

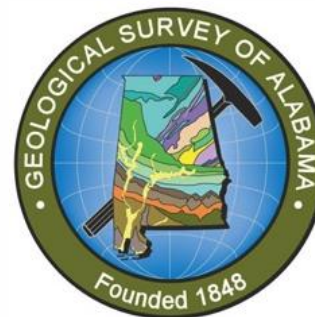
**SOUTHEAST OFFSHORE STORAGE RESOURCE ASSESSMENT (SOSRA)**

**PROJECT NUMBER: DE-FE0026086**

# **OFFSHORE CO<sub>2</sub> STORAGE POTENTIAL OF THE EASTERN GULF OF MEXICO**

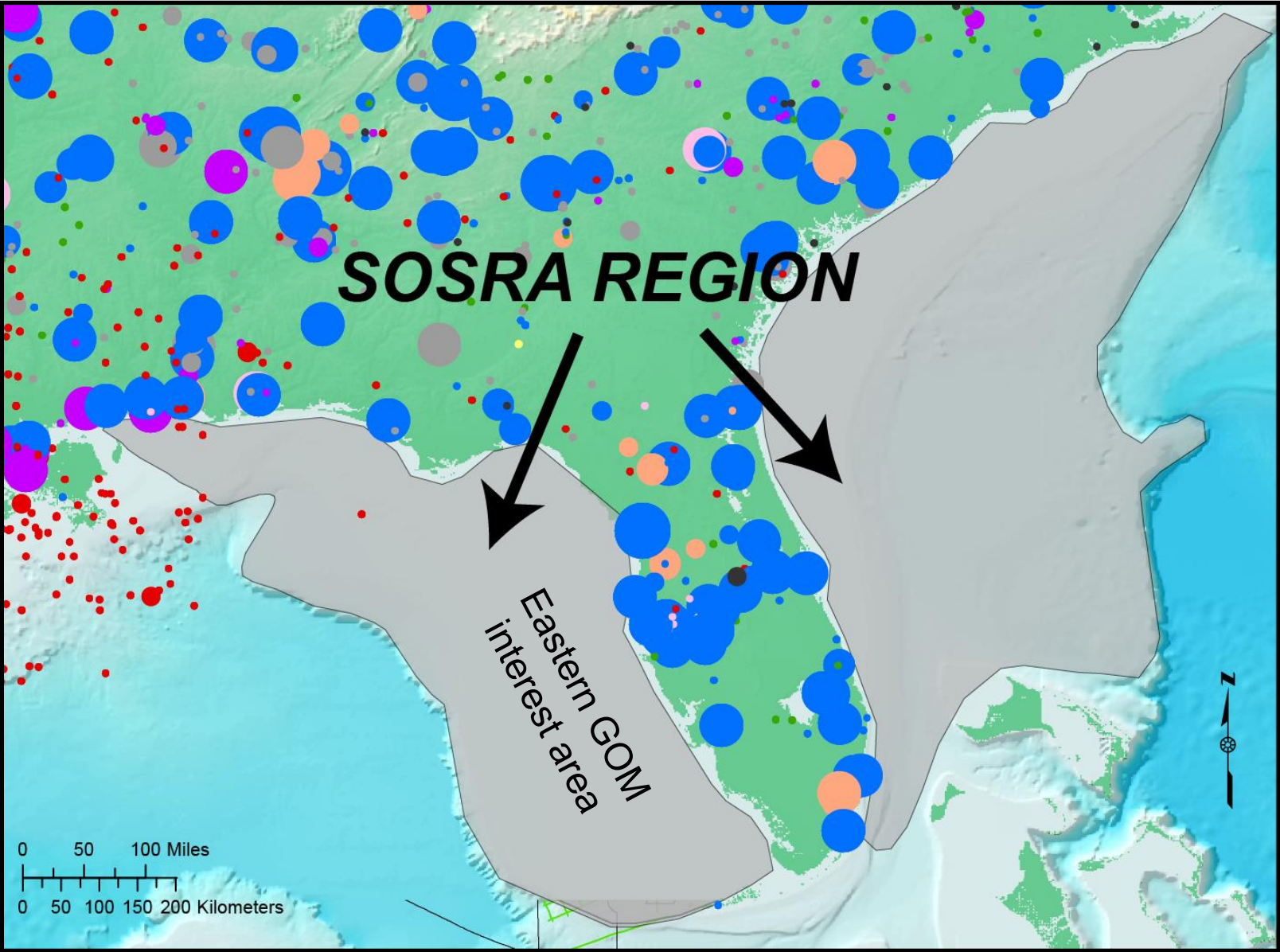
Jack C. Pashin, Avinash Chandra, Paul Charbonneau, and Jenny Meng, Oklahoma State University

Denise J. Hills, Guohai Jin, and Marcella R. Redden, Geological Survey of Alabama

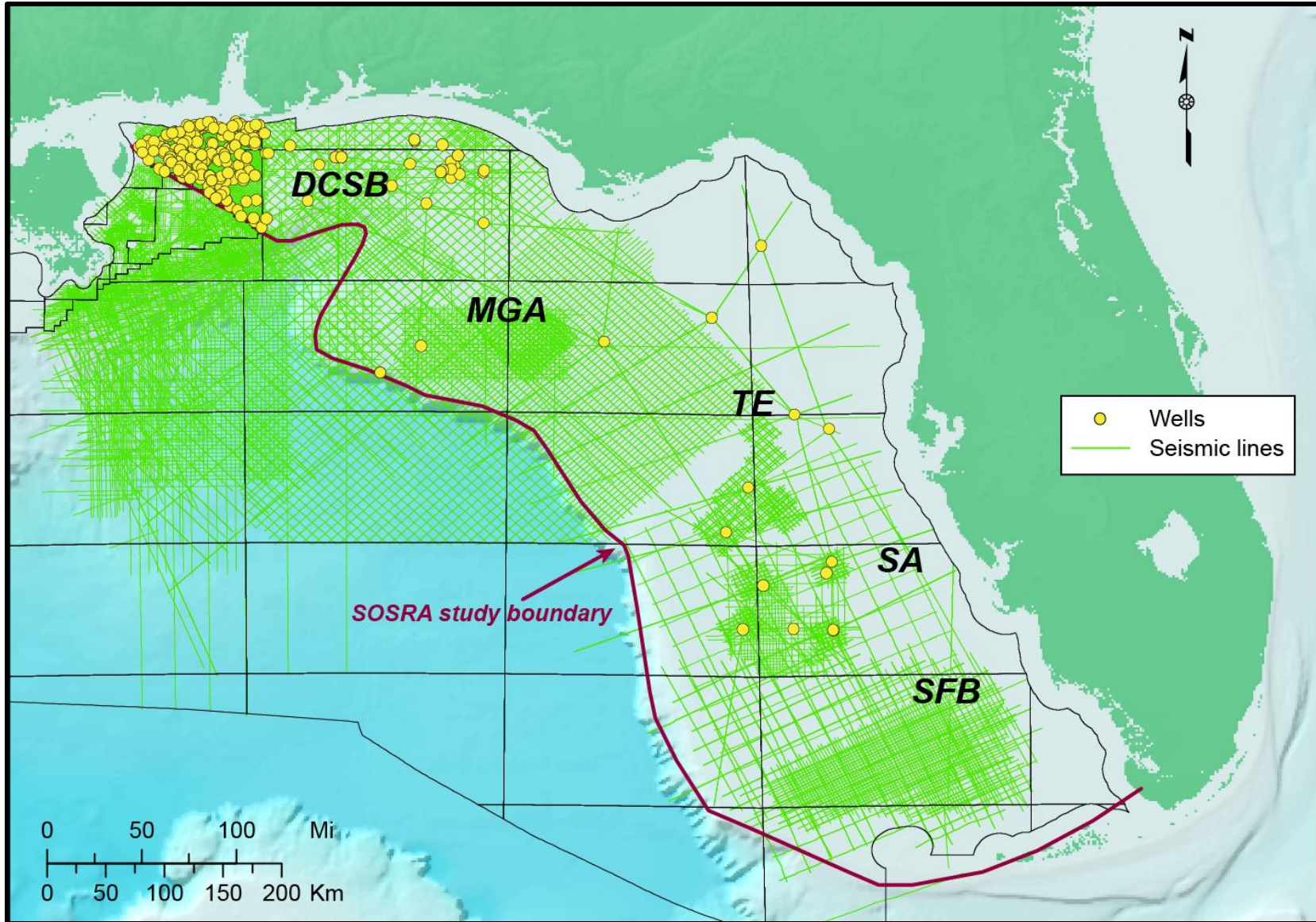


Carbon Management Technology Conference  
Hilton Americas, Houston, TX  
July 17-20, 2017

# SUMMARY – SOSRA



# STUDY AREA AND SUBREGIONS



**DCSB** DeSoto Canyon Salt Basin

**MGA** Middle Ground Arch

**TE** Tampa Embayment

**SA** Sarasota Arch

**SFB** South Florida Basin

*This material is based upon work supported by the U.S. Department of Energy National Energy Technology Laboratory.*

*Cost share and research support are provided by the Project Partners and an Advisory Committee*

# CRETACEOUS FACIES

SOSRA REGION

NETL EOR TEST  
SECARB ANTHROPOGENIC TEST

SW

NE

~100 mi (160 km)

