

Effects of geologic structures on organic carbon concentrations and thermal maturities in organic-rich Upper Devonian shales

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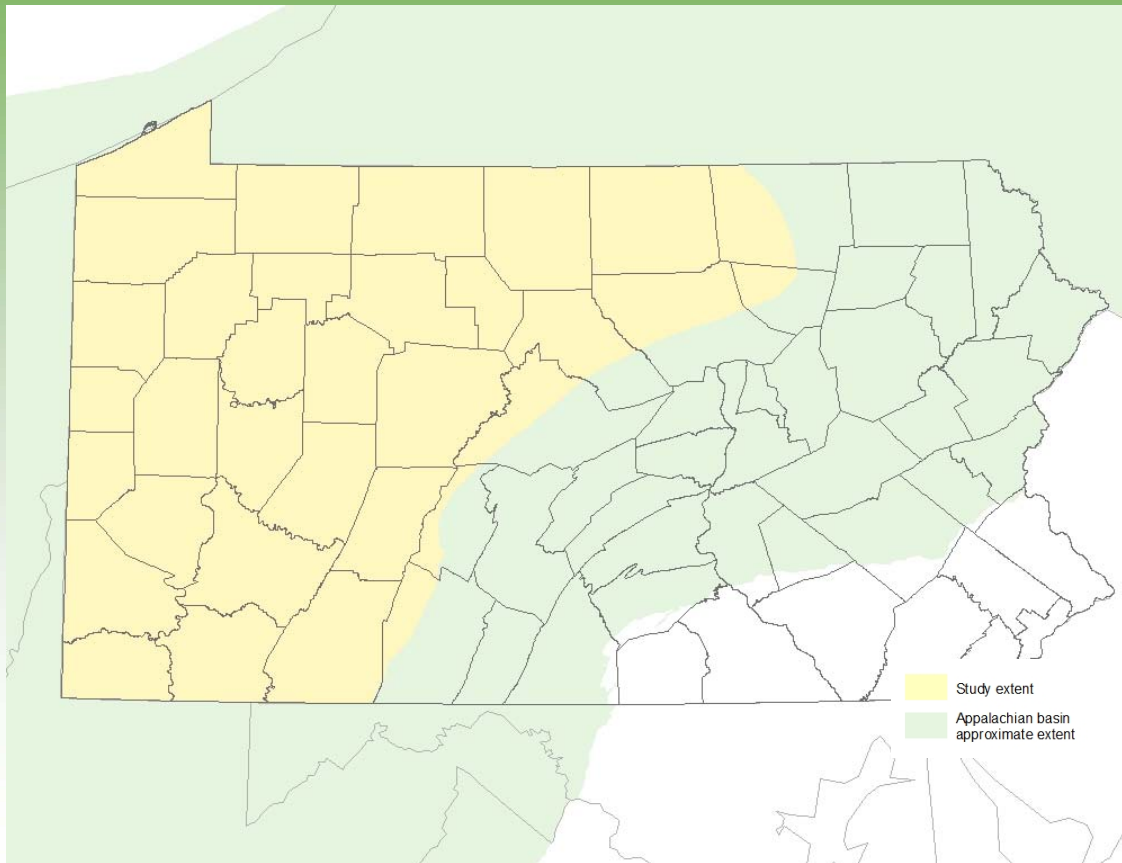
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Introduction

- Predicting the effects of geologic structures on the distribution of organic carbon and development of thermal maturity in shales is important for oil and gas companies who want to develop drilling programs in organic-rich shales
 - Shales need to contain at least 1% TOC to produce hydrocarbons
 - Shales need to reach a thermal maturity of about 0.6 to produce any oil or natural gas

