Geochemistry of shallow groundwater at Kigamboni peninsula along Dar es Salaam coastal strip Tanzania

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Abstract
The paper presents types of groundwater, hydrochemical facies, and chemical genesis of shallow groundwater at Kigamboni peninsula. Five types of groundwater have been identified as sodium bicarbonate, sodium sulphate, sodium chloride, calcium bicarbonate and magnesium bicarbonate type of waters.
Hydrochemical facies change from calcium-sodium facies near the shore to sodium-calcium facies landward for cations, and from chloride-sulphate-bicarbonate to bicarbonate-chloride-sulphate facies respectively for anions. Calcium and Magnesium in high concentrations near the shore are attributed to dissolution of dolomitic limestone, being indicated by higher ratio of Ca^{2+}/Mg^{2+} than one for samples K_6, K_7 and K_9. The rest of the samples show low ratios indicating dolomite dissolution with probable calcite precipitation.
Whereas the higher alkali metal concentrations than alkaline earths, observed landward, may probably be due to cation exchange process, similar pattern seen for chloride and sulphate concentrations also suggest mixing of fresh recharge water with interstitial marine water and or dissolution of airbone salts by recharging rainwater resulting into oceanic salt recycling. However, the water is observed to be suitable for general domestic and irrigation purposes.
It has been concluded that the chemical character of shallow groundwater in the studied area, is a result of the interaction between recharge water with lithology and mixing with probable trapped marine water.