**Continental margin**

**Citronelle area**

Lower Cretaceous  
reef trend

Platform lagoon

Shore zone

Coastal plain

Sea Level

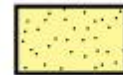
Foreslope

**Pine Island, James, and  
Rodessa carbonates**

**Donovan sand**



Limestone



Aggradational sandstone



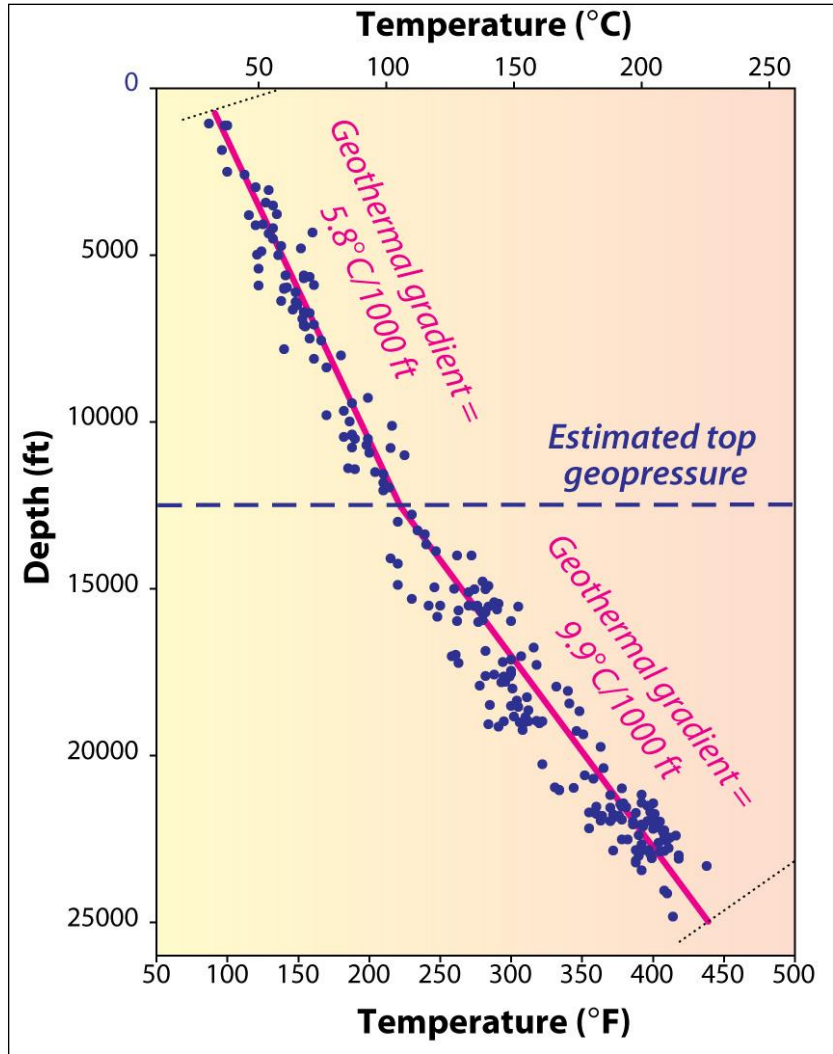
Variegated shale

1,000 ft  
(300 m)

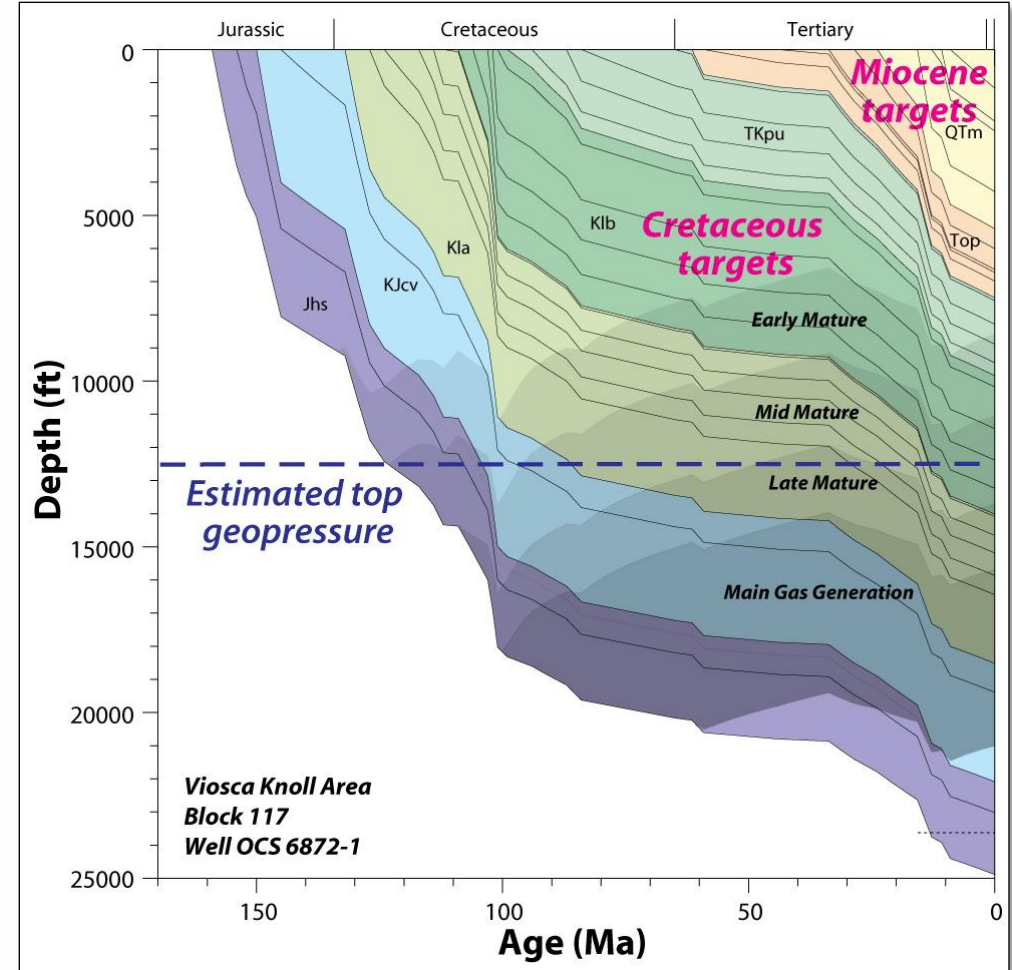
Pashin et al. (2014)

