Morphodynamics of shingle bars off the Deben estuary

by

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ABSTRACT

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The East Anglian coast has a long history of profound changes in morphology. In particular the rivers have shown marked differences in their response to sea level changes since the Holocene.

The extent of these changes has been influenced by a number of factors including the movement of sediment in the southern North Sea, by man's activities in the reclaimation of marsh areas, the construction of sea walls along the estuaries, dredging of navigation channels, the removal of sediments from beaches and offshore for use onshore and the construction of sea defences along the littoral. Most of these activities continue today.

This study covers the shoreline from Shingle Street in the north to Landguard point in the south, a distance of 20 Kms and for about the same distance seawards, with particular emphasis on the knolls at the mouth of the Deben estuary.

The study includes regular records (photographic) of the shape and size of the knolls, analysis of sediment along the shoreline, analysis of wind direction and strength taken from the European Wave Model and Met Office data, consideration of wave energy delivered to the beaches and knolls and the role of the offshore shoals in the protection of the shoreline.

The conclusions are;

1. The morphological changes at the mouth of the Deben will accelerate as a result of global warming.

2. There is a demonstrable relationship between wave power and the morphology of the estuary mouth.

3. There is a southern longshore drift of sediment without differences in the sediment characteristics between north and south of the estuary.

4. Photographic surveys of the knolls show a weak relationship between wave power and the vertical profile of the knolls.

5. The key role of the knolls as both a storage and release mechanism for sediment is identified and described.

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