

Master thesis at the Research Group of Hydrogeology

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Spatial distribution and sources of fluoride in the groundwater of the north-eastern Kilombero floodplain, Tanzania

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This master thesis deals with the evaluation of the spatial distributions of fluoride concentrations in the groundwater of the north-eastern Kilombero floodplain. Previous studies revealed fluoride concentrations at some groundwater sampling points that exceed the guideline value for drinking water of WHO (2011) (Beuel, unpublished). Firstly, the fluoride hotspots will be declared and delineated by water sampling in a finer mesh compared to the existing sampling points. Secondly, the origin of fluoride in regard to weathering, transport, and accumulation processes in the groundwater will be evaluated.

During a field survey in June and July 2016 groundwater will be sampled at wells and piezometers. The samples will be analyzed in terms of their hydrochemical composition. One part of the hydrochemical analysis is the determination of fluoride concentrations with the standard addition method at the ion chromatography. This method should provide more precise concentrations. As a result of the hydrochemical analysis typical ion compositions occurring in fluoride contaminated groundwater and groundwater with low fluoride concentrations might be determined. These ions could be indicators for the sources and weathering processes of the fluoride. Additionally, potentially appropriate fluoride removal methods will be considered. These methods will be selected in accordance with hydrogeological, infrastructural and environmental conditions in Tanzania.



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