Global perspectives on offshore storage

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US - NORWAY
COLLABORATION ON CCS/CCUS

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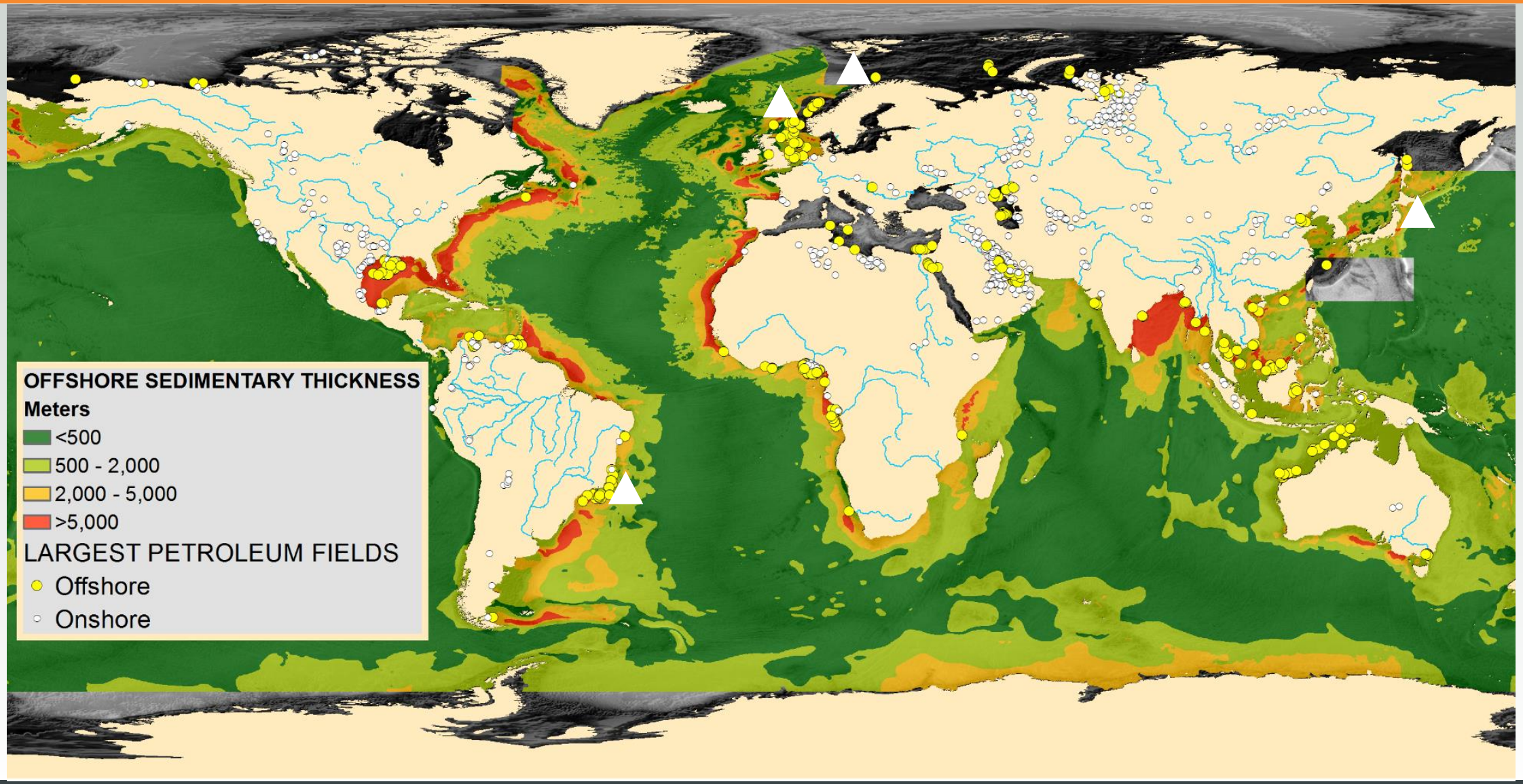
Offshore CCS can happen in a lot of places globally, but is not required everywhere to be effective globally.