# GEOTHERMAL AND BURIAL DATA, DCSB

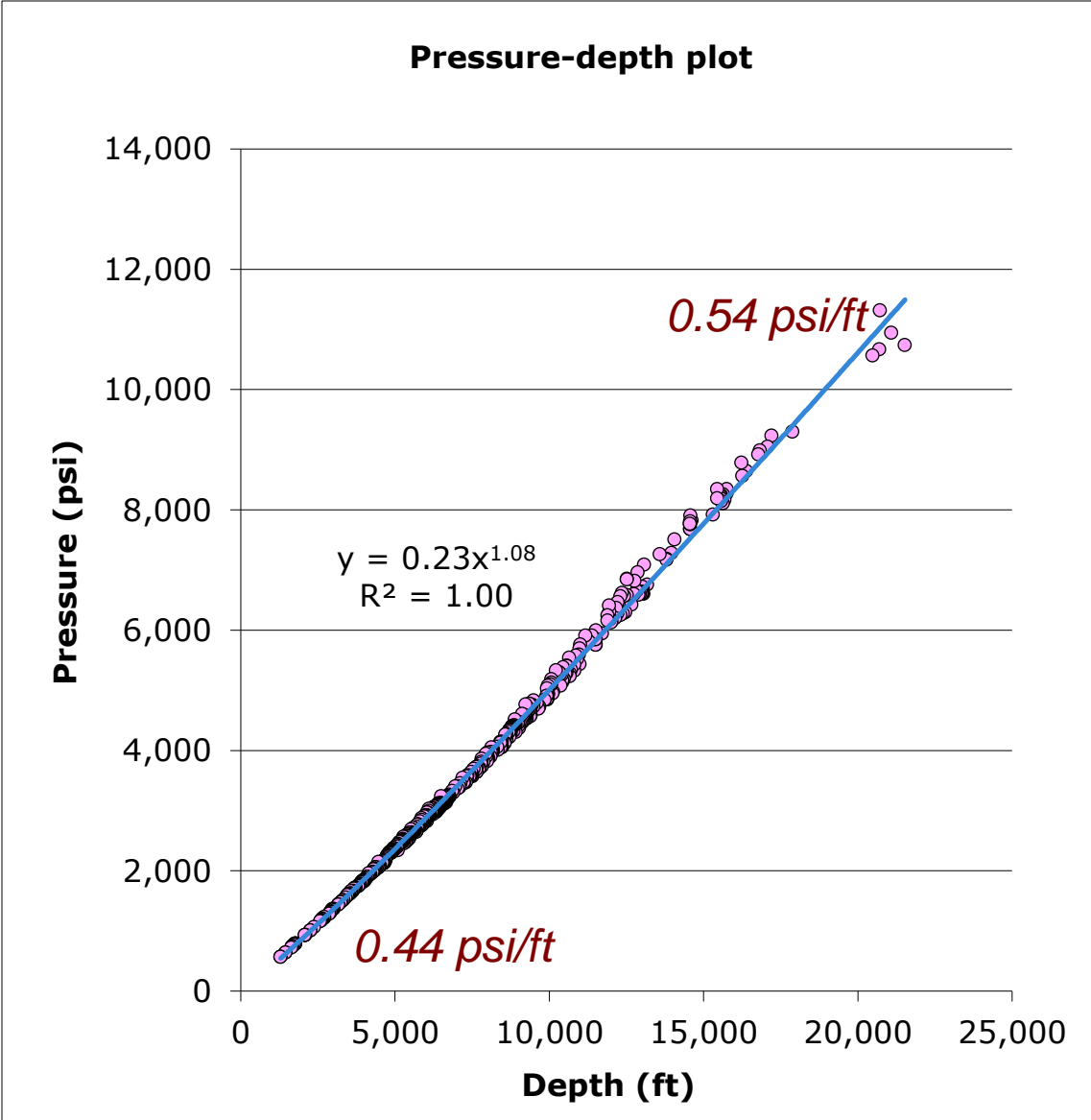
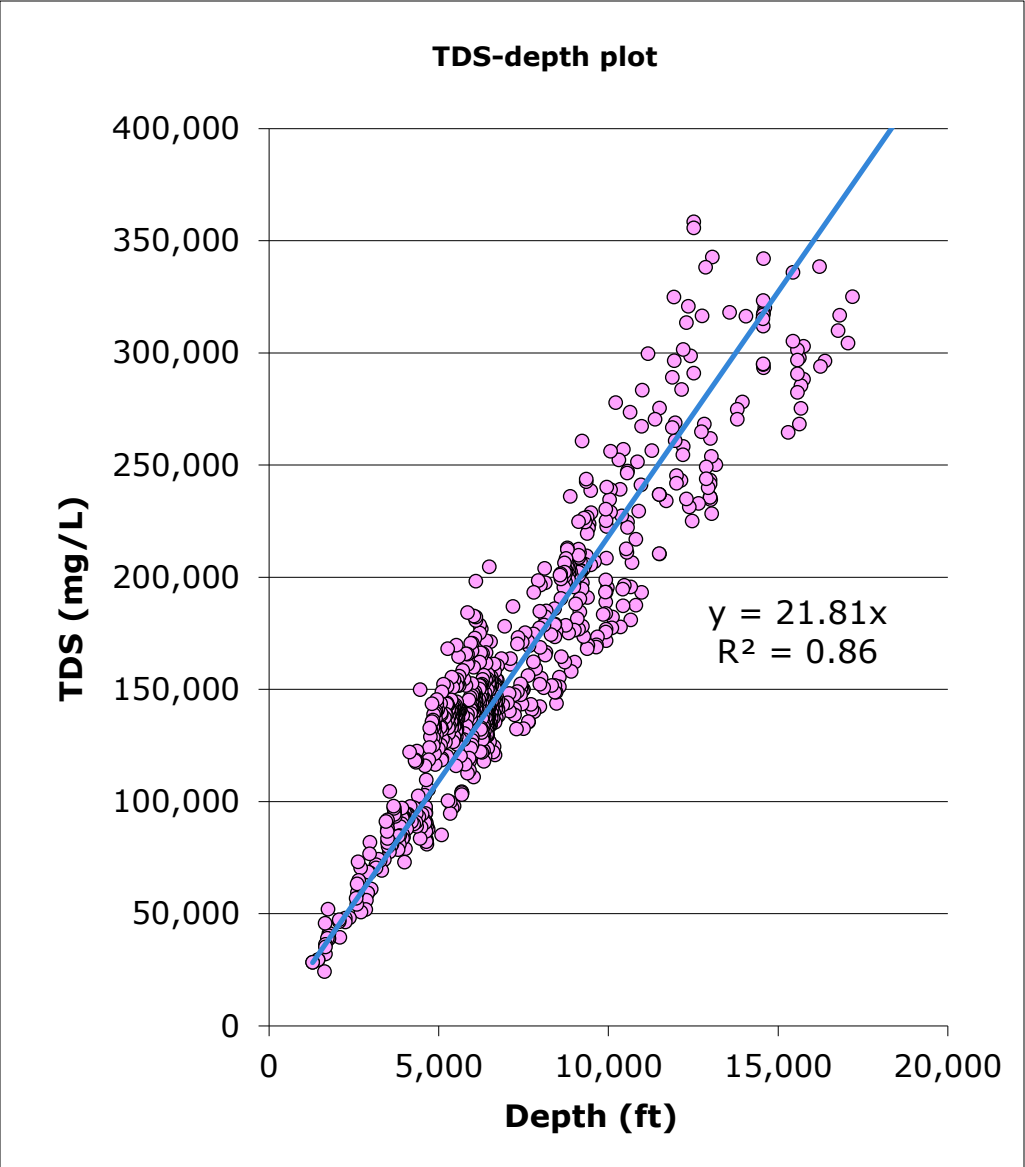
## Temperature-depth profile



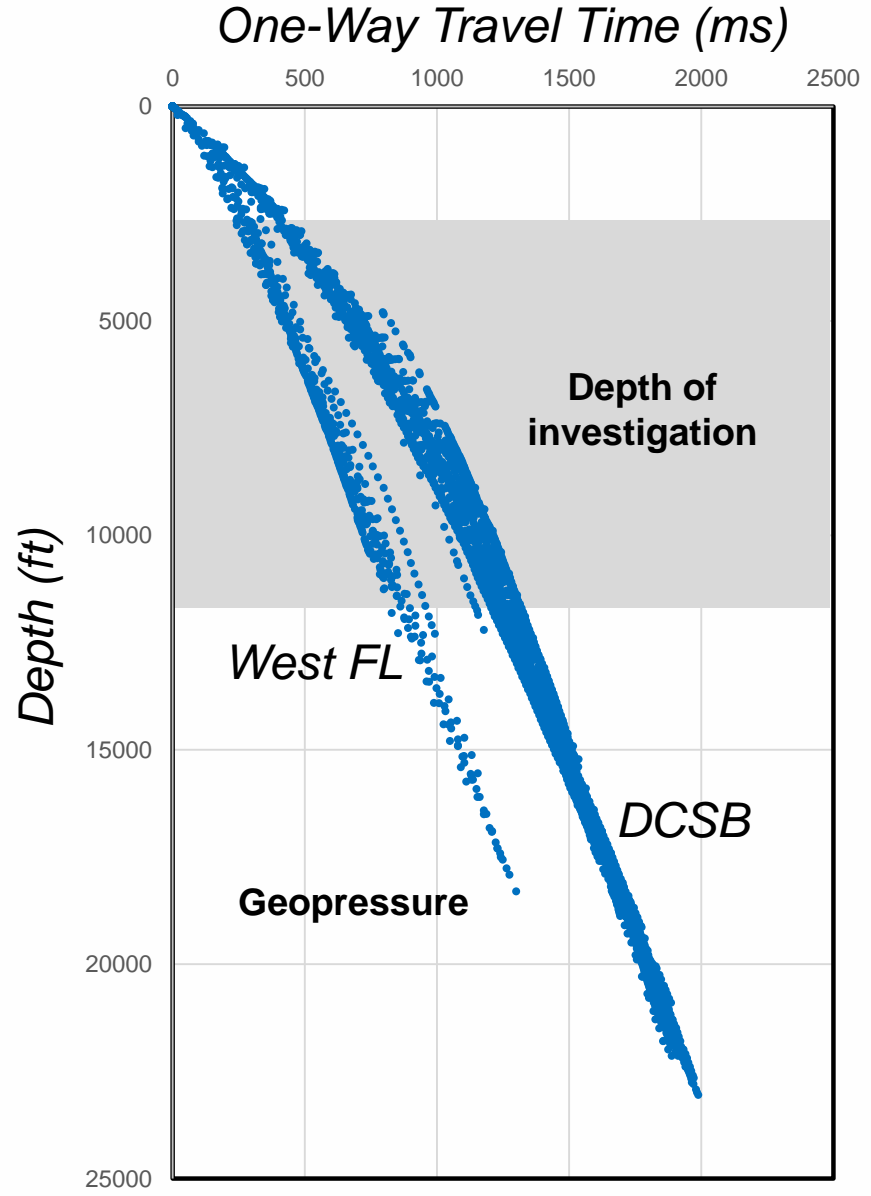
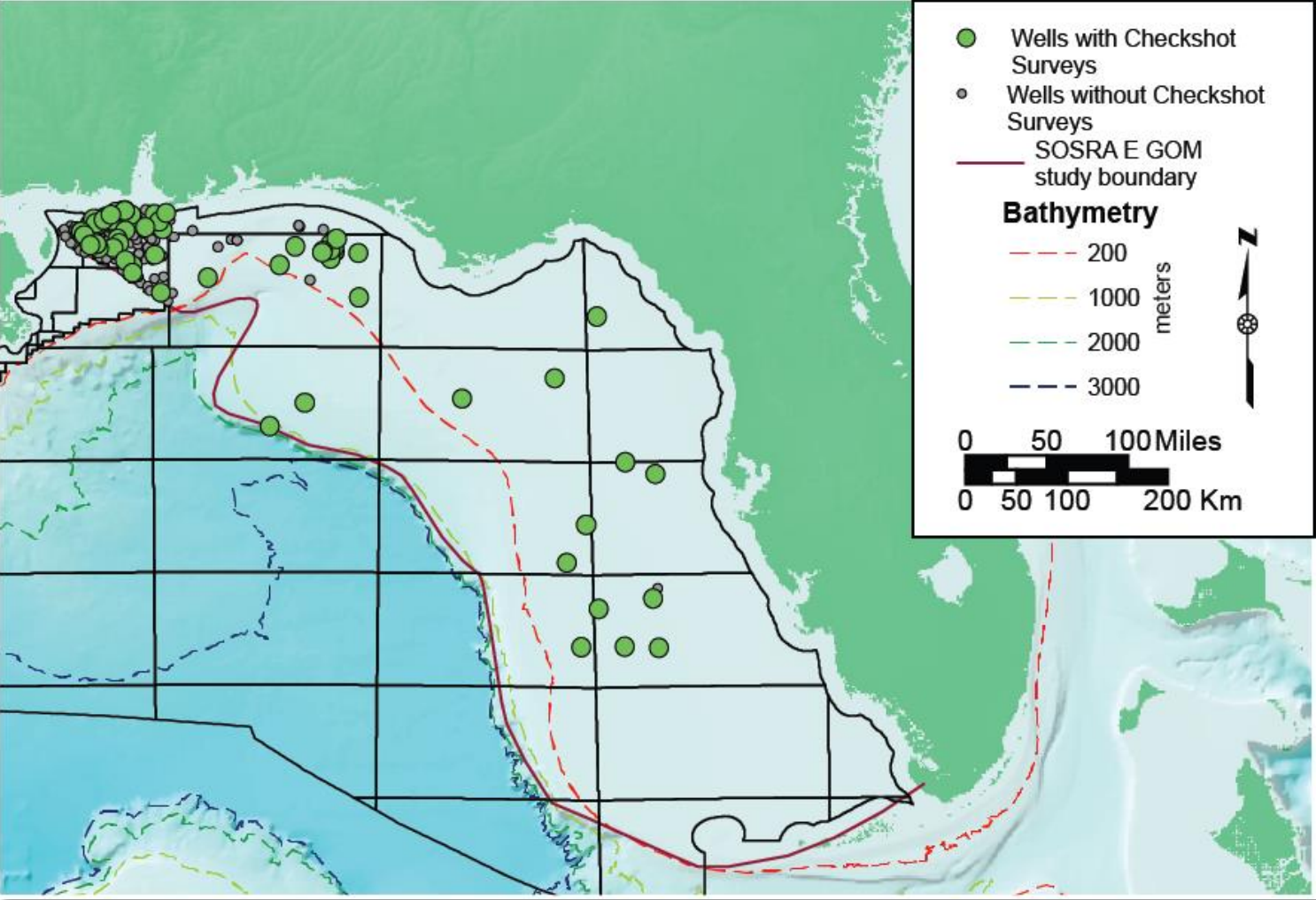
## Burial history curve



