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Bio-exploration on the Ghanzi Ridge copper deposit

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Viable mineral resources are often located by surface geochemical sampling, geophysical assessment and finally drilling. In areas where none of these methods can be done successfully due to thick superficial cover materials i.e. calcrete or aeolian sand, an alternative prospecting methods is required. Biogeochemical exploration techniques are less expensive and have the potential to detect these covered mineral deposits. Volatile trace elements associated with the hydrothermal Ghanzi Ridge copper deposit and its hyperaccumulation in certain plant species and macrotermite mound material were investigated. This was done for the purpose of prospecting for base metals where the metal deposits are covered with thick superficial deposits. The more volatile trace elements associated with the mineral deposit migrated higher up in the soil profile where it became available for uptake by plants and transport by termites. By analysing different horizons of the soil profile and also well-advised selected parts of the plant species and mound material, anomalies (indicating possible mineralization) were found. Even though biogeochemical surveys are complex and have negative aspects, it has proven to be successful in many places and in certain instances the biogeochemical anomalies can extend well beyond the soil anomalies. It is worth considering the use of this method as an alternative to geochemical, geophysical and drilling methods.

References:

[1] Dunn C (2007) Biogeochemistry in mineral exploration. Elsevier Publishers

