BOEM Bureau of Ocean Energy Management

MMIS MARINE MINERALS INFORMATION SYSTEM

Integrating and disseminating marine minerals information products at the national scale to support resilient communities

February 3, 2022

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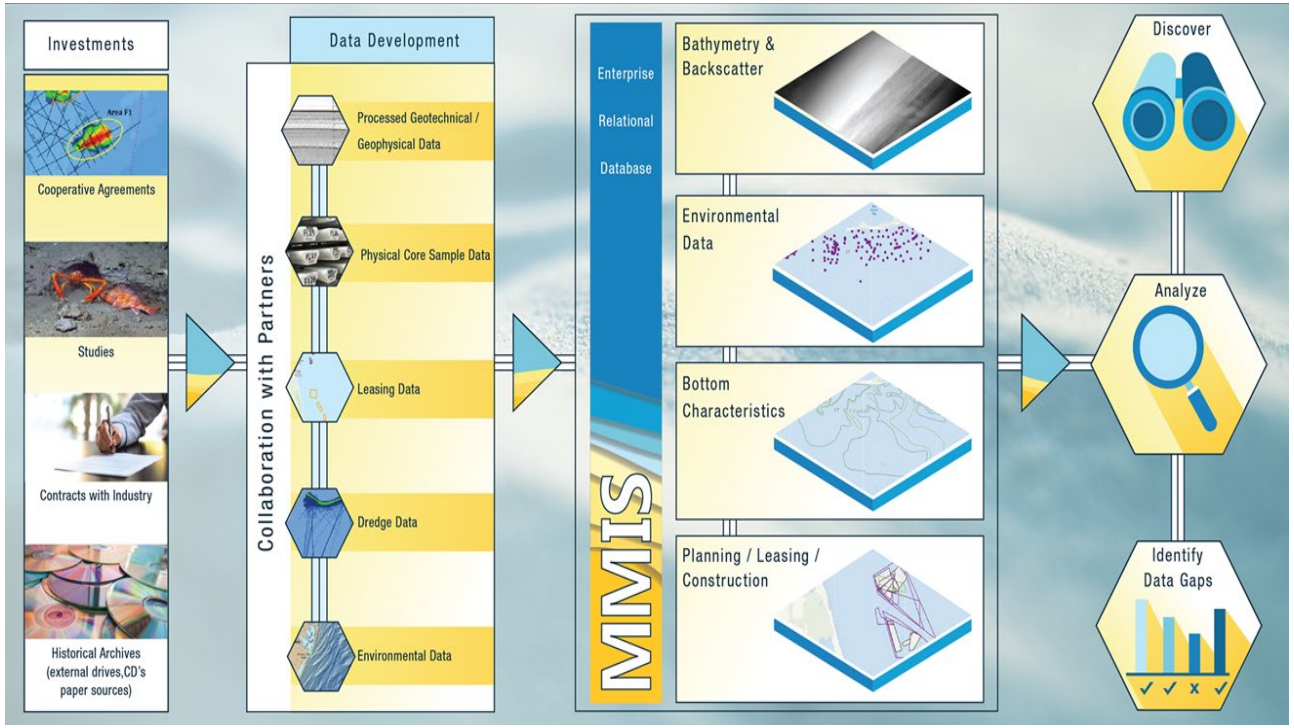
Agenda

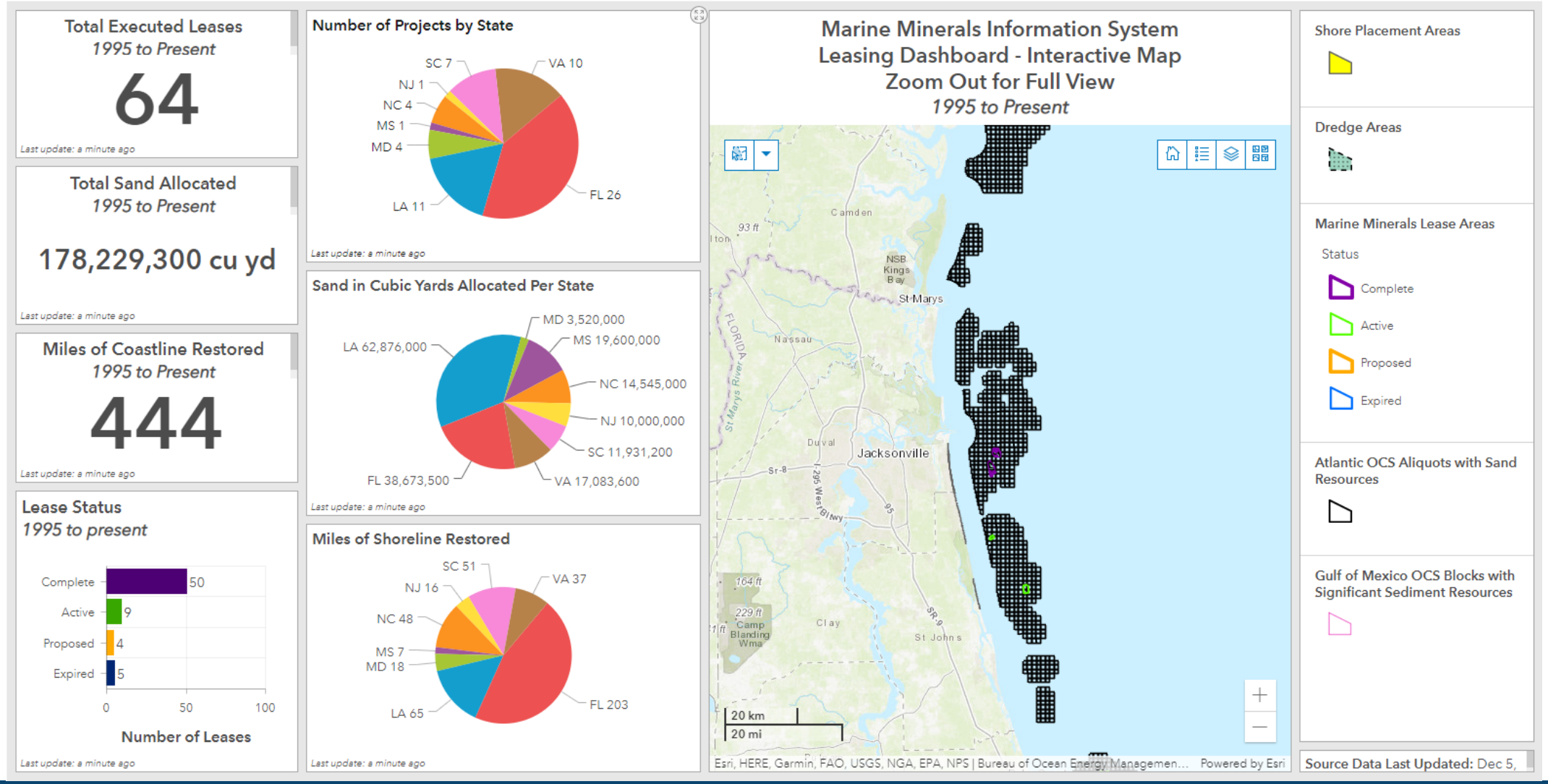
MMIS Focus Areas

- Coastal Resilience
- National Offshore Sand Inventory
- Data and Services
- Multiple Ocean Use
- MMIS / MMP Next Steps



Characterized sand / sediment resources
https://mmis.doi.gov/boemmmis

Coastal Resilience – BOEM Leasing



BOEM Bureau of Ocean Energy Management

MMIS home to marine minerals leasing project data

Coastal Resilience – BOEM Leasing

Construction Status

Not Started

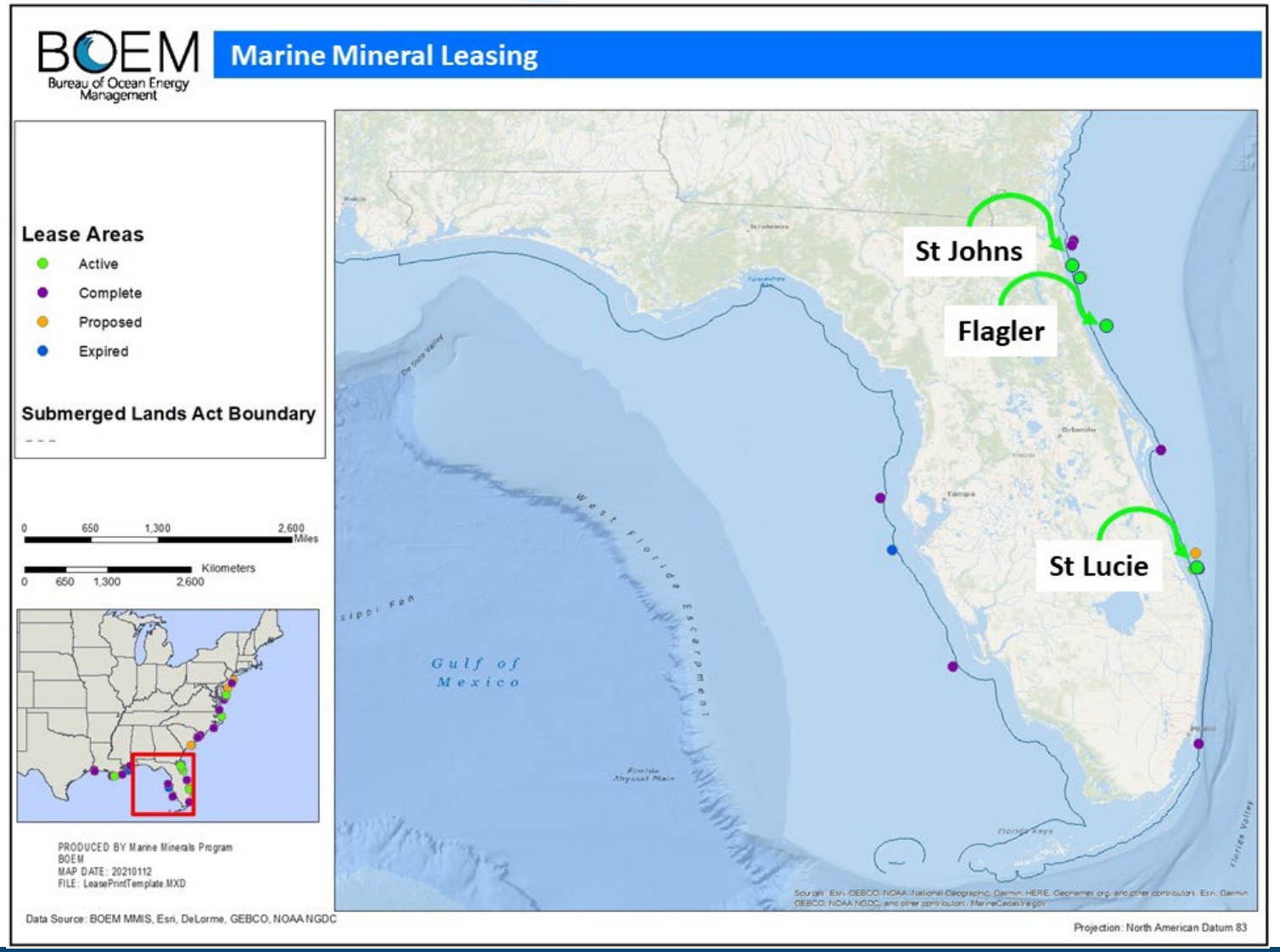
Lease No	ProjectID	Total Sand Allocated	ExpirationDate
OCS-A-0528	Flagler County Federal 2020	700,000	3/23/2023
OCS-A-0531	Flagler County NonFederal 2020	1,800,000	8/11/2023
OCS-A-0533	St Johns County South Ponte Vedra 2021	1,100,000	4/9/2024
OCS-A-0548	St Lucie County 2021	800,000	7/8/2024
OCS-A-0535	StJohnsCounty_NorthPonteVedraBeach_2021	2,200,000	9/30/2024

