

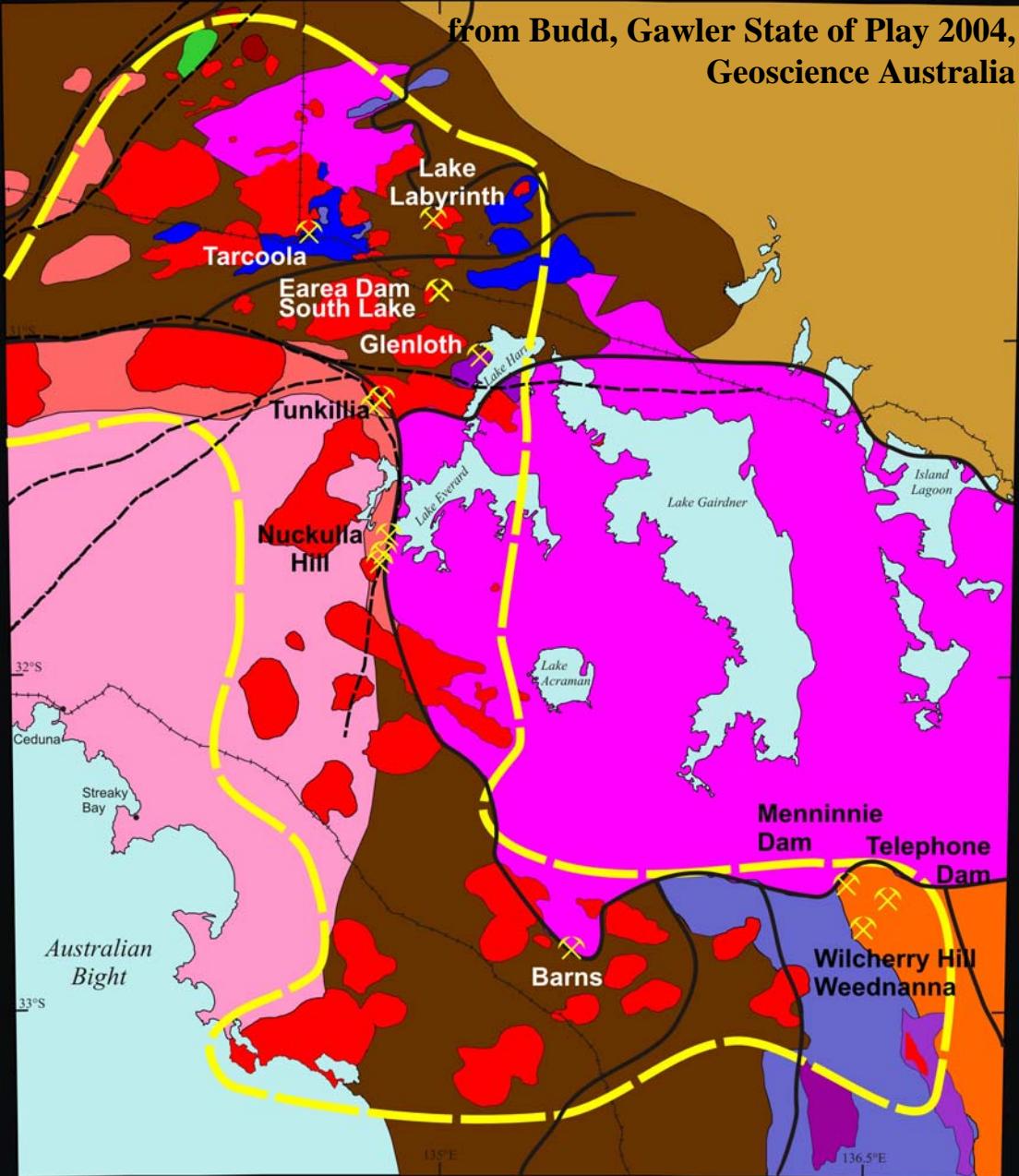
Tarcoola – Spectral Mapping of Mineral Alteration

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CRC LEME/Geological Survey SA



Introduction

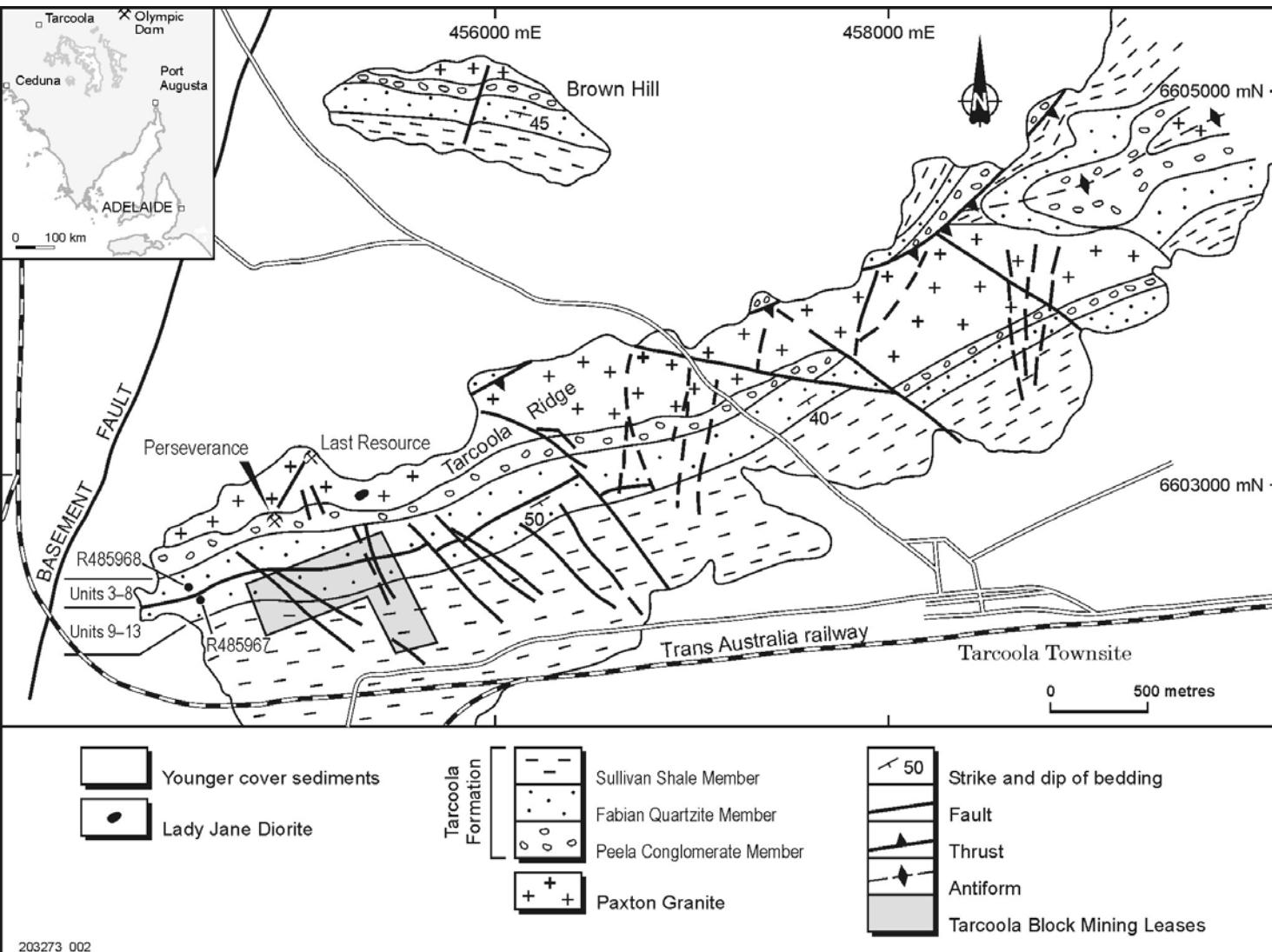
- Tarcoola – historic gold mining
- 76,000 oz Au resources
- CRCLEME Case study