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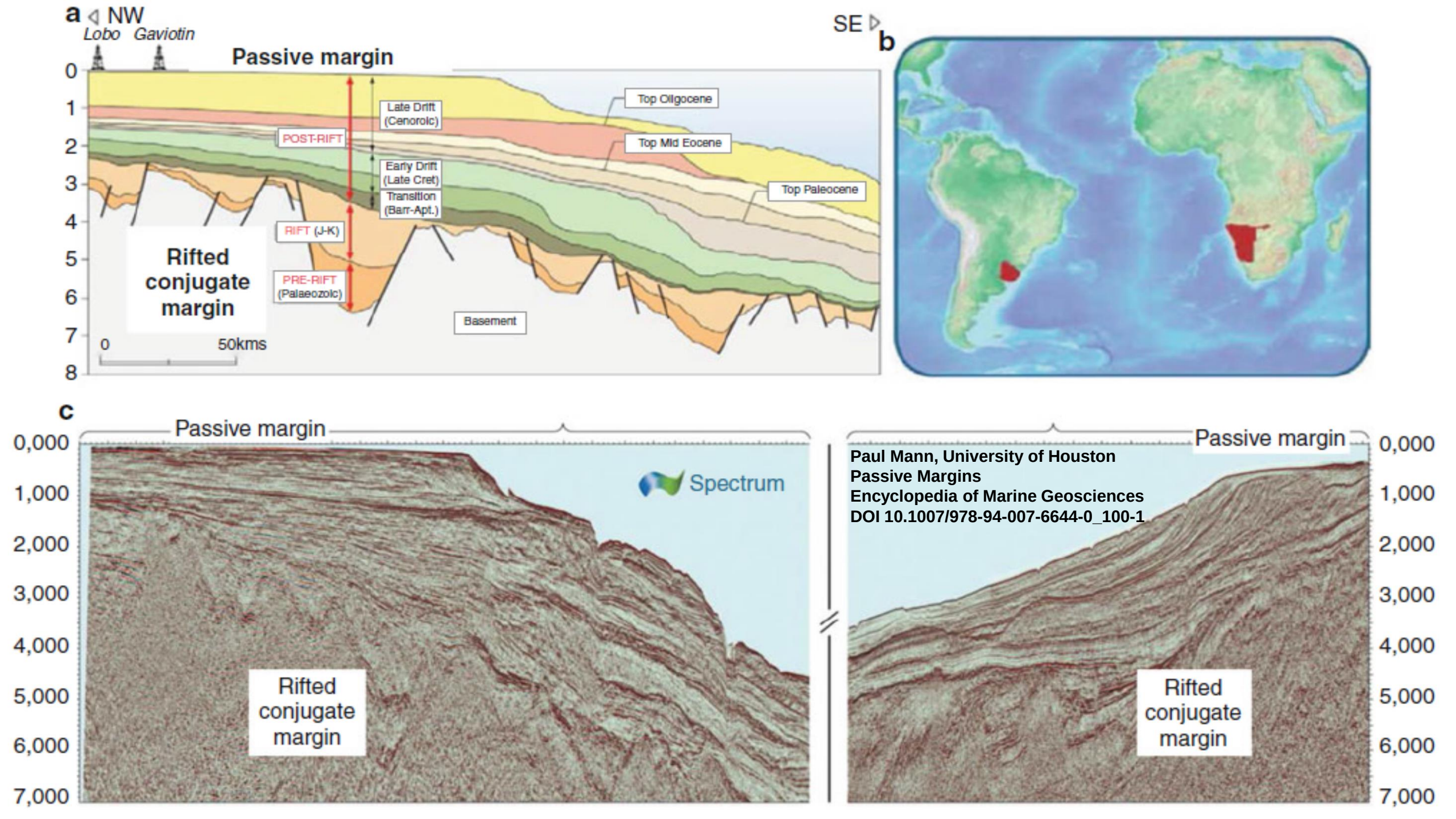
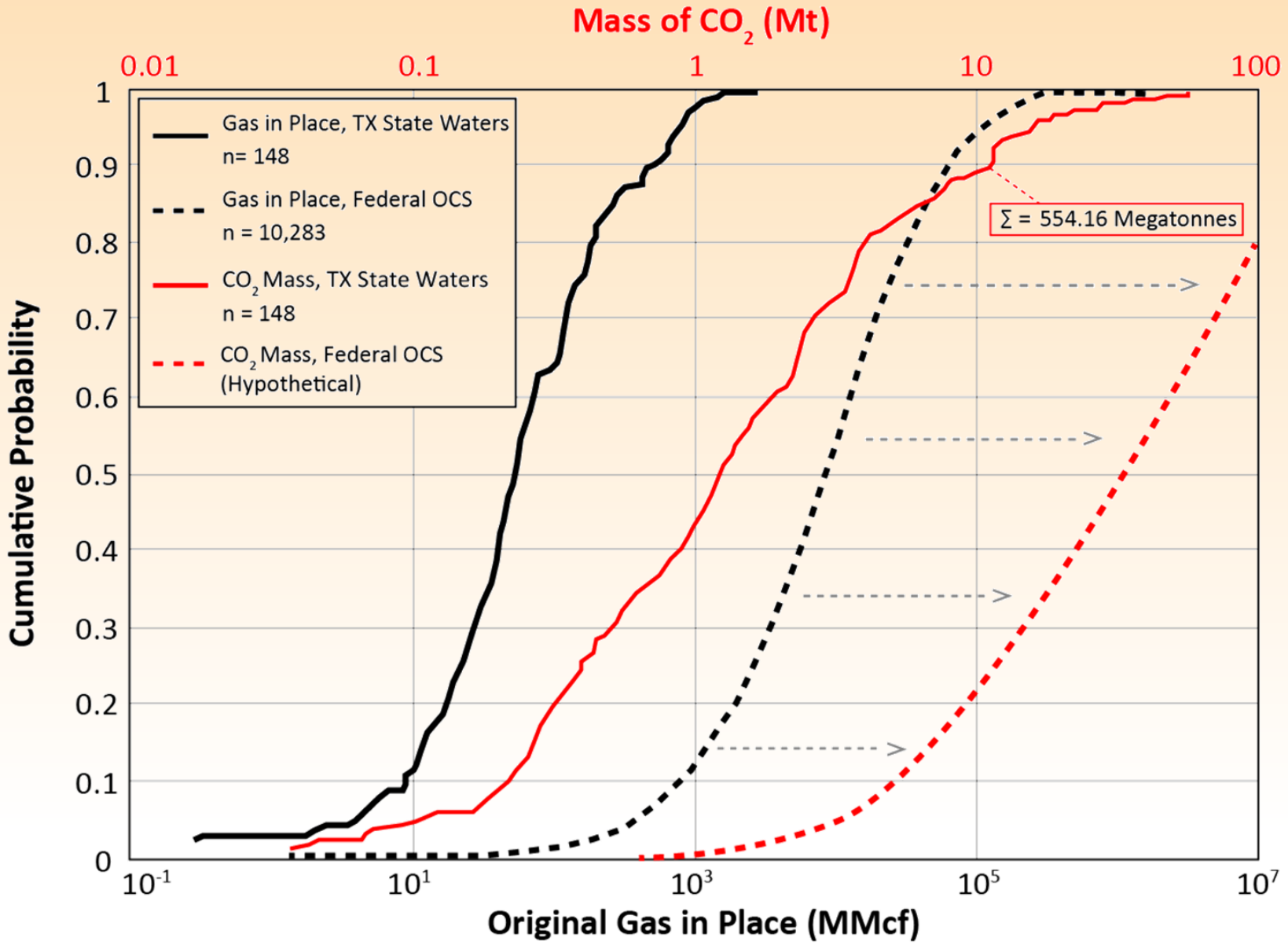


