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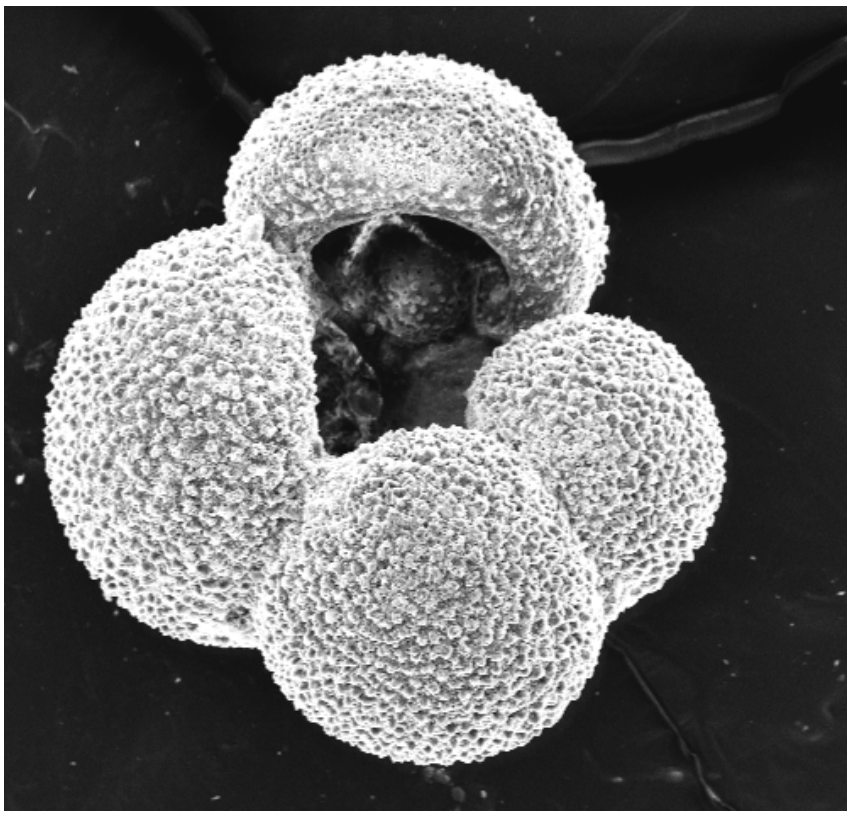
Foraminifera from the Holocene of Borehole 63 -01/08 Northern North Sea (Møre Sheet)

Internal Report IR/03/064



BRITISH GEOLOGICAL SURVEY

INTERNAL REPORT IR/03/064

Foraminifera from the Holocene of Borehole 63 -01/08 Northern North Sea (Møre Sheet)

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Globigerina bulloides from the Møres area.

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Summary

Foraminifera from borehole 63 -01/08 were found to be very similar throughout, although there was a slight increase in diversity towards the top of the hole. Cold water sinistrally coiled *Neogloboquadrina pachderma* are abundant throughout and the benthos is characterised by *Planulina ariminensis* and *Oridorsalis umbonata* with *Epistominella exigua* in some samples. These deeper water species are characteristic of water depth in excess of c. 500m

1 Introduction

Borehole 63 -01/08 was located north of the continental shelf in 2320m water depth at latitude 63° 38.51'N longitude 00° 46.32'W. Foraminifera were examine in order to provide a biostratigraphical and palaeoenvironmental analysis

2 Conclusions

Foraminifera throughout the borehole were dominated by planktonic species. So much so that if the first 300 specimens had been included in the analysis, most of the benthonic taxa would have bee missed, and even the more common taxa would have been considered rare. For his reason, the benthonic and planktonic elements of the fauna were considered separately.

The lowest sample collected was from a depth of 0.33-0.36m below sea bed. Of the planktonic species, sinistrally coiled specimens of *Neogloboquadrina pachyderma* were flood proportion, almost to the excusion of other taxa. A single dextral specimen was recorded and *Globorotalia inflata* was found to be rare. Of the benthonic elelment of the fauna. *Planulina ariminensis* was common, *Oridorsalis umbonata* was frequent and *Pyrgo depressa, Saccammina sphaerica, Lagena distoma, Cassidulina reniforme* and *Cribrostomoides subglobosa* were rare or very rare.

ERICSON (1959) pointed out that sinistrally coiled *Neogloboquadrina pachyderma* dominates in water temperatures below the 7.2°C Spring (April) isothem. This has been accepted by many authors, although some would associate the boundary with the 10°C isothem. Its domination over all other species of planktonic foraminifera is characteristic of the Arctic Faunal Province (BÉ, 1977), in the Subarctic Faunal Province, *Globigerina bulloides* would be expected to be the dominant form with N. pachyderma reduced in numbers.

Planulina ariminensis is a member of the *Cassidulina laevigata* association of MURRAY (1991) at depths between 100 and 2500m in the Møre area after data by MACKENSEN et al. (1985) and it is also present at depths below 500m around the Azores in the Epistomina exigua association (HERMELIN & SCOTT, 1985). It is often found associated with sponges.

Oridorsalis umbonata is a geographically widespread species. It is found living off Newfoundland at depths of 2695m and temperatures of 3-3.5°C (SCHAFER & COLE, 1982) and off northern Europe (North East Atlantic, Norwegian-Greenland Sea and Møre area (WESTON & MURRAY, 1984; BELANGER & STREETER, 1980; Mackensen et al., 1985) noteably at depths of 1734-1877m and temperatures between -1 and +4°C, although it is often found living below 1000m off in the Møre area.

Very similar faunas are present throughout the rest of the core. *Epistominella exigua* is present at 0.21-0.24m depth, another geographically widespread species that is recorded below 500 m water depth in the Atlantic and Pacific (MURRAY, 1991 and references). *Cribrostomoides subglobosa* is added to the fauna at 0.15-0.18m below sea bed and found throughout the remainder of the borehole. Off Northwest Europe and in the Faroes Channel, this species is a characteristic element in the warmer NAW water mass. Benthonic faunal diversity is increased at 0.03-0.06 m and in the top sample at 0.0-0.03m, although the additional species are either rare or very rare. The planktonic diversity is increased at 0.09-0.12m, although *sinistral N. pachyderma* continues to be abundant and *G. bulloides* remains rare. It must be assumed that the locality remains influenced by Arctic surface waters in which the planktonic taxa live.

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