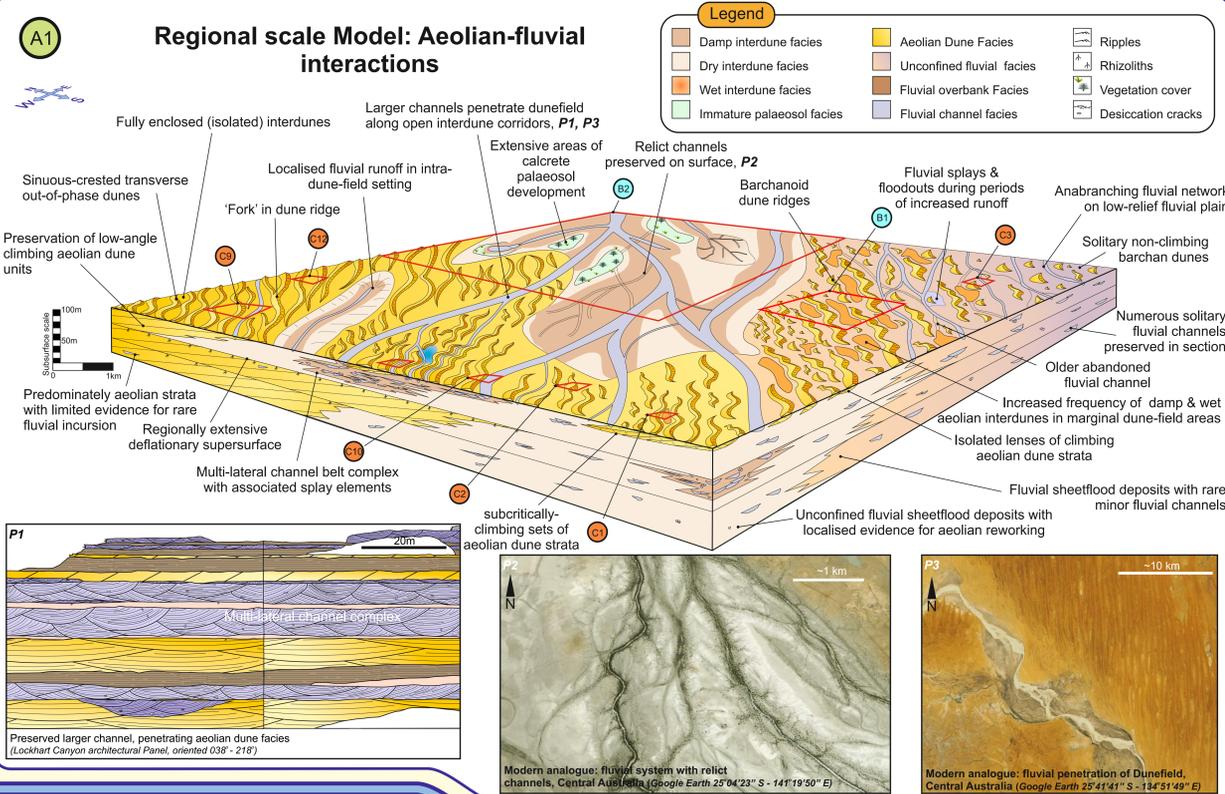


Large-scale model



Intermediate-scale models

Introduction & Discussion

Within Paradox foreland basin of southeastern Utah and northern Arizona, the Pennsylvanian-Permian Cutler Group records a varied array of aeolian-fluvial interactions within its various stratigraphic divisions: the Lower Cutler Beds, the Cedar Mesa Sandstone, the Organ Rock Formation and the Undivided Cutler Formation. The preserved architectural elements and facies arrangements that record these styles of fluvial-aeolian interaction within the Cutler Group are typically intimately related to each other and, in places, smaller-scale elements are nested inside larger elements suggesting that interactions commonly occur on several spatial and temporal scales. Specifically, autogenic interactions arising from intrinsic competition between coeval fluvial and aeolian processes can be shown to occur within sequences ascribed to allogenic controls, such as climatic cycles and systematic variations in sediment supply. Many of the types of interaction inferred from the Cutler Group successions are widely recognised within other ancient successions and within present-day desert systems. Criteria for the recognition and prediction of styles of fluvial-aeolian interaction have applied implications because resultant facies configurations exert a primary control on stratigraphic heterogeneity and compartmentalisation within hydrocarbon reservoirs. The 3D summary models resulting from this work provide a set of tools for predicting architectural relationships and for predicting sand body connectivity within sub-surface reservoir intervals.

