

Cypress Sandstone Reservoir Characterization Across the Clay City Anticline, Richland and Clay Counties, Illinois

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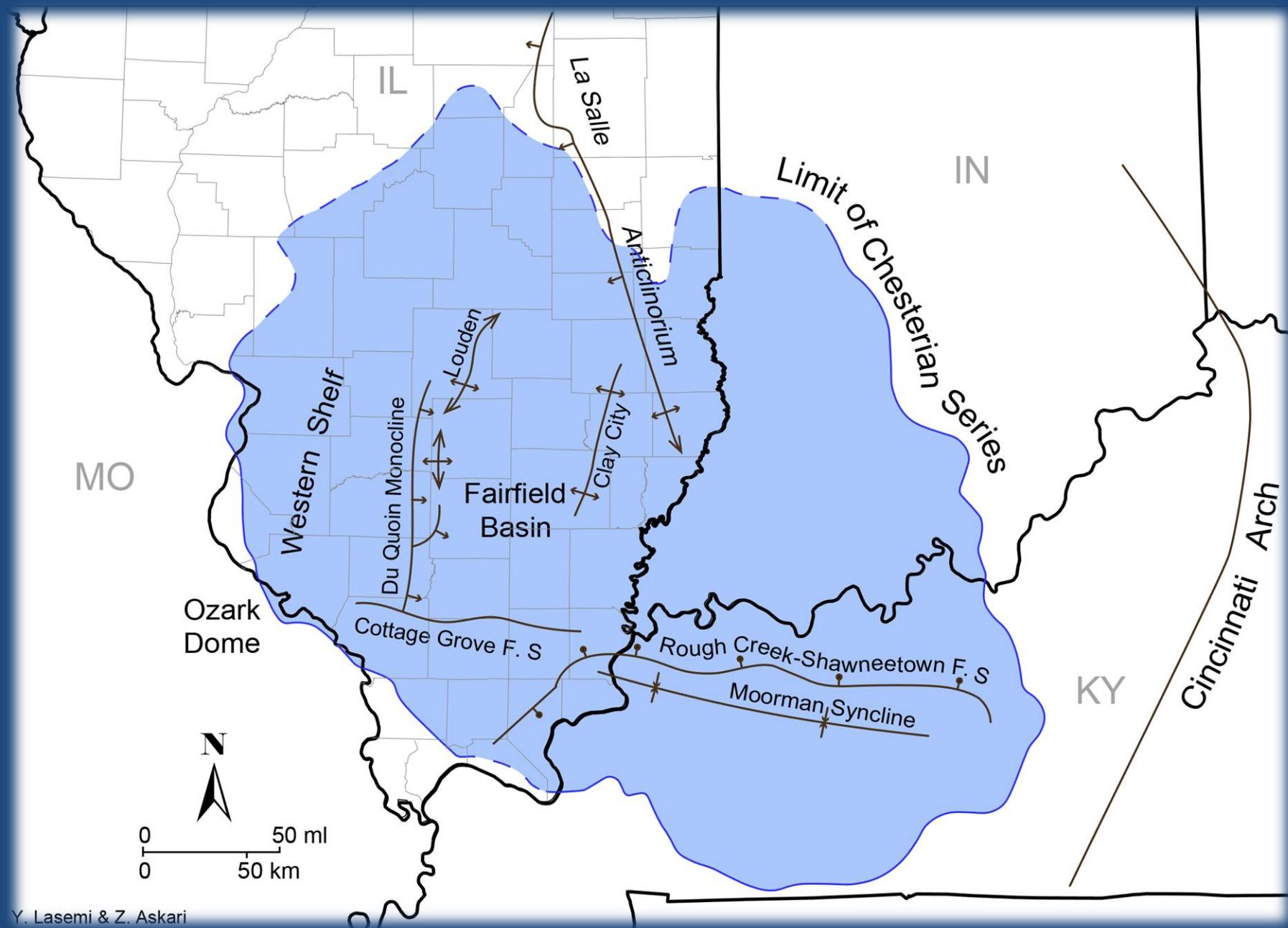


Acknowledgements

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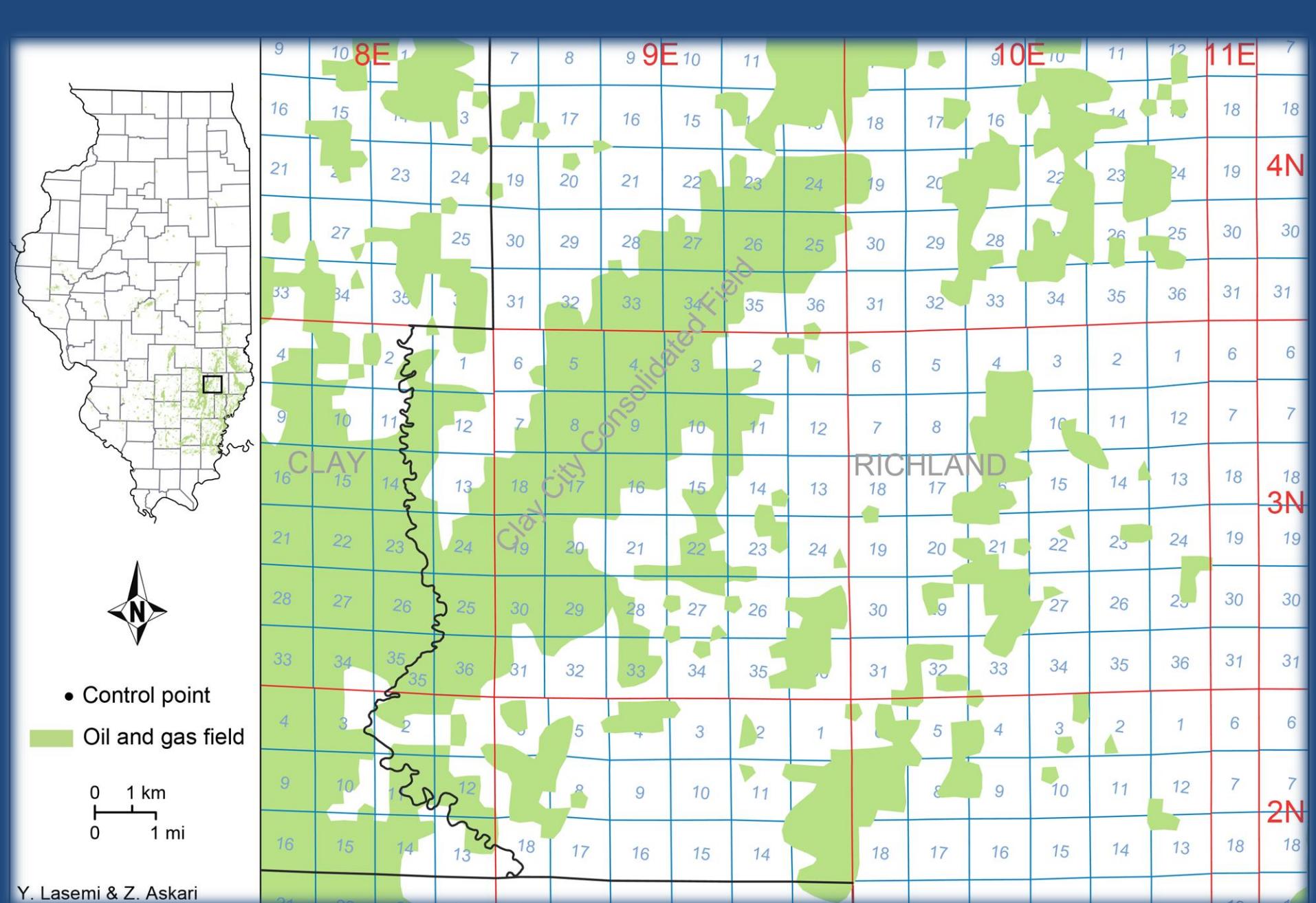
Objectives

- Stratigraphy of the Mississippian Cypress Sandstone in the deeper part of the Illinois Basin (Fairfield Basin) using subsurface data.
- Lithofacies and correction of the Cypress in the study area.
- Reservoir units and their lateral and vertical variability across the Clay City Anticline.