Active Florida Leases

Completed

LeaseNo	ProjectID	Total Sand Allocated
OCS-A-0527	Patrick Air Force Base 2019	600,000
OCS-A-0526	BrevardCounty 2019	2,020,000
OCS-A-0516	Brevard County 2018	1,700,000
OCS-A-0515	Martin County 2017	1,000,000
OCS-A-0511	Duval County 2016	2,400,000
OCS-A-0493	Brevard County 2013	2,400,000
OCS-A-0484	Martin County 2012	1,000,000
OCS-A-0481	Miami-Dade County 2011	474,000
OCS-G-34021	Pinellas County 2011	1,800,000
OCS-A-0479	Duval County 2011	1,200,000
OCS-A-00476	Brevard County 2009	1,300,000
OCS-G-23707	Collier County 2006	673,000
OCS-FL-2005	Patrick Air Force Base 2005	350,000
OCS-A-0461	Brevard County 2005	2,000,000
OCS-A-0460	Duval County 2005	1,500,000
OCS-FL-2000	Patrick Air Force Base 2001	600,000
OCS-A-0454	Brevard County 2000	7,300,000
OCS-A-0451	Duval County 1995	1,240,000

Completed Florida Leases



National Offshore Sand Inventory

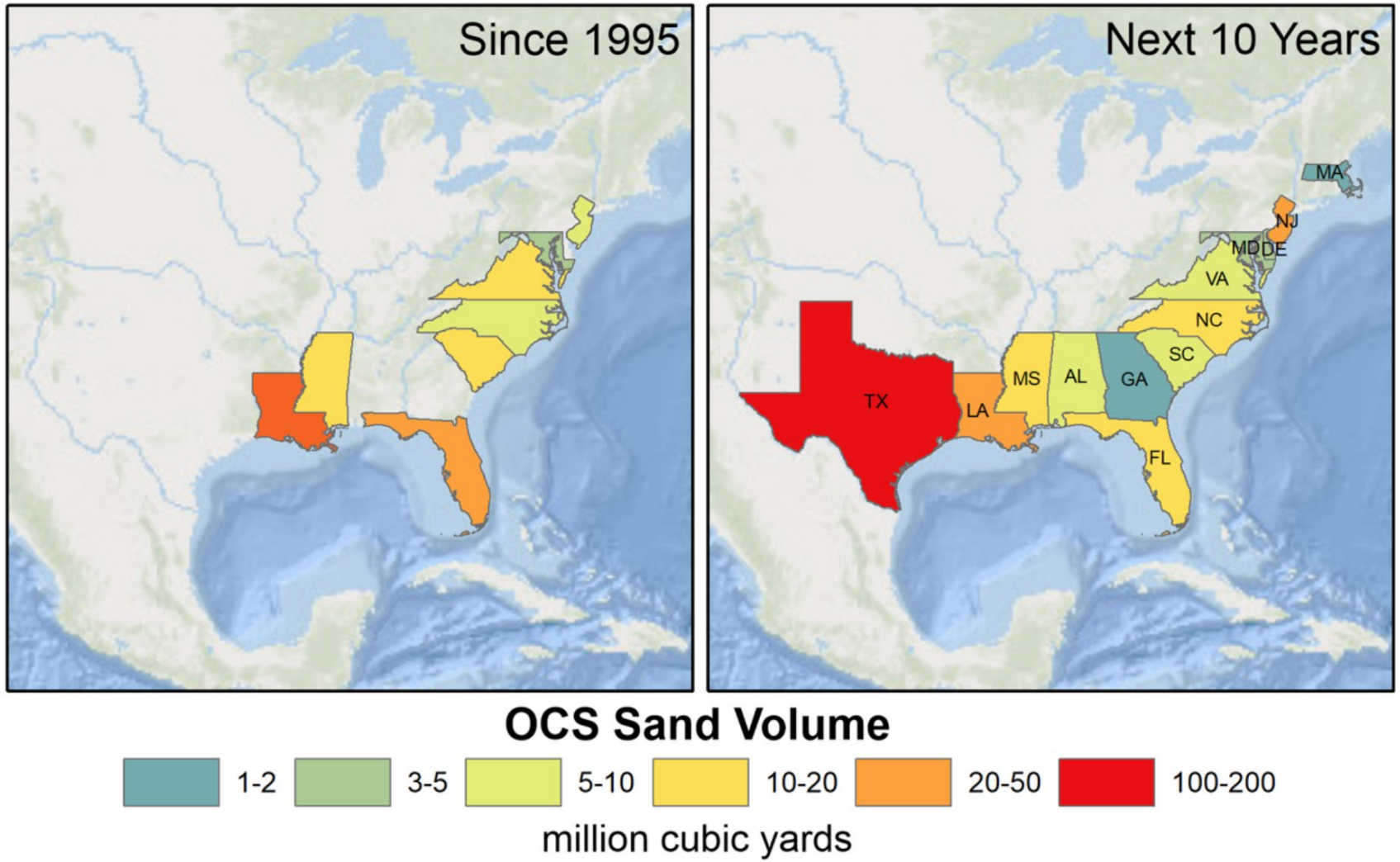
MMIS is just one of the mechanisms to support National Offshore Sand Inventory (NOSI) and foster access to the Nations offshore mineral resources

BOEM, other Federal agencies, and State partners collaborate on shared sediment data and inventory initiatives

- Share data
- Identify location and character of OCS sand resources
- Respond quickly to emergencies
- Coordinate with local and federal partners to fill data gaps
- Support stewardship role and coastal resilience

> **Investments** in NOSI **protect billions** in national resources and **reduce** emergency response time.

Map source data derived from 2018 Baird report "Projected OCS Sand Resource Needs and Effort"



National Offshore Sand Inventory

MMIS home to Characterized OCS Marine Minerals Resources

National Sand Resource Areas - Evaluation Stage (Atlantic Ocean, Gulf of Mexico, and Pacific Ocean)

Proven

Resource areas whose thickness and lateral extent have been fully determined through design-level geotechnical and seismic coverage. (Generally an area that has been authorized by a lease.)

