



Tritium as a Tracer for the Discrimination of Water Bodies in the German Bight

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Tritium (^3H) in the atmosphere has declined to natural levels, after above ground nuclear weapon tests ended five decades ago. Currently tritium is present in the marine environment of the North Sea mainly due to liquid discharges from nuclear reprocessing plants (NRP) in La Hague (France) and Sellafield (UK) and different nuclear power plants (NPP) discharging their effluent to the English Channel or directly into the North Sea. This work deals with seawater samples collected in the German Bight in October 2014 onboard the research vessel Heincke that were analyzed for tritium activity concentration. The major research question of this study is the characterization of different water masses due to their tritium activity concentration.

Tritium activity concentration in the coastal area is very high compared to samples taken in the central German Bight. Especially samples from the estuaries of the Elbe, Weser and Ems show high tritium activity concentrations. In correlation with salinity values, riverine freshwater masses were discriminated from oceanic influenced water masses. Activity concentrations from the coastal areas to the central bight are characterized by an exponentially decreasing gradient. It is shown that tritium can be utilized as a tracer for the discrimination of riverine freshwater from oceanic water masses.