**Cycles and Packages in Fluvial Deposits: What Do We Know? Examples from the Triassic Wolfville Fm (Nova Scotia)**

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Fluvial successions are often described in term of hierarchical packages which form distinct patterns developed at different orders of magnitude. Patterns are repetitive and often considered cyclic. Usually the fluvial architecture is defined by (1) a channel body as smallest element, (2) channel complexes formed by stacked channel bodies, and (3) packages of channel complexes and abandonment facies forming repetitive units. Channel complexes are commonly interpreted to be largely autogenic in origin (i.e. migration/ avulsion). In contrast, the controls that drive the repetition of stacked channel complexes and abandonment facies, representing the migration/ avulsion of a channel belts are debated.

We discuss the controls on Late Triassic fluvial architecture in the Wolfville Fm (Fundy, Nova Scotia) in which different orders of cycles have been recognized in both gravelly- and sandy-bedload fluvial successions. We show that an additional type of stacking pattern can be recognized.
In the gravelly fluvial succession, thirteen cycles have been mapped across 23 km of braid-plain. Each cycle displays a decrease in pebble content and an evolution in bedform architecture. In the sandy fluvial succession, the classic three order packages have been recognized together with an additional larger order package (4) identified using in-channel grain-size variations. We interpret the grain-size trend to record progressive changes in runoff and fluvial transport capacity indicative of a climatically-driven signal.

Determining autogenic vs allogenic controls in fluvial succession is challenging and interpretations depends on simplistic (unrealistic?) depositional models. Difficulties in interpretations also depend on recognition of architectural elements and bounding surface orders that can be misinterpreted where amalgamation is significant. We suggest that recognition of gradual grain-size variations allows determination of climatic controls. The repetition of channel complexes and abandonment units, showing higher frequency than grain-size cycles, could be interpreted to reflect autocyclic switching of channel belts.