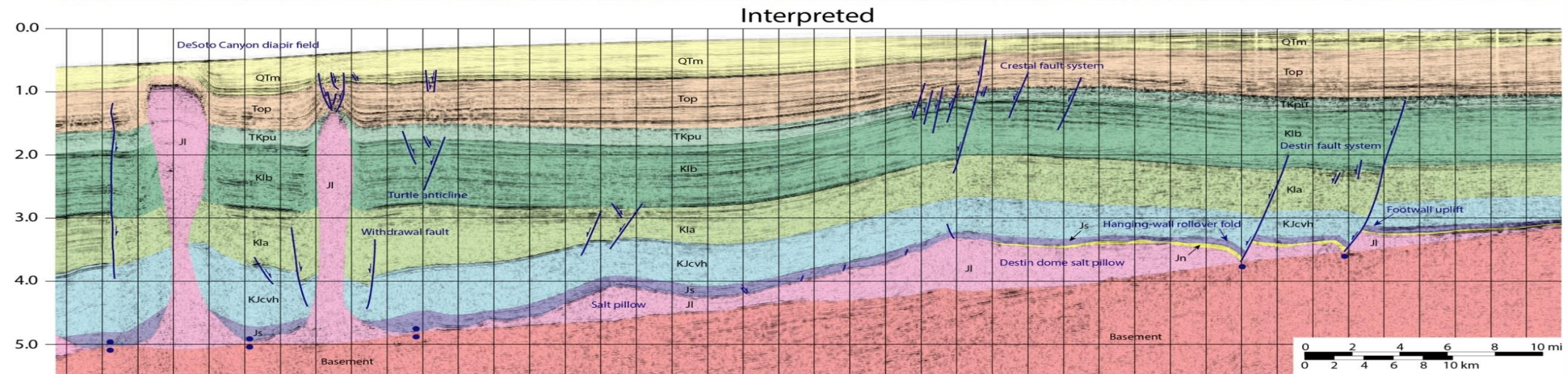
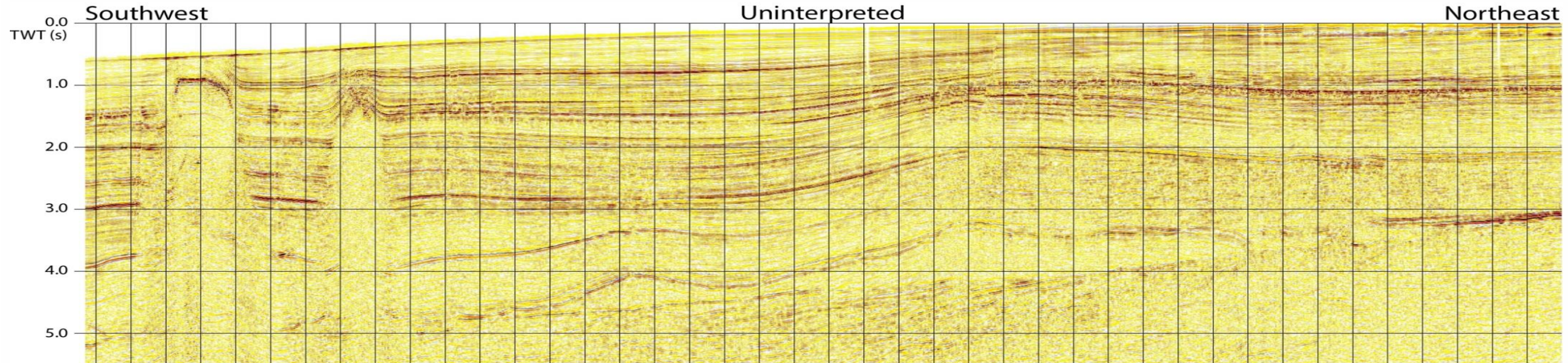
# NORMAL BRINE, PRESSURE GRADIENTS, ONSHORE EASTERN GULF



# SEISMIC VELOCITY SURVEYS



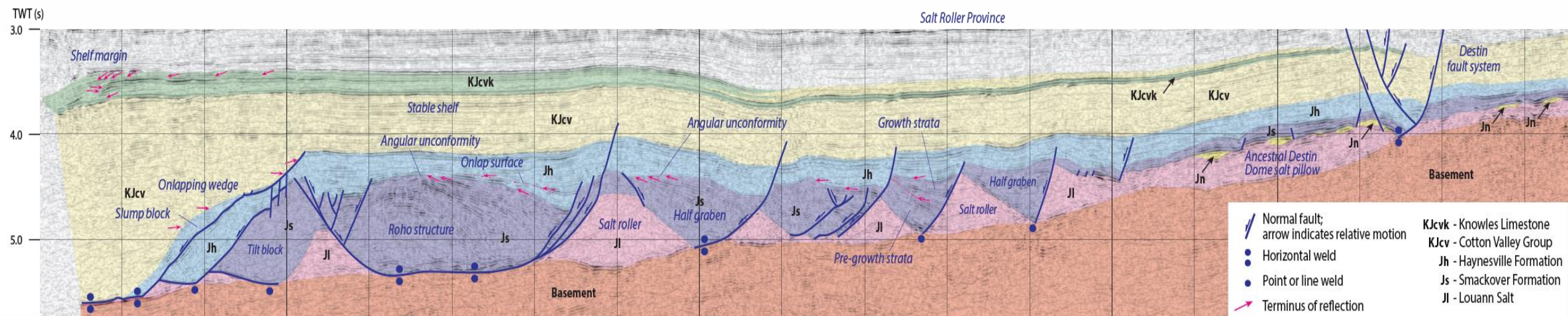
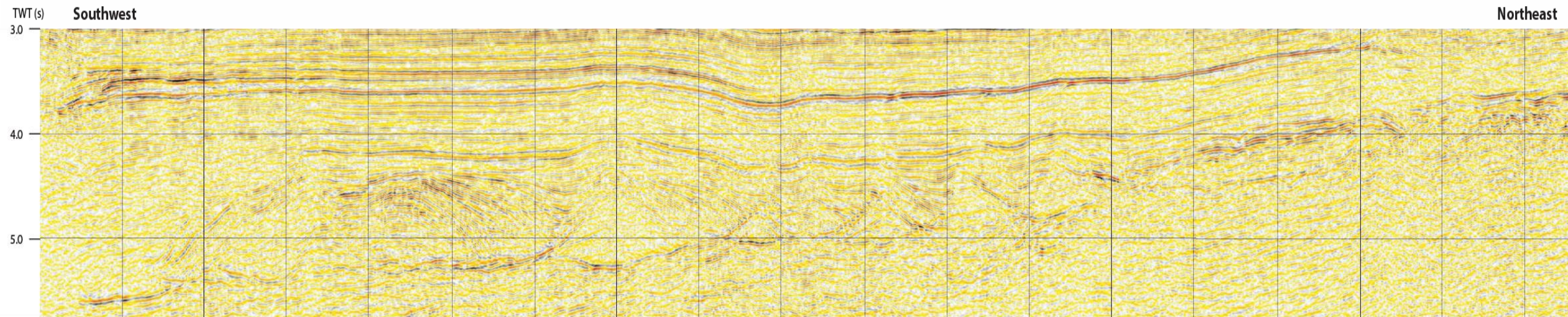
# DCSB DESTIN DOME





