

Hydrogeochemical Processes and Evolution of Groundwater in the Voltaian Aquifer of Krachi East Municipality, Oti Region, Ghana

Harriet Naa Lartey Yeboah¹, Joseph Ndago Amoldago², Emmanuel Daanoba Sunkari^{2,3}, Moses Boakye Okyere⁴

¹Department of Geological Engineering, Faculty of Geosciences, University of Mines and Technology, Ghana

²Mining Engineering, Faculty of Integrated and Advanced Technology, Sir Padampat Singhania University, India

³Department of Chemical Sciences, Faculty of Science, University of Johannesburg, South Africa

⁴Department of Geology, Faculty of Science, University of Johannesburg, South Africa

INTRODUCTION & AIM

This study adopts an integrated approach; combining hydrochemical analysis, multivariate statistics, and spatial mapping to characterize groundwater quality and identify the processes controlling its chemistry.

METHOD

The methodology for this study is summarized in Figure 1.

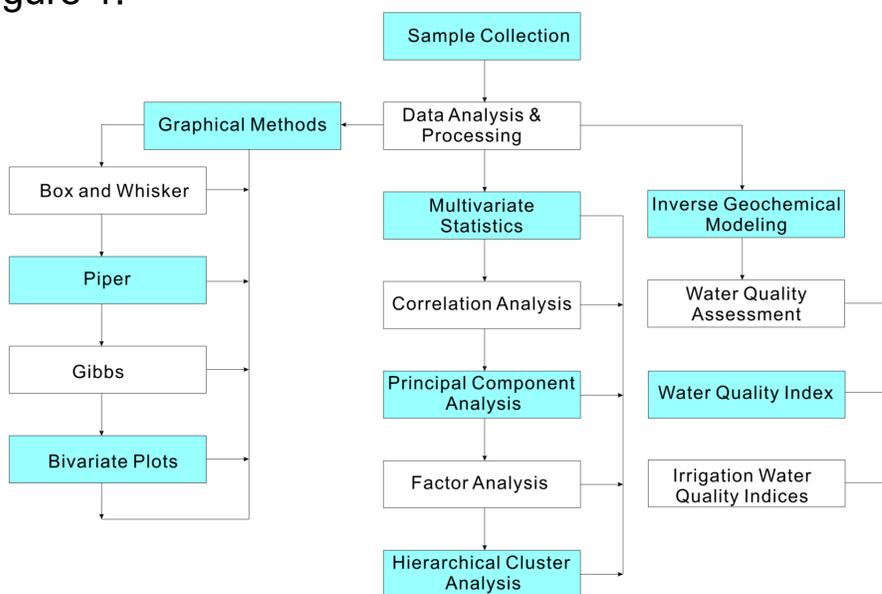


Figure 1. Flowchart Illustrating the Methods Used

RESULTS & DISCUSSION

Hydrogeochemistry

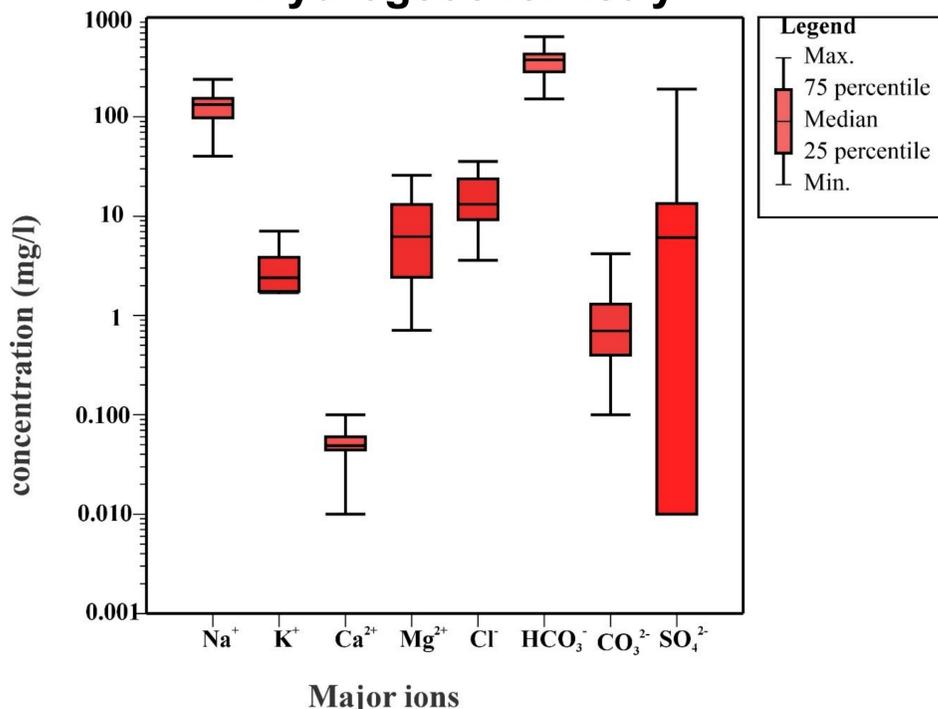


Figure 2. Box and Whisker Diagram Showing Major Ion Relationships

RESULTS & DISCUSSION

Hydrochemical Facies

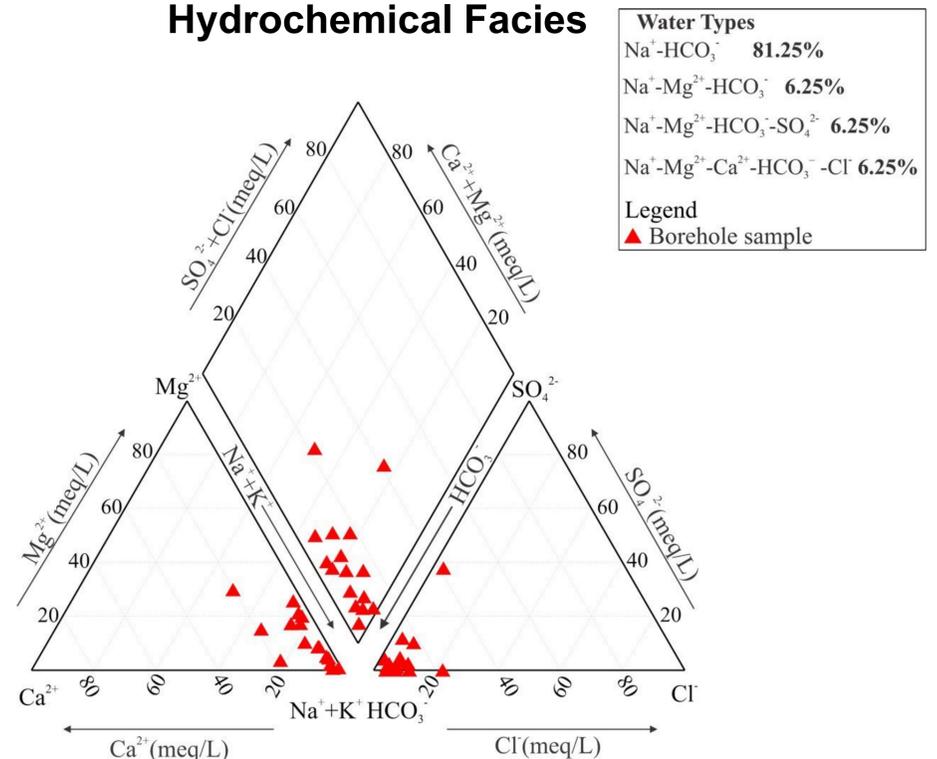


Figure 3. Piper Diagram Illustrating the Hydrochemical Facies

Hydrochemical Processes

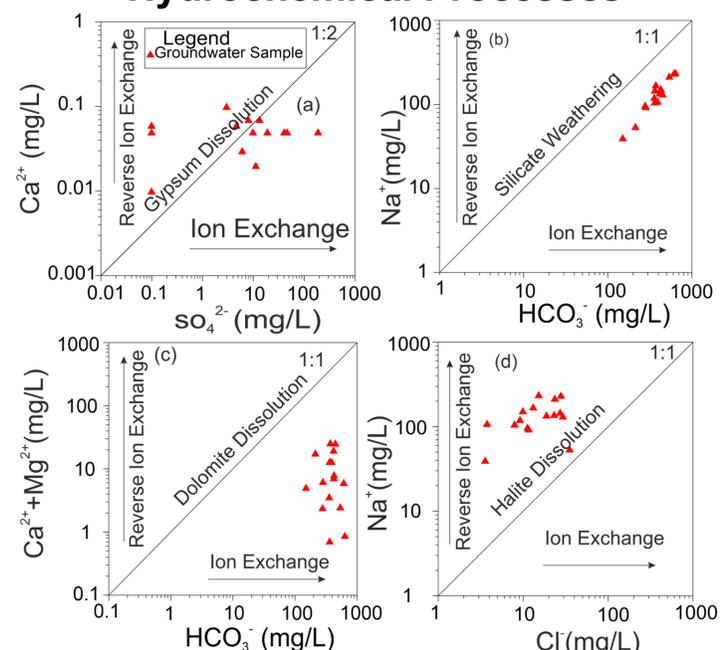


Figure 4. Bivariate Plots of Major Ion Relationships

CONCLUSION

- Dominant water type is $\text{Na}^+\text{-HCO}_3^-$
- Geogenic processes control groundwater chemistry

FUTURE WORK / REFERENCES

- Determination of recharge sources using environmental isotopes.
- Contaminant source apportionment.