



Assessing Evolution Mechanism & Hydrothermal Alteration Effects on Bulk rock Chemistry. A case example of well OW-910, Olkaria geothermal field.

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Outline

Introduction



Goals of the study



Outline of Geology

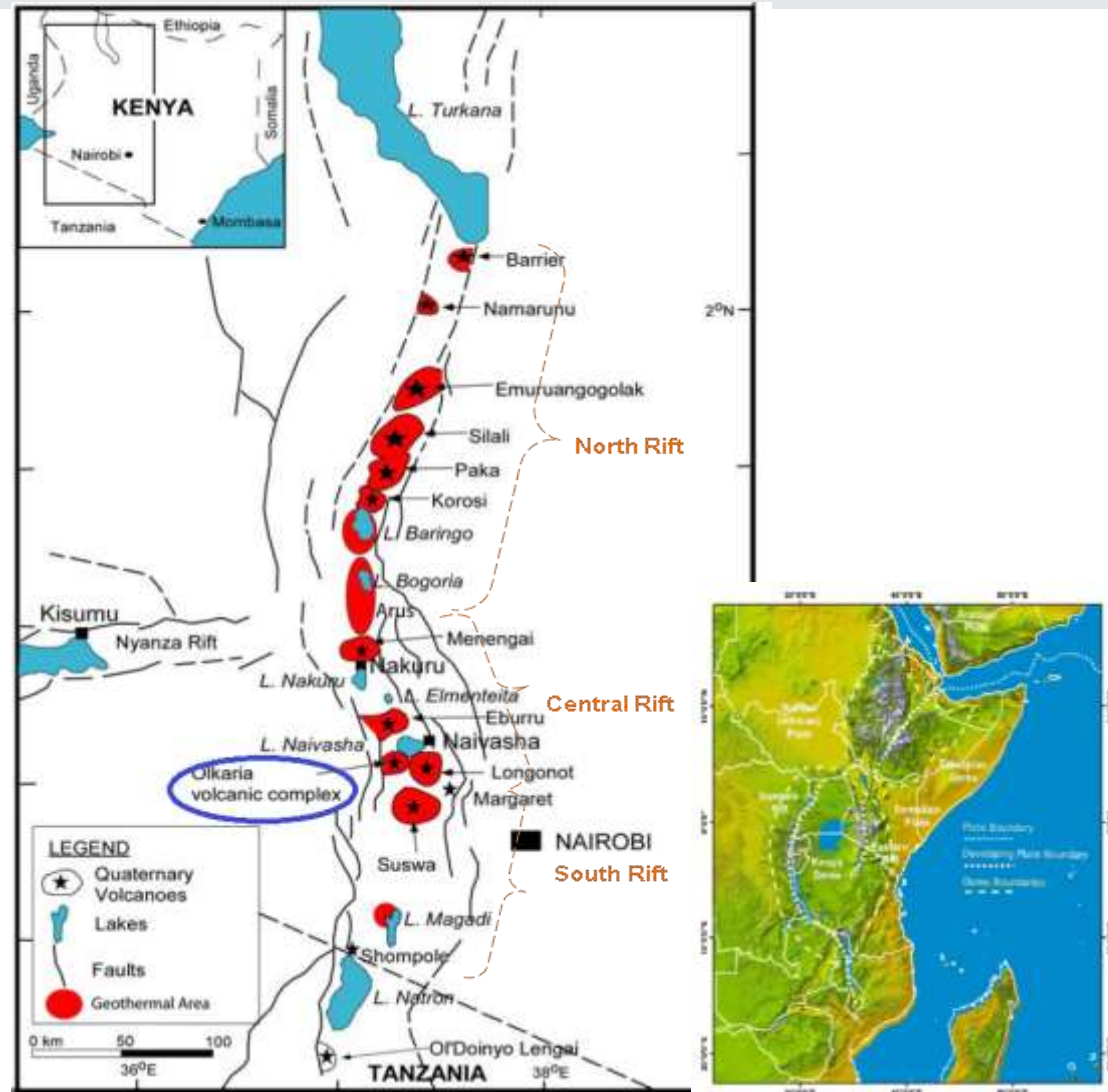


Results and Discussion



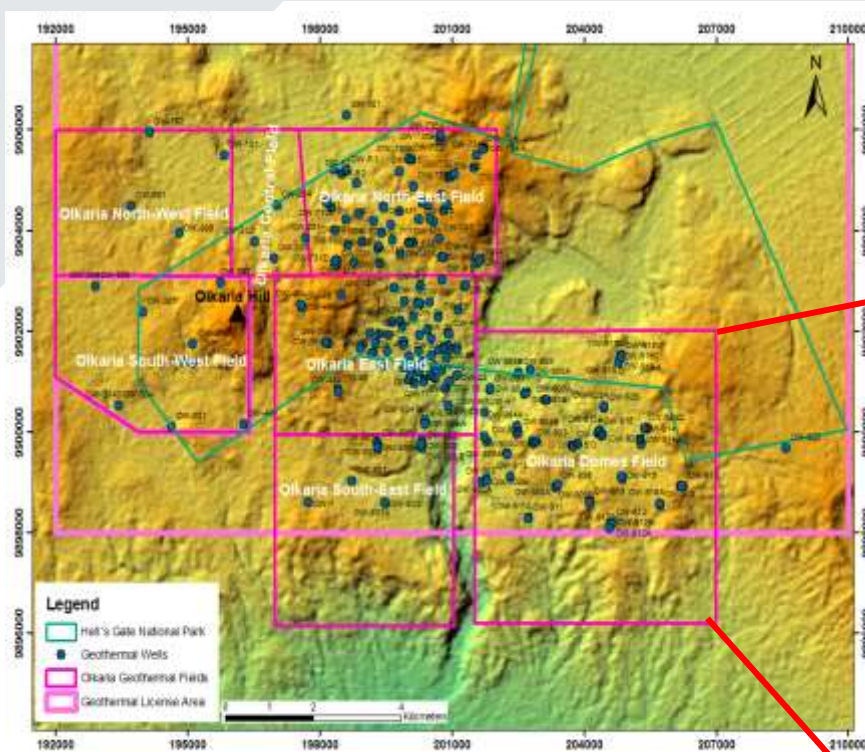
Conclusion and Recommendations

Introduction

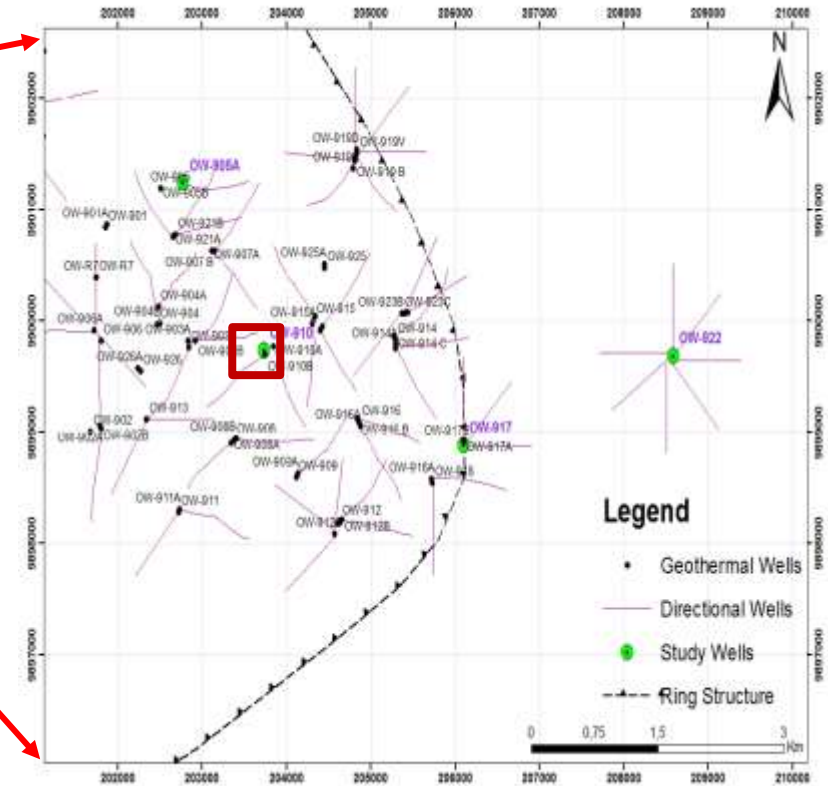


Ofwona et al. (2006)

Introduction cont'd



(Modified from Otieno and Kubai, 2013)



