



Marine Minerals Information System (MMIS)

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May 30, 2018



- **Background**
- **Challenges**
- **Needs**
- **Progress**
 - ✓ Data Model | Relational Database Management System
 - ✓ Information Technology
 - ✓ Data Development
 - ✓ Access
 - ❖ Demo
- **Plans**
- **Next Steps**

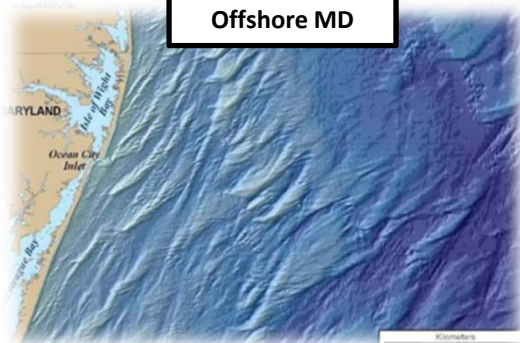


BOEM

BUREAU OF OCEAN ENERGY MANAGEMENT

Background

Offshore MD



RN Weeks



Long Beach Island, NJ



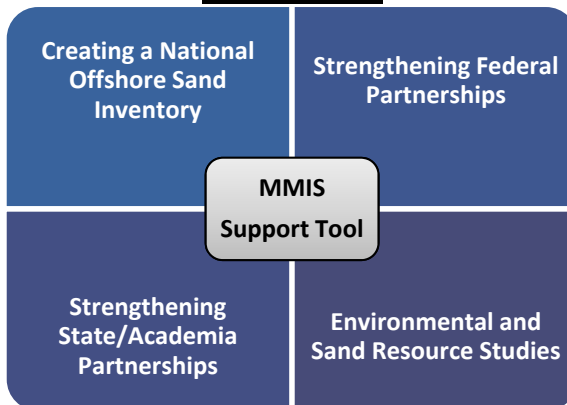
Curlew Island Shoal



A seaplane flies about 200 feet above what's left of Curlew Island after Hurricane Katrina devastated the Chandeleur Island chain. The dunes of sand, appearing like ripples in the kiddie pool, crest one or two feet from the surface.

Photographer: Ted Jackson / Times-Picayune

Priorities



Caminada Headland

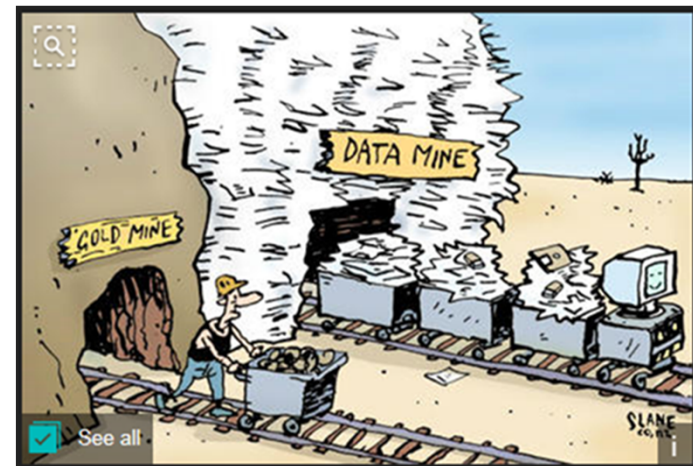


Restoring and Protecting Our Nation's Coasts through Stewardship of OCS Resources