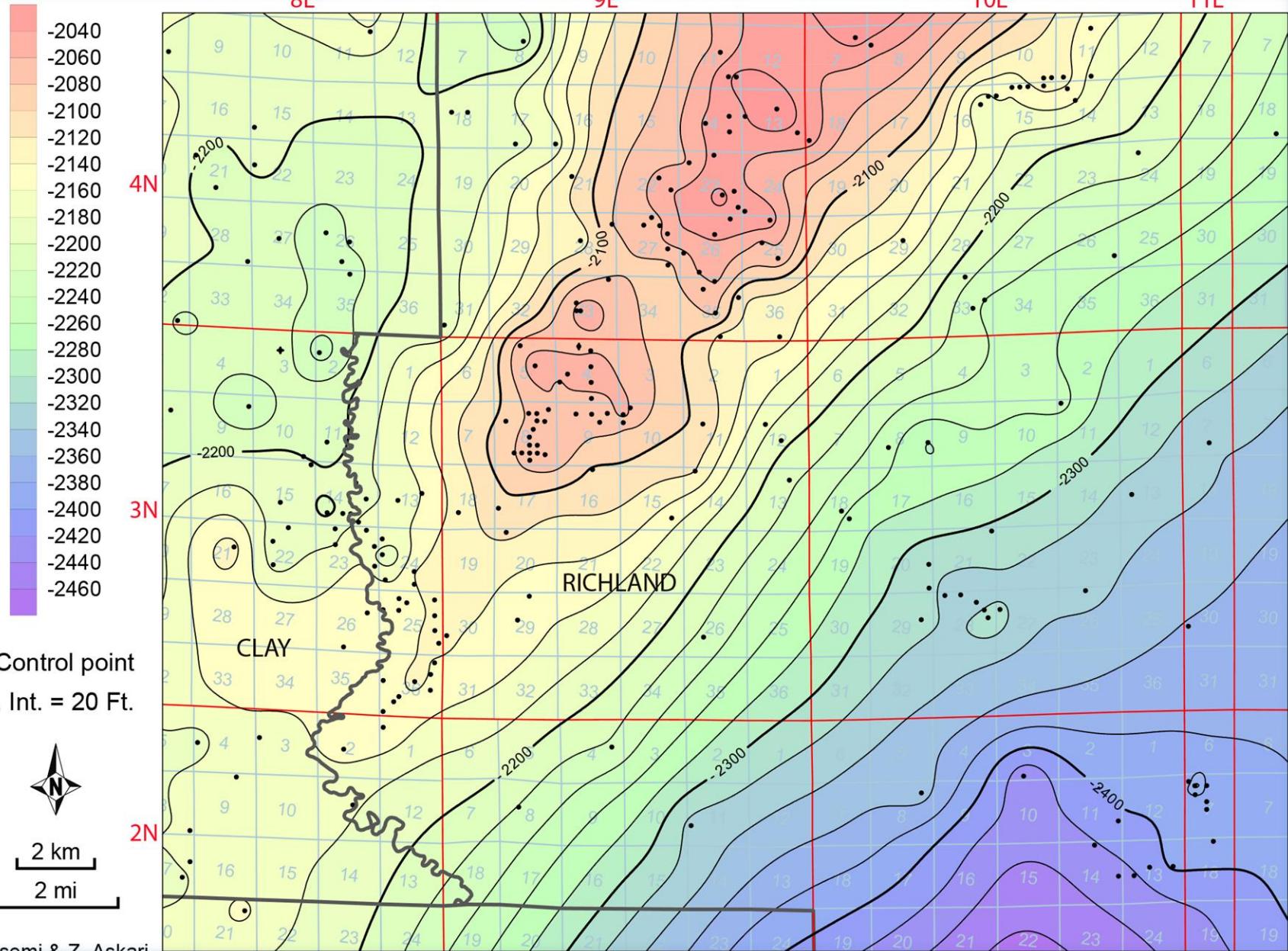


Y. Lasemi & Z. Askari

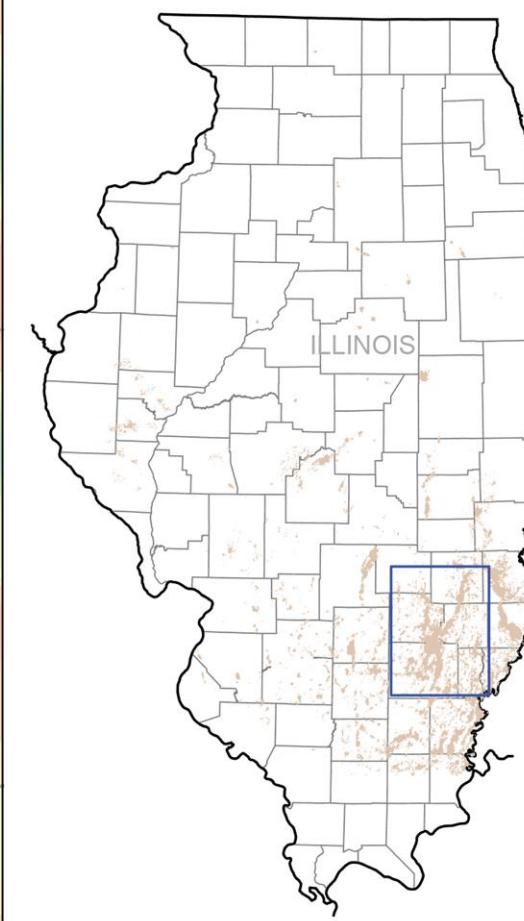
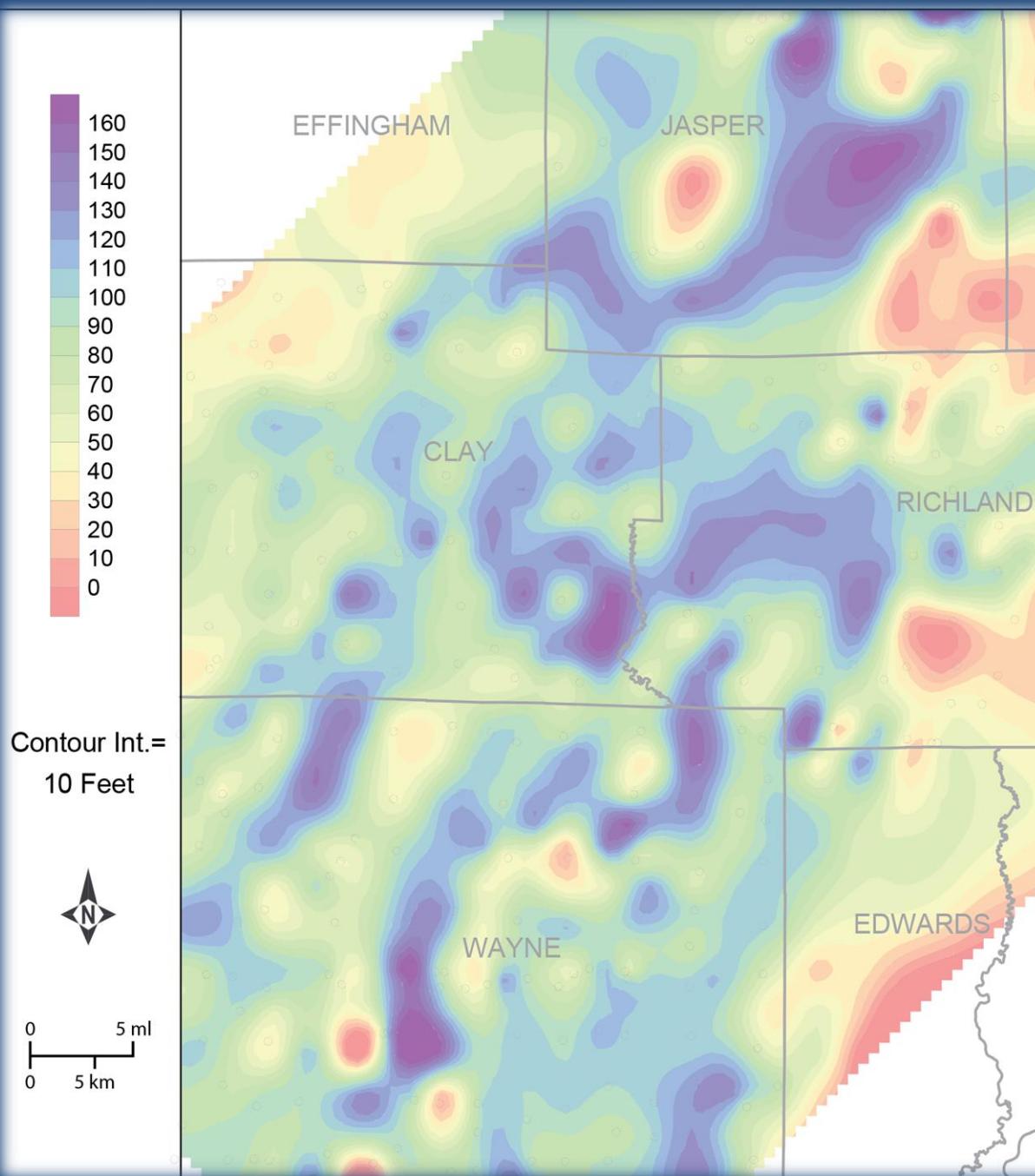
Structural Features of the Illinois Basin (modified from Nelson et al., 2002)