Paul Mann, University of Houston
Passive Margins
Encyclopedia of Marine Geosciences
DOI 10.1007/978-94-007-6644-0_100-1

Converting gas experience to CO_2 storage



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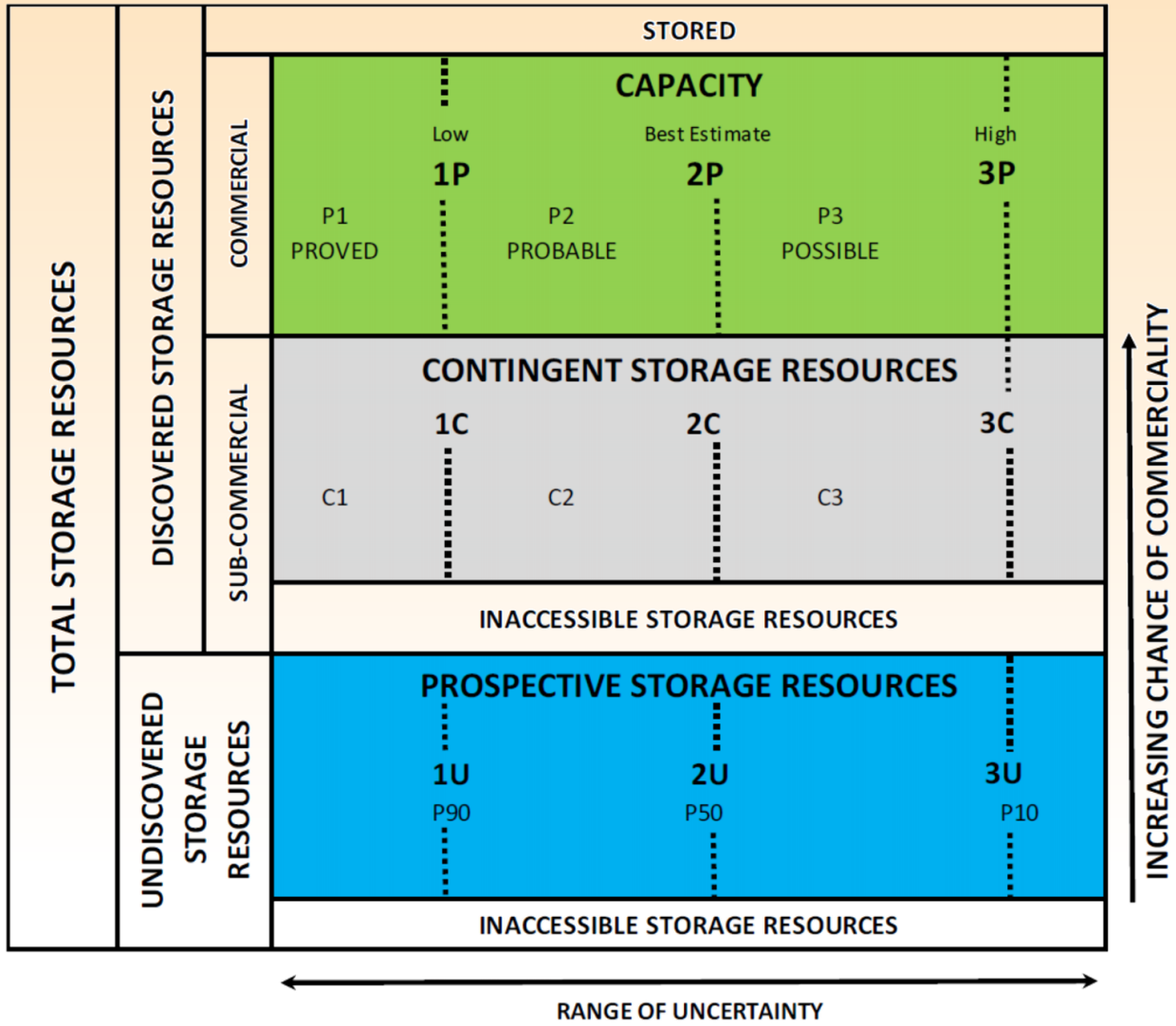
SPE Storage Resources Management System (SRMS)

