Evaluation of Tiger & Trinity Shoal Complex: A Potential Offshore Sand Resource for Restoration of Central Louisiana

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Minerals Management Services
25th Information Transfer Meeting
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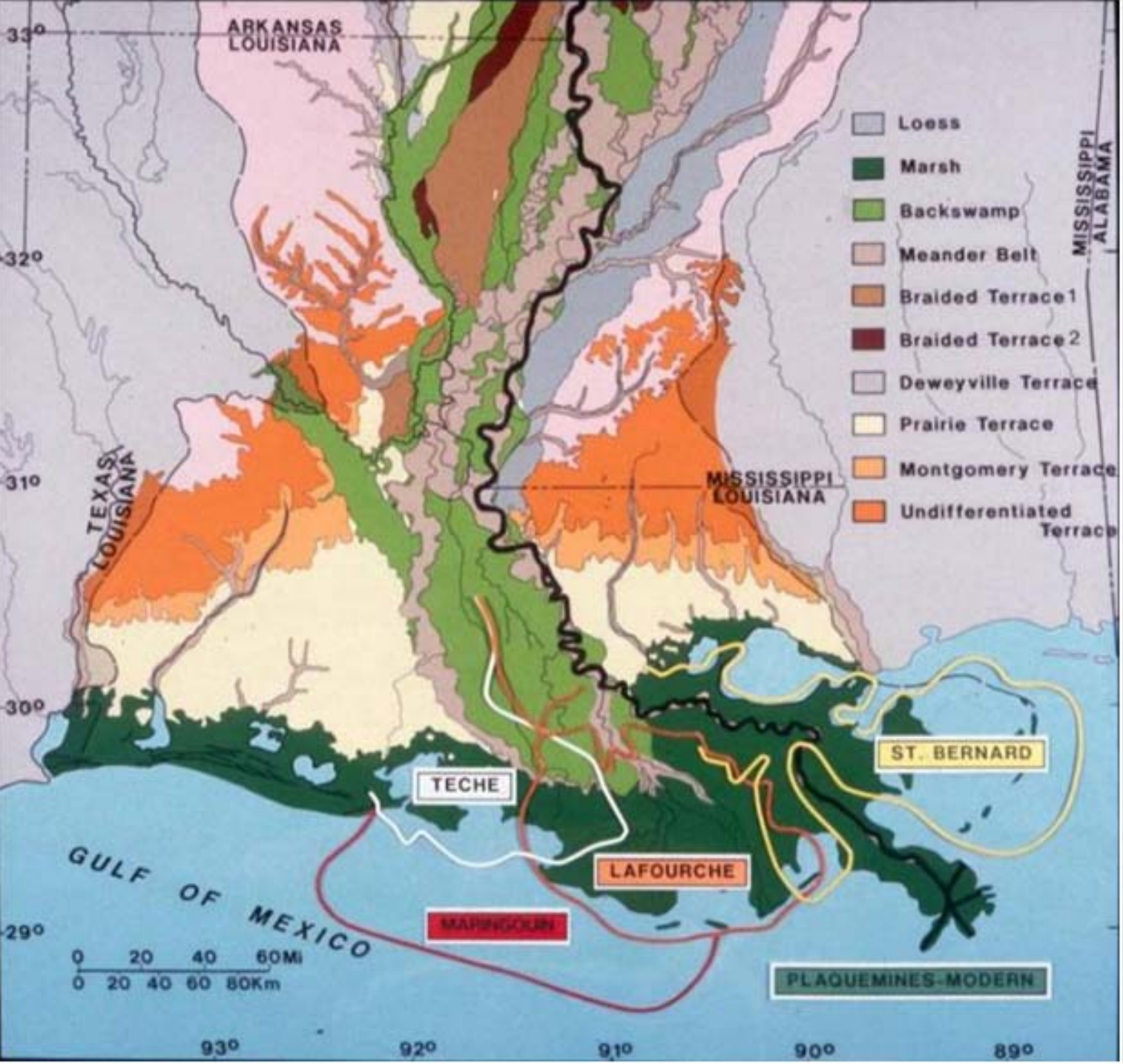
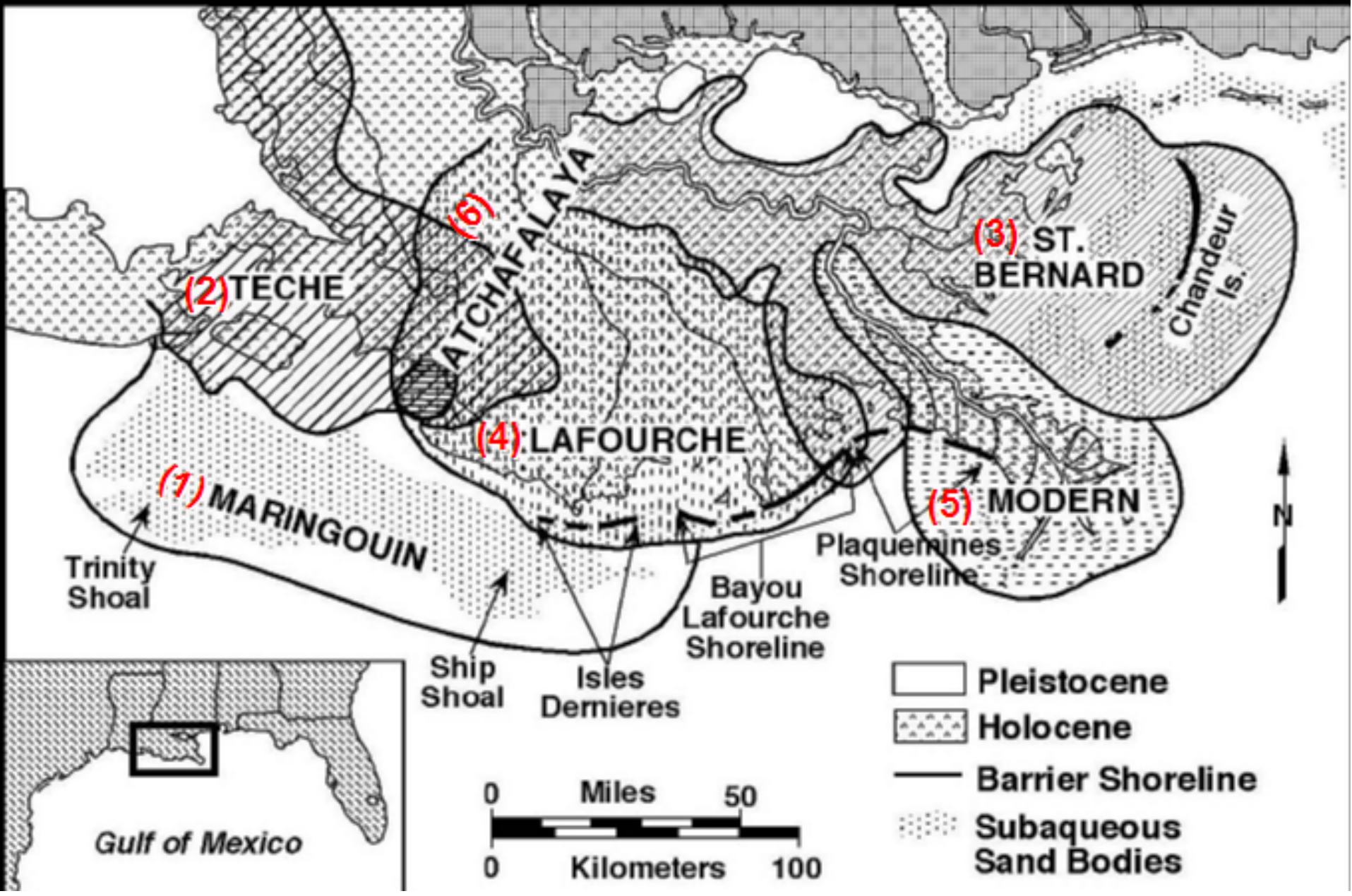


GEOLOGICAL SETTING

Mississippi River Delta Complex *(after Frazier 1967)*



Previous Work

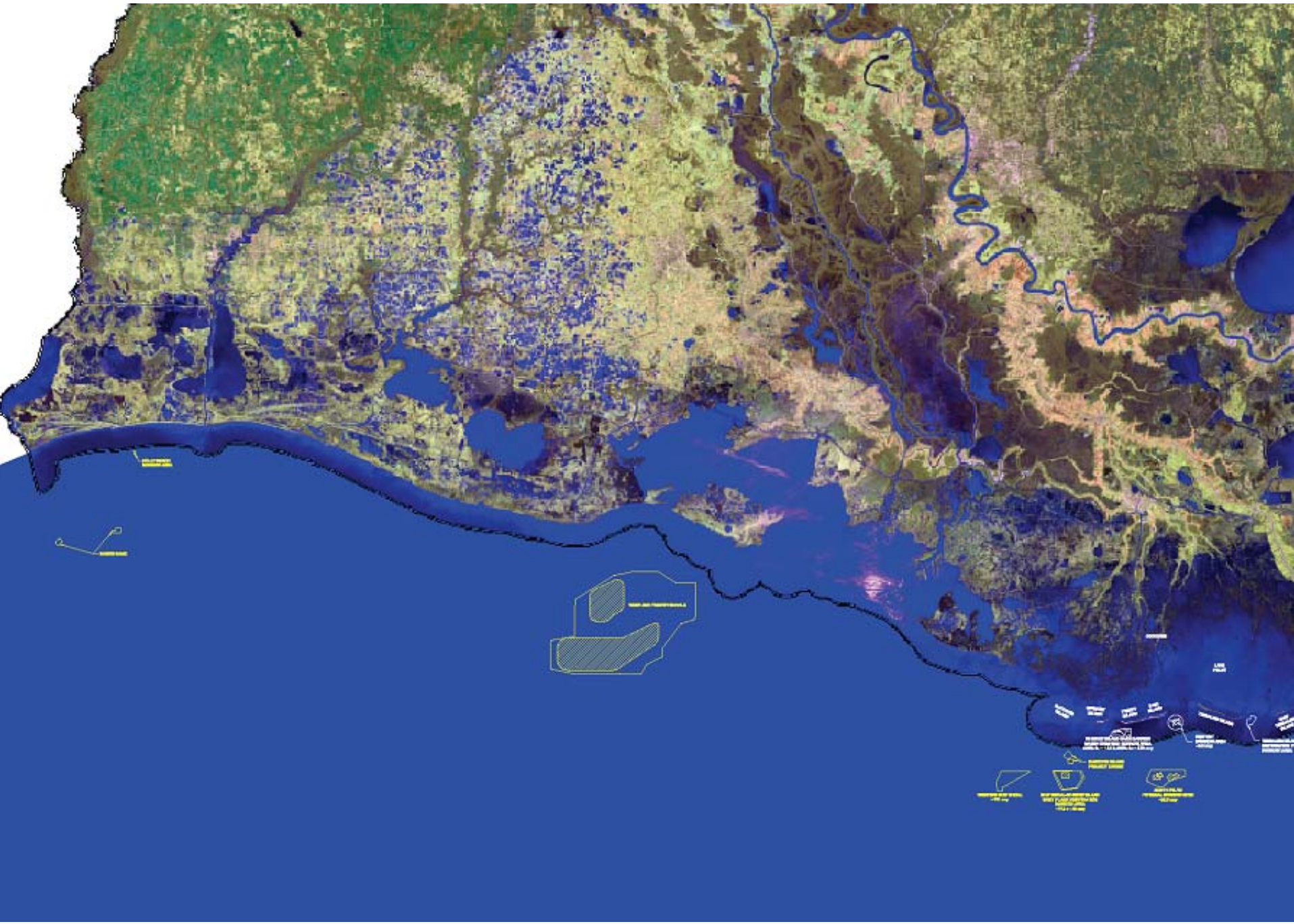
- ✓ MMS-Continental Margins Program – sand resource inventory & assessment on Louisiana Continental Shelf
- ✓ Data collected by Louisiana Geological Survey and USGS
- ✓ ~500 L M (800 line-km) of high resolution seismic data
- ✓ 30 vibracores
- ✓ Sedimentological studies leading to preparation of isopach maps and evaluation of sand resources
- ✓ 2.6 billion cubic yards (2 billion cu. m) up to 33 feet (10 m) depth
- ✓ Concluded that Trinity Shoal extends to the west