The Study Area in Clay and Richland Counties, Illinois



Structure Contour Map of the Base of Beech Creek Limestone

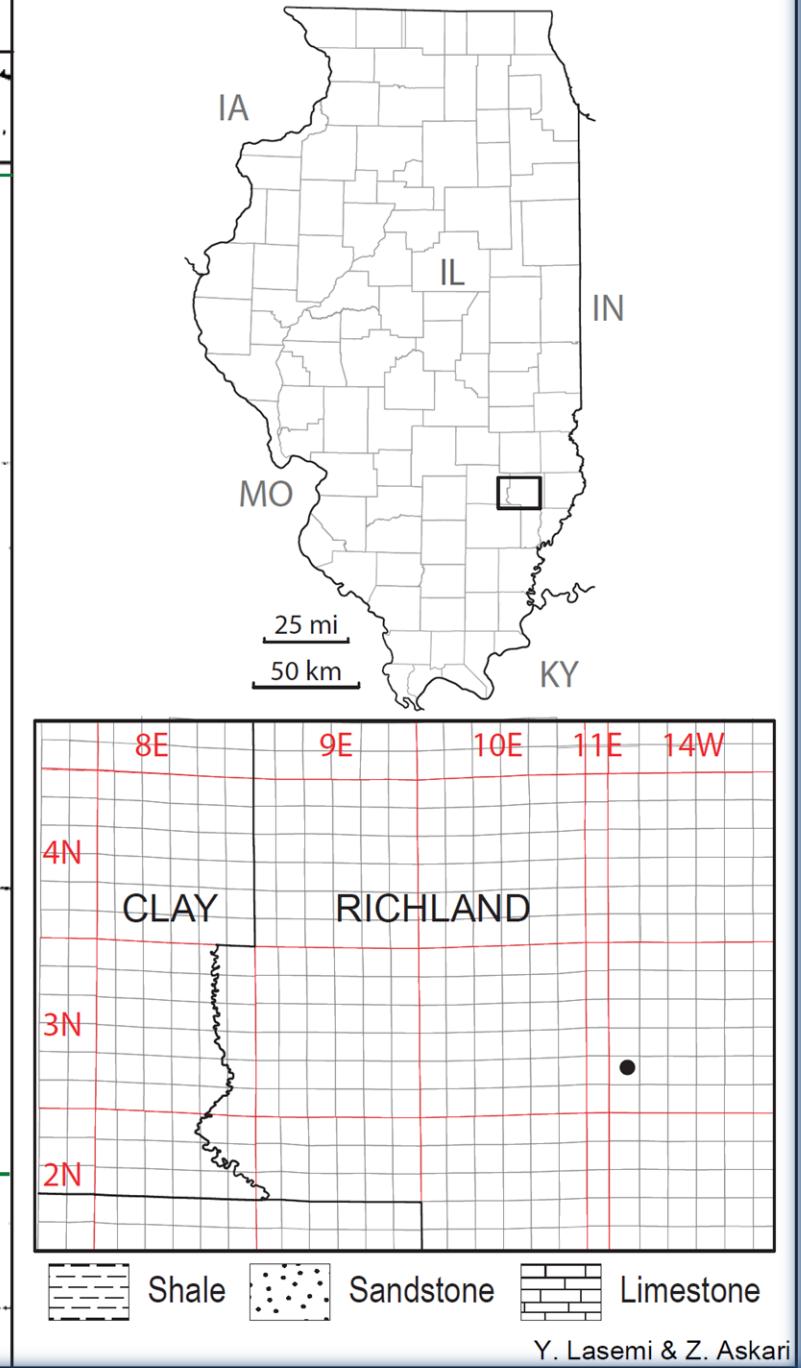
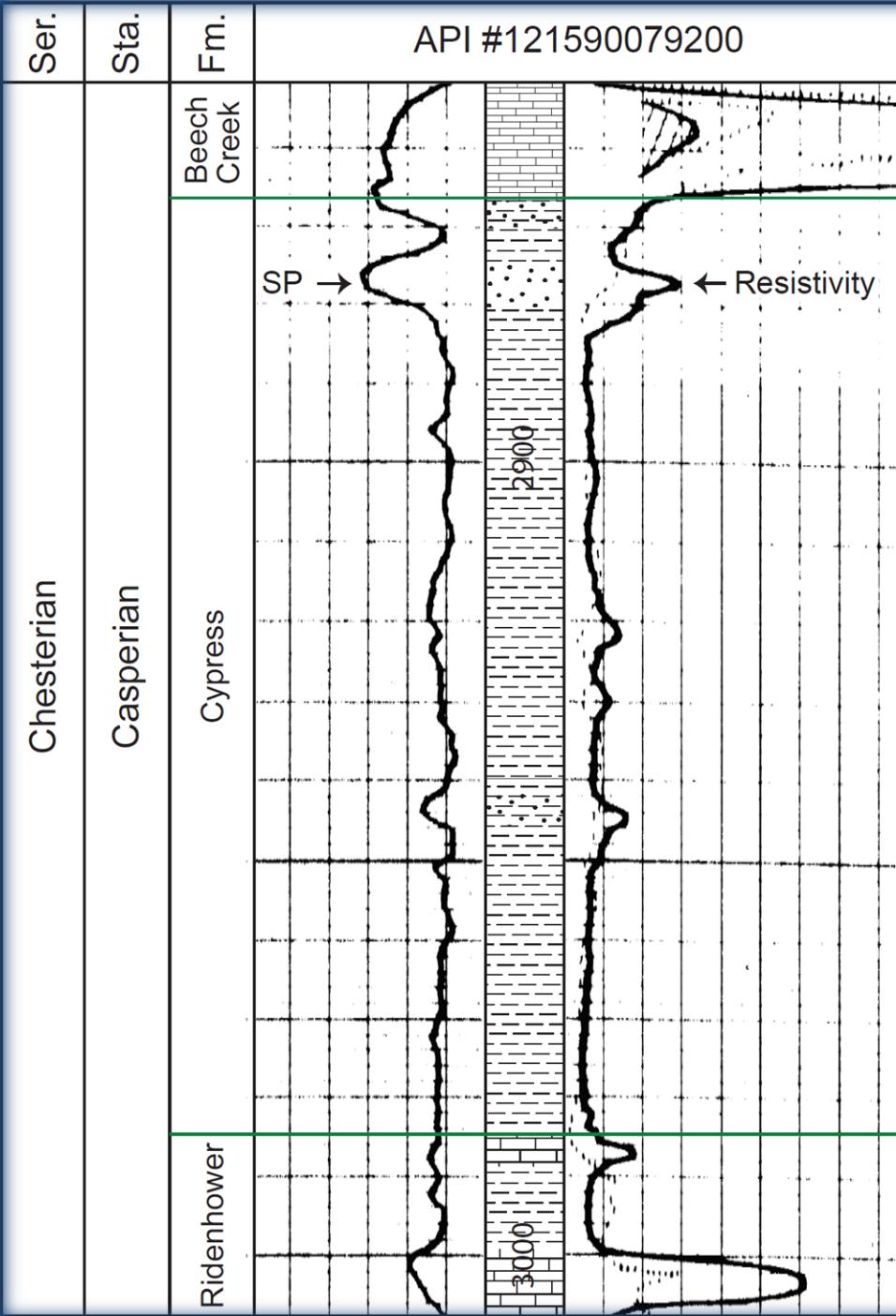


Cypress Net Sand Thickness Map

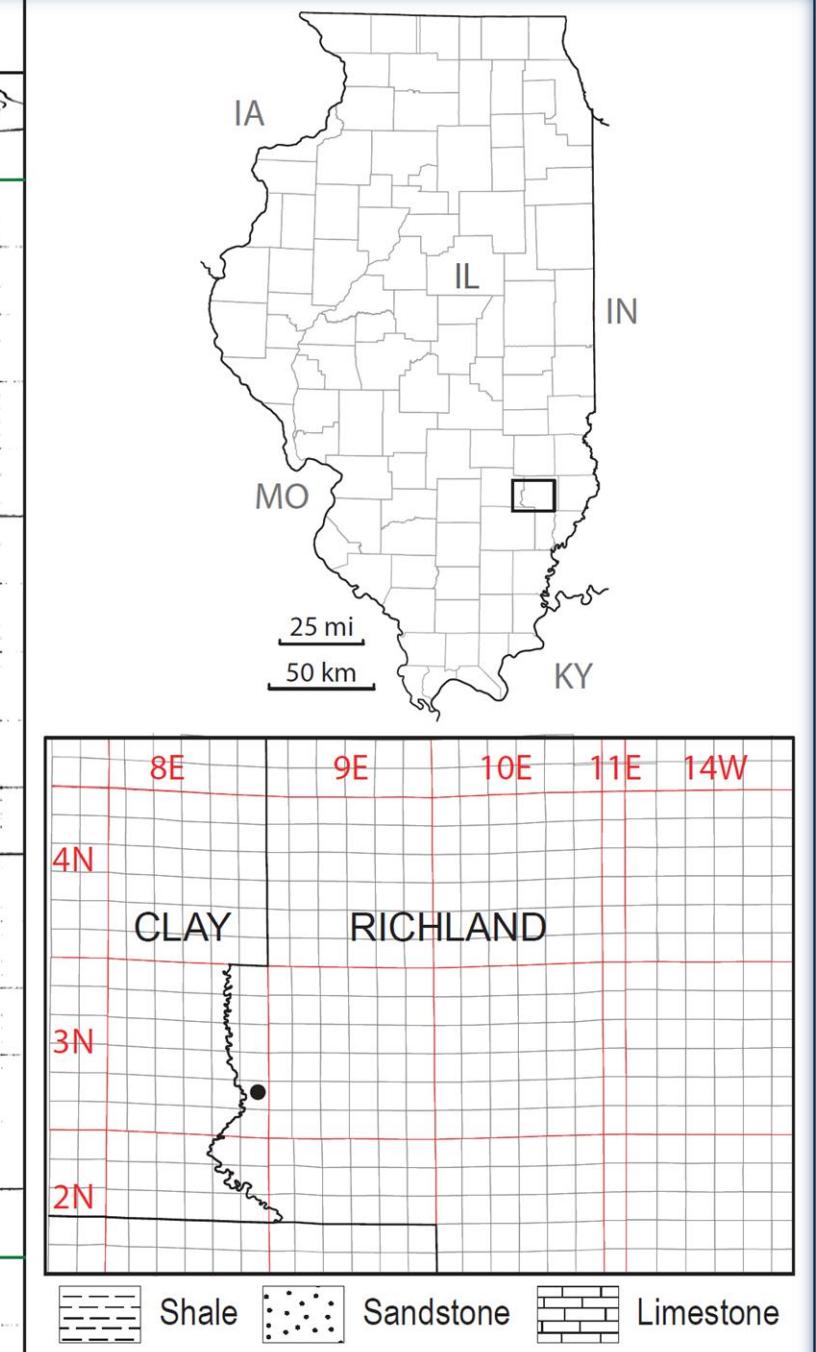
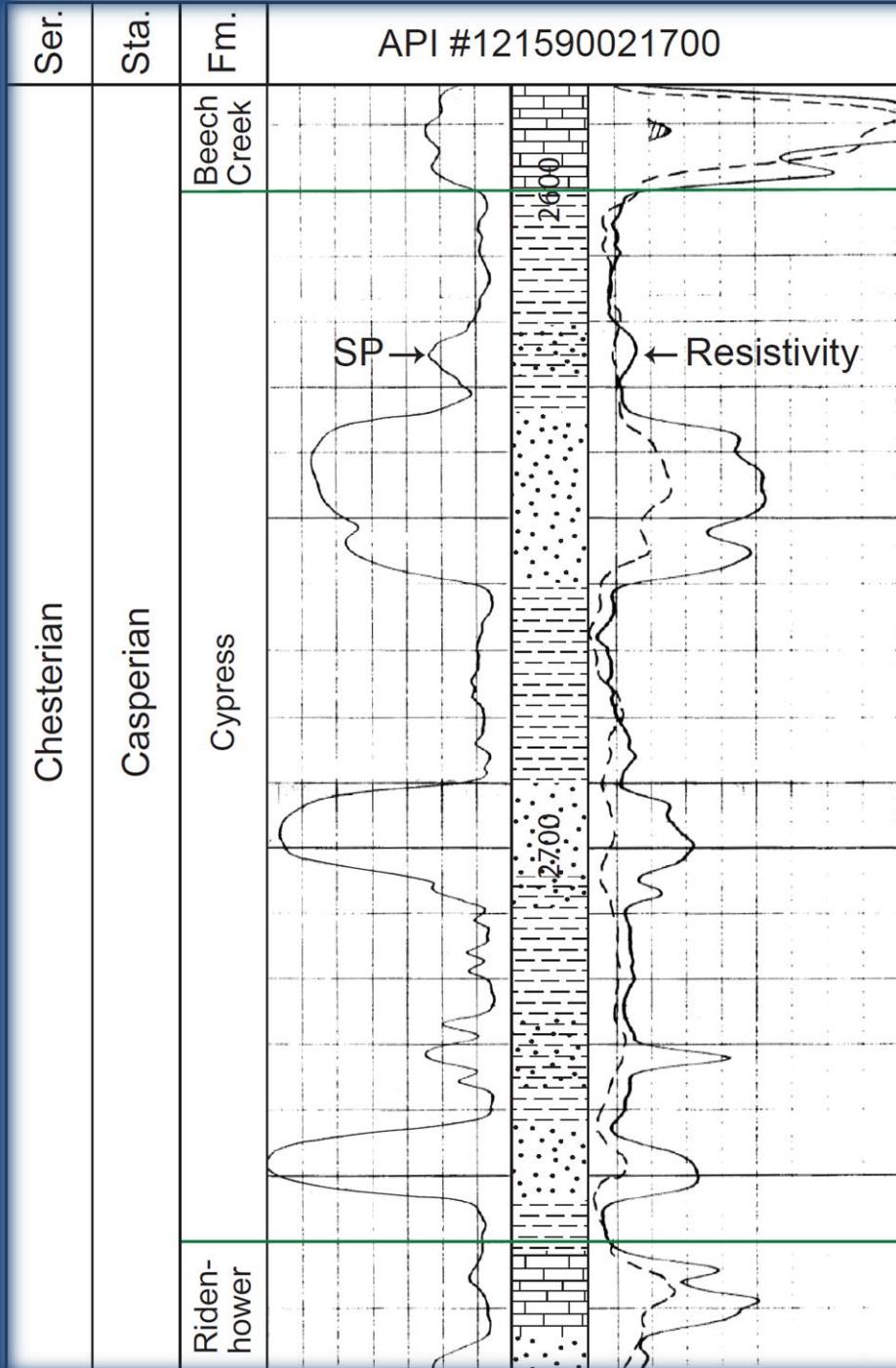
Stratigraphy