Central Gawler Gold

- Au+/-Ag
- ~1590 Ma
- Hiltaba Suite granite
- Altn =
Sericite,
chlorite,
pyrite

Geology - Tarcoola



- Paxton Granite
- Peela Congl
- Fabian Qtzite
- Sullivan Shale
- SE dip



from Budd, Gawler State of Play 2004,
Geoscience Australia

Railway

Tarcoola
Blocks
mine

Tarcoola Ridge

Main Slide Fault

Perseverance
deposit

Basal Thrust

Browns Hill

Lady
Jane
Diorite
dykes

Felsic granite
dykes & sills

Sullivan
Shale
Member

Sullivan Shale / Fabian
Fabian Quartzite Quartzite Member
Member

Fabian Quartzite
Peela Conglomerate
Member Member

Paxton Suite

The hill sits on an untapped resource....

- Historic Tarcoola Goldfield, "**Tarcoola Ridge**"
- numerous workings since 1893
- recorded production over 75,000 oz Au
- grades in excess of 0.5 oz Au per tonne.
- extends for over 5 km
- numerous target areas defined from geochemical & geophysical interpretations

Tarcoola Ridge

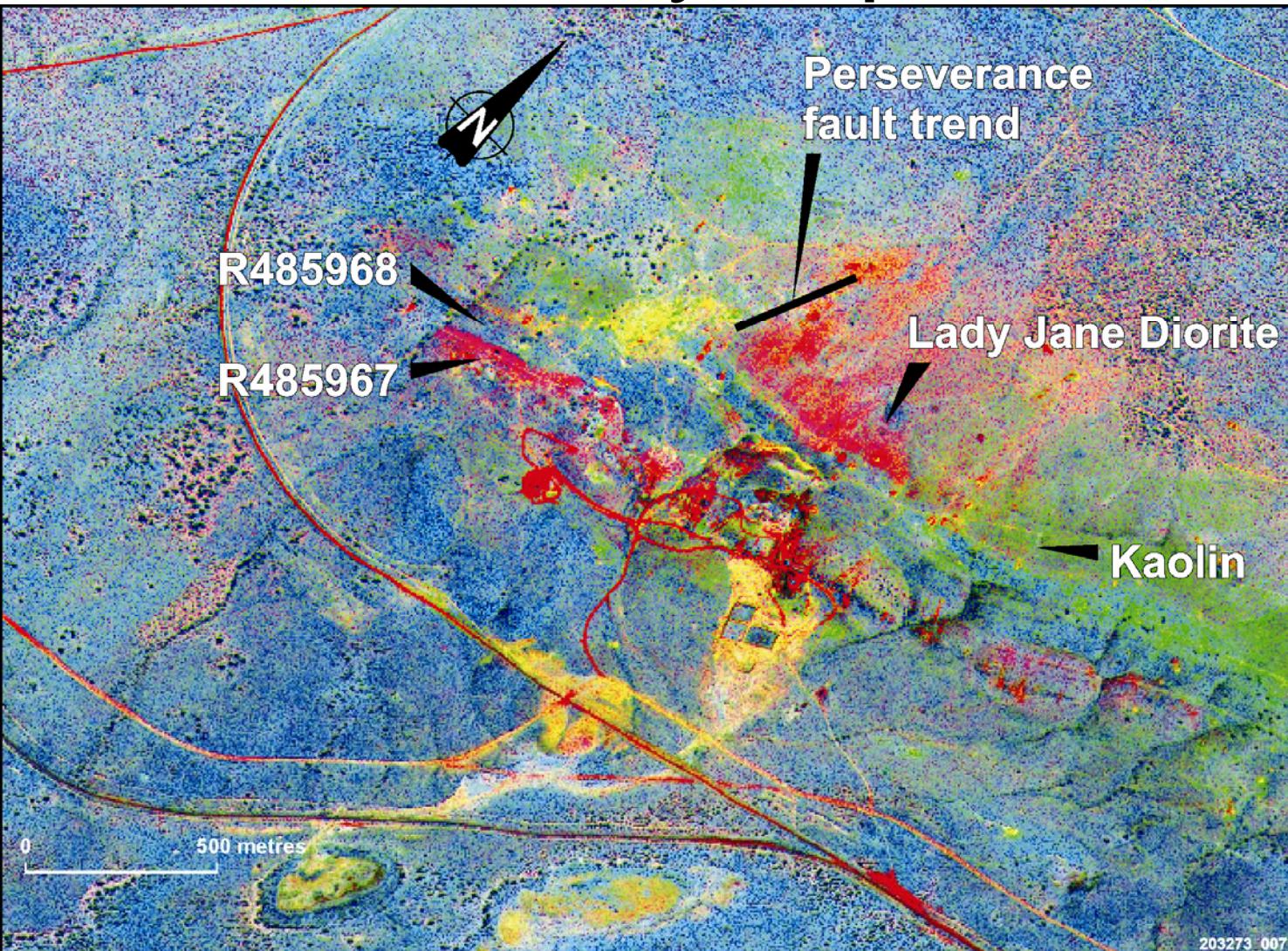


- HyMap: surface
- HyLogger: drill core
- Handspec spectra

Classic alteration exists...

