

17<sup>th</sup> Sep 00:00 – 17<sup>th</sup> Sep 24:00 GMT

### 1. Location

10° 6.507' E 55° 0.299' N  
BSB-3 – Lille Baelt  
Water Depth: 31.2m (beneath keel)

### 2. Activity Summary

Continued operations at M0059B.

### 3. Science Report

Drilling continued through glacial gravel and sand. Since a main objective of the present Station BSB-3 in the southern Little Belt is to reach Eemian sediment, it was decided to progress more effectively through the glacial till without sample collection and to monitor the lithology from drillers information in order to assess whether a more impermeable formation had been reached.

One small sample was collected at 111 mbsf and it displayed a sandy silty diamicton barren of fossils. At 117.7 mbsf was a clay sample which contained pieces of mollusc shells and benthic foraminifera. We anticipate encountering several till beds interlayered with units of softer sediments.

Chemical data from pore analyses during the past few days from the top 80 mbsf of the southern Little Belt site begin to show some clear results. Mineralization rates in the 40-m deep, organic-rich Holocene mud are very high as seen from extremely high alkalinity and ammonium concentrations reached in the middle of the mud layer. At the transition to the underlying 40-m deep glacial clay there is a steep drop in both alkalinity and ammonium which approach zero in the middle of the clay layer. This drop is possibly due to a diffusional front from organic matter mineralization in the Holocene mud and down into the clay. Methane concentrations are high throughout both the Holocene mud and the glacial clay, and most cores showed gas bubbles when retrieved on deck. Hydrogen sulfide was high only in the top section of the hole. Interestingly, the paleosalinity of the Baltic Sea environment is still reflected in the pore water salinity which reaches a maximum in the middle of the Holocene mud and a minimum in the glacial lake clay.

### 4. Core Recovery Details

Hole	M0059B
Cores recovered	8
Drilled length (Coring)	10.3 m
Drilled length (Open hole)	25.29
Recovered length	0.79 m
Recovery	0.08%
Depth at midnight	130 m

### 5. Weather

Fair with isolated showers, swell of 0.6 – 0.8 m; wind direction SSW, winds of 19 - 23 kts gusting 23 - 29 kts; 13°C.

Next 24 hrs: Showers, swell of 0.2 – 0.5 m, wind direction SSW swinging WNW, winds of 10 – 16 kts, gusting 12 - 20 kts. 13°C.

### 6. Planned Activity for the next 24 hours

Continue drilling operations on the second Paleooceanographic hole (M0059B) at BSB-3.

7. Photo of the day



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