



Hydrogeochemical and stable isotope geochemical characterization of shallow ground waters and submarine ground water discharge in North-Eastern Germany

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The evolution and hydrochemical composition of ground waters in Mecklenburg-Western Pomerania (North-Eastern Germany) is controlled by different natural and anthropogenic factors. In the present study, the hydrogeochemistry and stable isotope geochemistry (H, C, O, S) of shallow ground waters was investigated in 2014 and 2015. A mass balance approach is combined with physico-chemical modeling to define the mineral dissolution/precipitation potential as well as the processes taking place during the ground water development.

The dissolved inorganic carbon system of the ground waters is controlled by the dissolution of biogenic carbon dioxide, the dissolution of (marine) carbonates and the oxidation of anthropogenically introduced DOC and at a few sites biogenic methane. The sulfur isotope composition of dissolved sulfate indicates the substantial impact from the oxidation of sedimentary pyrite using oxygen or nitrate as electron acceptor. The combined results are the base for a quantitative reaction path analysis.

The composition of ground water is discussed with respect to its role as a source for fresh waters forming SGD and in a re-wetting wetland area (Hütelmoor) at the southern Baltic Sea coast line.

Acknowledgements: The SGD/Hütelmoor part of this study is supported by German Science Foundation during DFG research training group BALTIC TRANSCOAST.