Buried beneath the sea – mapping the prehistoric landscapes of the Belgian Continental Shelf

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In recent years a large number of archaeological discoveries have been made in the North Sea, ranging from prehistoric landscapes to buried archaeological structures as well as artefacts and palaeontological remains. In view of the ever-increasing pressure of commercial activities at sea it is therefore timely to map this cultural heritage before large parts of it are irreversibly lost. The need for action is further stressed by the unique setting of the Belgian part of the North Sea (BCP) which is marked by a thin layer of Quaternary deposits that are constantly being reworked in a sediment starved setting, and as a result prehistoric archaeological artefacts and sites may occur at limited depth and are therefore extremely vulnerable.

The proposed research involves the development of (I) a geo-archaeological evolution model of the BCP based on 'geological profile types' and (II) so-called 'potential maps' of the BCP indicating the sensitivity of marine areas to human settlement and settlement remnants. This will be done by integrating palaeogeographical information (which buried landscapes and coastlines have been preserved? what did these look like?) with existing palaeontological, archaeological and historical information. The identified Quaternary deposits, expressed as depositional environments, will be subdivided to a chronostratigraphic geological layer model. Based on the horizontal and vertical succession of these depositional environments a sequence map of the BCP can then be constructed. In combination with the preservation potential of each depositional environment this will result in 3D geo-archaeological 'preservation models' that can then be translated into 2D archaeological 'potential maps' that identify the key archaeological zones in the BCP.

Such archaeological 'potential maps' are crucial for a sustainable management of the underwater cultural heritage in Belgium. They will not only help to save time and money in industrial projects as high risk zones can be identified in an early stage of planning, but will also reduce the risk for damage to the archaeological heritage (or loss, in some cases). At the same time these maps will also yield a better insight into the response of coastal landscapes to past sea-level changes, which will allow a better understanding of the present-day changes in the coastal area. But most of all the maps will demonstrate that artefacts, settlements and whole cultural landscapes can be preserved underwater – and moreover that they provide rich information on ancient genetics and population migrations.

As a first step a new and improved 3D landscape model of the base of the Quaternary has been developed. This landscape came to existence by a combination of marine, lacustrine, fluvial and (peri)glacial processes. Based on this 3D model a first identification of key archaeological zones (e.g. preserved river valleys) can be made for the BCP. In a next step other depositional environments of the Quaternary will be visualized providing a better view how the landscape evolved on a spatial and temporal scale.