# DCSB SALT ROLLER PROVINCE

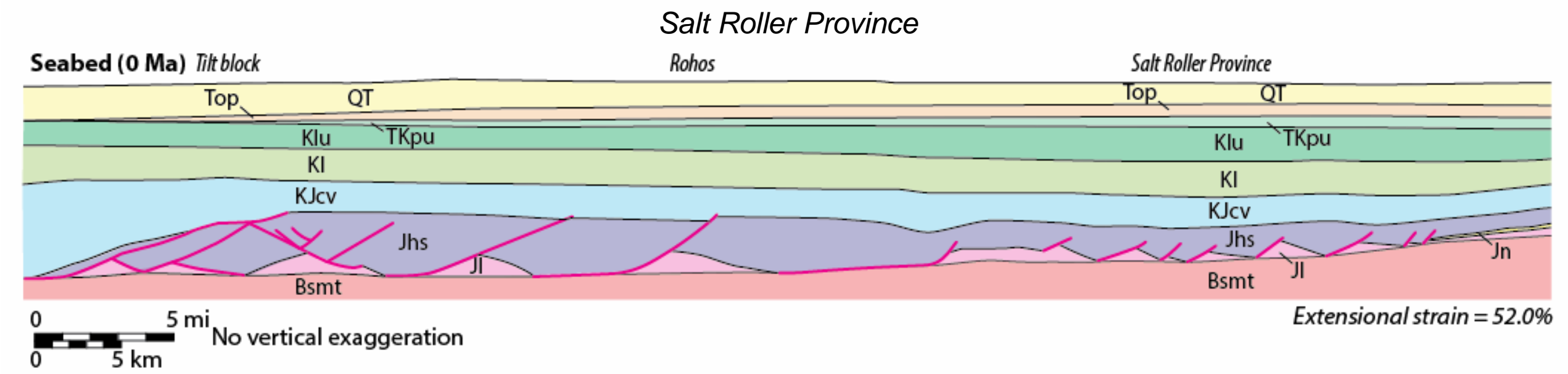
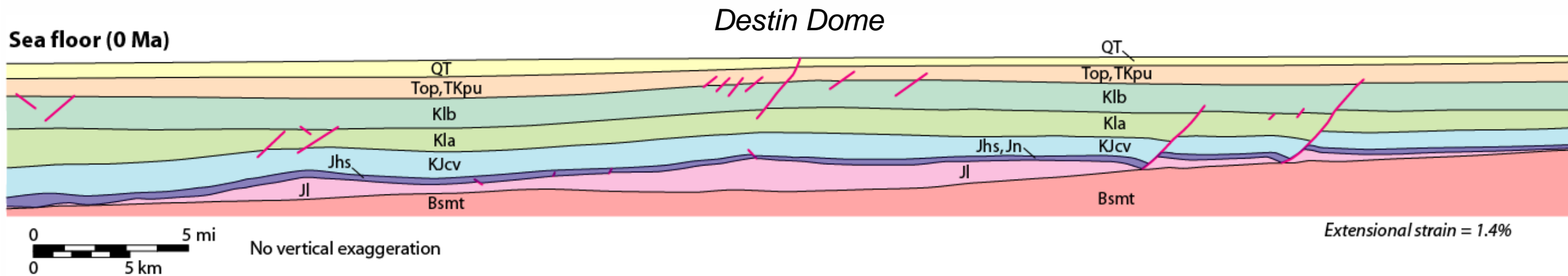
C. Destin Fault System-salt roller province transect (Line d8519)



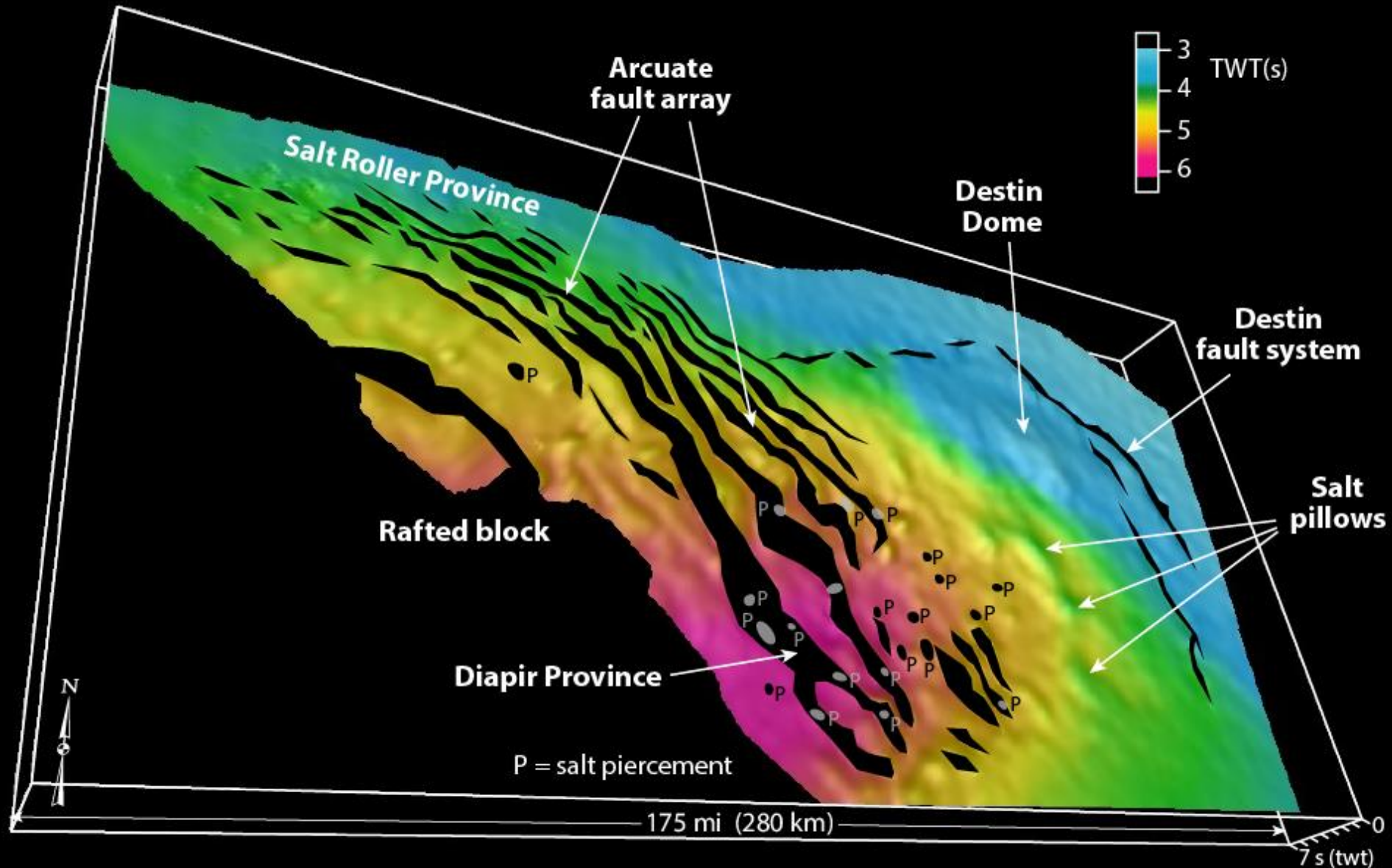
- Normal fault; arrow indicates relative motion
- Horizontal weld
- Point or line weld
- Terminus of reflection
- KJcvk** - Knowles Limestone
- KJcv** - Cotton Valley Group
- Jh** - Haynesville Formation
- Js** - Smackover Formation
- JI** - Louann Salt