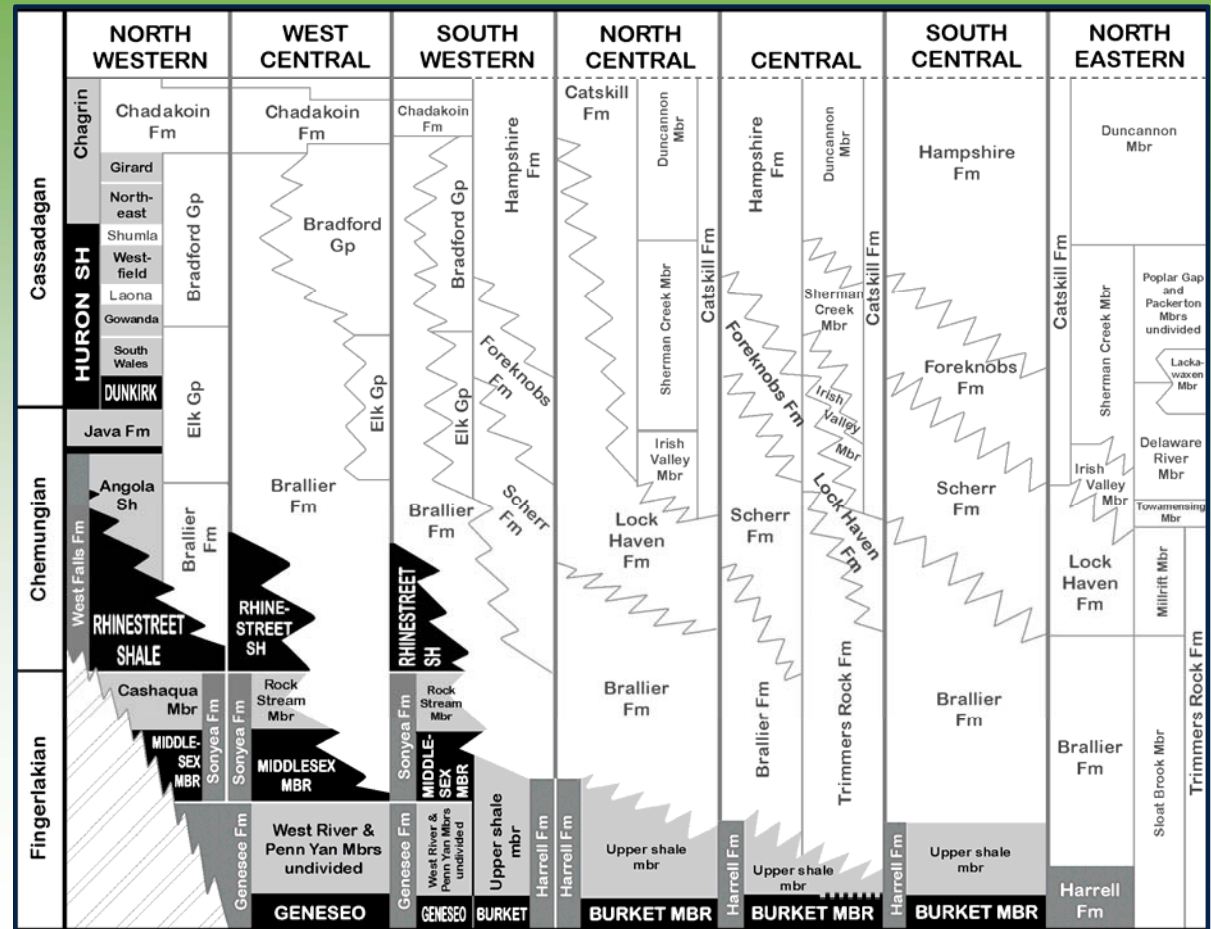
Outline



- Shales
- Structures
- TOC results
- Thermal maturity results
- Conclusions





Upper Devonian Shales

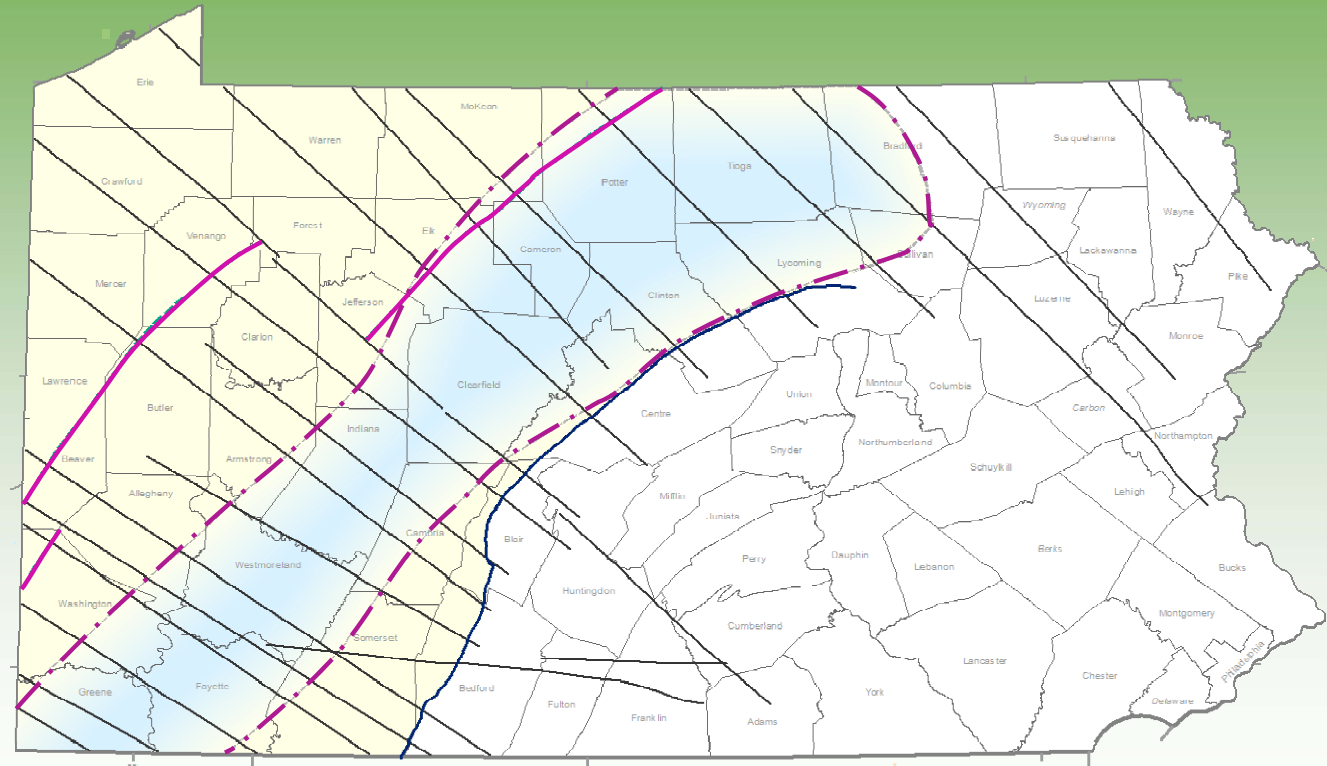
- West Falls Formation
 - Rhinestreet Member
- Genesee Formation
 - Geneseo Member
- Harrell Formation
 - Burket Member