Challenges on a National Scale

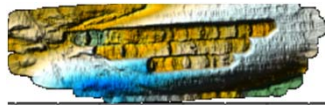
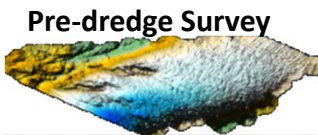
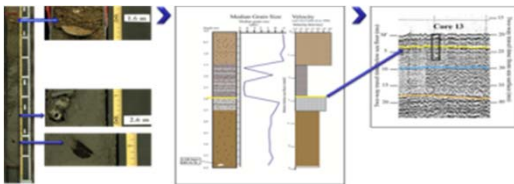
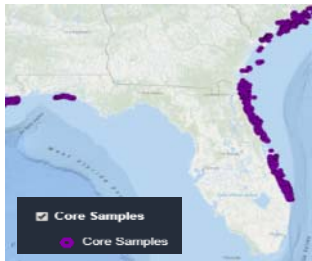
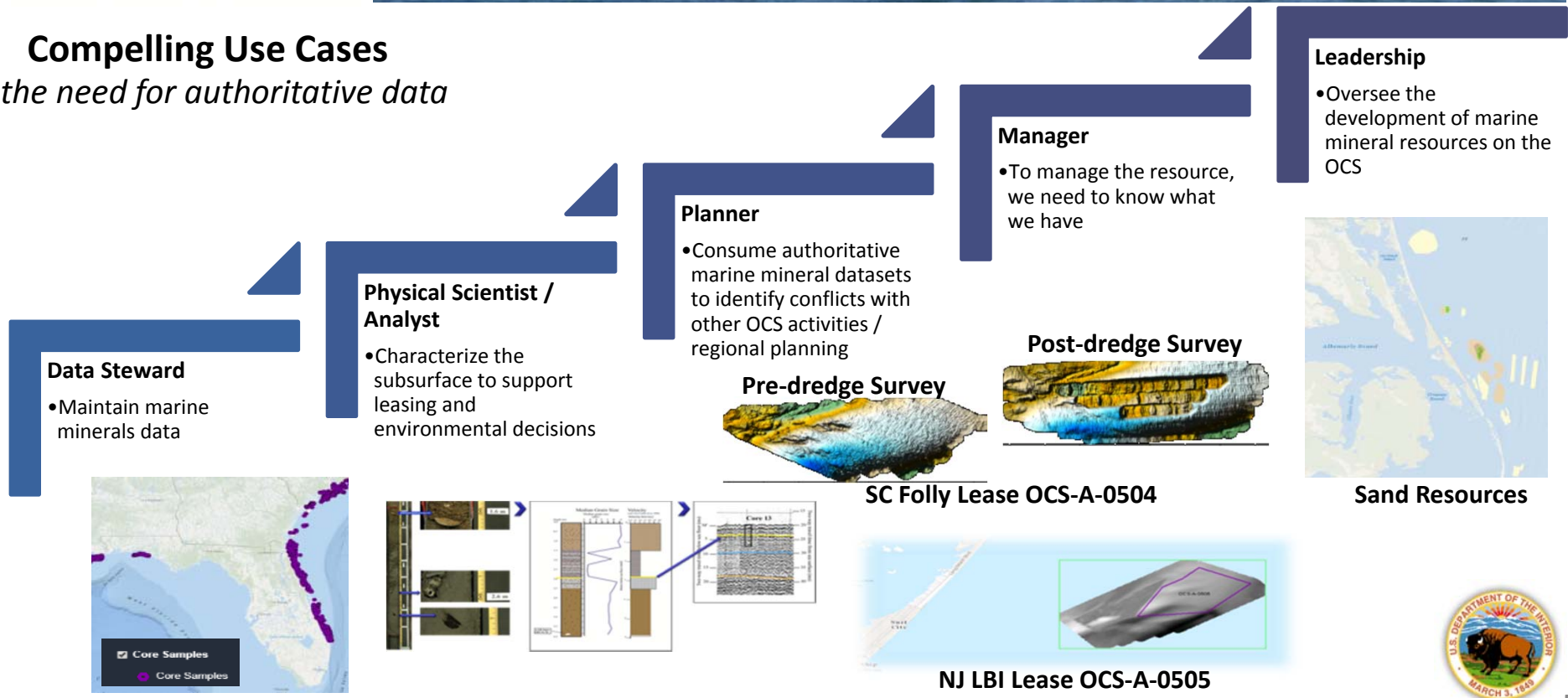
- 25+ years of BOEM's **investments** in offshore marine minerals information is **not accessible within a common framework for internal decision making** – limiting our ability to integrate data to meet BOEM's mission of managing offshore sand resources comprehensively and efficiently
- Information is **disparate, inconsistent** and in **varying data quality** standards and classifications standards to support national, regional and locals scales
- Difficult to demonstrate **sand resource delineations** that support coastal infrastructure projects to our Federal and State Partners
- Source and derived information products are held **across multiple agencies**
- No centralized **data steward** for offshore specific sand resource data
- **Increasing demand** for marine mineral resources has depleted known reserves
- **Competing** Ocean Uses



Foster access to the Nation's offshore mineral resources

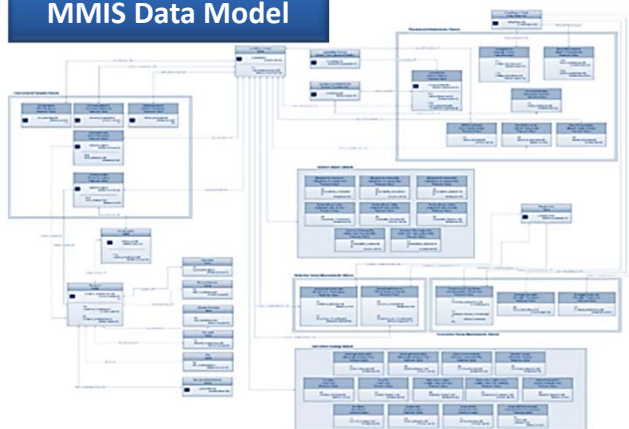


Compelling Use Cases
the need for authoritative data

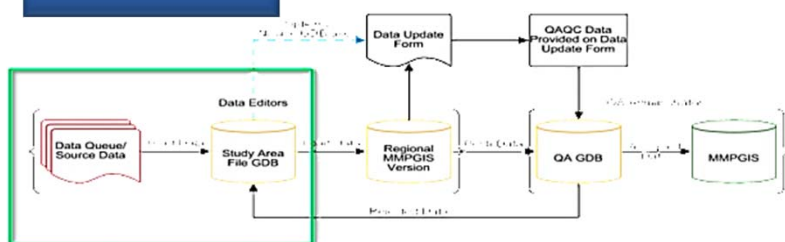


Data Model | Relational Database Management System

MMIS Data Model



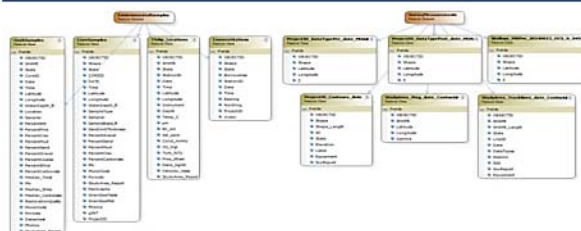
Workflow



Leveraged

- **Models**
 - ArcGIS Marine Model
 - Seabed Survey Data Model (Oil and Gas)
- **Data Management Tools / Resources**
 - USGS Data Management
 - BOEM Science Quality & Integrity
 - NOAA Scientific Data Stewardship

