

# **A Mushwad of Floyd Shale in the Appalachian Thrust Belt in Alabama, Combining the Structure of the Conasauga Gas Play with the Stratigraphy of the Floyd Gas Play\***

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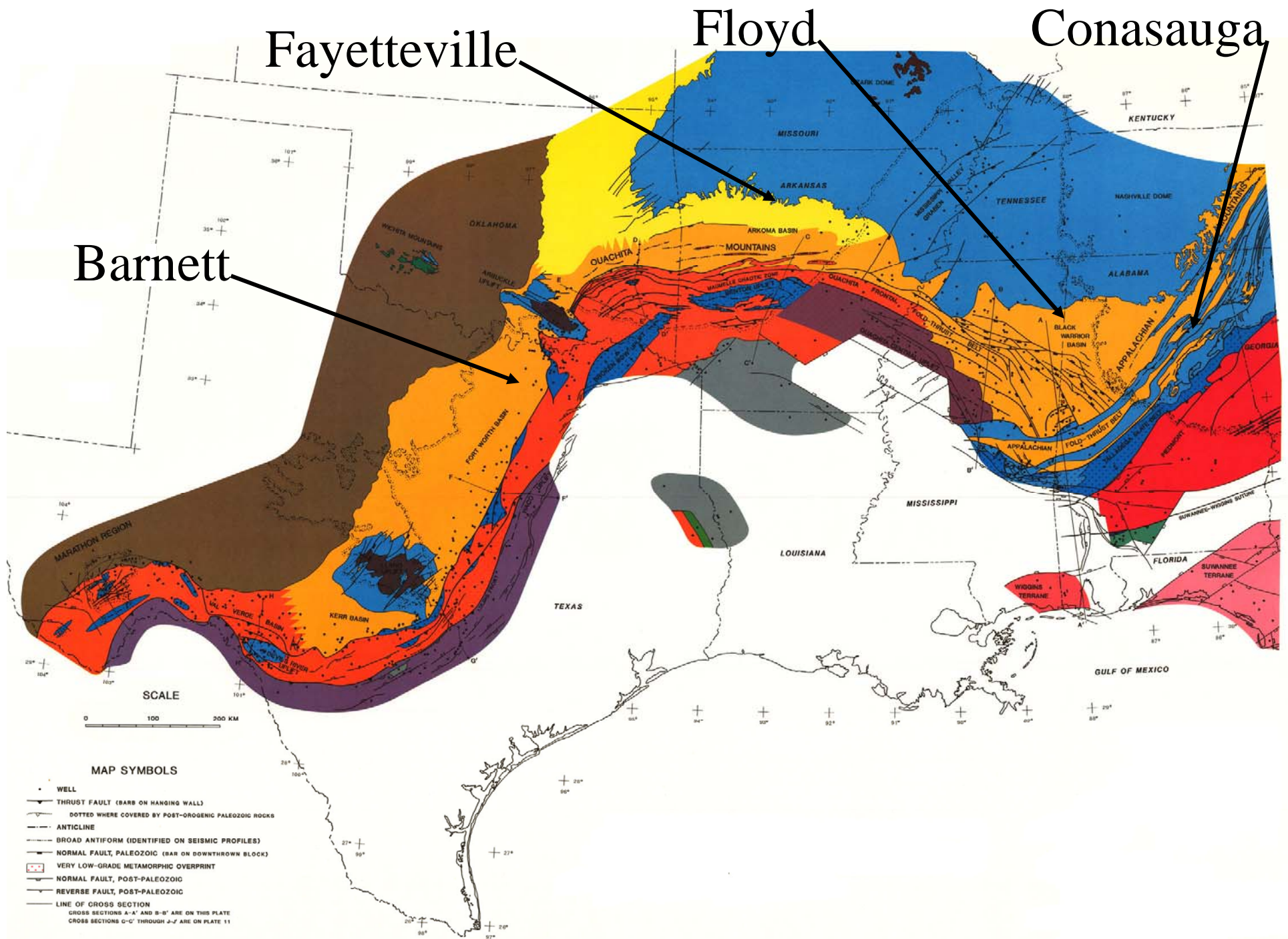
## **Abstract**

In the southern Appalachian thrust belt in Alabama, tectonically thickened, ductilely deformed duplexes (mushwads) of the Middle Cambrian shale-dominated Conasauga Formation recently have become an important shale gas objective. Meanwhile, the Upper Mississippian Floyd Shale (an approximate lithologic and temporal equivalent of the Barnett Shale) is a shale gas prospect in the Black Warrior foreland basin in northeastern Mississippi and northwestern Alabama. Within the several hundred feet of Floyd Shale (a lithostratigraphic formation dominated by dark-colored shale) in the Black Warrior basin, one interval approximately 100 feet thick is lithologically a “black shale” (informally, the Neal shale).

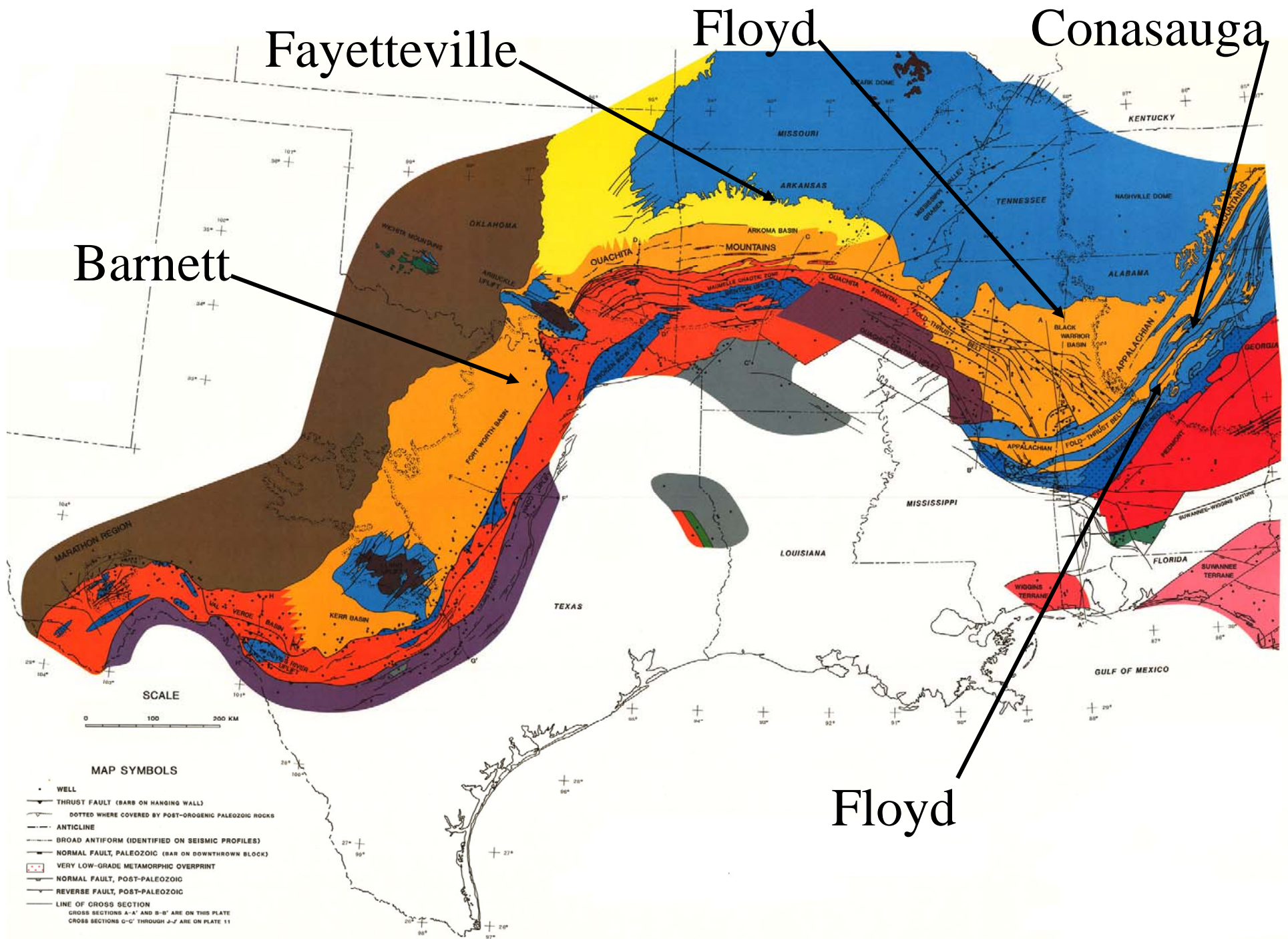
The stratigraphic strike of the Neal black shale is northwest-southeast, parallel with structural strike in the down-to-southwest Black Warrior basin in the Ouachita foreland. The northwest-striking Black Warrior basin is structurally truncated by the younger, northeast-striking Appalachian thrust belt, which imbricated the Ouachita foreland. The southeast-trending Neal shale is imbricated at approximately right angles by Appalachian thrust faults. The projection of the trend of the Neal shale from the Black Warrior basin into the Appalachian thrust belt is aligned with the Vandiver upper-level mushwad within the Coosa synclinorium. The Vandiver mushwad consists of a tectonically thickened, ductilely deformed, shale-dominated succession of Mississippian Floyd Shale (black and dark-gray shale) and Parkwood Formation (shale and sandstone interbeds). If the black shale (Neal) component of the Floyd Shale absorbed a significant proportion of the tectonic shortening and thickening in the Vandiver mushwad, then the favorable structure of the Conasauga mushwads is combined with the favorable stratigraphy of the Floyd Shale.