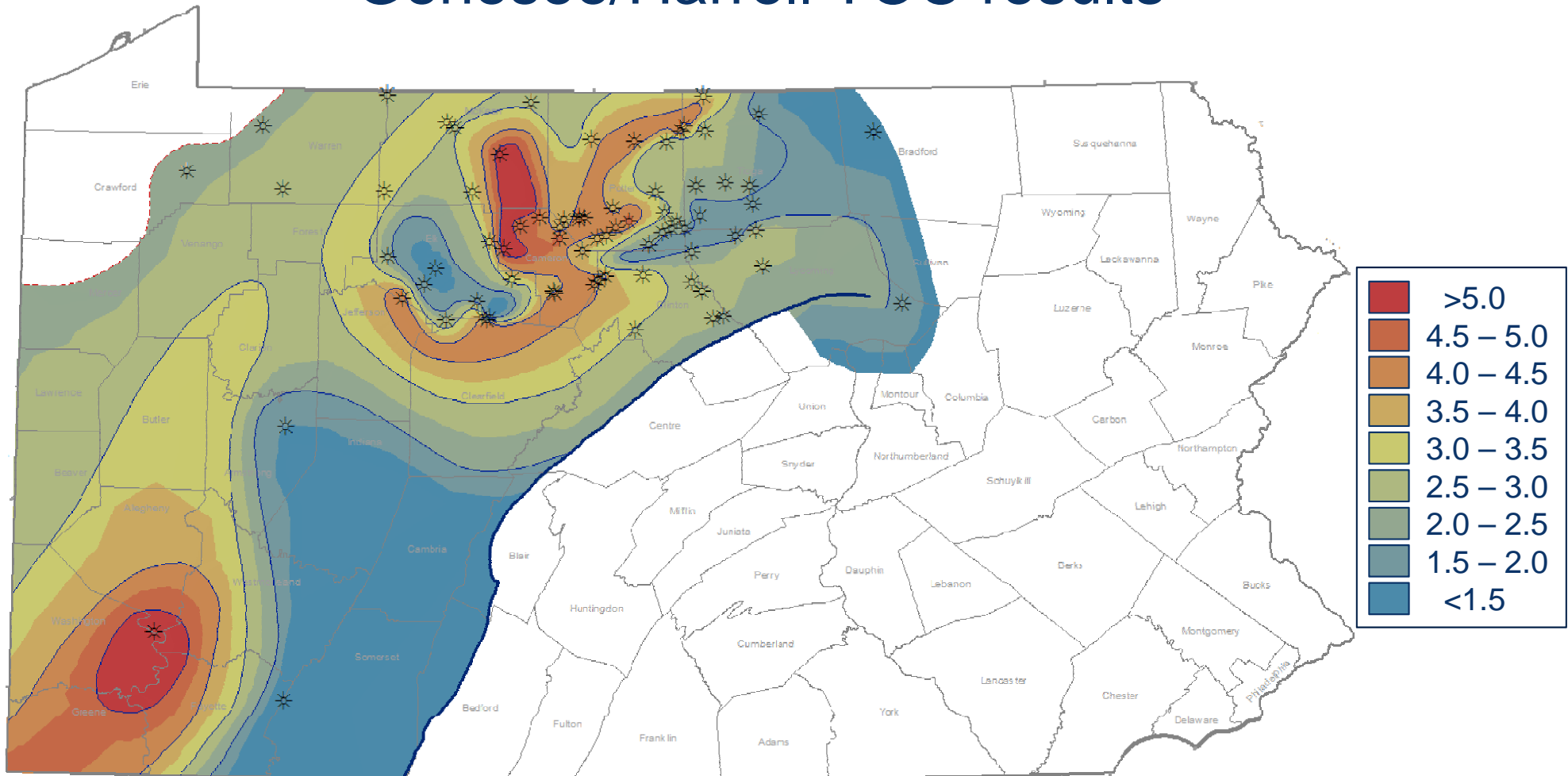
Major Geologic Structures

- Allegheny Front
- Rome Trough
- Lineaments

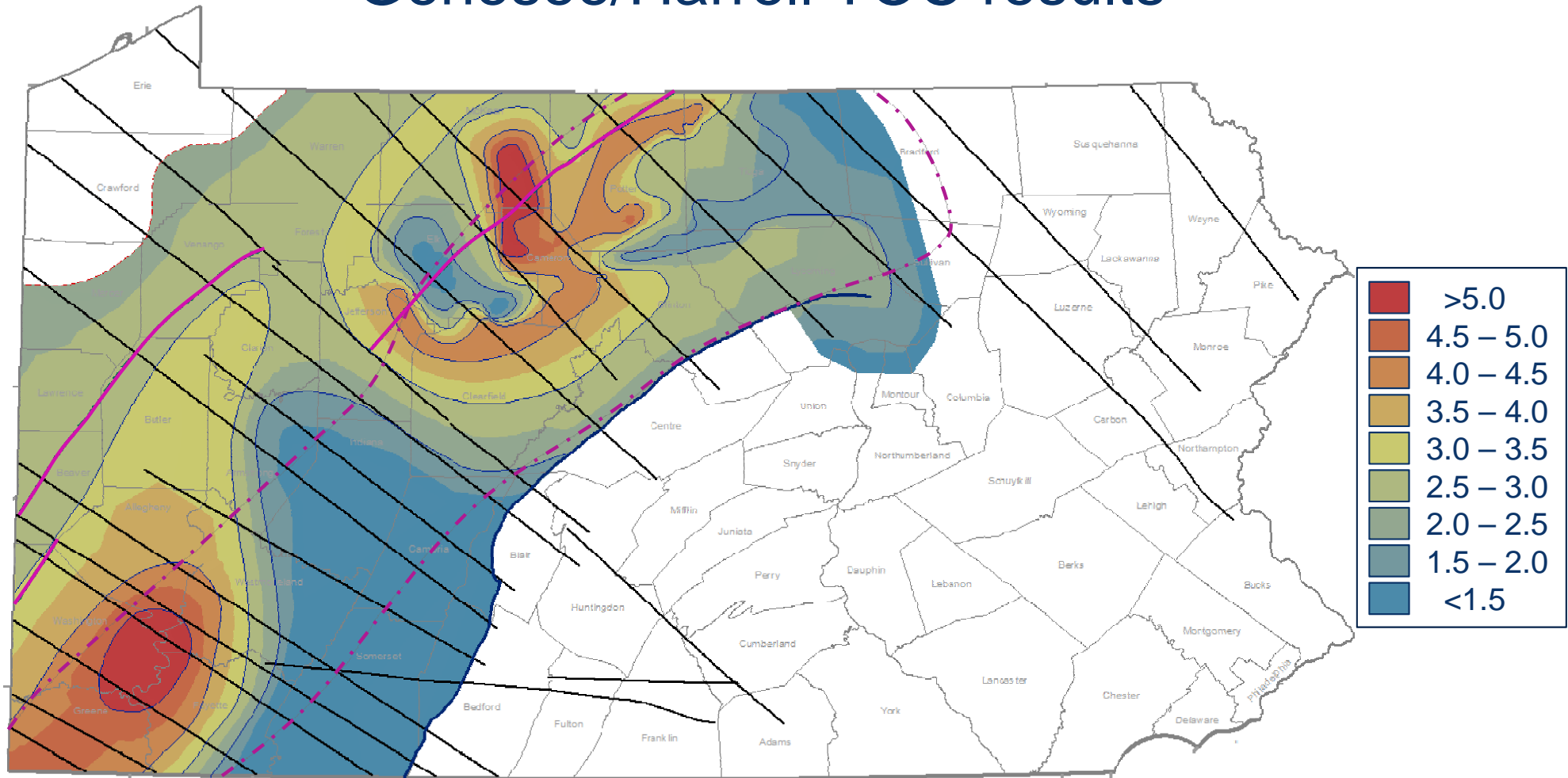
-  Rome Trough
-  Speculated western edge
-  Lineament
-  Allegheny structural front



