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DISSERTATION TITLE: *Continental to Shallow Marine Transition in a Tide-Dominated, Low Accommodation basin - Controlling Factors and Depositional Architecture*

Utah's urørte landskap er et kjent 'laboratorium' for geologer, og det inkluderer også denne Ph.D. studien. Vi studerte et spesifikt intervall av sedimentlagrekker i ørkenen, og gir et nytt perspektiv og dypere forståelse av en dramatisk klimaendring i Jura for 160 million år siden. Her lå dengang det grunne Curtis-havet, sterkt påvirket av tidevannsstrømmer som trengte inn over land bestående av sanddyner (Entrada-formasjonen). Studien viser hvordan kraftige tidevannsstrømmer kontrollerte avsetninger i Curtis-bassenget, og hvordan avsetningssystemet utviklet seg over tid.

This study presented in this doctoral thesis addresses the development of the Upper Jurassic Curtis Formation, cropping out in east-central Utah. The study suggests a separation of the Curtis Formation in three geological sub-units, each characterised by specific constituents, and diagnostic sedimentary architectures: the lower-, the middle-, and the upper Curtis.

The lower Curtis was deposited as the semi-enclosed Curtis sea was flooding the arid coastal Entrada plains and dunes. It is characterised by thin beds of alternating mudstone and sandstone beds. It reflects three short-lived episodes of relative sea-level oscillations. It is capped by the middle Curtis, which consists nearly entirely of sandstone. The well-defined beds of the lower Curtis are replaced by an amalgamation of dunes and tidal channel deposits, reflecting a much higher energy level in the sea than the conditions that prevailed during the deposition of the lower Curtis.

This dramatic increase in energy is thought to be the consequence of the basin entering in tidal resonance, which amplified the tides so much that the signature of the continuous short-lived relative sea-level variations were completely erased. As the Curtis sea was regressing, the energy level decreased, and the middle Curtis was replaced by the finer sediments of the upper Curtis, while the aeolian dunes of the Moab Member of the Curtis Formation were migrating next to the sabkhas of the Summerville Formation.

The effects of these relative sea-level variations, absent from the middle Curtis, kept being recorded by neighbouring and contemporaneous units above-mentioned, highlighting the importance of considering adjacent sedimentary systems in order to obtain the most complete knowledge of a basin's history.