A mishmash of Floyd Shale in the  
Appalachian thrust belt in Alabama,  
combining the structure of the  
Conasauga gas play with the  
stratigraphy of the Floyd gas play

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University of Kentucky



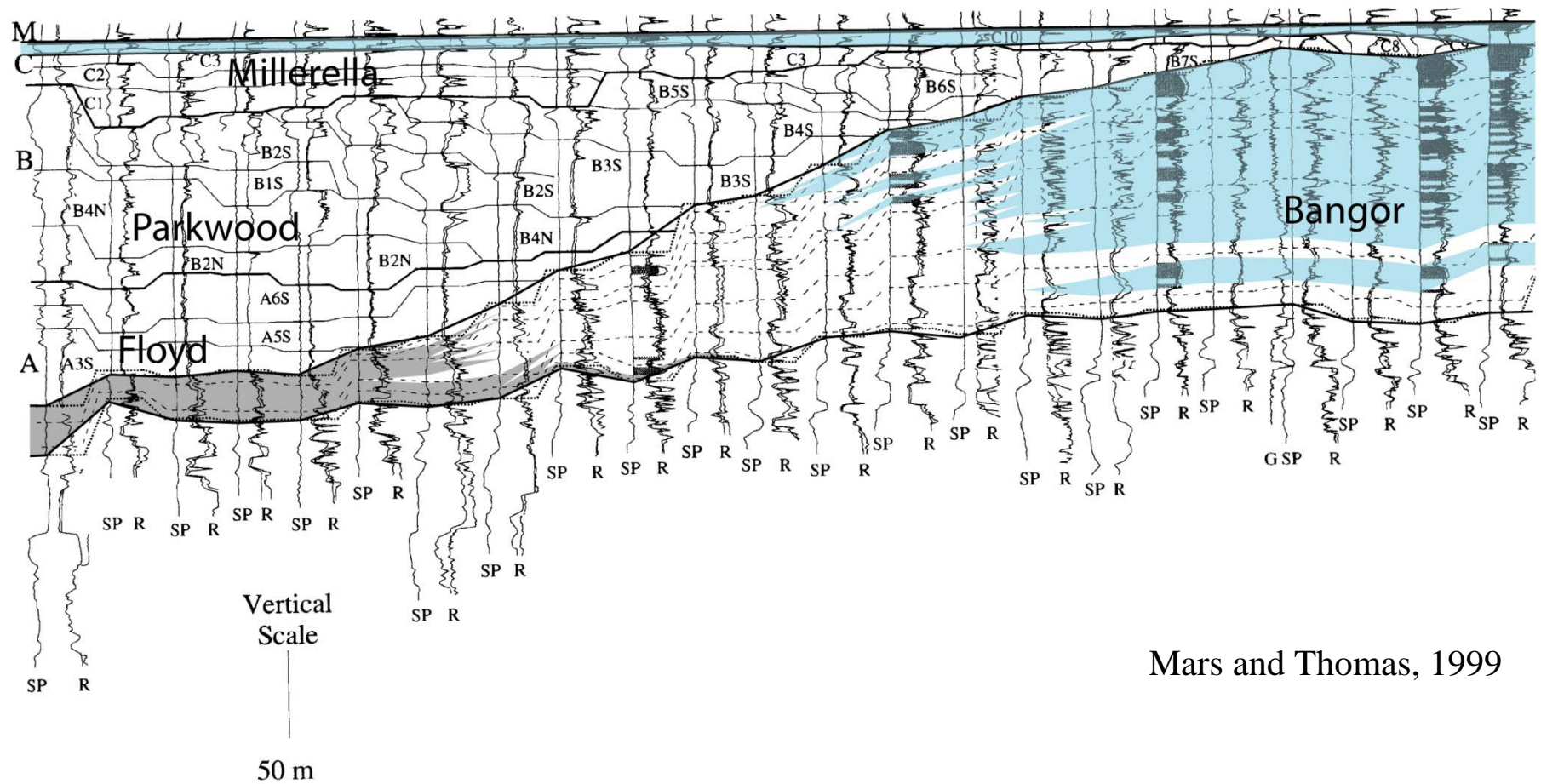




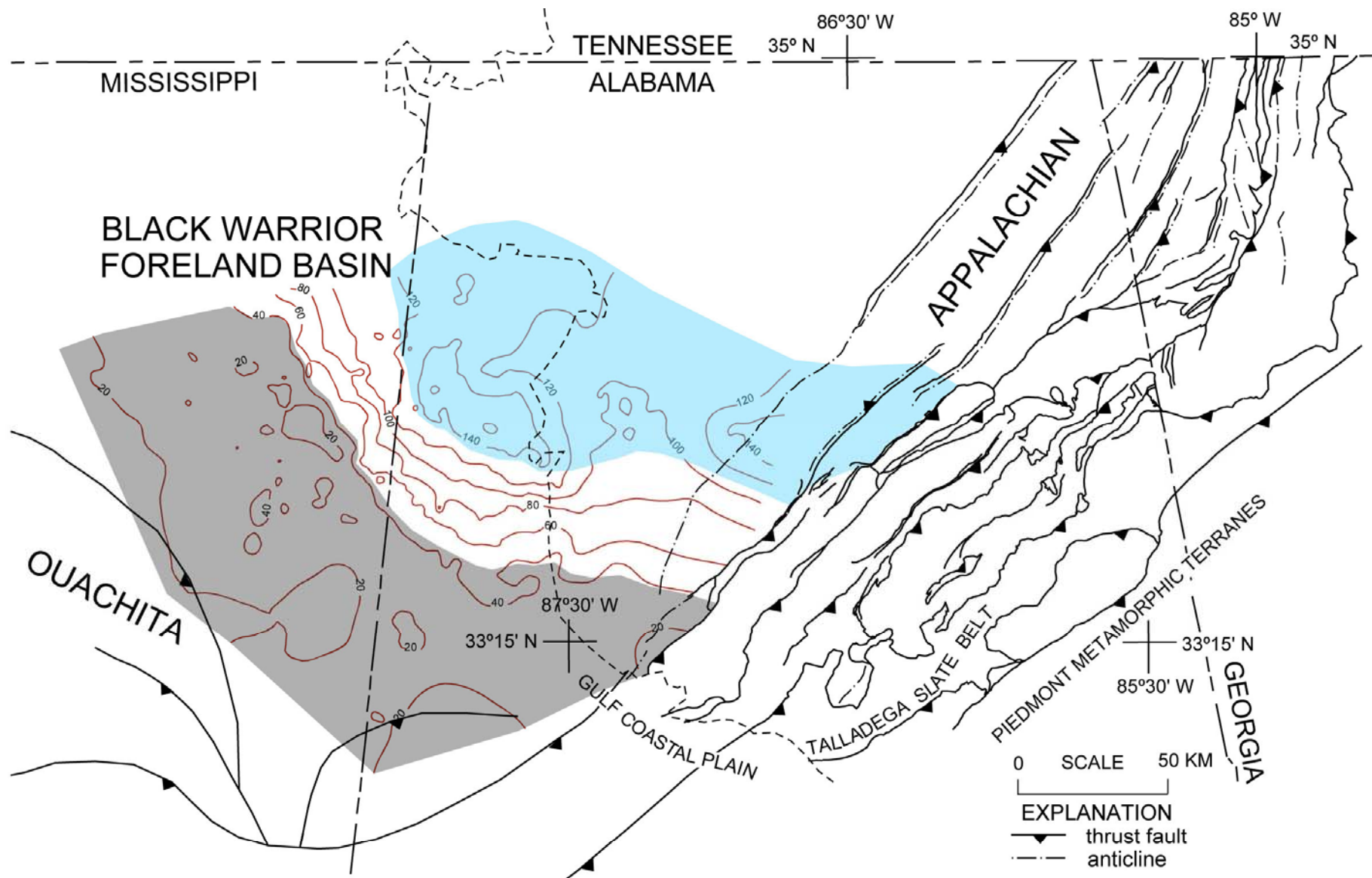


