Scientific Report for IODP Expedition 347
Baltic Sea Paleoenvironment

3rd February 2014 12:00 local time

1. Location

IODP Bremen Core Repository, MARUM, University of Bremen, Germany
Onshore Science Party

2. Activity Summary

Core splitting, analyzing and sampling of cores continues, following the estimated schedule listed below.

3. Schedule

The estimated schedule is as follows:

Site M0059 Core splitting, description, analyses, and sampling	January 23rd – 29th
Site M0060 Core splitting, description, analyses, and sampling	January 29th – February 2nd
Site M0061 Core splitting, description, analyses, and sampling	February 2nd – 3rd
Site M0062 Core splitting, description, analyses, and sampling	February 3rd – 4th
Site M0063 Core splitting, description, analyses, and sampling	February 4th – 12th
Site M0064 Core splitting, description, analyses, and sampling	February 12th – 13th
Site M0065 Core splitting, description, analyses, and sampling	February 13th – 17th
Site M0066 Core splitting, description, analyses, and sampling	February 17th
Site M0067 Core splitting, description, analyses, and sampling	February 17th – 19th
Delivery of results to Expedition Project Manager / Publications	February 21st

4. Current Status

The status as of 12:00 on February 3rd was as follows:

Site	Total Core Length (m)*	Core Length Measured / Described (m)*	Samples taken (incl. offshore)	Site Chapters - drafts
M0059	406.52m	406.52m	7151	100% complete
M0060	245.45m	245.45m	5811	100% complete
M0061	77.9m	26.3m	822	33.8%
M0062	81.69m	0	0	Not started
M0063	504.51m	0	0	Not started
M0064	101.50m	0	0	Not started
M0065	298.08m	0	0	Not started
M0066	43.78m	0	0	Not started
M0067	187.89m	0	0	Not started

** Includes offshore sampled microbiology cores*

5. Preliminary Scientific Assessment

Following a successful offshore operation in the Baltic Sea with the *Greatship Manisha*, during which nine sites were drilled and a total core length of more than 1600 m was retrieved, the completeExpedition 347 Science Team met three months later to open, analyse and sample the cores. The Onshore Science Party took place at the IODP Bremen Core Repository of the MARUM – Center for Marine Environmental Sciences, University of Bremen, Germany, where all the refrigerated cores and core and IW samples taken on board had been transported after the expedition.

The Sample Allocation Committee (SAC) met two days before the other scientists to plan the large and complex sampling project. The 30 scientists and >35 ESO staff and student helpers congregated on the 21st January 2014 in Bremen. The 22nd January was used to introduce the many participants to the facilities and the core flow of the Onshore Science Party and to discuss the allocation of samples, analyses, and work stations. Special care was taken to sort out those cases where sample requests were potentially overlapping and to ensure that all participants were informed about the sampling program in general and their own sample allocation.

The first core was split in the early morning of 23rd January and during that day all the main procedures and analyses started to become operational. The core flow followed IODP-ECORD standard procedures, with the archive half used for visual core description and digital line scanning to obtain a continuous high-resolution image of the freshly-opened core. During the day the open archive halves were lined up to give an overview of the cores (e.g changes in lithology and other qualities) for a given time interval. Simultaneously the working halves were first run through the color reflectance track system and then transferred to the sampling tables where several teams worked intensively to take the many diverse samples, using tubes, scoops, syringes or cubes for paleomagnetic measurements, according to the detailed sampling schemes that had been worked out in advance. Redox-sensitive samples were transferred to bags of gas-tight foil, flushed with dinitrogen, and refrigerated. Also macrofossils were collected for later identification and ^{14}C dating.

For the different analyses carried out during the Onshore Science Party, analytical laboratories were available at the MARUM and at the Department of Geosciences. The analyses included:

- Physical properties: Moisture and density (MAD), sound velocity (Pwave), magnetic properties (Pmag), color reflectance, digital line scanning
- Sedimentology: CoreWall setup, visual core description, smear slides analysis
- Micropaleontology: Identification of foraminifers, ostracods, diatoms, pollen and dinoflagellates
- Geochemistry: Total sediment: TOC, TC, S; IW (samples taken offshore): anions (chloride, sulfate, bromide), cations (major and trace elements)
- Natural gamma radiation (NGR) and thermal conductivity (TC) had been measured at MARUM on all full cores before the science party arrived and the splitting commenced. Both pieces of equipment were supplied by the European Petrophysics Consortium.

Sampling will be done in alphanumerical order, the sequence in which the different sites were drilled, starting with Site M0059 (BSB-3) in Lillebælt where five holes had been cored. Most sampling requests for the five holes followed the splice that had been established by successful stratigraphic correlation. The estimated mean progress required to process all cores during the 5-week long onshore party is 60 m of core per day. This rate of progress was realized after a few days of core flow and the first site, Site M0059 (BSB-3), was finished on 30th January. Site M0060 (BSB-1) in Kattegat was completed on Sunday 2nd February and Site M0061 (BSB-10) is now being processed.

Whereas the main stratigraphy of Site M0059 was reported during the offshore expedition, important new information and details are recorded as the cores are opened. The extended (ca. 50 m) Holocene sequence is generally a brackish-marine gyttja clay deposit but it started as a freshwater lake after a low-stand evident as a distinct erosional unconformity on top of the deep late-glacial varved ice-lake deposit. Below 83 mbsf the sediment consists of alternating fluvially sorted sand, diamicton and intermittent

layers of clay. Basement rock of Cretaceous limestone was reached at 203 mbsf.