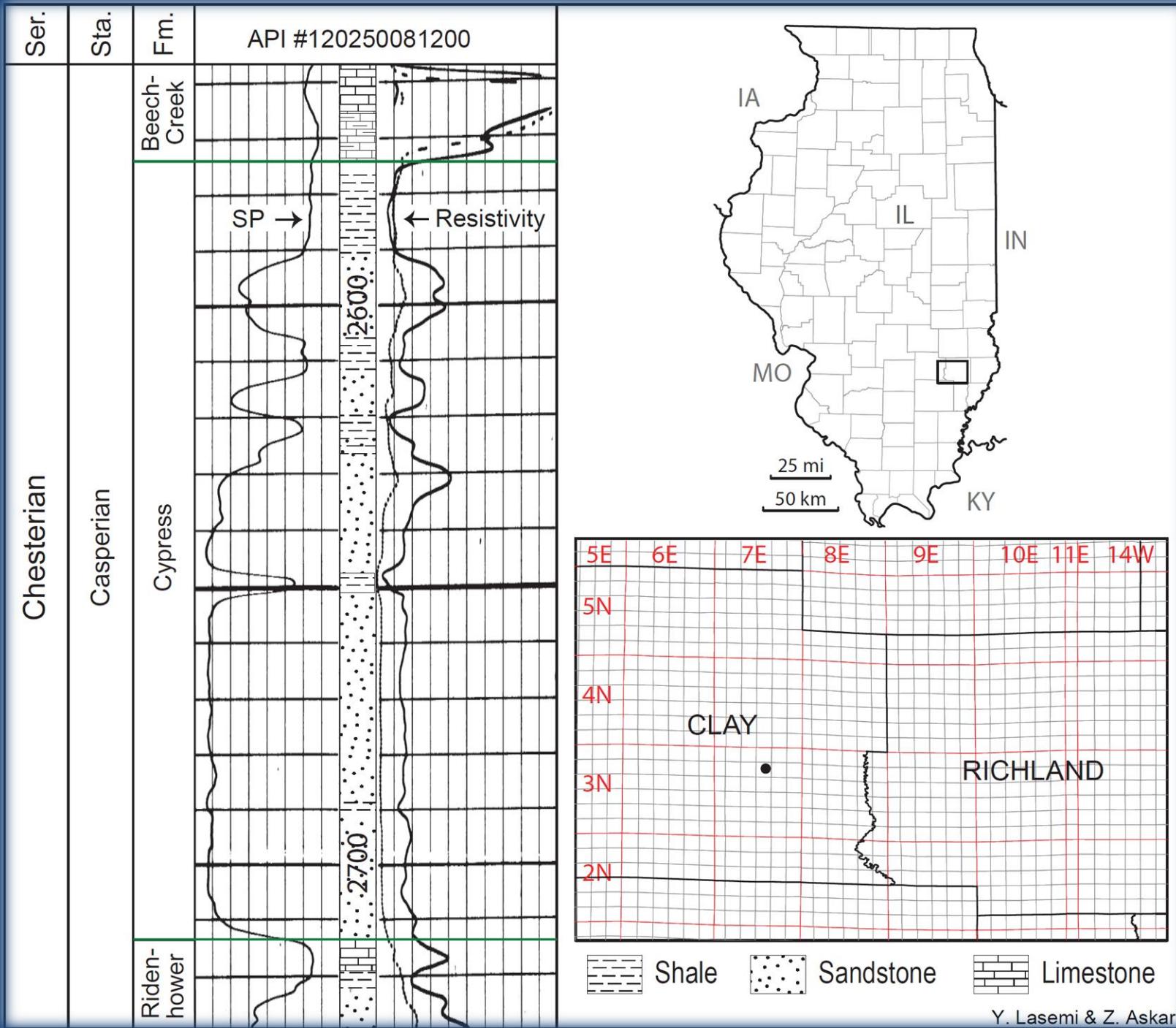
ILLINOIS		INDIANA	
Golconda Formation	Haney Limestone Member	Haney Limestone Member	
	Fraileys Shale Member	Big clifty Ss. Mbr.	Indian Springs Sh. Mbr.
	Beech Creek Ls. Member	Beech Creek Limestone	
Cypress Formation		Cypress Formation	Elwren Formation
Paint Creek Formation	Ridenhower Shale	Reelsville Limestone	
		Sample Formation	
		Beaver Bend Limestone	
		Bethel Sandstone	
	Downeys Bluff Ls. Mbr.	Downeys Bluff Member	

