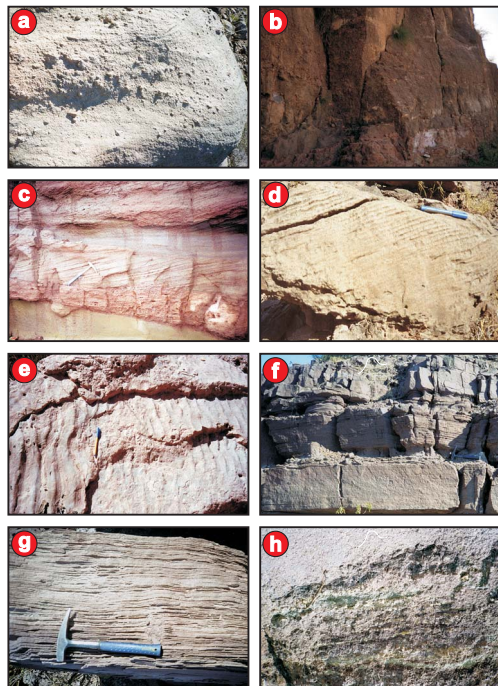
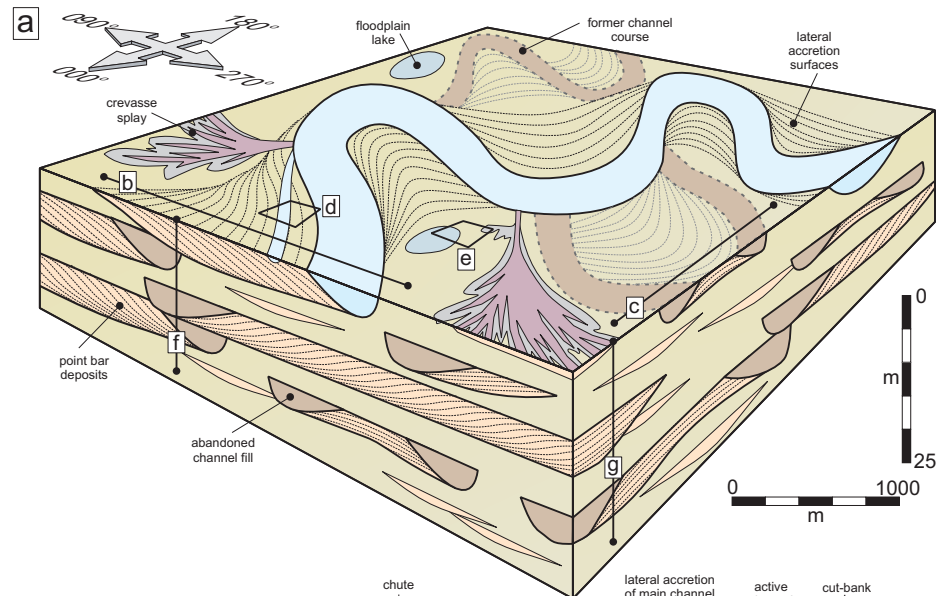


## Sand-body architecture within mud-prone meandering fluvial successions

Shahid Ghazi & Nigel Mountney

The Permian Warchha Sandstone of the Salt Range, Pakistan represents a mud-prone meandering fluvial succession in which gravel- and sand-dominated channelised elements are sporadically developed. Although depositional units within the succession are arranged into predictable fining-upward cycles, the lateral continuity and degree of interconnection of these sand-prone units, which possess favourable reservoir characteristics, is difficult to predict. The preserved sedimentary architecture reflects the complex nature of meander belt evolution with sand-dominated lateral accretion elements juxtaposed against crevasse splay, levee and chute channel elements, each of which are themselves surrounded by mud-dominated floodplain sediments with abundant well developed palaeosols.

This project is characterising the detailed sedimentary architecture of the Warchha Sandstone to develop a series of facies models that account for the complex geometry of the sand-bodies preserved within this otherwise mud-dominated succession. The preserved architectural expression reflects a complex interplay between autocyclic meander-loop evolution, channel switching (avulsion and neck cut-off), style of sediment supply and climate. The available dataset consists of 1D sedimentary logs, subsurface wireline logs, architectural panels and lateral surface tracings, all of which have been used to determine 3D sand-body geometry and stacking pattern.



Characteristic examples of lithofacies encountered in the Warchha Sandstone of the Central Salt Range. (a) and (b) trough cross-bedded pebbly conglomerate and pebbly sandstone facies Gt. (c) Trough cross-bedded sandstone facies St. (d) planar cross-bedded sandstone facies Sr. (e) Ripple laminated sandstone facies Sr. (f) Horizontally laminated sandstone facies Sh. (g) Interlaminated siltstone and claystone facies Fl. (h) Massive claystone facies Fm with abundant caliche nodules.

