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Geochemical Classification of Groundwater System in a Rural Area of Nigeria

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Abstract

The characteristics of the groundwater system in Iresa-Apa, Oyo state, Nigeria, were studied using the Piper linear approach. Twenty-four water samples were randomly collected to cover the area of study. The analyzed cations from the samples are Mg^{2+}, Na^{+}, K^{+}, and Ca^{2+}, while the anions are CO_3^{2-}, HCO_3^{-}, SO_4^{2-}, and Cl^{-}. The three hydrochemical facies identified are Ca–Mg–Na, Ca–Mg–Na–SO_4, and Na–K–Cl–SO_4 types. The similarities in the observed water types suggest that almost the same geochemical processes are controlling the cation-anion reaction of the groundwater system in the study area.

Keywords

Geochemical Groundwater classification Hydrochemical facies Iresa-Apa Cations and anions

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References

1. 1.

Adagunodo, T.A.: Groundwater Pollution and Control: An Overview. Chapter 1 in Book: Groundwater Contamination: Performance, Limitations and Impacts, pp. 1–135. ISBN: 978-1-153611-017-3; 978-1-53611-003-6. Editor: Anna L. Powell © 2017 Nova Science Publishers, Inc. pp. 1–12 (2017a)Google Scholar

2. 2.

Adagunodo, T.A.: Groundwater Contamination: Performance, Effects, Limitations and Control. Chapter 3 in Book: Groundwater Contamination: Performance, Limitations and Impacts, pp. 1–135. ISBN: 978-1-153611-017-3; 978-1-53611-003-6. Editor: Anna L. Powell © 2017 Nova Science Publishers, Inc. pp. 33–64 (2017b)Google Scholar

3. 3.

Adagunodo, T.A., Akinloye, M.K., Sunmonu, L.A., Aizebeokhai, A.P., Oyeyemi, K.D., Abodunrin, F.O.: Groundwater exploration in Aaba residential area of Akure, Nigeria. Front. Earth Sci. **6**, 66 (2018). https://doi.org/10.3389/feart.2018.00066

4. 4.

Adagunodo, T.A., Sunmonu, L.A., Ojoawo, A., Oladejo, O.P., Olafisoye, E.R.: The hydro geophysical investigation of Oyo State industrial estate Ogbomosho, Southwestern Nigeria using vertical electrical soundings. Res. J. Appl. Sci. Eng. Technol. **5**(5), 1816–1829 (2013)CrossRefGoogle Scholar

5. 5.

Adejumo, R.O., Adagunodo, T.A., Bility, H., Lukman, A.F., Isibor, P.O.: Physicochemical constituents of groundwater and its quality in crystalline bedrock, Nigeria. Int. J. Civ. Eng. Technol. **9**(8), 887–903 (2018)Google Scholar

6. 6.

APHA: Standard Methods for the Examination of Water and Wastewater. American Public Health Association, Washington DC (1998)Google Scholar

7. 7.

Ganiyu, S.A., Badmus, B.S., Olurin, O.T., Ojekunle, Z.O.: Evaluation of seasonal variation of water quality using multivariate statistical analysis and irrigation parameter indices in Ajakanga area, Ibadan, Nigeria. Appl. Water Sci. **8**, 35 (2018)CrossRefGoogle Scholar

8. 8.

Maxwell, O., Wagiran, H., Ibrahim, N., Lee, S.K., Soheil, S.: Comparison of ^{238}U, ^{232}Th, and ^{40}K in different layers of subsurface structures in Dei-Dei and Kubwa, Abuja Northcentral Nigeria. Radia. Phys. Chem. **91**, 70–80 (2013)CrossRefGoogle Scholar

9. 9.

Narsimha, A., Venkatayogi, S., Geeta, S.: Hydrogeochemical data on groundwater quality with special emphasis on fluoride enrichment in Menneru River Basin (MRB), Telangana state, South India. Data Brief **17**, 339–346 (2018)CrossRefGoogle Scholar

10. 10.

Offodile, M.E.: The occurrence and exploitation of groundwater in Nigeria Basement rocks. Journal of Mining and Geology **20**, 131–146 (1983)Google Scholar

11. 11.

Selvakumar, S., Chandrasekar, N., Kumar, G.: Hydrogeochemical characteristics and groundwater contamination in the rapid urban development areas of Coimbatore, India. Water Resour. Ind. **17**, 26–33 (2017)CrossRefGoogle Scholar

12. 12.

WHO: Guidelines for Drinking-Water Quality. First Addendum to 3rd edn. Recommendations. World Health Organization, Geneva (2004)Google Scholar

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