Time Line

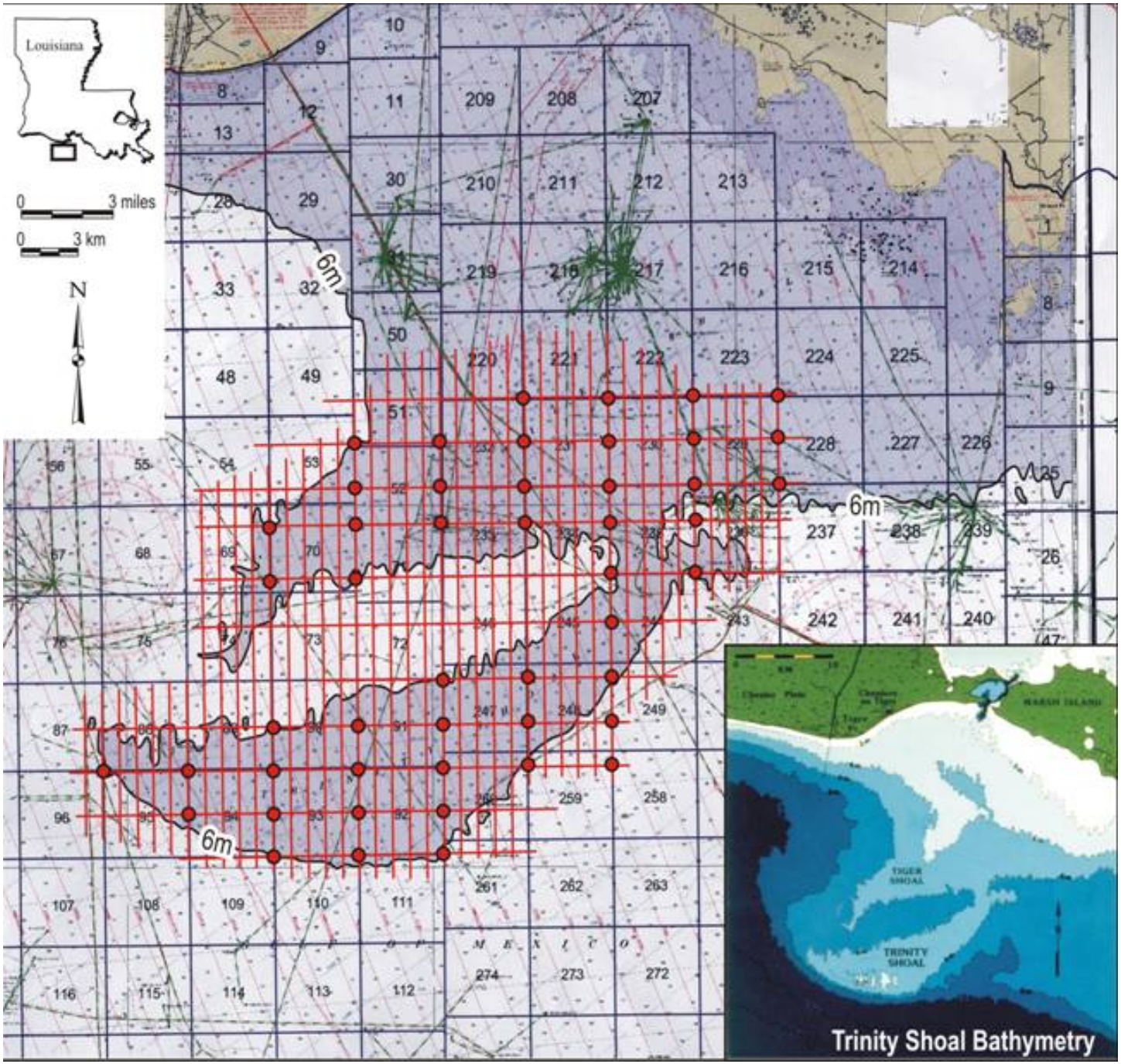
MMS Post 2005 Hurricane Gulf Coast Sand Studies

Tiger &Trinity Shoal Complex Investigations

Proposal Submitted/accepted	Spring 2007
Contract Issued	1 June 2007
Geophysical Survey	August–September 2007
Vibracoring at selected sites	September/October 2008
Sedimentological Studies & Report	31 August 2009

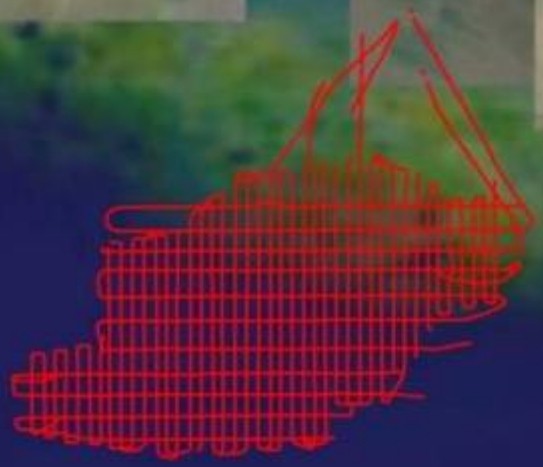


Proposed Tiger-Trinity Shoal Complex Exploration



450 LM of Geophysical Survey &
50 vibracores

Geophysical Survey Track Lines



~ 800 L. Miles of Geophysical Data

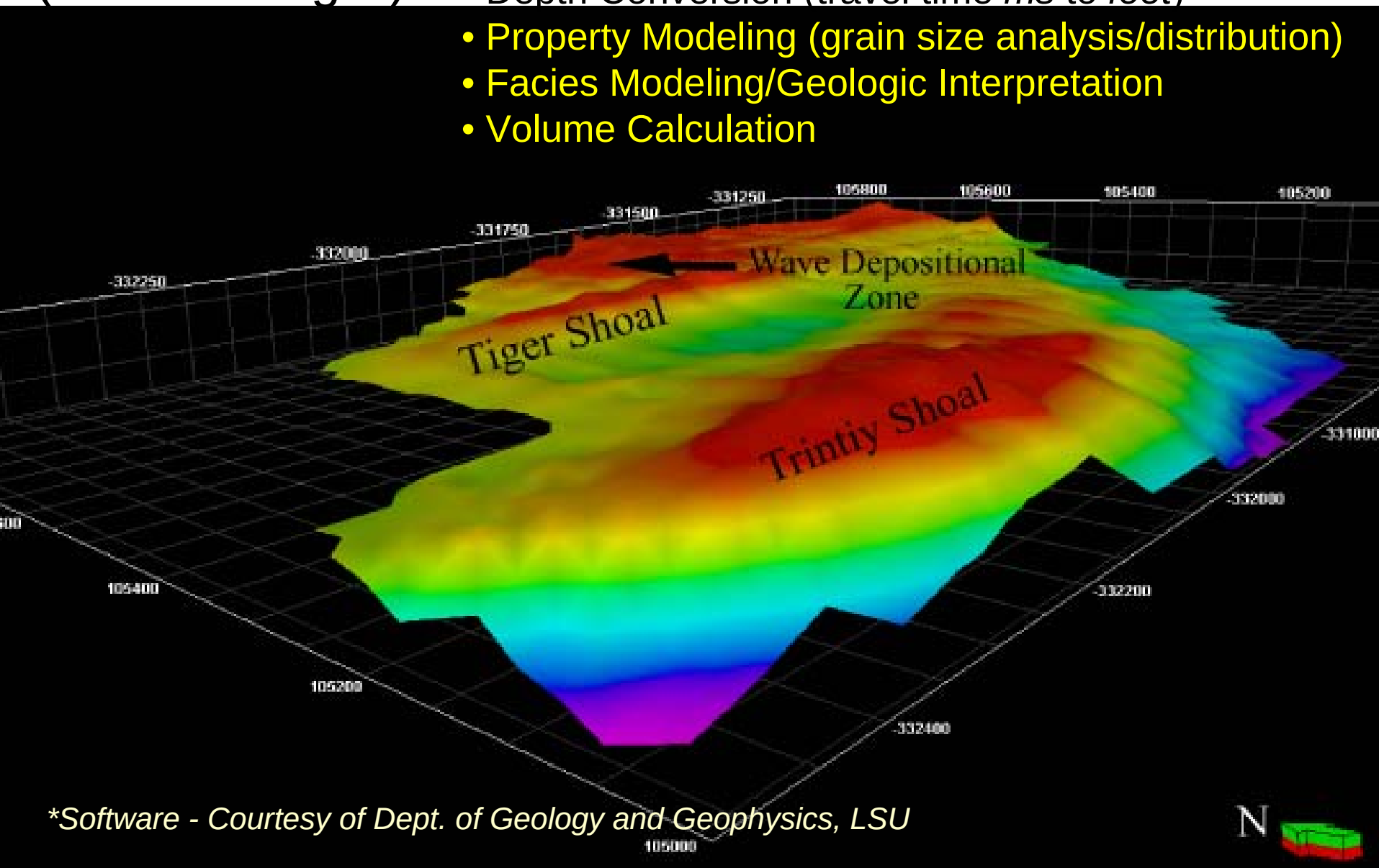
- Bathymetric
- High-resolution seismic
- Side scan sonar
- Magnetic

R/V Coastal Profiler

- Odom HydroTrack Digital Fathometer
- EdgeTech Chirp Subbottom Profiler 512i
- Klein 2260 NV Side Scan Sonar
- Geometrics Cesium Magnetometer
- Vibracore

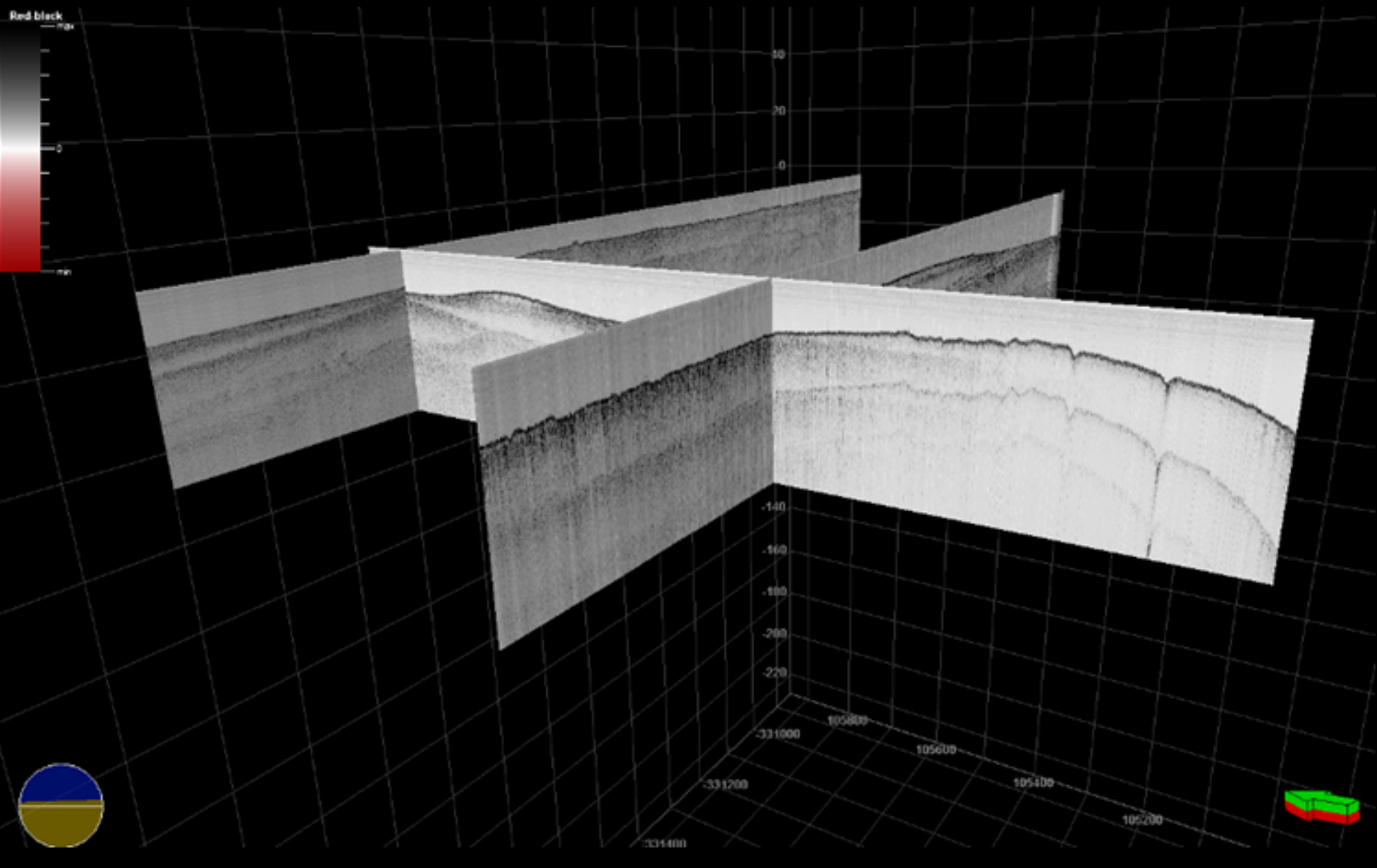
Petrel* (Schlumberger)