Potential

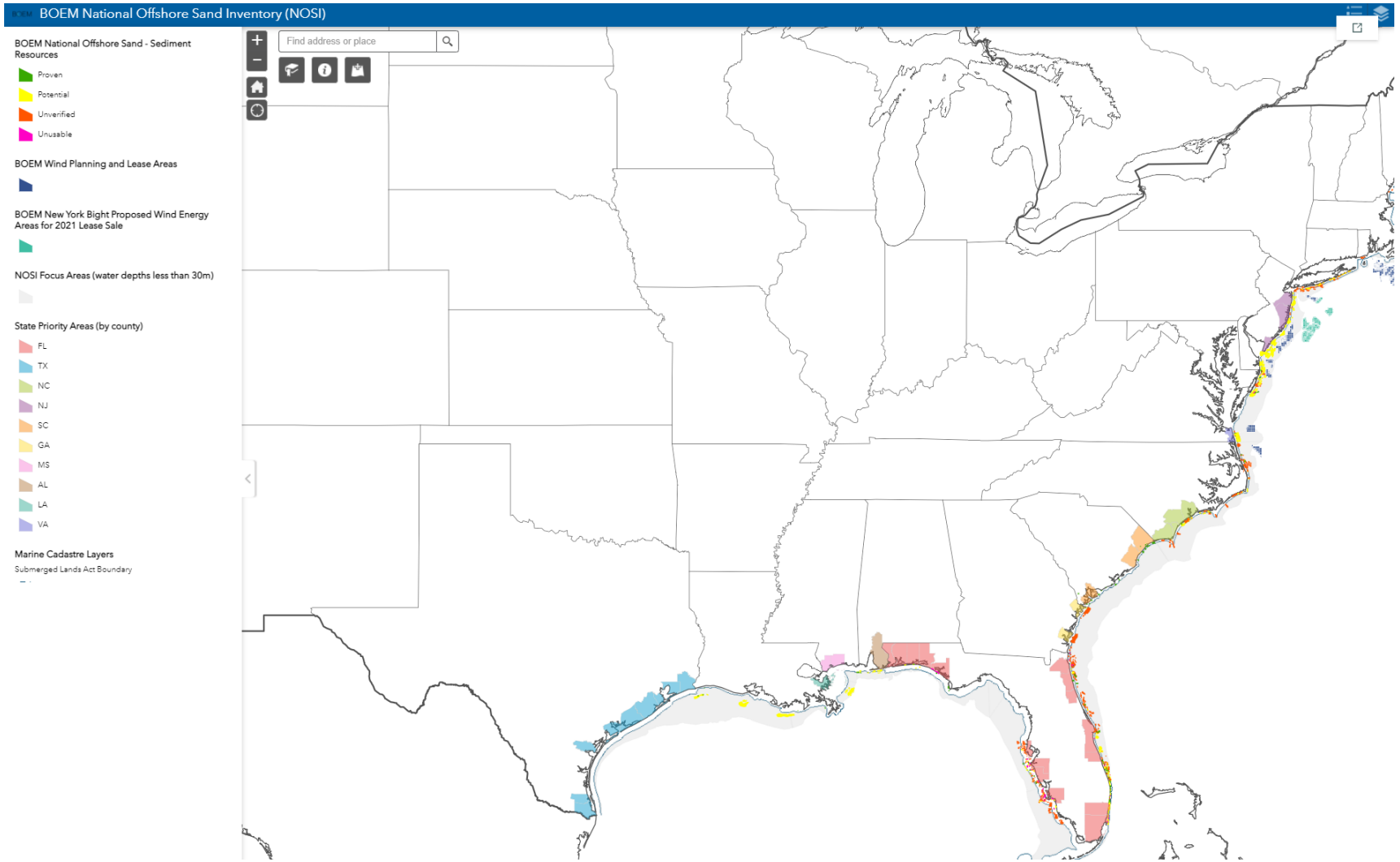
Resource areas whose existence has been verified through sufficient geotechnical and geophysical data. Thickness and/or lateral extent has not been fully determined. All areas have some combination of geotechnical and geophysical datasets (vibracore, bathymetry, sidescan, and seismic).

Unverified

Resource areas hypothesized to exist on the basis of indirect evidence (seismic profiles, bathymetry, or sidescan). Inferred sediment types, unit thickness and lateral extents have not been confirmed through direct sampling method

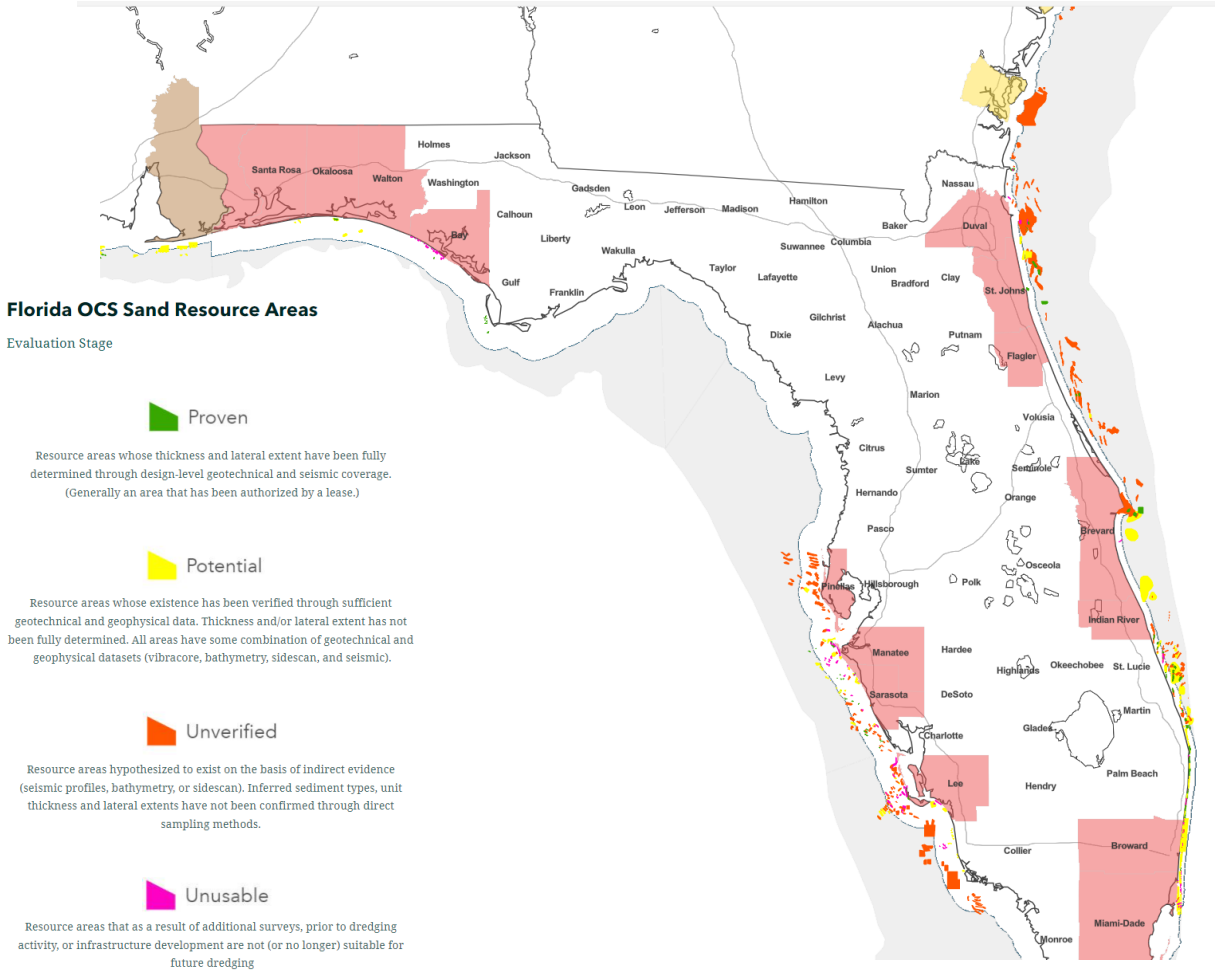
Unusable

Resource areas that as a result of additional surveys, prior to dredging activity, or infrastructure development are not (or no longer) suitable for future dredging.



National Offshore Sand Inventory

U.S. Army Corps of Engineers South Atlantic Division Sand Availability and Needs Determination Sand Source Categories and Confidence Levels - Borrow Areas



Category[1]	Confidence	Description
Proven	90%	Resource areas with beach-quality sand whose thickness and lateral extent have been fully determined through design-level geotechnical data and in most cases are permitted.
Potential	70%	Resource areas with beach-quality sand whose existence has been verified through preliminary geotechnical and geophysical data (with vibracores approximately one mile apart). Thickness and/or lateral extent has been preliminarily determined.
Unverified Plus	can vary from 5% - 30%[2]	Resource areas hypothesized to exist on the basis of geophysical evidence (seismic profiles, bathymetry, or side scan sonar) and at least one geotechnical core or surficial samples verifying beach-quality sand.
Unverified	0%	Resource areas hypothesized to exist on the basis of indirect evidence for the presence of beach-quality sand.
Unusable	0%	Unusable for one or more of the following reasons: 1. All beach-compatible material has been removed from the area prior to the SAND Study, 2. The sand source is inaccessible due to current conditions. 3. Area was investigated and the presence of non-beach quality material throughout the area was verified.

[1] Sand source categories modified from BOEM's *Marine Minerals Information System* (2020), *FDEP's Regional Offshore Sand Source Inventory* (2020c), and *Southwest Florida Borrow Area Update* (2017).
[2] Confidence level for Unverified Plus sand sources varies based on the density of the available geophysical and geotechnical data. This study provides the estimated volumes of Unverified Plus sand sources but considers them as non-volume contributing for the summary tables.

