Carbon Storage Resource Assessment for Offshore MidAtlantic United States

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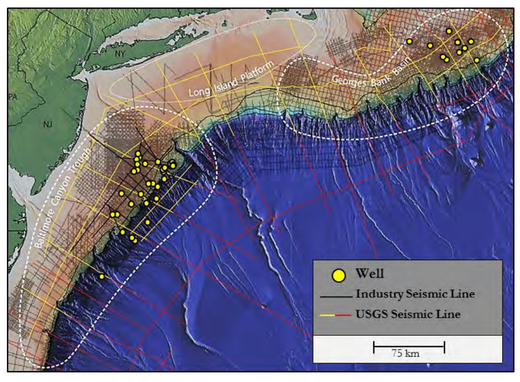
INTRODUCTION

The **Mid-Atlantic U.S. Offshore Carbon Storage Resource Assessment** expands upon the **Midwest Regional Carbon Sequestration Partnership (MRCSP)** to include three sub-basins and the collaboration of regional experts from the private sector, universities, and state geologic surveys.

- Addresses emission reductions in the industry sector along the coast, which have limited onshore options
- Establishes a foundation of knowledge and expertise critical for successful planning and implementation in the future



Study area: ~171,000 km^2

Main target is porous (20-30%), permeable (>100 mD) sandstones

Existing data set:

Log and core data from 44 wells

1000s of line-km seismic data

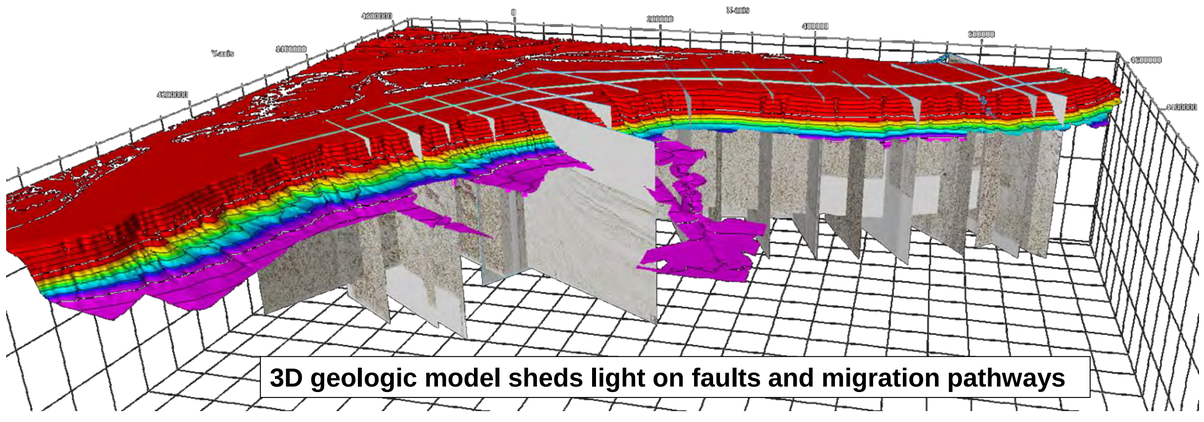
Challenges - varying vintage, quality, reporting methods, etc.

RISK FACTORS

Risk factors need to be represented to ensure meaningful assessment values. Features to be portrayed on study area maps and geologic cross-sections:

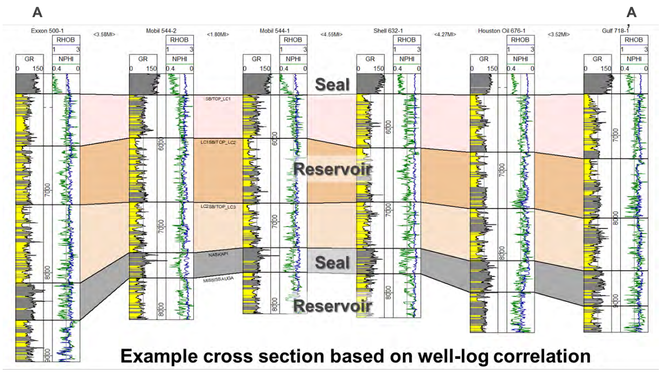
- Faults, basement structures, seismic activity, slope instability
- Continuity and integrity of confining layers
- CO_2 migration pathways and trapping mechanisms
- Logistical factors for CO_2 storage facility development

Identifying and addressing perceived risks through stakeholder engagement is another important project objective.

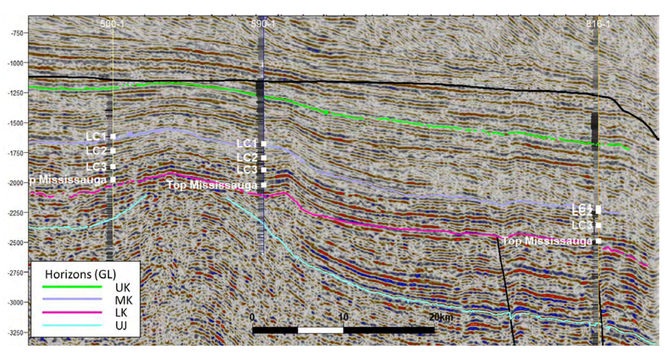


3D geologic model sheds light on faults and migration pathways

GEOLOGIC CHARACTERIZATION



Example cross section based on well-log correlation



Project study area **has large potential storage capacity** in continuous deep, thick, porous formations. Common chrono-, sequence-, and bio-stratigraphic correlations across the sub-basins allow for consistent interpretation and resource estimates.