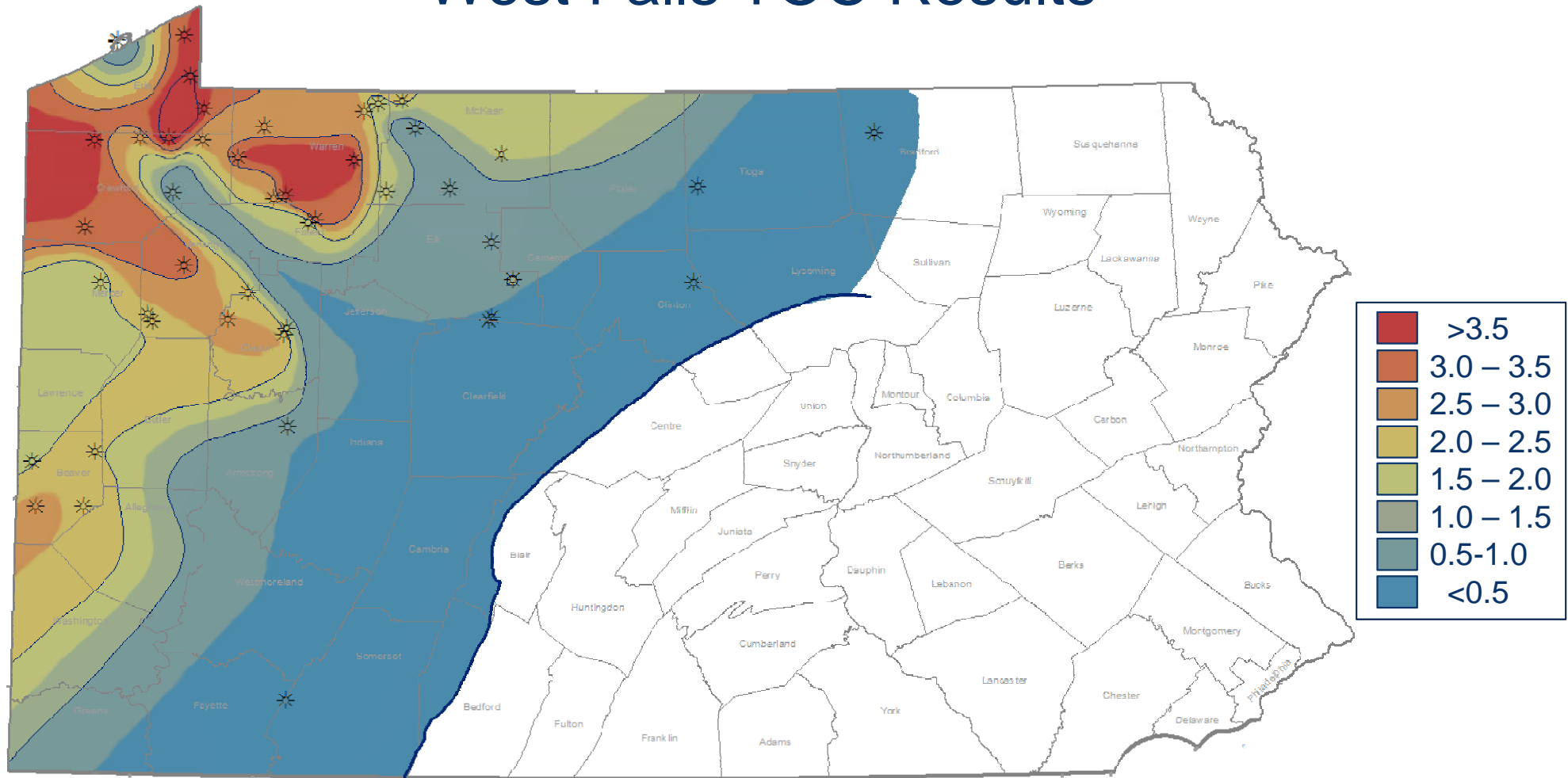
Genesee/Harrell TOC results



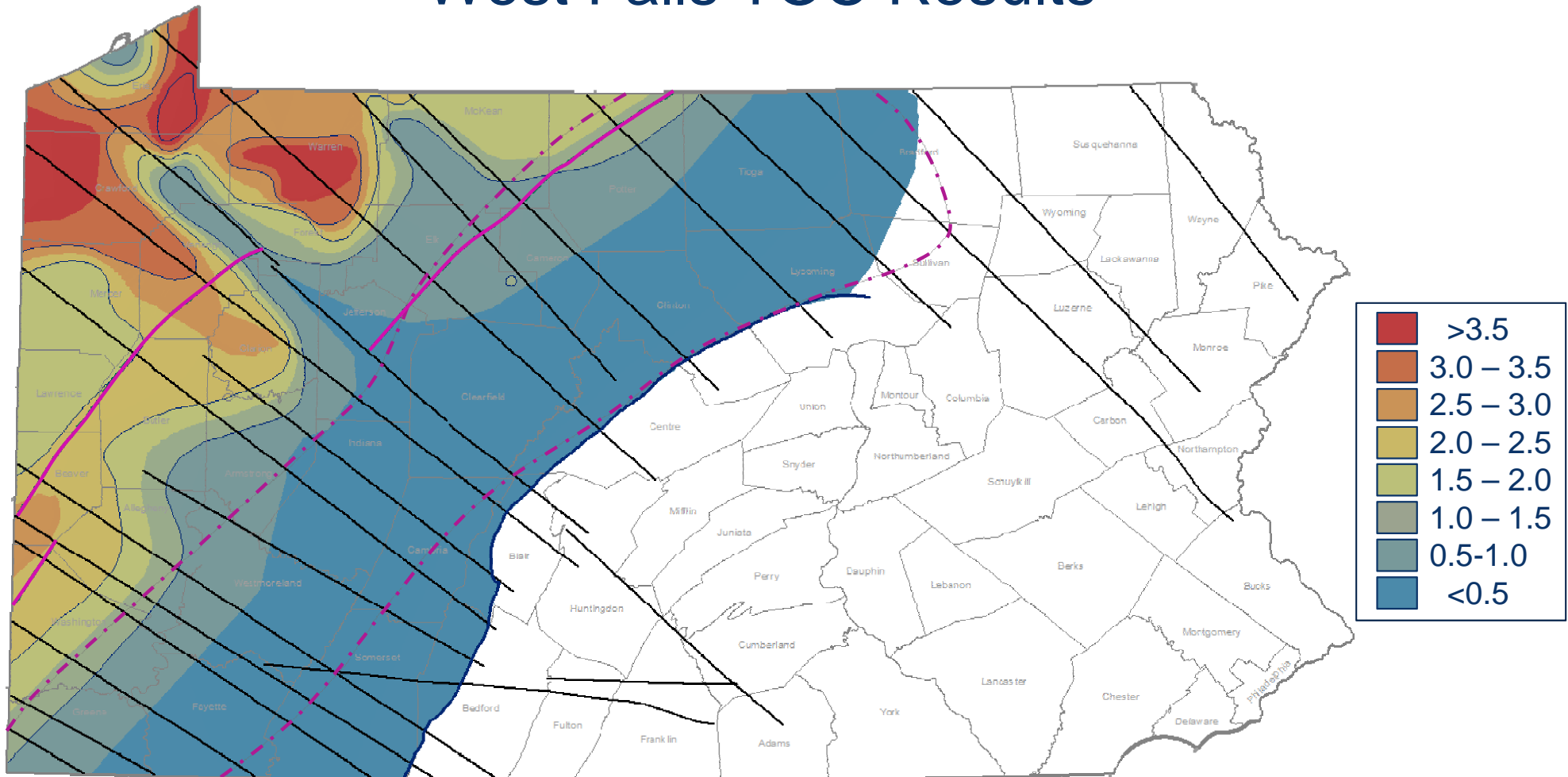
Genesee/Harrell TOC results



West Falls TOC Results