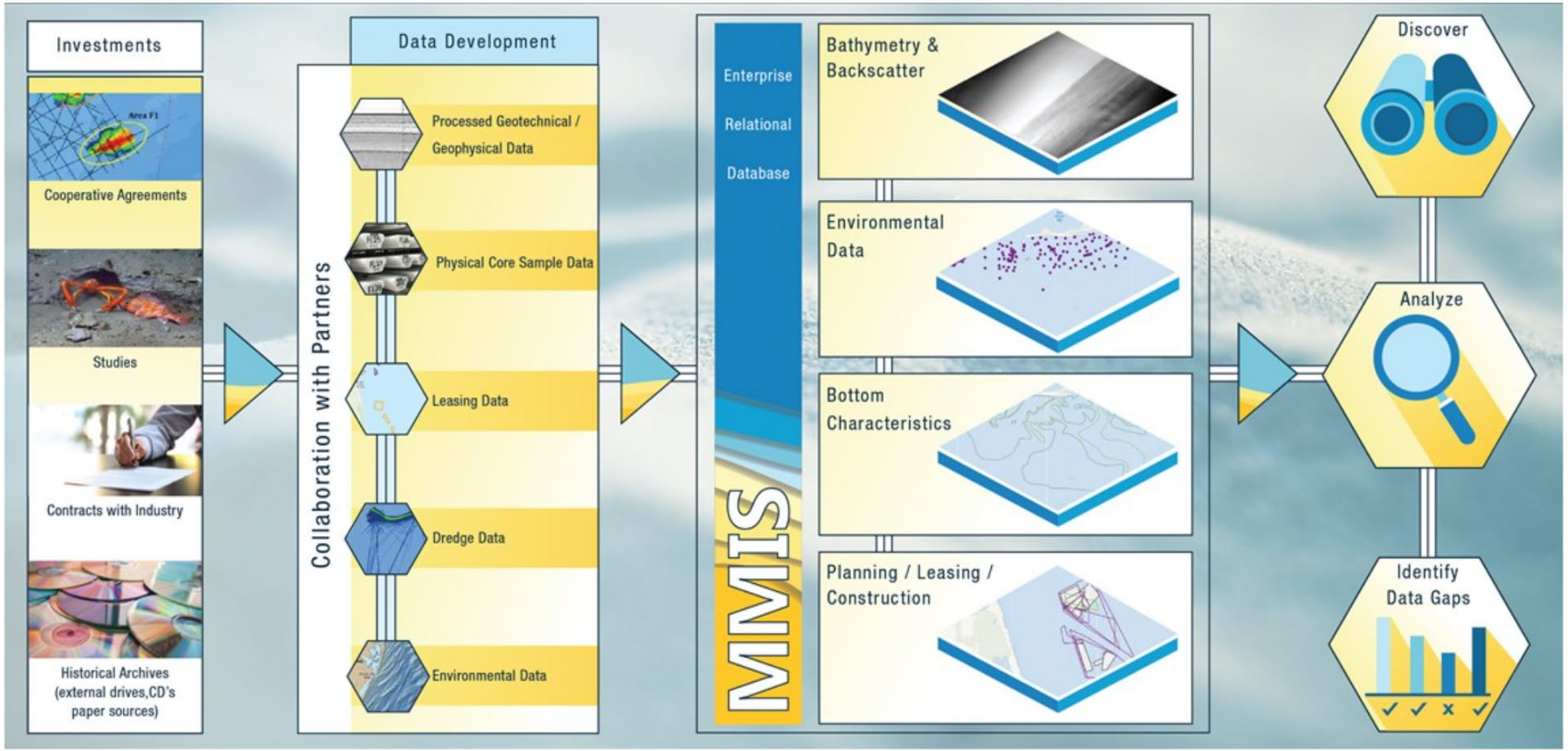
Source: U.S. Army Corps South Atlantic Division Sand Availability and Needs Determination Summary Report (army.mil)

Data and Services

MMIS MARINE MINERALS INFORMATION SYSTEM

Home to usable, accessible, and trusted ***characterized marine mineral resource information*** that is accessible to all who need it

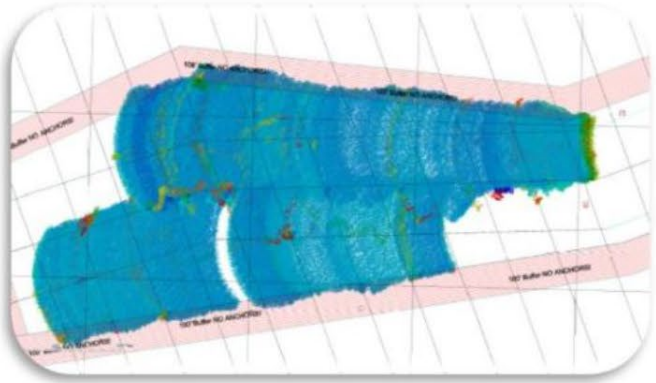
Data and Services



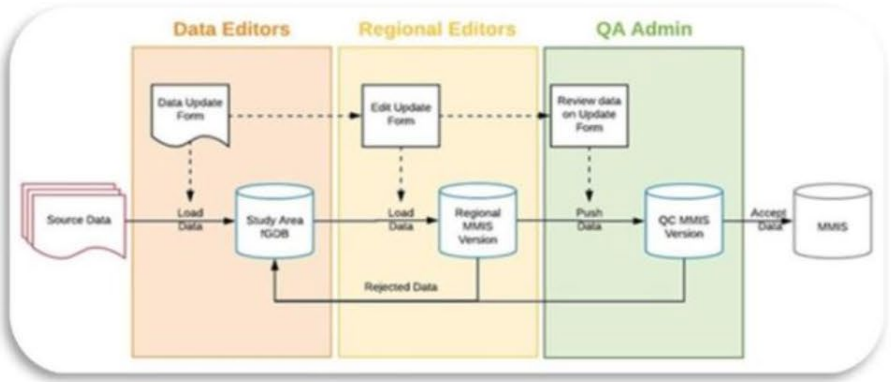
Data and Services

Data Management

Data Intake



QAQC

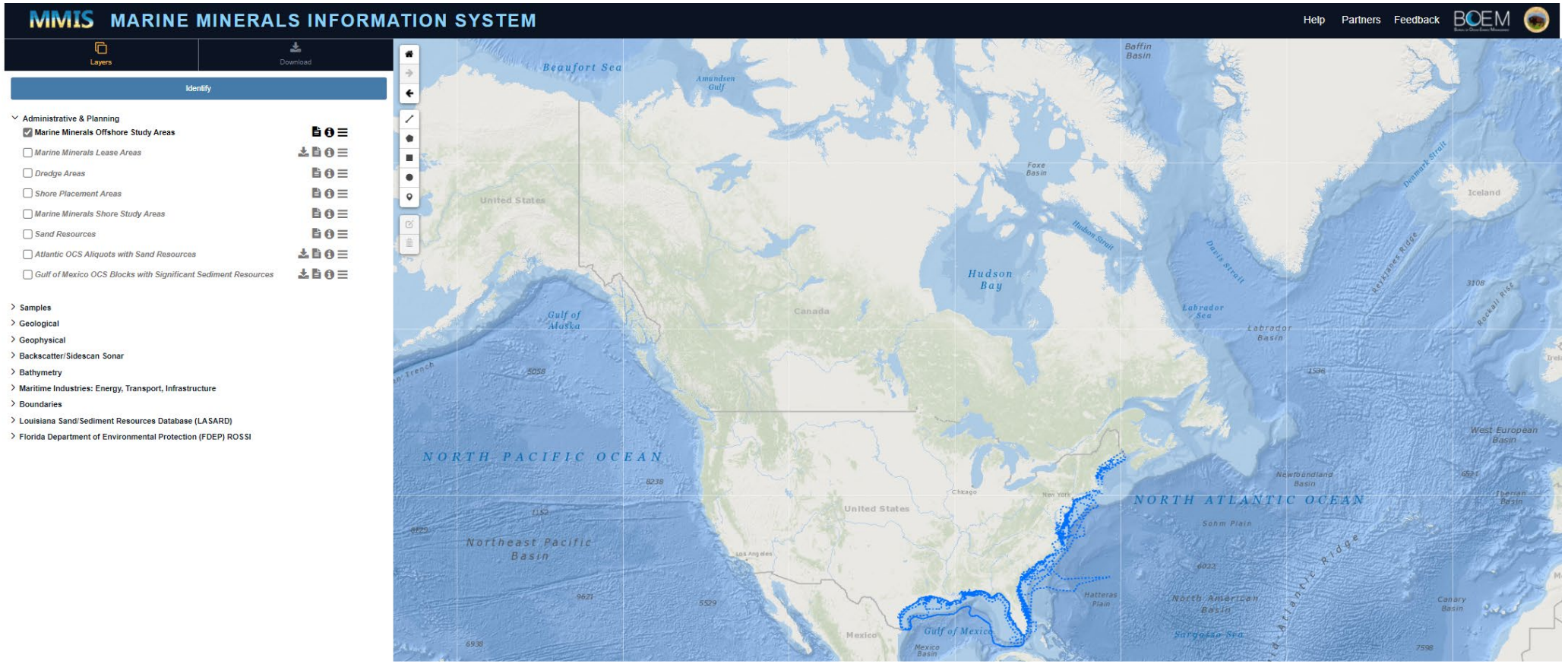


Public Access

Data and Services

Data Accessibility

https://mmis.doi.gov/boemmmis/



Data and Services

MMIS Data Downloads

For the non-GIS user, download is available in csv format and links to pdf reports can be discovered

https://mmis.doi.gov/boemmmis/

Accessible Reports

Marine Mineral Resource Evaluation Research | Bureau of Ocean Energy Management (boem.gov)

Marine Mineral Studies | Bureau of Ocean Energy Management (boem.gov)

ESPIS | Environmental Studies Search Tool (marinecadastre.gov)

