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NEW CENTRAL GAWLER GOLD HYLOGGER RESULTS

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CSIRO

Government of South Australia

Primary Industries and Resources SA

Preliminary results from the Tunkillia region Central Gawler Gold Prospect South Australia

Hylogger project collaborators/developers:

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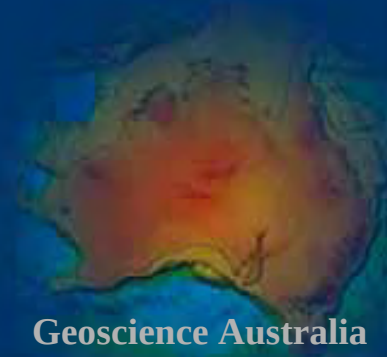
Geoscience Australia (Matilda Thomas)

Government of South Australia
Primary Industries and Resources SA

Australian Government
Geoscience Australia

CSIRO

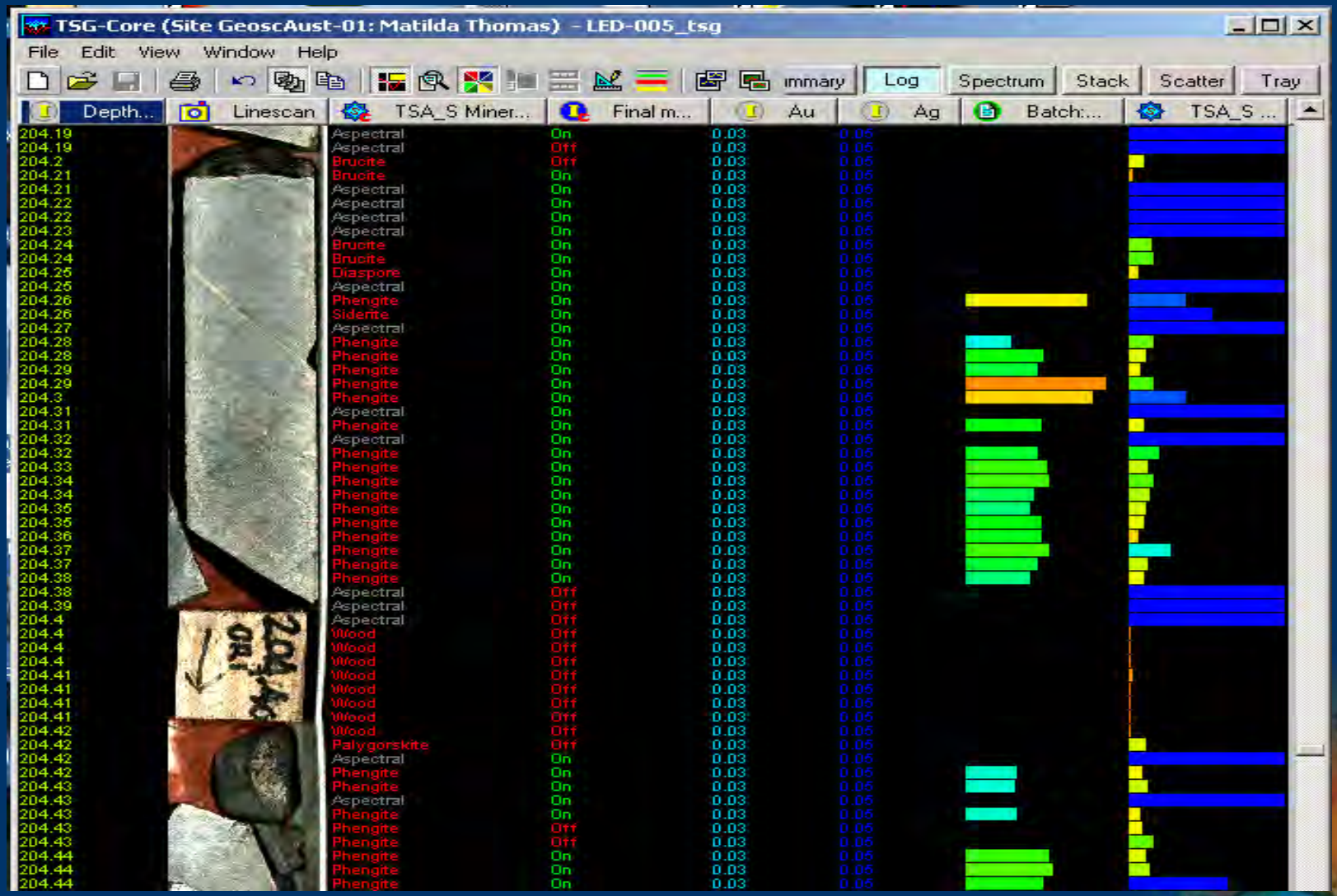


Hylogger background

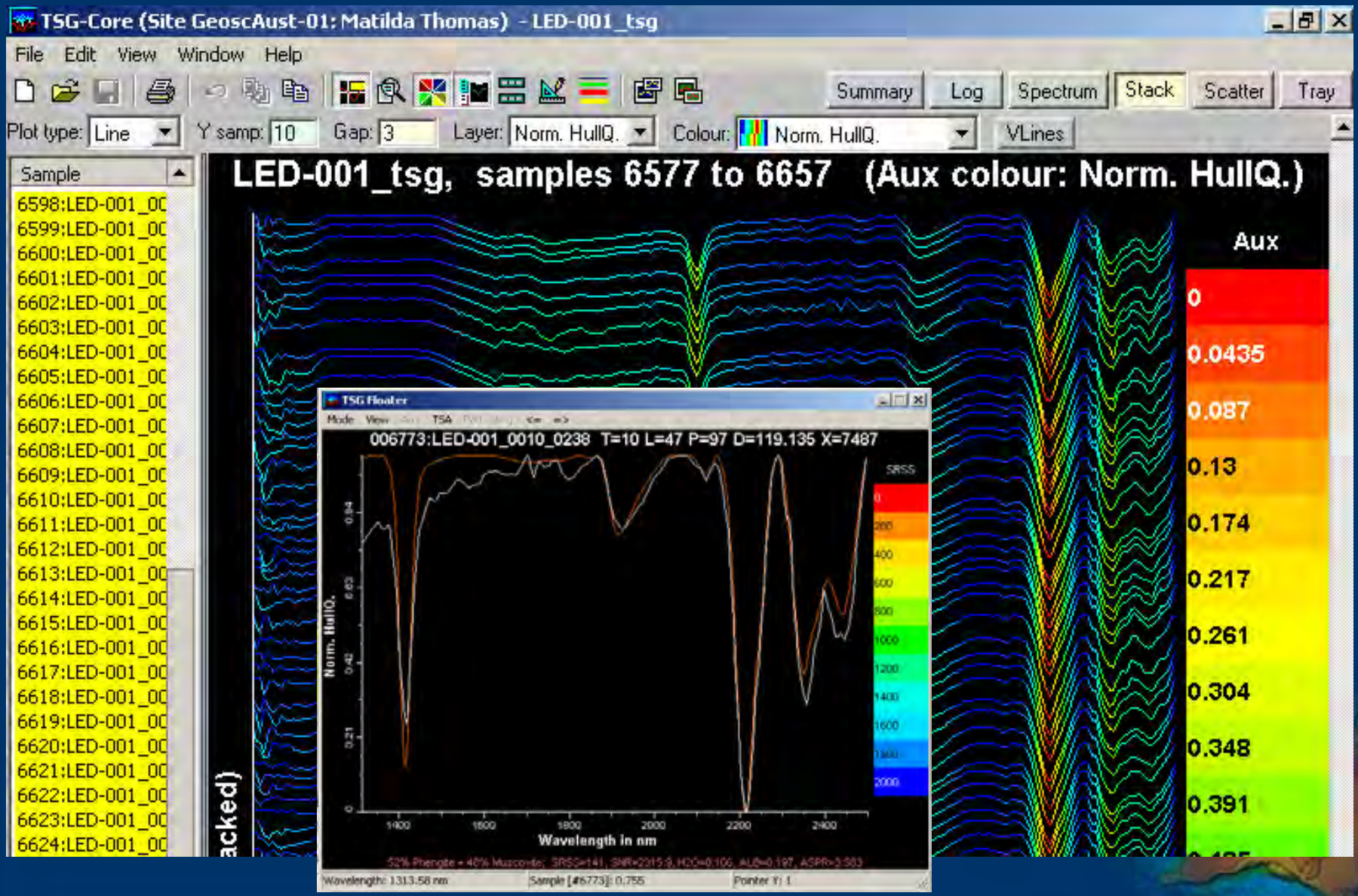
- **Developed by CSIRO's Mineral Mapping Technologies Group**

