



## **Constraints on relative sea-level fluctuations at the island of Anholt, Kattegat Sea, from AD ~1000 to the beginning of the 20th century based on interpretation of GPR reflection data**

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A ground-penetrating radar (GPR) reflection line collected across dated sediments on the island of Anholt located in the sea of Kattegat between Denmark and Sweden images dunes, beach ridges, and swale sediments deposited during the time period from AD ~1000 to the first part of the 20th century. The GPR data sets was collected with 250 MHz shielded antennae and provides a vertical resolution of ~0.1 m of the imaged sedimentary layering, depending on the wave velocity of the sediment. Sediment samples taken near the GPR reflection line were dated with optically stimulated luminescence (OSL) techniques. Map information on coastal evolution, topography measurements and geomorphological observations were integrated with the reflection GPR data to constrain the interpretation of the observed GPR reflection patterns.

Observed downlap points interpreted to represent the transition from beach sediments to the upper shoreface regime are assumed to have formed near sea-level at the time of deposition (Tamura et al., 2008; Nielsen and Clemmensen, 2009). A relative sea-level curve from AD ~1000 to the beginning of the 20th century may thus be constructed. Observed variations in relative sea-level are discussed in terms of change in eustatic sea-level and the effects of isostatic rebound since the last ice age. Quantification of the main uncertainties related to the construction of the relative sea-level curve is also discussed.