

Hyperspectral characterisation of alteration zones in the southern Gawler Range Volcanics margin

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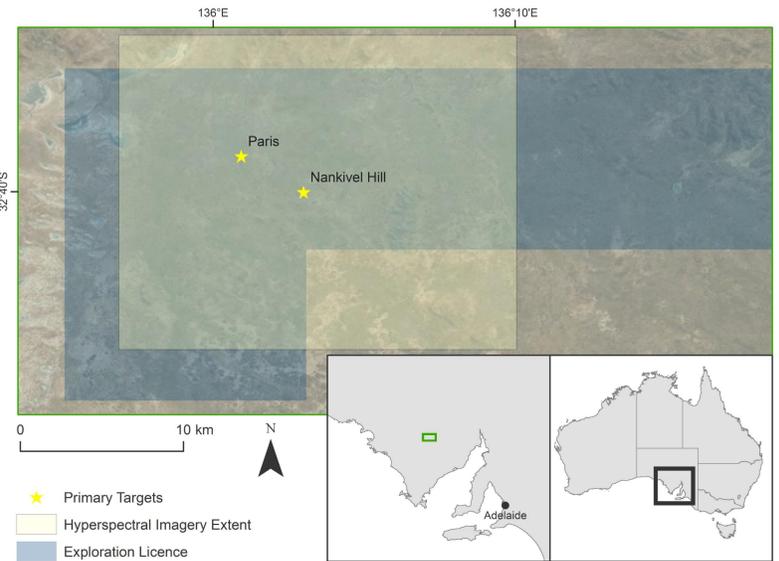
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Background

- The Gawler Craton is a highly economic but buried terrain in Australia
- These conditions can lead to high risk and high cost of exploration
- Satellite and airborne hyperspectral imagery has been successfully used to understand regolith overlying basement mineralisation in Australia
- This study area contains the Paris Silver deposit and highly prospective Nankivel Hill porphyry copper target within exploration licence EL5368 owned by Investigator Resources

This work aims to characterise alteration zones in an area of copper and silver mineralisation using airborne hyperspectral imagery



Methods

- Vegetation masked in HyMap™ airborne hyperspectral imagery
- Broad targeting techniques - removed noise and emphasised spectral variation
- Spectral matching algorithms using reference spectra used depth of diagnostic mineral absorption features in-image to produce mineralogical maps
- Suitable sites selected for field evaluation based on initial mineralogical maps
- Produced mineralogical maps based on field spectral signatures
- Defined approximate regions of alteration zones based on mineralogical maps

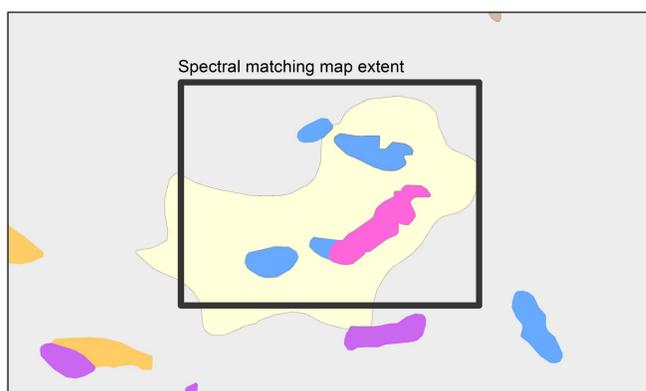


Masked HyMap™ airborne hyperspectral image



Alteration Zone

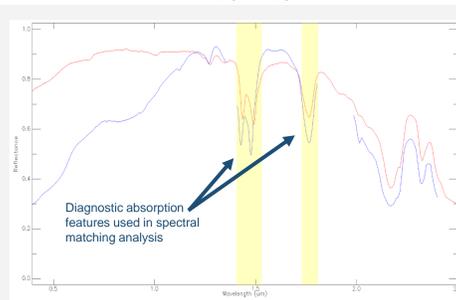
- Advanced Argillic Alteration
- Propylitic Alteration