- **Automated core tray handling, digital imaging and spectral scanning can log up to 1000 m of core per day (more for chips)**
- **Specialised mineral identification software for rapid logging capability**

Continuous VNIR-SWIR hyperspectral scanner and digital imager (~1cm spectral resolution, ~0.1mm image resolution)

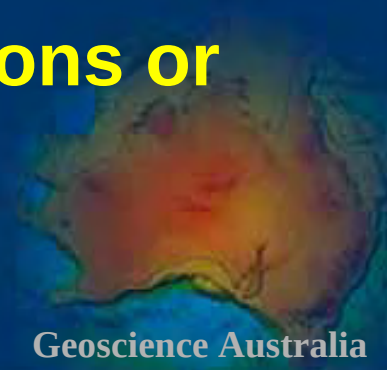


The contiguous spectrum (similar to PIMA and HyMap) allows detailed information to be extracted from the spectra

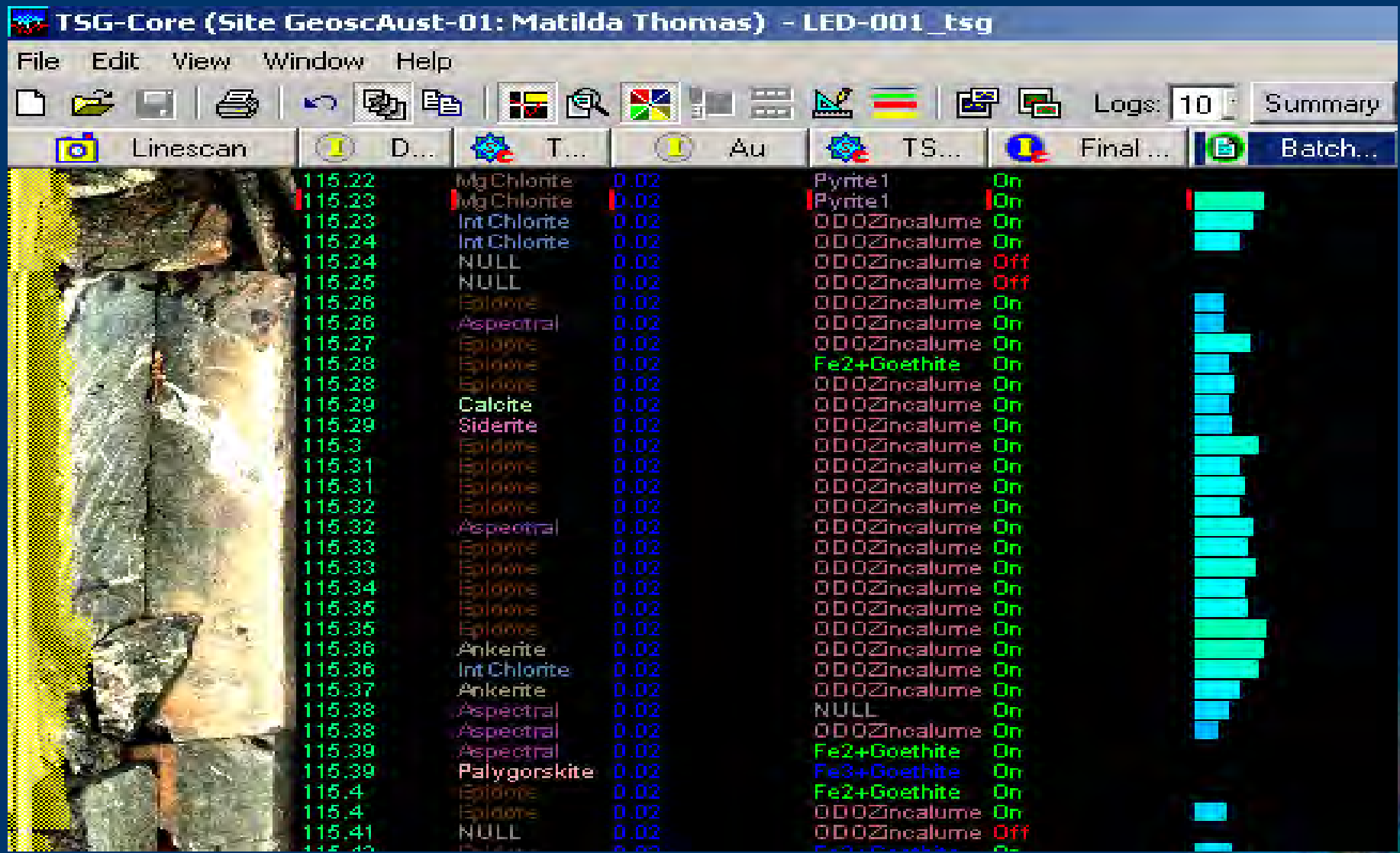


Hylogger interpretation challenges

- processing approach and methodology – where to start, what to mask, etc.
- software bugs – “cutting edge” technology = undiscovered bugs lurking at every corner
- software version changes – several versions released since start of project, some problems opening previously processed data in newer versions
- Export to other formats, display options or lack thereof …