Marine Minerals Database Schema

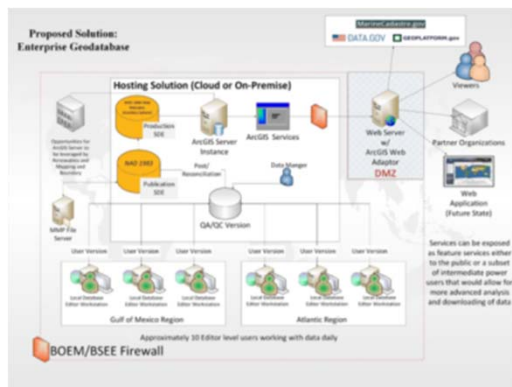


Database Connections

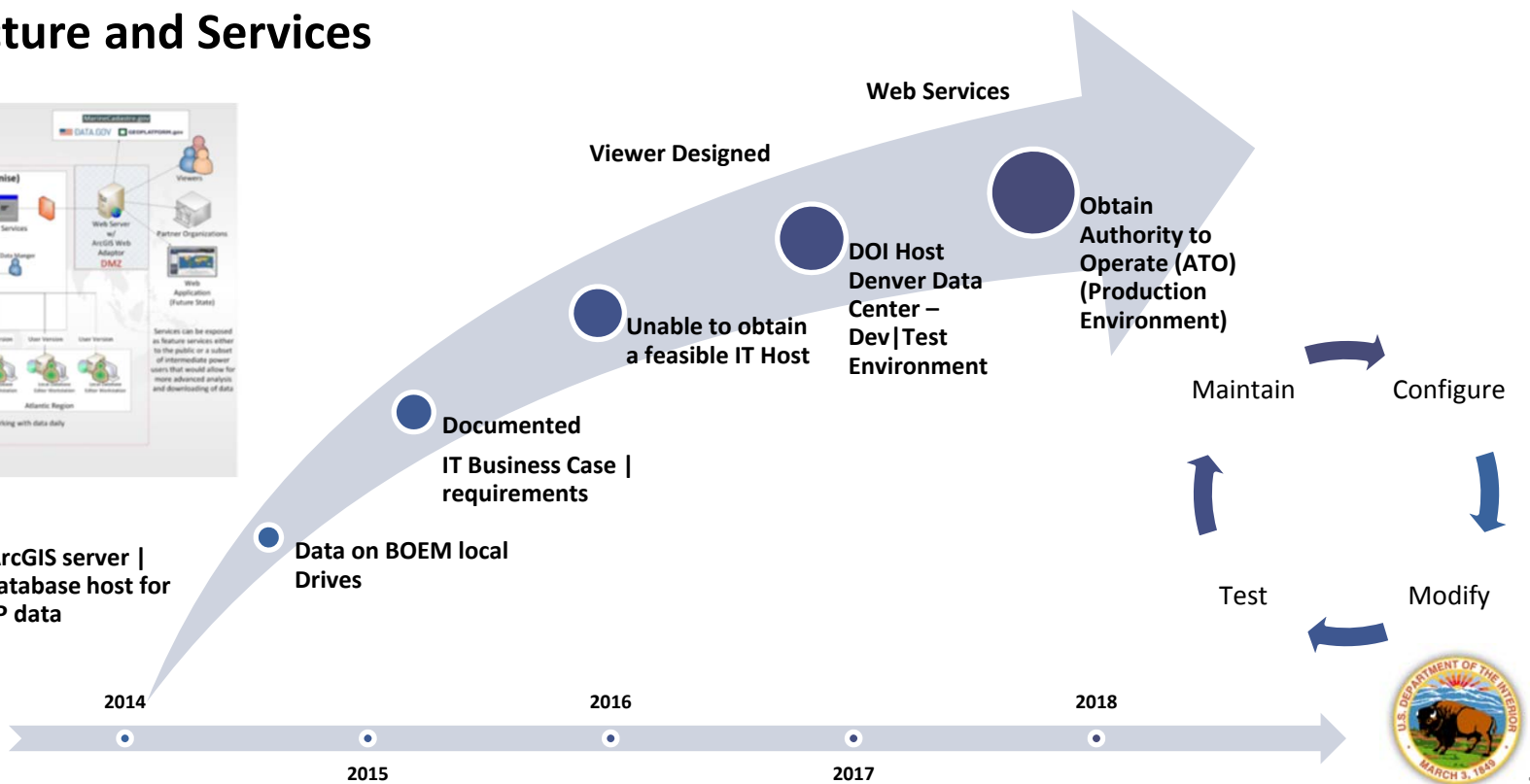
- + MMPGIS.177.AtlanticEditor.Atlantic.sde
- + MMPGIS.177.GulfEditor.Gulf.sde
- + MMPGIS.177.PacificEditor.sde



IT Infrastructure and Services



No ArcGIS server | no database host for MMP data





Progress

Data Development

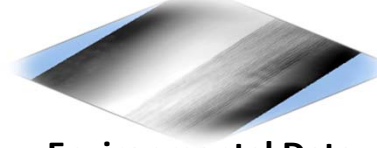
Collaboration with our Partners

	Analyzed Geotechnical / Geophysical Source Data
	Digital data from physical core samples
	Digital derived data from external drives, CD's, paper sources
	Cooperative Agreements
	Leasing data
	Dredge data
	Environmental Studies Data