- Bookable storage
- Uniformity, clarity, familiarity
- Similar to PRMS
  - SRMS exists
  - https://www.spe.org/industry/CO2-storage-resources-management-system.php
  - Guidelines currently being drafted

SPE SRMS Fig. 1.1



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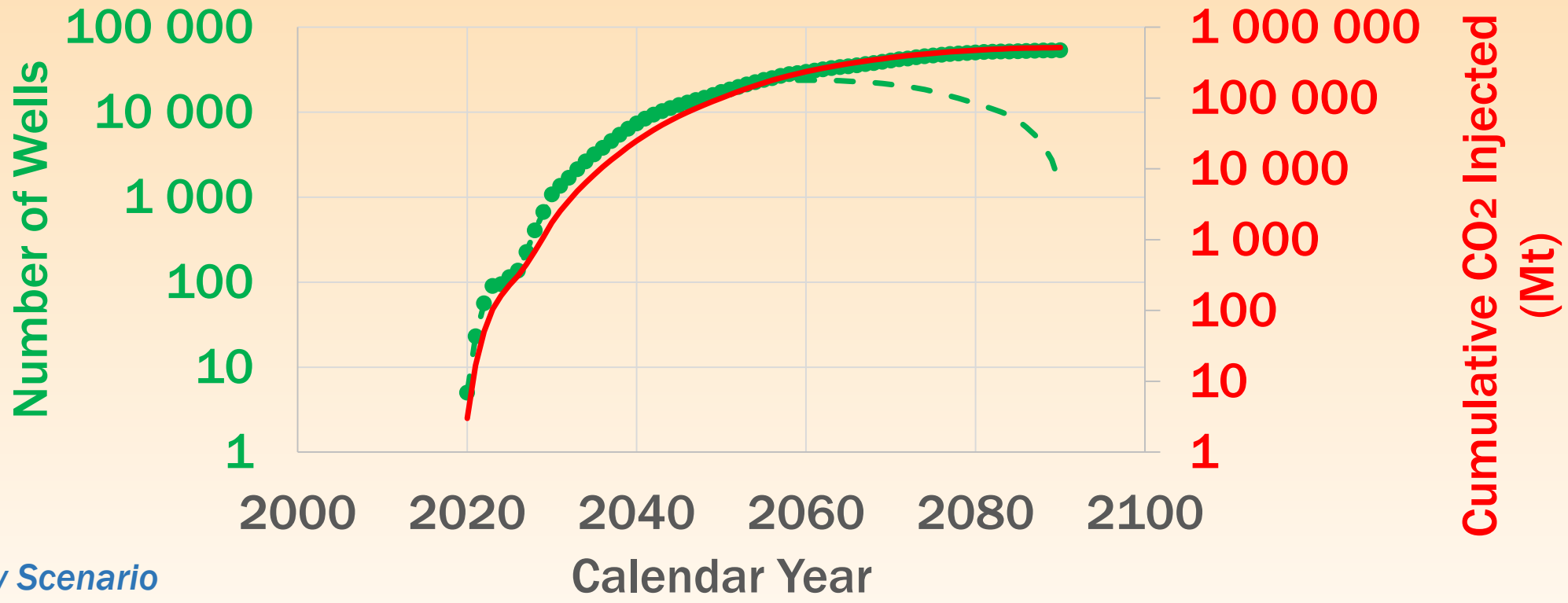
Gulf of Mexico – CO_2 well development scenario



Sky Scenario
9.5 Gtpa @ 2070

2020+ SCENARIO	Avg. Well Inj. Rate Mt/yr	Number of active wells in 2050	Incremental Rate in 2050 Mt/yr	Cumulative Mass in 2050 Mt CO_2	Comment
GoM	0.6	17,175	10,305	99,946	Unlikely one region will develop this aggressively; Incremental goal exceeded; Close to cumulative goal
GoM	0.41	17,175	7,000	67,891	Injection rate low, not cost effective; Cumulative goal not met

