

Salt-walled mini-basin development as a control on fluvial drainage patterns in distal sheet flood and marginal marine successions

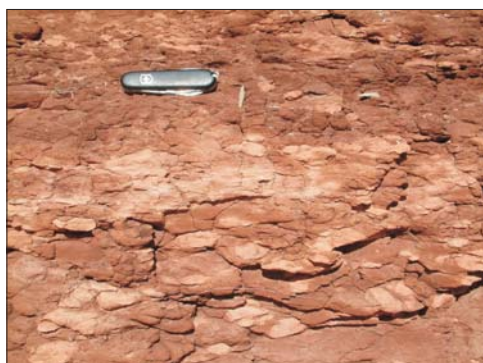
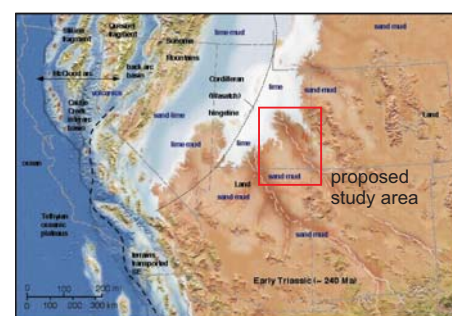
Nigel Mountney & Bill McCaffrey

Distal fluvial sheet flood sandstones of the Triassic Moenkopi Formation are predominantly characterised by fine-grained, parallel laminated fluvial sheet sandstones with numerous minor single storey channels and rare multi-storey channel complexes, replete with a variety of styles of cross bedding. These fluvial elements are interbedded with a range of facies of marginal marine origin and that are themselves characterised by tidal flat and estuarine shoal sands, wave ripples, heterolithic deposits with mud drapes, intraclasts and extensive bioturbation that together represent a marine-influenced tidal flat and lagoon-bay setting. Around the Moab region of SE Utah this mixed fluvial and marginal marine succession exhibits dramatic changes in preserved thickness that are thought to have been controlled by the early onset of development of a series syn-sedimentary salt-walled mini-basins. Thus, the Moenkopi Formation bears many similarities to the hydrocarbon-bearing Triassic Skaggerak Formation of the UK Central North Sea.

This project will test whether the distribution of preserved facies and the style of interaction between fluvial and marginal marine facies within the Moenkopi Formation were controlled by the early movement of salt buried within the evolving Paradox Basin. Salt movement is known to have exerted a strong control on the deposition of the younger Middle Triassic Chinle Formation but little is known about its role in controlling development of the Lower Triassic Moenkopi Formation. In particular, what combinations of fluvial sediment deliver and salt-influenced mini-basin development will likely lead to the best reservoir development in terms of sandbody interconnectivity.



Outcrop of the Triassic Moenkopi Formation in the White Canyon region of southern Utah.



Representative facies examples from the Triassic Moenkopi Formation in the southern Utah region.

Early Triassic palaeogeographic setting of the SW USA region. After Blakey (<http://jan.ucc.nau.edu/~rcb7/>)