- Alunite
- Kaolinite
- Illite
- Phengite
- Chlorite
- Smectite
- Fe OX

HyMap

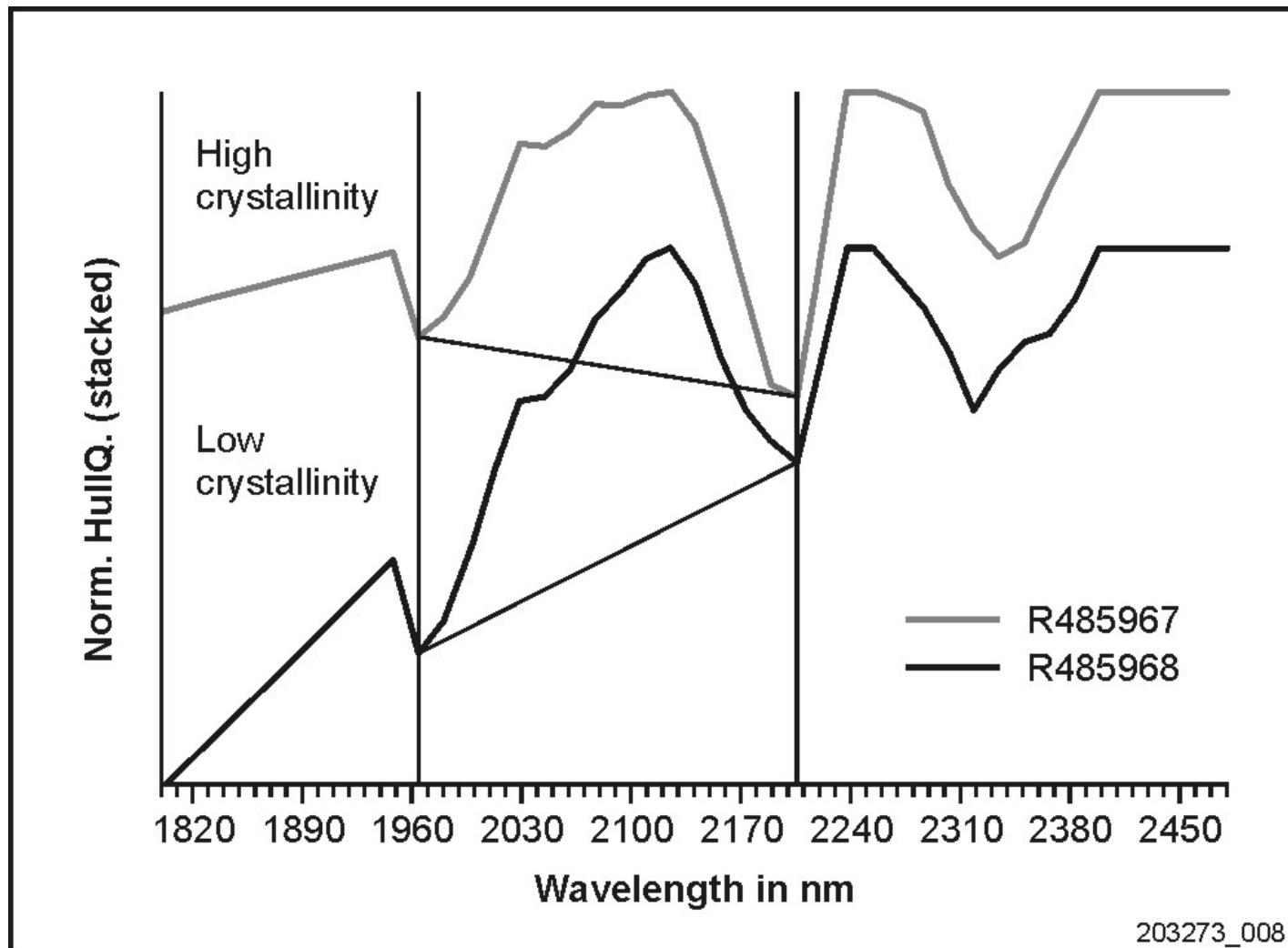


- AIOH
Decorr.
- 2171:R
- 2181:G
- 2205:B

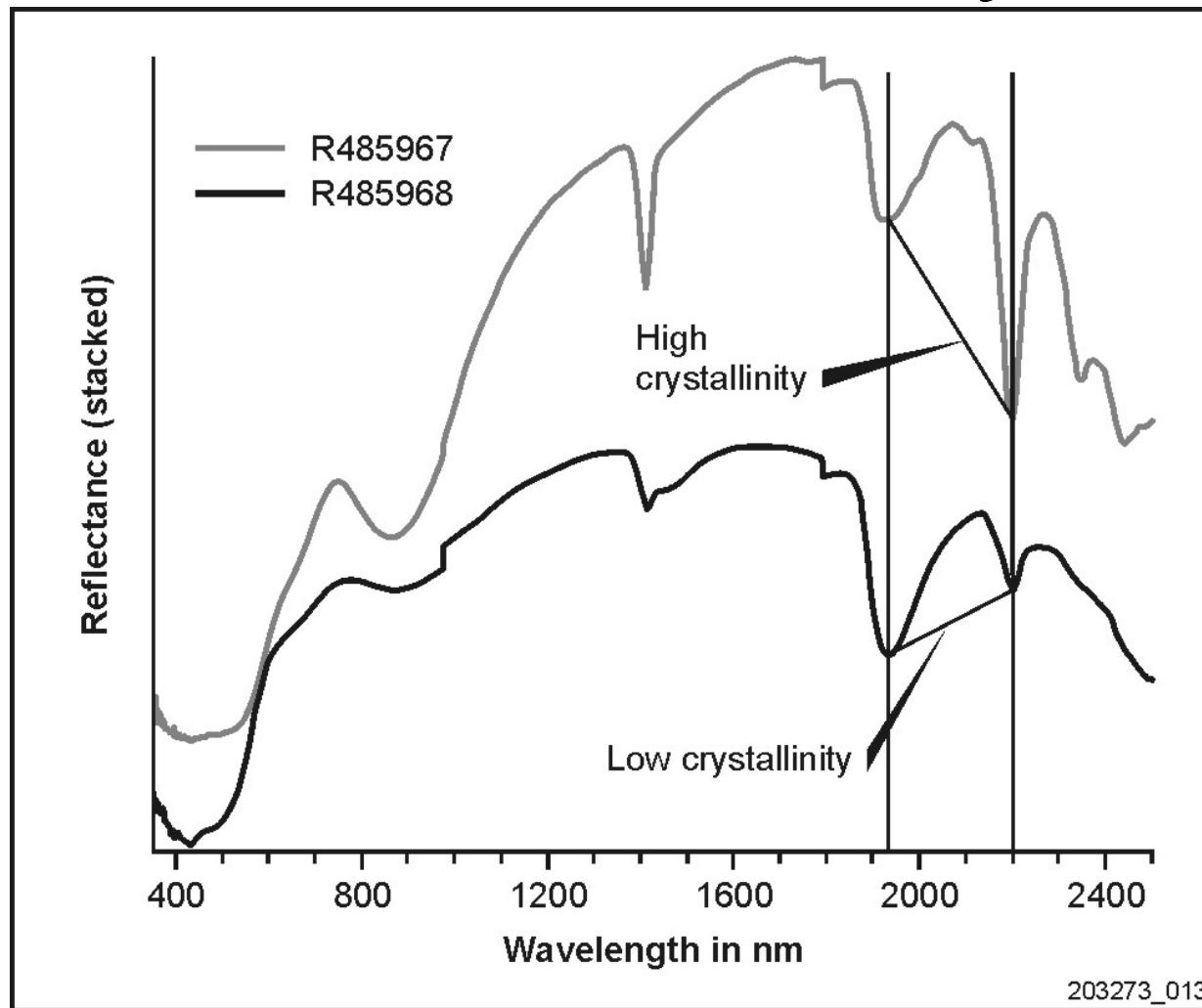
Where does water come into it ???

- While examining HyLogger 1900nm water absorption in Central Gawler Gold project discovered “crystallinity” of illite