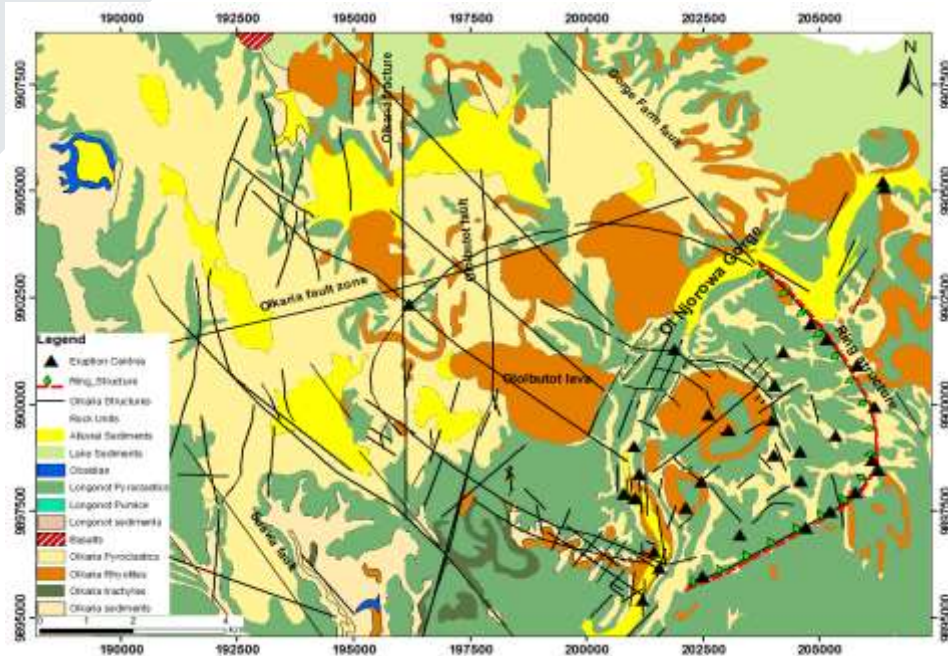
Objectives of the study

- Place constraints on the main magmatic differentiation mechanism.
- Evaluate the degree of hydrothermal alteration on the chemical elements of altered rocks.



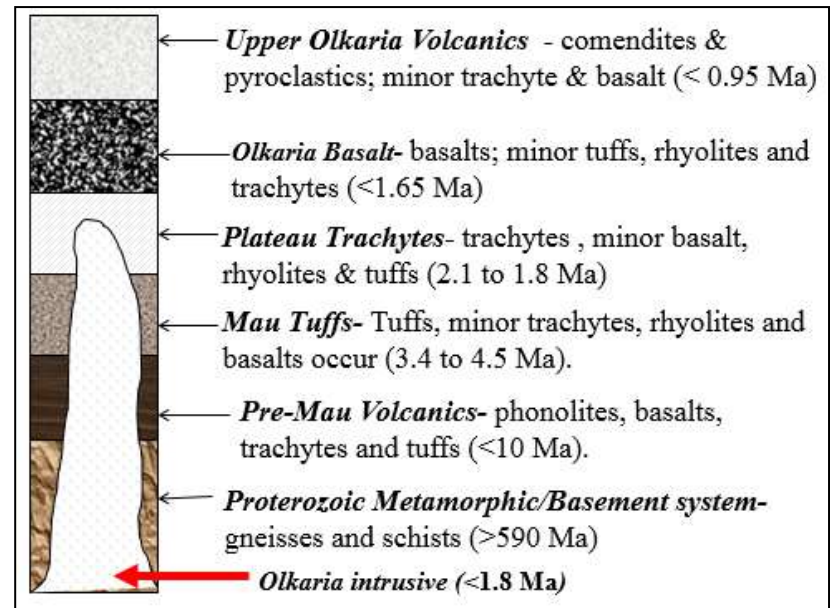
Outline of Geology

Surface geology



(Modified from Clarke et al., 1990)

