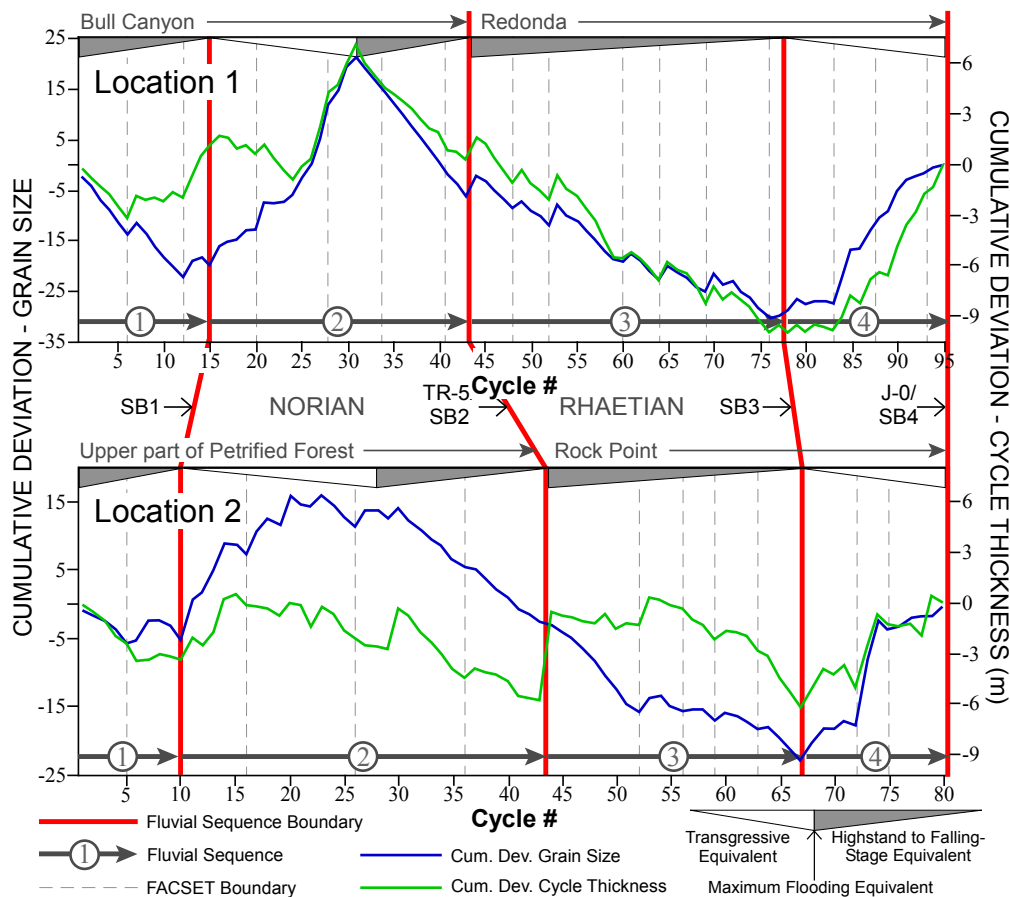


Fluvial Sequence Stratigraphy and Paleoclimate of the Upper Triassic Chinle Formation

This study evaluates the interrelationship of fluvial deposition and climate as preserved in the rock record. Preliminary results show that there are regionally significant trends of deposition that extend for at least 200 km. Four correlative fluvial sequences have been identified via a stacking pattern methodology typically applied to marine carbonate successions (A). Paleosols from the same interval suggest that the interval was dominated by an arid to semiarid climate. Stable oxygen and carbon isotopes from pedogenic carbonate nodules show high frequency (<1Ma) extreme climate shifts (B). Based on the lack of correlation between the fluvial sequences and climate changes, it appears that climate was not driving deposition at this scale. Climate likely influences deposition at a larger scale, as demonstrated by the shift from a sub-humid Triassic (Carnian) to the fully arid Early Jurassic, which coincides with the depositional change from a forested fluvial system to a eolian desert.

A - Cumulative deviation plots and fluvial sequence stratigraphy of two age-equivalent sections separated by ~200 km.



B - Reconstruction of the Late Triassic climate using stable isotope proxies from pedogenic carbonate nodules.