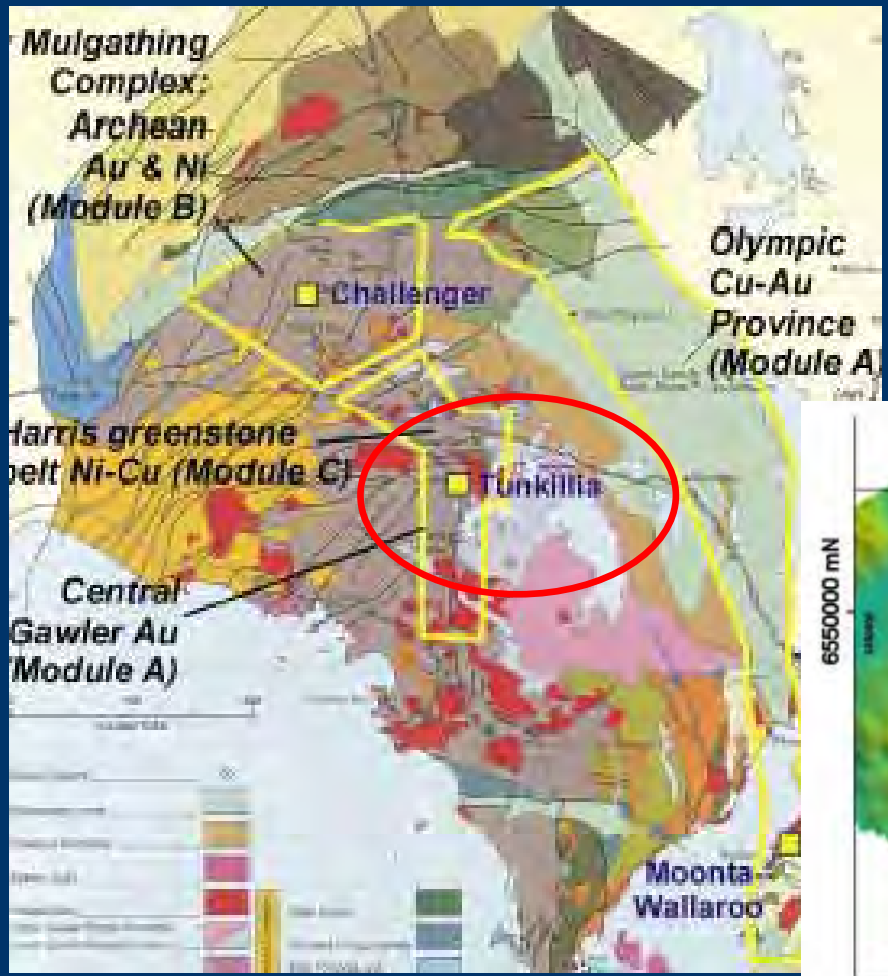


Spectral unmixing generally allows up to 4 minerals to be identified, also non-minerals such as wood, plastic markers, metal trays, etc., which can then be “masked out”