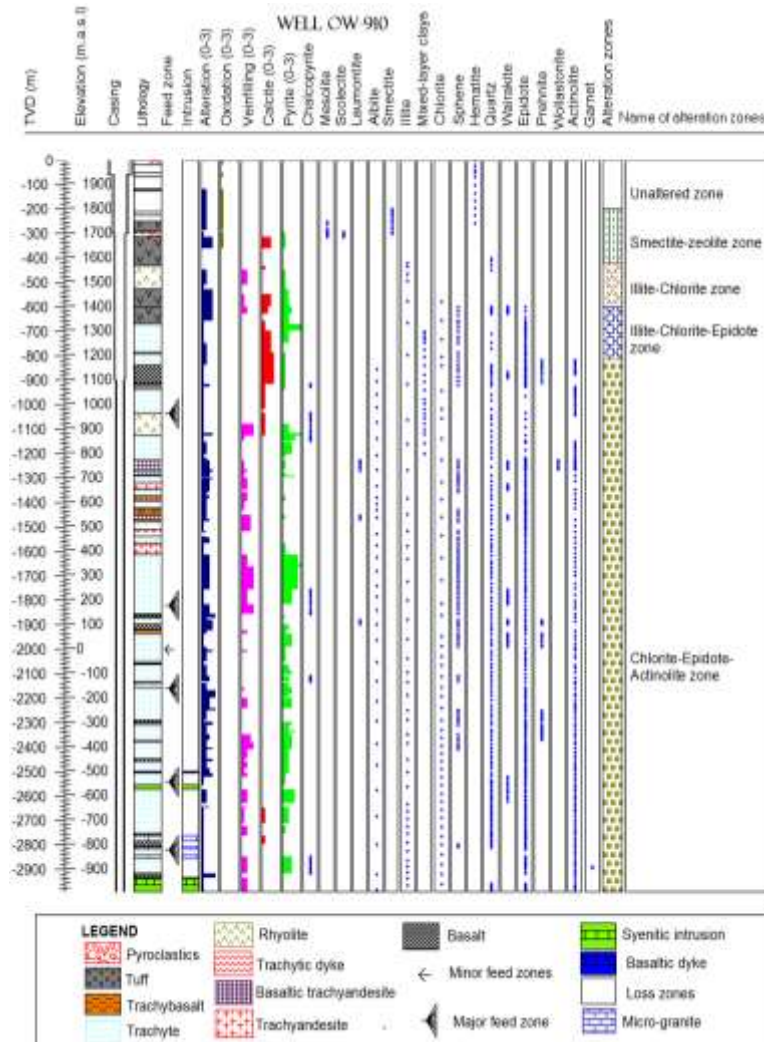
Sub-surface geology



(Modified from Omenda, 1998)

