Geophysical Research Abstracts, Vol. 7, 07441, 2005
SRef-ID: 1607-7962/gra/EGU05-A-07441

Seasonal influence on methane turnover

N.J. Knab (1), H. Fossing (2), C. Borowski (1), B.B. Jørgensen

(1) Max-Planck Institute of Marine Microbiology, Bremen, Germany, (2) National Environmental Institute, Silkeborg, Denmark (nknab@mpi-bremen.de)

Anaerobic oxidation of methane (AOM) is a microbiological process responsible to prevent methane outgasing from marine environments. The EU-Project METROL aims to determine which factors control the effectiveness of AOM as a methane barrier and how methane fluxes are regulated by this process in diffusion dominated coastal margin sediments.

To investigate the influence of seasonal change, sediment samples were collected in an area of gas charged sediment from two sites in Aarhus Bay. The first site was located in an area of homogeneous methane distribution with free gas in 4 m sediment depth, whereas on the second more heterogeneous site, the methane gas bubble front comes up close to the sediment surface. At both sites AOM is very effectively retaining the methane from outgasing into the water column, even though fluxes differ considerably.

The sulfate and methane profiles that determine the location of the methane/sulfate transition zone, showed on both sites only a minor depth fluctuation over time. This change is not significantly exceeding heterogeneity and an influence of seasonal change on methane turnover can therefore not be detected.