

**Scientific Report for IODP Expedition 347
Baltic Sea Paleoenvironment**

10th 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 23 rd – 30 th
Site M0060 Core splitting, description, analyses, and sampling	January 30 th – February 2 nd
Site M0061 Core splitting, description, analyses, and sampling	February 2 nd – 4 th
Site M0062 Core splitting, description, analyses, and sampling	February 4 th – 5 th
Site M0063 Core splitting, description, analyses, and sampling	February 5 th – 12 th
Site M0064 Core splitting, description, analyses, and sampling	February 13 th – 14 th
Site M0065 Core splitting, description, analyses, and sampling	February 15 th – 16 th
Site M0066 Core splitting, description, analyses, and sampling	February 17 th
Site M0067 Core splitting, description, analyses, and sampling	February 17 th
Delivery of results to Expedition Project Manager / Publications	February 21 st

4. Current Status

The status as of 12:00 on February 10th 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	66% complete
M0061	77.9m	26.3m	2173	44% complete
M0062	81.69m	81.69m	2454	10% complete
M0063	504.51m	73.6m	8646	10% complete
M0064	101.50m	0	0	Not started
M0065	143.41m	0	0	Not started
M0066	43.78m	0	0	Not started
M0067	15.7m	0	0	Not started

* Includes offshore sampled microbiology cores

5. Preliminary Scientific Assessment

After finishing the description, analyses, and sub-sampling of cores from Holes A-C from Site M0061 (Ångermanälven river mouth, water depth 86m) on Tuesday 4th February, the lithology and preliminary results can be summarized as follows.

The lithology of the cores reveals an upper unit down to c. 8 mbsf of a laminated greenish grey silty clay in the uppermost 1.5 meters with a high organic content. Below this unit follows a greenish grey varved clay, in its upper part heavily disturbed. Varve thickness in this unit is 1-4 cm. From c. 14.4 mbsf to the bottom of the core at c. 25 mbsf, grey silty sand is interlayered with clayey silt units. The entire unit is very water saturated and contains a few gravel clasts and plant macrofossils.

The diatom flora indicates a sediment deposition in an almost freshwater environment from below c. 8 mbsf and an increasing brackish water influence reaching a maximum at c. 5 mbsf where a brackish diatom flora is recorded. Above this level a decreasing brackish water influence is recorded as an increase in freshwater diatom species. A similar upwards decreasing trend in salinity is recorded in the geochemistry data based on pore water analyses.

The Site M0062, Holes A, B, C and D, is situated some 25 km upriver from Site M0061 at a water depth of 68 m. Here, the stratigraphy is similar, with the exception of the uppermost c. 9 meters which displayed a much weaker brackish water influence with freshwater, brackish and brackish-marine species but no real marine species recorded. The maximum saline influence was recorded at c. 7 mbsf. Splitting and documentation of the cores from this site was finished Wednesday 5th February.

The following day the work with the Landsort Deep site commenced where five holes had been drilled, Holes M0063 A to E. This is the site that has generated most sample requests and, as the holes are fairly deep, the rest of the week was spent opening, documenting, analyzing and sub-sampling the cores from this site. The site is located in the deepest basin in the Baltic Sea with a water depth of 437m at the sampling site. We know from offshore that the cores had been expanding due to their high gas content and that we could expect disturbances in the uppermost part of each hole. Despite this it was possible to put together a complete lithostratigraphy which displayed sediments from the Baltic Ice Lake stage to present. Based on a preliminary estimate, the brackish phase of the Yoldia Sea (c. 11.400 to 11.100 years BP) stage is recorded between c. 43 and 45.3 mbsf. In Hole M0063 C it can be assumed that the varved sequence below this unit has recorded c. 1500 varve years meaning that the entire Younger Dryas may have been recovered at this site. It furthermore indicates that the average yearly sediment accumulation is close to 4 mm above 43 mbsf, something that is evident from the lamina thickness in several of the long laminated sequences recovered at this site. The cores from the last hole from this site are now being processed, before work with the next site, Hanö Bay M0064, can commence.