

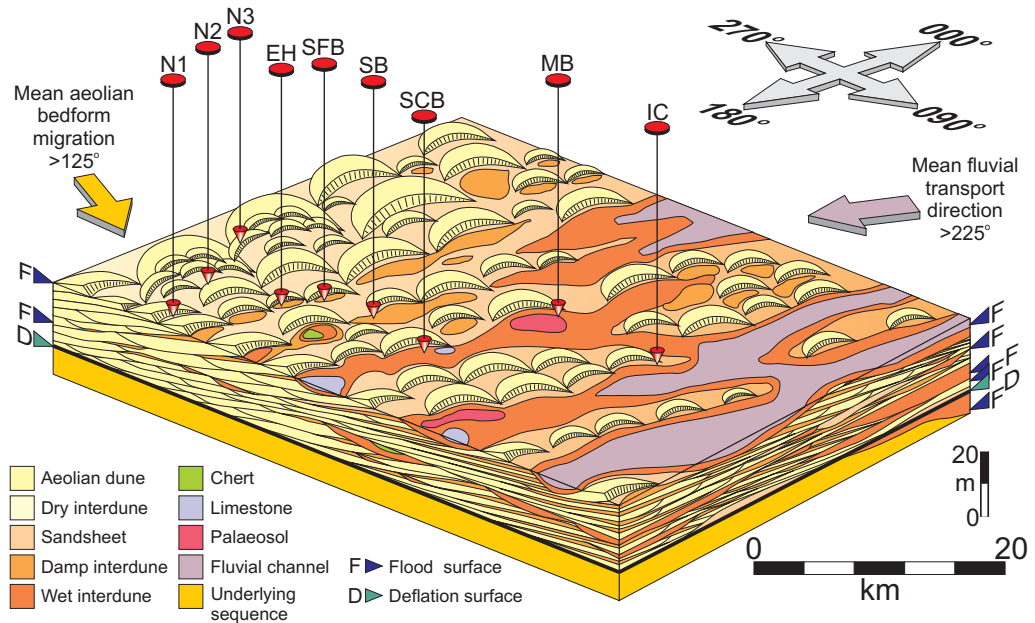
Fluvial-aeolian system interaction and response to climatic cyclicality

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The predominantly fluvial Cutler Group of the Paradox foreland basin, Utah exhibits a variety of styles of interaction with aeolian dune-dominated parts of the succession. In places, large-scale channelised fluvial deposits demonstrate evidence for multiple fluvial incursions into the margins of a range of types of aeolian dune fields and in some instances demonstrate fluvial penetration for distances of several tens of kilometres into dune-field centres. Elsewhere, fluvial sheet-flood deposits occupy broad interdune corridors and are indicative of unconfined flash-flooding in marginal dune-field regions. A range of styles of fluvial-aeolian interaction are indicative of coeval system activity and have resulted in a complex interdigitation of a variety of facies types with subtly varying porosity-permeability characteristics. Results from this ongoing project are being used to develop reservoir models for marginal plays in the Southern and Northern Permian basins of the North Sea.

Detailed analysis has involved the construction of over 100 1D logs, the assembly of many tens of kilometres of architectural panels, the development of a series of detailed 3D semi-quantitative facies models that depict styles of facies interaction on a range of scales, the construction of a series of sequence stratigraphic models to demonstrate system response to periodic changes in regional climate, and the development of a series of numerical forward stratigraphic models with which to account for the variety of styles of fluvial-aeolian system interaction identified.

Fluvial-aeolian interaction: Cutler Group-Cedar Mesa Sandstone transition



Reconstruction of 3D fluvial architectural elements