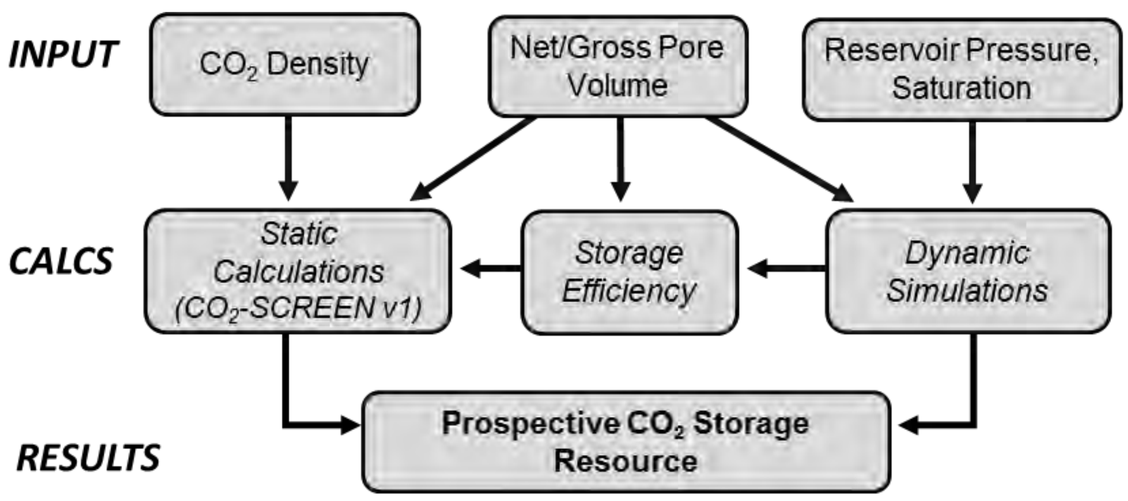
Sequence stratigraphic methods are used to **predict sand and shale prone units in a more laterally continuous area** than strict Formation unit definitions.

Seismic data is used to constrain formation geometry, continuity, and geologic structures, and is **critical in areas without well control.**

RESOURCE CALCULATIONS

Prospective CO_2 Storage Resource estimates at the regional scale for Mid-Atlantic Offshore sub-basins will be calculated considering screening-level constraints on storage potential of deep saline formations.

Local sites will be selected based on data density and favorable geologic conditions for more detailed evaluation and calculation refinement.



HYDROLOGIC PROPERTIES

One project benefit is the greater **accessibility** to and **preservation** of **legacy offshore data.**

Sample Inventory

~2,300 core samples

~5,000 thin-sections

~97,000 drill cuttings

Data Compilation

~5,500 porosity and permeability core data points from 184 reports

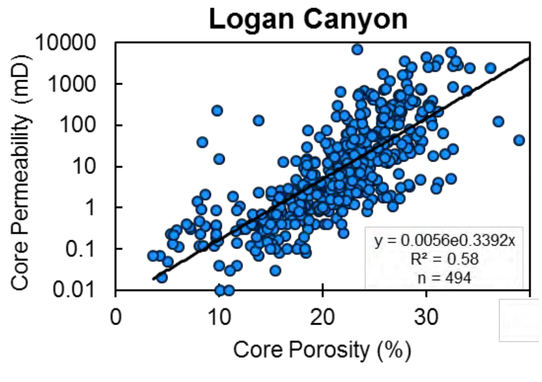
~2,500 logs in well database

~1,000,000 ft. of log data digitized

New Data Acquisition

~100 geologic core samples selected for porosity, permeability, petrography, X-Ray Diffraction analysis

1: sandstone 2:mudstone



FUTURE WORK

The Mid-Atlantic US offshore project area has **attractive prospective resources for safely storing large CO_2 volumes** offshore should there be a price for carbon. Project results will help guide site screening, identify technical barriers, and inform decision making. The databases built under this project, combined with newly released seismic data, provide significant research opportunities.

Key Needs for the Future

- Additional geologic characterization
- Integration of newly released seismic data not available for this project
- Detailed mapping and modeling on selected areas within the sub-basins
- Examination of economic factors and optimization strategies
- Enhanced stakeholder engagement

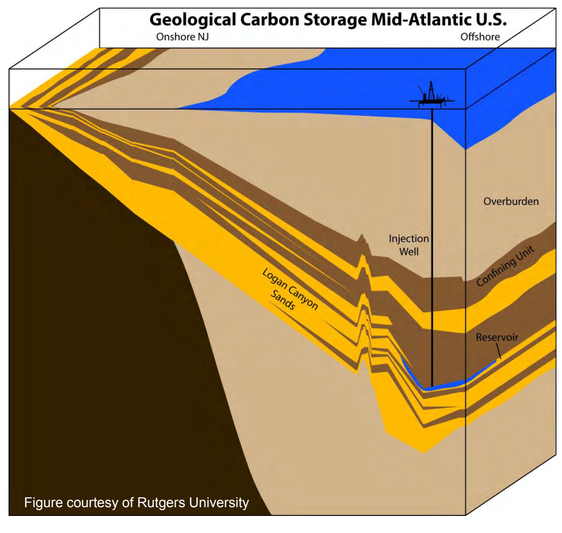


Figure courtesy of Rutgers University