

CELTIC EXPLORER CE 0913: 2nd Weekly Report (August 4-10, 2009)

After changing some personal and the exchange of the BSH vibrocorer for an almost identical instrument belonging to the Geological Survey of Ireland, the RV CELTIC EXPLORER departed during clear skies at 18.00 h Cuxhaven and headed back towards the Salt Dome Juist working area. The short stay in the harbor was used to review the data collected so far and to discuss the sampling strategy for the following working days.



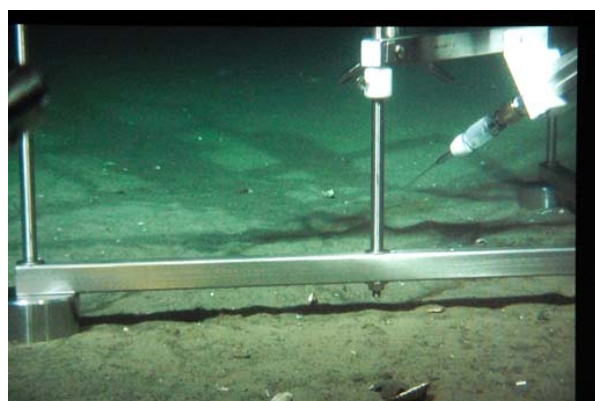
Deployment of the ROV loaded with a benthic chamber and the new Eddy Correlation System. Photo: Peter Linke, IFM-GEOMAR.



Catfish watching with alert eyes the movements of the ROV at the Tommeliten chemoherm. Photo: Peter Linke, IFM-GEOMAR.

After arrival in the working area we succeeded in deploying a new submersible pump on the CTD rosette to pump water from depth in a towed profile across the salt dome into the lab attached to a mass spectrometer. The eagerly awaited results demonstrated the capabilities of this new measurement technique and showed a clear increase in CO₂ concentration in the bottom waters. The next 3 days were occupied with an intensive sampling program involving all instruments on board, which demanded all cruise participants and pushed lab personal to their limits. Beside the CTD with pump, the POZ-lander and for the first time with a ROV, a novel benthic chamber was deployed. All instruments were deployed successfully and obtained samples and data which will keep us busy for the coming months.

After this intense program all cruise participants were cheerful for the 20 h transit to the working area Tommeliten in Norwegian waters, where a comparable investigation of fluid and gas discharge



In the spotlight: fragile microsensor tip (20 um) of the Eddy Correlation System successfully deployed by the ROV pilots. Photo: Peter Linke, IFM-GEOMAR.

was planned. After arrival at lunchtime of August 8 the vibrocorer and the POZ-lander were deployed. The following ROV dive in approx. 70 m water depth showed pilots and scientists at clear visibility spectacular pictures of bacteria mats, gas ebullition and chemoherm carbonates, which were densely colonized and serve as a shelter and feeding ground for various fish species. Again we deployed a benthic chamber with the ROV at a bacteria mat and obtained gas flux measurements and samples.

Inspired by this experience and the fantastic weather conditions an intensive deployment schedule was planned for the following day. It involved the deployment of the Profiler Lander, the 2 Eddy Correlation Systems and the second benthic chamber in a row perpendicular to the tidally changing currents. This work was performed with great enthusiasm and eagerness by all contributors and was completed around midnight by the

recovery of the first benthic chamber. During the night an intense acoustic survey for gas flare detection was performed, which was accompanied by physical microstructure measurements in the water column.

Now we hope that we are able to recover all instruments intact and loaded with samples and data until our departure.

All are well on board and I am sending regards on behalf of the crew members,
Peter Linke