- Consider as a surrogate for mv-phengite relationship
- Translate to Tarcoola site
- Petrology identified hydromica
- Mv + H₂O = illite

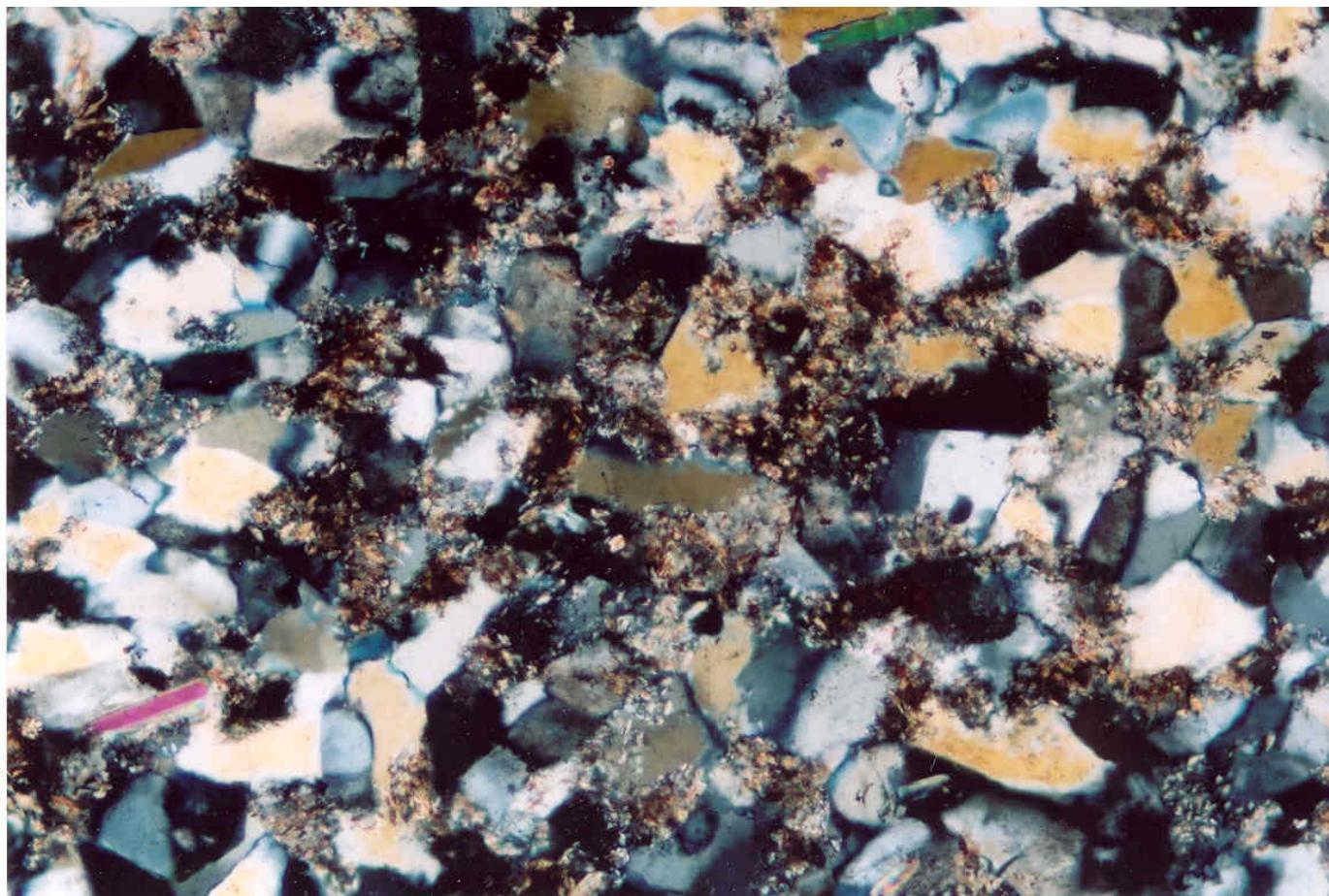
The HyMap illite story....



The ASD illite story....



Crystalline Illite



- Fg
interstitial
sericite/illite

Exploration implications...