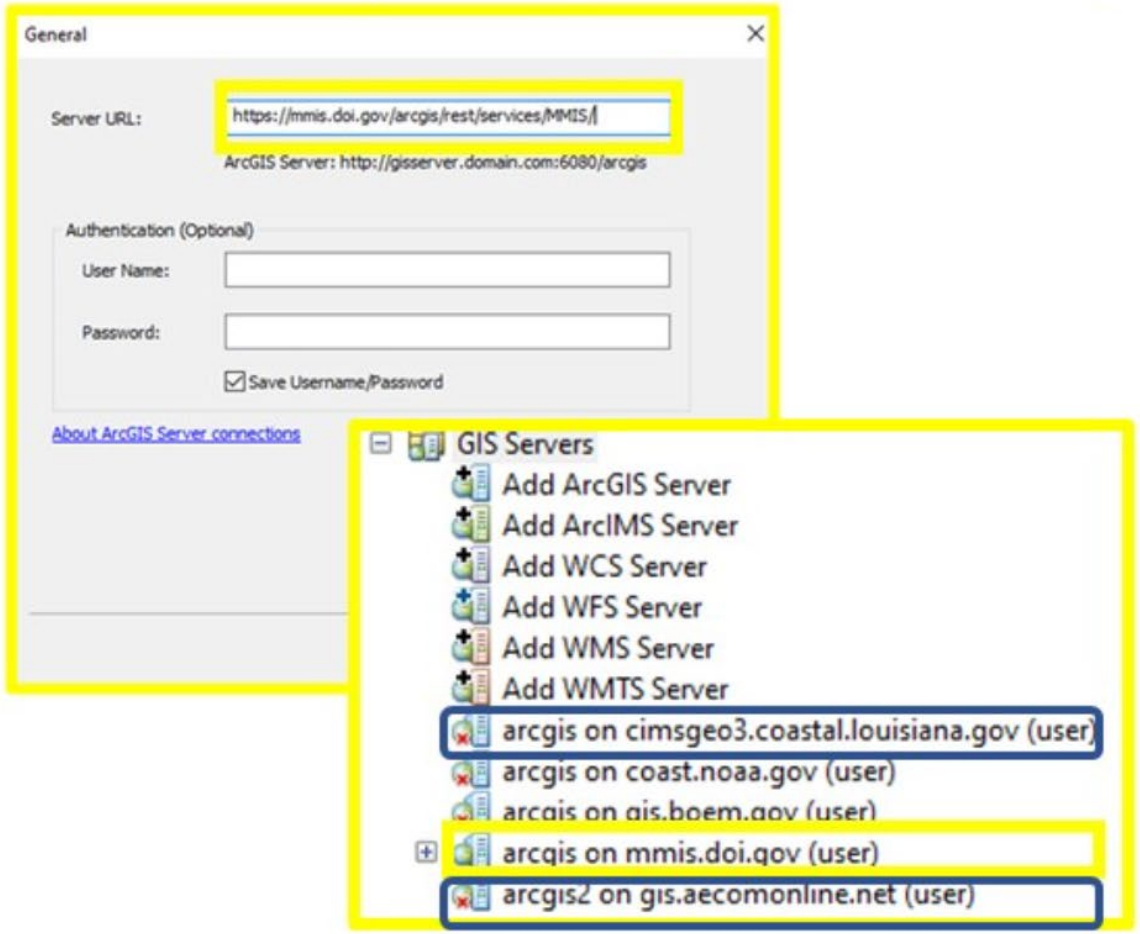
Data and Services

MMIS Rest Services

For the GIS user, enabled services so that information layers can be used directly

https://mmis.doi.gov/arcgis/rest/services/MMIS

https://mmis.doi.gov/arcgis/rest/services/MMIS/



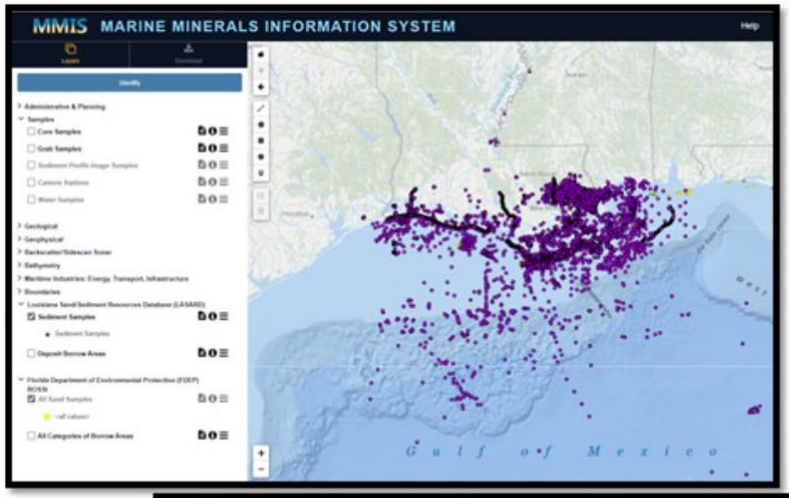
Data and Services

Partners - Interoperability | Discoverability

Coastal Protection and Restoration Authority

Louisiana Sand Resource Database (LASARD)

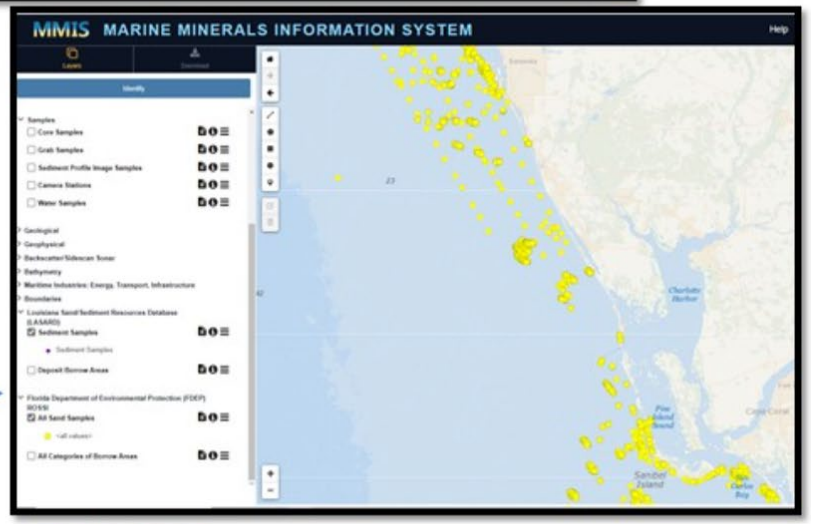
APTIM



Florida Department of Environmental Protection

Regional Offshore Sand Inventory (ROSSI)