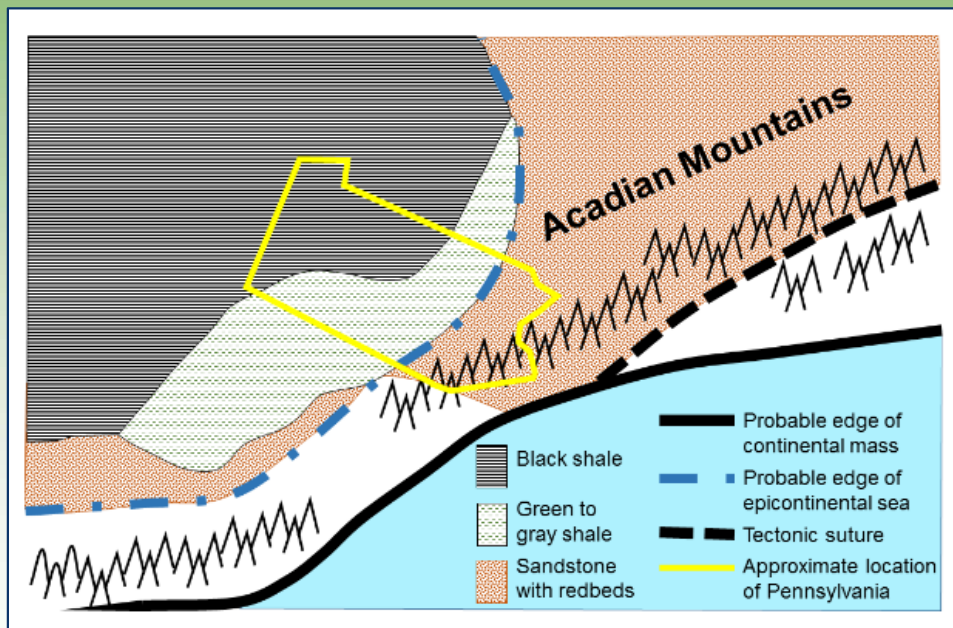


West Falls TOC Results

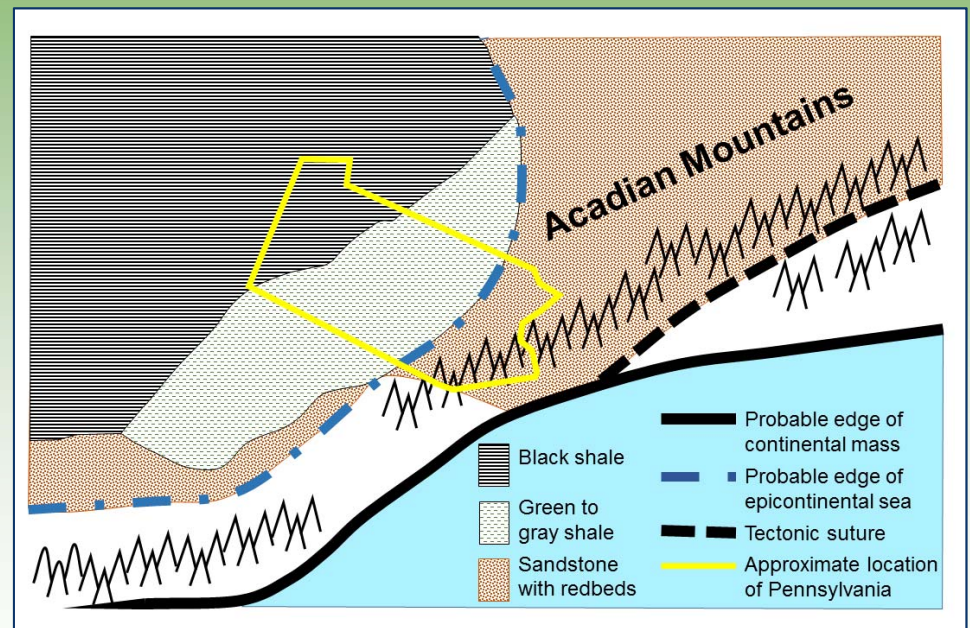


Paleogeography

Genesee/Harrell time



