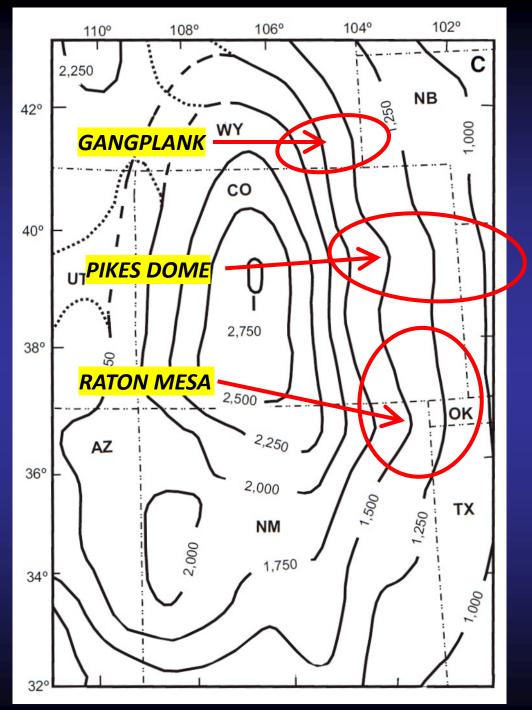
Previously Unrecognized Neogene (?) Structural Controls on River Courses along the Eastern Flank of the Southern Rocky Mountain Epeirogen with a Focus on "Pikes Dome", an Interfluve High between the South Platte and Arkansas Rivers

Edward J. "Ned" Sterne Independent Geologist Littleton, Colorado nedsterne@aol.com

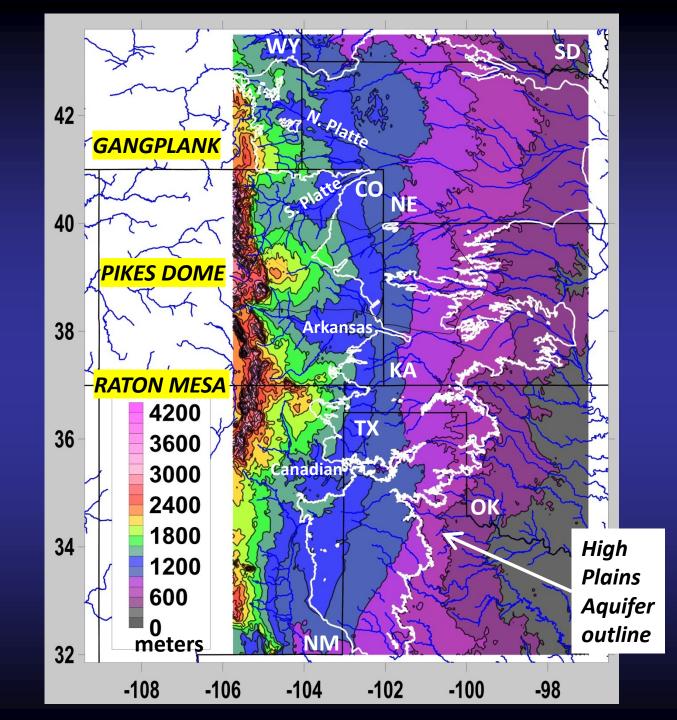
Pikes Peak and Rampart Range erosion surface from Palmer Divide by Bierstadt



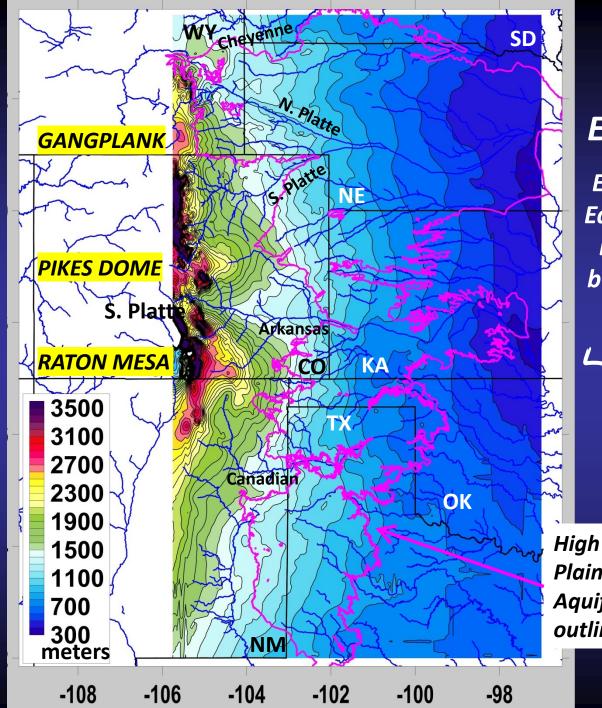
Southern Rocky Mountain Epeirogen (SRMe)

