



Bedform development and morphodynamics in mixed cohesive sediment substrates: the importance of winnowing and flocculation

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There remains a lack of process-based knowledge of sediment dynamics within flows over bedforms generated in complex mixtures of cohesionless sand and biologically-active cohesive muds in natural estuarine flow systems. The work to be presented forms a part of the UK NERC "COHesive BEDforms (COHBED)" project which aims to fill this gap in knowledge. Herein results from a field survey in sub-tidal zone of Dee estuary (NW, England) and a set of large-scale laboratory experiments, conducted using mixtures of non-cohesive sands, cohesive muds and Xanthan gum (as a proxy for the biological stickiness of Extracellular Polymeric Substances (EPS)) will be presented. The results indicate the significance of biological-active cohesive sediments in controlling winnowing rates and flocculation dynamics, which contributes significantly to rates of bedform evolution.