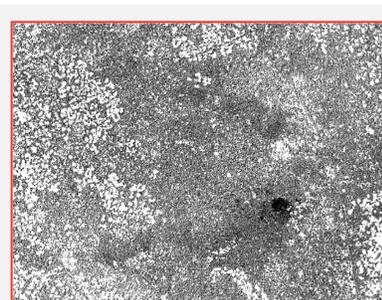
100K Geology

- Holocene sand capping dunes
- Pooraka Formation
- Alunite Breccia
- Bittali Rhyolite
- Peter Pan Supersuite
- Lower and/or Upper Middleback Jaspilite

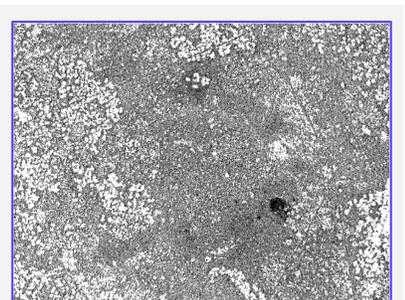
Alunite



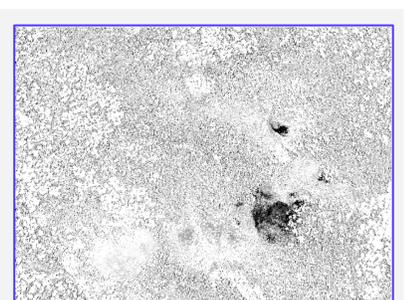
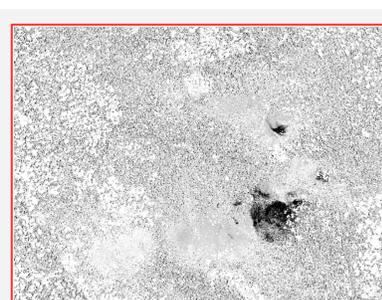
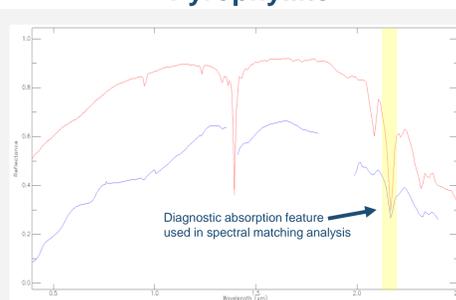
Reference



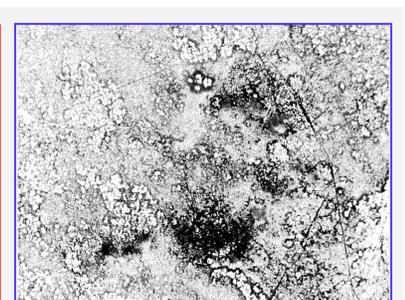
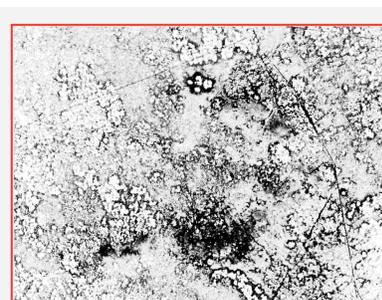
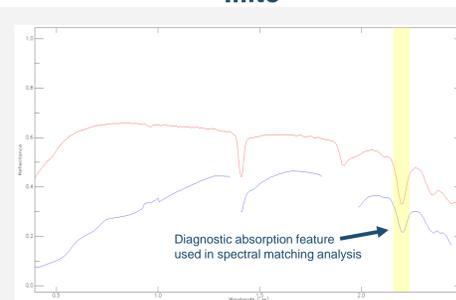
Field



Pyrophyllite



Illite



Low High
Likelihood of mineral presence

Outcomes

- Field and reference spectra map the same distribution of target alteration minerals using spectral matching algorithms
- Maps agree with prior field knowledge of soil and outcrop alteration mineral locations - these can indicate buried mineralisation
- Suggests this remote sensing method is capable of mapping alteration zones