- Horizon Interpretation
- Depth Conversion (travel time *ms* to *feet*)
- Property Modeling (grain size analysis/distribution)
- Facies Modeling/Geologic Interpretation
- Volume Calculation

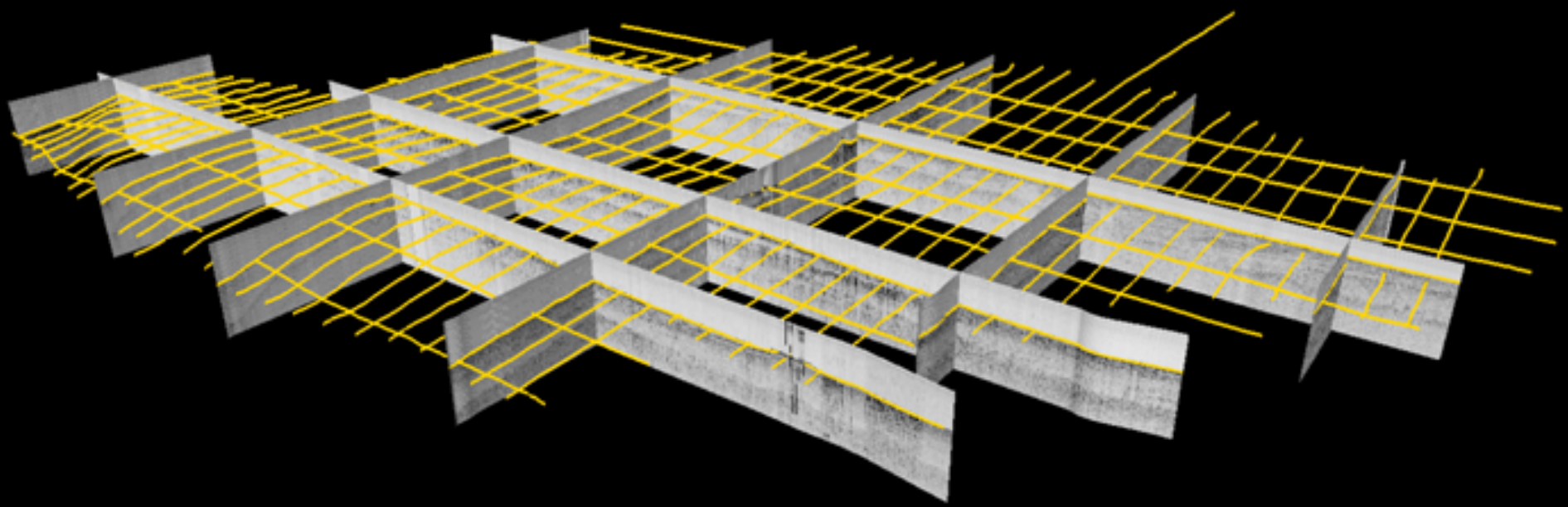


**Software - Courtesy of Dept. of Geology and Geophysics, LSU*

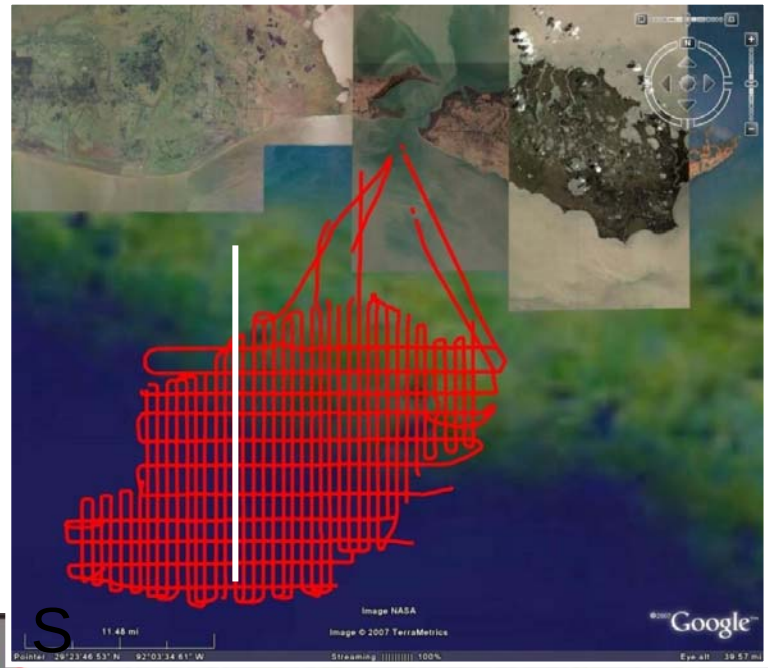
Subbottom/Seismic Profiles



Geophysical Survey Tracklines
and
Seismic/Subbottom Profiles



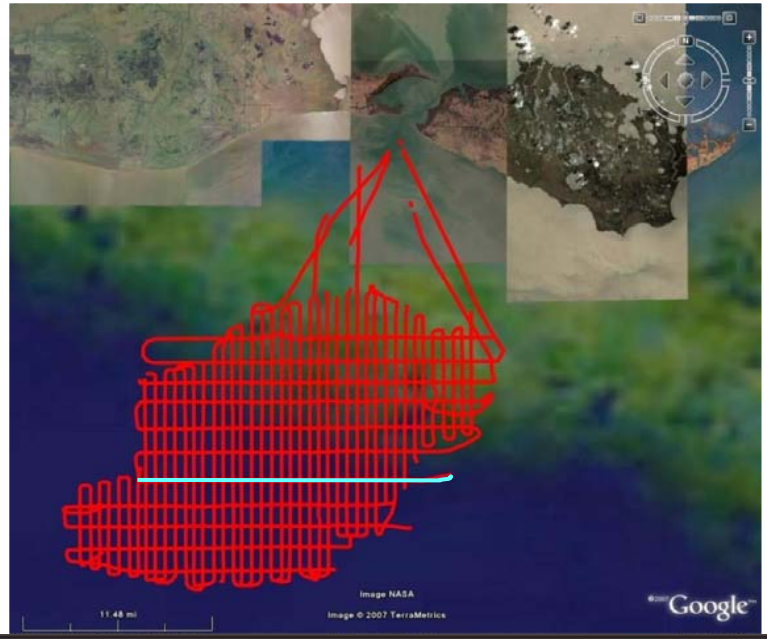
Trinity Shoal
Geophysical Survey
Track Line Y18