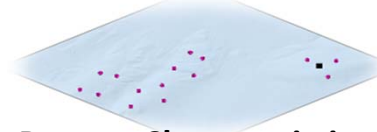


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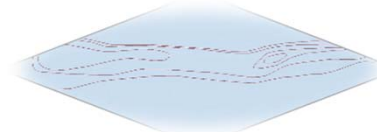
Bathymetry & Backscatter



Environmental Data



Bottom Characteristics



Leasing / Planning/Construction

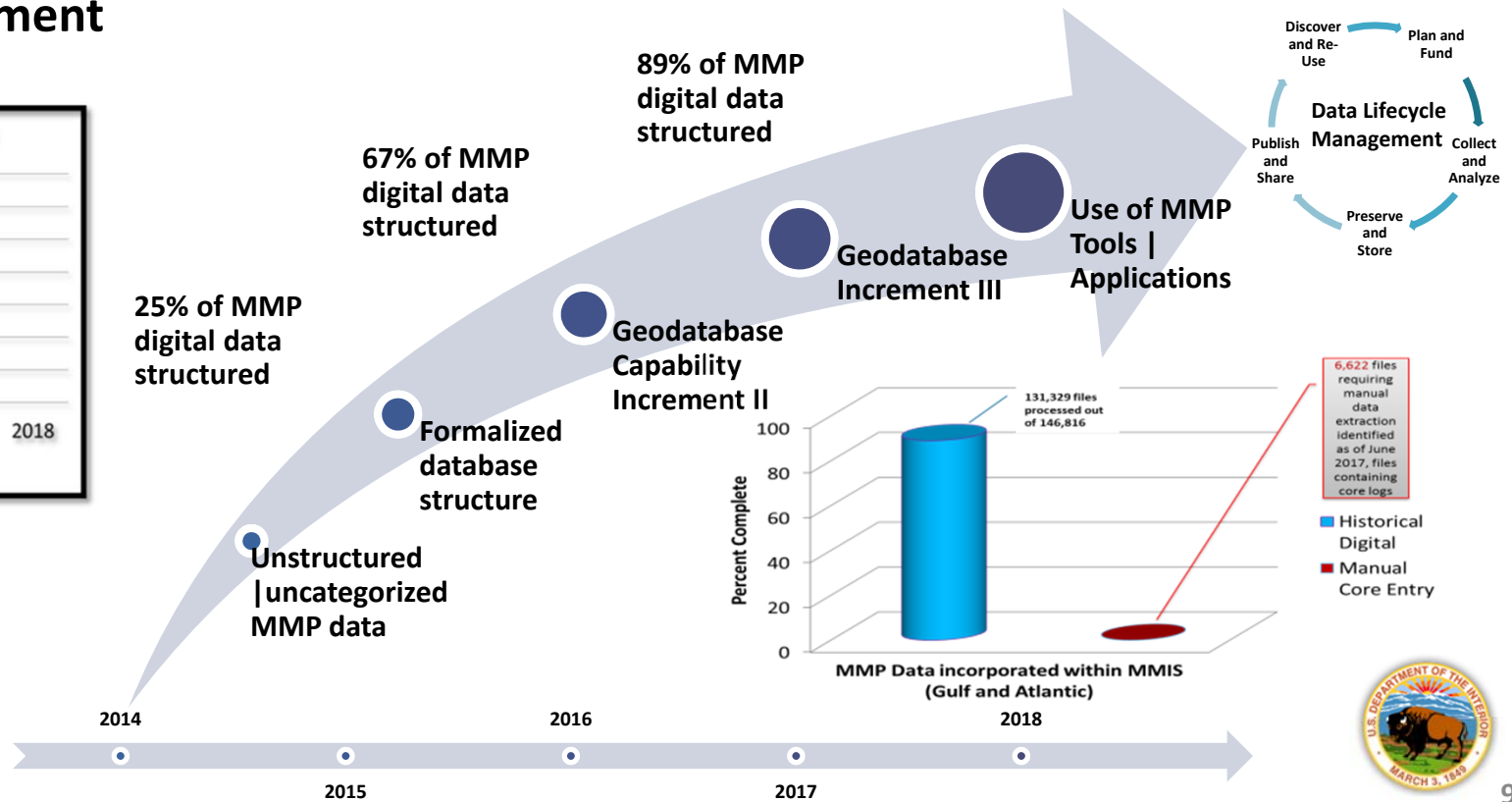
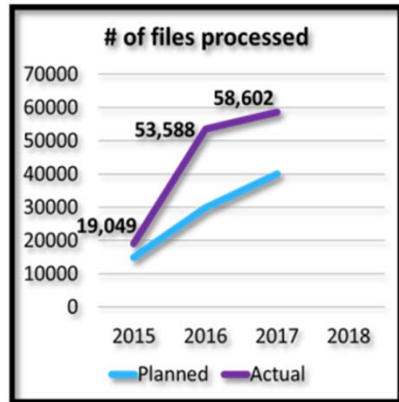


Discover
Analysis
Id Gaps

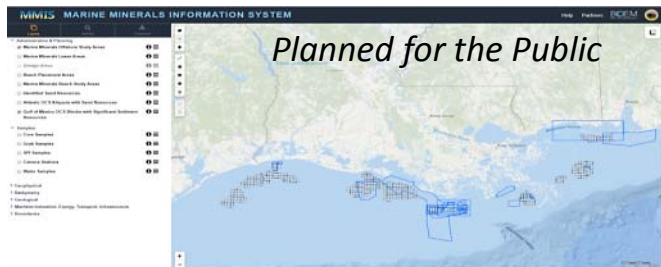
A tool to support the National OCS Sand Inventory for Coastal Restoration Projects