AECOM

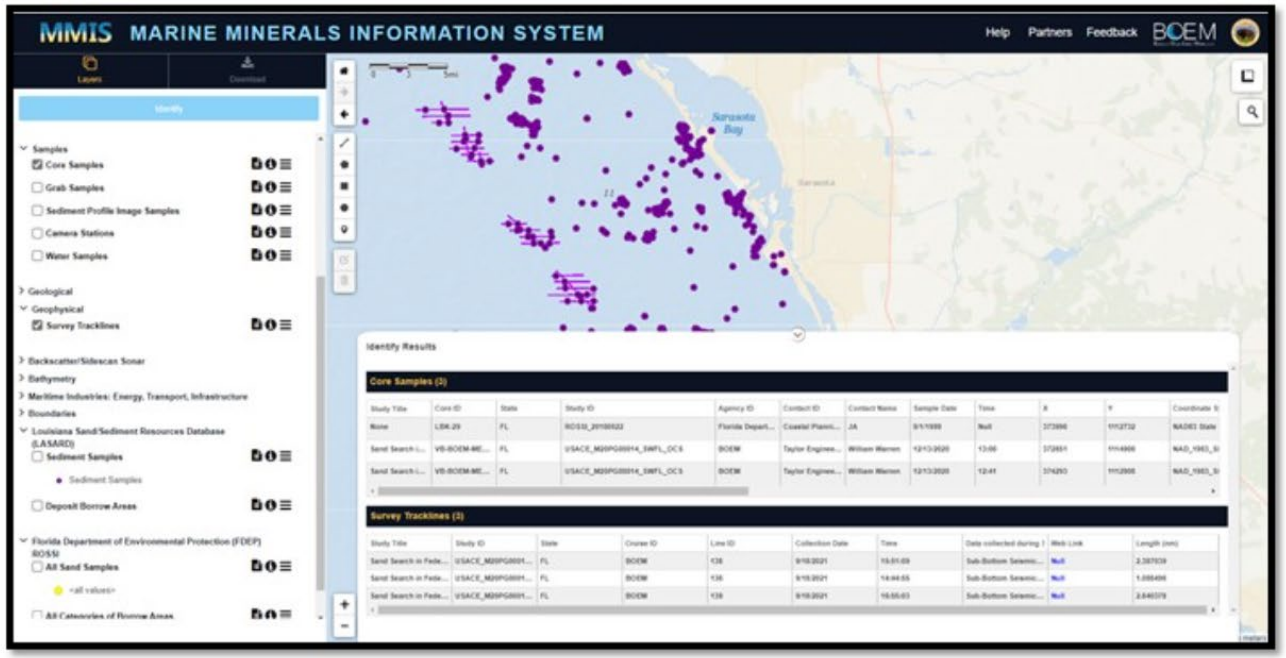


MMIS MARINE MINERALS INFORMATION SYSTEM

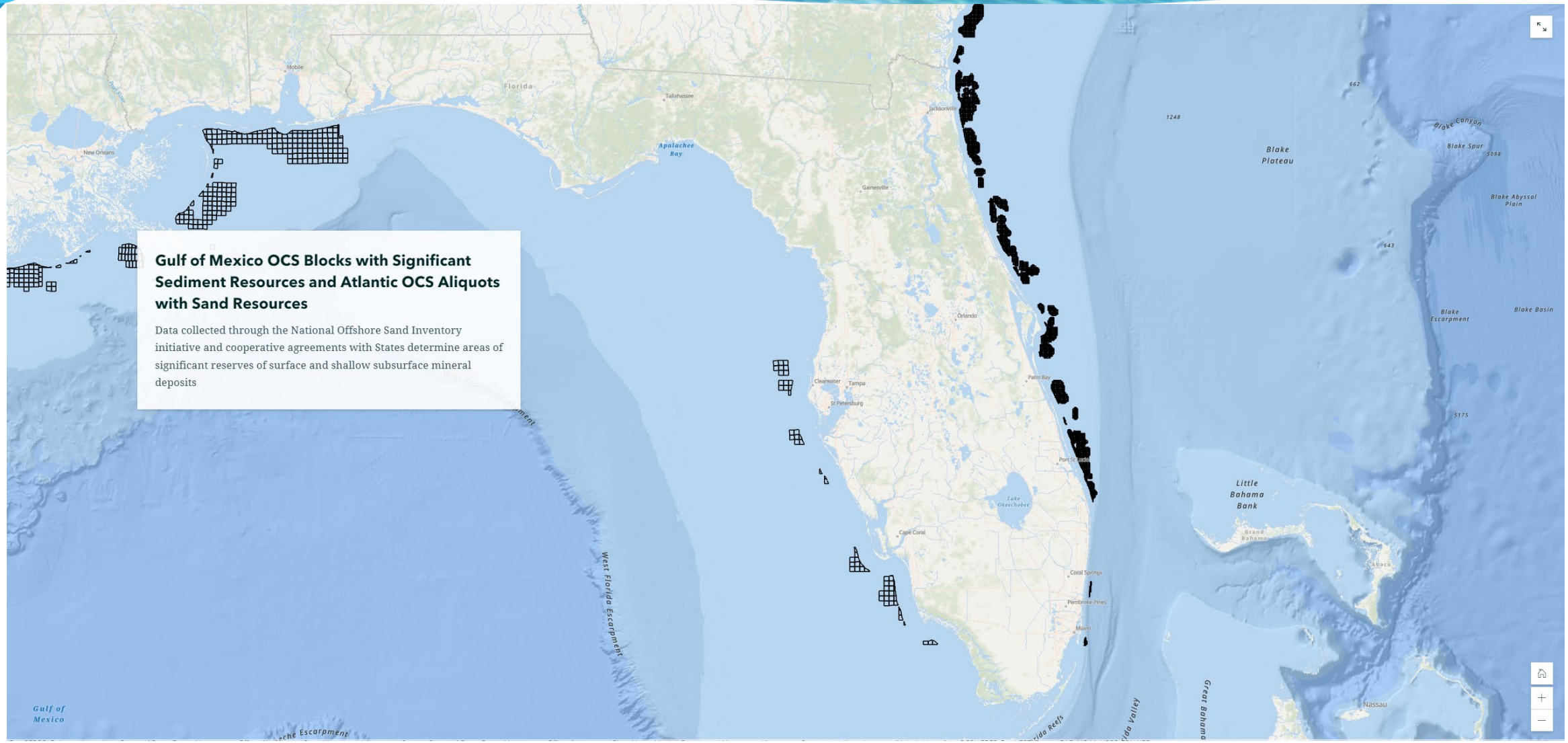
Data and Services

Partners - Interoperability | Discoverability

- **USACE Jacksonville**
  - SW Florida data products in MMIS
- **USACE Mobile and USGS**
  - Project planning phase
- **NOAA NCEI**
  - NOAA – BOEM geophysical data submission agreement

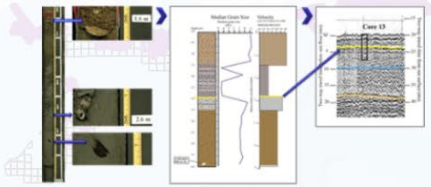


Data and Services

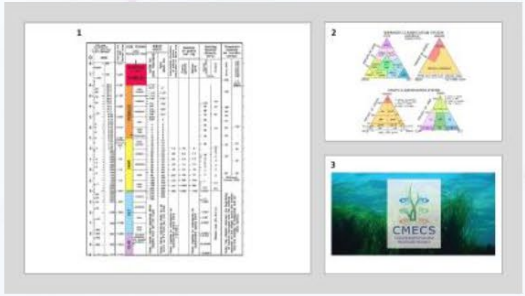


Data and Services

Core Samples - Sediment Characterization



Core Analysis



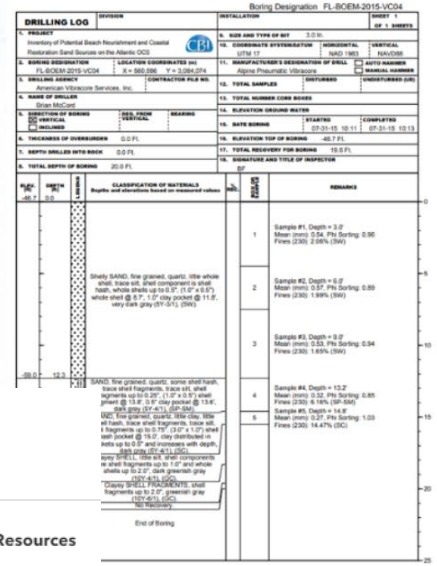
1 USGS Wentworth Grain Size Chart (Source: United States Geological Survey Open-File Report 2006-1195),
2 Shepard's Classification System, Folk Classification System (Source: 20130123_shepard_folk_sediment_classification.gif (620×620) (planetary.s3.amazonaws.com),
3 Coastal & Marine Ecological Classification Standard Ecological Classification - CMECS (noaa.gov) (Source: NOAA)

Data and Services

Core Samples - Sediment Characterization

Select a core on the map to identify applicable study and International GeoSample Number Link