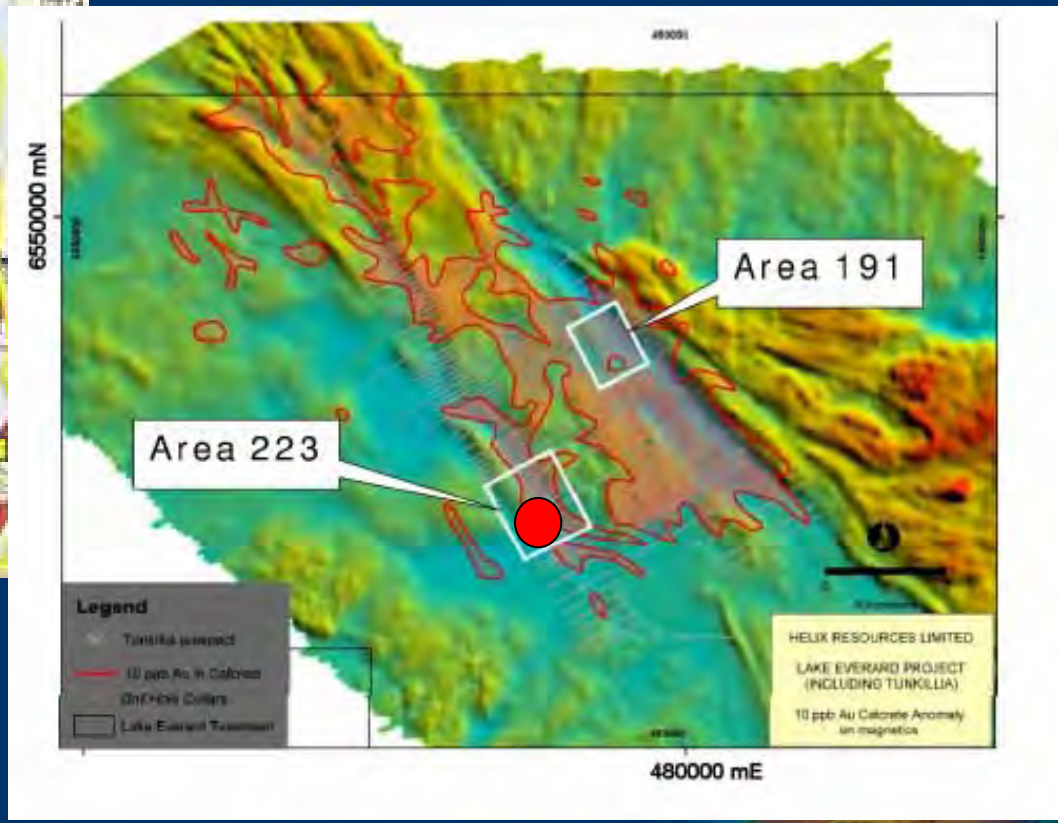


Tunkillia

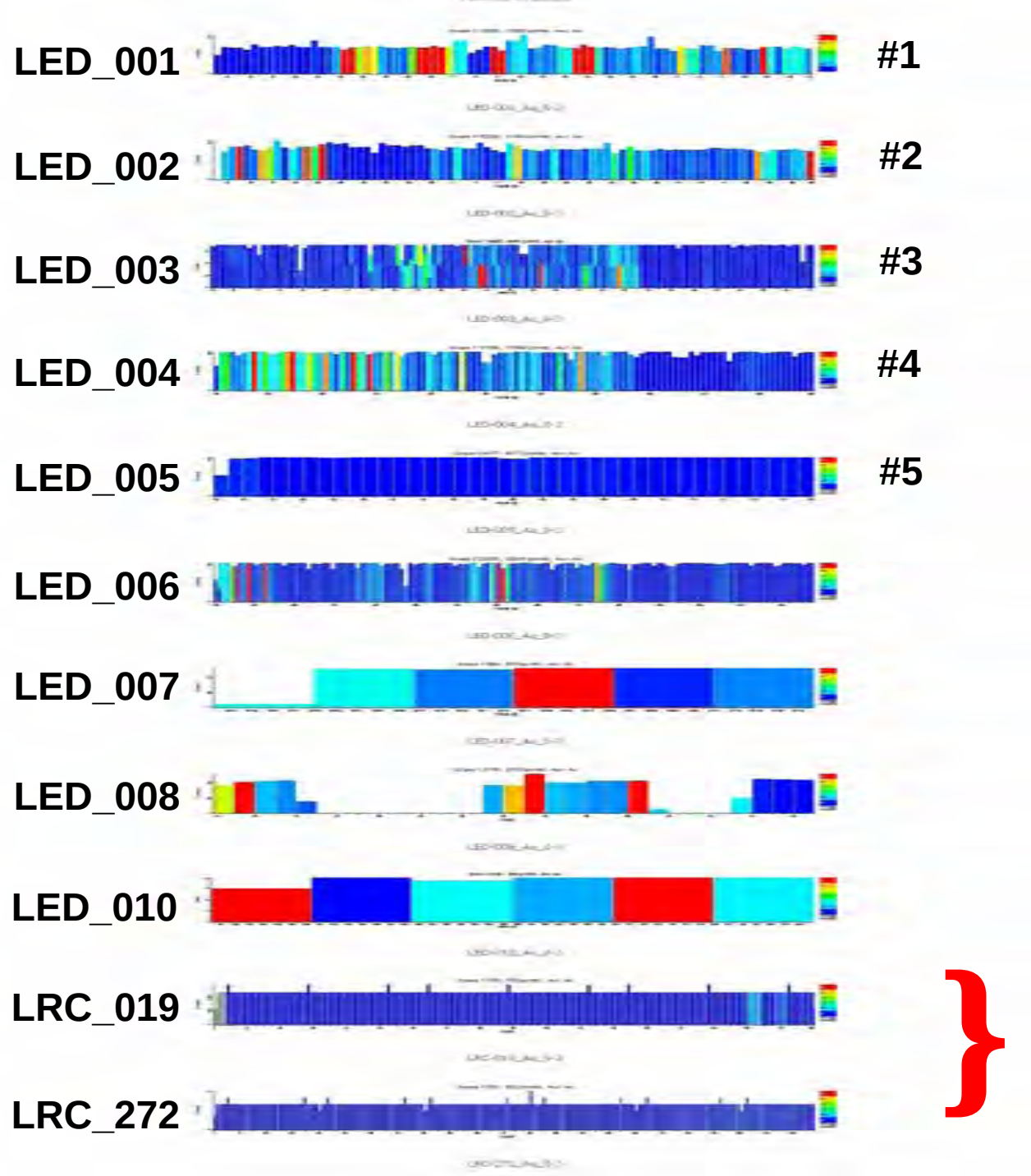
Location of Tunkillia



Location of drill holes in area 223



Figures from Worral et.al 2003

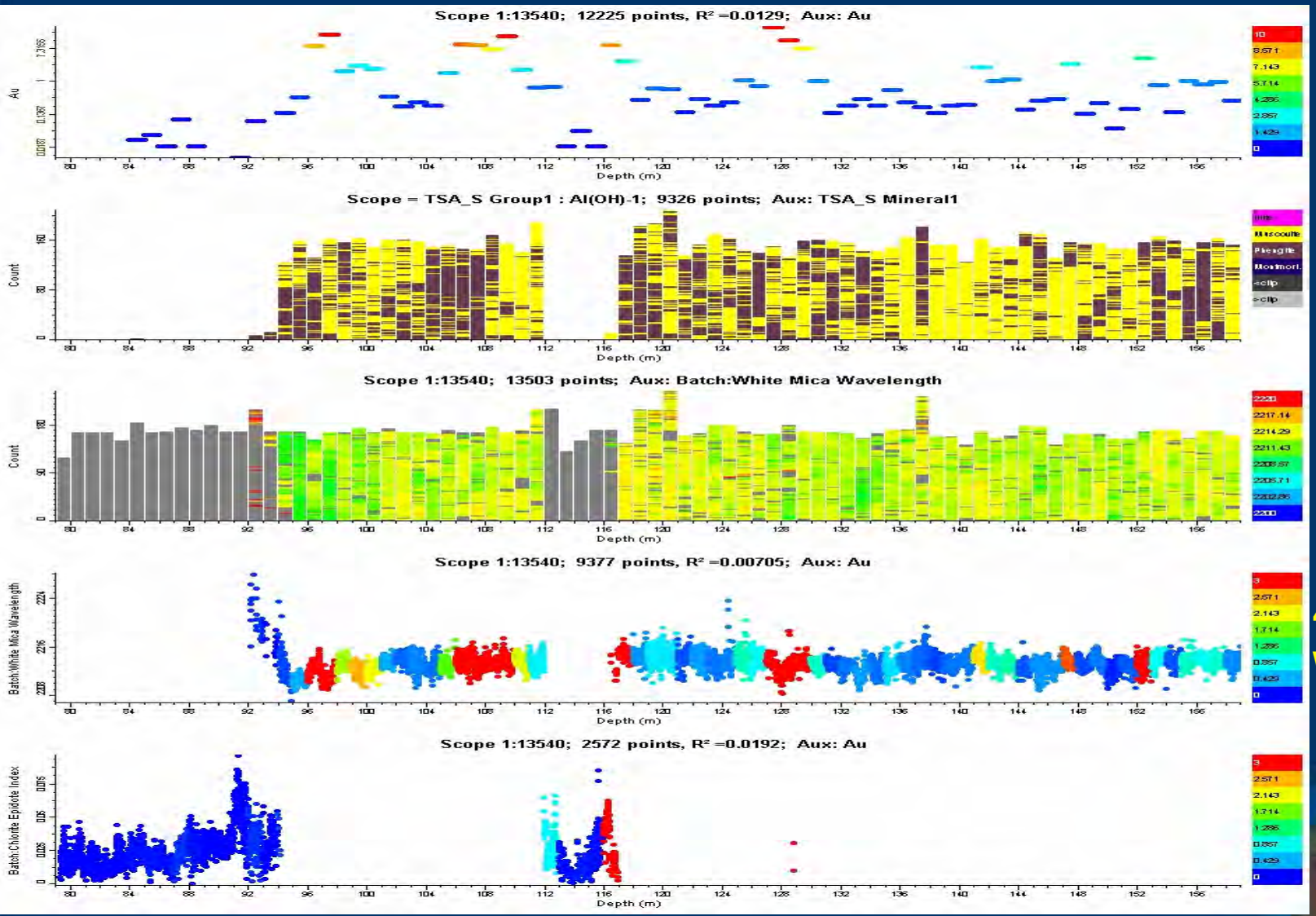


Tunkillia Diamond Holes Au assay data

(Blue = 0ppm to Red = >3ppm)

Outside mineralised zone

Tunkillia Hylogger Diamond Holes #1



1. Log Au

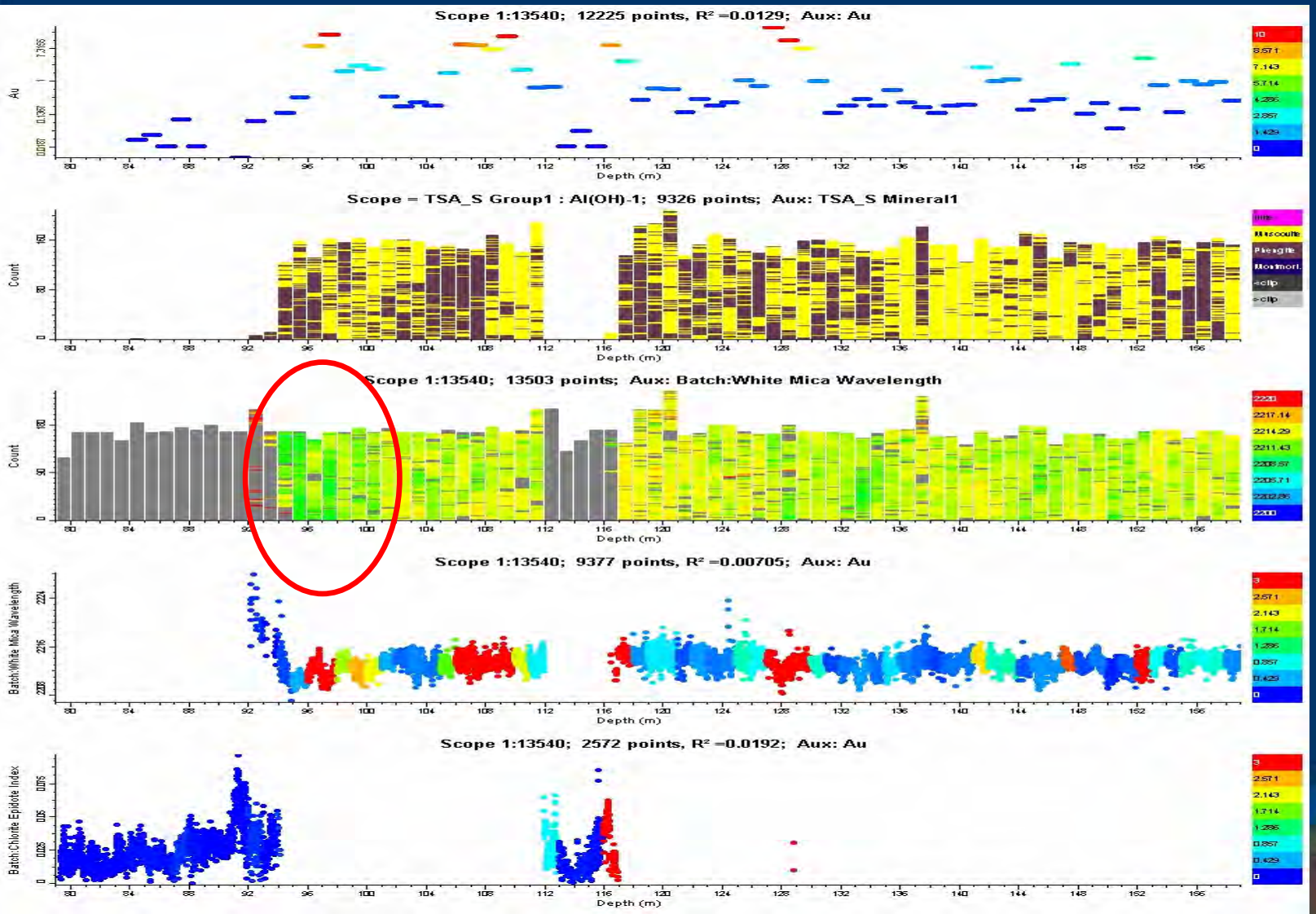
2. Al(OH)