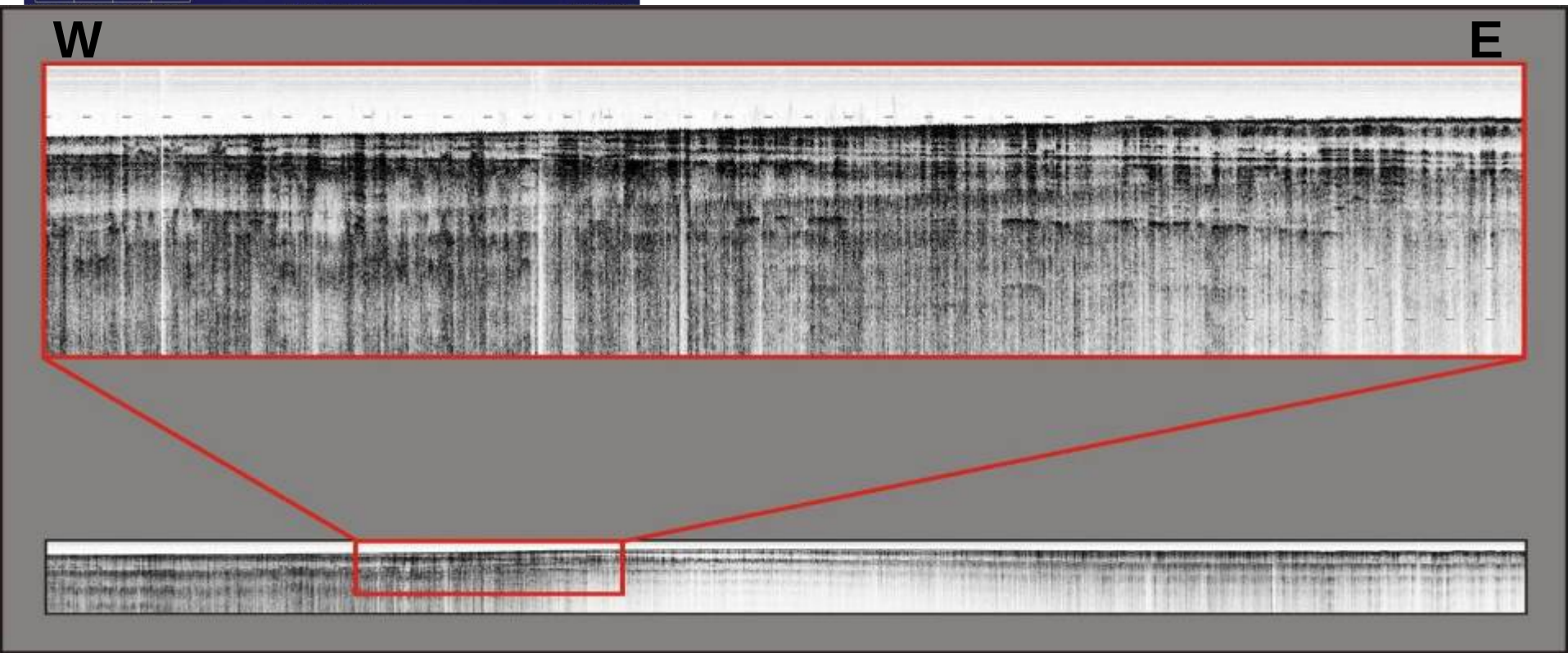


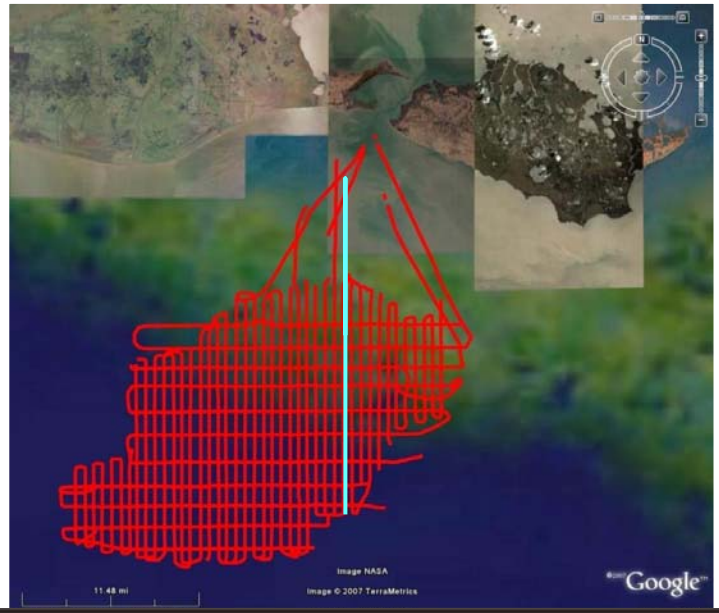
Trinity Shoal

Geophysical Survey

Track Line X5



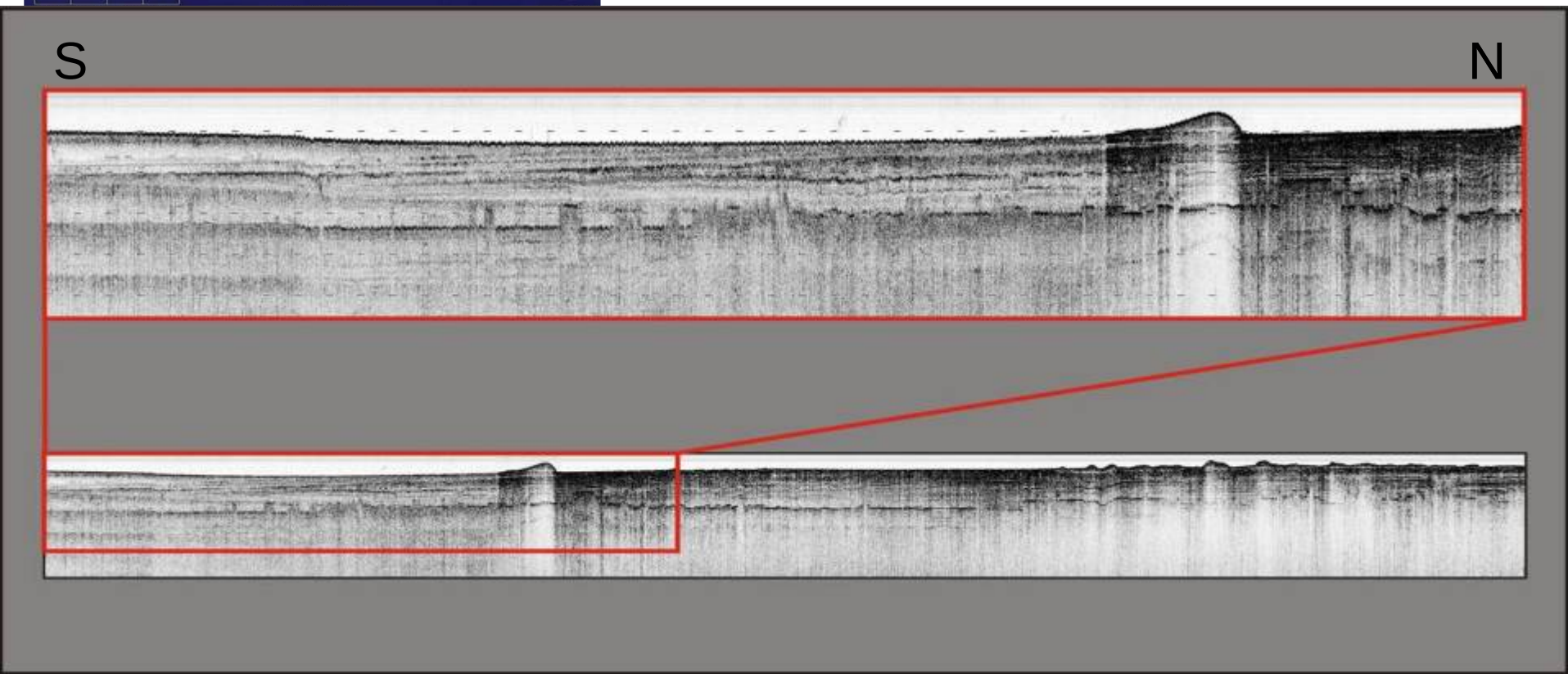


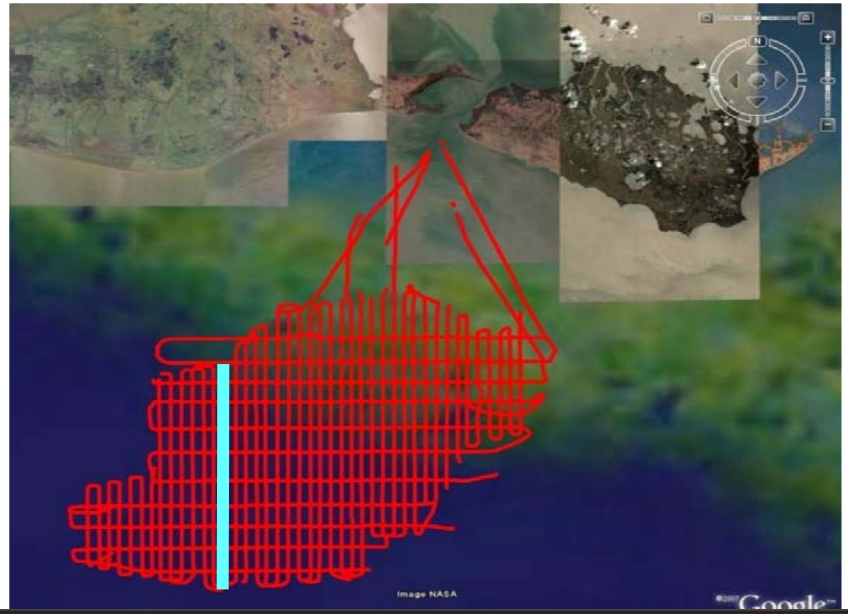


Trinity Shoal

Geophysical Survey

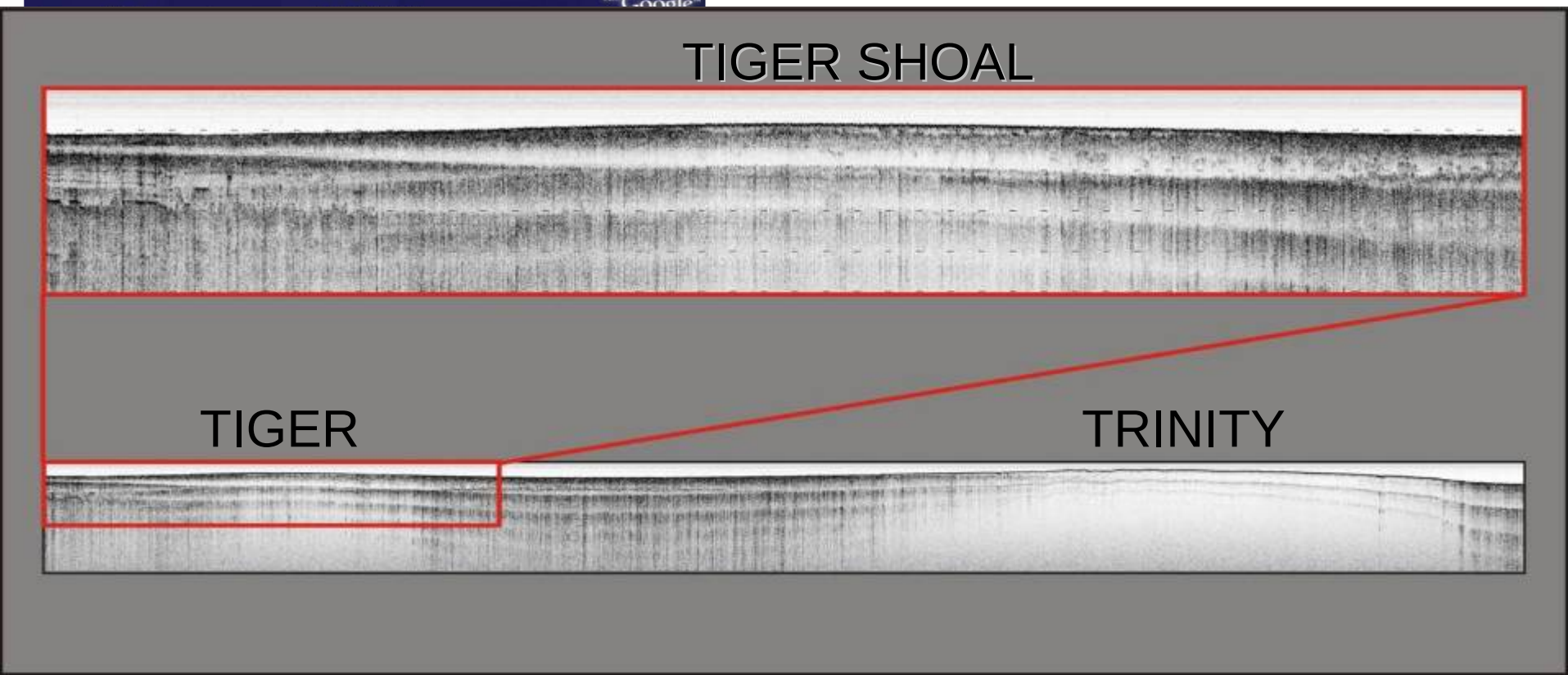
Track Line Y25

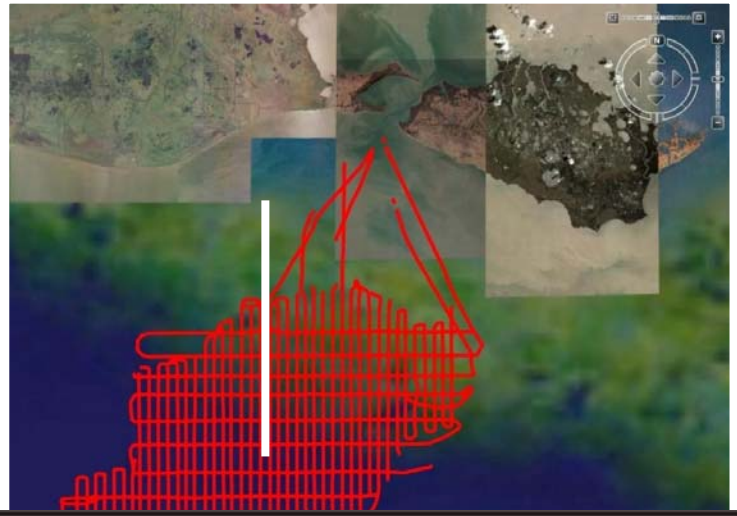




