



# 1 Pore pressure measurements with in-situ FF-CPT in the western Baltic Sea

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Cone penetrometers are commonly used to investigate the in-situ properties of sediments such as sediment strength, pore pressure ( $u_2$ ), and temperature. During two research cruises in January and March 2006 in the Baltic Sea (Mecklenburg, Eckernförde, and Geltinger Bays), 57 free-fall CPT measurements were carried out altogether. The main aim was to analyse the pore pressure evolution during and up to 15 mins. after insertion of the probe, and then compare those results to physical properties data obtained from sediment cores recovered in the same locations. As a free-fall CPT decelerates into the sediment until it rests, very rapid changes of pressure occur due to fluid displacement and sediment deformation. In the majority of the tests, pore pressure decreases to sub-hydrostatic values upon insertion into the fine-grained cohesive sediments, and then slowly increases again. In places, positive spikes in both pore pressure and cone resistance overprint this pattern where slightly indurated sandy silts are penetrated. We propose that the observed delayed pore pressure response is an indication for dilatancy of the mud as well as the presence of free (microbial) gas in the sediments, especially in Eckernförde Bay.