3. Mica wavelegnth

4. Mica wavelegnth

5. Chlorite /Epidote

Tunkillia Hylogger Diamond Holes #1



Au>3ppm

Au=0

Muscovite

Phengite

2220nm

2210nm

2200nm

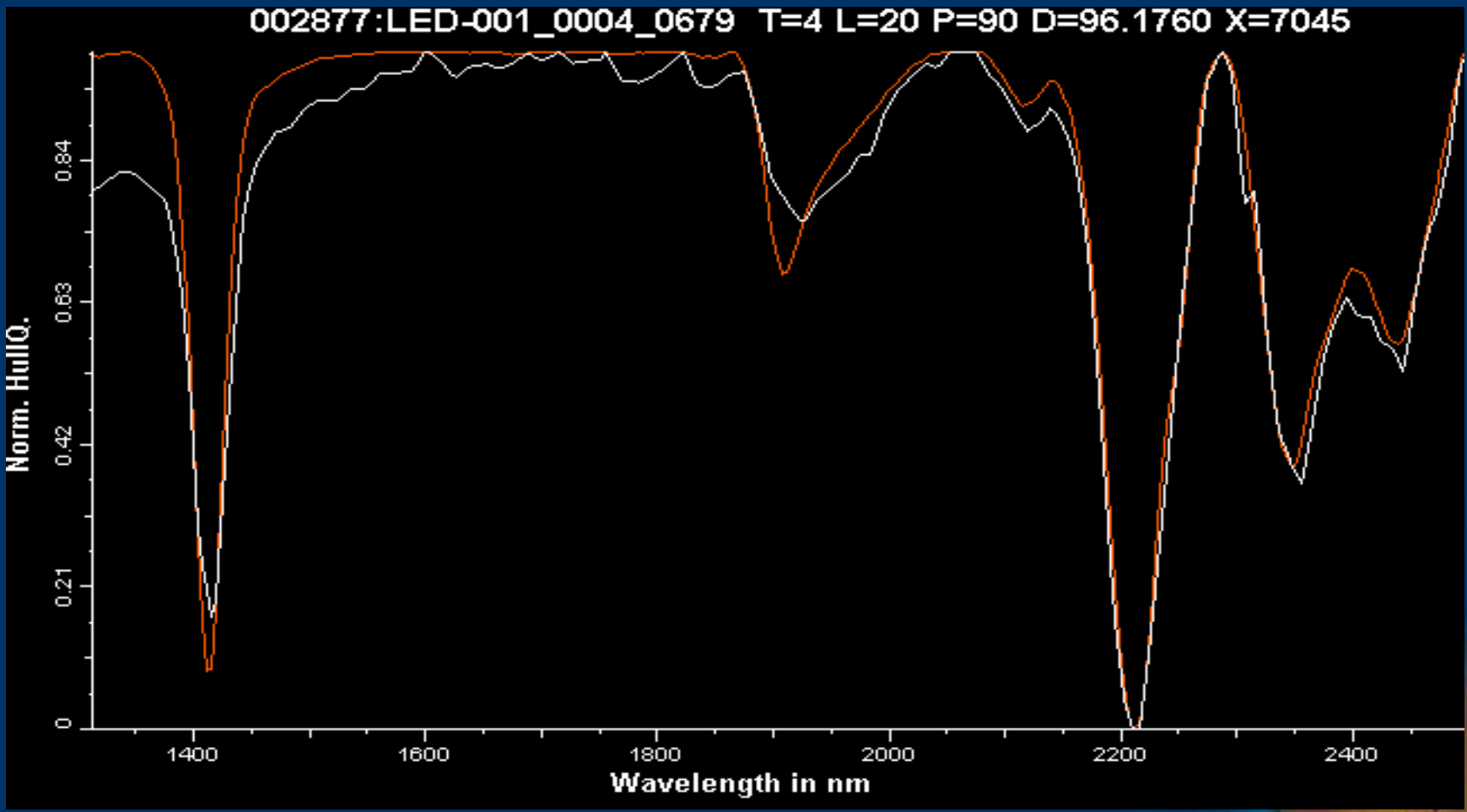
Au>3ppm

Au=0

Au>3ppm

Au=0

"Transitional" white mica spectra – between muscovite and phengite, diagnostic absorption feature at ~2210nm