Tiger Shoal

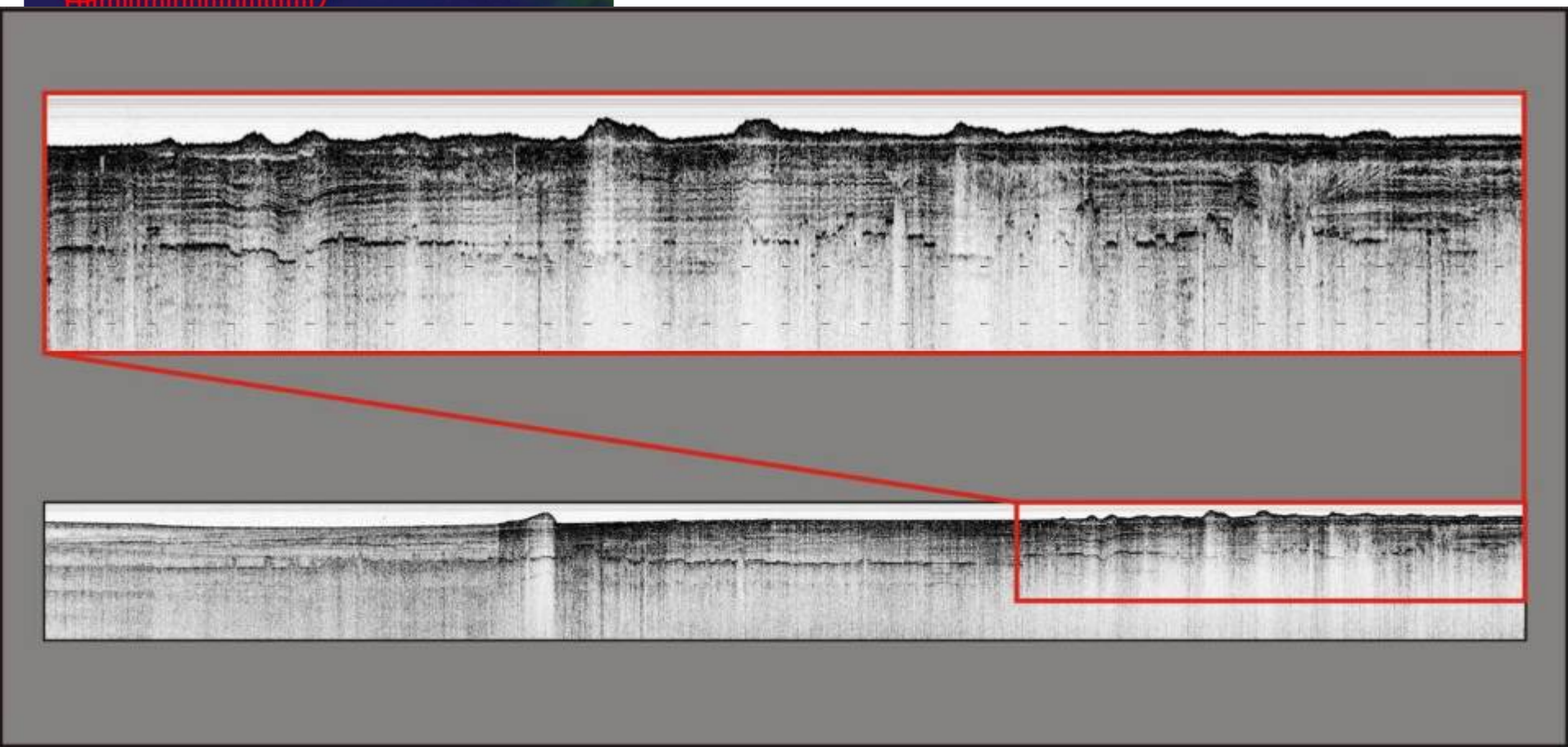
Geophysical Survey
Track Line Y14



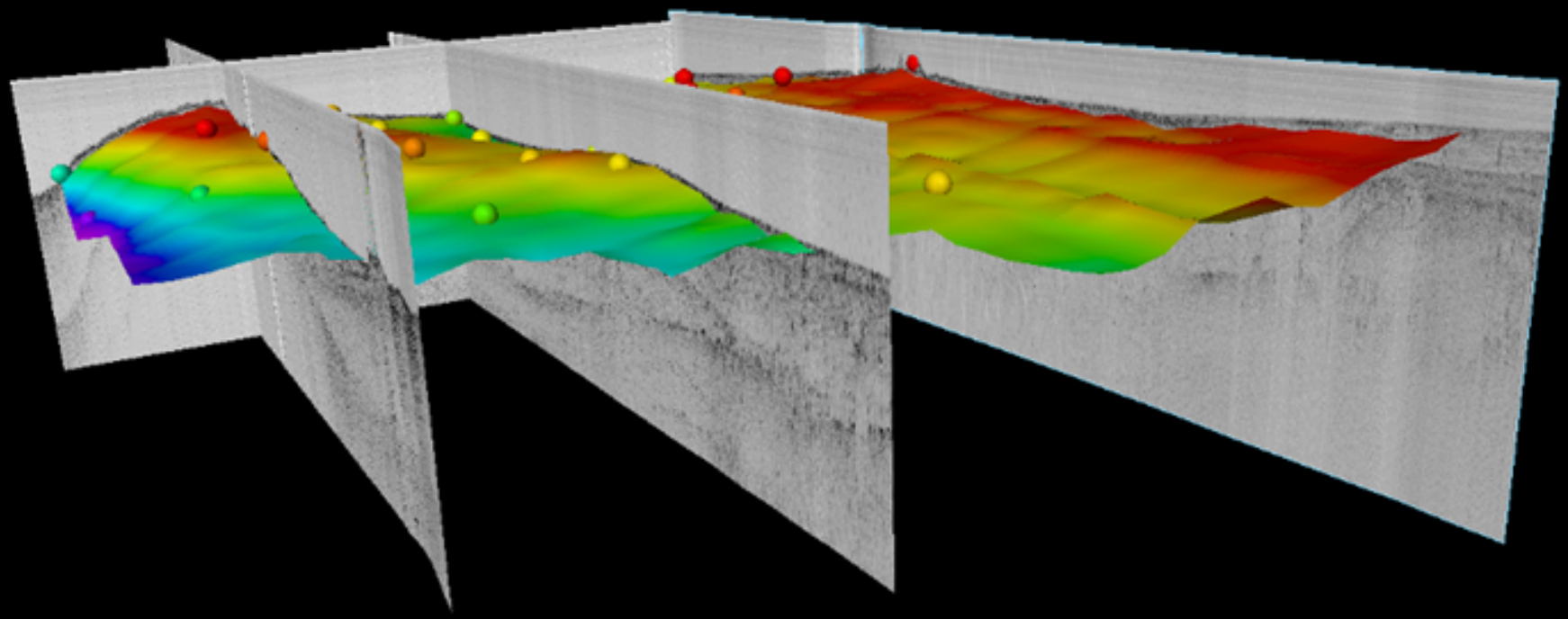


Dumping Site

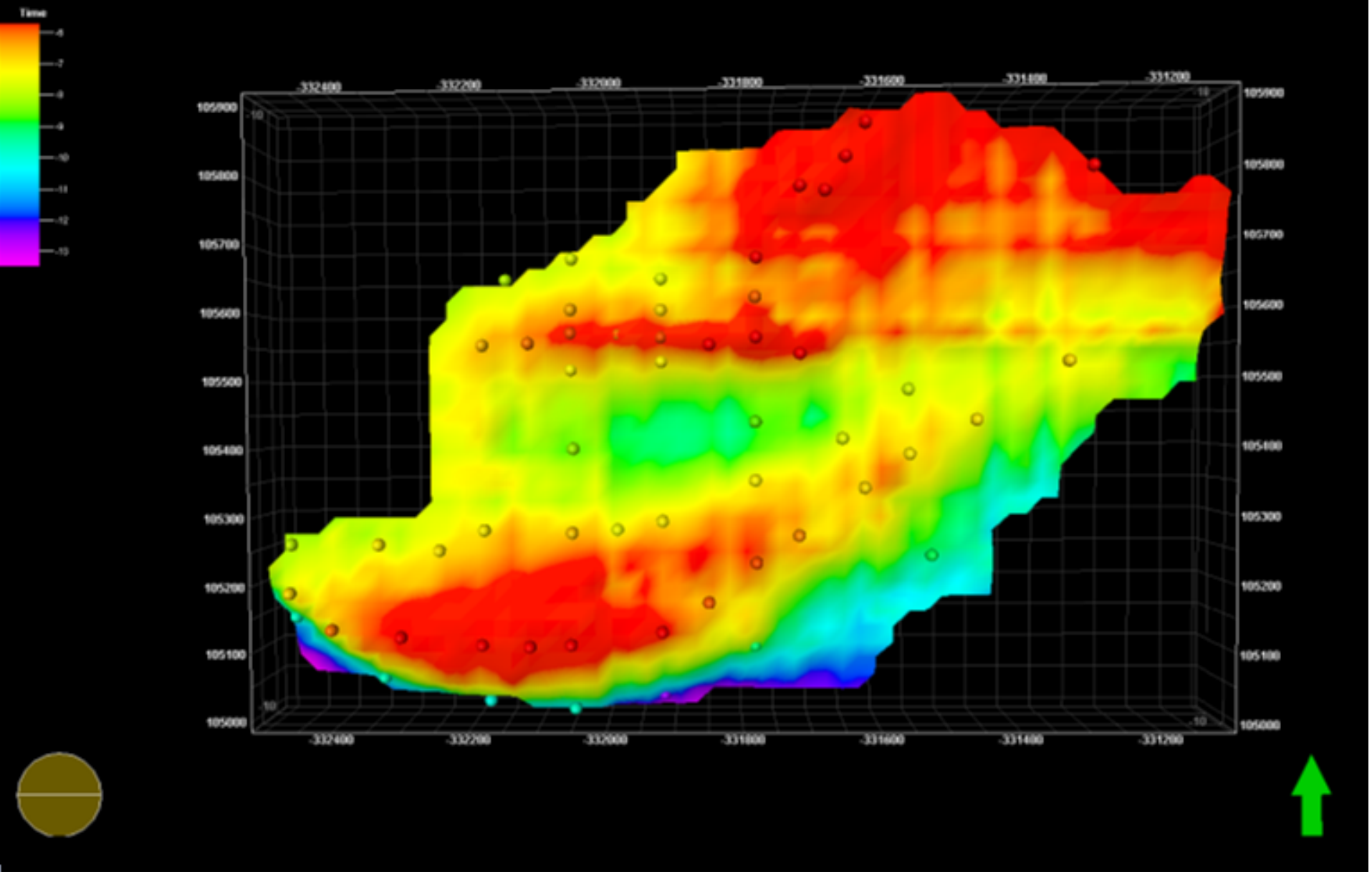
Geophysical Survey Track Line Y25



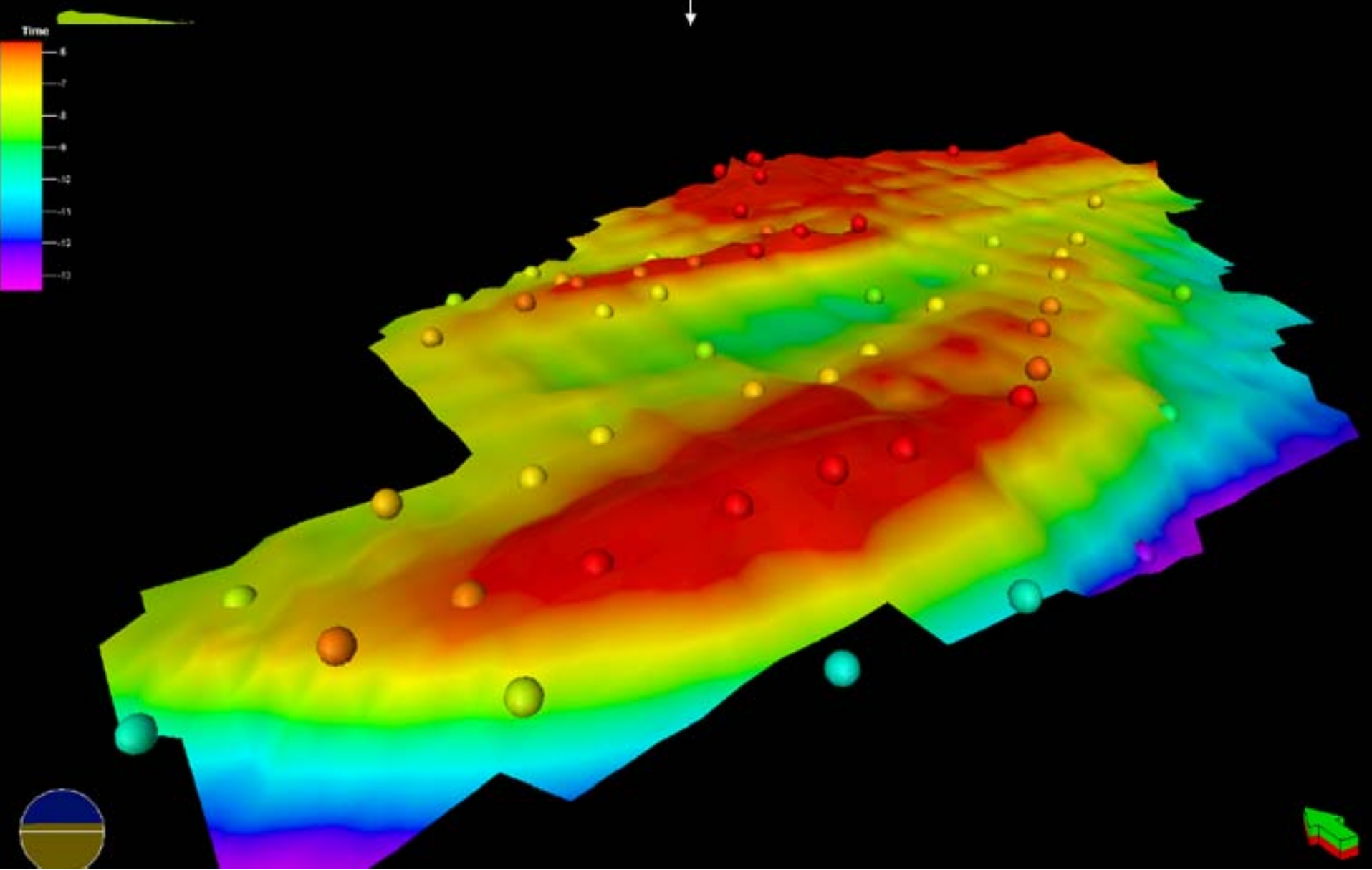
Subsurface Interpretation along Subbottom Profiles