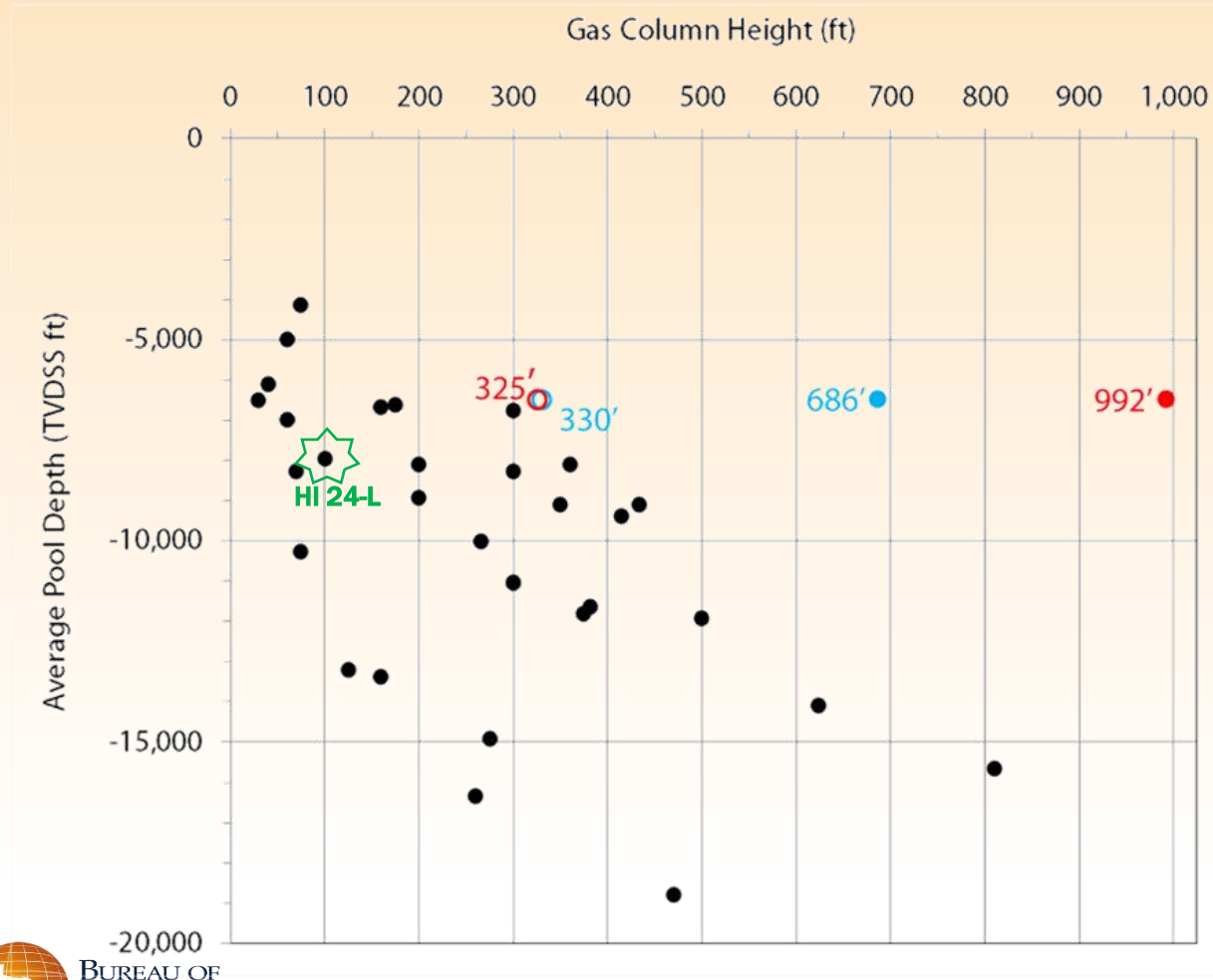
SUMMARY

- The global offshore continental margins represent the best near-term opportunity for Gigaton-scale CCS.
  - Thematic and country opportunities will vary with asset base, but broad similarities exist and resource base is fairly equitable.
  - Research need is to understand impact of Gt-scale pressure perturbation, especially faults.
- CC(U)S perspectives benefit from knowing your petroleum system.
- CO_2 storage is a bookable resource for attracting investment and evaluating project economics.