Smoothed Topography (meters)

Eaton (2008)

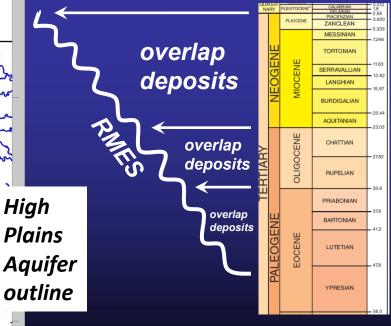


Regional Topographic Map

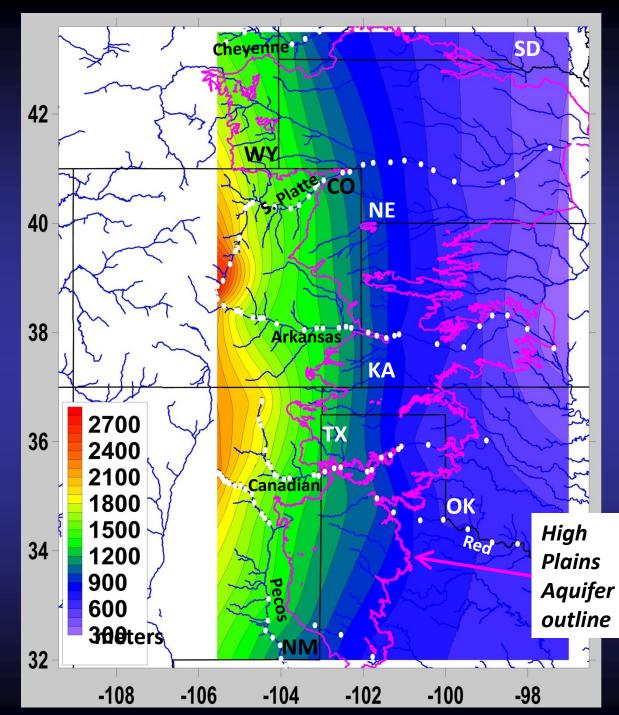


#### Structure Map of the Rocky Mountain Erosion Surface (RMES)

Eastern Colorado ~ 4,000 points Eastern New Mexico ~ 875 points Eastern Wyoming ~ 300 points base of the High Plains Aquifer = tens of thousands of points



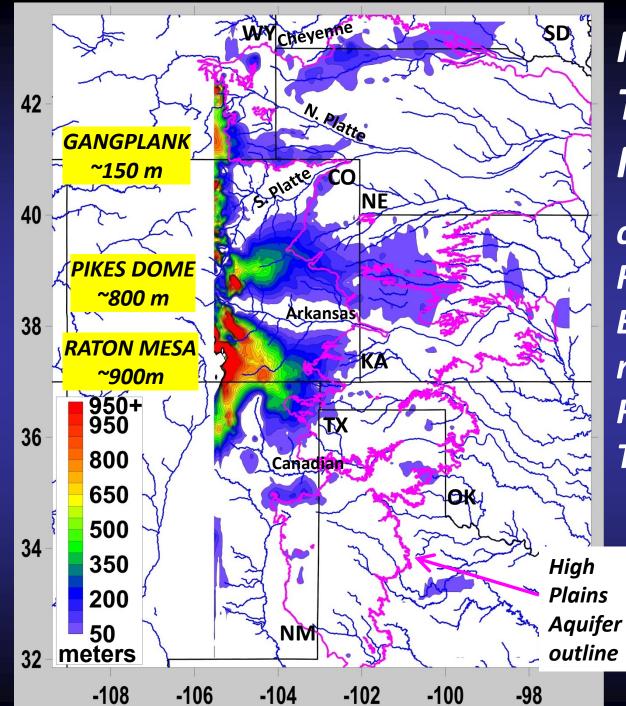
Late Eocene to base Pleistocene overlap deposits



Structure Map of the Regional Trend Surface

Based on datums from the RMES along the major rivers.