Proposed Vibracoring Locations

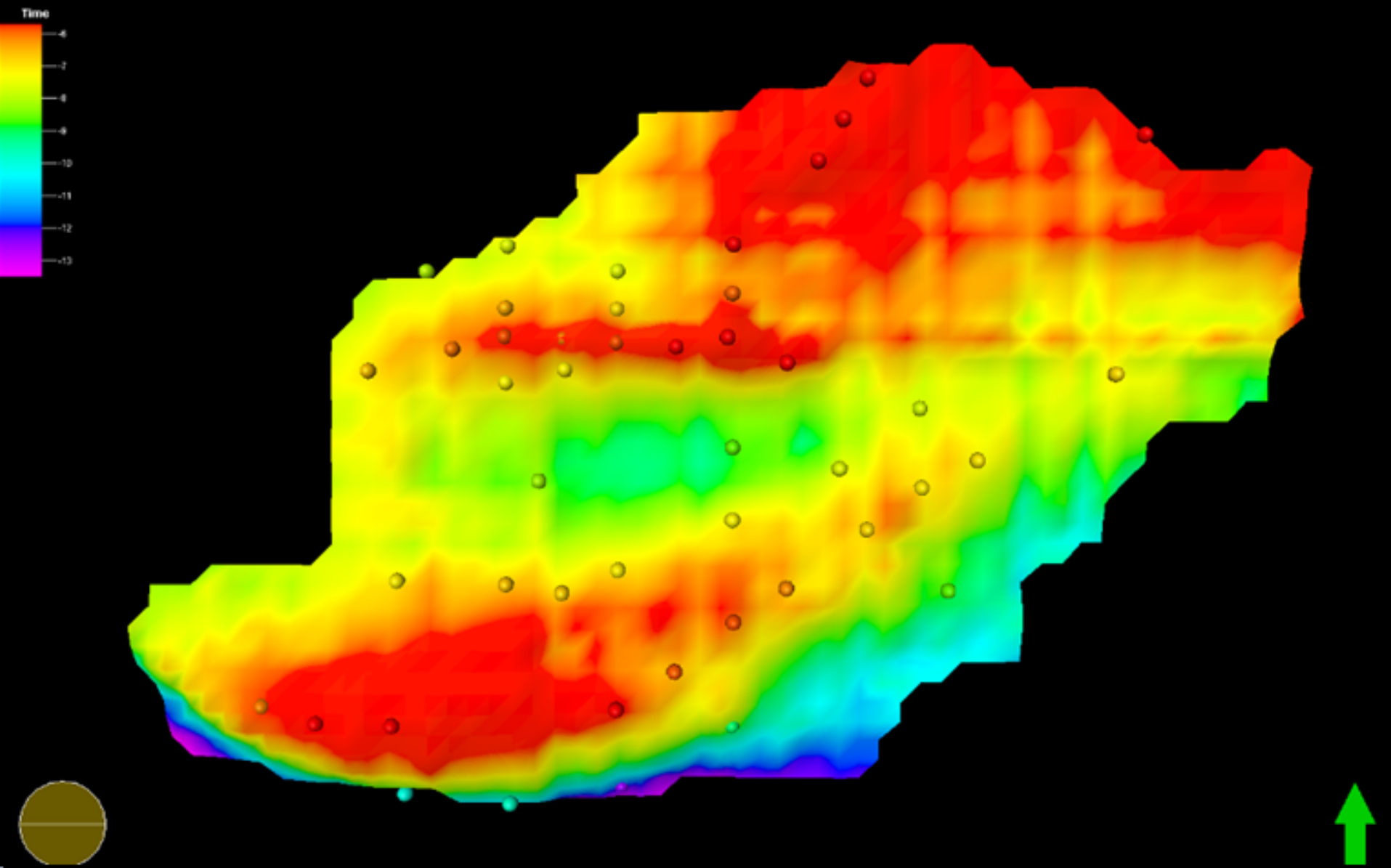


Proposed Vibracore Locations

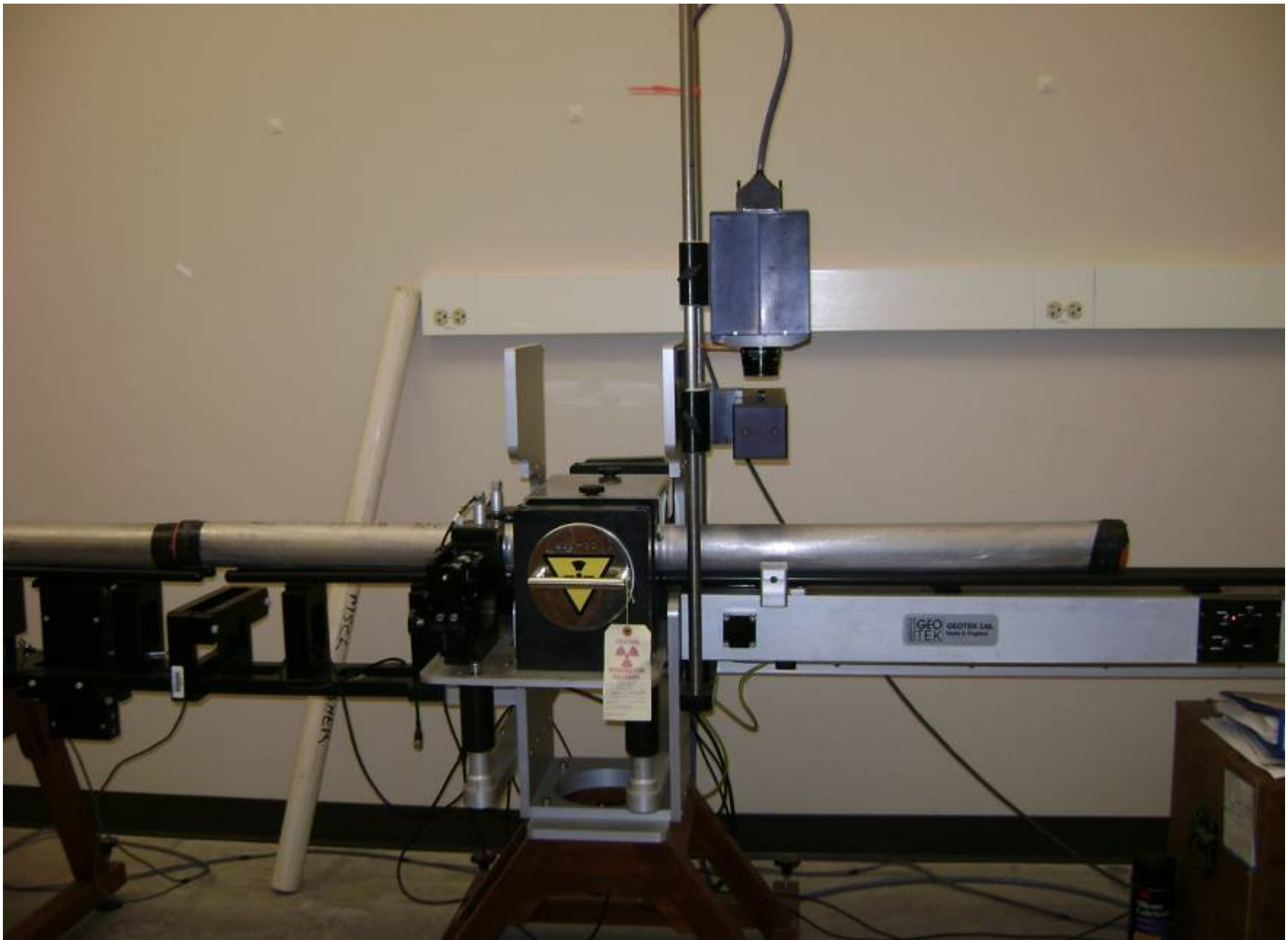


Vibracore Acquisition – Onboard R/V Coastal Profiler

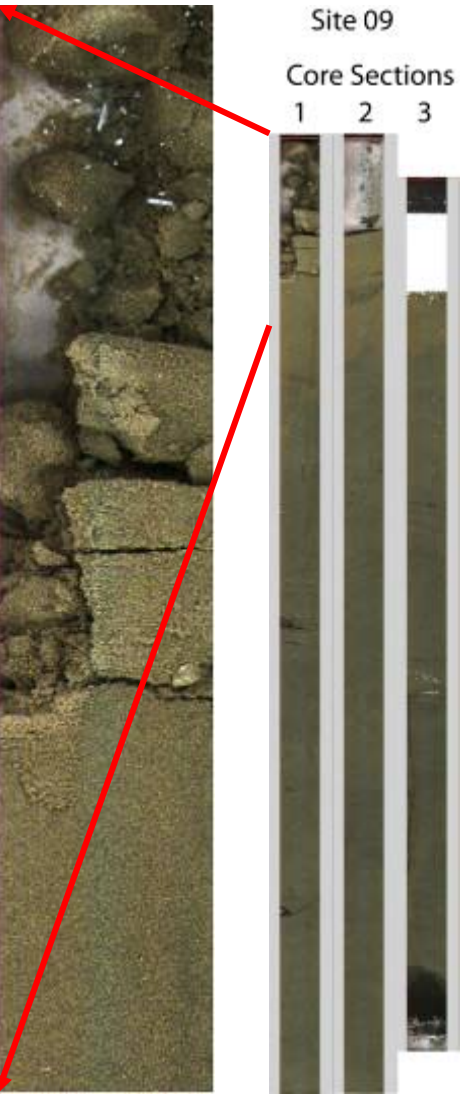
Vibracore Locations – Final

