

# Analysis of a buried post-Eemian erosional feature in the Southern North Sea

## PRESENTED BY

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## ABSTRACT

The southern North Sea has been significantly affected by glacial and interglacial cycles during the Middle and Late Pleistocene. The offshore stratigraphic record can be used to understand the regional response to these climatic changes and reconstruct the Quaternary palaeo-landscape evolution of the area.

During the Eemian Interglacial (MIS 5e) and the Weichselian Early Pleniglacial (MIS 4) periods, the regional climate underwent significant changes and sea level fluctuated considerably. The global sea-level record illustrates a period of rapidly rising sea level towards the Eemian highstand, reaching values close to the present, followed by a drop of 40-50m during the Early Pleniglacial lowstand. During the Eemian- Weichselian transition, a widespread 5-20m thick unit composed of clay-rich, brackish-marine sediments was deposited across the southern North Sea. This deposit is known as the Brown Bank Formation (BNB) or Brown Bank Member in the British and Dutch sectors, respectively. Although it is easily identifiable on seismic profiles as a unit composed of (sub)parallel reflectors, its chronology and depositional environment remain poorly defined.

For this study, high-resolution seismic data and sediment cores were collected in 2022 from the wider area of the North Axial Channel, a major NS-oriented palaeo-river system. The seismic data reveal the presence of a buried and infilled channel-like feature that locally incises the older sediments of the BNB. This NS-oriented feature has a total length of more than 20km, a width of up to ~1.5km, and a max. depth of ~25m below the seafloor; core data show the infill consists of fine-grained sediments. The geomorphology of the channel and sedimentary infill pattern imply a period of extensive erosion of the BNB followed by rapid infilling with younger sediments.

We aim to examine the newly acquired datasets to better understand (a) the processes that shaped the erosional surface within the BNB, (b) the genesis, age, and morphology of the enigmatic channel, and (c) the depositional environment and processes in the region. Any information derived from this study will be a valuable contribution to understanding and reconstructing the stratigraphy, sedimentary architecture, and depositional history of the southern North Sea during the late Quaternary.

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