Southwest

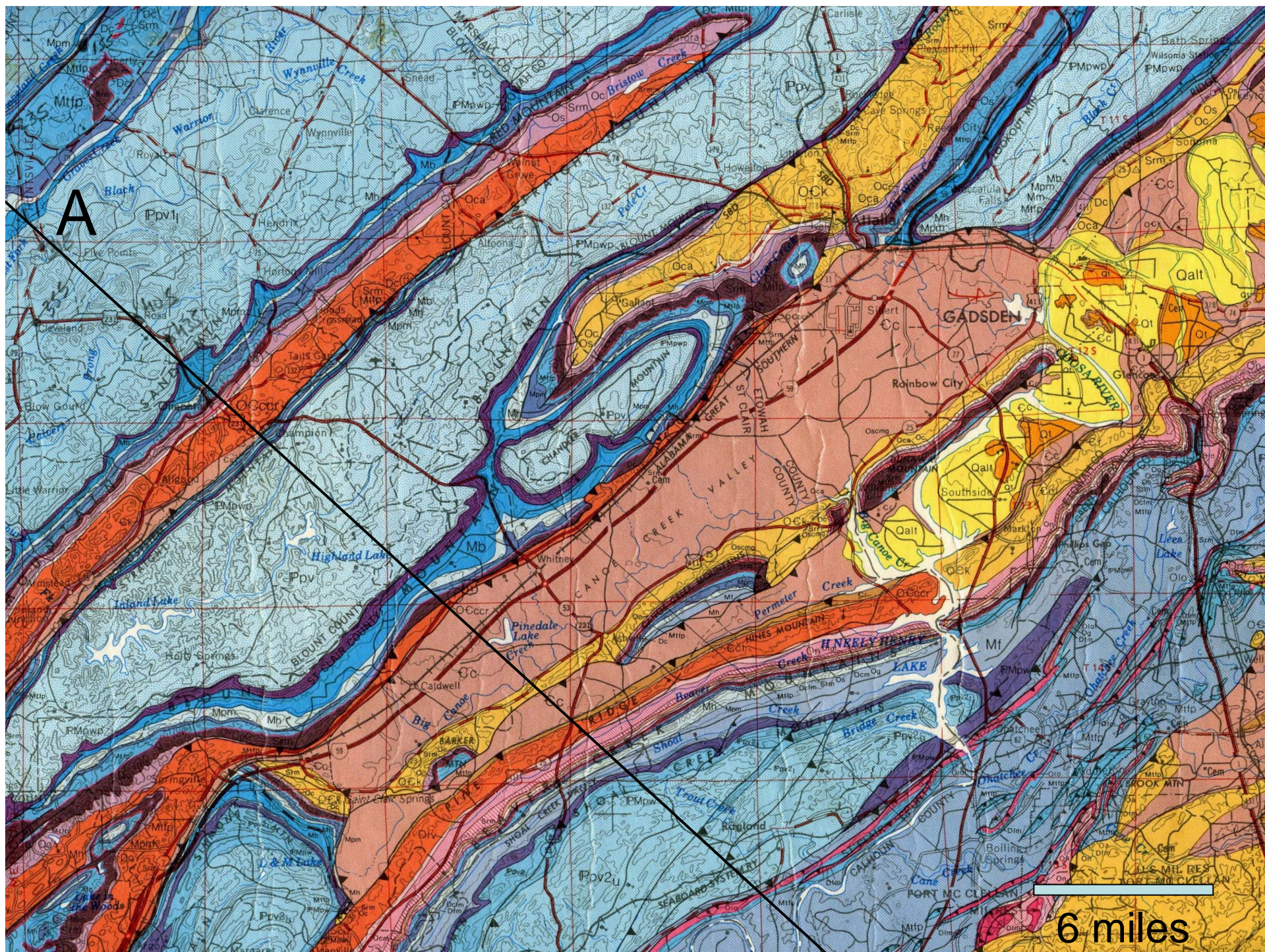
Northeast



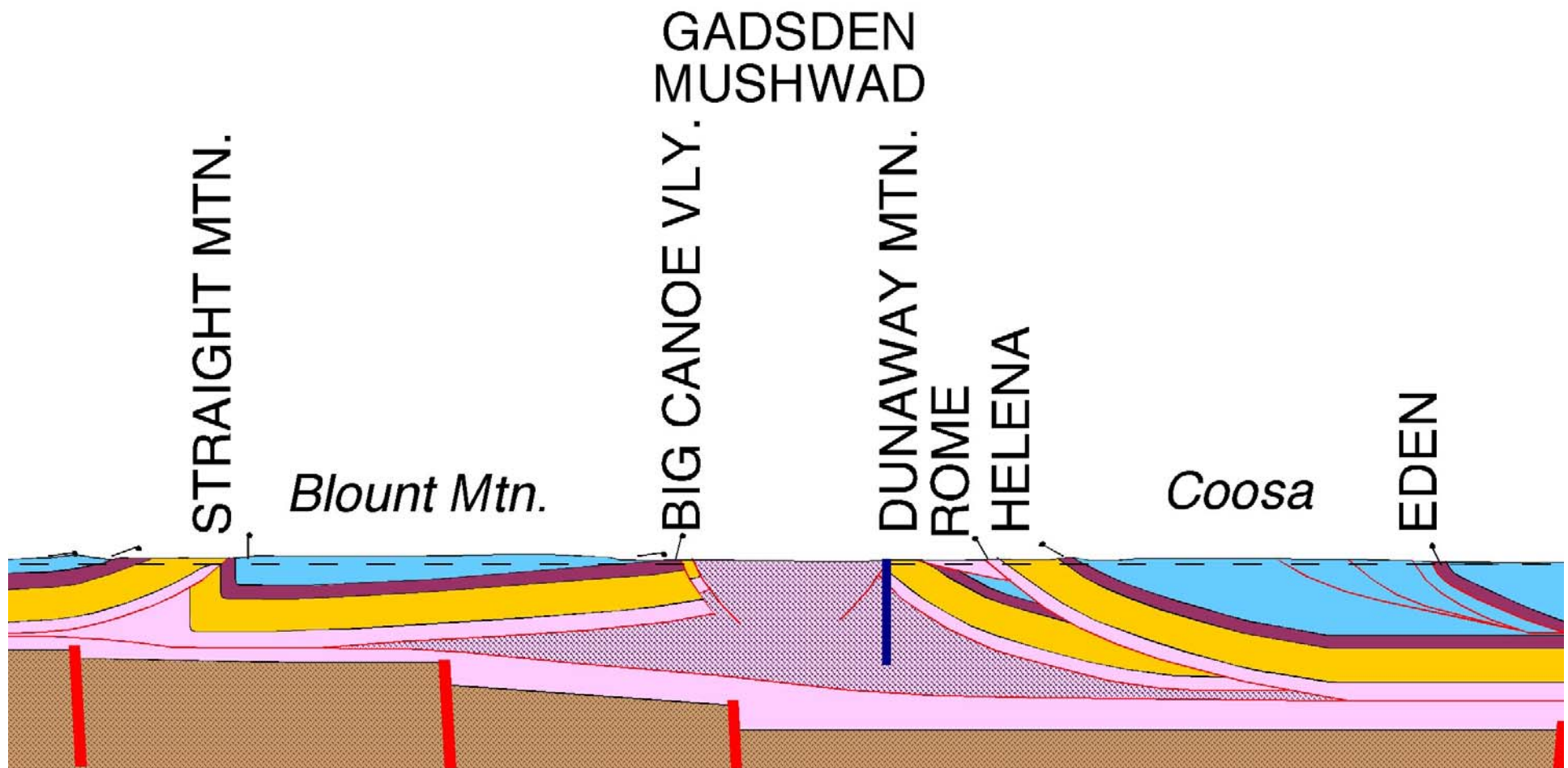
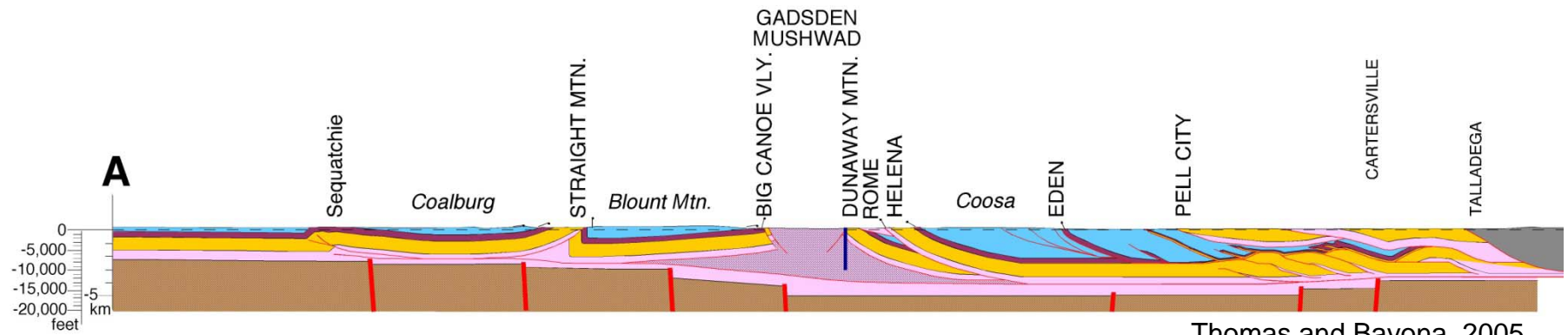
Mars and Thomas, 1999















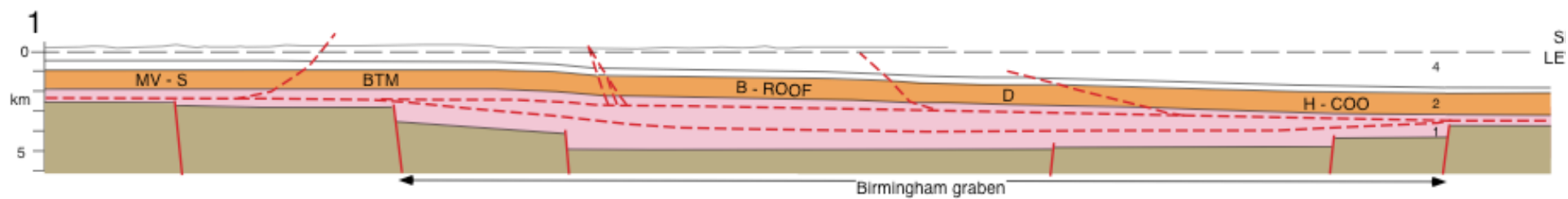
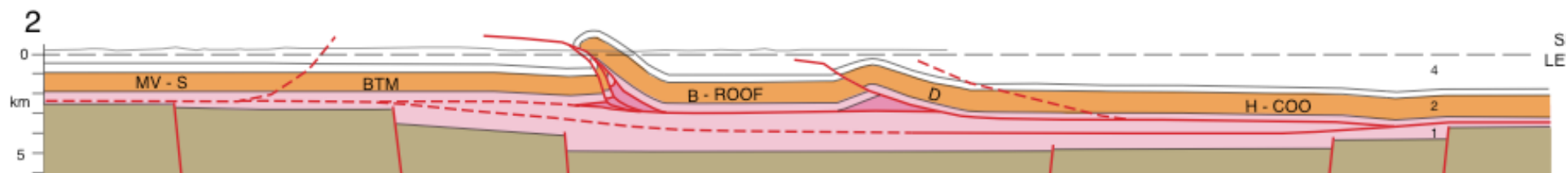
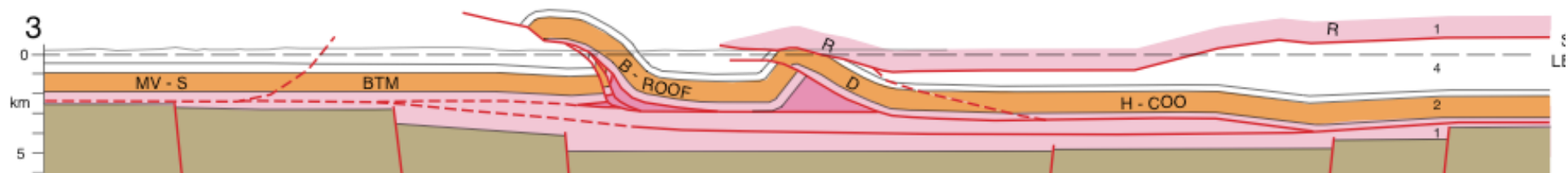