Data Development

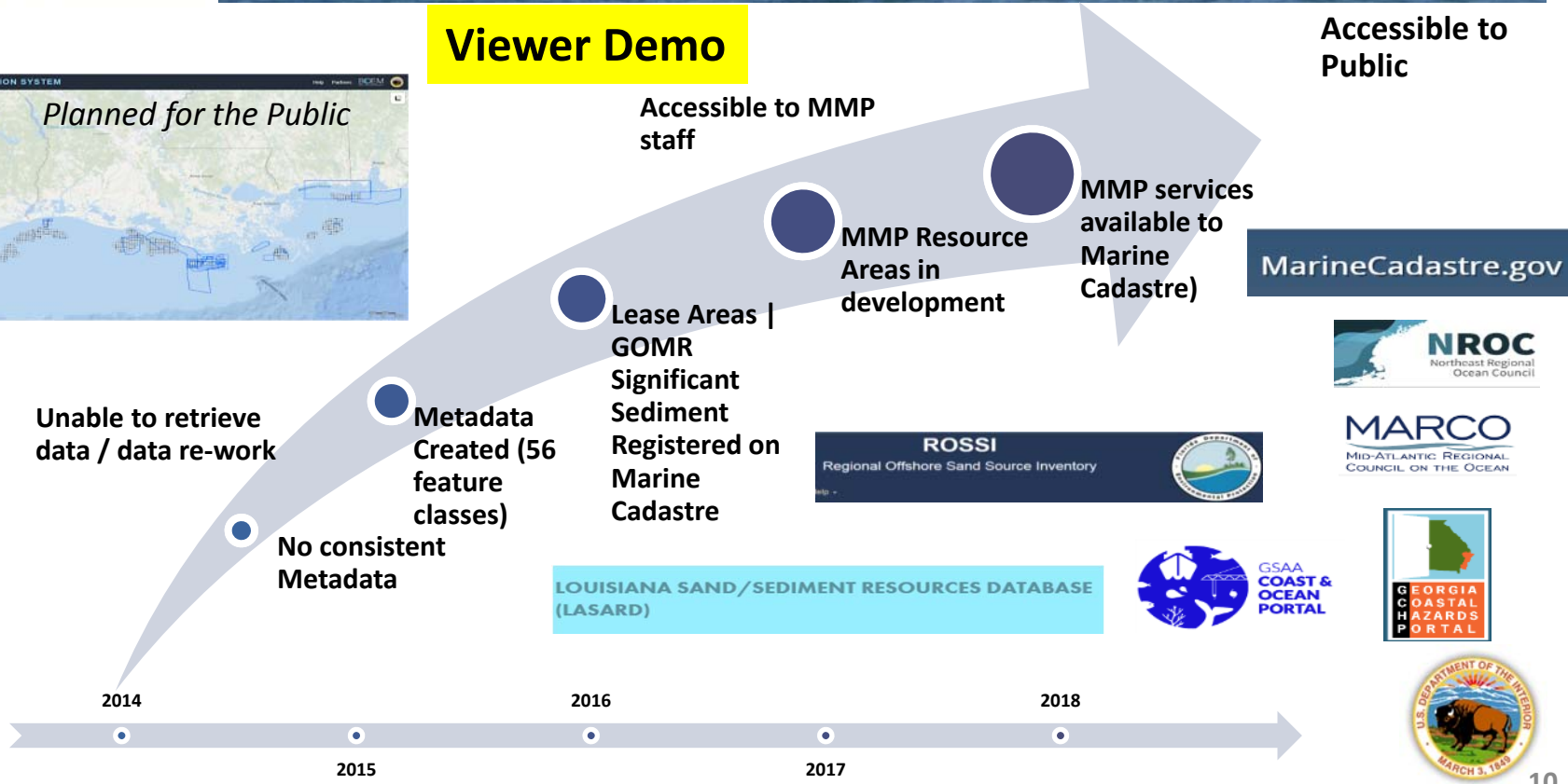


Access



Viewer Demo

Accessible to Public



MarineCadastre.gov



LOUISIANA SAND / SEDIMENT RESOURCES DATABASE (LASARD)



