**Hydrogeochemical Facies and Geochemical Trends in the Shallow Aquifer system of Egbako sheet 183 NE, Bida Basin, Nigeria**

**A.A. Sidi[1], I.A. Okunlola[2], N.M. Waziri[3]**

[1]Department of Geology and Mining, Ibrahima Badamasi Babangida University, Nigeria
[2]Department of Chemical and Geological Sciences, Al-Hikmah University, Ilorin, Nigeria
[3]Department of Geology, Federal University of Technology Minna, Nigeria

Groundwater geochemistry of the shallow aquifers of Egbako sheet 183 NE, Bida Basin, Nigeria, was studied to understand the geochemical signatures and groundwater evolution. The major hydrochemical facies in the shallow aquifer in this area are ($Ca^{2+}$-$Cl^{-}$) facies, and the less common are ($Ca^{2+}$-$Mg^{2+}$-$HCO_3^{-}$) type facies. The Gibbs diagram plotted from the groundwater geochemical data shows the aquifer system has similar geochemical character and trend, and the evolution of the groundwater system was from both the precipitation and water-rock interaction as exhibited by the Scholler diagram. The water samples used for this study were collected in precleaned plastic bottles and rinsed twice with the water samples to be collected. Two samples per location were collected, and acidification was done with $H_2SO_4$ for the samples for the cation analysis. Flame Photometry (FP) technique was used for the analysis of $Ca^{2+}$, $K^{+}$, $Mg^{2+}$, and $Na^{2+}$, while titrimetry and colorimetric techniques were used for the analysis of $Cl^{-}$, $HCO_3$, and $SO_4$, respectively. The finding from this research shows that the geochemical interpretation tools can be used to identify the geochemical processes within the shallow aquifer system and groundwater facies can be mapped.

**Keywords:** Groundwater, Hadrochemical Facies, Bida Basin, Nigeria