White mica chemistry and relation to fluids

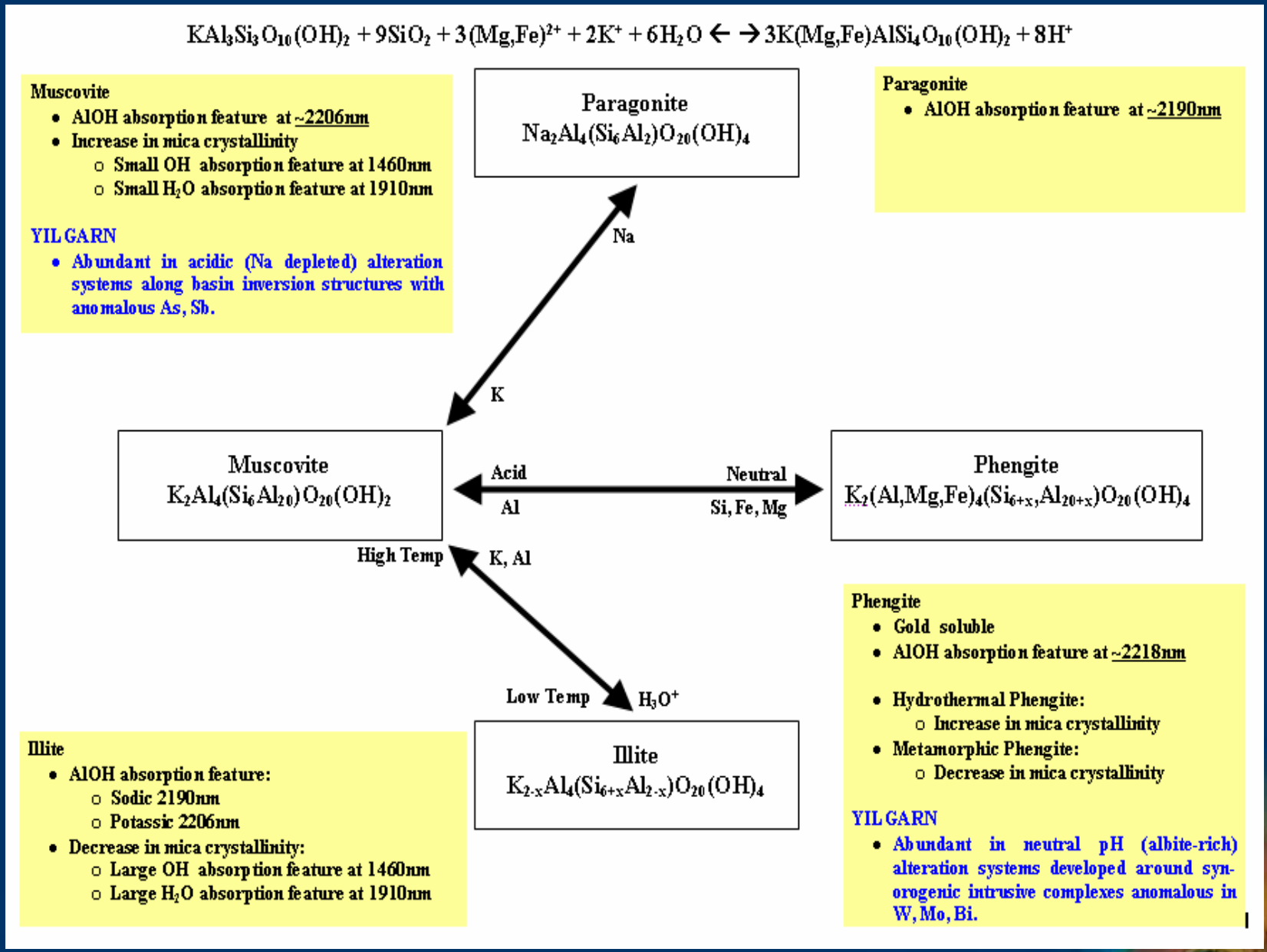
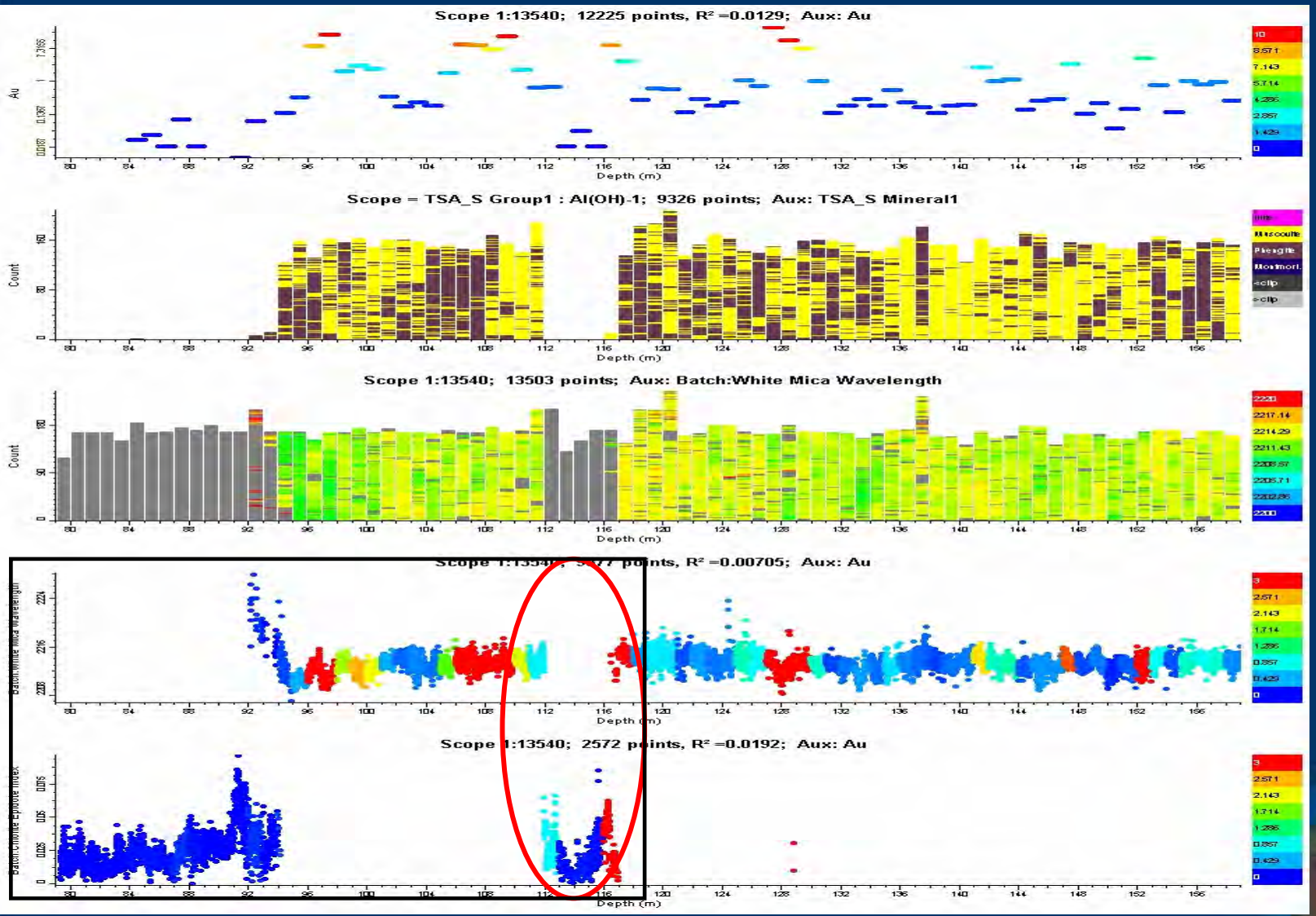