Cypress Stratigraphy



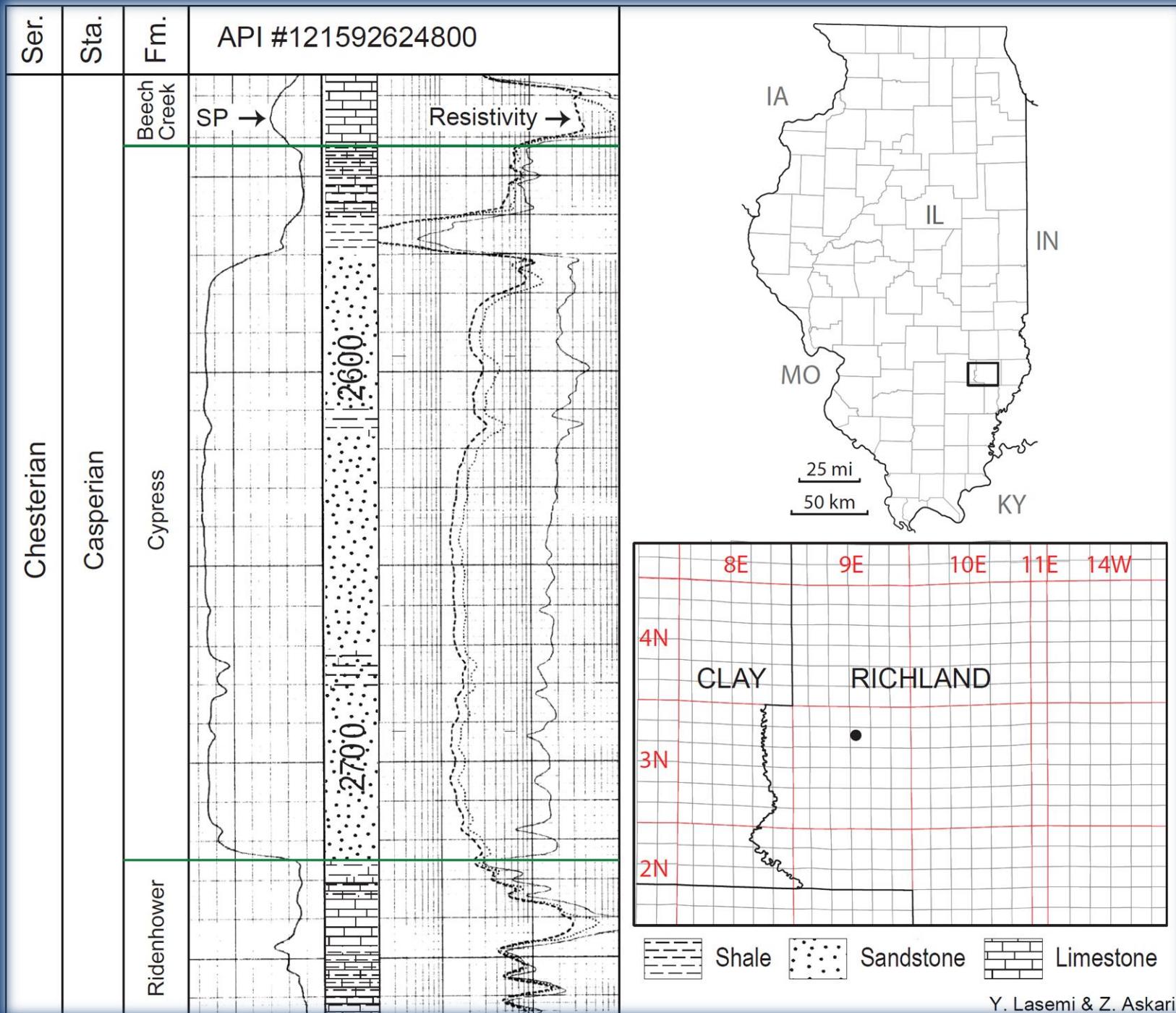
Cypress Stratigraphy





Cypress Stratigraphy

Cypress Stratigraphy



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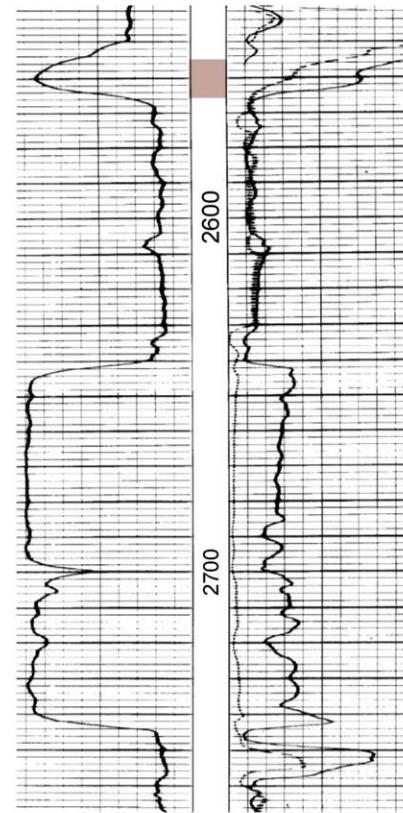
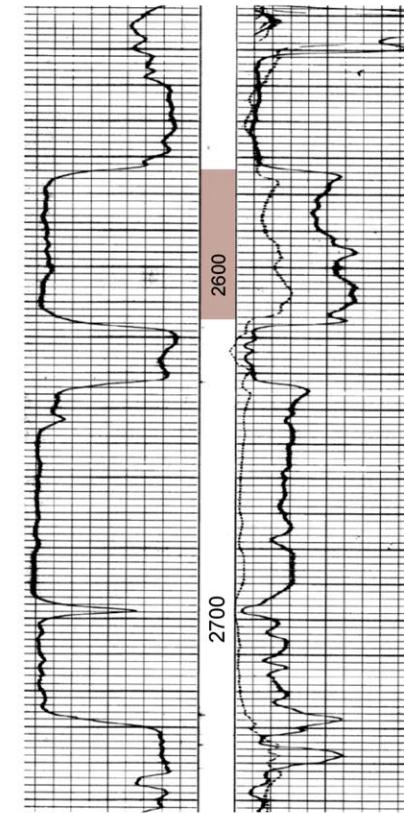
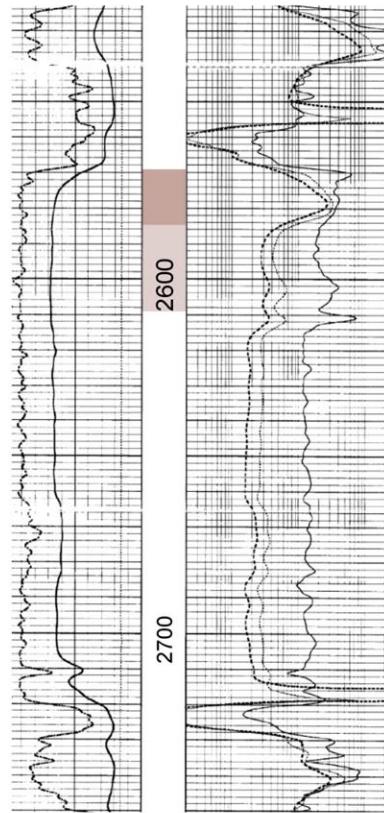
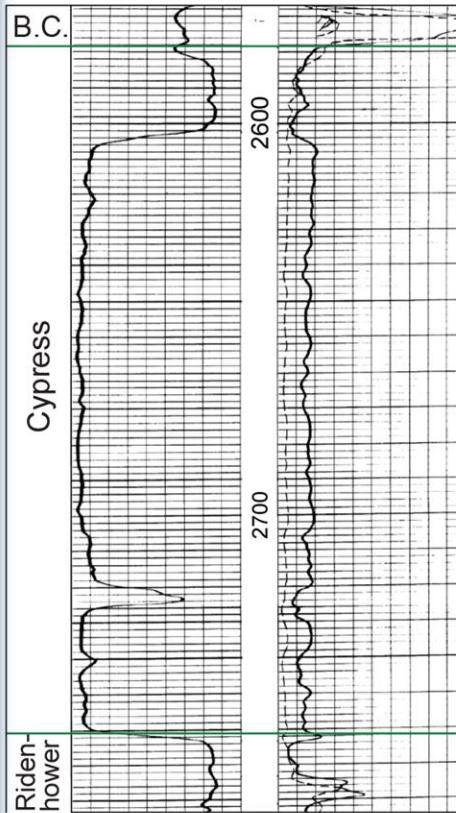
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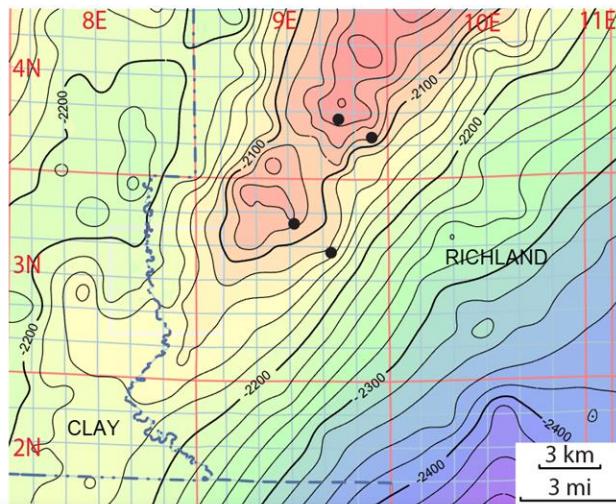
