BOGUE BANKS SAND SEARCH: Regional Geophysical Survey & GIS Decision Tools

geodynamics
AN NV5 COMPANY

Project Highlights

- MBES used to identify seafloor elevations, and MBES backscatter helped identify areas of complex seafloor morphology in concert with SSS data.
- Innomar Med-100 parametric SBP utilized to discern paleo-channel features, identify seismic horizons and facies.
- Worked with BOEM on behalf of the client to secure a geophysical prospecting permit (E22-001), including all protected species provisions.
- The Advanced Sand Search GIS Tool was custom developed for the project to help synthesize previously acquired geotechnical and geophysical data with the new HRG survey dataset.

Project Location

East Onslow Bay, N.C.

Client

Carteret County / Moffatt & Nichol

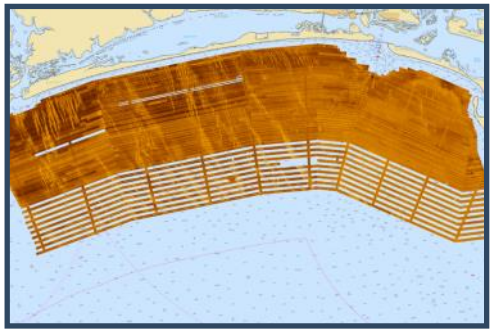
Project Description

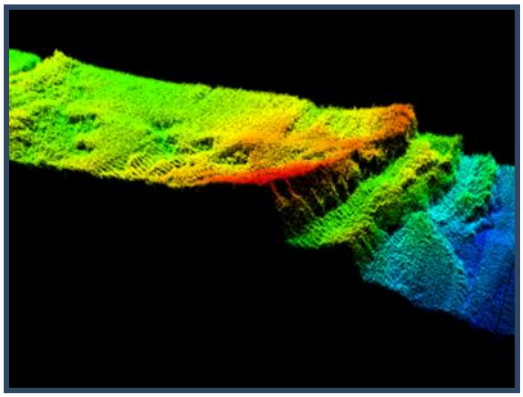
Geodynamics was retained by Moffatt & Nichol to conduct one of the largest sand & gravel surveys along the Atlantic seaboard to support Carteret County's future beach re-nourishment efforts. A High Resolution Geophysical (HRG) suite including multibeam echosounder sonar (MBES), side-scan sonar (SSS), and parametric sub-bottom profiling (SBP) technology was employed to survey approximately 270 sq NM (~1,382 survey linear miles). Including both State and Federal waters, the survey stretched from 0.5 to 9 NM offshore of Bear Island, Bogue Banks, and Shackleford Banks. HRG survey activities were conducted aboard Geodynamics' *R/V Chinook* and Duke University's *R/V Shearwater*.

A GIS database with highly-customized decision support tools was also developed for the project to incorporate a large catalog of previously collected geotechnical data with the newly acquired HRG data to constrain areas of compatible sand. These historical vibracores were converted into digital format according to a developed schema that will standardize and simplify inclusion of future geotechnical sampling.

Geodynamics then developed a powerful geospatial analysis tool, known as the Advanced Sand Search Tool (ASST), to identify and differentiate potential sand reserve areas (good quality sand that could be economically extracted) from less desirable sand resource areas (marginal quality sand that may be difficult to extract). The County will use this information to further identify discrete sand reserve areas as part of an overall effort to successfully secure borrow site authorizations for the next several decades.

SSS coverage and general track line scheme within ~270 sq NM survey box.





MBES data processed in CARIS depicting complex seafloor morphology.