Figure courtesy PlacerDome/ Simon van de Wielen

Tunkillia Hylogger Diamond Holes #1



Au>3ppm

Au=0

Muscovite

Phengite

2220nm

2210nm

2200nm

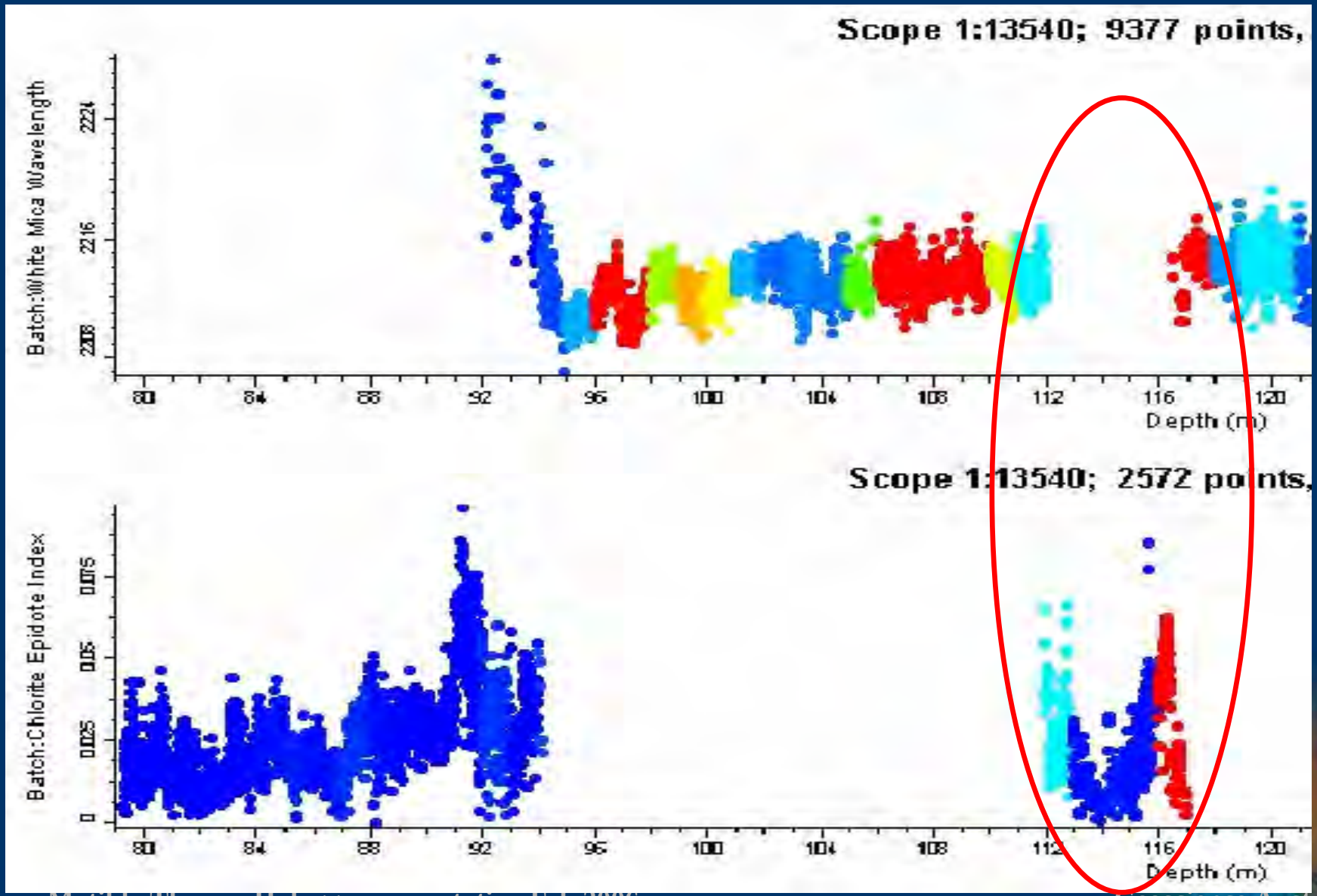
Au>3ppm

Au=0

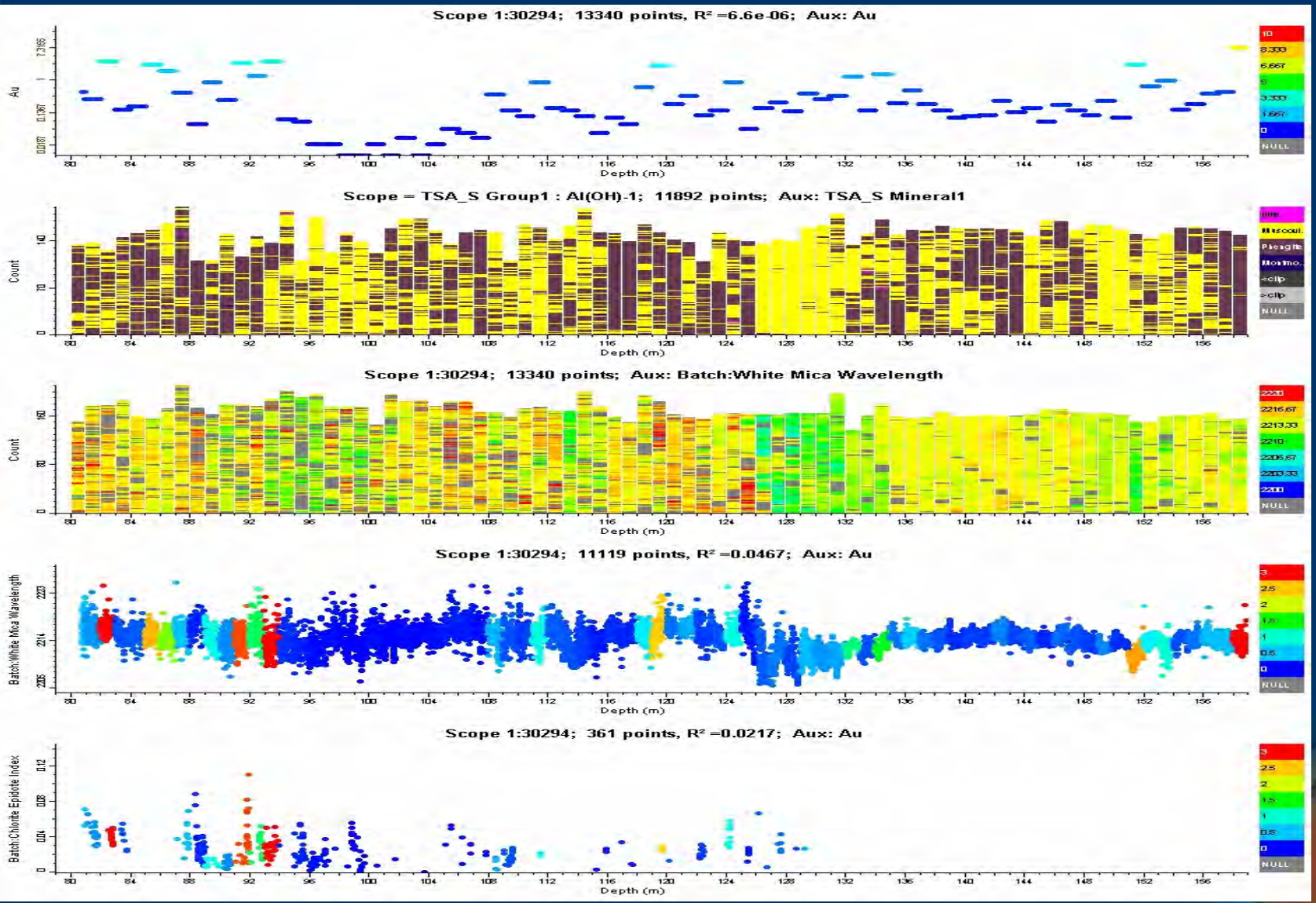
Au>3ppm

Au=0

Plots delineate mafic dykes – chlorite/epidote generally inverse relationship to Au, exceptions at margins



