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COASTAL LAGOON SEDIMENTS AND BENTHIC FORAMINIFERA AS INDICATOR FOR HOLOCENE SEA-LEVEL CHANGE: SAMSØ, SOUTHERN KATTEGAT

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The island of Samsø is located in the southern Kattegat region of Denmark, a relatively sheltered micro-tidal environment. The area experienced a period of rapid transgression during the early Atlantic period, reaching its maximum approx. 7,600 yr BP. Since then, isostatic uplift gradually caused relative sea-level to drop. Originally, two Pleistocene elevations existed as separated islands, which were high enough to reach above sea-level during the transgressions. Proceeding coastal erosion produced material that was transported longshore and successively accommodated in a shallow sound. Over time, an extensive beach ridge system formed, which eventually connected the islands, giving Samsø its characteristic shape.

Ephemeral shallow-water lagoons evolved in topographic depressions along the shores of the island, most of which became inactive until today. A semi-enclosed coastal lagoon remained in the NE part of the island, which developed around an archipelago of submerged moraine hills.

In the scope of this project, we will study the evolution of the coastal landscape from the mid-Holocene to present day. We use a multi-proxy approach to resolve local variations in sea-level and to investigate associated geomorphic responses in coastal lagoon and beach ridge systems. Vibracorings will be carried out in these sedimentary environments and will be supplemented with manual auger corings and ground penetrating radar (GPR) surveys to assess vertical variations in the deposited sediments. The aim is to facilitate a three dimensional interpretation of processes, rates, and dynamics of coastal lagoons and associated systems. Recent foraminiferal assemblages will be employed to support facies description and interpretation of collected sediment cores. The use of benthic foraminifera for the reconstruction of Holocene sea-level variations is a novel approach in the Kattegat region.

We present preliminary results obtained during fieldwork in spring and summer 2012.