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Hydrochemical and Isotopic Characterisation of Groundwaters in the Eastern Region of Ghana

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ABSTRACT

Major ions and stable isotopes of groundwater in the Cape Coast granitoid complex (G1) and Lower Birimian (LB) formations in the Eastern Region of Ghana were evaluated to establish the source of recharge to the groundwater system. Five major hydrochemical facies were identified in the various rocks in the study area. They are calcium-magnesium-bicarbonate, sodium bicarbonate, sodium chloride and calcium chloride waters and mixed or non dominant water type. Sodium chloride and calcium chloride waters dominate aquifers of the Cape Coast granitoid complex whereas calcium-magnesium-bicarbonate is the dominant hydrochemical facies in the Lower Birimian aquifers. The most probable geochemical process responsible for the evolution of these hydrochemical facies is dissolution of minerals in the various rock types. Stable isotope composition of the groundwaters established that the recharge to the groundwater system is derived from rainfall.

KEYWORDS

Hydrochemistry, Isotopes, Groundwater, Ghana

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