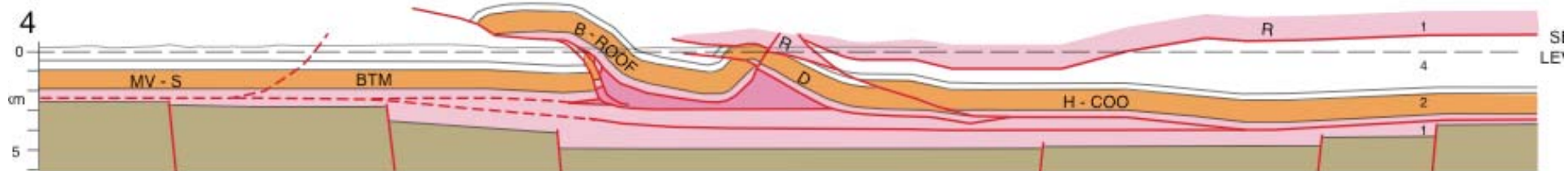
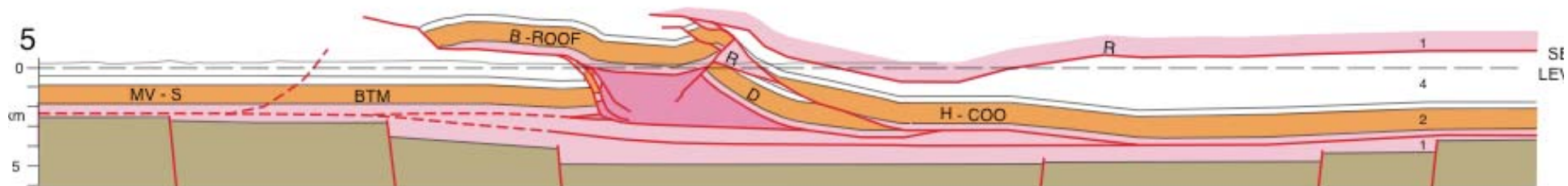
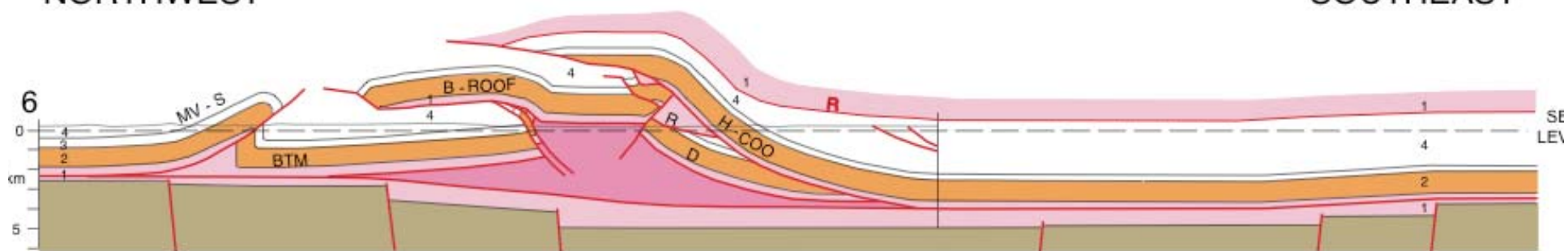
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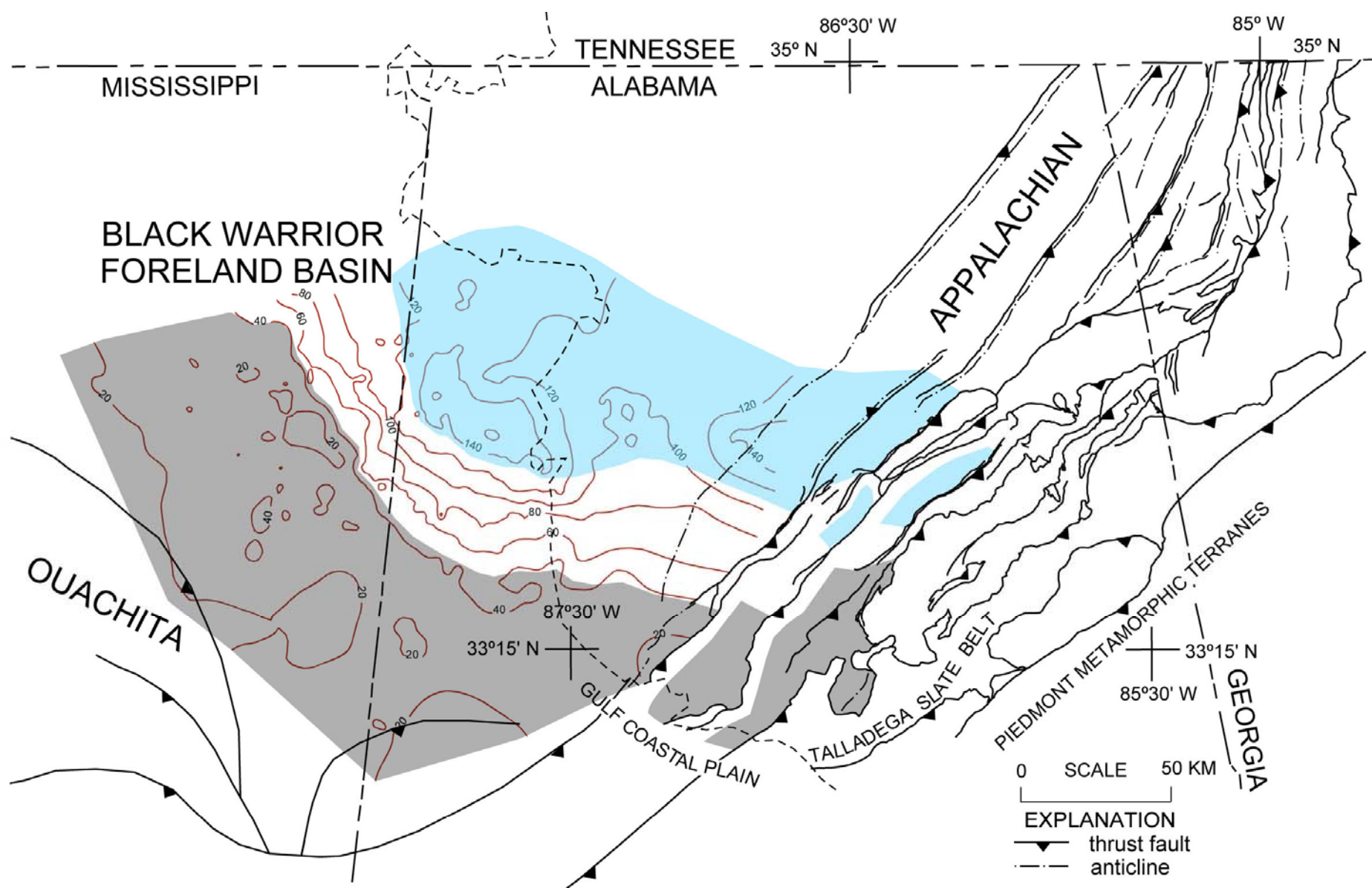
## SOUTHEAST



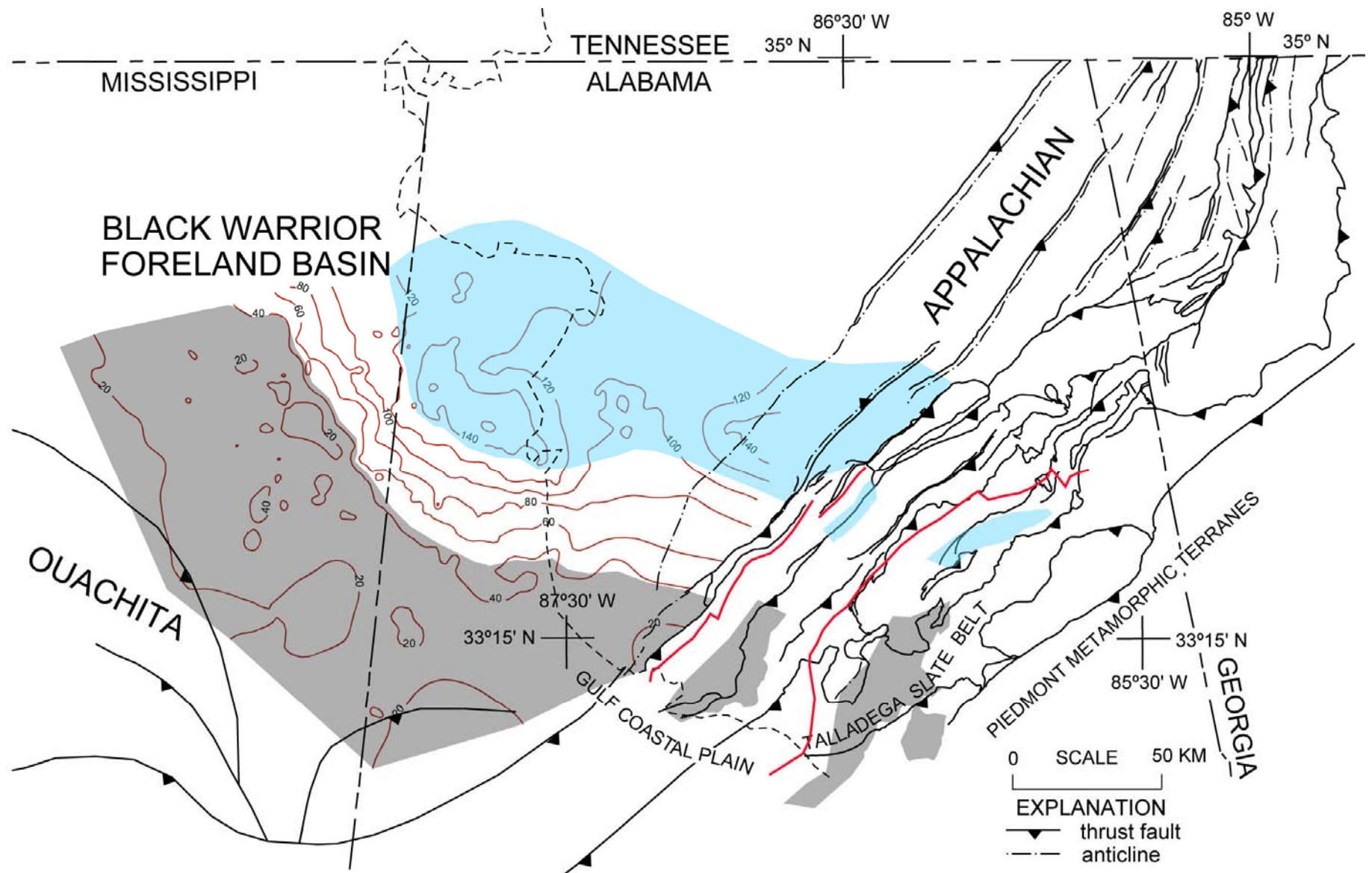
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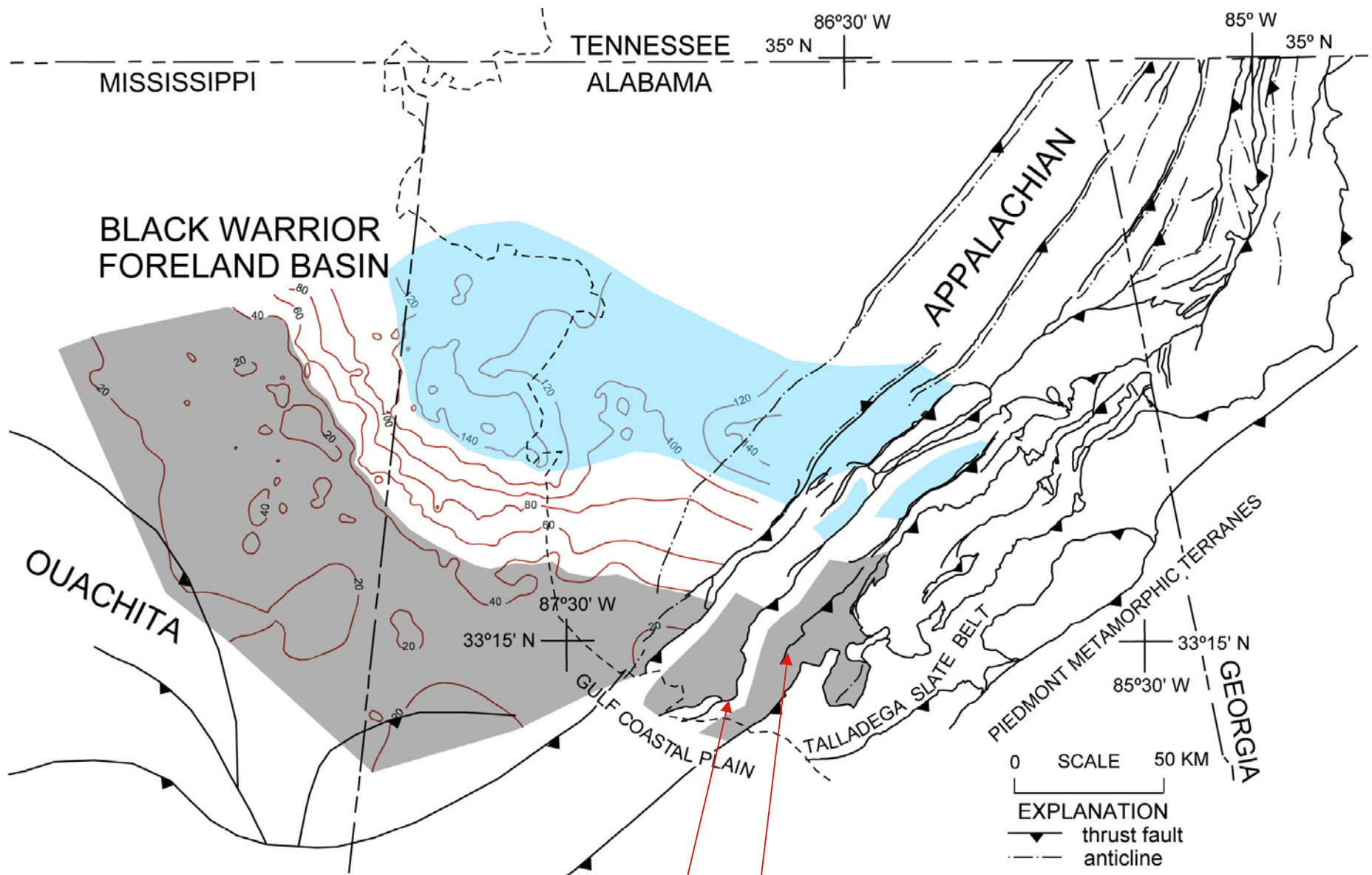
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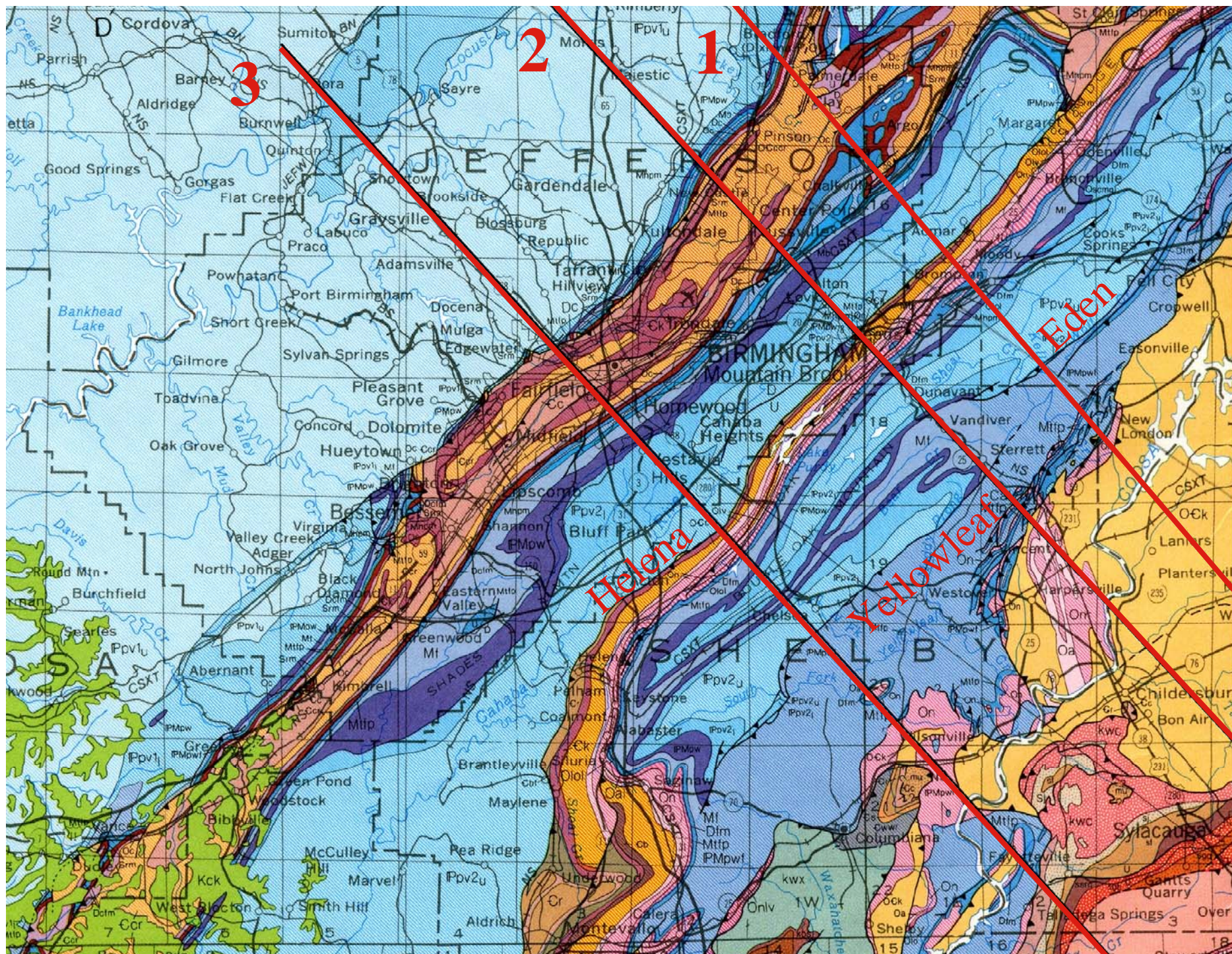