Drilling Log



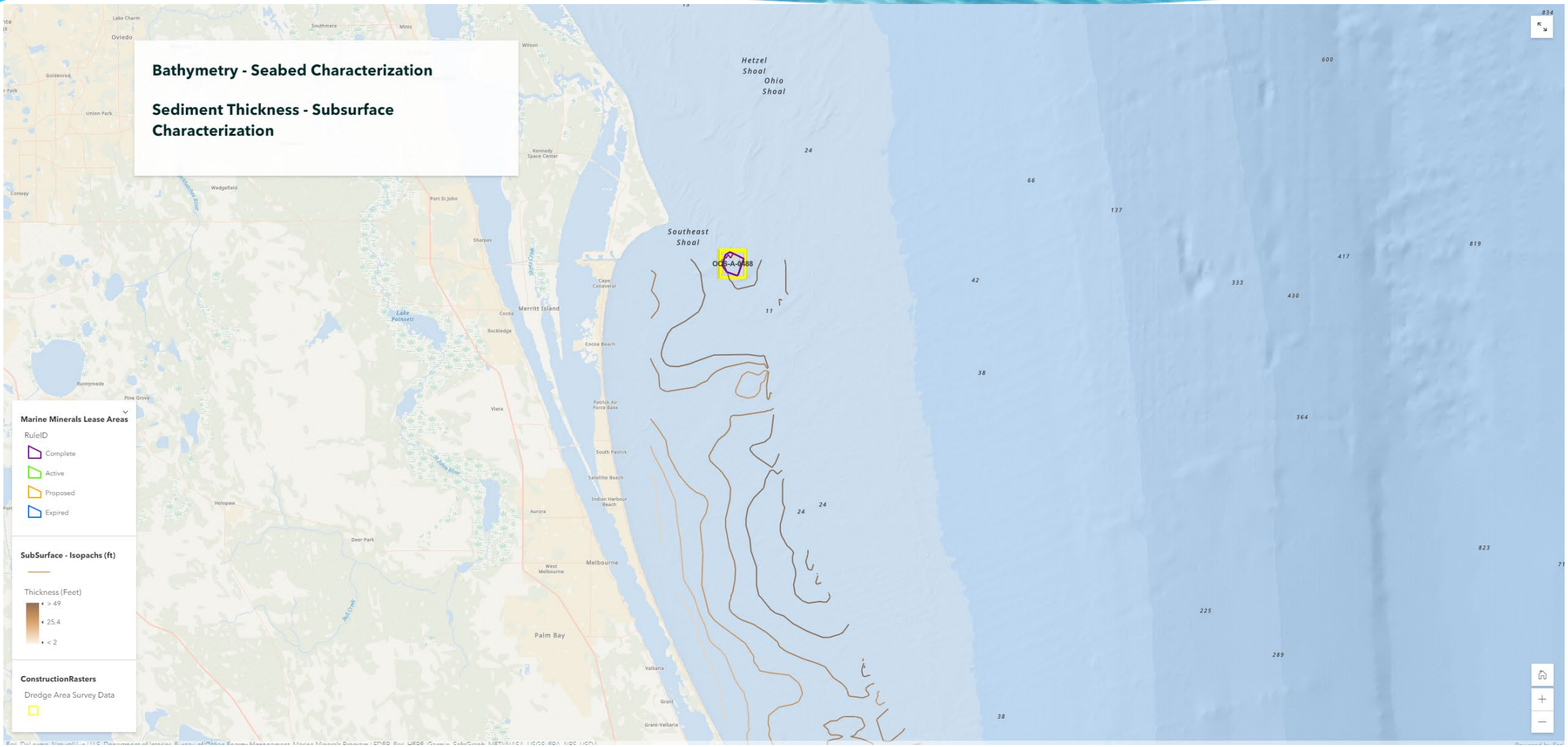
Drilling Log from APTIM

Core Samples

Atlantic OCS Aliquots with Sand Resources

Gulf of Mexico OCS Blocks with Significant Sediment Resources

Data and Services

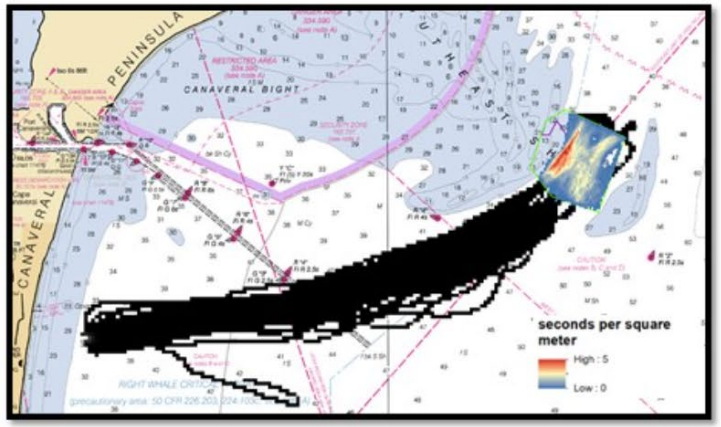


Data and Services

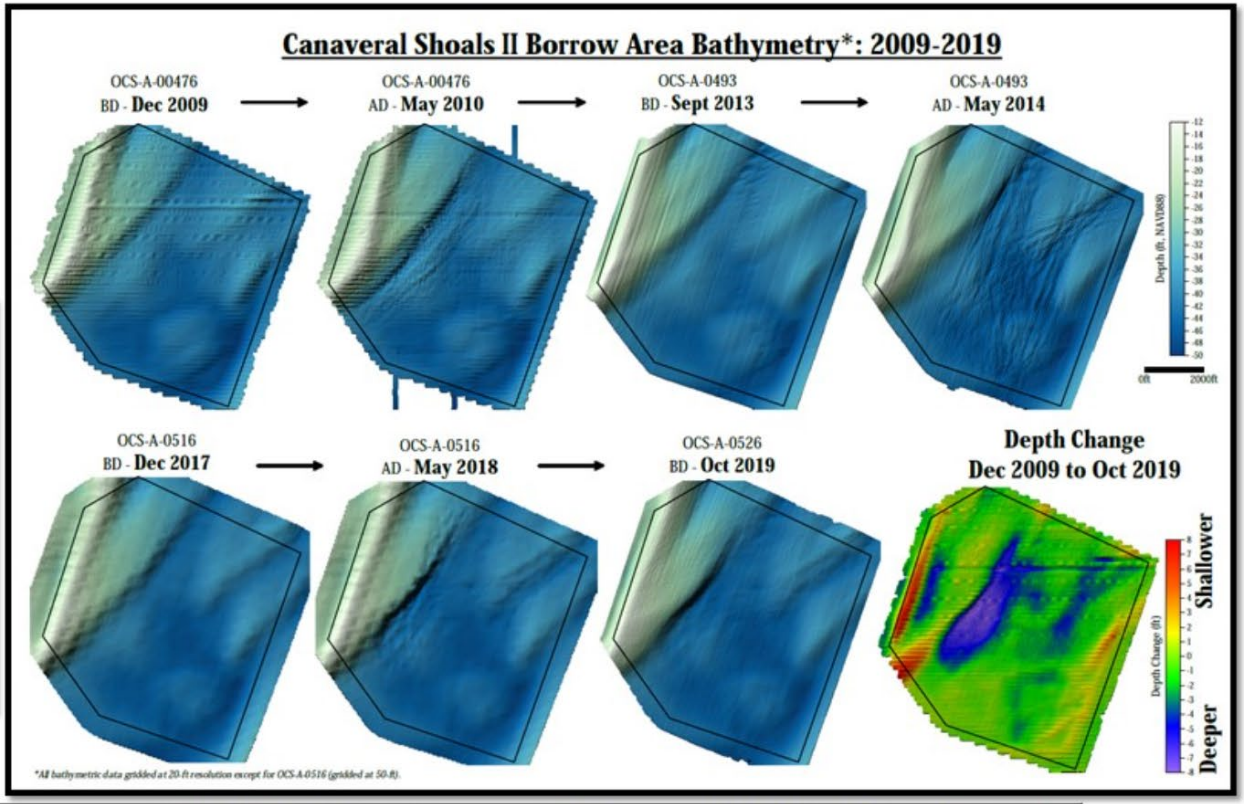
Brevard County | Patrick Airforce Base - Florida

- **Dredge Activity:** 2009 - 2020

Dredge Exposure
cumulative intensity within a grid cell over multiple analyses, normalized by area of grid
(seconds / meter squared)



Before Dredge Bathymetry (BD) and After Dredge Bathymetry (AD)

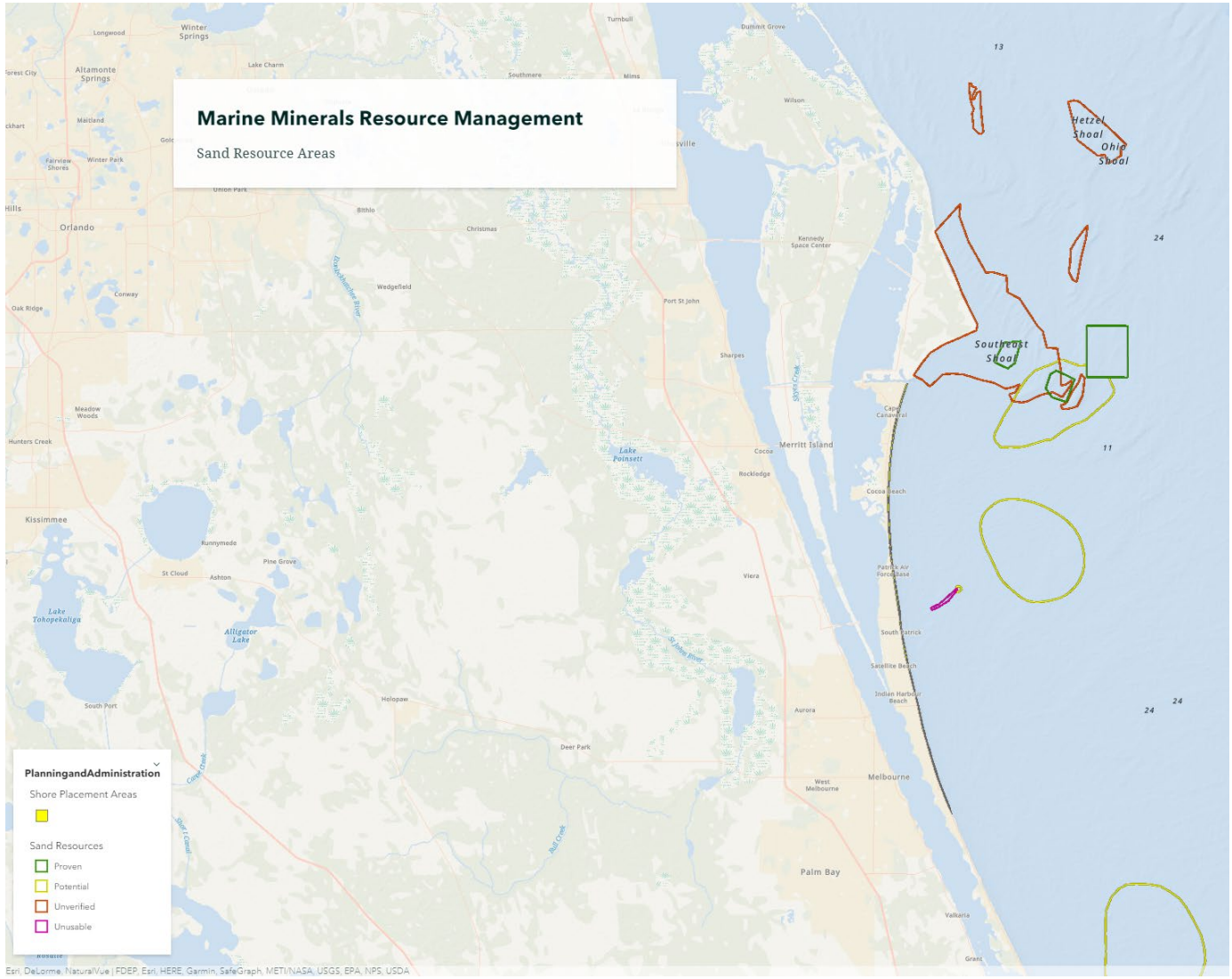


Offshore Florida Canaveral Shoals Lease Area

Borrow Area Monitoring

Lease No	ProjectID	Total Sand Allocated (cubic yards)	Lease Signed	Calculated Dredge Volume (cubic yards)
[illegible]	[illegible] 2019	600,000	8/29/2019	811,943
[illegible]	[illegible] 2019	2,020,000	8/29/2019	1,634,826
OCS-A-0516	Brevard County 2018	1,700,000	10/11/2017	932,359
OCS-A-0493	Brevard County 2013	2,400,000	7/12/2013	2,664,582
OCS-A-0488	Patrick Air Force Base 2013	350,000	1/16/2013	Expired Lease
OCS-A-00476	Brevard County 2009	1,300,000	9/11/2009	675,353
OCS-A-0461 | OCS-FL-2005	Brevard County 2005 | Patrick Air Force Base 2005	2,000,000 | 350,000	1/14/2005 | 1/28/2005	2,576,802
OCS-A-0454 | OCS-FL-2000	Brevard County 2000 | Patrick Air Force Base 2001	7,300,000 | 600,000	7/11/2000 | 12/7/2000	2,195,013

Data and Services



Data and Services

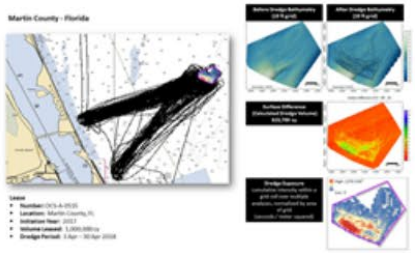
Inform Environmental and Mitigation Analysis

- Decision support tools utilizing Marine Minerals Information System and data to support environmental assessments

Intensity and Exposure Characterization Algorithms (IECA)

measured cumulative use impact of dredging activities depicted in a lease area

Seafloor Analysis



Shoal Map Assessment Tool for EFH

shoalMATE
Shoal Map Assessment Tool for EFH

improved assessments of the potential impacts of dredging on Essential Fish Habitat

Analyzing Sea Turtle Entrainment Risk

ASTER
Analyzing Sea Turtle Entrainment Risk

informed decisions to minimize dredging impacts to sea turtles

Multiple Ocean Use

Multiple Ocean Use

Working Together

- Federal, State, Counties
- Tribes
- National: American Shore and Beach Preservation Association, Marine Cadastre, ...
- Regional: Northeast Ocean Data, Mid-Atlantic Ocean Data Portal, Gulf of Mexico Alliance, Florida Shore and Beach Preservation Association...

