

Askö Field Campaign – Himmelfjärden  
12. – 17. May 2009

Participants

Volker Brüchert, BONUS Scientist *U. Stockholm*

Tim Ferdelman, BONUS Scientist *MPI Bremen*

Åsa Löv, Student *U. Stockholm*

Thang Manh Nguyen, PhD Candidate, *MPI Bremen*

Maja Reinholdsson, PhD Candidate *U. Lund*

Gunter Wegener, Scientist *MPI Bremen*

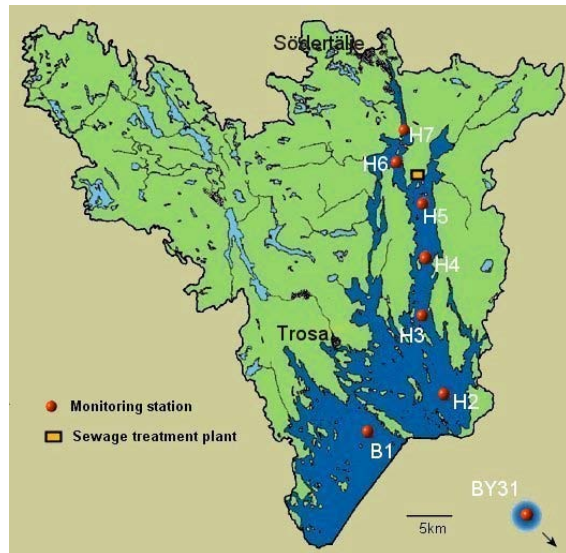


Figure 1. Monitoring sites in Himmelfjärden. The sites

Table 1. Askö May 2009 Campaign Stations:

H5:	N 59° 02' 19, E 17° 43' 40 Maximum depth 25m
H3:	N 58° 56' 04, E 17° 43' 81 Maximum sampling depth 50m
H2:	N 58° 50' 40, E 17° 47' 42 Maximum sampling depth 30m

In the week of May 12 to 17, 2009 scientists and students from three BONUS Institutes (U. Stockholm, U. Lund, and MPI Bremen) participated in a field campaign to obtain cores from the Himmelfjärden, an anthropogenically impacted fjord in the north-central basin of the Baltic Sea. The principal goals were to obtain baseline porewater, gas, and solid phase sediment data for the Baltic Gas project, as well as to obtain samples for experimentation and flux measurements. In addition, this expedition provided the initial training for BONUS doctoral students Thang Manh Nguyen and Maja Reinholdsson.

Cores were obtained over a two day period onboard the *R/V Limada* (<http://www.smf.su.se/english/scientist/askolaboratory.html#>) using mini-multicorer (MuC) or a Rumortype gravity core (see pictures). The Rumortype coring device proved to be an excellent tool for deeper coring and we were able to obtain high-quality cores up up to 150 cm length. Three sites, H5, H3, and H2, which belong to a long-term water column monitoring

program (<http://www2.ecology.su.se/dbHFJ/index.html>), were chosen for study. Gas samples for methane analysis were taken directly from a Rumorlot core onboard within 15 minutes of sampling. The remaining cores were returned to the Askö Marine Lab, where we sampled pore waters using the Rhizone technique. Preliminary dissolved sulfide and Fe(II) data (Figure 2) indicate that three distinct variations on the intensity of iron-sulfur cycling are to be found. Further methane, dissolved inorganic carbon, metal and nutrient data will be forthcoming. Samples for solid phase iron and sulfur speciation and for Pb-210 dating were collected. On the experimental side sulfate reduction, methanogenesis, and anaerobic oxidation of methane rate experiments were performed on sediment sub-cores. Additionally, oxygen uptake fluxes and methane emission fluxes were performed.

We would like to thank the Askö Marine Station staff for their unerring and enthusiastic support. Gunther Wegener was also a tremendous help in all aspects of the expedition - logistic as well as scientific.

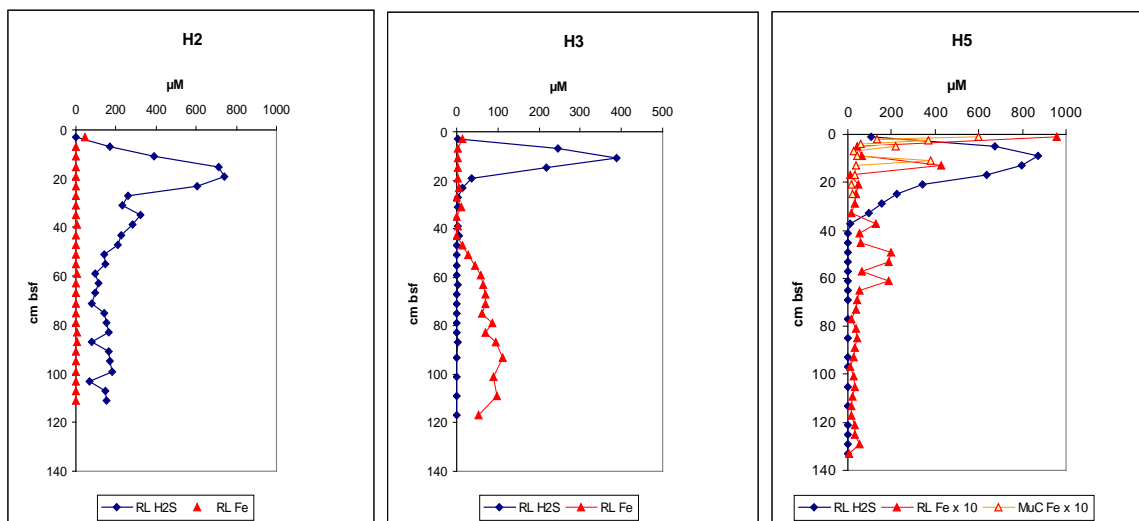
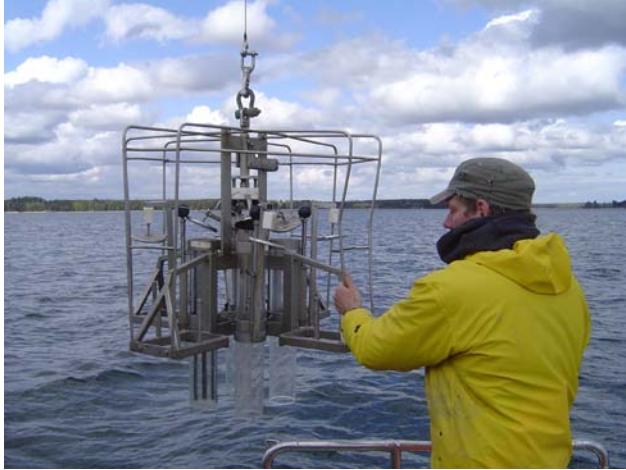


Figure 2: Pore water distributions of dissolved H<sub>2</sub>S and dissolved Fe(II) in Himmelfjärden sediments.



- a. Askö Marine Station
- b. Mini-multicorer being deployed from *R/V Limada*
- c. Laminated sediments in a Rumorlot type gravity core from Station H5. Note high quality of the surface of this coring device.
- d. Retrieval of the Rumorlot type gravity corer.

*All photos ©Timothy G. Ferdelman*