Results and Discussion

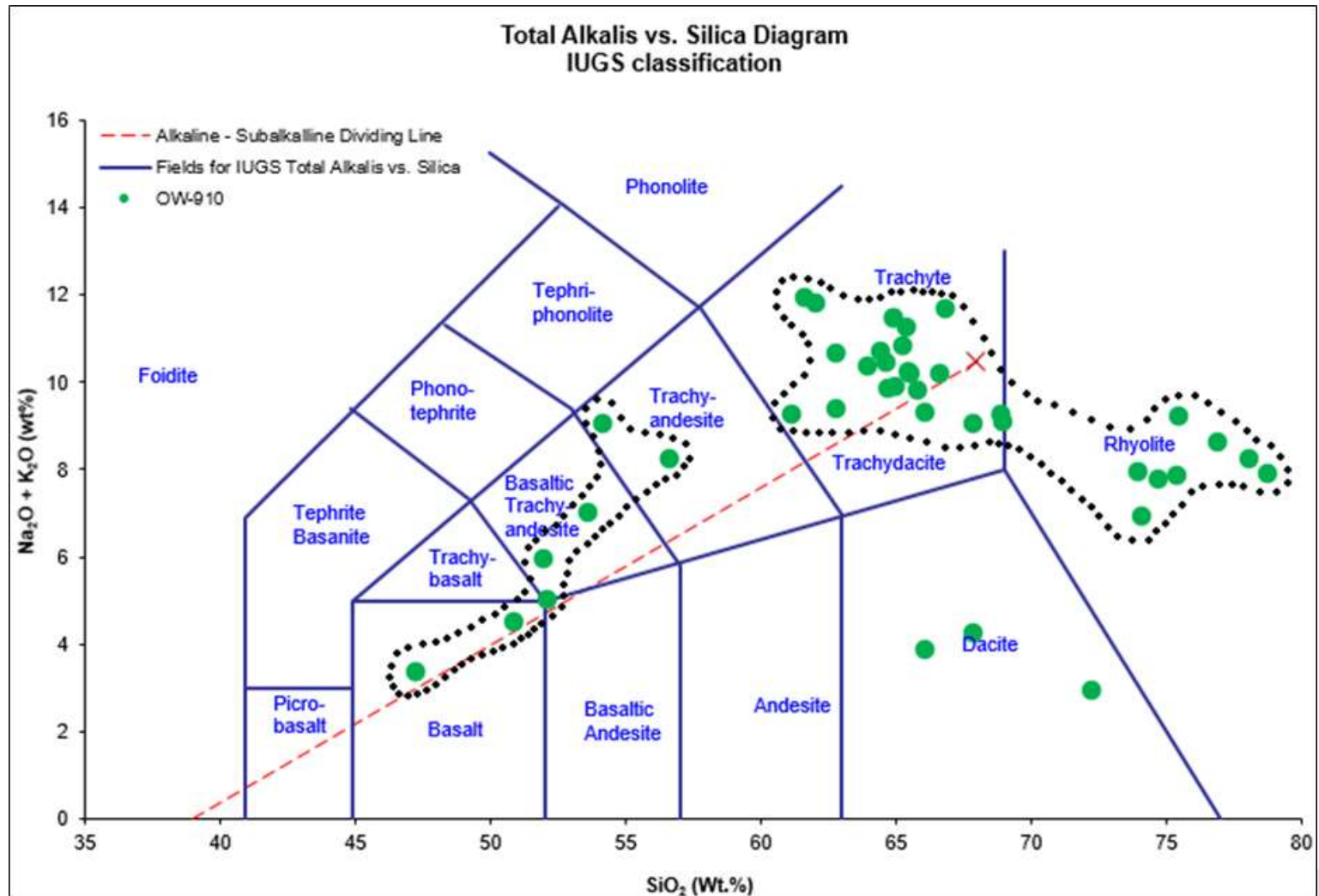
Lithology, alt. minerals and zones



(Musonye, 2015)

