

Paleochannel Style in Fluvial Deposits of the Kayenta Formation, Southwestern Utah

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ABSTRACT

The fluvial system that deposited the Kayenta Formation (Sinemurian) appears to have maintained a braided channel style throughout its longitudinal extension, from western Colorado to southwestern Utah. This is surprising, since past studies of this formation have shown a decrease in grain size towards the system's distal depositional sector, along with a much greater preservation of floodplain deposits when compared to the system's proximal sector. Initial results from fieldwork recently conducted in Washington County (Utah) suggest the predominance of downstream and oblique fluvial bar accretion in channel deposits of the Kayenta Formation (including the Springdale Sandstone). Initial estimates of paleoflow depth (a useful proxy for channel style) gained from cross set thickness distributions (paleohydraulics) suggest a relatively shallow paleochannel flow depth of 4 to 6.5 m. It is expected that measured distributions of cross-set thickness for a few selected outcrops on a transect across Utah will show no significant trend of increase in paleochannel flow depth for the Kayenta system from its proximal to its distal depositional sectors. Since downstream change in channel style might not be a significant mechanism for explaining a greater preservation of floodplain deposits in the Kayenta's distal sector, a relatively higher tectonic subsidence rate in the region could be inferred to account for this depositional architecture. This inference would be in agreement with a foreland basin subsidence model for the Early Jurassic of Utah, which suggests greater subsidence rates towards the west.