

Refining the offshore Quaternary stratigraphy of the Southern North Sea – an example from the Brown Bank Formation/Member

PRESENTED BY

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ABSTRACT

The Quaternary stratigraphy of the Southern North Sea is well-described and has gone through several updates since the 1960s. The original framework was based on seismic data, supplemented with core samples, some of which were acquired over 50 years ago. With the development of higher resolution acoustic and seismic systems, combined with the growing number of densely-spaced geophysical, sedimentary and geotechnical data obtained by offshore infrastructure projects, such as windfarms, it has become apparent that further refinement of the current offshore Quaternary framework is possible. In the upper 10 meters of the seabed in particular, these new data are much better at resolving the complex Pleistocene-Holocene seismic stratigraphy, providing better insights into the depositional history of the Southern North Sea.

Using high-resolution parametric echosounder data, acquired between 2018-22 across a subregion of the Southern North Sea (the Flemish Bight), we demonstrate this by drawing attention to one specific unit: the Brown Bank. In the British stratigraphic framework this unit has been attributed the status of Formation, whilst the Dutch system refers to the Brown Bank Member. This unit is easy to recognise on seismic data from its mostly (sub)parallel internal reflections, and corresponds with fine-grained, lagoonal, lacustrine to shallow marine sediments. Although thought to date to MIS5d-4, its exact age nor its depositional history are presently well-understood. In this talk, we show the complex lateral and vertical variation within the unit, both on a regional and local scale. More recently, in June 2022, a series of vibrocores were taken to ground-truth a number of subunits visible in the newly-acquired high-resolution seismic data. The combined seismic and sedimentary data bring us one step closer to understanding the Brown Bank Formation/Member, and should lead to a consensus on its cross-border stratigraphic ranking.

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