

## Can surface geochemistry be used to identify and predict the crustal blocks of the Australian continent?

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The Major Crustal Blocks (MCBs) of the Australian continent were defined based on the analysis of geological (e.g. outcrop mapping, drill hole, geochronology, isotope) and geophysical (e.g. seismic profiles, gravity, aeromagnetic, magnetotelluric) data. These blocks reflect distinct tectonic domains and can be used to improve targeting accuracy of surficial and deep natural resources. The National Geochemical Survey of Australia (NGSA project) consists of multi-element near-surface geochemistry of regolith overlying the major crustal blocks across Australia. This study explores the relationships between the surface geochemistry and the major crustal blocks of the Australia continent [1]. The compositional machine learning algorithms and geostatistical techniques were used to explore such complex relationships.

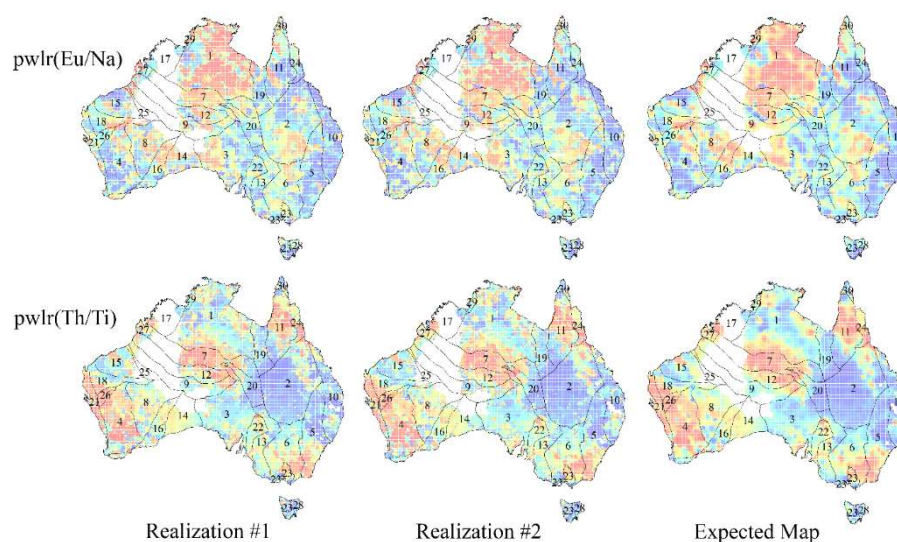


Figure 1. Simulated models for the most significant log-ratios associated with MCB #1 and #2 (warm colours are associated with high values)

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### References

Talebi, H., Mueller, U., Tolosana-Delgado, R. et al. 2019, Surficial and deep earth material prediction from geochemical compositions: Natural Resources Research, 28-3, 869-891.