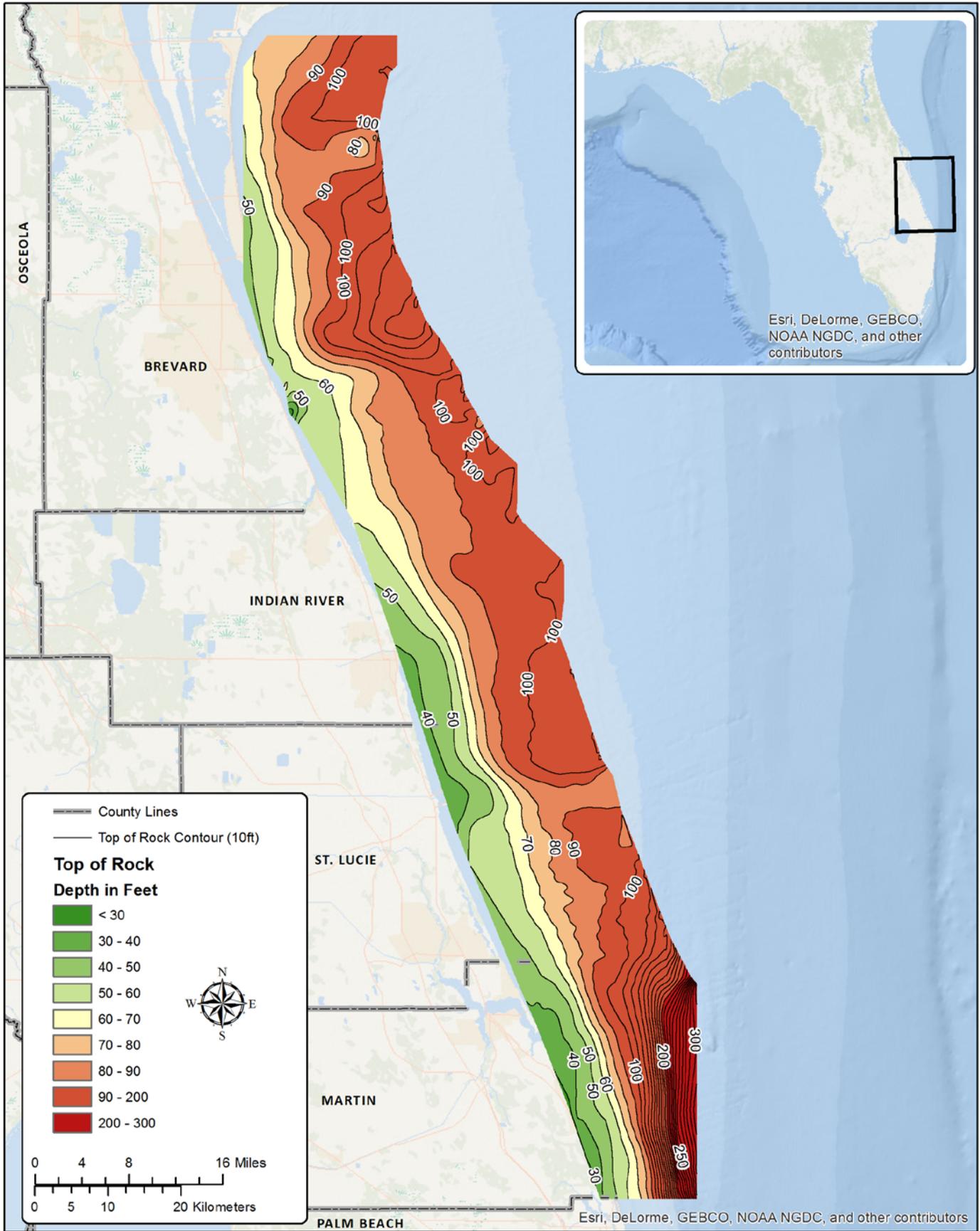


Figure 3e. Map of interpreted top of rock south of Cape Canaveral.

