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国立大学法人
島根大学 エスチュアリー研究センター

第134回 汽水域懇談会 & 地球資源環境学科教室セミナー
134th Estuaries Open Seminar

Quantitative prediction of stratigraphic architecture in fluvial overbank successions
河川性オーバーバンク堆積物における層序構造の量的な予測

日時:2018年 6月19日(火) 18:00–19:00, 19th June (Tue), 2018

場所:総合理工3号館301号室 (3F), Room 301, Sogo-Riko Bldg 3

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Most outcrop-based studies of fluvial successions predominantly focus on sand-prone channel complexes; less attention has been directed towards finer-grained fluvial overbank successions. Such accumulations can often constitute a volumetrically significant part of many fluvial successions and can yield important information about the size, form and behaviour of formative fluvial systems.

Quantitative facies and architectural-element analysis was undertaken on outcrop successions from the Morrison Formation (Upper Jurassic) and the Castlegate and Nelsen formations, Mesaverde Group (Upper Cretaceous), this was then supported by analysis of 10 modern fluvial systems to better constrain the planform variations in overbank areas. A nested, hierarchical stacking of the deposits of fluvial overbank successions are recognized and record accumulation of the following components: (i) lithofacies; (ii) individual beds; (iii) splay elements comprising genetically related beds that stack vertically and laterally and represent the deposits of individual flood events; (iv) splay complexes comprising one or more genetically related elements that have a common breakout point and represent the deposits of multiple flood events.

Lithofacies arrangements are used to establish: (i) recognition criteria for overbank elements; (ii) criteria for the differentiation between distal parts of splay elements and floodplain fines; and (iii) empirical relationships with which to establish the extent (ca. 280-500 m long by 180- 1000 m wide) and planform shape of splay elements in the Morrison Formation (teardrop) and Castlegate and Neslen formations (semi-elliptical). Splay deposits occur as parts of thicker floodplain-dominated successions that are preserved in response to longer-term autogenic controls, such as channel-migration patterns, flooding, and avulsion frequency of parent channels, and allogenic controls, such as changes in subsidence, climate, base-level and sediment supply.

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