Geophysical Research Abstracts
Vol. 14, EGU2012-7682, 2012
EGU General Assembly 2012

The Baltic Sea IODP project "Paleoenvironmental evolution of the Baltic Sea Basin through the last glacial cycle"

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Despite an almost 100 year long history of geological research in the Baltic Sea, no scientific deep drilling has been carried out until now; the Baltic Sea IODP project drillings will take place in 2013.
We aim at retrieving sediments, in different settings of the Baltic Sea Basin (BSB), from the last interglacial-glacial cycle. This will be accomplished by drilling in six sub-basins, one in the gateway of the BSB (Anholt), where we focus on sediments from MIS 6-5 as well as MIS 2–1. A sub-basin in the southwesternmost part of the BSB (Little Belt) possibly holds a unique MIS 5 record. Two sub-basins in the south (Bornholm Basin and Hanö Bay) may hold long complete records from MIS 4–2, and the deepest (450 m) sub-basin in the central Baltic (Landsort Deep) promises to contain a thick and continuous record of the last ca 14000 years, and perhaps also older deposits. Finally, the sub-basin in the very north (Ångermanälven River eustary) contains a unique varved (annually deposited) sediment record of the last >10000 years. All in all these six areas will contain a set of sediment sequences of the last ca 140000 years, with paleoenvironmental information on a semi-continental scale; the Baltic Sea drains an area four times as large as the basin itself.
The location of the BSB in the heartland of a recurrently waning and waxing ice sheet, the Scandinavian Ice Sheet (SIS), has resulted in a complex development: repeated glaciations of different magnitude, sensitive responses to sea level and gateway threshold changes, large shifts in sedimentation patterns and with usually high sedimentation rates. Its geographic position also makes it a unique link between Eurasian and NW European terrestrial records. Therefore the sediments of this largest European intra-continental basin form a rare archive of climate evolution over the last glacial cycle. The high sedimentation rates provide an excellent opportunity to reconstruct climatic variability of global importance at unique resolution from a marine-brackish setting, and comparable sequences cannot be retrieved anywhere in the surrounding onshore regions. Furthermore, and very crucial, the large variability (salinity, climate, sedimentation pattern and oxygenation) that the BSB has undergone during the last glacial cycle makes it optimal for new research on the deep biosphere, its evolution, biogeochemical processes and e.g. also on how the post-glacial diffusive penetration of conservative seawater ions may alter the chemical composition and microbial physiology in the sub-seafloor biosphere.
The scientific communities of the nine countries around the Baltic Sea have by tradition had the Baltic Sea and its many intriguing scientific problems as a focal point for research. Now comes the real challenge!