

Hydrogeochemical evolution of ground water along the Butajira-Ziway transect, Central Main Ethiopian rift.

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The hydrogeochemical evolution of ground water is analyzed in central Main Ethiopian rift on the basis of major elements and trace elements analysis. The analysis was carried out on the water samples collected from cold spring, well water, hot spring and Lake Water. The analysis indicate that the rift floor well water, hot spring and Lake water is characterized by high total dissolved solids (TDS), fluoride and sodium concentration. Ca and Mg are the dominant feature for ground water from escarpment areas. Characterization of rare earth elements (REEs) has been used to understand water-rock interactions. Lanthanum (La) concentration of ground water ranges from 0.0088145 $\mu\text{g/l}$ to 13.95805 $\mu\text{g/l}$, Cerium (Ce) concentration of the ground water also ranges from 0.002196532 $\mu\text{g/l}$ to 9.89699422 $\mu\text{g/l}$ along Butajira-Ziway transect. Ordinary normalized REEs patterns of some water samples such as Bui spring, Tulugudo springs, Bui well and Ziway Lake water shows Light Rare Earth Elements (LREEs) enrichments and Heavy Rare Earth Elements (HREEs) depletion occurs with Europium (Eu) negative anomaly. This is due to ground water and Lake Waters inherit the property of felsic rocks through water rock interaction. Ordinary Chondrite normalized REEs patterns of Inseno town well shows that slight LREEs depletion and HREEs enrichment which shows that escarpment water is highly interacted with basaltic rocks.