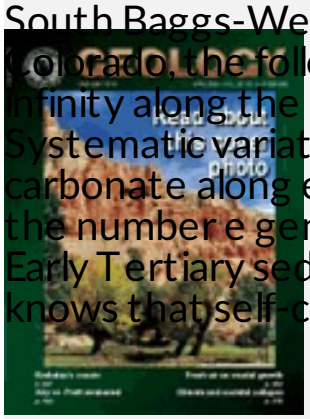

RESEARCH ARTICLE | APRIL 01, 2000

Fourth-order nonmarine to marine sequences, middle Castlegate Formation, Book Cliffs, Utah

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Geology (2000) 28 (4): 359-362.

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https://doi.org/10.1130/0091-7613(2000)28<359:FNTMSM>2.0.CO;2

Article history

Abstract

The lower part of the Campanian Castlegate Formation, one of the best known fluvial sheet sands of the Western Interior seaway, combines with an overlying finer grained unit (middle member of the Castlegate Formation) to form an unconformity-bounded, third-order stratigraphic sequence (?3 m.y. duration). This sequence contains a mappable muddy zone along the western Book Cliffs of Utah now mapped as contiguous with the open-marine parts of the succession (Buck Tongue, Sego Sandstone, Anchor Mine Tongue) to the east. The correlation within the middle Castlegate has been refined and the nature of the link between tidally influenced fluvial strata in the west and marine strata in the east has been remapped. Five high-frequency stratigraphic sequences (all within the upper part of the larger third-order sequence), forming a thickness to 160 m, have been mapped in the Price area southeastward into the time-equivalent marine succession near Green River. Individual sequences (probably <0.5 m.y. duration), reflecting transgressive to regressive estuary infilling, have an internal architecture in which fluvial and tidally influenced distributary-channel belts pass up into muddy central-basin sedimentary units, to bayhead-delta deposits, and in some places up to more fluvial channel belts. The key to the mapping of individual sequences is recognition of the muddy, brackish-water interval, developed during maximum transgression of the time-equivalent shoreline. The two most proximal marine-influenced sequences (2 and 3) are probably broadly time-equivalent with the Buck and Anchor Mine Tongues to the east. The analysis here, contrary to recent suggestions, shows that the marine sequences in the eastern Book Cliffs can be traced far into the time-equivalent, western fluvio-estuarine succession.

GeoRef Subject
clastic rocks Mesozoic Book Cliffs Castlegate Sandstone Grand County Utah paleogeography sedimentary rocks sandstone Senonian Campanian Carbon County Utah Cretaceous channels Emery County Utah North America Upper Cretaceous United States Western Interior Seaway Western Interior Utah

Index Terms/Descriptors

Book Cliffs | Campanian | Carbon County Utah | Castlegate Sandstone | channels | clastic rocks | correlation | Cretaceous | cross sections | deltaic environment | depositional environment | Emery County Utah | estuarine environment | fluvial environment | Grand County Utah | lithostratigraphy | marine environment | Mesozoic | North America | paleogeography | sandstone | sedimentary rocks | Senonian | sequence stratigraphy | unconformities | United States | Upper Cretaceous | Utah | Western Interior | Western Interior Seaway | eastern Utah

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Online ISSN 1943-2682 Print ISSN 0091-7613