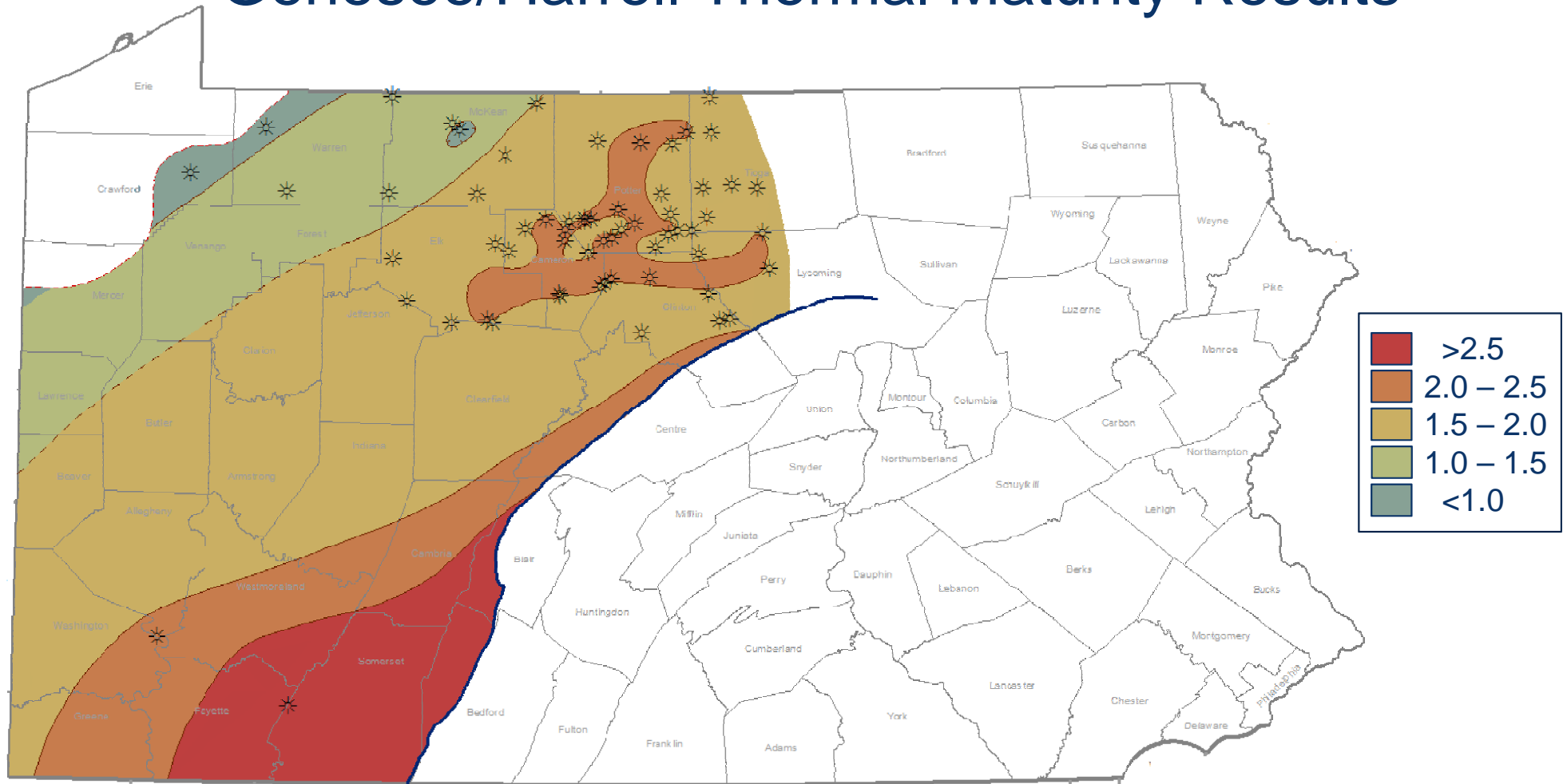
West Falls time



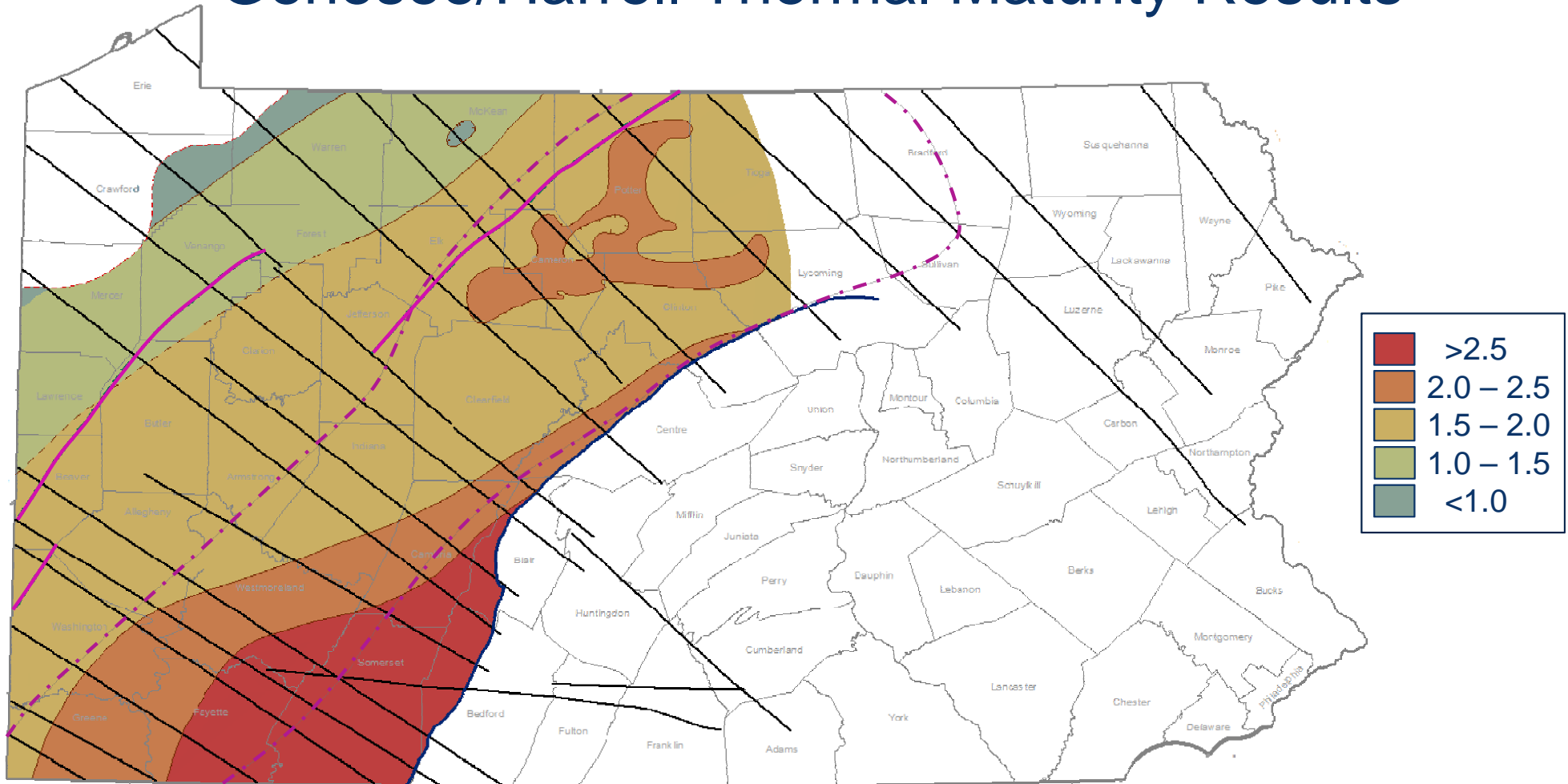
Thermal Maturity Table

Maturity Stage	% R ₀
Immature	0.20 – 0.60
Early Oil	0.60 – 0.65