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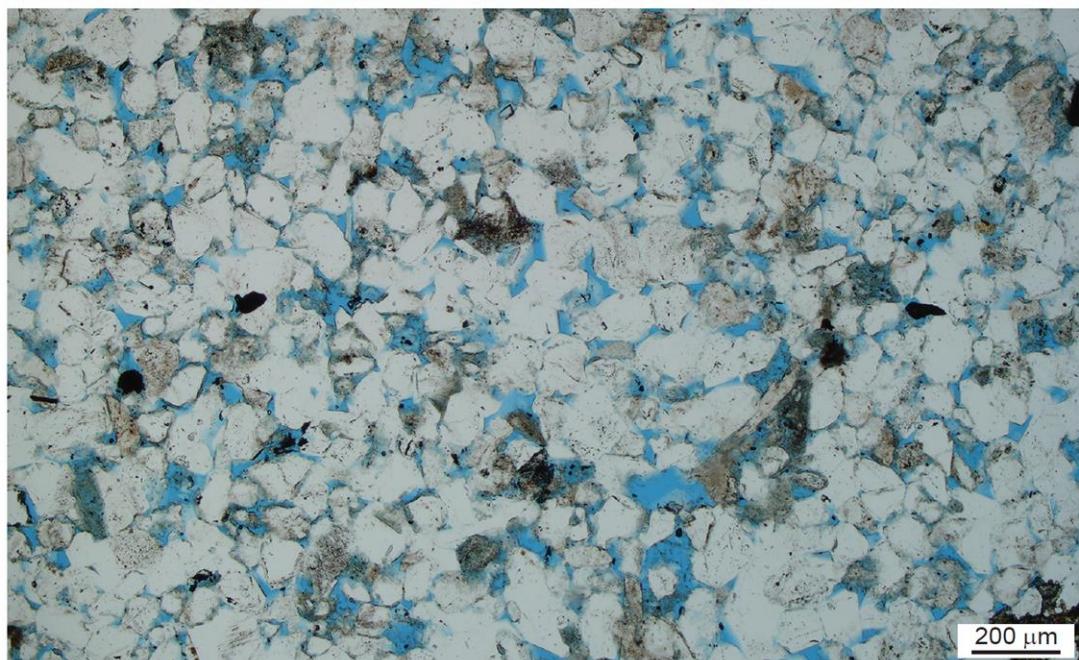
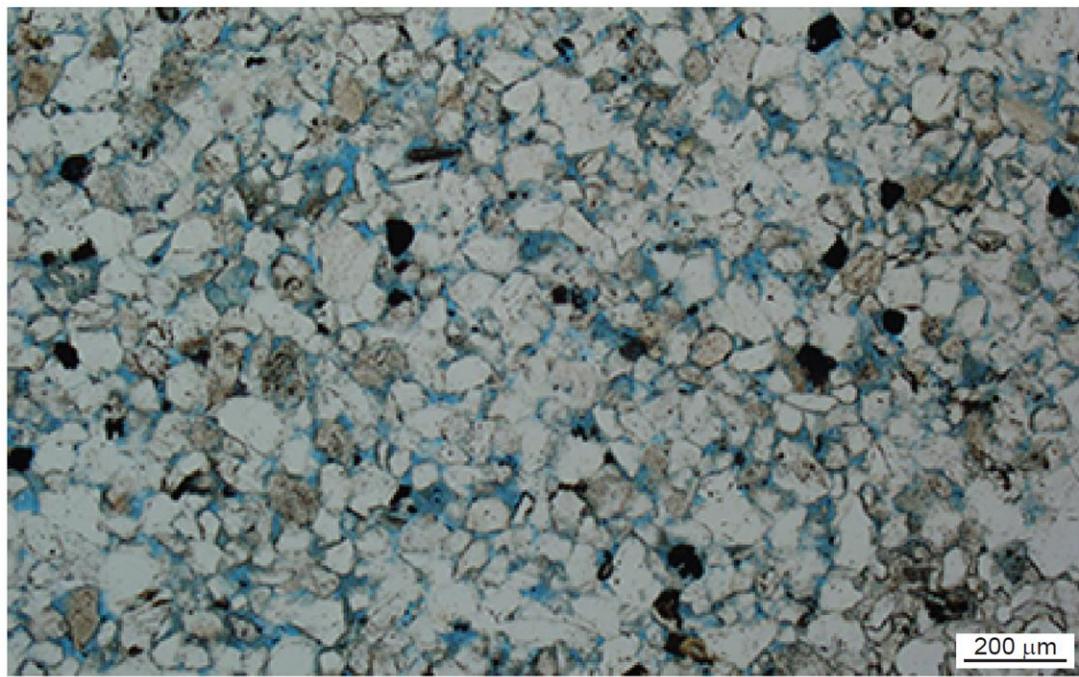
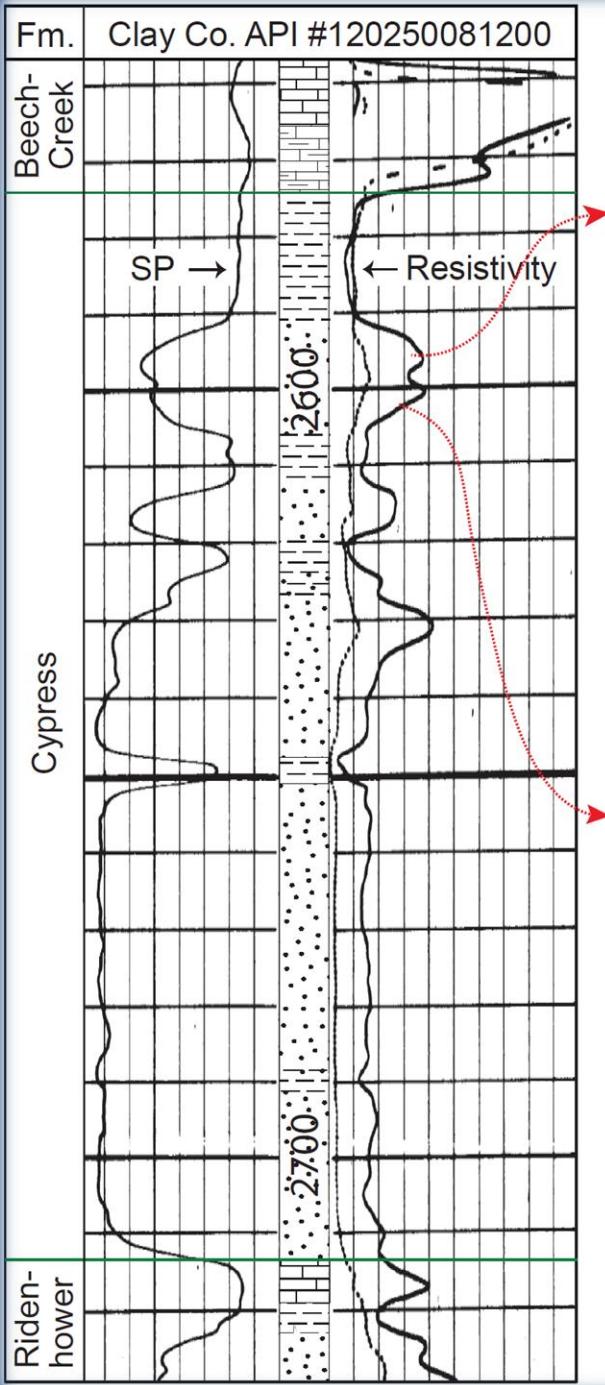
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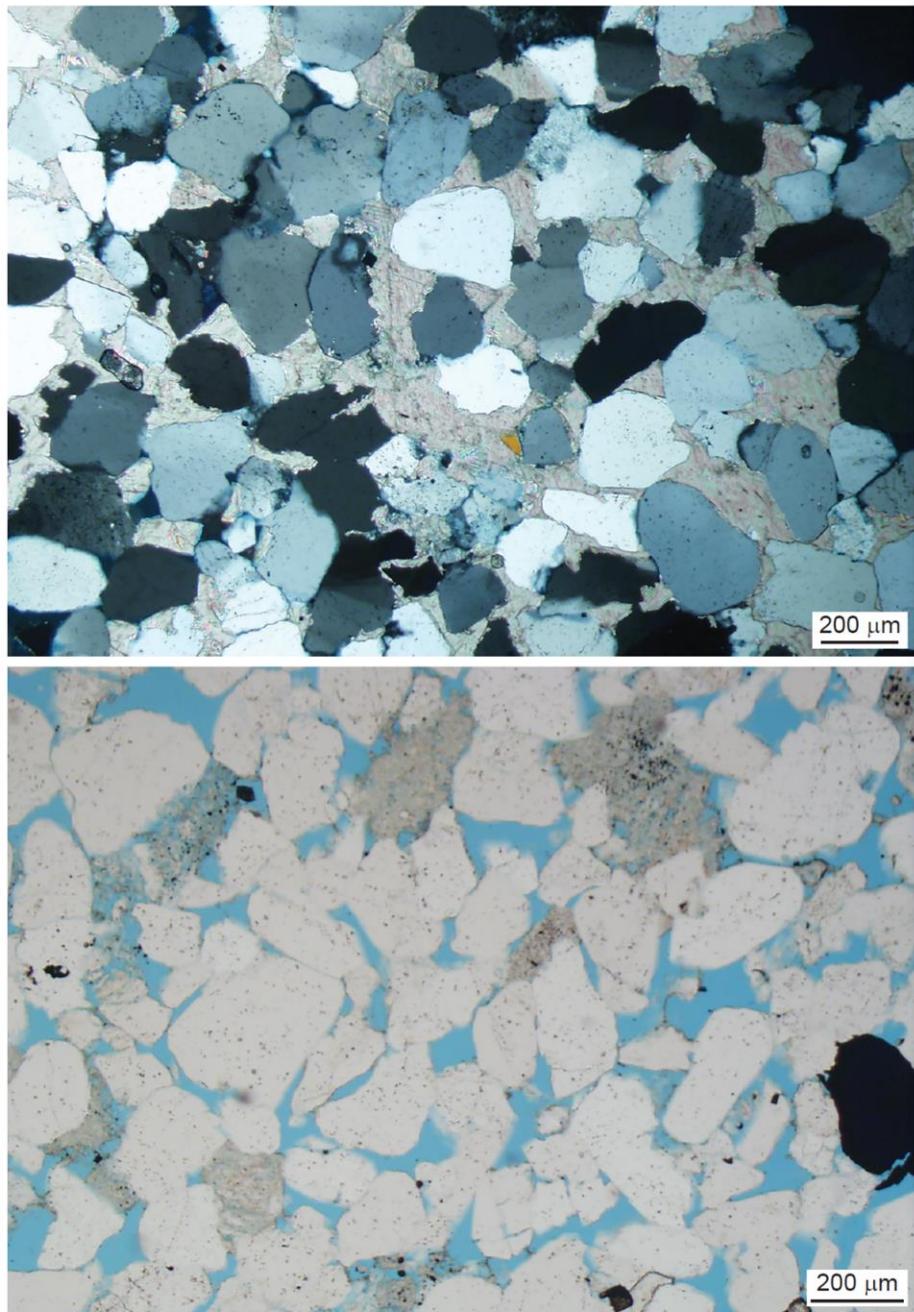
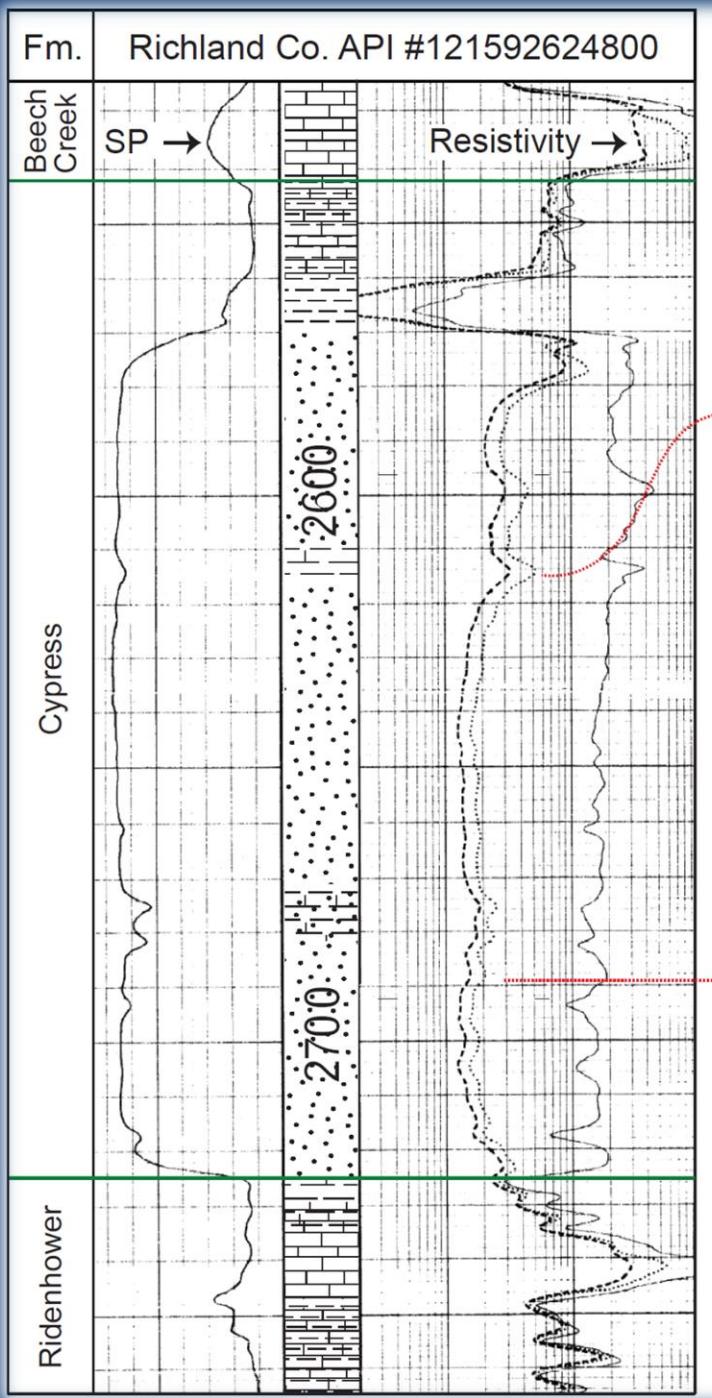
Cypress Productive Horizons Along the Clay City Anticline