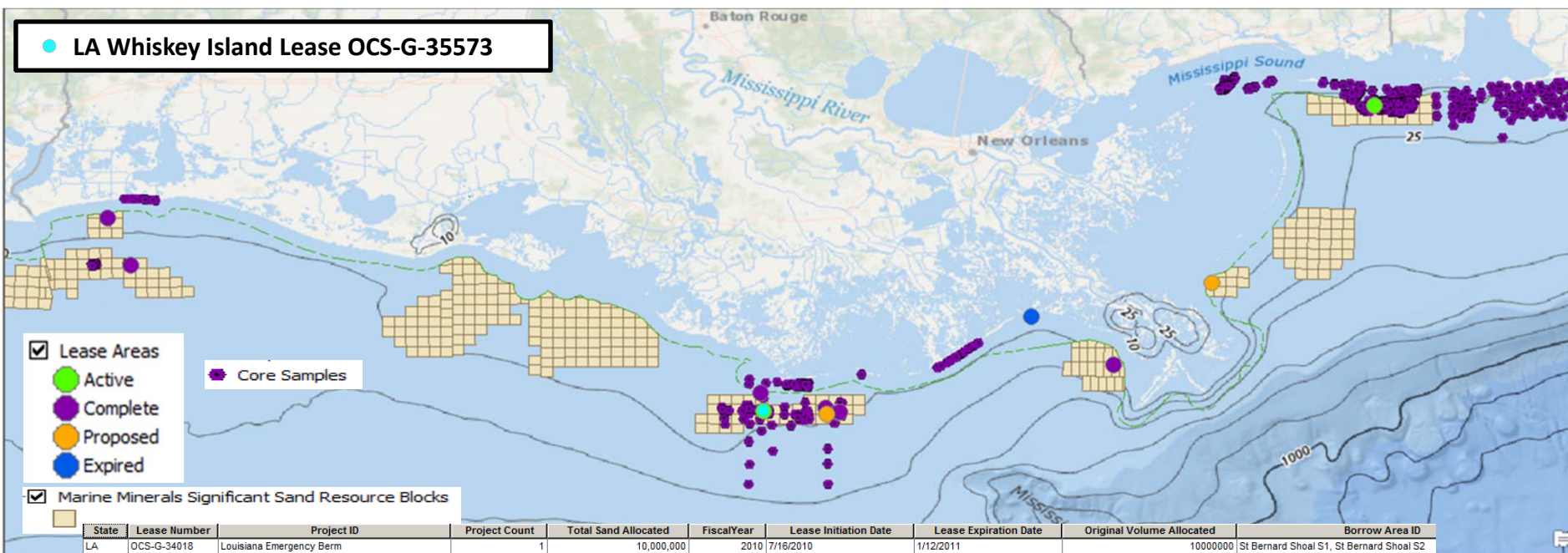
2014

2015

2016

2017

2018



● LA Whiskey Island Lease OCS-G-35573

- Lease Areas
- Active
- Complete
- Proposed
- Expired

● Core Samples

Marine Minerals Significant Sand Resource Blocks

State	Lease Number	Project ID	Project Count	Total Sand Allocated	Fiscal Year	Lease Initiation Date	Lease Expiration Date	Original Volume Allocated	Borrow Area ID
LA	OCS-G-34018	Louisiana Emergency Berm	1	10,000,000	2010	7/16/2010	1/12/2011	10000000	St Bernard Shoal S1, St Bernard Shoal S2
LA	OCS-G-24648	Ship Shoal	1	3,000	2003	12/29/2002	6/18/2003	3000	South Pelto Block 12
LA	OCS-G-33039	Terrebonne Parish	1	750,000	2013	12/8/2010	12/4/2014	750000	Raccoon Island Borrow Area
LA	OCS-G-35573	Whiskey Island	1	13,400,000	2015	5/28/2015	5/28/2019	13400000	Ship Shoal Block 88
LA	OCS-G-35161	Caminada (Phase II)	1	8,800,000	2014	3/13/2014	3/13/2018	6100000	South Pelto Blocks 13 and 14
LA	OCS-G-23707	Holly Beach	1	4,200,000	2002	5/3/2002	6/27/2003	4200000	Peveto Channel
LA	OCS-G-34667	Caminada (Phase I)	1	5,200,000	2012	8/2/2012	8/2/2016	5200000	South Pelto Blocks 13 and 14
LA	OCS-G-34668	Cameron Parish	1	5,000,000	2012	8/2/2012	8/2/2016	5000000	Borrow Area HF, Borrow Area JF
LA	OCS-G-25379	Pelican Island	1	5,523,000	2002	6/10/2008	6/6/2014	5523000	Sandy Point North, South, Southeast
LA	<Null>	Breton Island	1	3,000,000	<Null>	<Null>	<Null>	<Null>	<Null>
LA	<Null>	East Timbalier	1	<Null>	<Null>	<Null>	<Null>	9000000	South Pelto 12, 13, 18, 19



Core Samples

The screenshot shows a GIS interface with a map of the Gulf of Mexico. Purple dots representing core samples are scattered in the area around Ship Shoal and Callou Bay. A PDF report titled "SHIP SHOAL: SAND RESOURCE SYNTHESIS REPORT" is displayed in a window on the left. The report includes the following text:

SHIP SHOAL: SAND RESOURCE SYNTHESIS REPORT

Prepared by:
Mark Kulp, Steve Pineda, and Karen Ramsey
Coastal Research Laboratory
Department of Geology and Geophysics
University of New Orleans
2000 Lakeshore
New Orleans, LA 70148

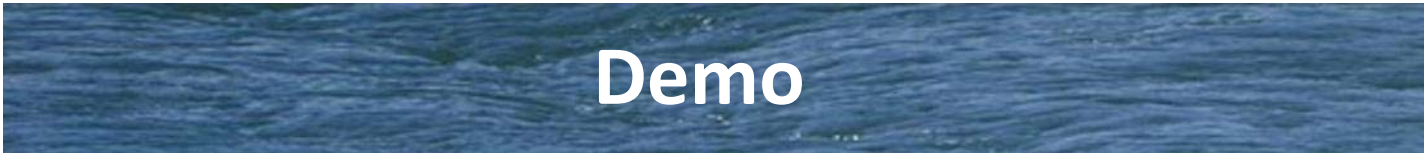
Submitted to:
Lee Wilson and Associates
105 Canoga St.
Santa Fe, New Mexico 87501