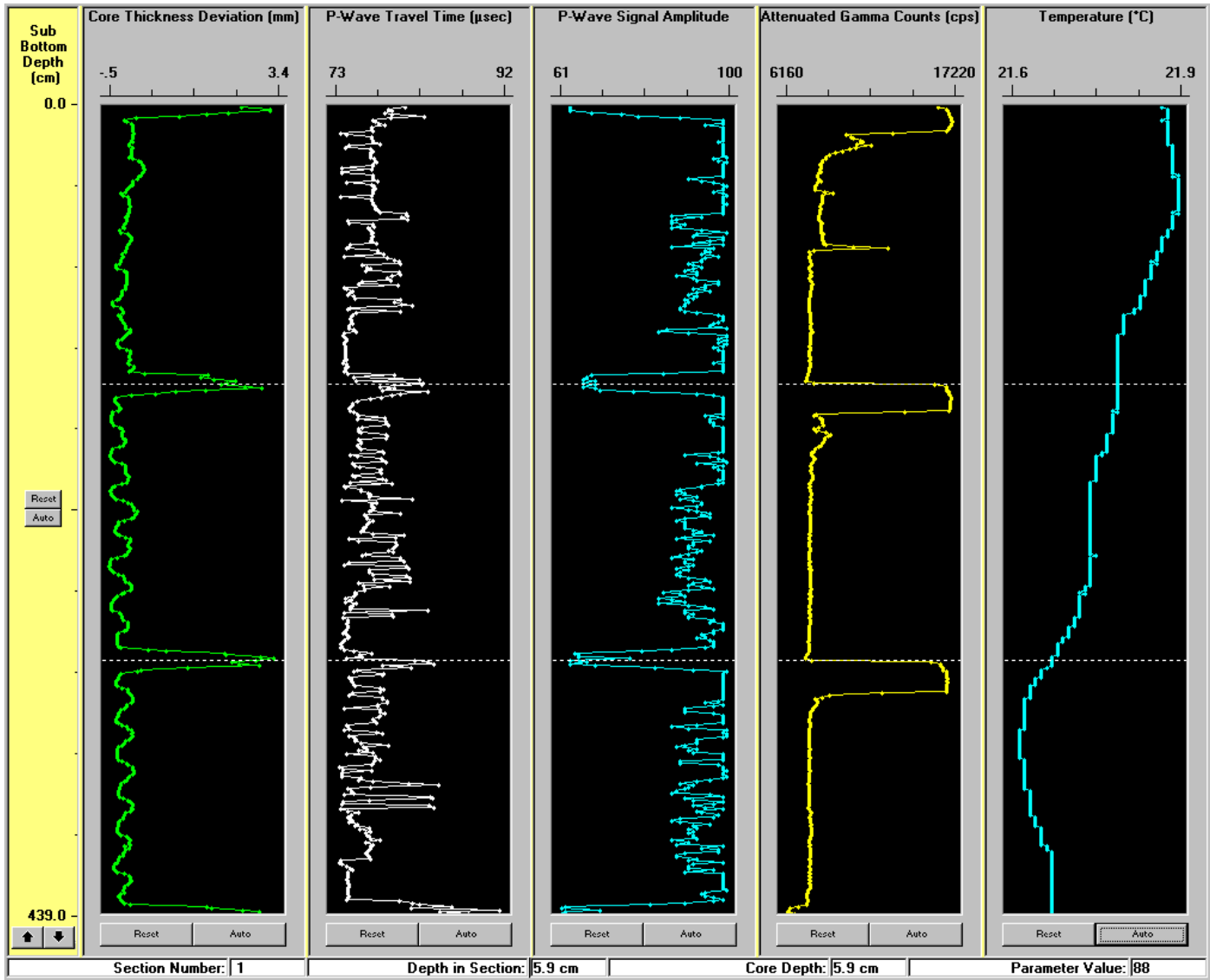


Core Logger – Sedimentological Laboratory



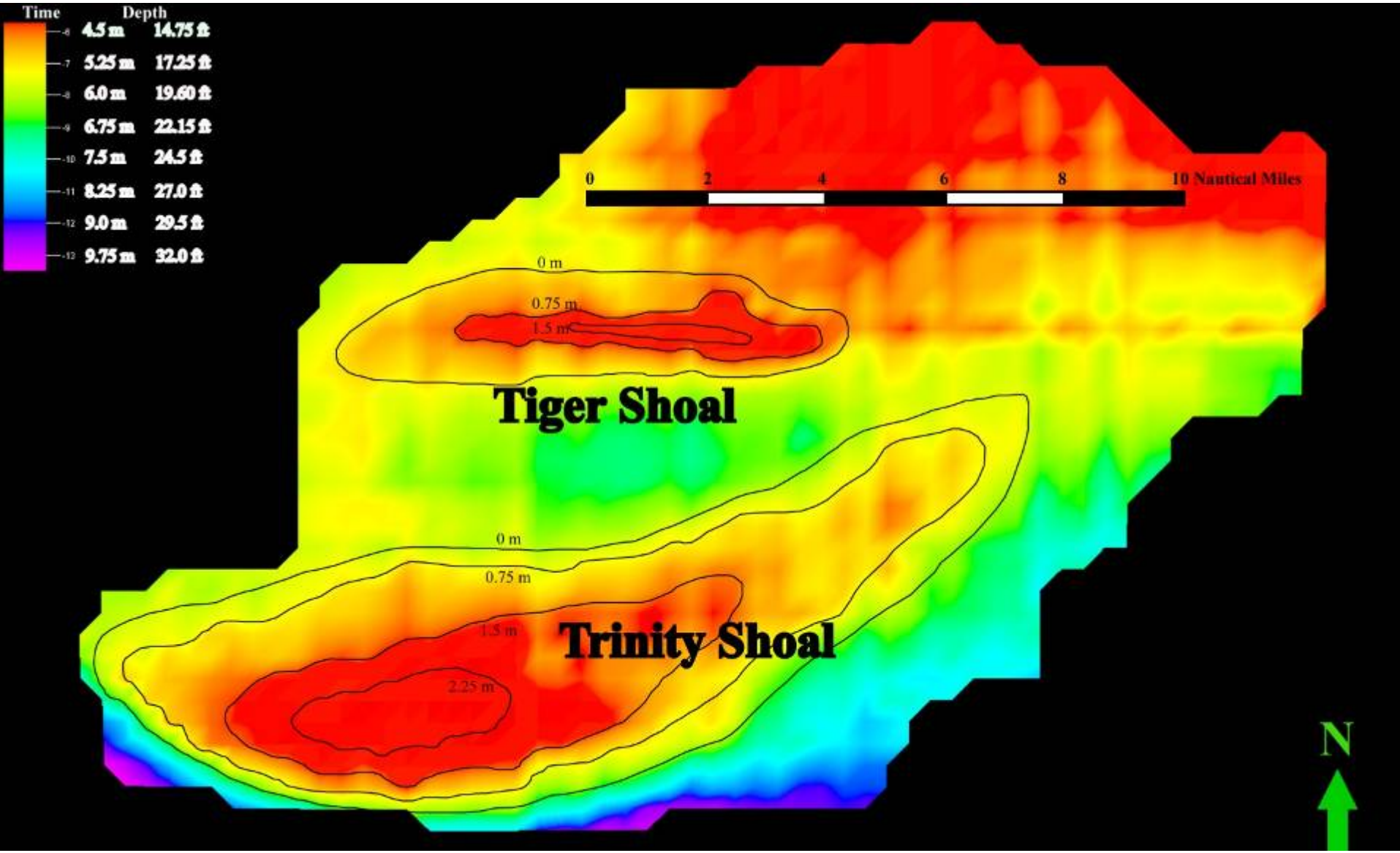
Study of Core #9 with Core Logger Graphs



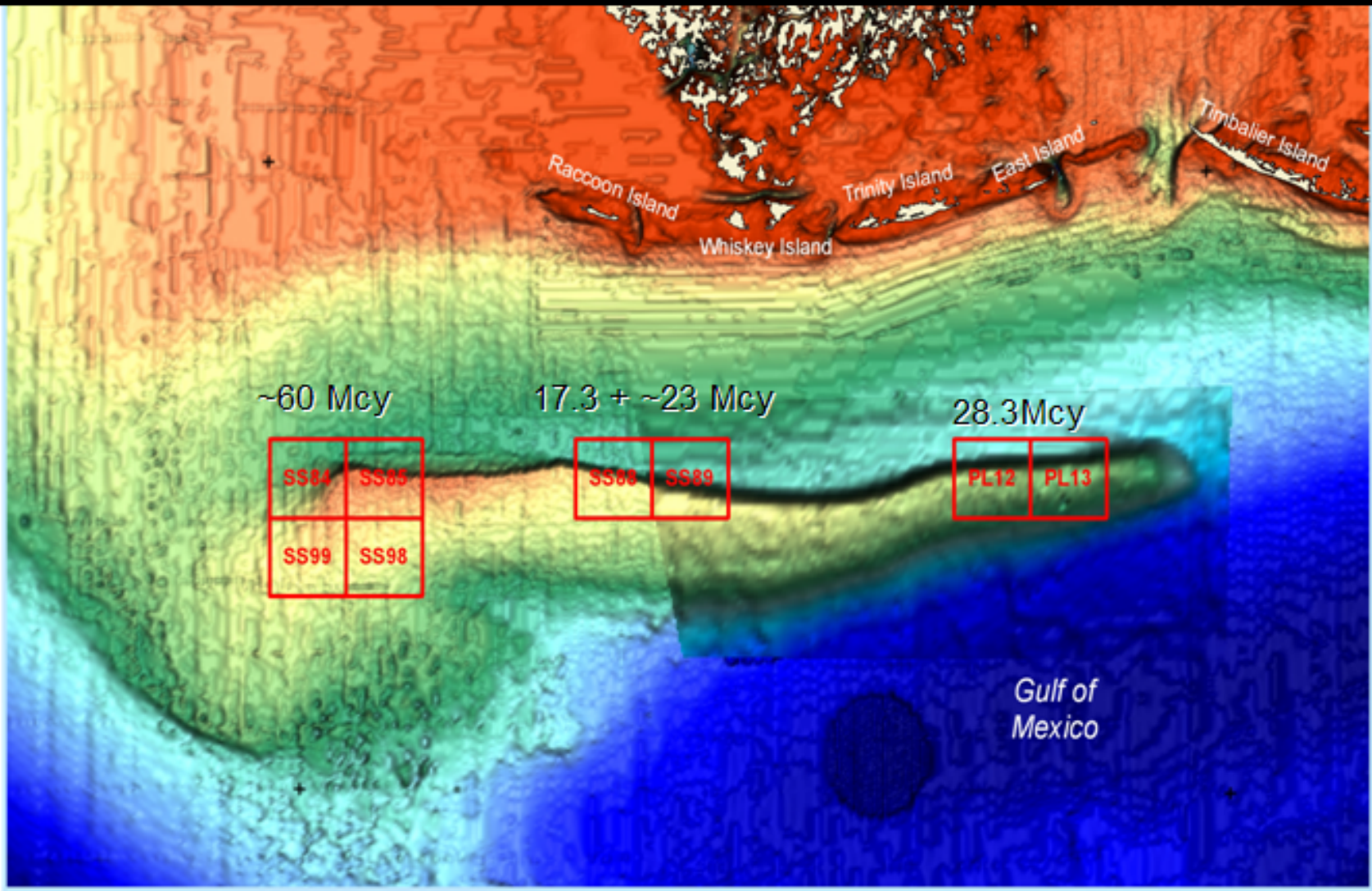


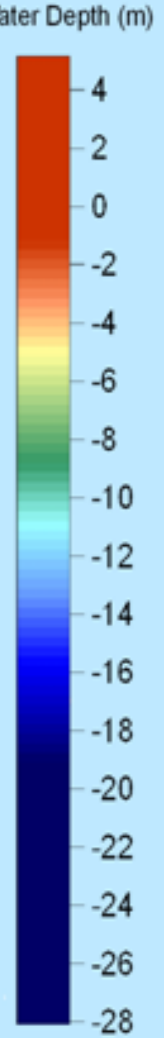
Volume Calculation (approx.) /Isopach Map