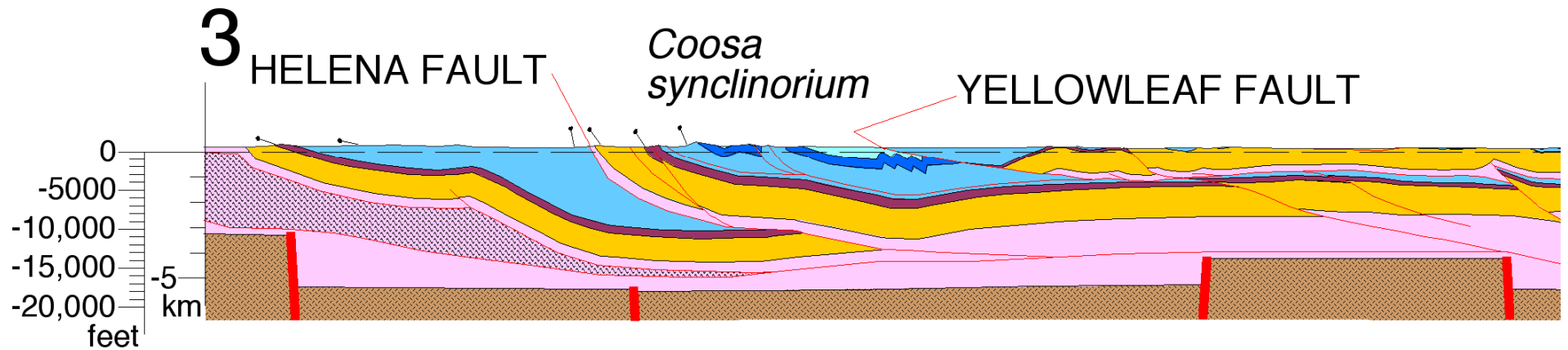
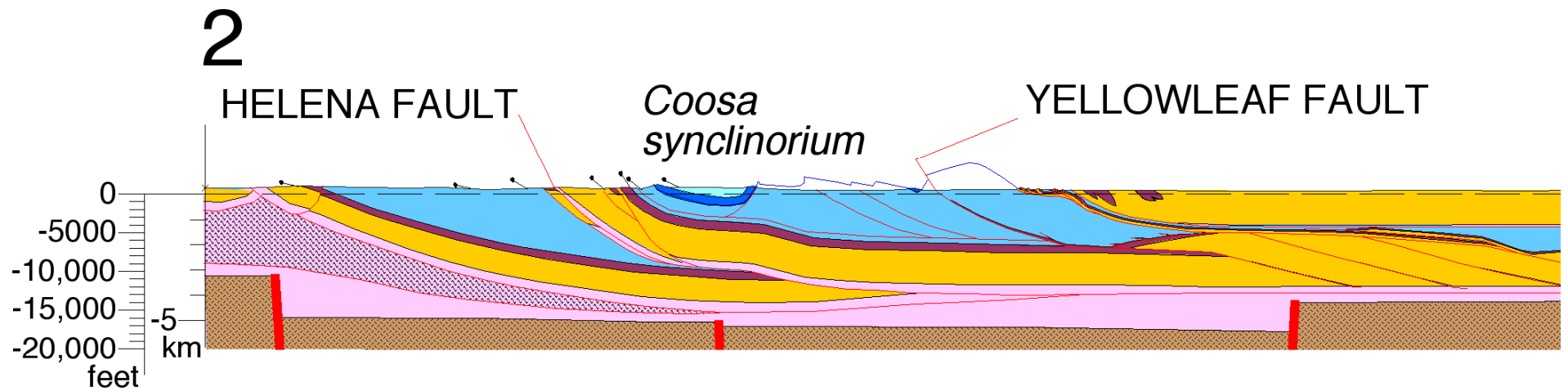
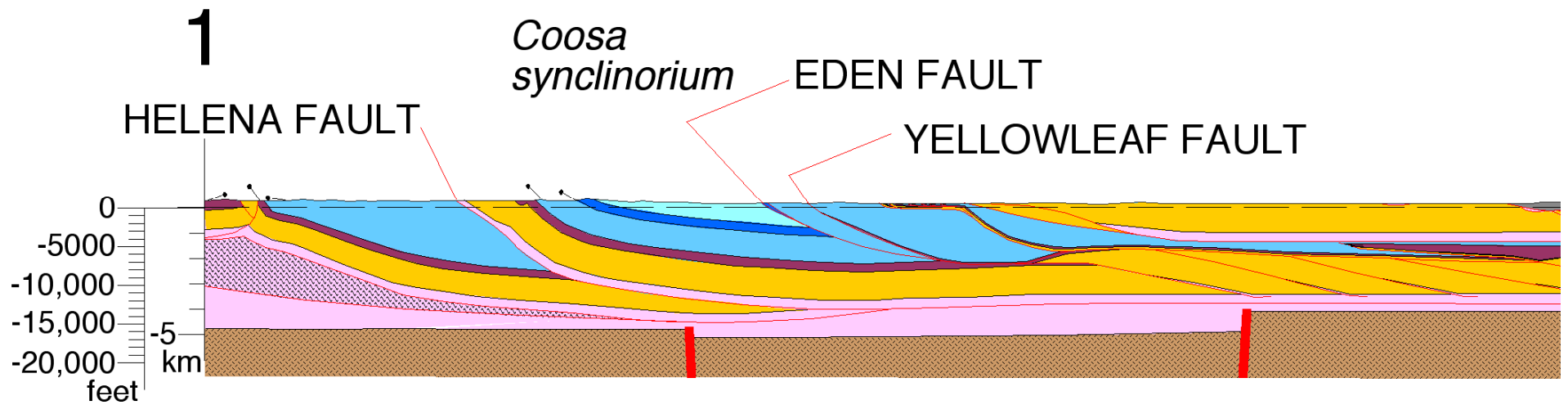
Helena fault