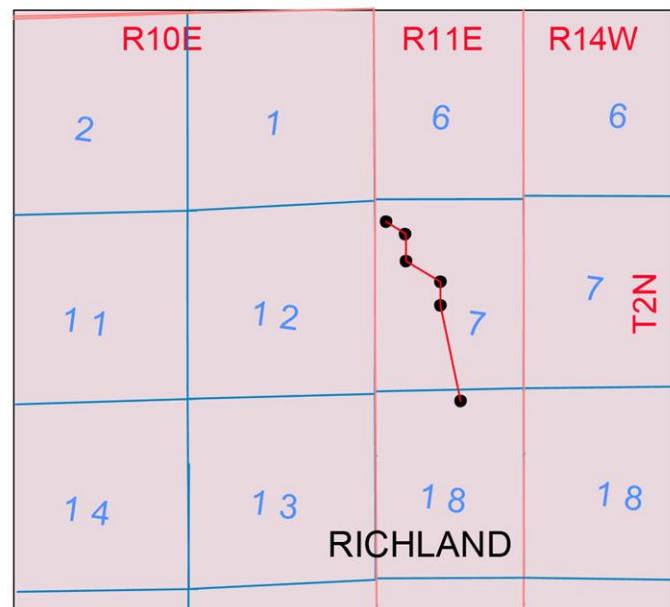
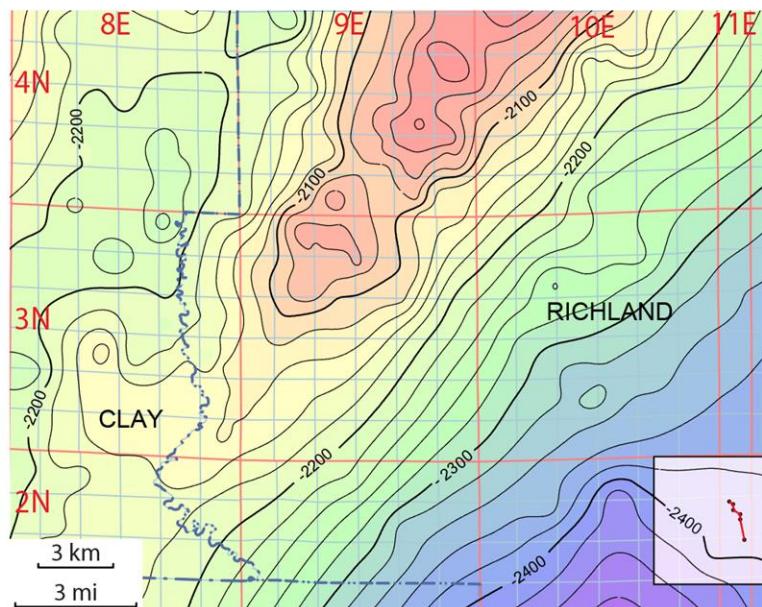
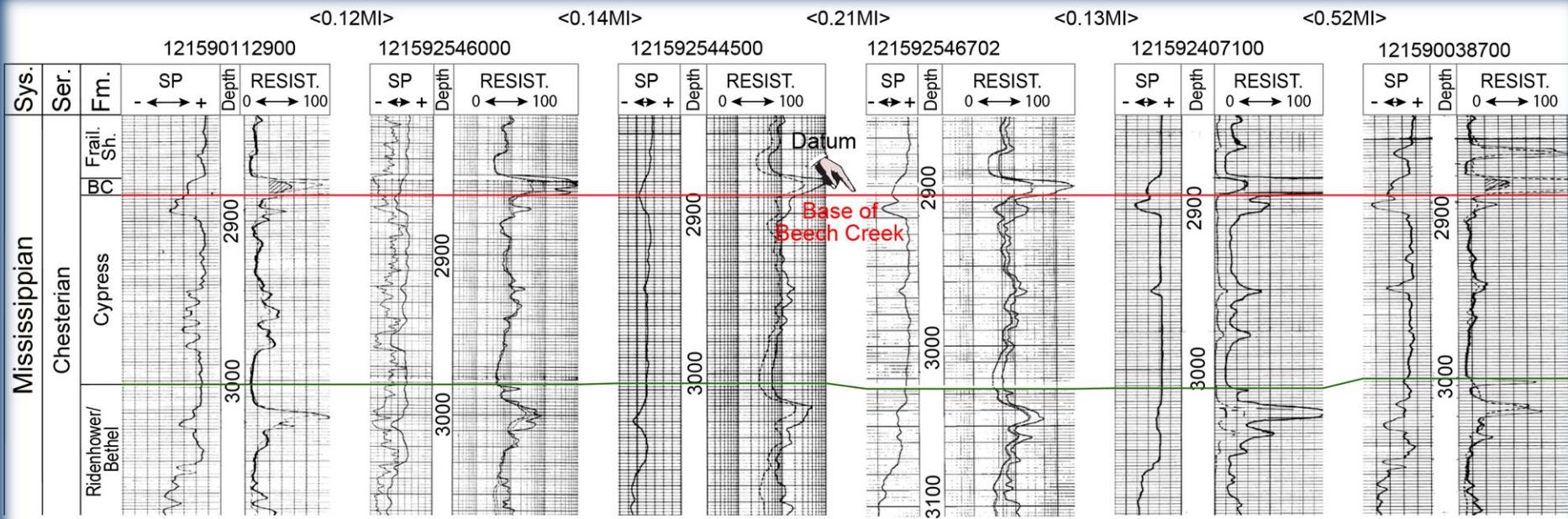
Lithofacies Variability