- Xtal Illite (red) zone on HyMap image
- Crosscutting stratigraphy
- Lady Jane Diorite o/c in midst
(Qtz poor, high K intrusives)
- Au 9m@4.26g/t on western margin
- Au 10m@6.77g/t on eastern margin

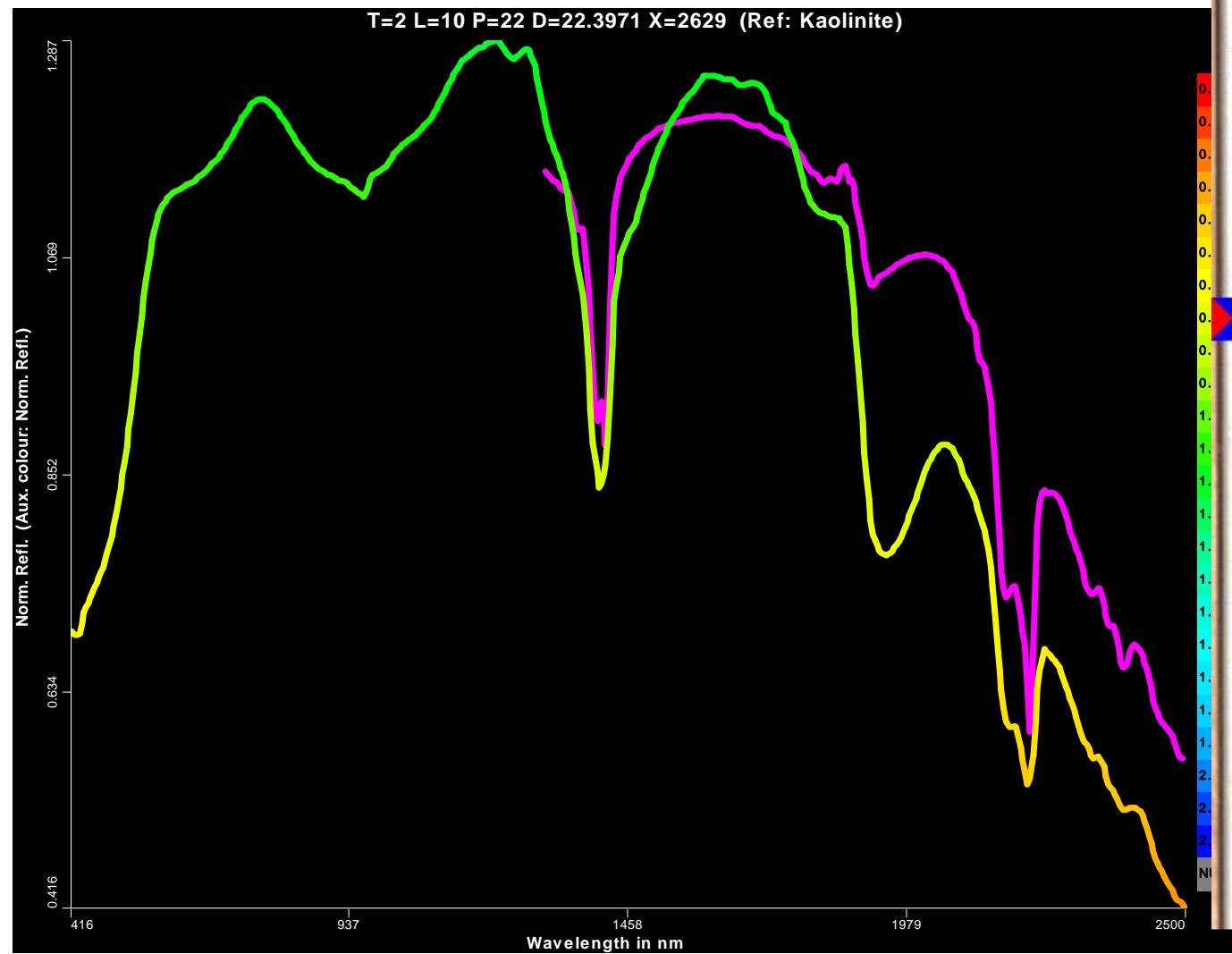
Sub-surface....

- CSIRO HyLogger
- VNIR-SWIR:
- 370 –2500nm
- 10nm spectral resolution
- 1 cm spatial resolution
- 100 spectra per metre
- 60-80 m / hour
- 1000 m core / day
- 3 Gigabytes / day
- 40:1 ratio for chips

