

OLIGOCENE BIOSTRATIGRAPHY OF SHALLOW WATER DEPOSITS IN BELGIUM COMPARED WITH DEEP WATER SUCCESSIONS OF MORE NORTHERN AREAS OF THE NORTH SEA BASIN

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The Oligocene sediments of the classical outcrops of the Rupelian Boom Clay Formation in Belgium, and of the underlying Lower Oligocene Tongeren Formation have been deposited in a shallow shelf sea at the southern edge of the North Sea Basin. Some sedimentary gaps and/or non-marine deposits occur, mainly in connection with the upper part of the Tongeren Formation. In this area the thickness of the Oligocene does not exceed hundred meters.

During the same period deep water sedimentation took place in the central and northern North Sea leading to a fully marine continuous succession of several hundred meters of sediment; the biostratigraphy of this succession, based on different microfossil groups, is well known, as it has been studied in numerous wells.

The comparison of the multi-biozonation of the deep water (bathyal) succession with the microfossil assemblages of the shallow water (neritic) deposits of Belgium allows to better assess the time spans corresponding to the transgressive cycles, i.e. the marine incursions which occurred from the north onto the Brabant Massif.

Although deposited at different bathymetric depths, the microfossil assemblages are generally well comparable, since they belonged to the same basin. The biostratigraphic frame used for the here presented North-South correlation is based on the juxtaposition of the biozonations of dinoflagellates, calcareous nannoplankton, planktonic and benthic foraminifera, as compiled from existing publications; mainly the results from the IGCP project No. 124 can be used and have been compiled into detailed biostratigraphic schemes for different parts of the North Sea Basin. The biostratigraphy of the Oligocene of the North Sea Basin is based on several groups of planktonic microfossils which have a nearly worldwide distribution and allow transcontinental correlations.

However, these data do not allow a direct comparison with the recently proposed Eocene-Oligocene boundary stratotype located at the hantkeninid extinction level in the Massignano section in Italy. It is thought that the mentioned extinction is not a valid criterion for world-wide correlation of this boundary, as it can only be recognised in the tropical to warm temperate climatic belt of that period, excluding all areas of the higher latitudes. Other groups of planktonic microfossils (e.g. some dinoflagellate species etc...) are thought to provide somewhat more cosmopolitan criteria for biostratigraphic correlation and appear therefore more appropriate to define a stage boundary of worldwide acceptance than the above mentioned extinction level of some warm water Hantkenina species.

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