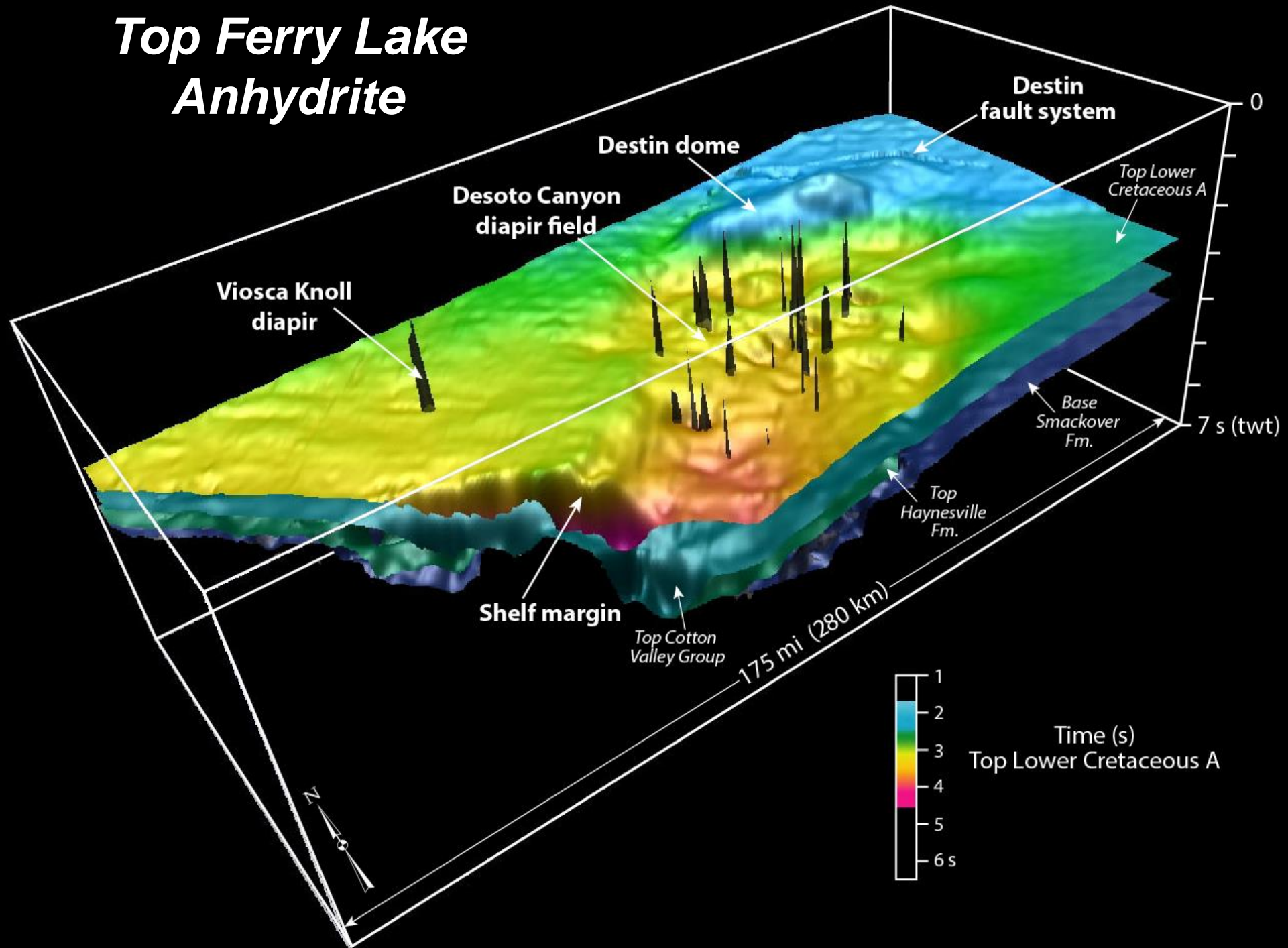
# DEPTH CONVERTED STRUCTURAL CROSS SECTIONS, DESOTO CANYON SALT BASIN



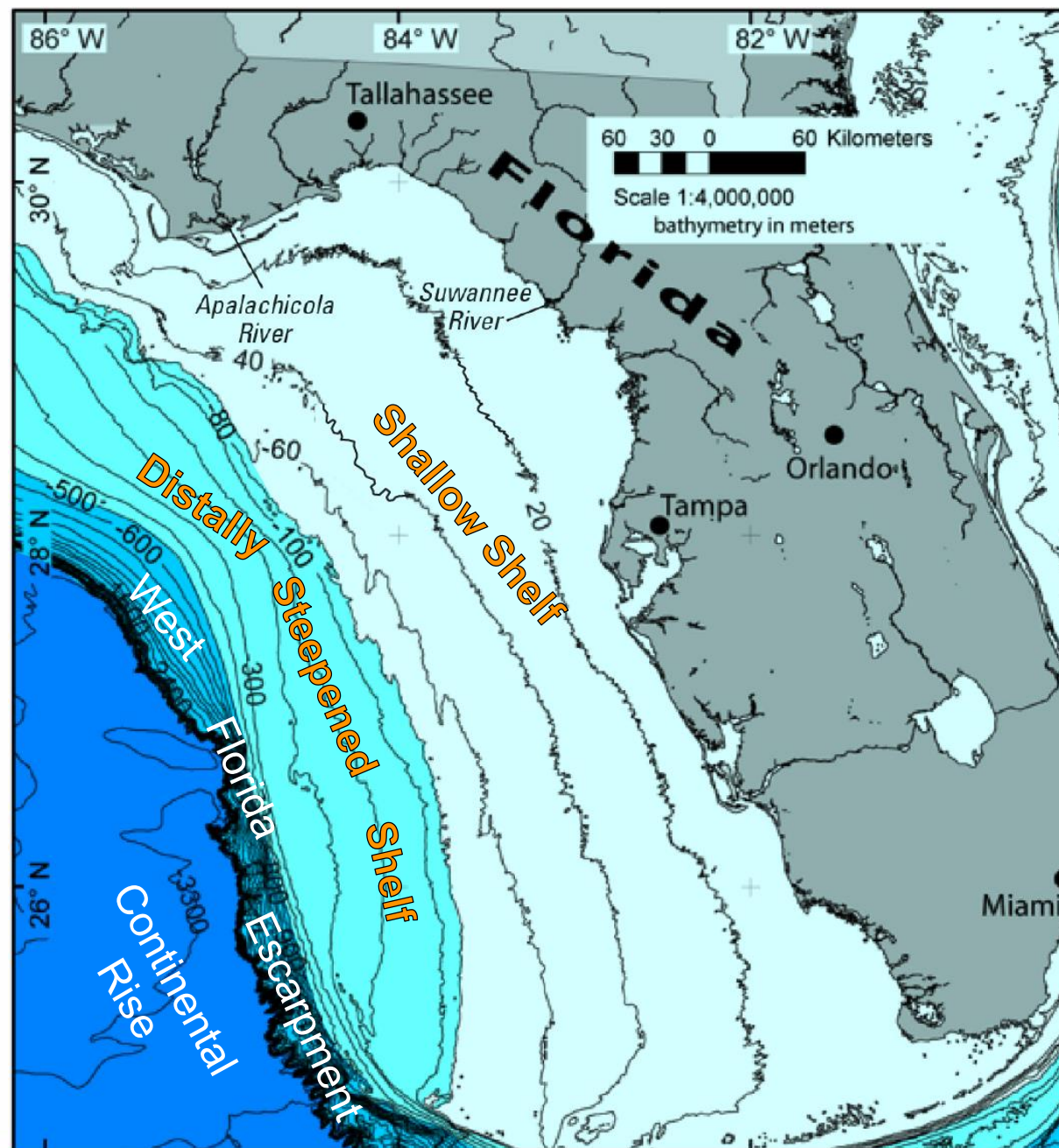
# Top Smackover Limestone



# Top Ferry Lake Anhydrite

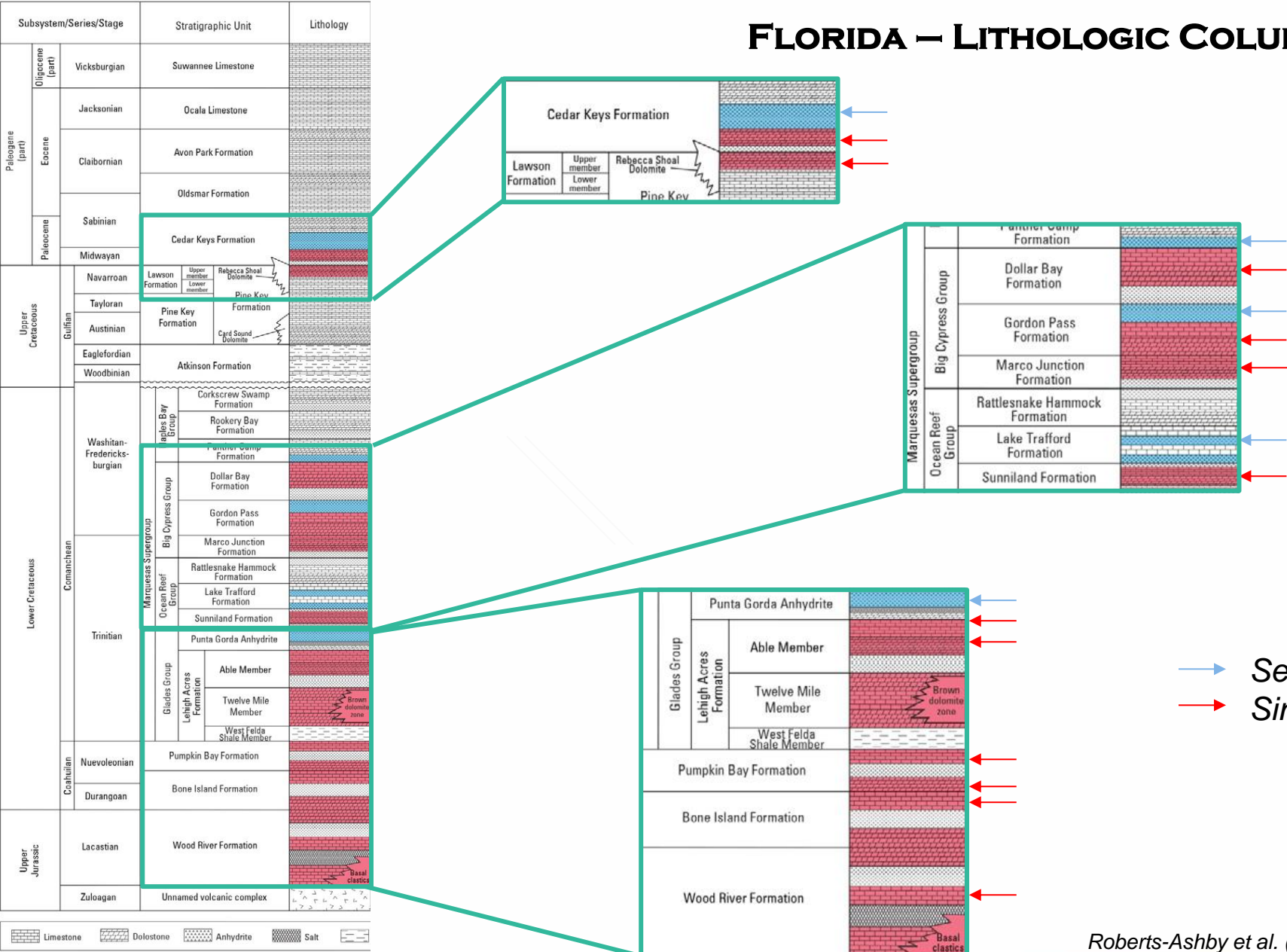


## WEST FLORIDA SHELF BATHYMETRY



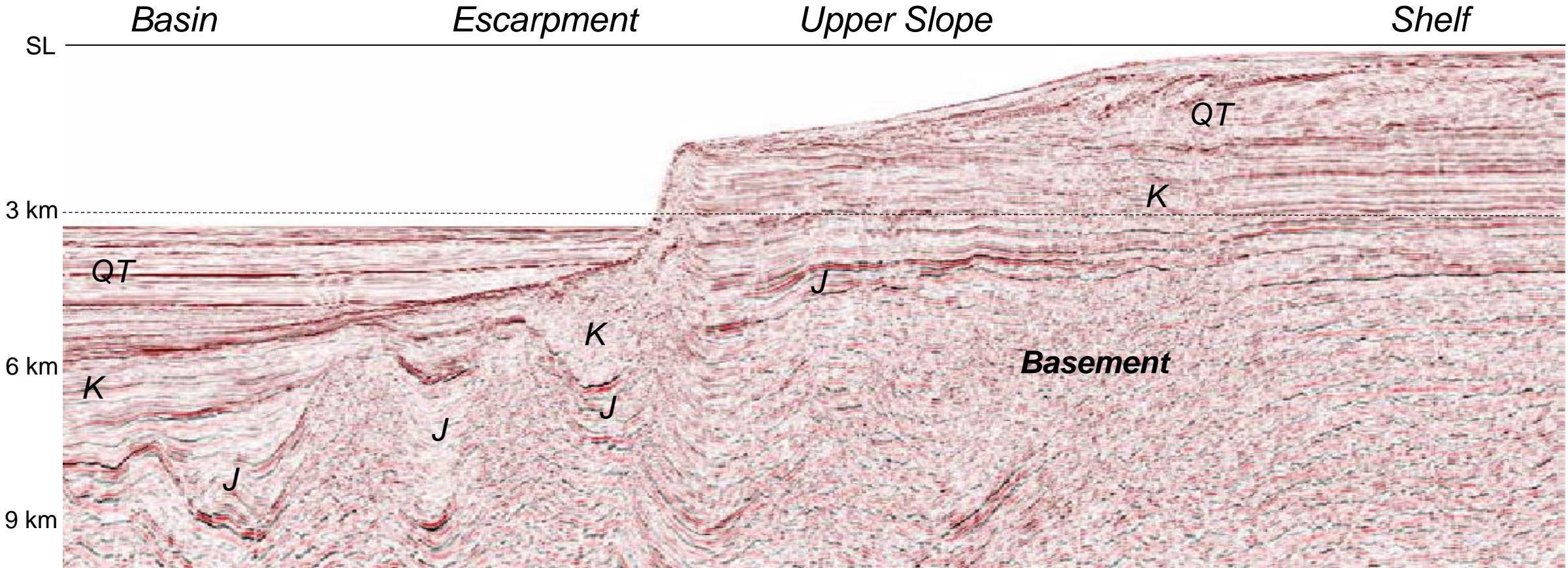
