

Geochemistry of DOC-rich coastal watercourses in northwest Germany

S. Kölsch, O. Dellwig, M. Grunwald, R. Reuter, H. Brumsack

Geochemical signatures of small watercourses in the northwest German coastal area are governed by the soil types found in the catchment area. Peat bogs and forests lead to very high DOC-concentrations. The marine influence is partly responsible for elevated salinities. Different types of watercourses were sampled over 18 months to investigate the influence of physical, chemical, and biological parameters on the trace element composition of dissolved and particulate phases on a seasonal scale. The aim of this study was to clarify whether freshwater forms an important trace metal source for coastal waters (Wadden Sea). Dissolved trace metals (e.g., Al, Pb, REE) are distinctly enriched due to complexation by humic substances, and are contributed to the marine environment. Salinity changes affect the particle formation of Fe and organic colloids, which leads to scavenging of adsorbed trace metals. Furthermore, rainfall and microbial activity largely influence the DOC, Fe, Mn, and Al concentration.