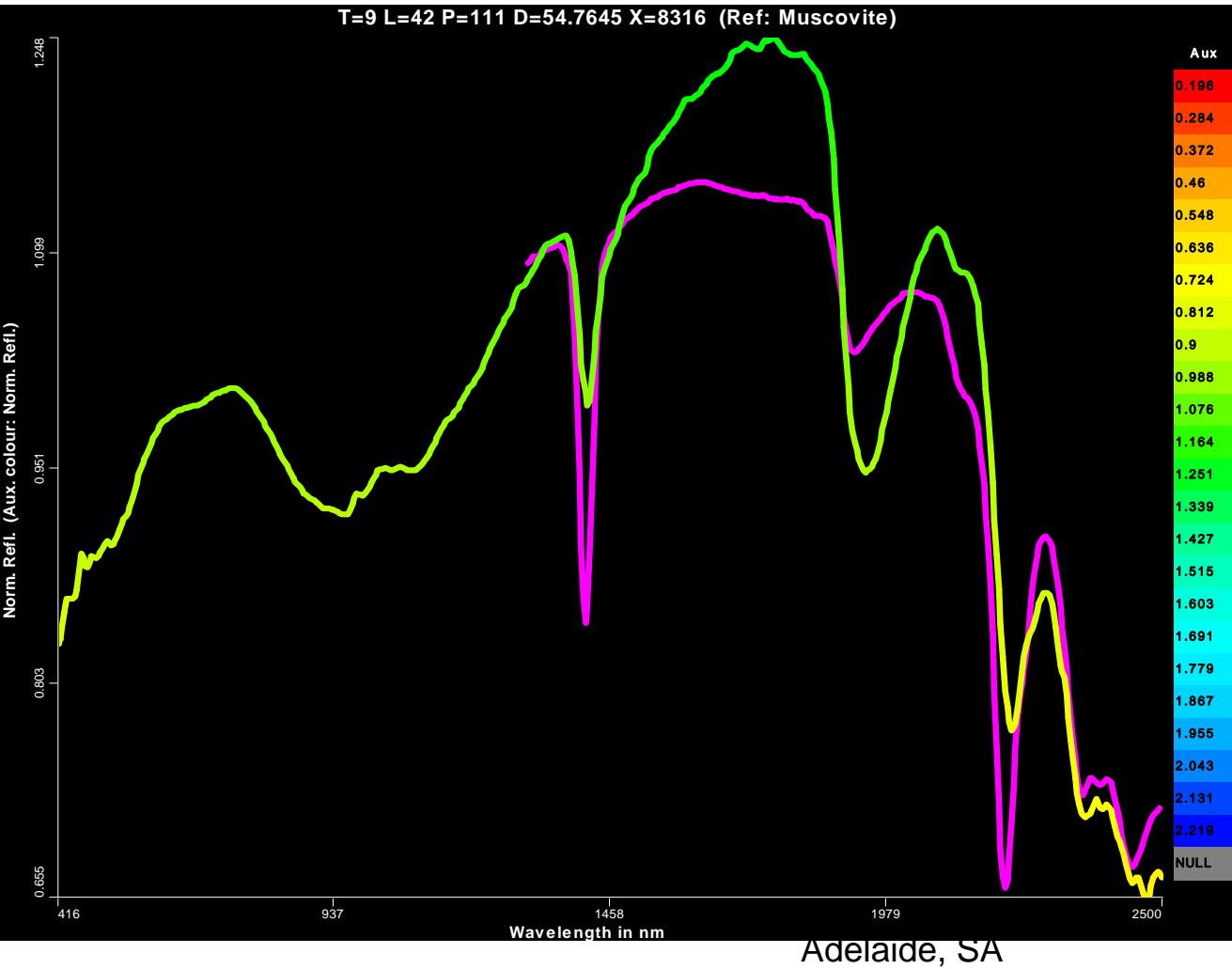


08/09/2004

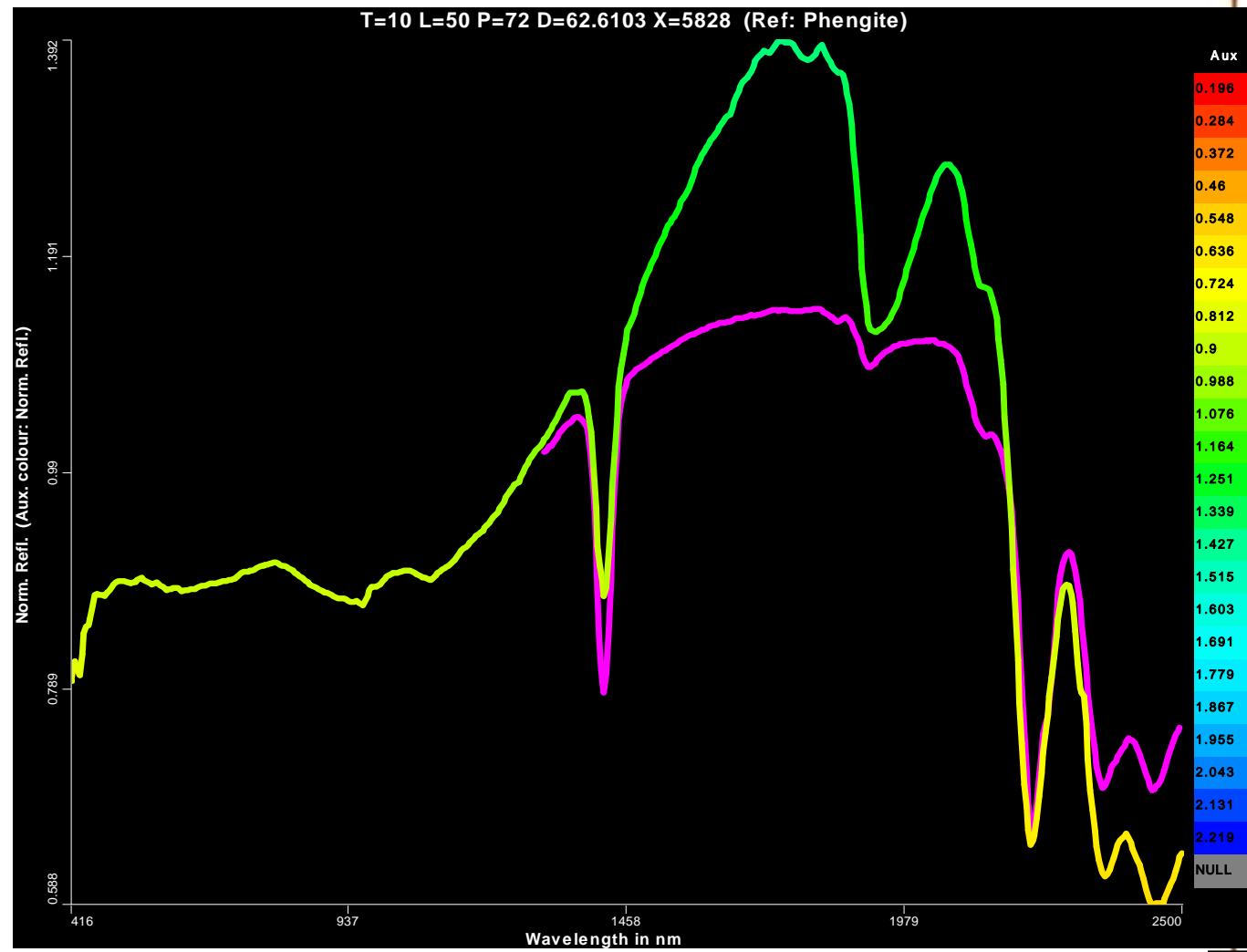
Kaolinite



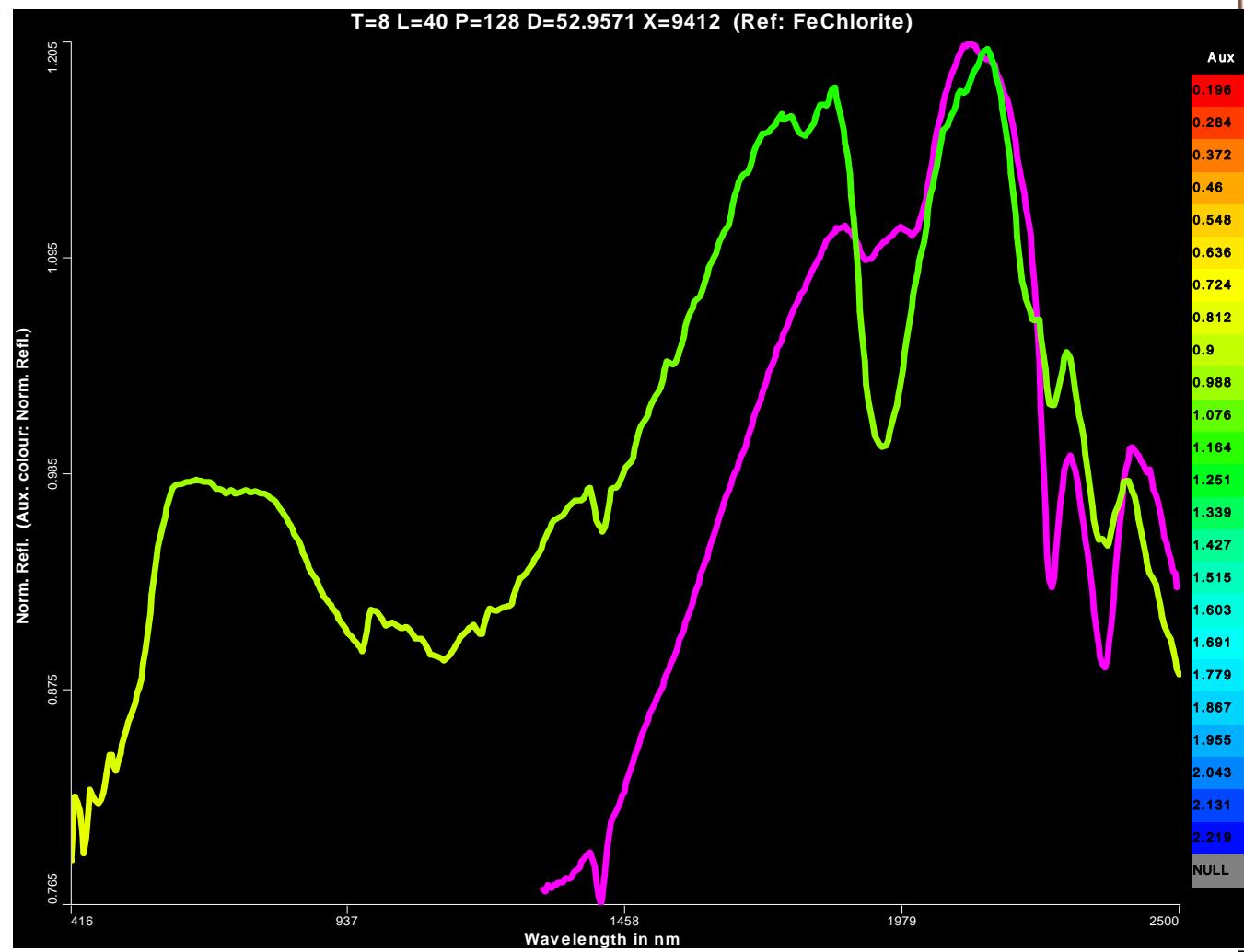
Muscovite



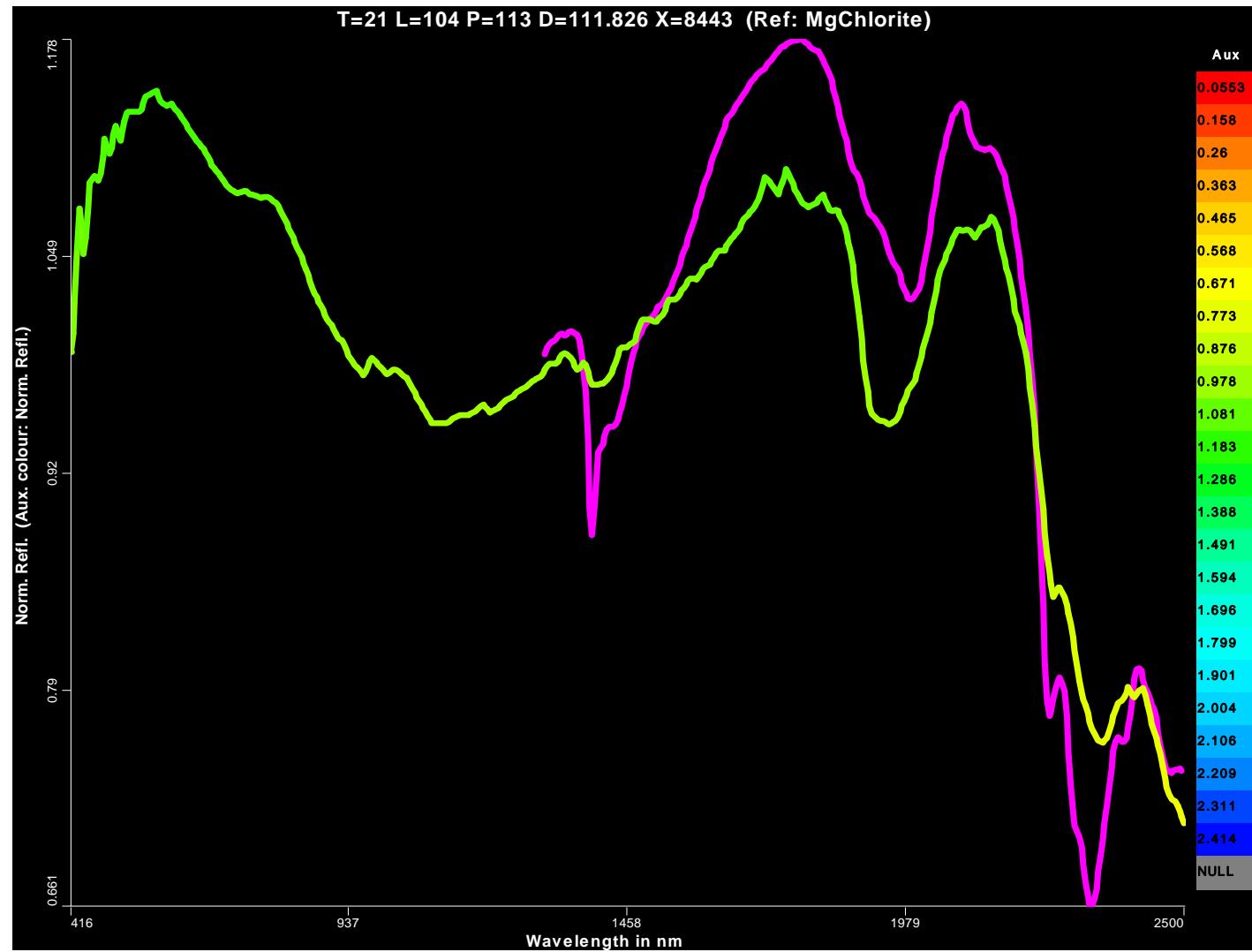
Phengite



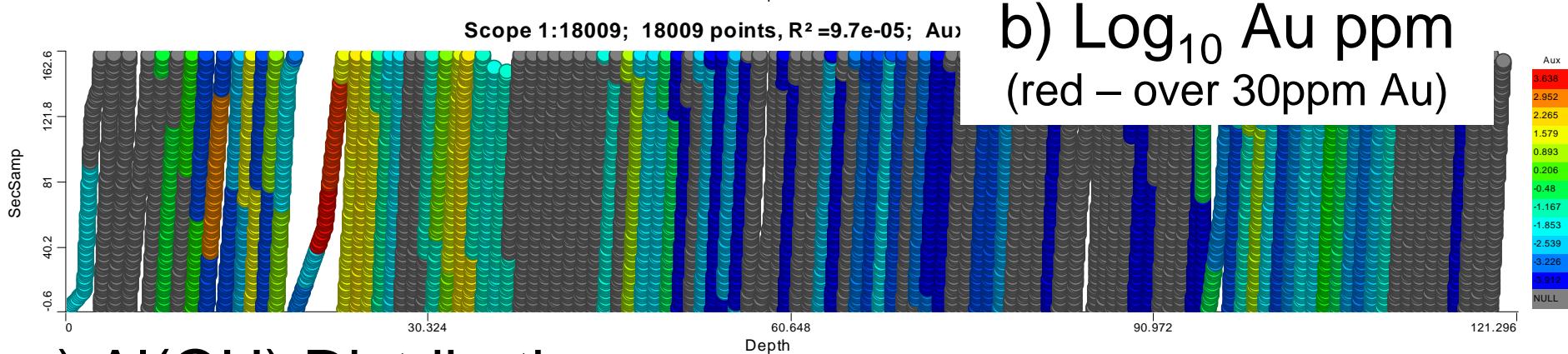
