

### Talk 3

## **Tidal and brackish-water signatures within the fluvio-estuarine sheet sandstone of the Upper Cretaceous Mesaverde Group in Utah, Colorado and Wyoming, USA: foreland basin analysis and nonmarine-marine correlations over 100s km of downdip transects**

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### **Abstrak (Abstract)**

The Mesaverde Group is a second-order clastic wedge shed from the Sevier thrust belt, and contains two prominent sheet sandstones; the Castlegate Sandstone in Utah, and the Ericson Formation in Wyoming. They have been traditionally interpreted as of solely fluvial origin. However, detailed mapping utilizing outcrop photo panels and closely-spaced vertical sections have revealed that these units, at certain levels, also contain tidal sedimentary structures and a brackish-water ichnofauna. We propose that these amalgamated sheetsands contain high-frequency sequences with both fluvial and estuarine components. Although the entire sheetsand represents a time of lower regional A/S ratio, the upper (estuarine) part of individual high-frequency sequences represents transgressive penetration far back into the wedge during shorter periods of increased accommodation.

During the last decade the significance of tidal deposits have been increasingly recognized for giant hydrocarbon reservoirs (e.g., Jurassic Beryl, Cook and Tilje Formations in the North Sea). They were formerly misidentified as purely fluvial deposits. The difficulty of identifying tidal and brackish-water signatures within subsurface cores arises mainly due to (1) their low preservation potential, (2) scattered occurrence of genuine tidal indicators that may not be encountered by widely spaced wells, and (3) the close association of these deposits with genuine fluvial strata. In addition, tidally-influenced sandstone are difficult to identify on outcrops due to recent weathering effects which wash out mud drapes and leach shelly body fossils. We will present a diversity of tidal sedimentary structures and brackish-marine indicators from the outcrops of parts of the Castlegate and Ericson Sandstones.

