



## **Sticky Stuff: Redefining Bedform Prediction for Modern and Ancient Environments**

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The dimensions and dynamics of subaqueous bedforms are well known for cohesionless sediments. However, the effect of physical cohesion imparted by cohesive clay and biological agents within mixed sand-mud substrates has not been examined, despite its recognised influence on sediment stability. Here we present a series of controlled laboratory experiments to establish the influence of substrate clay and biological content on subaqueous bedform dynamics within mixtures of sand and clay exposed to unidirectional flow.

The results show that bedform dimensions and steepness decrease linearly with clay content and comparison with existing predictors of bedform dimensions, established within cohesionless sediments, reveals significant over-prediction of bedform size for all but the lowermost clay contents examined. Similar, although stronger patterns are observed when biological agents are also present. The profound effect substrate clay content has on bedform dimensions has a number of important implications for interpretation in a range of modern and ancient environments, and offers a step-change in our understanding of bedform formation and dynamics in these environments.