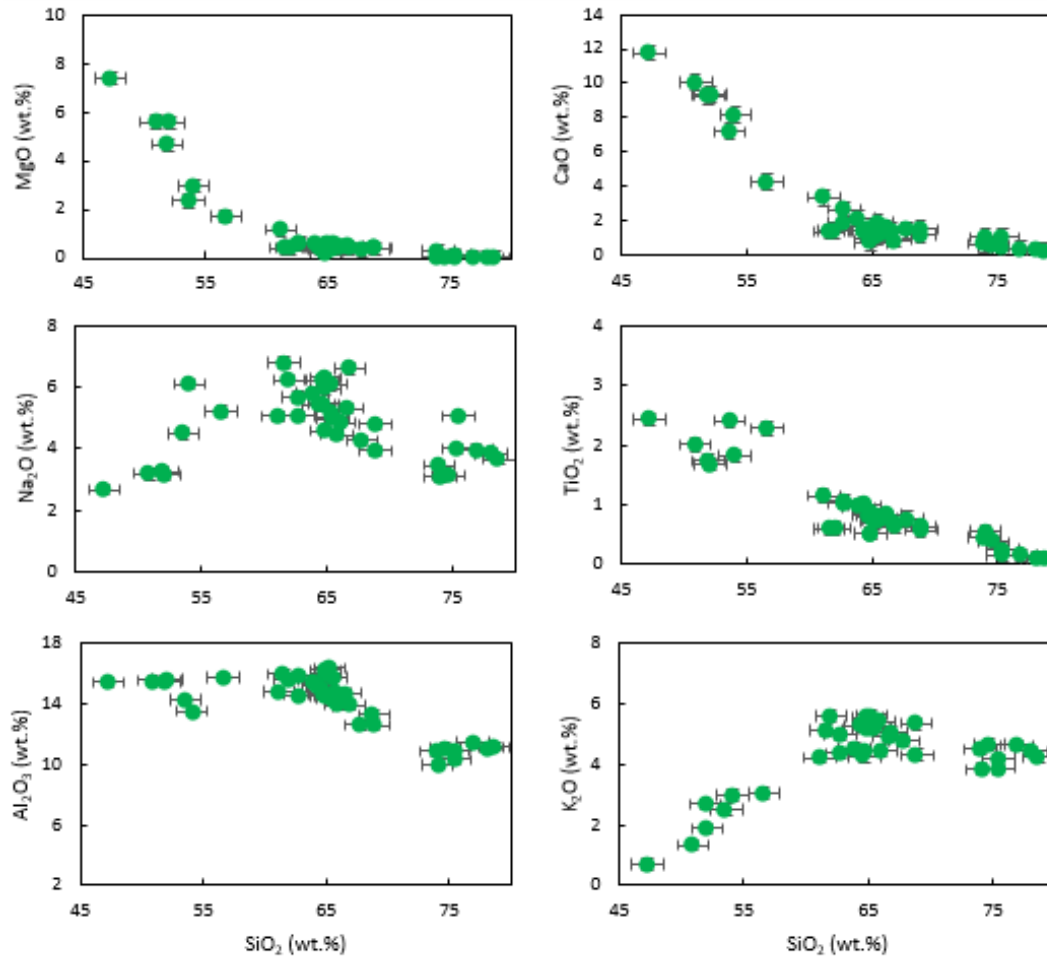
Whole rock chemistry

TAS classification



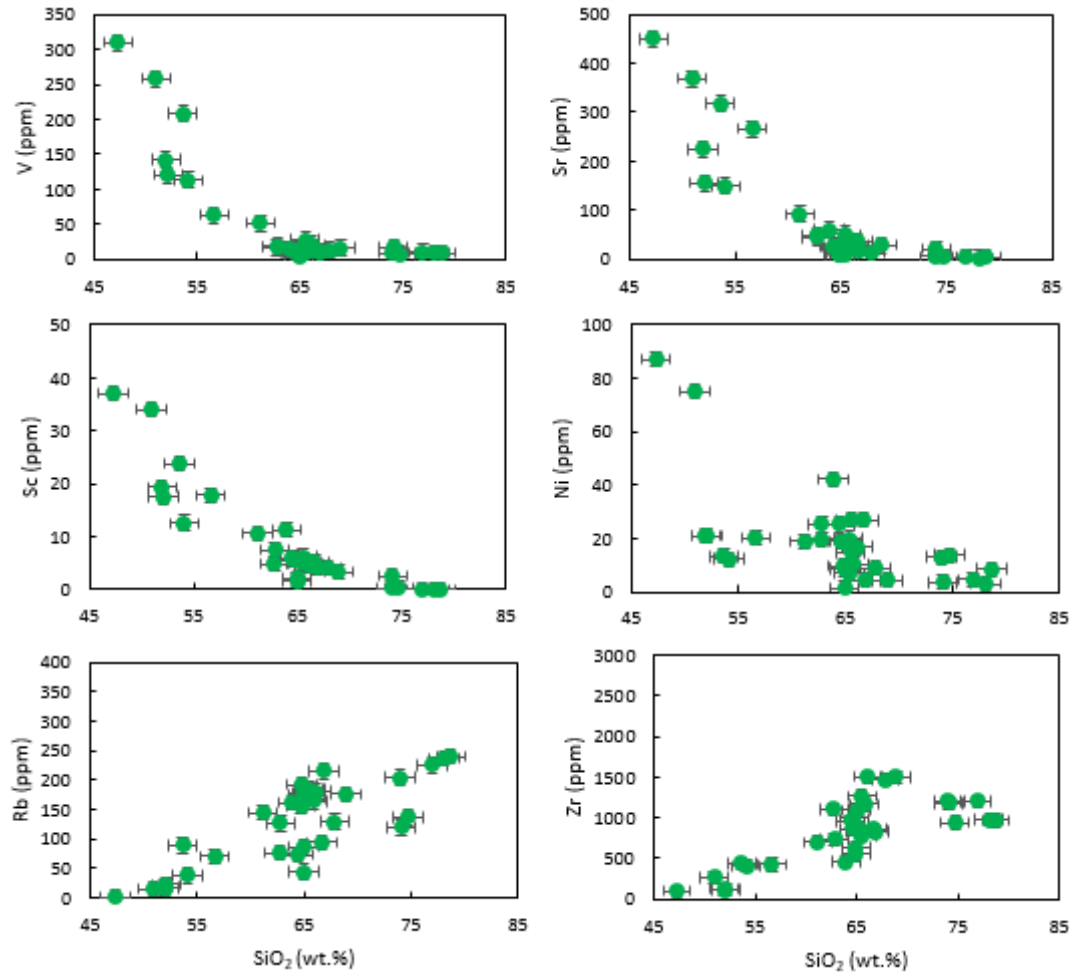
Magmatic differentiation process

(a) Major elements



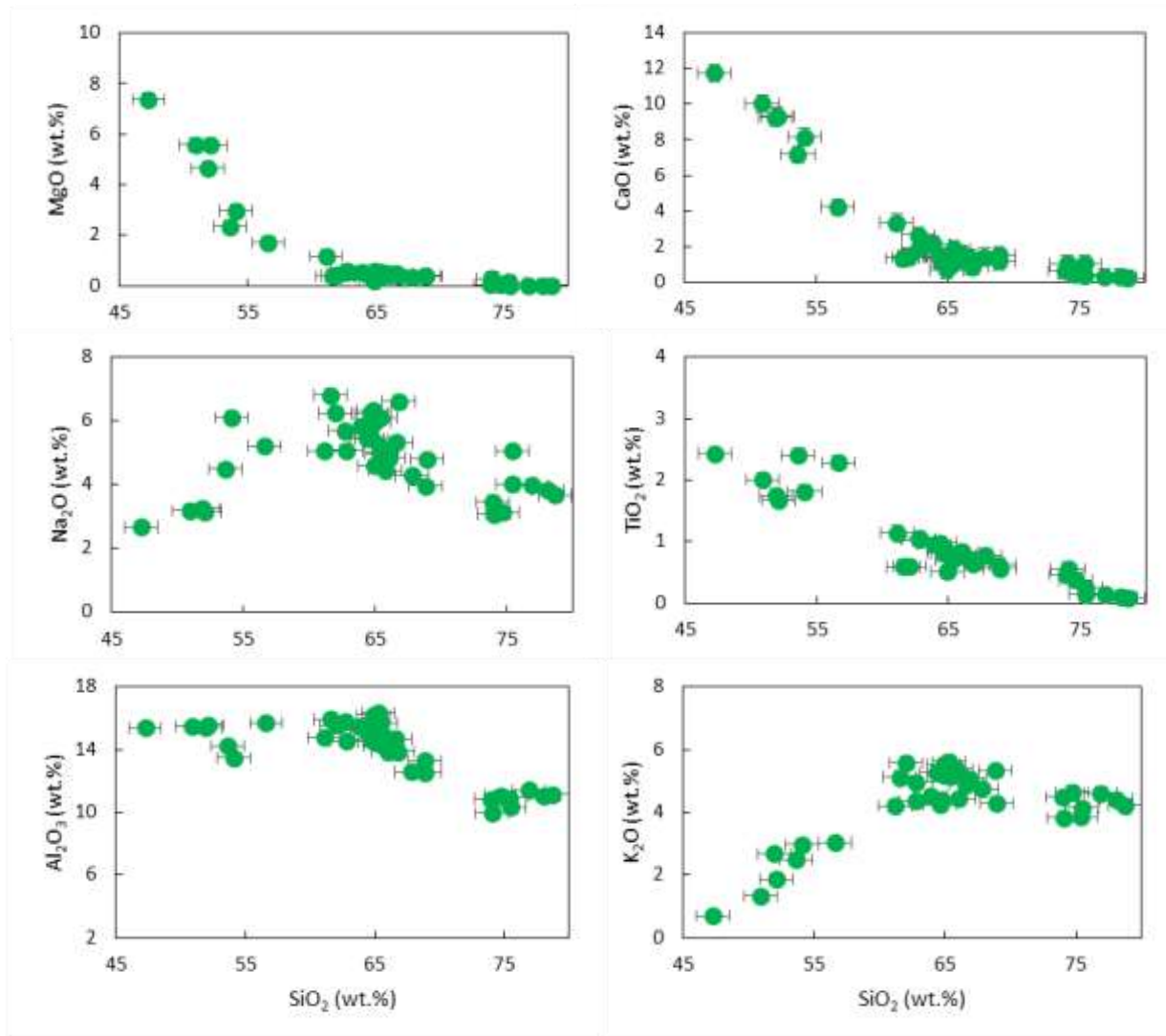
Magmatic differentiation cont'd

(b) Trace elements



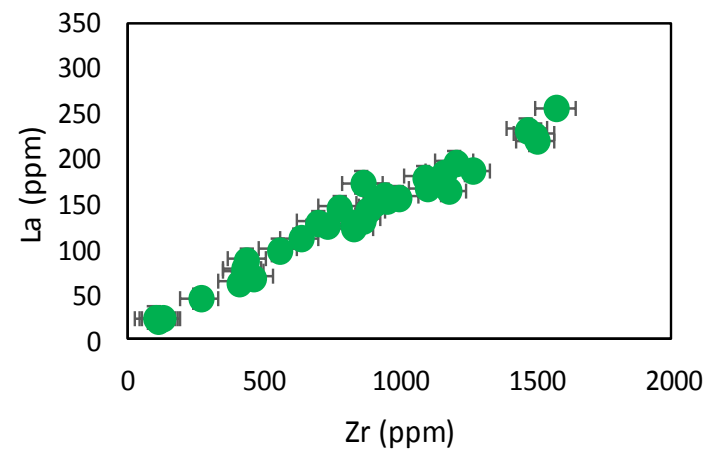
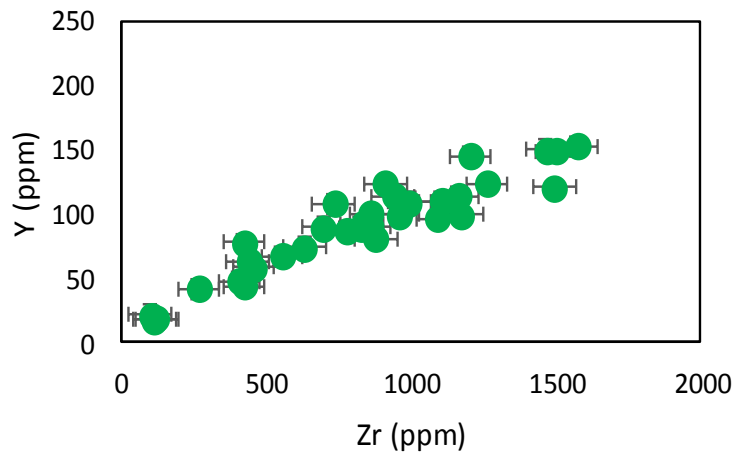