Data points : •



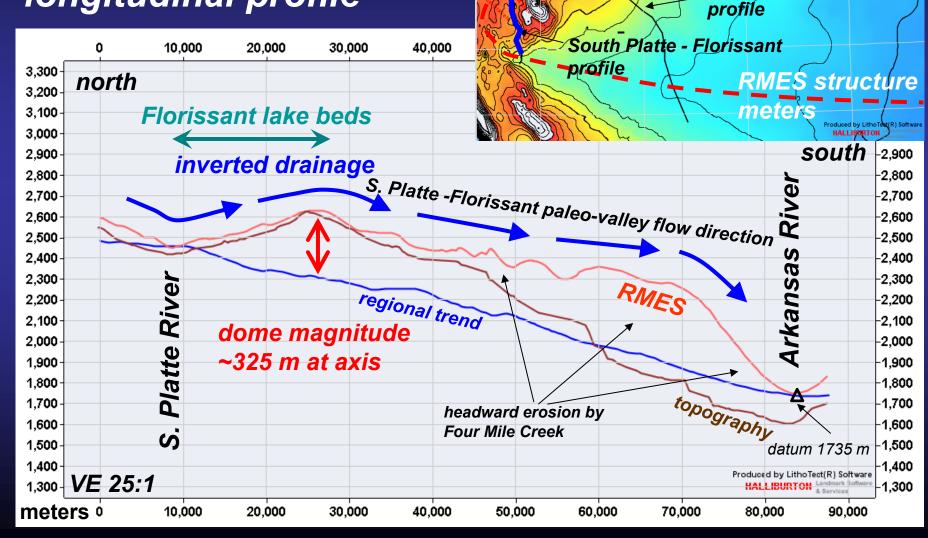
Residual Thickness *Map* >50*m* calculated from the Rocky Mountain **Erosion Surface** minus the Regional **Trend Surface Erosional topography** and / or Structural doming?