July 2001

An "Identify" window is open on the right, showing the following metadata for a selected feature:

Field	Value
OBJECTID	22
ReportTitle	Ship Shoal: Sand Resource Synthesis Report
Report	R:\StudyArea_Folder\LA\Kulp2001_ShipShoal\Documents\Reports\LA_2001_Kulp.p...
Constraints	Option 2
GlobalLinkID	<null>
GlobalID	<null>
State	<null>
Year	<null>
OCSStudyAreaID	<null>





Demo

Identify from: <Top-most layer>

- Tracklines
 - LA
 - LA
 - LA
 - LA
 - LA
 - LA
 - LA
 - LA
 - LA
 - LA
 - LA

StudyAreaTracklines

Location: -90.904141 28.892776 Decimal Degrees

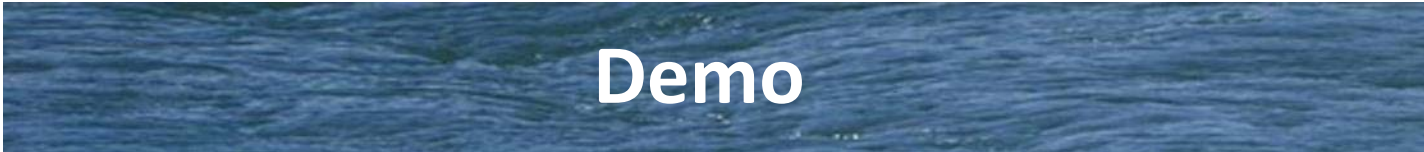
Field	Value
OBJECTID	1227
State	LA
Cruise ID	<null>
Line ID	SS_078_0
Collection Date	8/7/2003
Time	<null>
Data collected during Survey	seismic data, sidescan sonar data, bathymetric data
Seismic profile pdf/jpg	http://sonris-www.dnr.state.la.us/gis/offshoresand/LASARD/Metadata/Geopl...
Sidescan Sonar pdf/jpg	<null>
Video link	<null>
Length (nm)	2.759502
Global Link ID	(34823C9A-D20A-4C1F-9A70-46D618C77D2B)
Global Equipment ID	(BCB1A05A-BF90-487A-92B7-9F29AAA4DDA2)
Additional Equipment	<null>
RuleID	StudyAreaTracklines
GlobalID	
Raw Data Available	
SHAPE	
SHAPE.STLength0	

Ship Shoal Waterfall: In78.La.0.ct.subb.SEG

Louisiana State University

SONRIS^{NG} Interactive Maps - Oil/Gas
Louisiana Department of Natural Resources

U.S. DEPARTMENT OF THE INTERIOR
MARCH 3, 1849



Demo

Marine Minerals Significant Sand Resource Blocks

StudyAreaTracklines

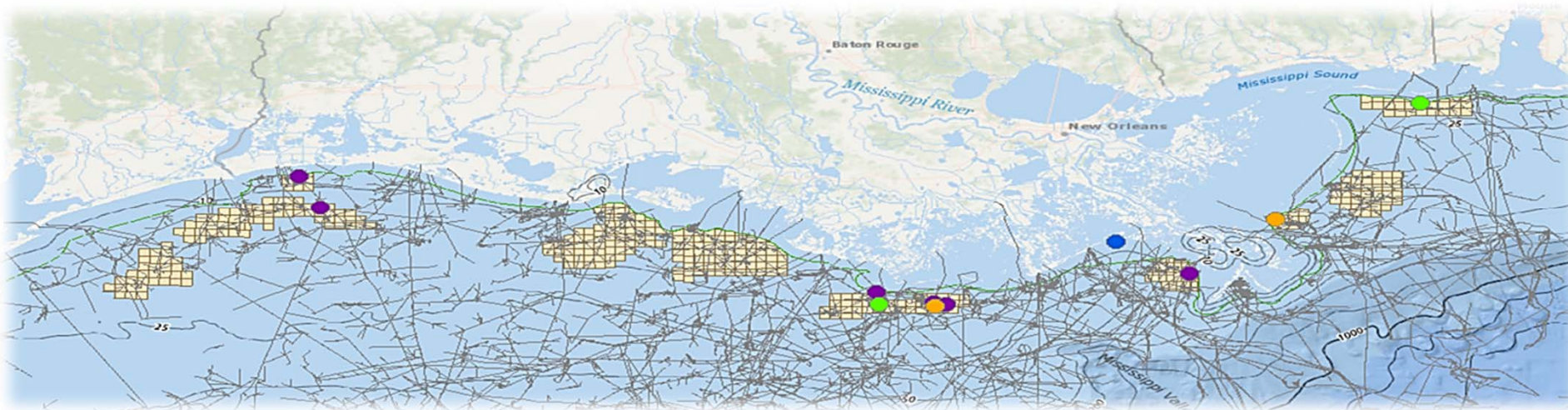
The screenshot displays a GIS application interface. On the left, an 'Identify' window shows metadata for a selected trackline, including fields like OBJECTID, State, Cruise ID, Line ID, Collection Date, and Time. Below this is a table of tracklines. The main map area shows a coastal region with purple tracklines overlaid on a grid. On the right, two browser windows are open: 'View Downloads - Internet Explorer' showing a list of downloaded files (831a3_ss1a.tiff) and 'St. Petersburg Coastal and Marine Science Center - Internet Explorer' showing the USGS logo and center name. A black arrow points from a trackline in the table to a specific trackline on the map, and another arrow points from that trackline to a seismic profile plot at the bottom of the screen.