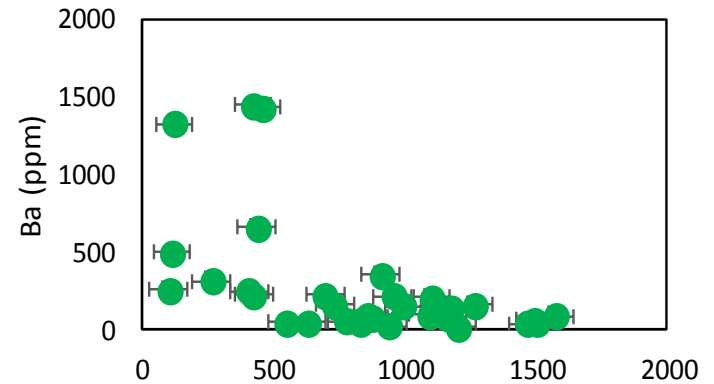
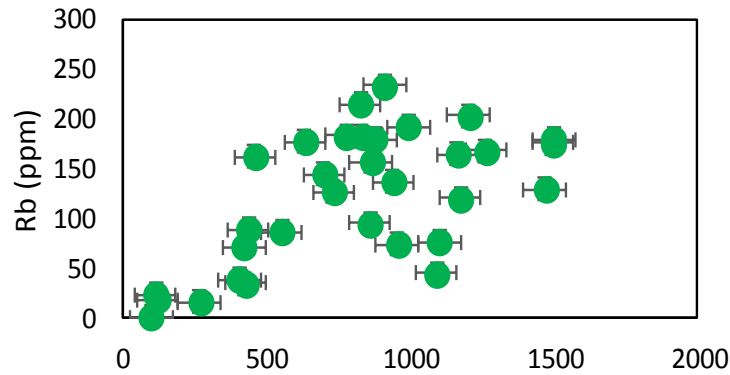
Hydrothermal alteration effects

(a) On major element geochemistry



Hydrothermal alteration effects cont'd

(a) On trace element geochemistry



Conclusion and Recommendations

- Bulk rock chemistry- complete range of composition (primitive – highly evolved).
- Major and trace element systematics- monogenetic process. Other mechanisms not ruled out.
- Significant element mobility- have not taken place.
- Only a few elements appear to have been mobilised.
- Low PI- Attributed to loss of the alkalis.
- ❖ Study exclusively on altered rocks- data for fresh rocks required.
- ❖ Measurement of LOI.



THE END



*Thank
you*