# **Pikes Dome river profiles**

Pikes Peak and Rampart Range erosion surface from Palmer Divide by Bierstadt

Biersladt

#### Oligocene South Platte - Florissant paleo-valley longitudinal profile



Pikes Dome

outline

Castle Rock

**Divide** 

profile

2000

000

#### Oligocene **Castle Rock** paleo-valley longitudinal profile

0

Creek

Coal

VE 25:1

5,000

4,750

4,500

4,250 4.000

3,750

3,500

3,250

3,000

2,750

2,500

2,250

2,000

1,750

1,500

1,250

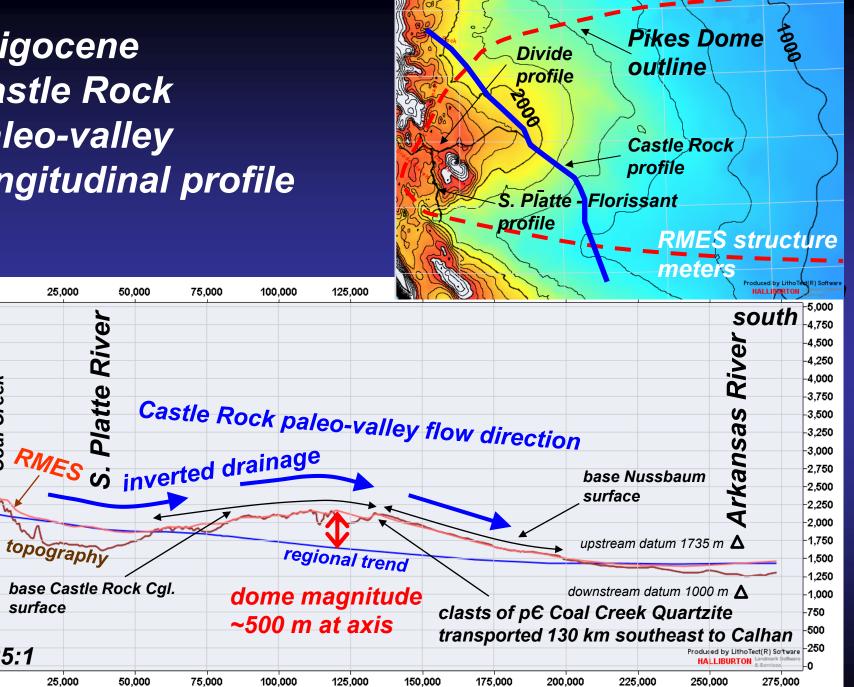
1.000

750

500

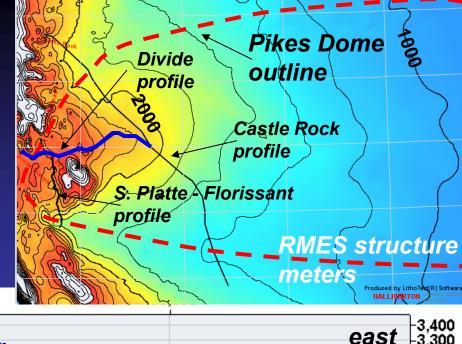
250

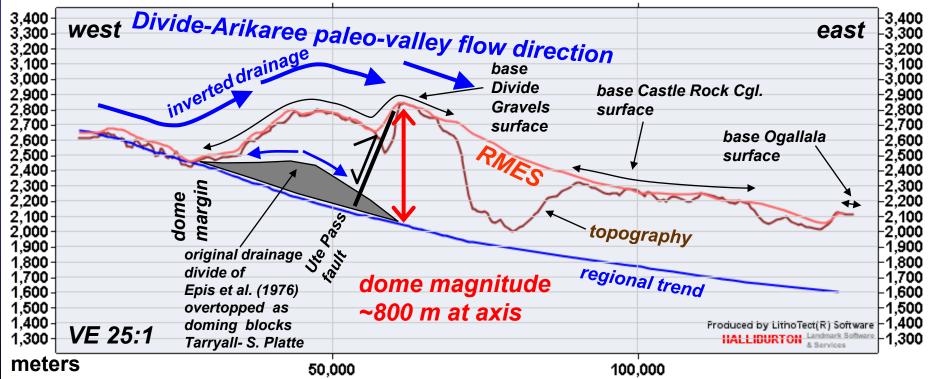
meters •



#### Miocene? Divide paleo-valley longitudinal profile

50,000

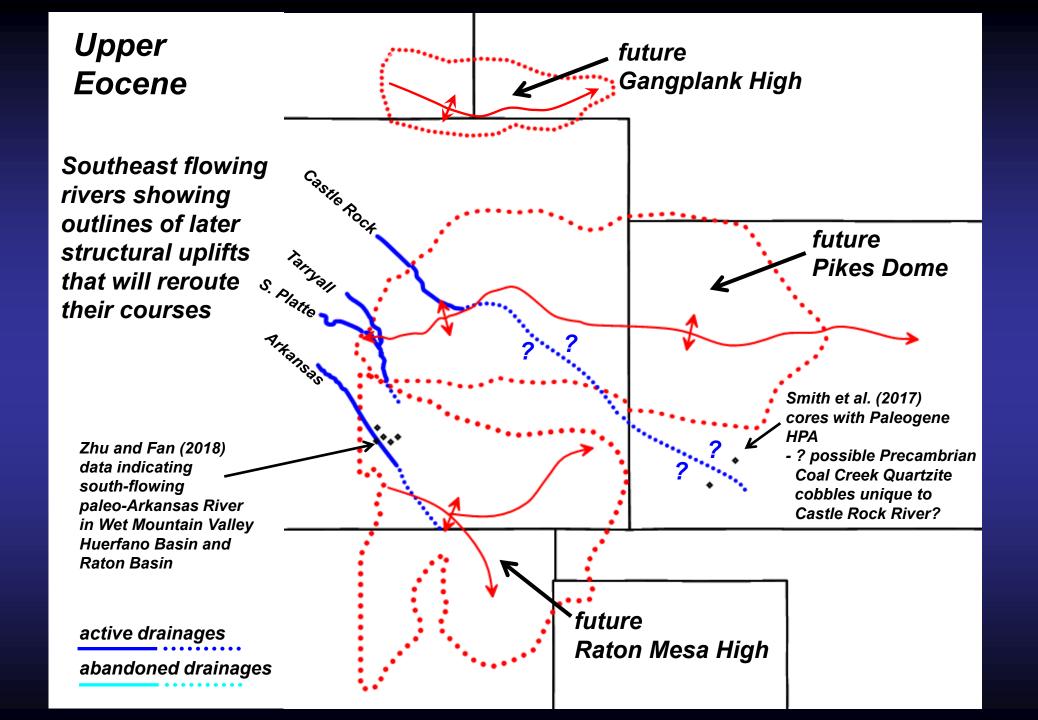


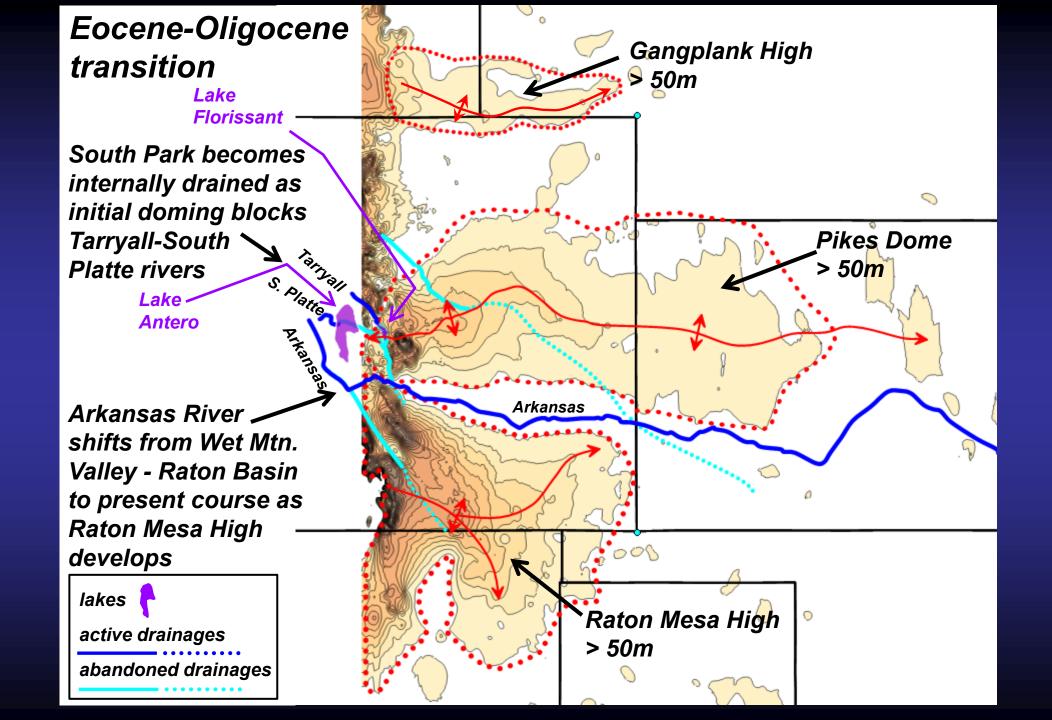


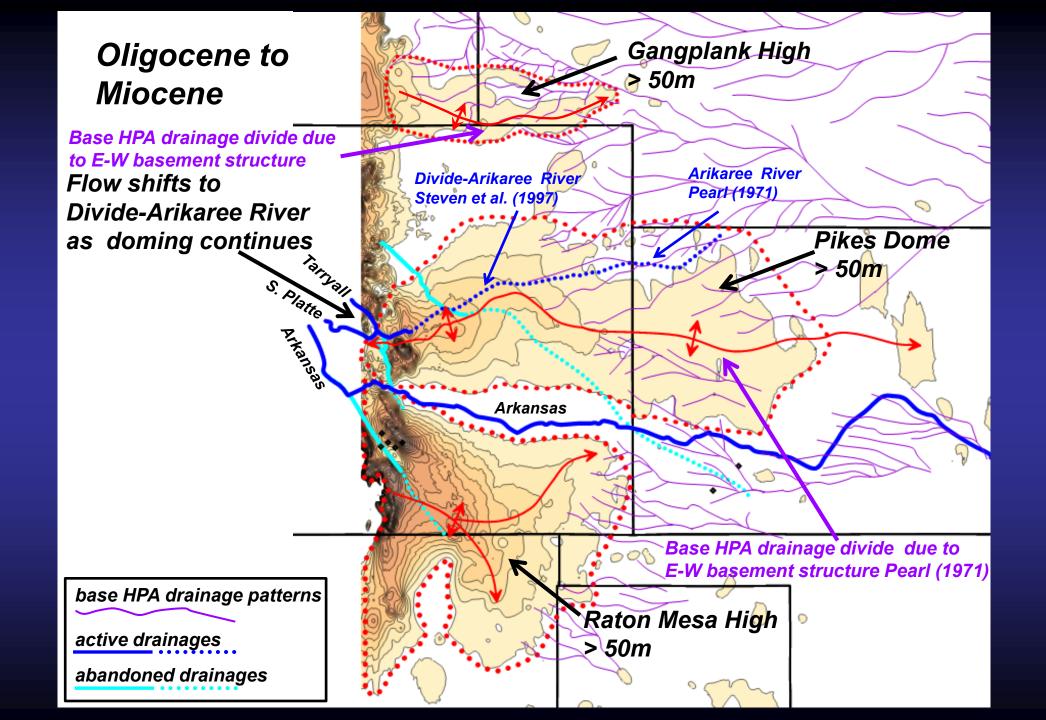
## Structural realignment of rivers

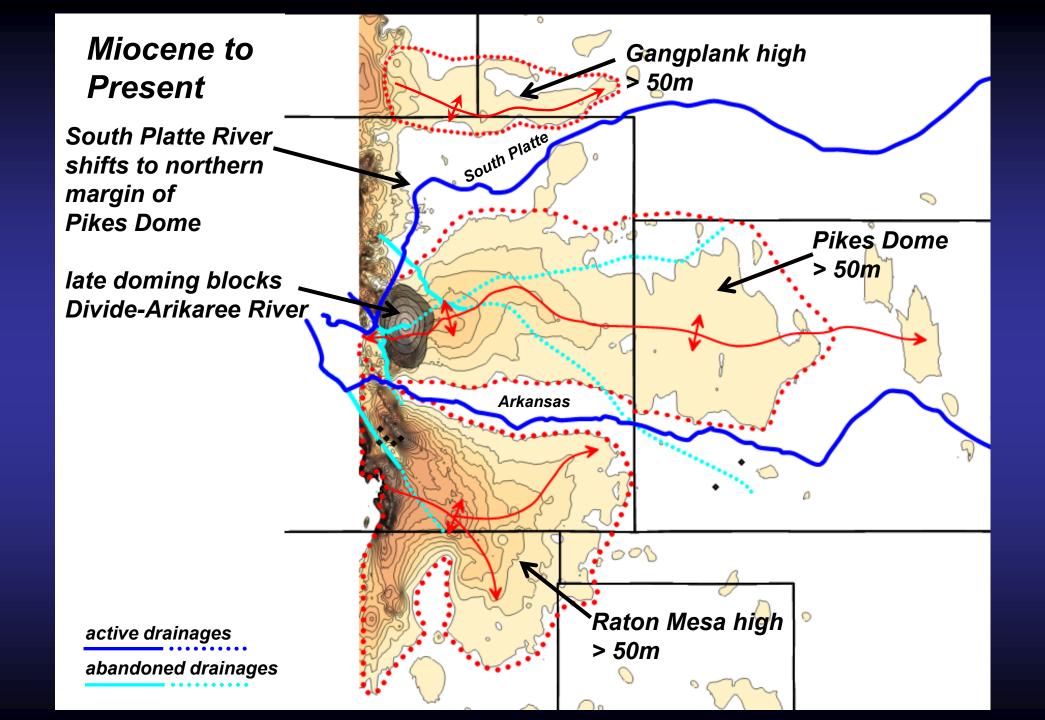
Pikes Peak and Rampart Range erosion surface from Palmer Divide by Bierstadt

Bierstadt









### Conclusions

- 2<sup>nd</sup> order structural domes punctuate the eastern flank of the SRMe
  Major trunk drainages follow structural lows in the RMES
  Doming has altered the courses of rivers over time
- Doming has been active since the Paleogene

Pikes Peak and Rampart Range erosion surface from Palmer Divide by Bierstadt