

A LATE CRETACEOUS BROKEN FORELAND: EVIDENCE OF BASIN PARTITIONING IN THE WESTERN INTERIOR SEAWAY FROM DETRITAL ZIRCON GEOCHRONOLOGY ACROSS THE SOUTHWESTERN HIGH PLATEAUS, SOUTHERN UTAH

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ABSTRACT

The objective of this study is to decipher the spatiotemporal relationship between transverse and axial fluvial systems of the Late Cretaceous foreland basin in the Southwestern High Plateaus of southern Utah. Recently, convincing evidence from detrital zircon geochronology in the Kaiparowits Plateau for an axial river system flowing from the south, have raised questions about the lack of sediment input from the Sevier fold-and-thrust belt, and how the transverse fluvial systems were responding at this time. Currently, provenance and stratigraphic data is sparse on fluvial systems to the west of the Kaiparowits Plateau. However, distinct step-wise thickness changes of Late Cretaceous strata as early as the Cenomanian suspiciously coincide with Cenozoic normal faults, suggesting these faults may have been active reverse faults during the Cretaceous that were then re-activated as normal faults during the Cenozoic. This study will use detailed stratigraphy, paleocurrents, and sandstone petrography, combined with detrital zircon U-Pb geochronology of samples from across the Southwestern High Plateaus to decipher the stratigraphic architecture of transverse rivers and where they were sourced. Ultimately, this will allow us to determine if previous interpretations of a dominant axial river system are correct, and if the transverse and axial systems were being altered by active Laramide structures as early as the Cenomanian. If these hypotheses are true, it would imply that the timing and influence of Laramide tectonics on the foreland basin began much earlier than is previously assumed, altering deposition in the foredeep as early as the Turonian.

AAPG Search and Discovery Article #90298 © 2017 AAPG Foundation 2016 Grants-in-Aid Projects