



## CELTIC EXPLORER CE 0913: 3<sup>rd</sup> Weekly Report (August 10-14, 2009)

On August 10 the vibrocorer of the Geological Survey of Ireland was deployed again. Excellent sediment samples were recovered, which will be studied with respect to their sedimentology and geochemistry to characterize the origin and migration pathways of the ascending fluids and gases.



**Deployment of the Profiler Lander. Photo: Peter Linke, IFM-GEOMAR.**

Afterwards a ROV dive was conducted where a self-made bubble measurement tool and a gas sampler for quantification and characterization of the discharged gasses as well as push cores for sediment sampling were deployed. After the successful sampling the ROV did a 500m long transit in parallel to the vessel to reach the instruments which had been deployed on the previous day in a line perpendicular to the currents. The first of the 4 instruments to be recovered was the benthic chamber which arrived on deck without damage. After this the Profiler-Lander was released acoustically and recovered. The major component this lander carries, beside two acoustic current profilers, is a profiler which moves microsensors in x, y, and z direction at the seafloor to measure high-resolution oxygen profiles. The measured sediment microprofiles were of excellent quality. As a night program measurements with the microstructure CTD were obtained as well as an intensive acoustic survey and sampling of gas flares in the water column by the video-guided CTD.

During this deployment the submersible pump was deployed down to 70 m water depth to obtain on-line measurements of gas composition with the mass spectrometer. After various failures with 3 different pumps this one, which was exchanged in Cuxhaven and is designed for 20 m water depth, has proven to be a good investment.

During the last day at the Tommeliten working area a change of weather became apparent with increasing winds from the northwest and swell from the Atlantic. Therefore, after sampling with the vibrocorer we had to cancel the deployment of the pore water sampler and had to conduct two rapid, sequential ROV dives to recover the 2 sensitive eddy correlation systems. Both instruments could be recovered without damage by the excellent handling capabilities of the ROV pilots. Both instruments recorded high-resolution data for the measurement of the dynamics of oxygen fluxes in the benthic boundary layer. By this the ROV conducted a total of 14 dives with almost 50 h of bottom time during this cruise.

We did not forget the POZ-lander which was deployed during the whole duration of our work at Tommeliten. The instrument was released by acoustic command and recovered. The end of scientific work was the acoustic survey of the whole working area until the vessel lifted its drop keel around mid-night and headed for Bremerhaven. Here



**View on the microsensors deployed by the profiler in the lander. Photo: Peter Linke, IFM-GEOMAR.**

5 containers are waiting at the Labrador harbour, which were left behind and have to be packed in the remaining time. At the moment the vessel is gently pushed by wind and waves towards harbour and all participants use the transit for packing of all the equipment used on deck and in the laboratories. At the same time all data are stored and organized to be sure that no information is lost when we leave the vessel.

Altogether we can look back at a very successful program with many new instruments which was favoured by calm summer weather and a fantastic crew.



**Group picture of the science party on board the CELTIC EXPLORER. Photo: John Barry, P&O**

On behalf of the crew members I would like to thank Captain Anthony Hobin and his crew for the excellent and professional cooperation as well as the friendly and warm atmosphere on board of this Irish vessel,

Peter Linke