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An updated interpretation of the Hanö Bay Basin, Baltic Sea, based on recently re-processed vintage 2D seismic data

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The Hanö Bay Basin is a relatively small, tectonically controlled, Mesozoic basin in the SW Baltic Sea, Northern Europe. In this study a new seismic interpretation has been made of the basin based on re-processed vintage 2D marine seismic data.

A large dataset acquired between 1970 and 1984 by Oljeprospektering AB (OPAB) containing seismic lines across the Hanö Bay Basin has recently been made available by the Swedish Geological Survey (SGU). Seismic interpretation studies within the Hanö Bay Basin were last conducted in the mid-1990's. Since this time, computer power and seismic processing methods have advanced. Re-processing of a grid of lines across the Hanö Bay Basin has allowed updated interpretations to be made which more accurately reflect the geological history of the area. Multi channel seismic data from four surveys within the OPAB dataset: NA79, D72, W70 and EA73, along with two wells H1 and H4, were used in this study.

An updated interpretation of the pre-Cambrian basement, which exhibits a distinctive, sharply undulating morphology, was undertaken. The basement horizon across parts of the Hanö Bay appears to be very rugose, containing a number of distinctive troughs and peaks that are over 50m in amplitude. Within these basement troughs a set of distinct packages of sediment is observed. These packages are discontinuous and are most prevalent in a small circular area in the central section of the study area. The age of these sediment packages is uncertain, being either early Mesozoic or the erosional remnants of older Paleozoic sediments.

Interpretations of the re-processed seismic data indicate, in some areas, that basin fill has occurred in a significantly different way to previous interpretations during the Mesozoic. The model proposed in this study takes into account normal movement on the Christiansø Fault prior to Cretaceous inversion.