OBJECTID	State	Cruise ID	Line ID	Collection Date	Time	Data collected during Survey	Seismic profile pdf/jpg
1817	LA	LACOSS-IV	TS6	9/18/1983	-Hu-	seismic	
1818	LA	LACOSS-IV	TS8	9/18/1983	-Hu-	seismic	
1819	LA	LACOSS-III	SR30	7/4/1983	-Hu-	seismic	
1820	LA	LACOSS-III	SS1a	6/30/1983	-Hu-	seismic	http://coastal.er.usgs.gov/lased_data/seismic/scanned/lacoss3/831a3_ss1a.tif
1821	LA	LACOSS-III	SS1b	6/30/1983	-Hu-	seismic	http://coastal.er.usgs.gov/lased_data/seismic/scanned/lacoss3/831a3_ss1b.tif
1822	LA	LACOSS-III	SS2	6/30/1983	-Hu-	seismic	http://coastal.er.usgs.gov/lased_data/seismic/scanned/lacoss3/831a3_ss2.tif
1823	LA	LACOSS-III	SS3a	6/30/1983	-Hu-	seismic	http://coastal.er.usgs.gov/lased_data/seismic/scanned/lacoss3/831a3_ss3a.tif
1824	LA	LACOSS-III	SS3b	6/30/1983	-Hu-	seismic	http://coastal.er.usgs.gov/lased_data/seismic/scanned/lacoss3/831a3_ss3b.tif
1825	LA	LACOSS-IV	021	9/15/1983	-Hu-	seismic	



- OCS Oil & Gas Pipelines
- Marine Minerals Significant Sand Resource Blocks

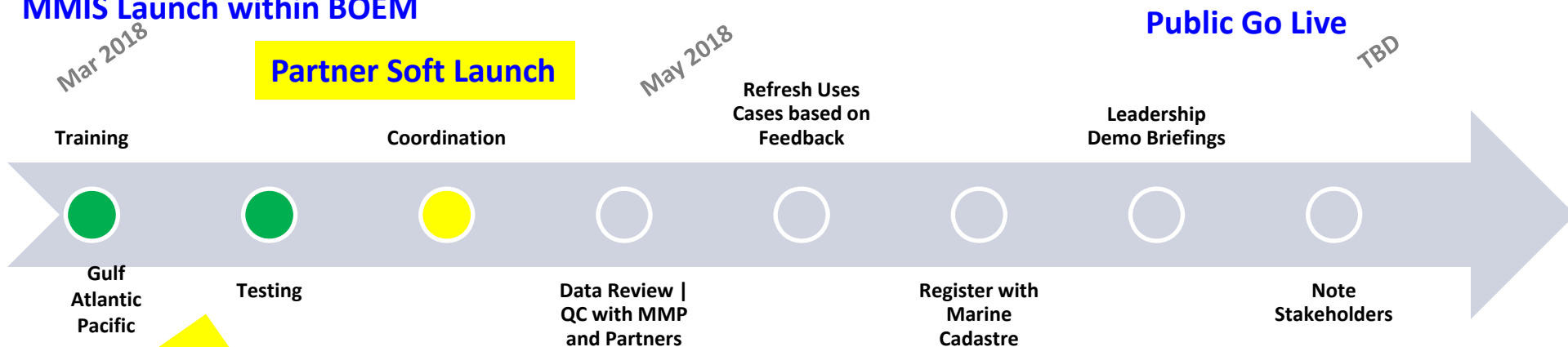
- Lease Areas
 - Active
 - Complete
 - Proposed
 - Expired



Competing Ocean Uses



MMIS Launch within BOEM



In Progress
Data Reviews

- MMP Team Review
- Active Coop Agreement Partners Preview
(ME, NH, MA, RI, NY, NJ, DE, MD, VA, NC, SC, GA, FL, MS, TX, CA)
- State Partners Review
(LA, AL)
- Fed Partners Review
(USGS St Petersburg, Woods Hole, Santa Cruz), NOAA, USACE Districts
- RPB Review



Interoperability Opportunities *Louisiana Systems*

- Department of Natural Resources
 - Strategic Online Natural Resources System (SONRIS)
- Coastal Protection and Restoration Authority
 - Louisiana Sand Resource Database (LASARD)



Standard Operating Procedures for Geo-scientific Data Management

Louisiana Sand Resources Database (LASARD)

Syed Khalil¹, Ed Haywood¹, and Beth Forrest²
¹CPRA, ²CB&I



Coastal Protection and Restoration Authority of Louisiana

June 14, 2016





Next Steps

- Quantum Spatial (contractor) supporting application with Department of Interior
- Developing Marine Minerals data planned through 2019
- Maintaining the system with Department of Interior
- Training
- Continued analysis work and products development
- Continued coordination with our partners (Cooperative Agreement States, Regional Planning Bodies, State Agencies, Academia, USACE, NOAA, USGS...)

Value driver	Commitment
Quality	Meet or exceed established levels
Responsiveness	Adjusting to meet the needs of our external partners
Sourcing	Establish and manage effective partnerships
Agility	Maintain the ability to change services / flex the data model (scaling them up or down) supporting new initiatives
Innovation	Develop new products and services to support BOEM and our partners





Thank You

<https://www.boem.gov/Marine-Minerals-Program/>

marineminerals@boem.gov