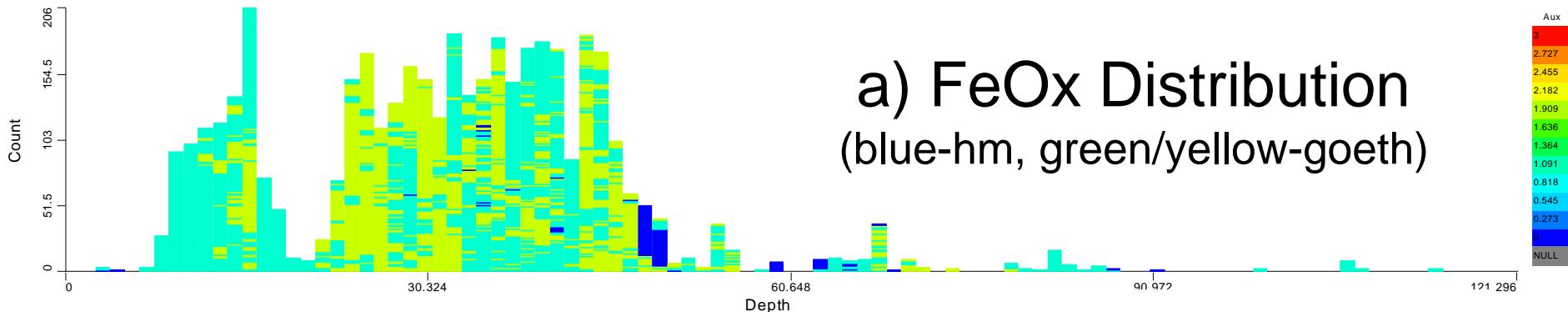
Fe-Chlorite



Mg - Chlorite

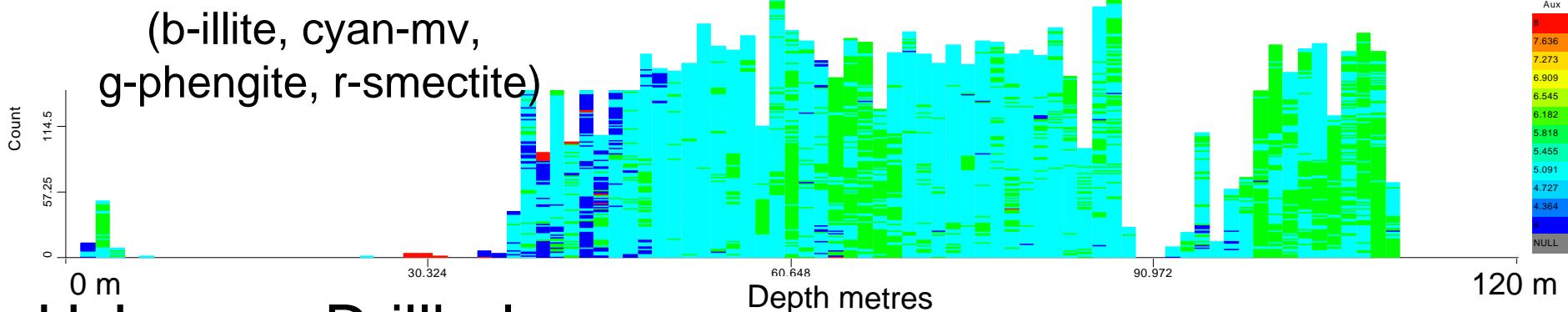


Scope = TSA_B Group1 : Iron_Oxide; 4269 points; Aux: TSA_B Mineral1



c) Al(OH) Distribution

(b-illite, cyan-mv,
g-phengite, r-smectite)



HyLogger Drillhole
TD001

5th Sprigg Symposium 2007
Adelaide, SA

Conclusions

- Weathering
 - Kaolinite
 - Goethite
 - Smectite
 - Sulphate
- Supergene enrichment
- Alteration zone
 - Phengite
 - Chlorite
 - Illite
 - Hematite
- Sulphide associated Au

4m @ 73 g/t Au