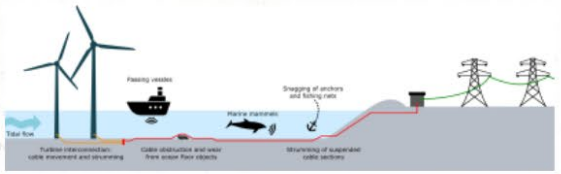
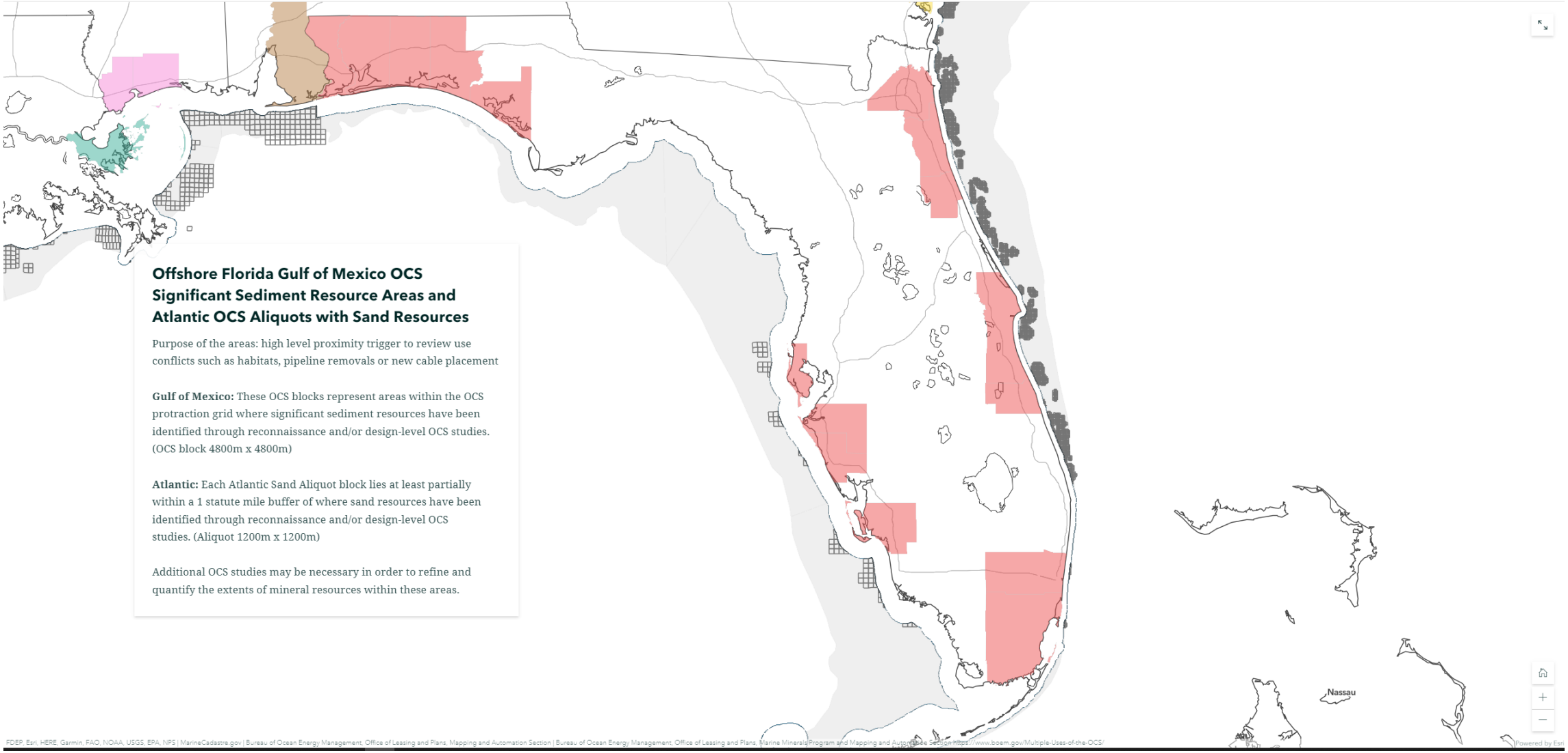


Photo Credit: Fraunhofer

Multiple Ocean Use



Offshore Florida Gulf of Mexico OCS Significant Sediment Resource Areas and Atlantic OCS Aliquots with Sand Resources

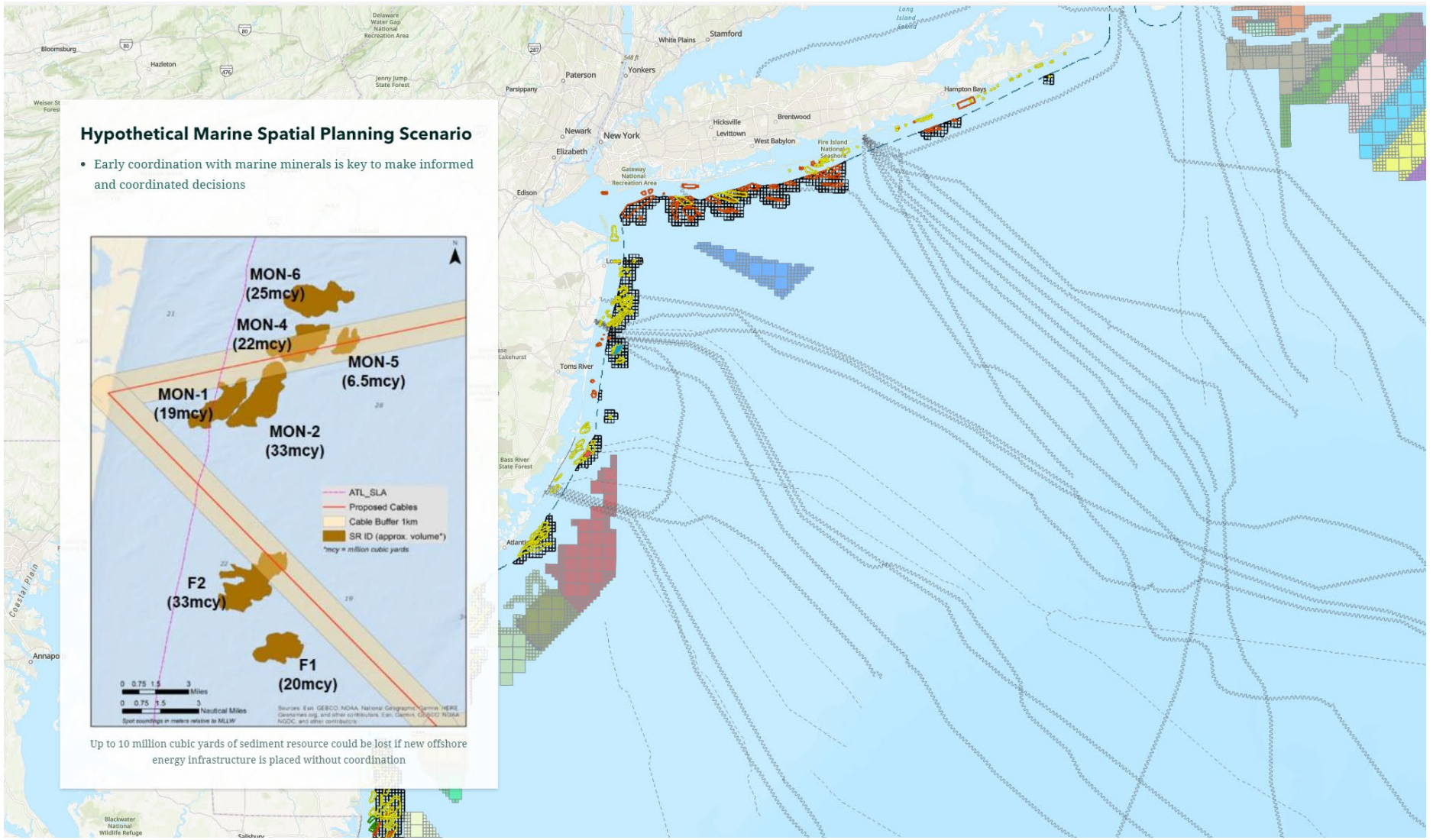
Purpose of the areas: high level proximity trigger to review use conflicts such as habitats, pipeline removals or new cable placement

Gulf of Mexico: These OCS blocks represent areas within the OCS protraction grid where significant sediment resources have been identified through reconnaissance and/or design-level OCS studies. (OCS block 4800m x 4800m)

Atlantic: Each Atlantic Sand Aliquot block lies at least partially within a 1 statute mile buffer of where sand resources have been identified through reconnaissance and/or design-level OCS studies. (Aliquot 1200m x 1200m)

Additional OCS studies may be necessary in order to refine and quantify the extents of mineral resources within these areas.

Multiple Ocean Use



Next Steps

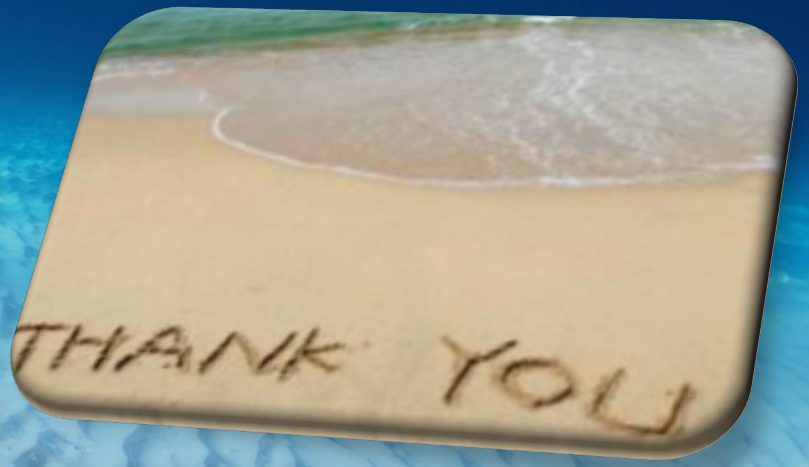
- Continue to advance and maintain a repository of applicable offshore marine mineral data of BOEM's investments of historic and current project data

- Continue to work with our partners to improve meaningful data to support planning and operational needs, data discovery and accessibility, and partner usability

BOEM

Bureau of Ocean Energy Management

BOEM.gov



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