- Broad, shallow, region near shore (NE of 80 m contour).
- Distally steepening outer shelf leading to West Florida Escarpment.

# FLORIDA – LITHOLOGIC COLUMN



Roberts-Ashby et al. (2015)

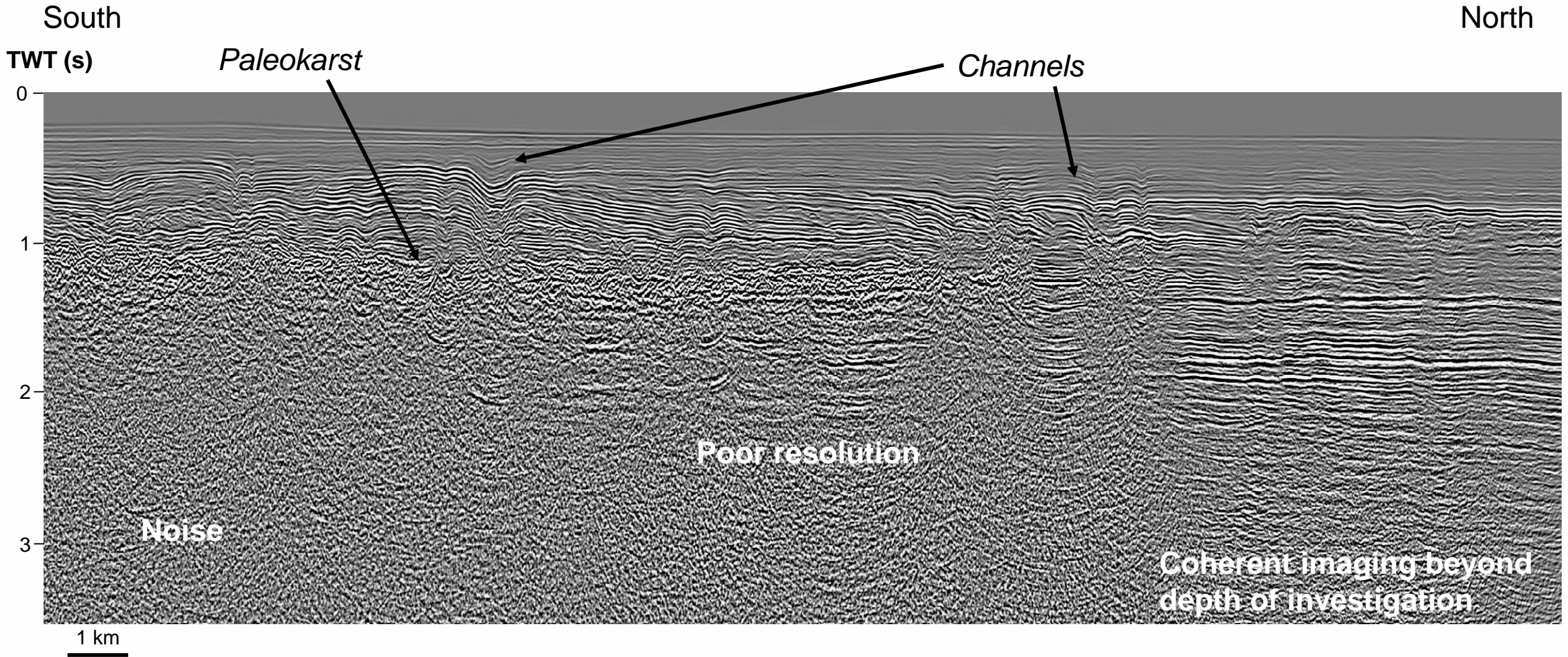
# WEST FLORIDA SHELF-ESCARPMENT



VE ~4x

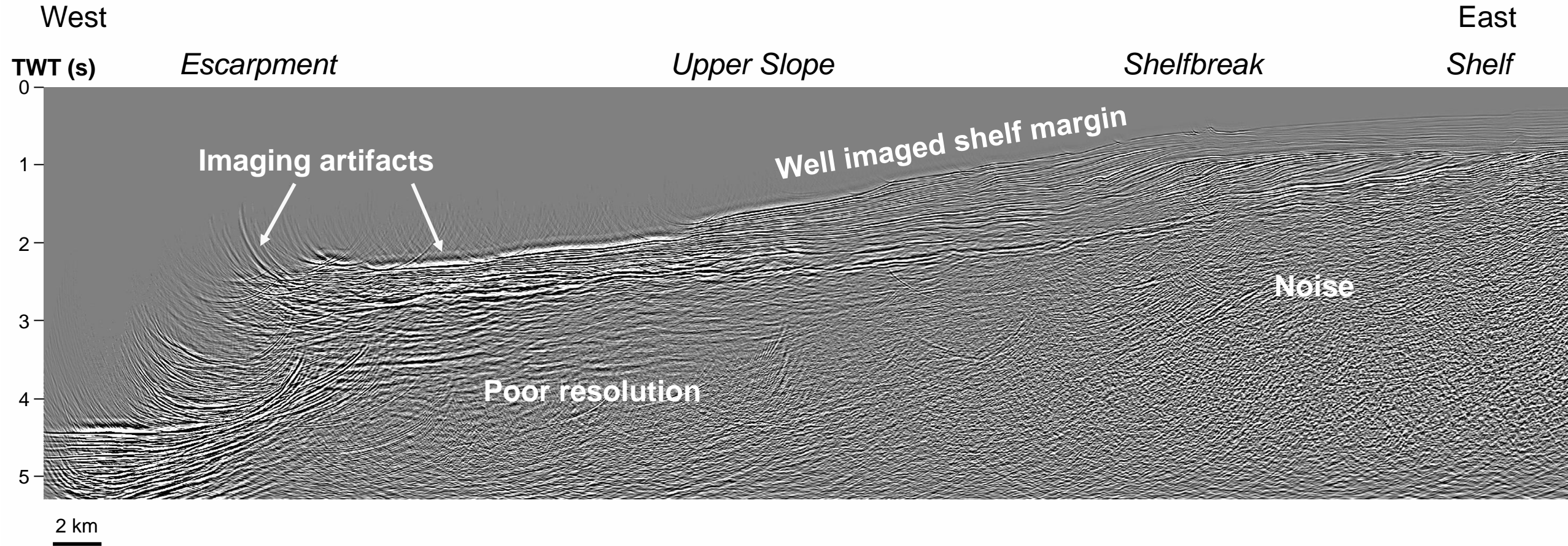
Roberts and Erickson (2009)