- CCS can deliver needed scales on needed time frames.
  - Offshore CCS can happen in a lot of places globally, but is not required everywhere to be effective globally.

Backup slides for discussion

Faults may control ultimate storage capacity

Estimated Gas Column Heights for the Fault A Structure vs. Regional Data from Seni *et al.*, 1997 TX

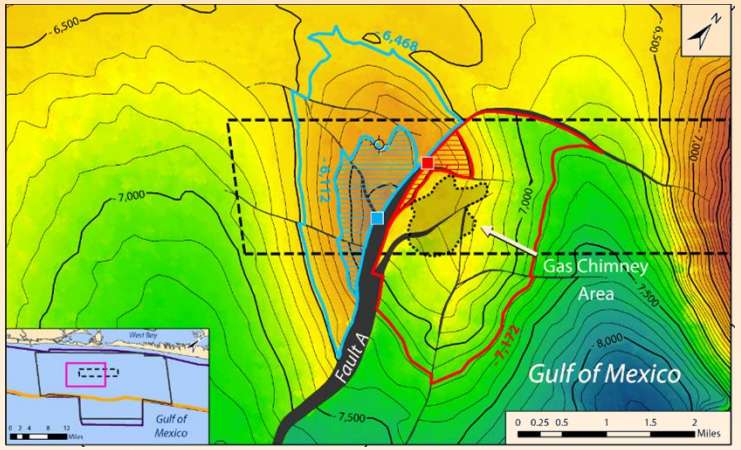


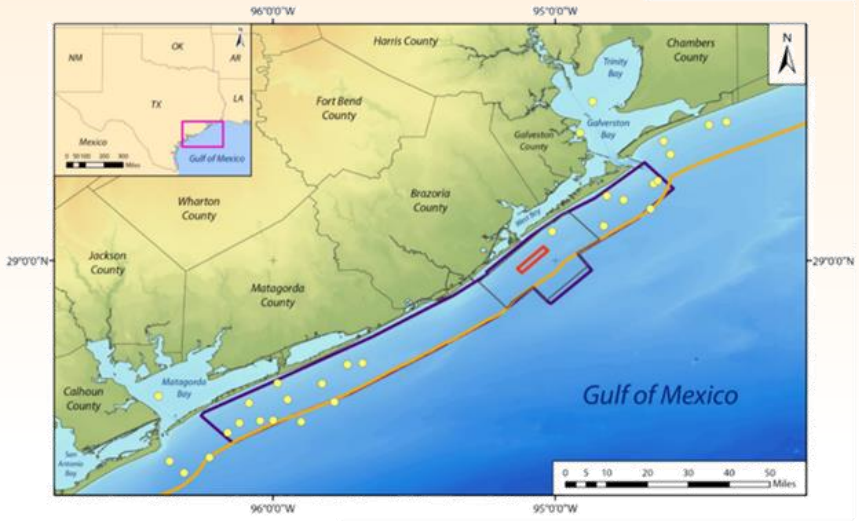
Key to Chart Symbols

- Seni et al., 1997
- Fill-to-Spill: FW
- Fill-to-Spill: HW
- Fault Seal Membrane: FW
- Fault Seal Membrane: HW