Yellowleaf fault

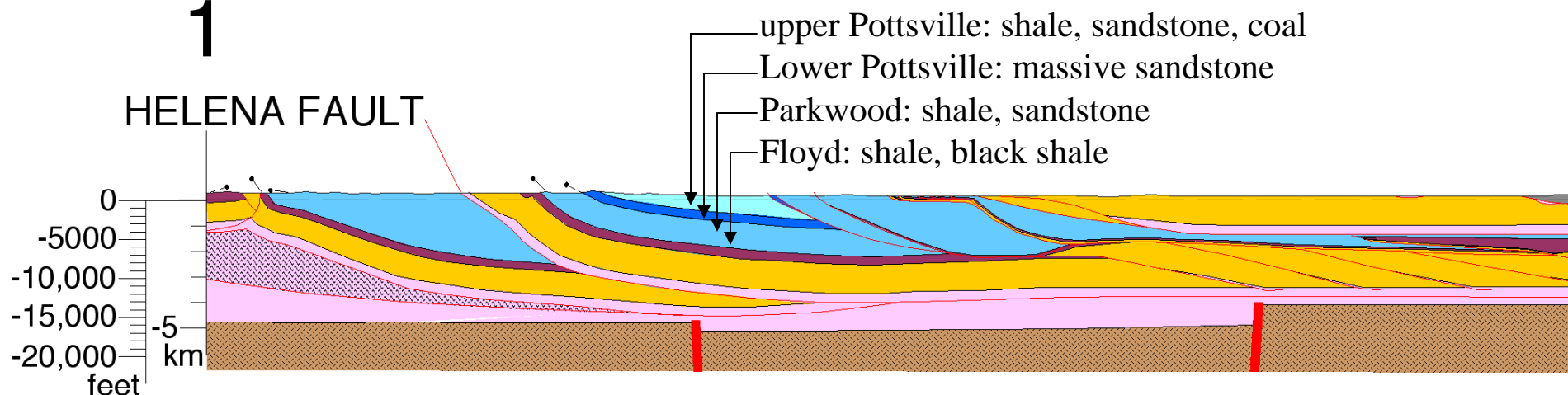




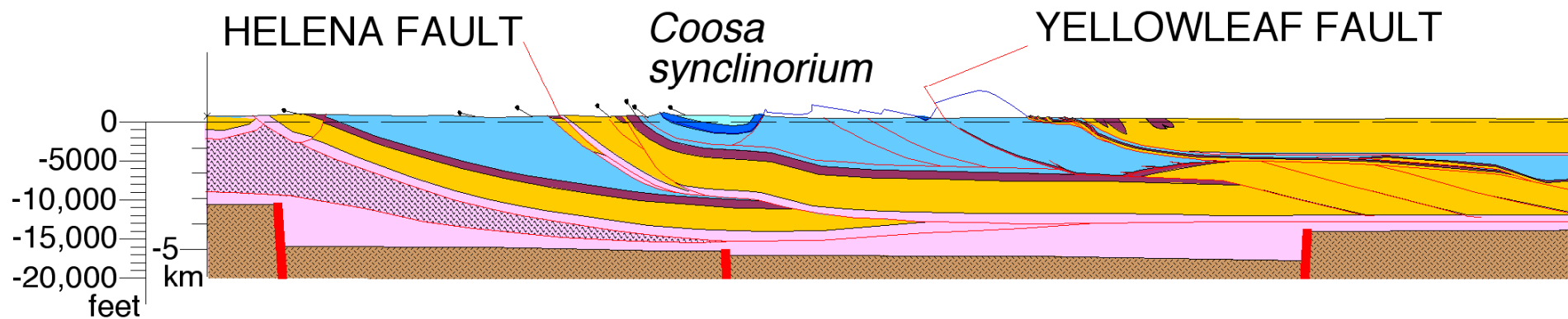




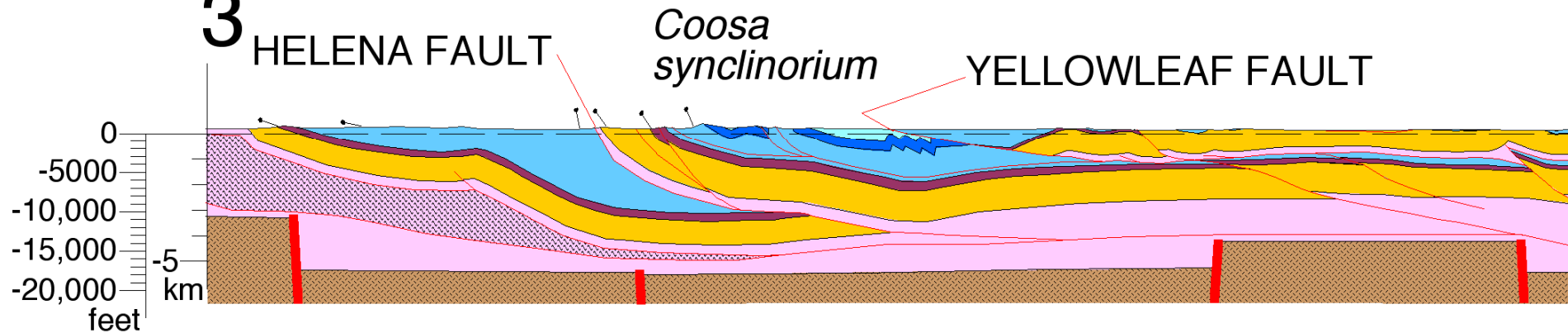
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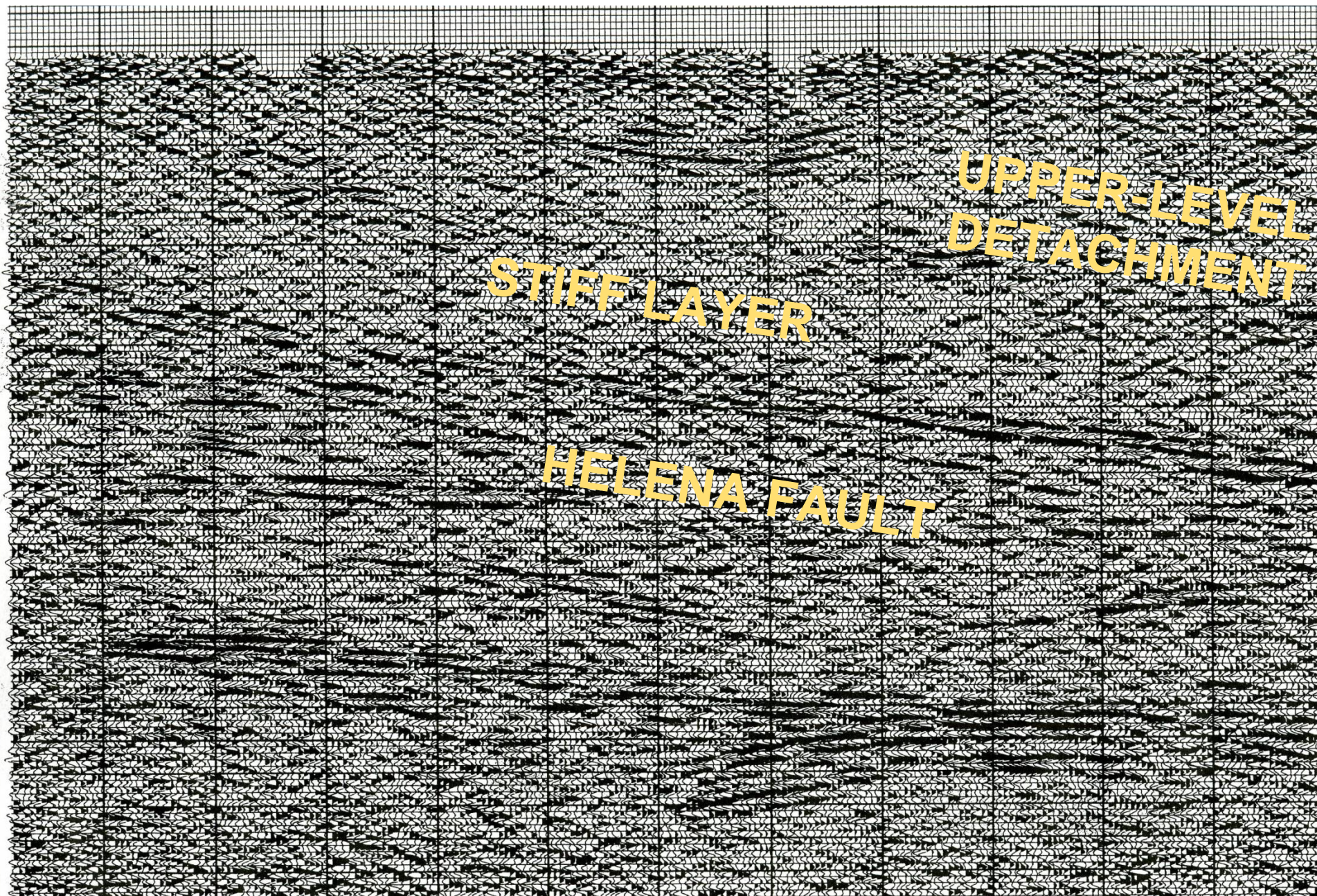
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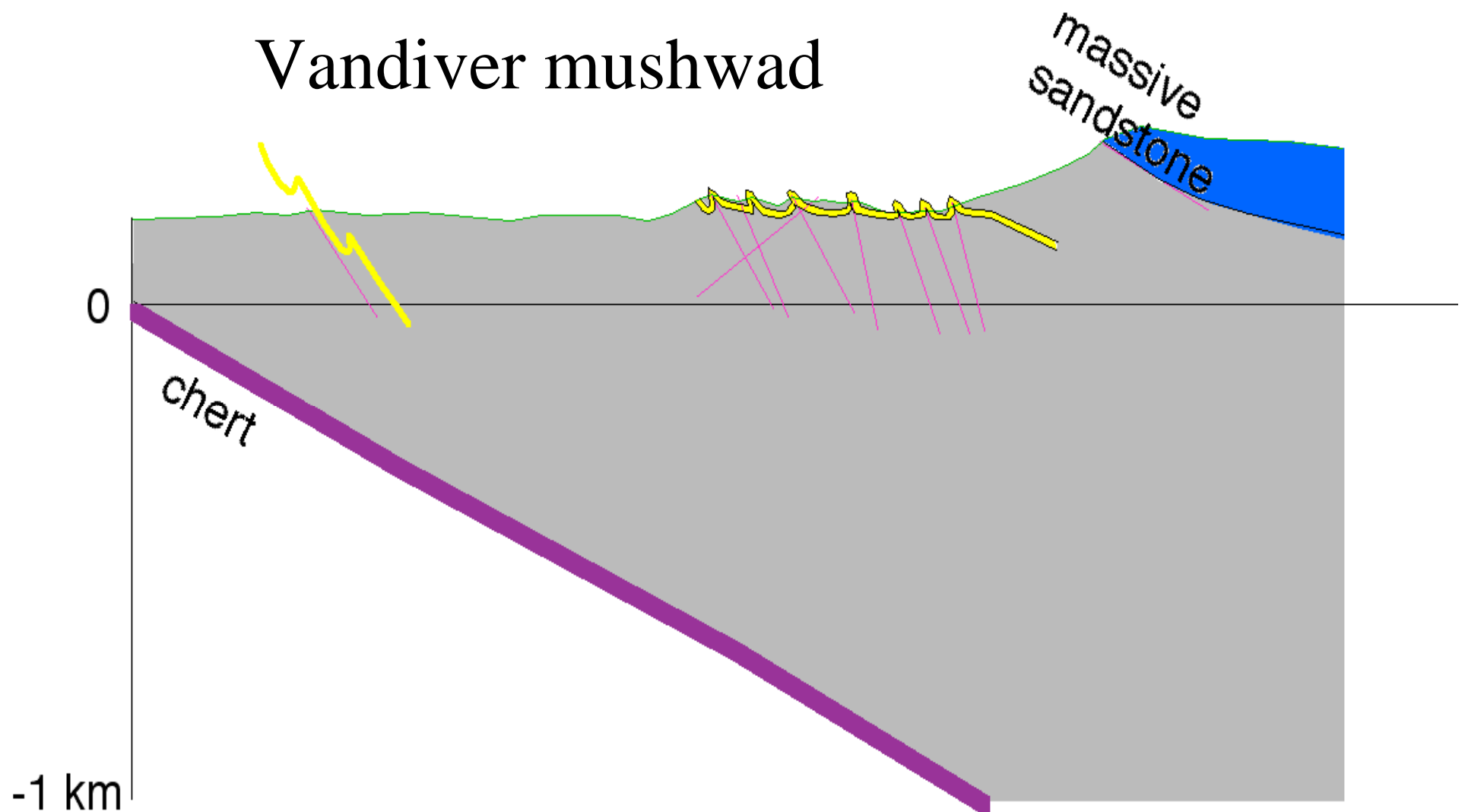