# DATA QUALITY – WEST FLORIDA

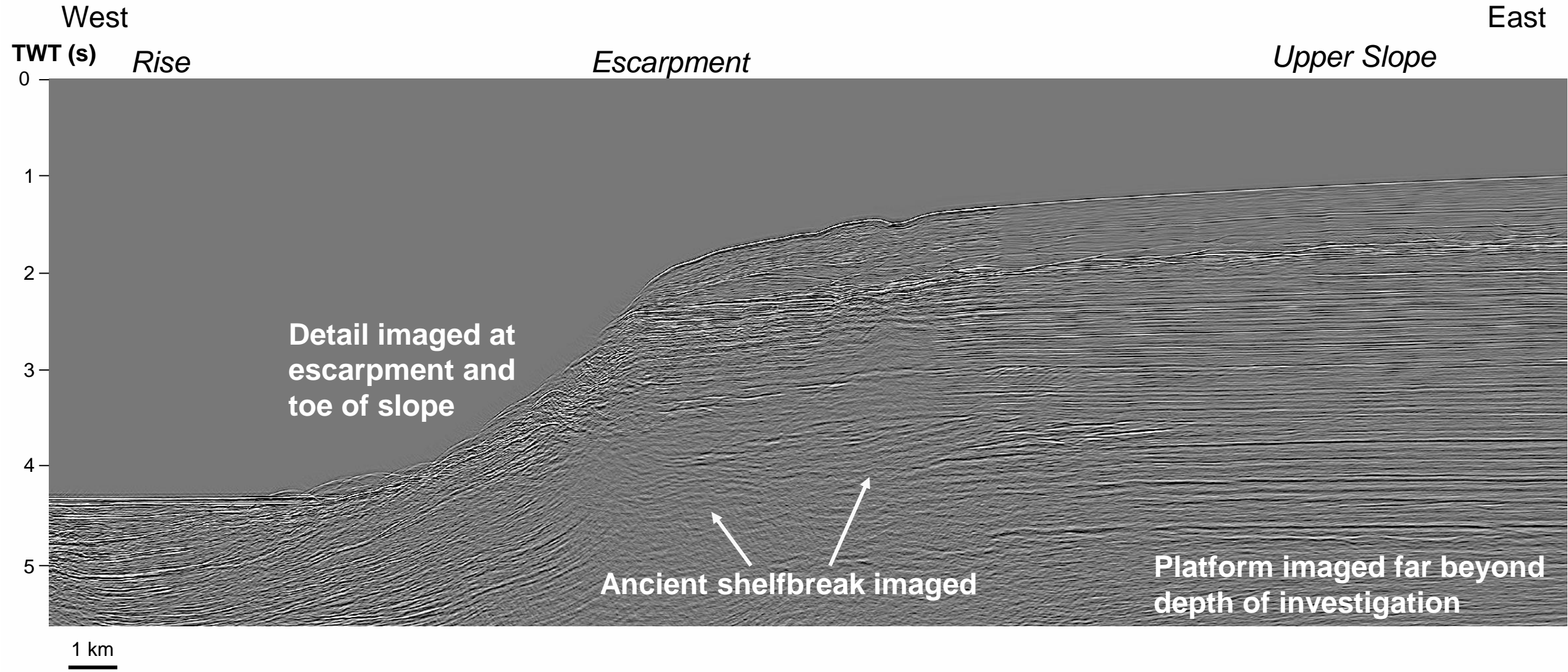




# DATA QUALITY – WEST FLORIDA

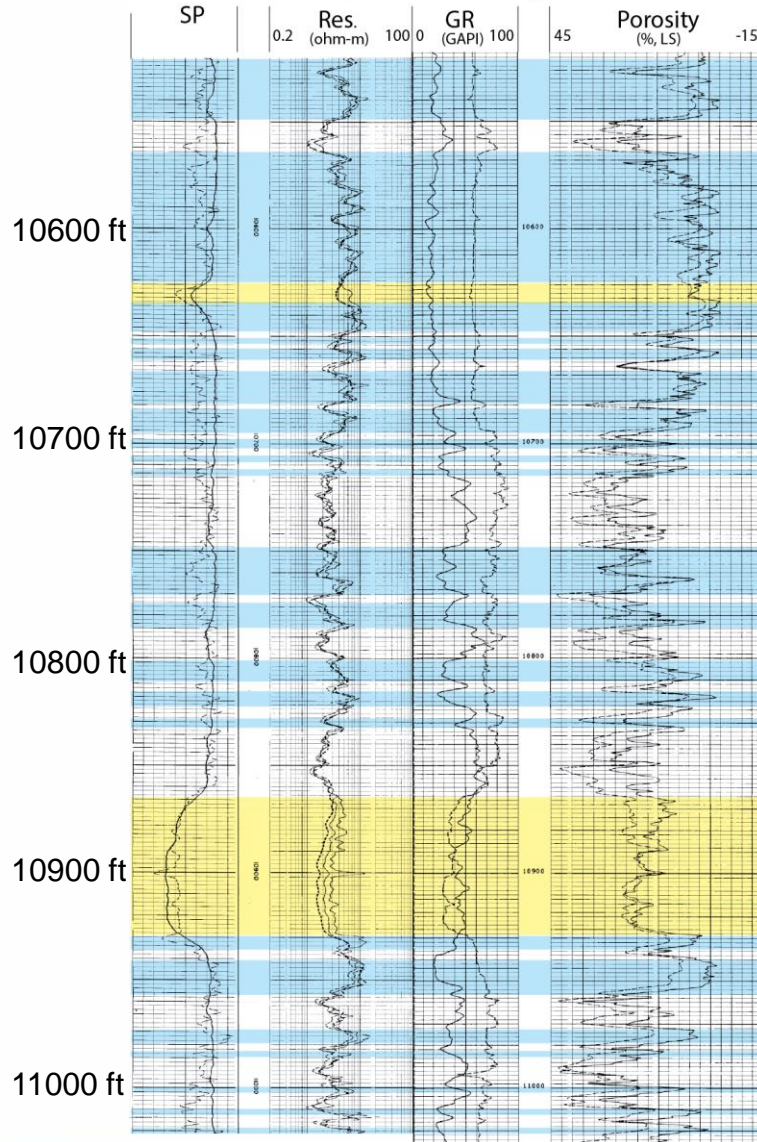


# DATA QUALITY – WEST FLORIDA



# PROSPECTIVE EGOM SINKS

Well G02468, Desoto Canyon Salt Basin



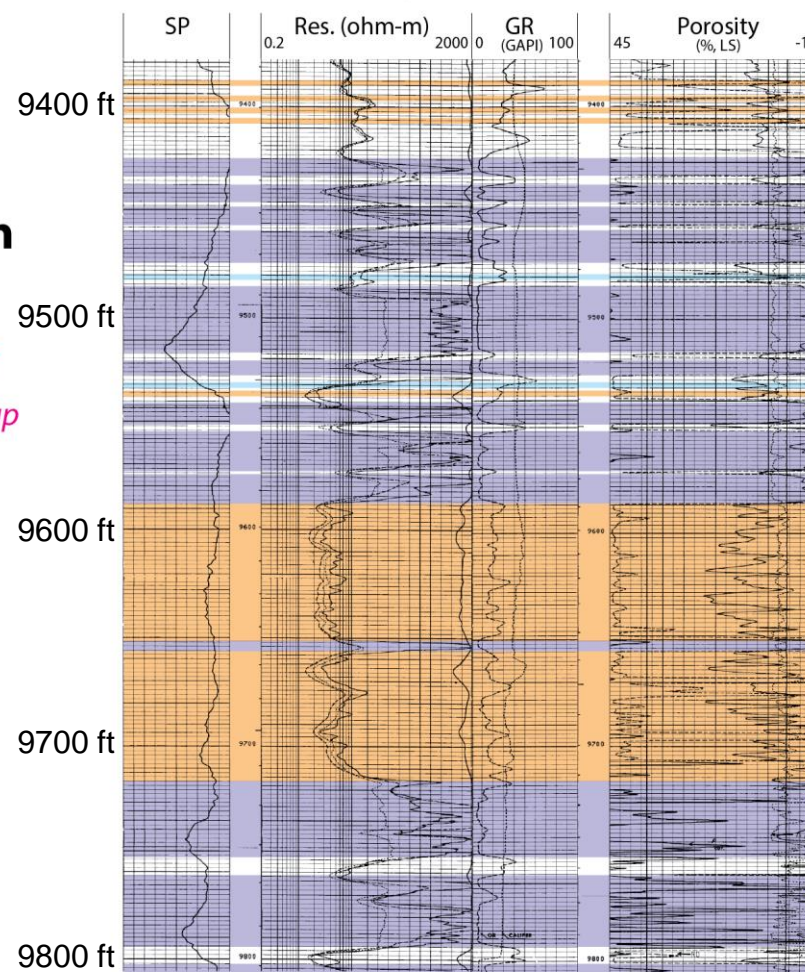
## Paluxy Formation

*Major prospects in sandstone of Tuscaloosa Group and Paluxy Fm.*

*Topseal*

*Reservoir*  
*Porosity locally >20%*

Well G3912, West Florida Shelf



## Punta Gorda Anhydrite

*Topseal*

*Reservoir*

*Porosity locally >15%*

*Reservoir*

*Major prospects in porous dolomite associated with anhydrite intervals*



## OBSERVATIONS AND ISSUES

- Large portfolio of potential sinks and seals in eastern Gulf of Mexico region.
- Seismic and well data being interpreted.
- Geopressure >12,000 ft; main storage prospects in Cretaceous-Miocene section.
- Multiple sandstone formations prospective in DeSoto Canyon Salt Basin; abundant mudrock and carbonate seals, including chalk.
- Relatively simple Cretaceous carbonate platform and distally steepened Cenozoic shelf in West Florida.
- Variable seismic quality in West Florida.
- Porous dolomite below anhydrite seals.