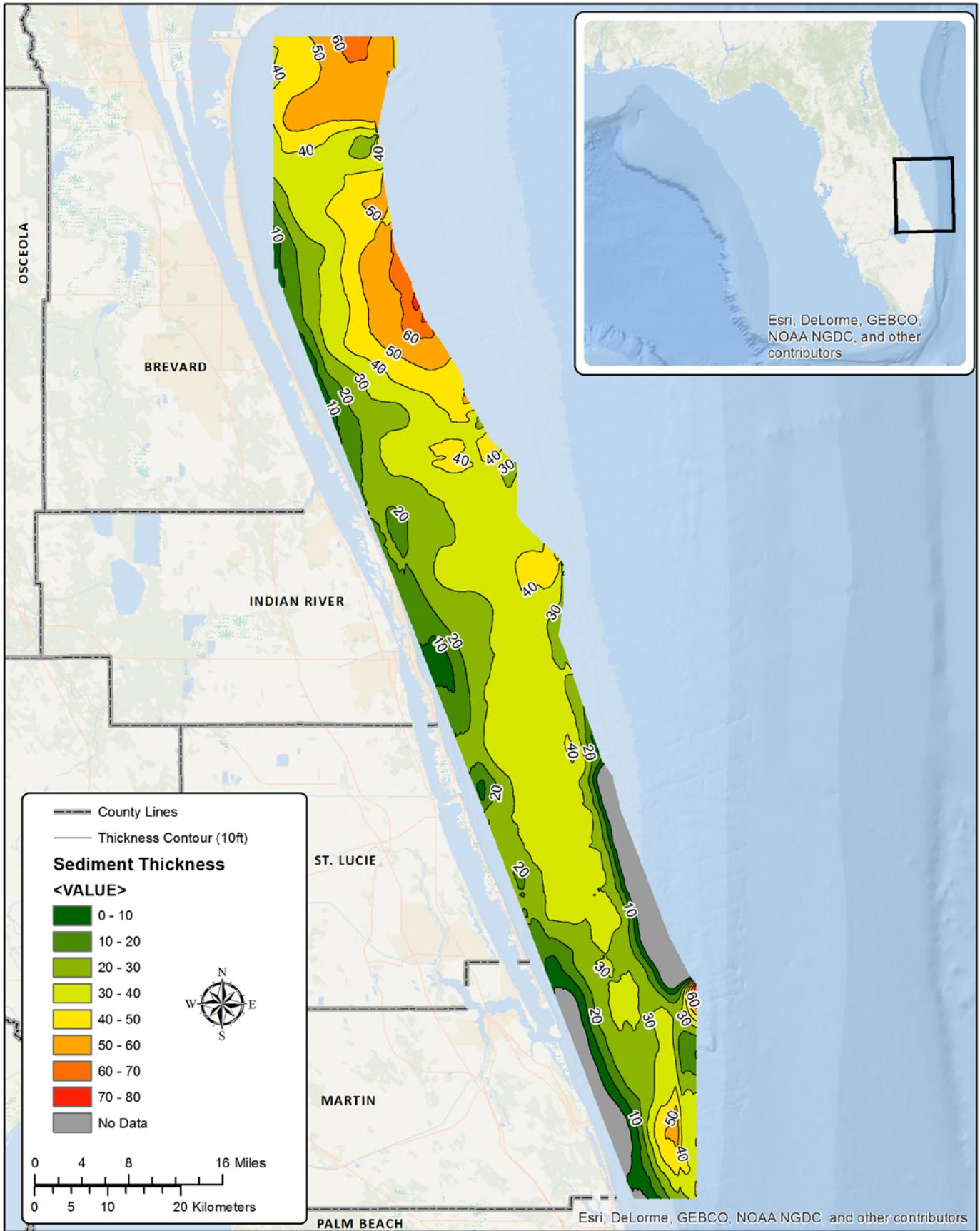


Figure 3f. Map of interpreted unconsolidated sediment thickness south of Cape Canaveral at the time data were collected.