Peak Oil	0.65 – 0.90
Wet Gas	0.90 – 1.50
Dry Gas	1.50 – 2.50
Overmature	>2.50

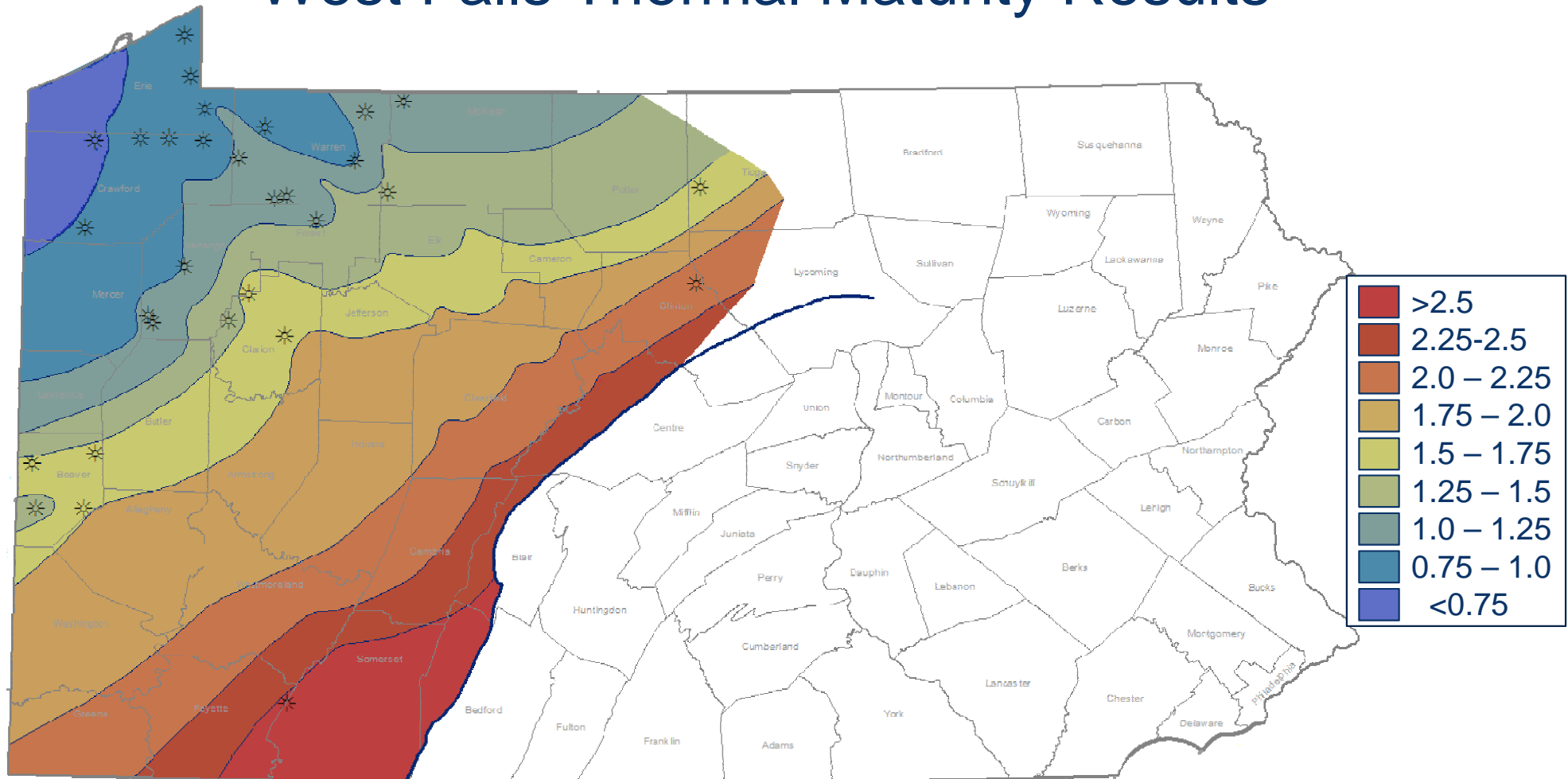
Genesee/Harrell Thermal Maturity Results