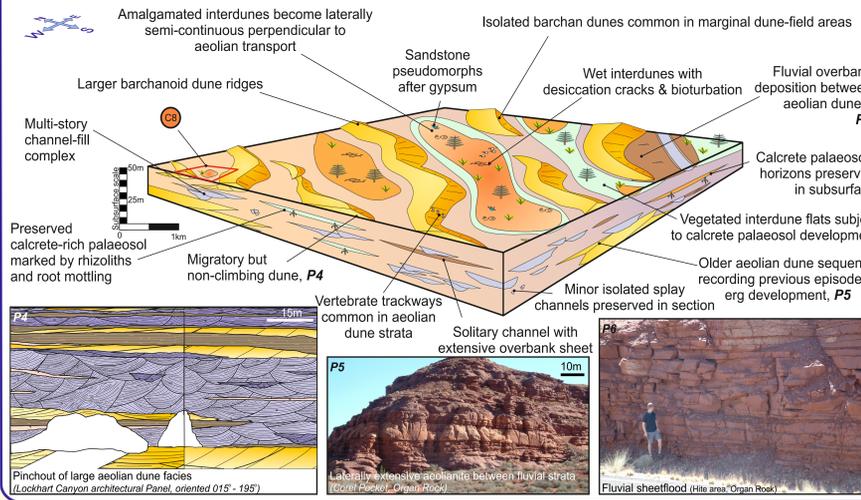
Study Location



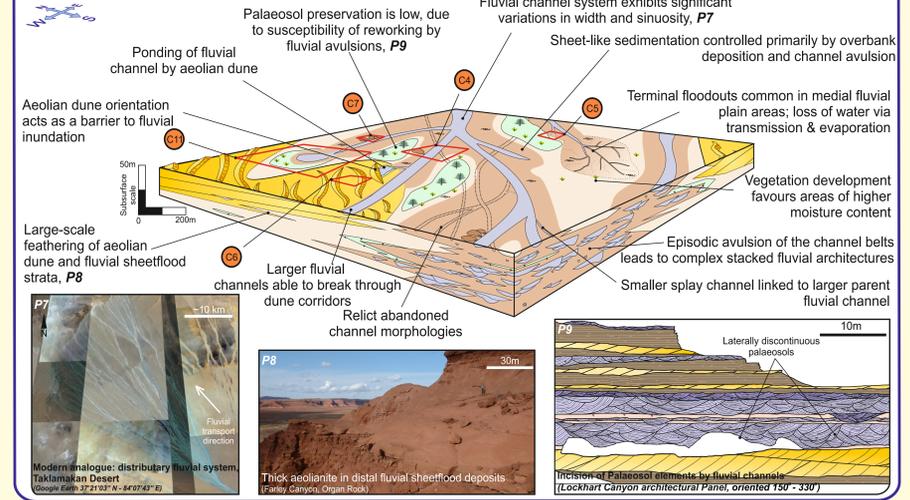
Data represented from four separate formations of the Pennsylvanian-Permian Cutler Group: the Undifferentiated Cutler, the Lower Cutler Beds, Cedar Mesa Sandstone & the Organ Rock.

Models created from data at field sites Farley Canyon, Lockhart Canyon & Big Springs Canyon, SE Utah.

B1 Intermediate-scale model 1: fluvial influenced aeolian erg margin



B2 Intermediate-scale model 2: fluvial incursion of dune-field



Local-scale Models