Associated Cooperative Agreement Outputs:

Florida Department of Environmental Protection, Regional Offshore Sand Source Inventory: <http://rossi.urs-tally.com/>

Coor, J.L., Beauvais, C., and Ousley, J.D., 2015, ROSS/OSSI: A Coastal Management Tool for Offshore Sand Sources: *The Proceedings of the Coastal Sediments 2015*, San Diego, California, USA, 11 May – 15 May, 2015.

The loss of sand from Florida's beaches and coastal systems is a serious problem that affects not only the coastal system, but also the economic livelihood of Florida's coastal communities. Beach erosion is a chronic problem in Florida, influenced by sea-level rise, natural coastal processes, storms, and inlet management. Florida has 407.3 miles of critically eroded sandy shoreline, 8.7 miles of critically eroded inlet shoreline, 93.9 miles of non-critically eroded sandy shoreline, and 3.2 miles of non-critically eroded inlet shoreline statewide (FDEP, 2014). Recent study has shown that beach quality sand resources for restoration adjacent to the beaches along southeast Florida have been exhausted (Ousley et al., 2014). Identifying offshore sand resources that are suitable for future beach restoration projects is critical in order to sustain Florida's beaches that are vital to the economic stability of the state.

The goal of this project is twofold, encompassing the completion of necessary upgrades and updates to the Reconnaissance Offshore Sand Search/Offshore Sand Search Inventory (ROSS/OSSI) database, and populating OSSI with existing borrow area data for Florida counties; the population of OSSI for Southeastern Atlantic counties is currently underway. Beach compatible sand from any newly identified offshore deposits (or those currently existing in ROSS/OSSI) may be used in beach nourishment projects throughout Florida's coastal counties in order to bolster coastal resiliency during future storm events.

Coor, J.L., 2015, ROSSI: A coastal management tool for offshore sand sources: Shoreline, Florida Shore and Beach Preservation Association, July 2015, p. 17-21.

In January 2001, the Department of Environmental Protection (FDEP) developed a geologic model and report of sand sources offshore of the Florida Panhandle known as SandPan. Existing geologic and geophysical data that represented the beach, nearshore, and offshore regions of the Panhandle were collected to facilitate understanding of the geologic evolution of the Florida Panhandle. Following the completion of SandPan, additional geotechnical studies were completed by URS, at the request of FDEP, in both the Atlantic and Southwest Florida coastal regions. Both the Southwest Gulf Coast Project and the Atlantic Coastal Sand Search Project acquired and incorporated offshore geological and geotechnical data into the ROSS database system, and constructed a geologic model to identify potential sand resources for beach nourishment.

These regional studies, in addition to data acquired through the permitted process, were developed by FDEP and URS into the online components of the Reconnaissance Offshore Sand Search (ROSS) database. The Offshore Sand Source Inventory (OSSI) project was instituted in 2007 after the Florida Legislature created Chapter 161.144, Florida Statute (F.S.), requiring the FDEP to develop and maintain a comprehensive inventory of identified offshore sand sources. As the project has progressed past the reconnaissance level, it has been renamed the Regional Offshore Sand Source Inventory (ROSSI) to better reflect the current purpose of the system as a repository of offshore geotechnical and geophysical data and borrow area locations.

The objectives of this project were to complete various improvements, updates, and enhancements to the ROSSI database (formerly ROSS/OSSI), in addition to populating ROSSI with data from Florida's coastal counties. The modernization of the ROSSI webpage and API mapping utility will provide coastal scientists and managers with a more user-friendly, reliable database to describe existing borrow areas and geotechnical and geophysical data.

References

Ousley, J. D., Kromhout, E., Schrader, M. W., & Lillycrop, L. S., 2014, Southeast Florida Sediment Assessment and Needs Determination (SAND) Study: Coastal Hydraulics Laboratory (U.S.), Engineer Research and Development Center (U.S.). ERDC/CHL TR-14-10.