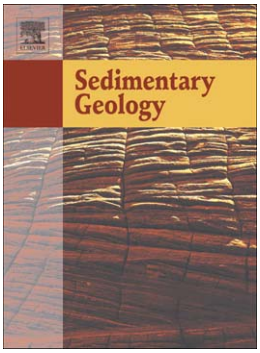

Stratigraphic evolution of the Late Jurassic Hanifa Formation along the Tuwaiq Escarpment, Saudi Arabia: evidence for a carbonate ramp system

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Stratigraphic evolution of the Late Jurassic Hanifa Formation along the Tuwaiq Escarpment, Saudi Arabia: evidence for a carbonate ramp system

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Abstract

A sequence stratigraphic framework of the Late Jurassic (Oxfordian) Hanifa Formation at its exposure in Central Arabia is presented for the first time. This study offers the first high-resolution stratigraphic framework of the Hanifa along the Tuwaiq Escarpment by measuring 15 sections (~770 m total thickness) over an oblique-to-dip distance of 260 km and collecting 295 samples for petrographic analysis. On the basis of these data, the Hanifa Formation can be subdivided into eight facies; 1) tabular cross-bedded quartz-peloidal-skeletal grainstone, 2) cross-bedded skeletal-peloidal grainstone, 3) bioturbated foraminiferal wackestone/mud-dominated packstone, 4) oncolitic rudstone, 5) stromatoporoid-coral biostrome/bioherm, 6) peloidal/composite-grain grain-dominated packstone/grainstone, 7) bioturbated spiculitic wackestone/mud-dominated packstone, and 8) thinly-bedded argillaceous mudstone/wackestone. The vertical and lateral distributions of these facies along the exposure define their sequence setting using the principals of sequence stratigraphy. By recognizing erosional surfaces, facies offset, and

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