Key to Map Symbols

- Accumulation Data Locations from Seni *et al.*, 1997





*Average pool depth for San Luis Pass = –6,477 TVDSS ft

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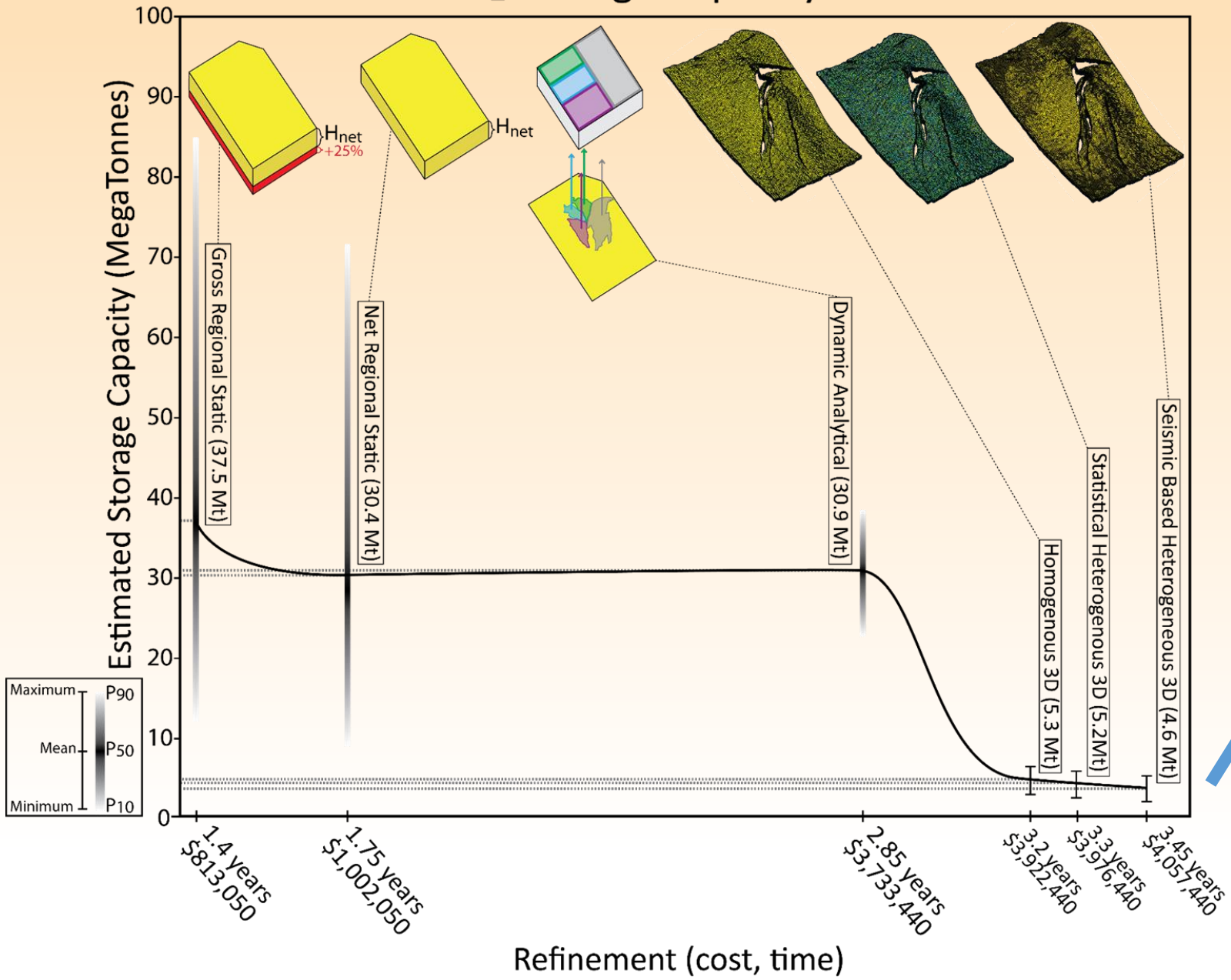
Johnathon Osmond
MS Thesis, 2016

Estimated CO_2 Storage Capacity vs. Refinement



Stacked Storage

Petroleum System:
Faults
Net sand
Column height
Pressure

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