

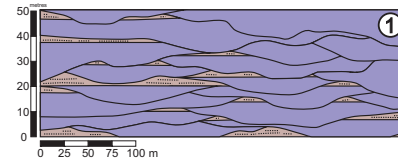
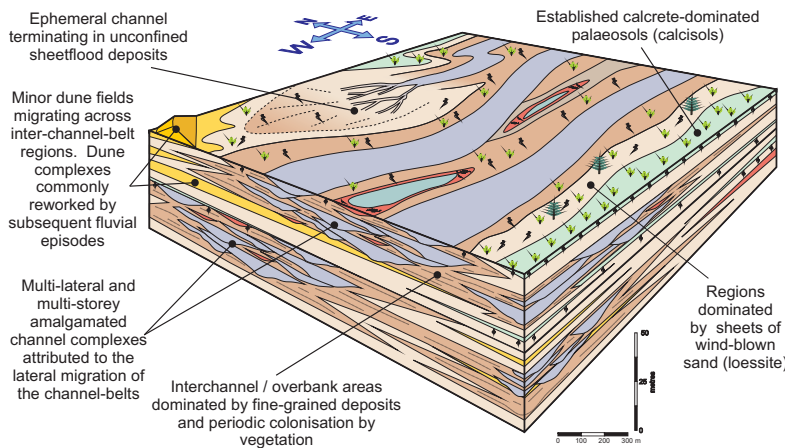
## A multi-scale approach to characterising terminal fluvial fan successions

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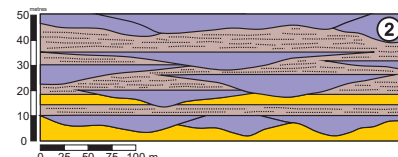
Although facies models have been proposed previously for terminal fluvial fan systems, their wider applicability and scope has hitherto been limited and recent debate in the literature has shown them to be inappropriate or unjustified for many applications. This project seeks to present a brand new series of facies and sequence stratigraphic models with which to better demonstrate the behaviour of terminal fluvial systems. This has been achieved through analysis of the Organ Rock Formation, a Permian succession that is well exposed across much of southern Utah and parts of northern Arizona.

Detailed analysis of basin-scale architecture has involved the recording of over 100 1D sedimentary logs from which the internal stratigraphy of the Organ Rock Formation has been established. Regional-scale tracing of key stratal surfaces has been employed to determine the nature of proximal to distal changes in preserved sedimentary style. The construction of 2D architectural panels has enabled the style of fluvial behaviour to be determined such that the relationship between fluvial processes and the resultant geometry of preserved architectural elements can be demonstrated. A series of 3D and 4D facies and sequence stratigraphic models account for complex spatial and temporal complexity within the system.

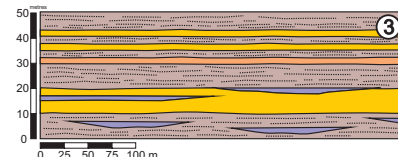
### Channel belt architectural model



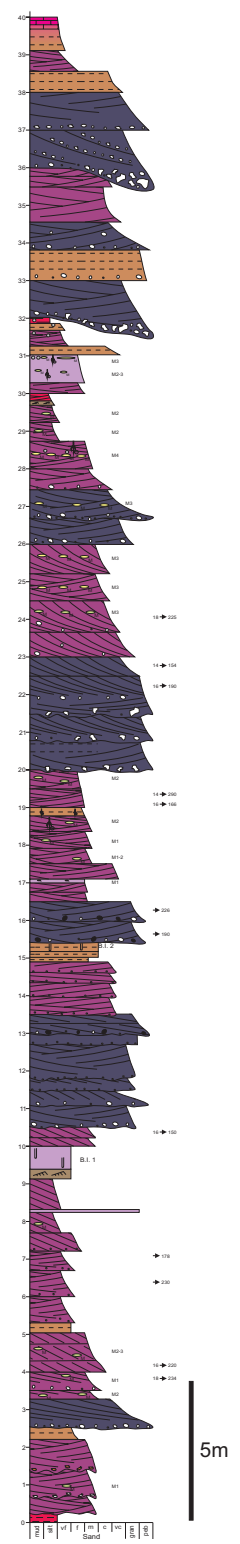
Fisher Towers (proximal fluvial-fan)



Corral Pocket (medial fluvial-fan)



Farley Canyon (distal fluvial-fan)



### Terminal fluvial fan depositional model

Expansion of a distal dune field marks a transition from fluvial-dominated to aeolian-dominated sedimentation in response to an increase in aridity within the distal desert plain region. Migration of sinuous dune trains and adjacent wind-ripple-dominated sandsheets was to the south and southeast.

Development of calcisols reflect a significant hiatus in fluvial deposition.

Within medial and distal fluvial-fan regions, a change from multi-lateral braided fluvial complexes to well defined ribbon sandstone units indicates channels of higher lateral stability enabling better preservation of adjacent overbank and calcisol sediments.

Denudation of the Uncompahgre Uplift in response to a cessation of tectonic uplift.

Abandonment of fluvial-fan lobes represented by the prevalence of fluvial sheetflood deposits and increased evidence for preserved overbank deposits within medial and distal fluvial-fan regions.

Stratigraphic pinch-out of aeolian dune deposits indicates a down-wind decrease in wind strength and/or sediment availability.

Standing water deposits within mud-lined depressions represent deposits of remnant flood waters.

Evidence for fluvial incursions in the upper third of the aeolian dune complex represents the flooding of interdune corridors in response to intense flood events and marks a return to fluvial-dominated sedimentation within the distal desert plain region.

