

A MULTISENSOR EXPERIMENT ON RESUSPENSION EFFECTS OF TRAWL FISHERY IN THE WESTERN KIEL BAY: GEOLOGICAL AND PHYSICAL INVESTIGATIONS

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The knowledge of spatial and temporal variations of present sediment accumulation rates in near-coast sediments is important for assessing the distribution processes of sediment constituents including trace metals from anthropogenic sources. Kiel Bay is one of several areas in the Western Baltic Sea, which are highly affected by trawl-net groundfishery. Since 1987 the Geological Institute investigates the influence of trawl-net tracks on surface sediments, particularly in areas of muddy sediments.

In 1988 started the collaboration between the Geological Institute and the Institute of Applied Physics to investigate the suspension cloud originated by the otter boards and by the trawl net during trawling. The inner Eckernfoerde Bay was selected as investigation area, because fishing in this region normally is not allowed. So it is possible to study the morphological evolution of this track over a long period without disturbances from further groundfishery activities.

In January 1991 the suspension cloud was studied by a two ship experiment. The first ship RV "Alkor" dragged a trawl net over about 2 km while the second RV "Littorina" examined the spreading of the suspended sediment.

At the beginning of the track a drifting buoie with its sail below the halocline was positioned from RV "Littorina" to observe the movement of the bottom-layer. The drifting buoie is equipped with a microprocessor system which controls a Decca-Navigator and stores its position each minute. All data can be received by radio transmitter.

Following the wake of RV "Alkor" in a cross-section station grid the turbidity of the water column was determined by a fast dropping CTD-system including a turbidity sensor. For continuous recording a high frequent echo sounder operating at 690 kHz and 230 kHz was used.

Parallel to the hydrographic survey the disturbance of the surface near sediments was determined by side-scan sonar and by an ROV video equipment.

The results showed a current velocity of the bottom layer of about 10 cm/s and due to this slow motion the dispersed suspension cloud settled slowly in the local area near to the

track.

Due to the strong groundfishery activities in Kiel Bay a considerable amount of sediment is resuspended. The sandy sediments will settle locally but the mud can be transported over a long distance, if stronger bottom currents occur.