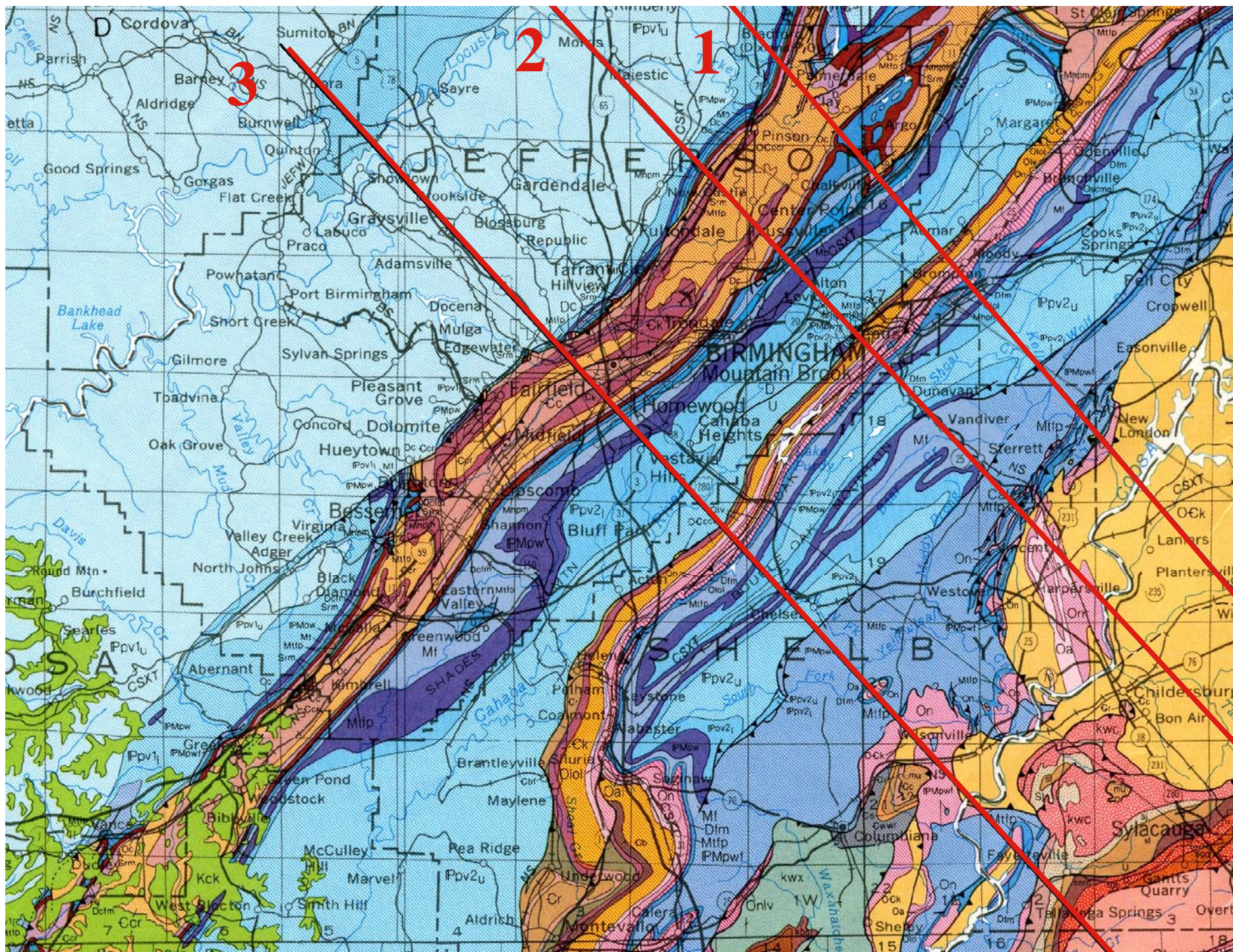




# Vandiver mushwad

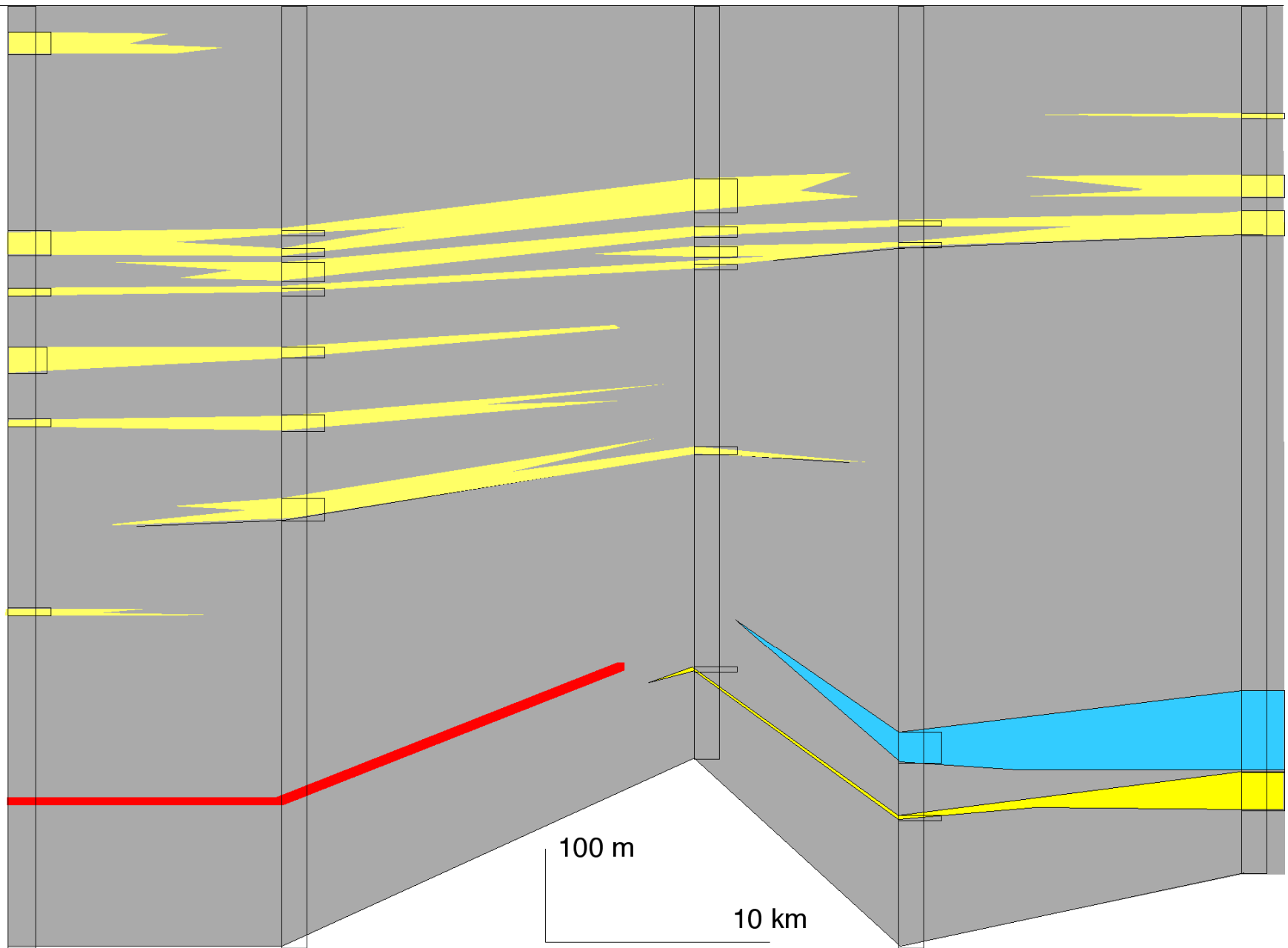








massive sandstone



chert



Pennsylvanian-  
Mississippian  
sandstone  
& shale

Mississippian-  
Ordovician  
ls-ss-chert

Ordovician-  
Cambrian  
massive  
carbonate

Cambrian  
carbonate  
& shale

sandstone & shale

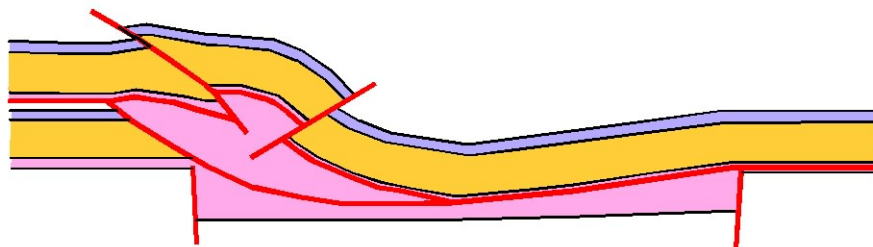
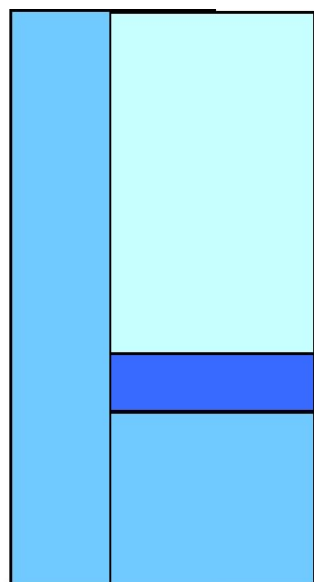
massive sandstone  
shale & sandstone  
shale

