

A First Assessment of Belgian Continental Shelf Prehistory

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Abstract

Until recently, little attention had been paid in Belgium to submerged prehistoric landscapes and to the related underwater cultural heritage. This is undesirable given the increasing pressures of commercial activities at sea and in light of the unique setting of the Belgian Continental Shelf (BCS), close to the nearby confluence of major Late Quaternary fluvial systems at times of lower sea level. Moreover, the relatively thin and fragmented Quaternary sediment cover renders prehistoric sites extremely vulnerable to disturbance of commercial activities and to natural erosion at the seabed, as most of them occur at limited burial depth. In 2014, systematic mapping of the archaeological potential of the BCS commenced within the project SeArch. A first major step concerned the development of an improved 3D geological layer model of the Quaternary, based on all existing and newly collected seismic, core and CPT data. Where needed, existing data were reinterpreted, and concepts of process-response relationships revised. At the start of the project, a lot of the topographic features and their relationships with formative processes and environments remained unexplained. Despite the large volume of available data, the associated paleolandscapes were still poorly constrained and understood. The new 3D model provides a first glimpse of the potentially preserved prehistoric archaeology within the Quaternary layers and in the context of the associated landscape remnants. Embedding the layer model in information and knowledge from the neighbouring Dutch, French and UK marine area as well as from Belgian and Dutch land areas has been key to generating new insights into submerged landscapes (e.g. old river valleys connections) on the BCS. In support of the interpretation of the 3D layer model, new chronostratigraphic evidence was collected from a detailed palynological analysis of an 80-m-long core from the Ostend Valley, a large paleo-river valley off the coast of Ostend. First results show that the upper part of the ~45-m thick Quaternary sequence is represented by ~10-m of very fine to fine silty sediments with tidal mud drapes and a Holocene pollen content overlying a ~3-m-thick layer of fine silty sands that are presumably of Weichselian age. Below this unit, approximately ~20-m of beige coloured, very fine sands occur that are characterised by Eemian pollen (PAZ E4, E5, E6). Locally tidal mud drapes occur in this unit. Between ~33 and 41 m depth, the sediments are much coarser grained and contain abundant reworked shell fragments. The age of these sediments is unknown. Below this unit, fine- to medium sands occur with a higher clayey-silty admixture and well-developed tidal mud drapes. The pollen data suggests an Eemian assemblage (PAZ E2, E3) although at this stage an older Middle Pleistocene interglacial age (MIS7, 9, 11) cannot be excluded. By linking this new information to seismic data, it is possible to provide a tentative chronostratigraphy to larger parts of the BCS subsurface. In a next step, a number of geo-archaeological 'profile-type' maps will be created on the basis of the 3D layer model and both stratigraphic and chronostratigraphic information. The layer succession visualized in these maps will serve as the foundation for the future archaeological potential map of the BCS, the main deliverable of SeArch.