Sand Available vs. Sand Accessible



Total Sand Available for Dredging from Ship Shoal





Legend

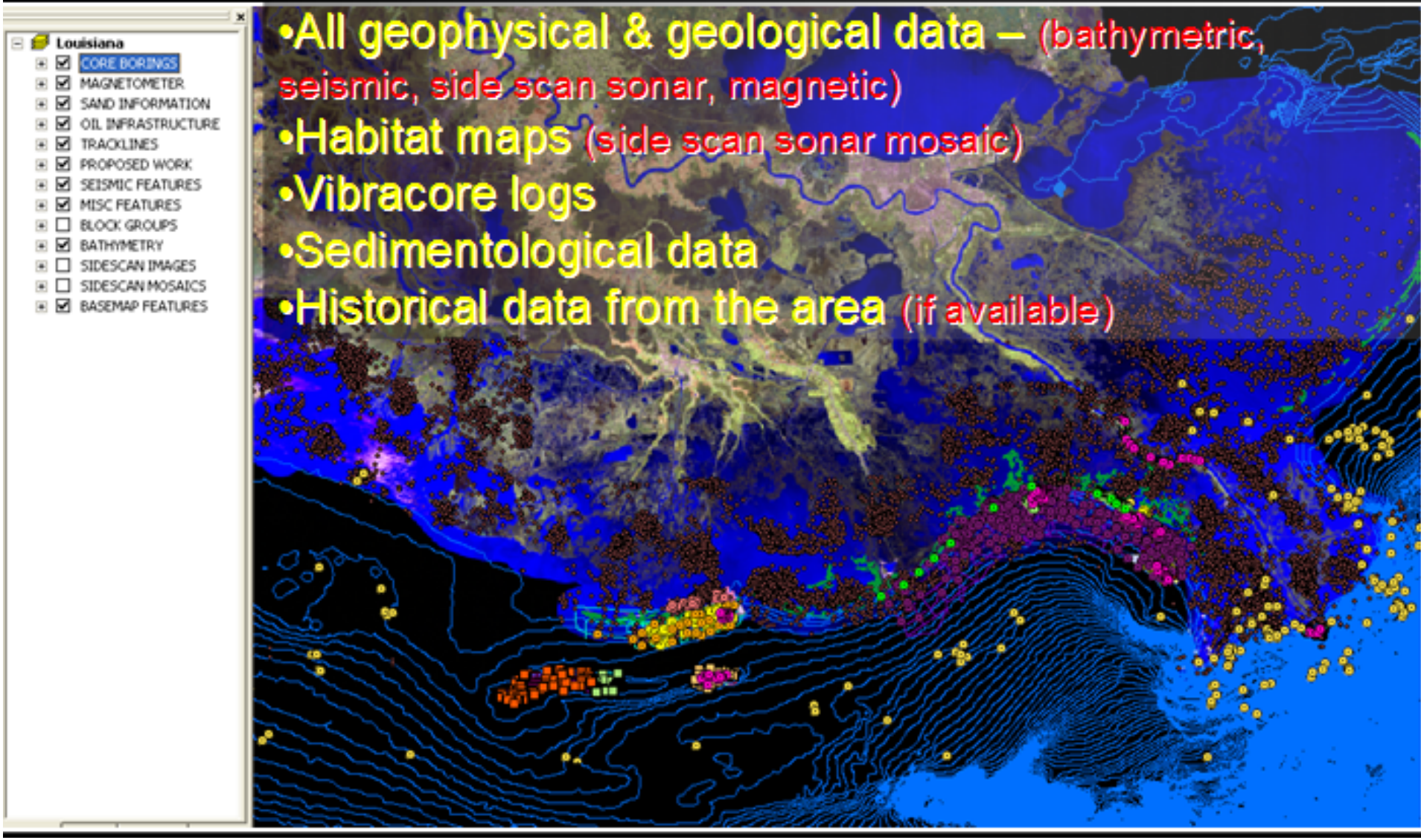
MMS Lease Blocks

0 2 4 8 Miles

<10% of total sand is available for dredging

Data Management

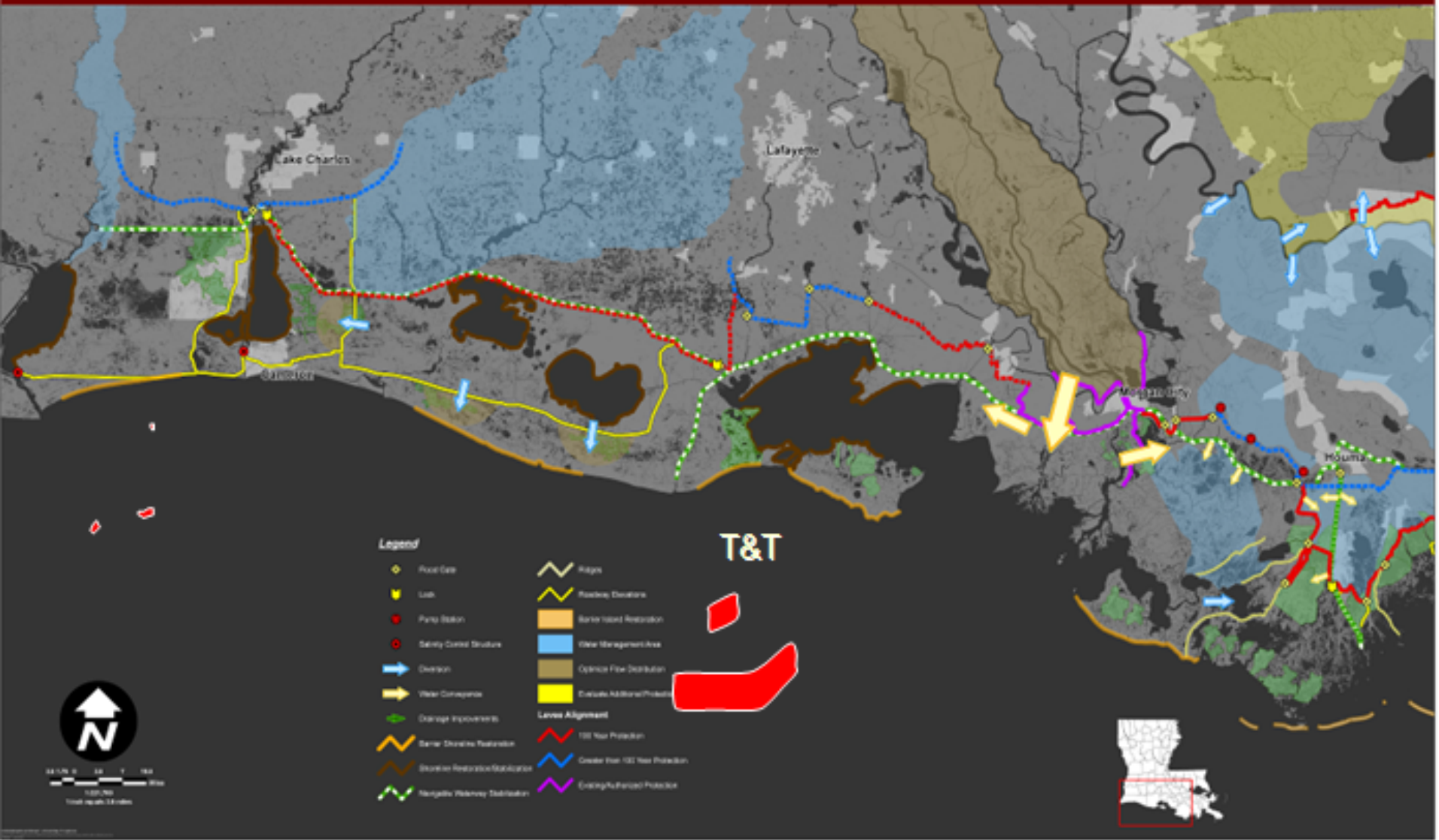
Louisiana Sand Resources Database (LASARD) - GIS Project



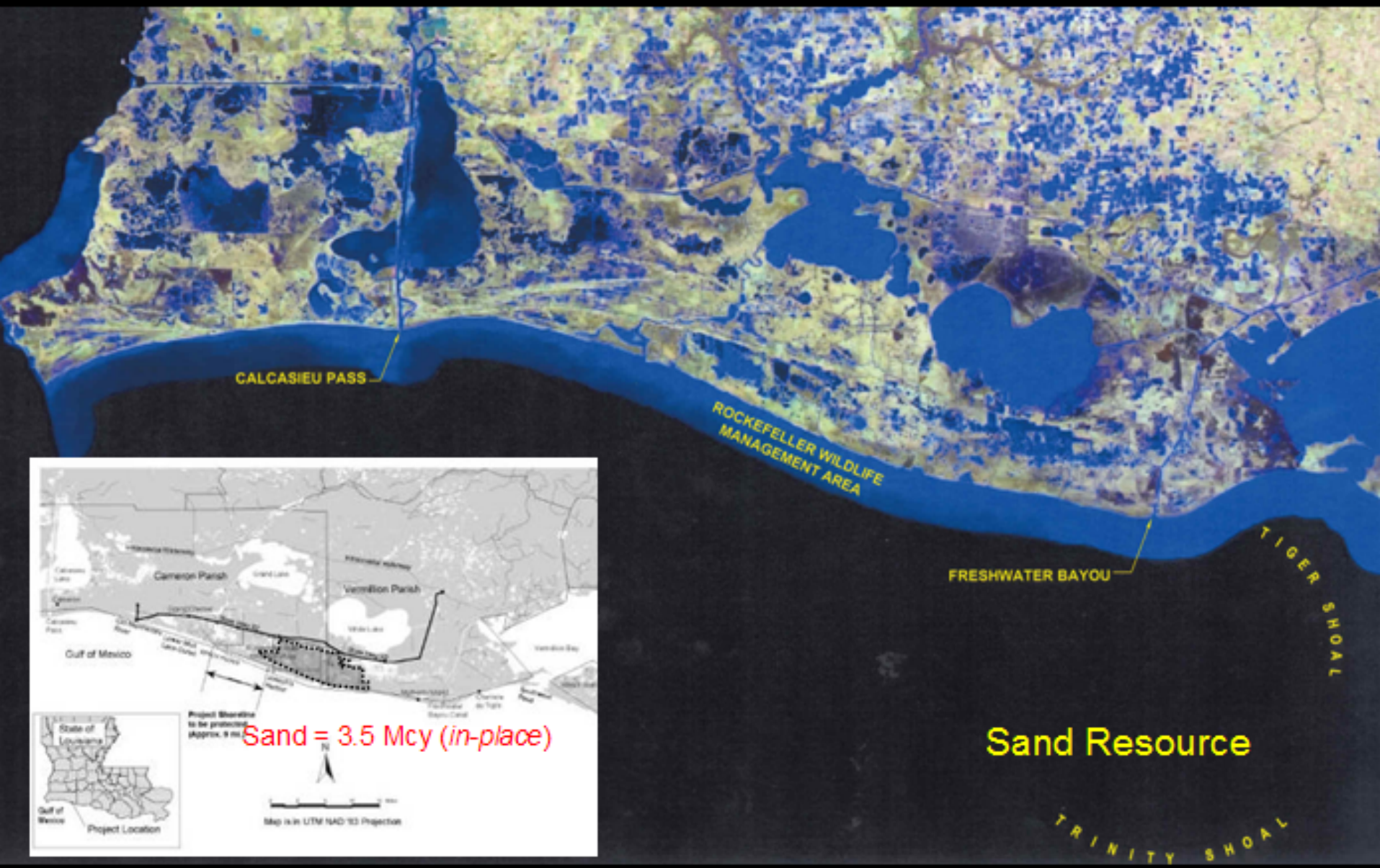
Master Plan

FIGURE 4.2

MAP REPRESENTING A CONCEPTUAL DEPICTION OF MEASURES FOR THE CHENIER PLAIN



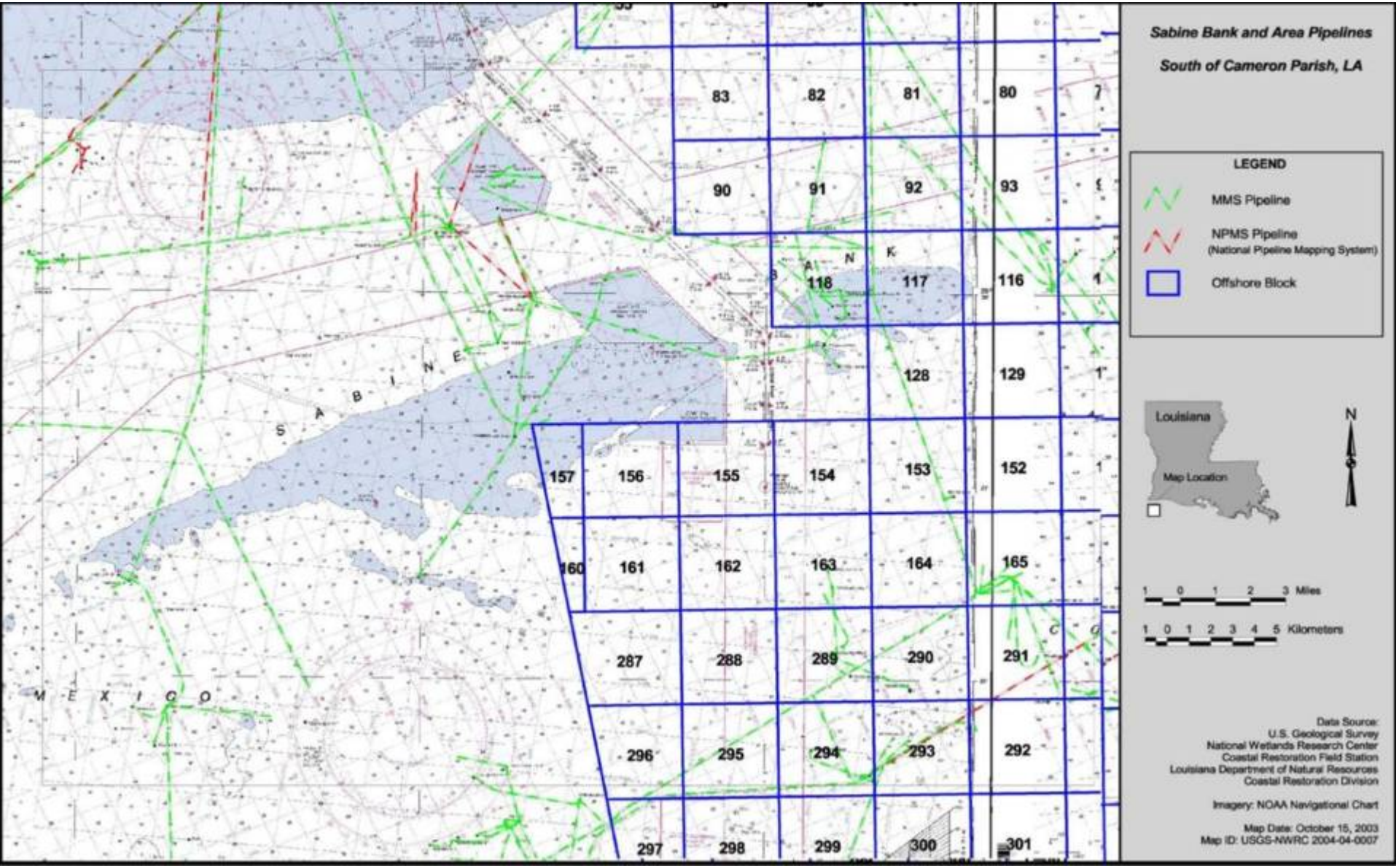
Rockefeller Refuge to Calcasieu Pass



Coordination with Environmental Study on Tiger & Trinity Shoals (MMS-LSU)

- ✓ Sharing geophysical data especially bathymetry, magnetic
- ✓ Sharing and coordinating ship-time

Coordination with GLO, TX-Sabine Bank



Conclusions

- ✓ Approximately 800 line miles of geophysical data were collected mainly along N-S (few E-W) trending track lines
- ✓ 46 vibracores were collected after the analyses of geophysical data. Constraint by Hurricane Gustav
- ✓ The collected geophysical/sedimentological data will be incorporated into LASARD
- ✓ Using State/LSU-owned research vessel/equipment helped reduced the cost greatly and efficiently manage the time
- ✓ Restoration and protection of Coastal Louisiana on scale envisioned in Master Plan will require implementation of RSM
- ✓ Delineation of “accessible” offshore sand source at T&T shoal complex should be appreciated
- ✓ For the first time few un-leased offshore blocks were reserved as sand resources areas/blocks by MMS requiring horizontal and vertical buffers around these areas when laying pipelines

Reference

Frazier, D.E. 1967. Recent deltaic depositions of the Mississippi River: Their development and chronology. Gulf Coast Association of Geological Societies Transactions 24:287–315.