upper-level mushwad

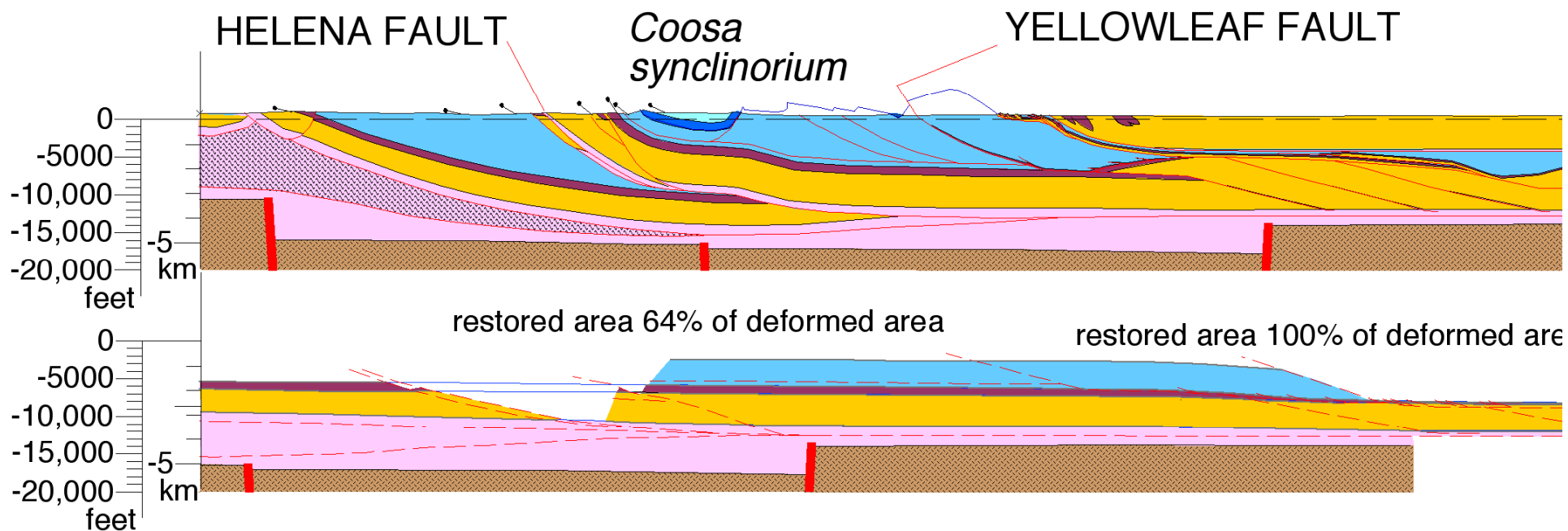
upper-level duplex

duplex

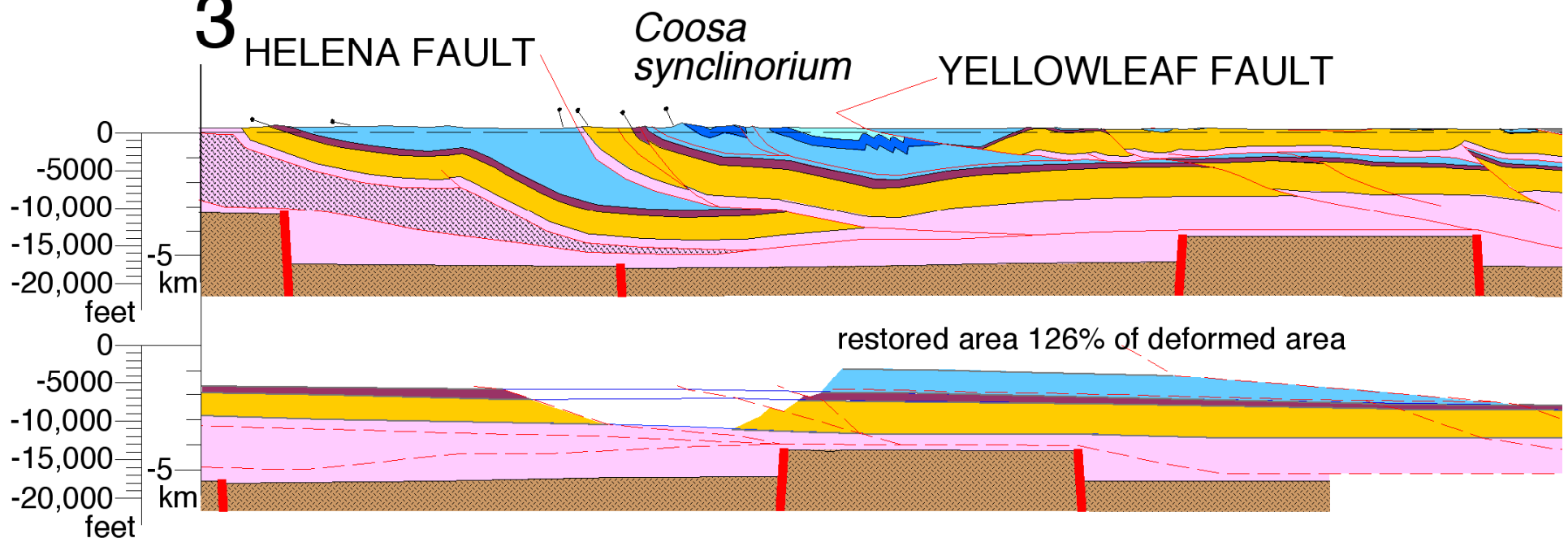
mushwad



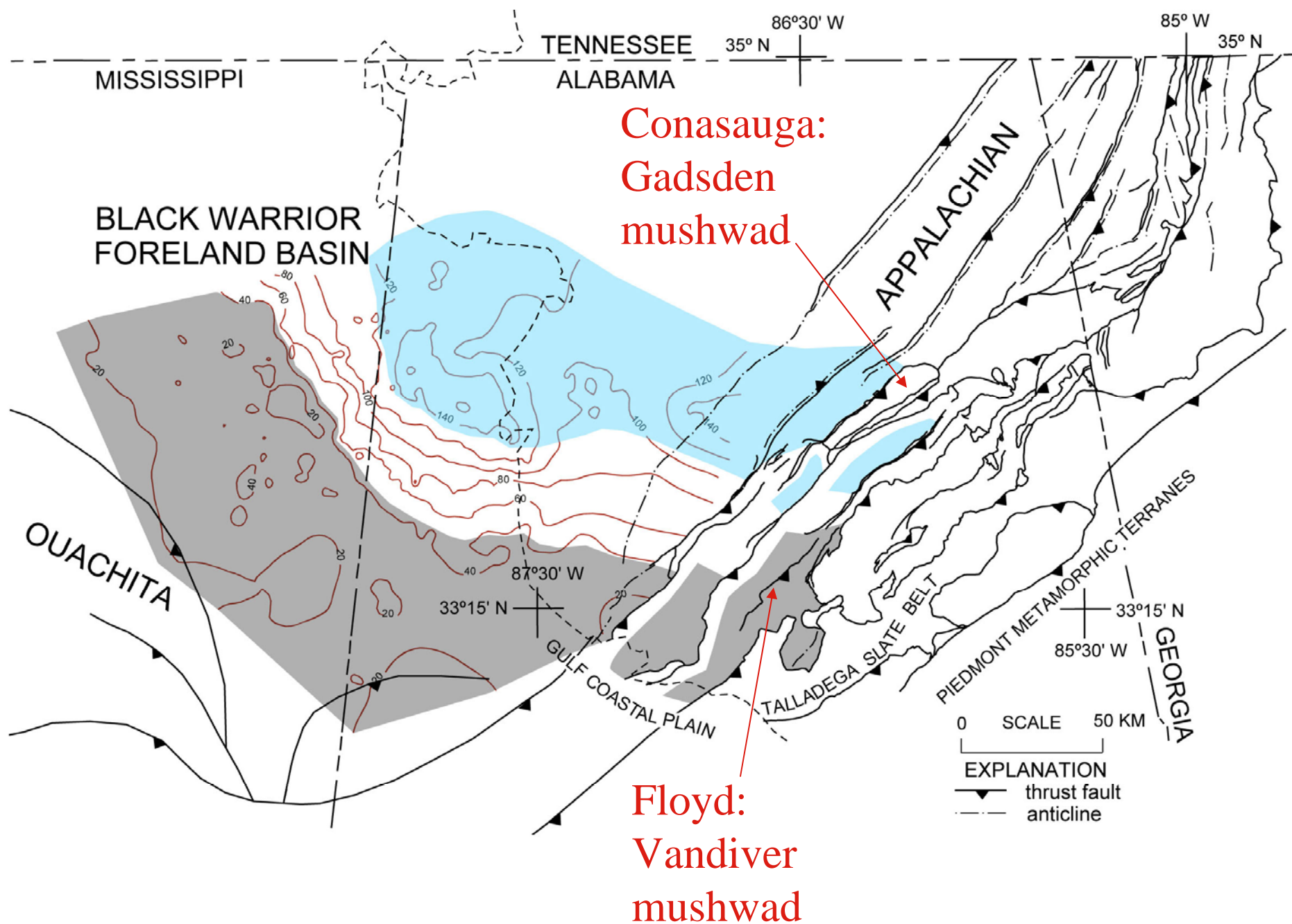
2



3









## **References**

Mars, J. C., and W.A. Thomas, 1999, Sequential filling of a late Paleozoic foreland basin: *Journal of Sedimentary Research*, v. 69, p.1191-1208.

Thomas, W. A., and G. Bayona, 2005, The Appalachian thrust belt in Alabama and Georgia: thrust-belt structure, basement structure, and palinspastic reconstruction: *Geological Survey of Alabama Monograph 16*, 48 p., 2 plates.