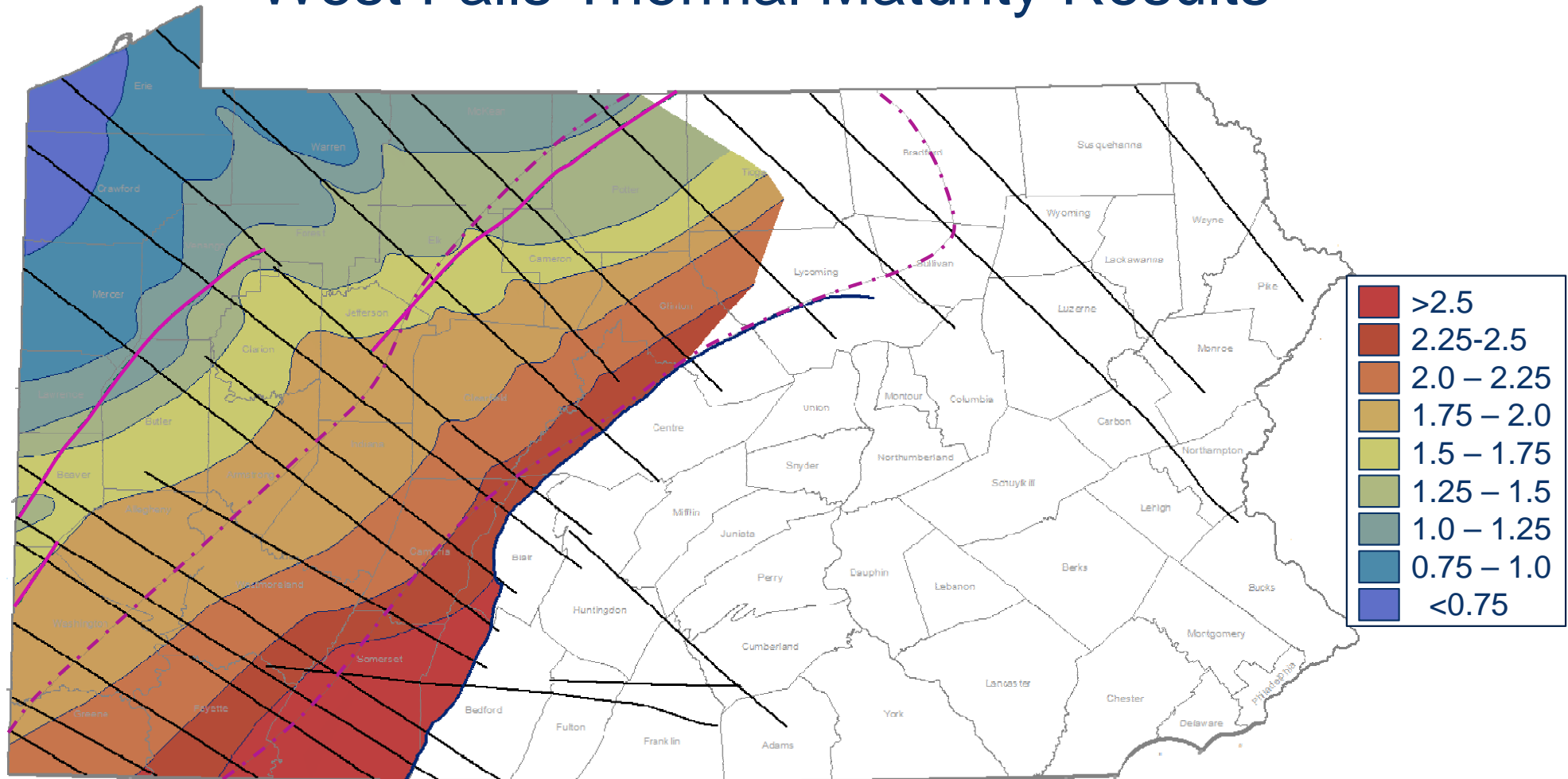
Genesee/Harrell Thermal Maturity Results



West Falls Thermal Maturity Results



West Falls Thermal Maturity Results



Conclusions

Genesee/Harrell

- The Allegheny Front displays strong influence on thermal maturity
- The Rome Trough shows some control on TOC and thermal maturity
- Lineaments show little effect on TOC and thermal maturity

West Falls

- The Allegheny Front displays strong influence on thermal maturity
- The Rome Trough shows little influence on TOC and thermal maturity
- Lineaments show strong effects on TOC and thermal maturity

Thank you!

Questions?