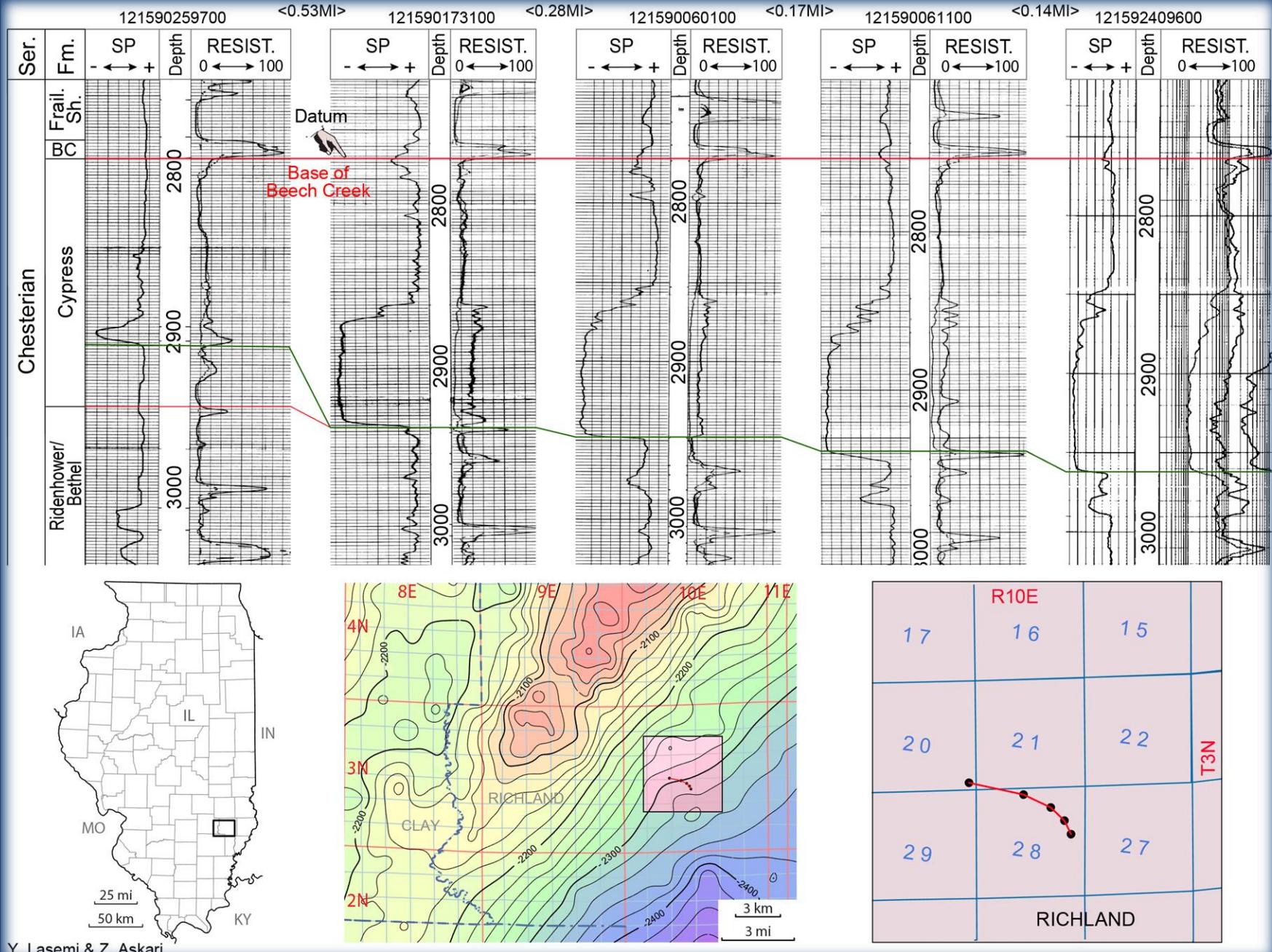


Lenticular Cypress Sandstone Facies

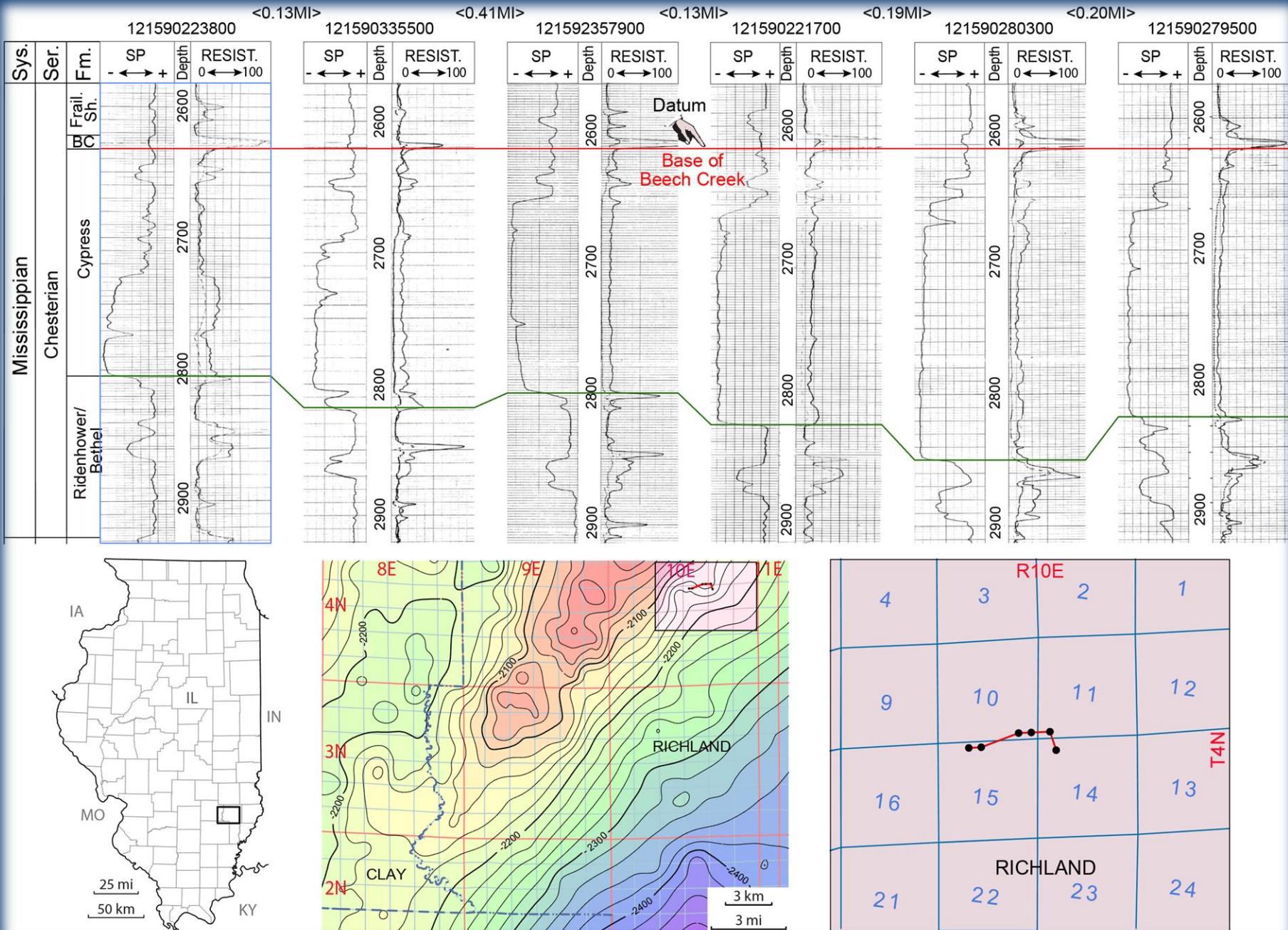


'Thick Cypress' Sandstone Facies

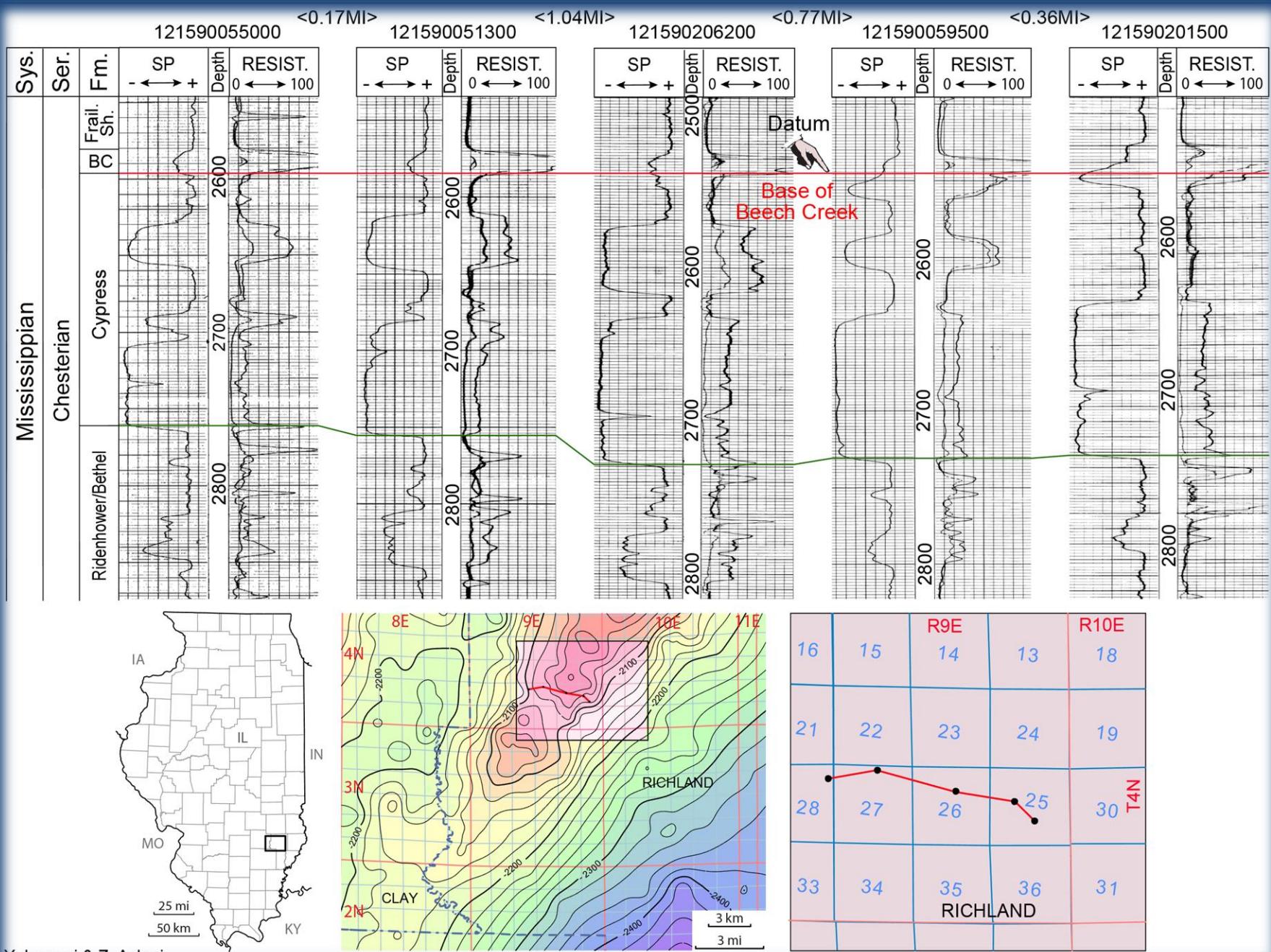


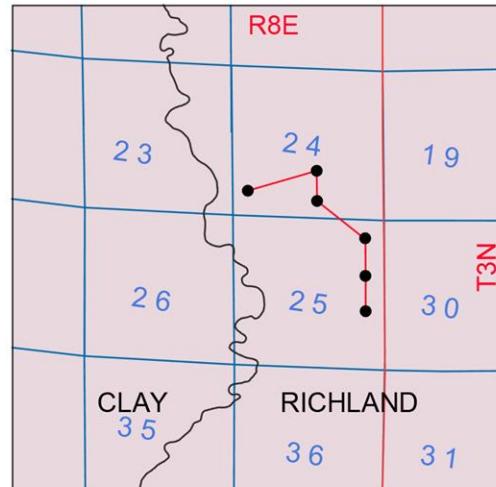
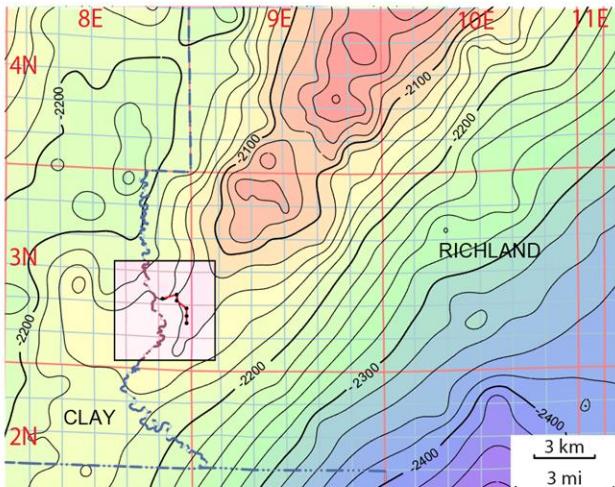
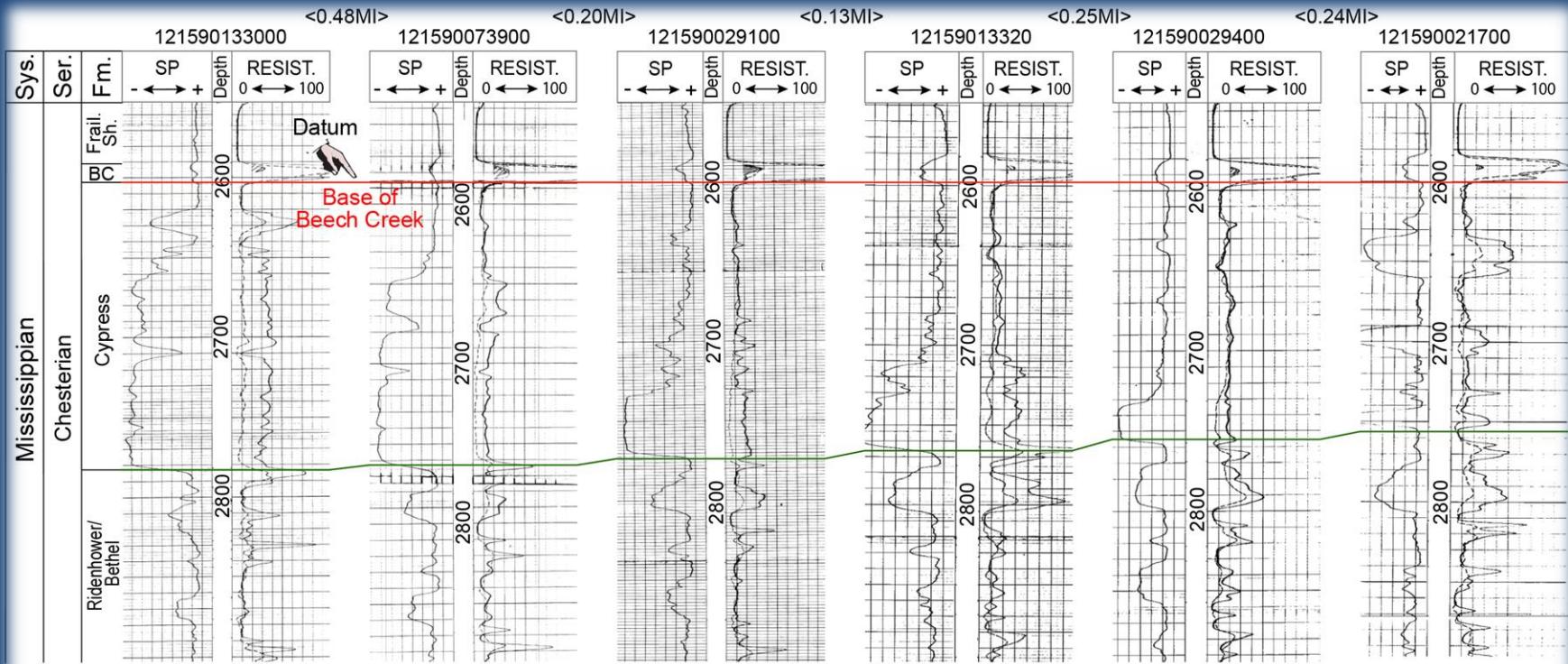


Lateral Variability of the Cypress Formation



Lateral Variability of the Cypress Formation





Conclusions

- The Cypress Formation in the study area consists of interbedded shale and sandstone; in places, sandstone or shale constitutes the main part of the formation.
- Lenticular sand bodies showing funnel, blocky, and bell shaped geophysical log signatures are recognized in the lower, middle and upper part of the Cypress Formation.
- The sand bodies could have been deposited in fluvial channels/incised valleys, deltaic distributary channels/mouth bar, and shoreface depositional settings.

- In places, sand bodies cut down several meters into the succession; these incised valley fill sandstones are interpreted as being deposited during fourth-order sea level falls.
- Cypress oil production is from porous lenticular and stacked sandstones developed in the upper part of the formation, and from the upper part of amalgamated sand bodies ('thick Cypress') near the crest of the Clay City Anticline.