Fluvial Research Group

UNIVERSITY OF LEEDS

A multi-scale approach to characterising terminal fluvial fan successions

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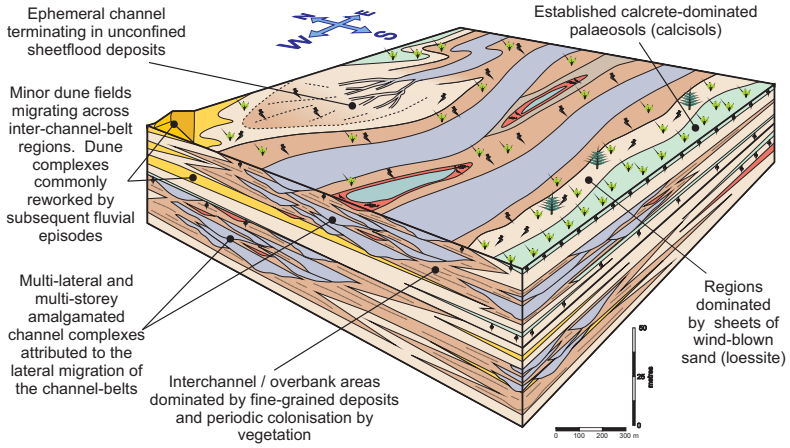
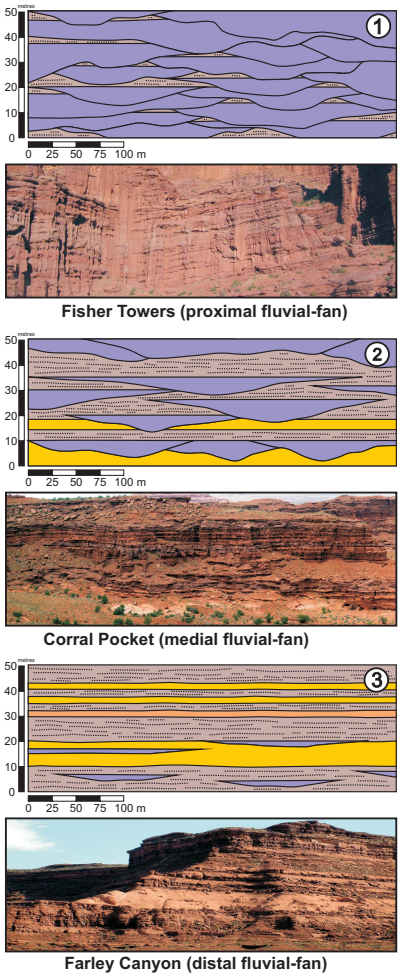
Although facies models have been proposed previously for terminal fluvial fan systems, their wider applicability and scope has hitherto been limited and recent debate in the literature has shown them to be inappropriate or unjustified for many applications. This project seeks to present a brand new series 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.

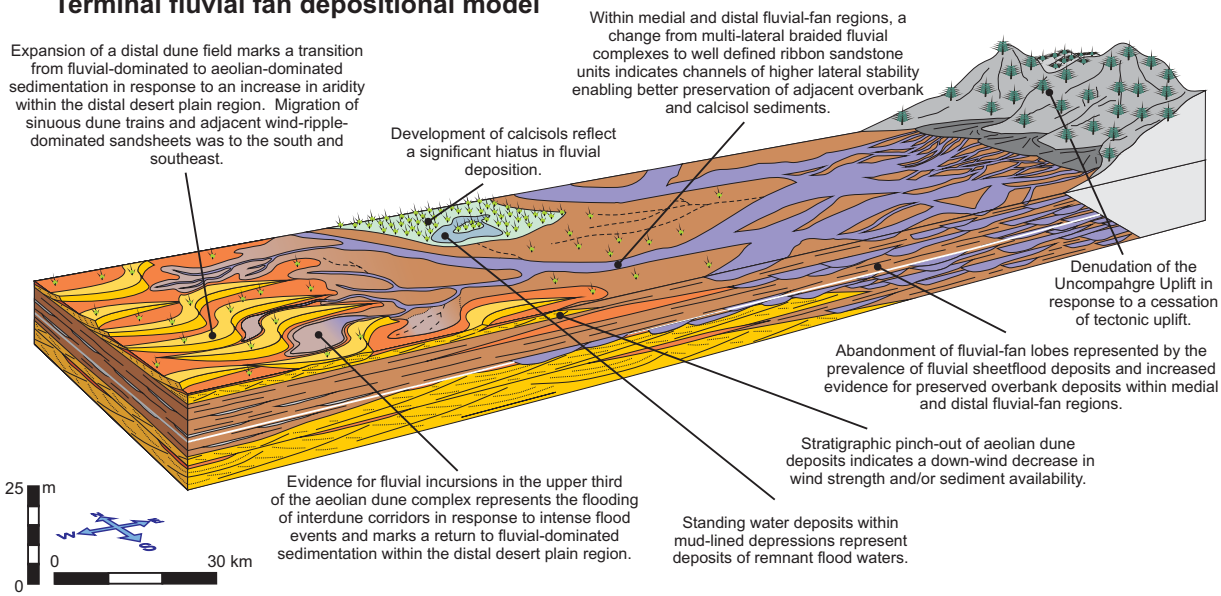
Detailed analysis of basin-scale architecture has involved the recording of over 100 1D sedimentary logs from which the internal stratigraphy of the Organ Rock Formation has been established. Regional-scale tracing of key stratal surfaces has been employed to determine the nature of proximal to distal 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.

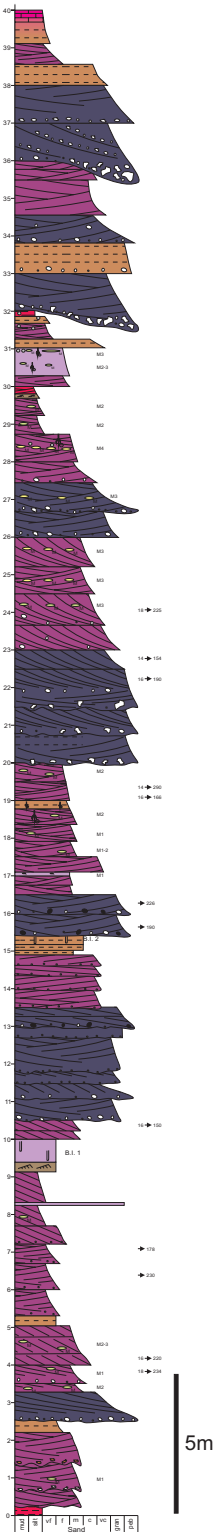
Channel belt architectural model





Terminal fluvial fan depositional model





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