Tunkillia Hylogger Diamond Holes #2



Au>3ppm

Au=0

Muscovite

Phengite

2220nm

2210nm

2200nm

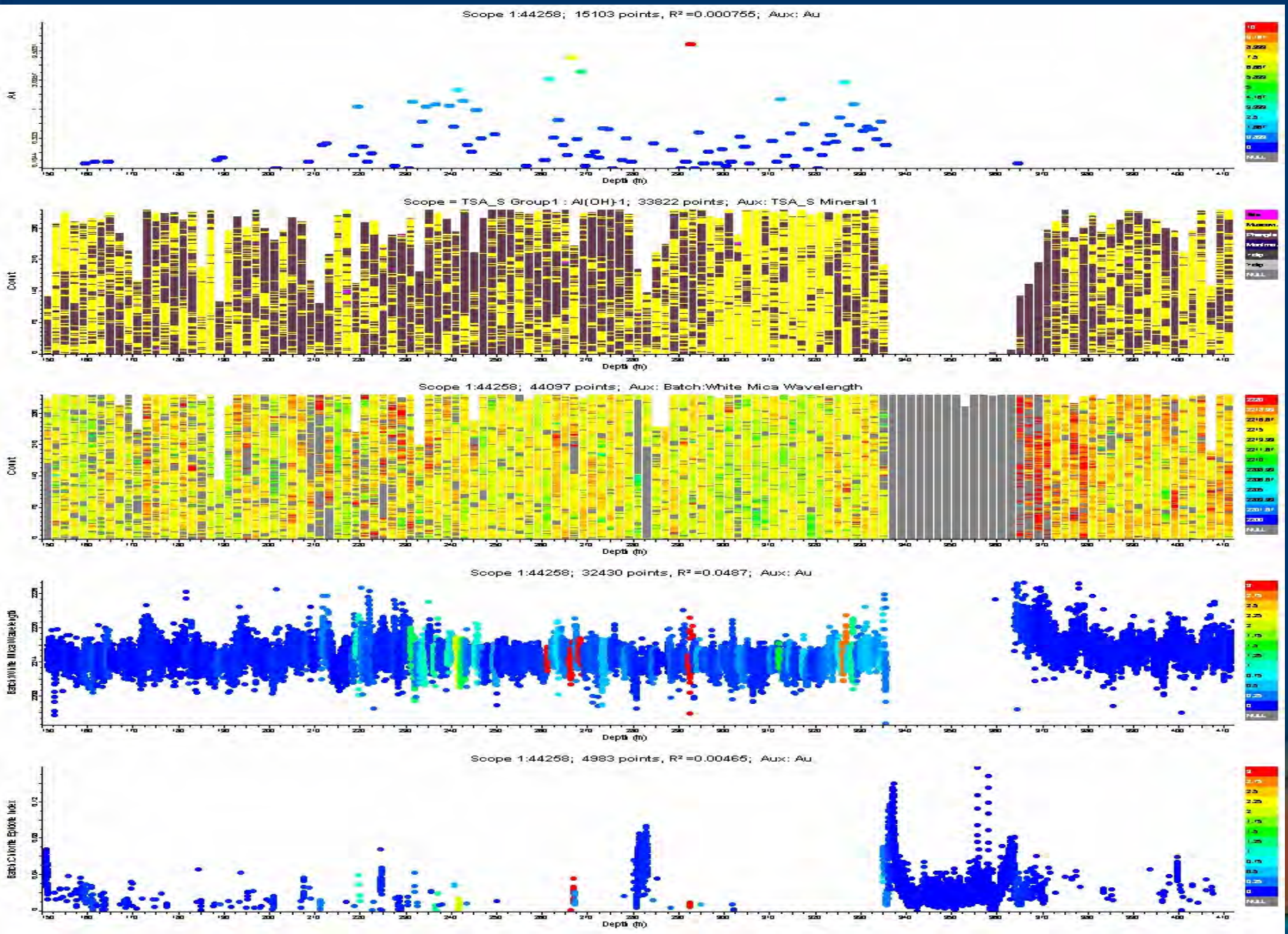
Au>3

Au=0

Au>3

Au=0

Tunkillia Hylogger Diamond Holes #3



Au>3ppm

Au=0

Muscovite

Phengite

2220nm

2210nm

2200nm

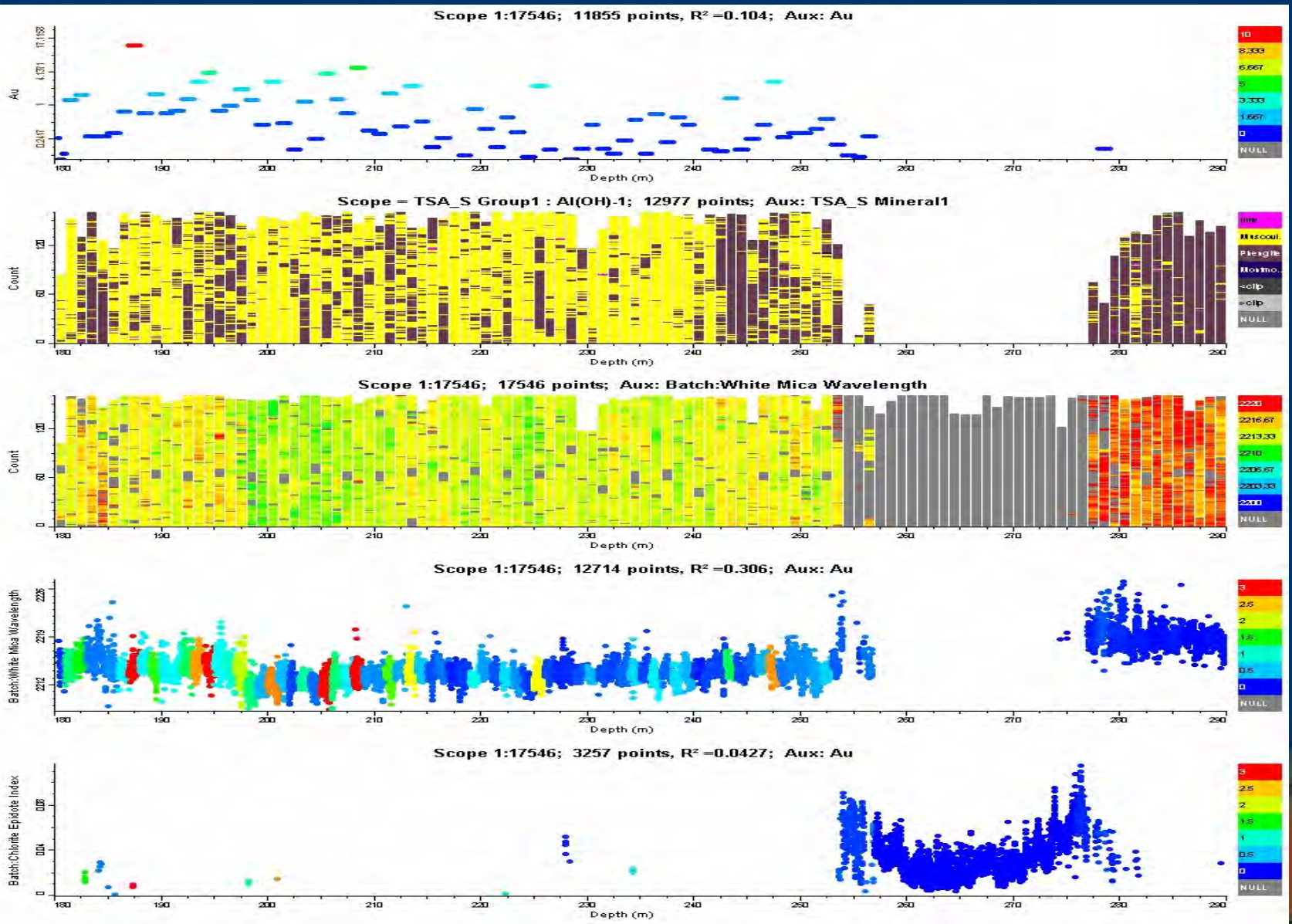
Au>3

Au=0

Au>3

Au=0

Tunkillia Hylogger Diamond Holes #4



Au>3ppm

Au=0

Muscovite

Phengite

2220nm

2210nm

2200nm

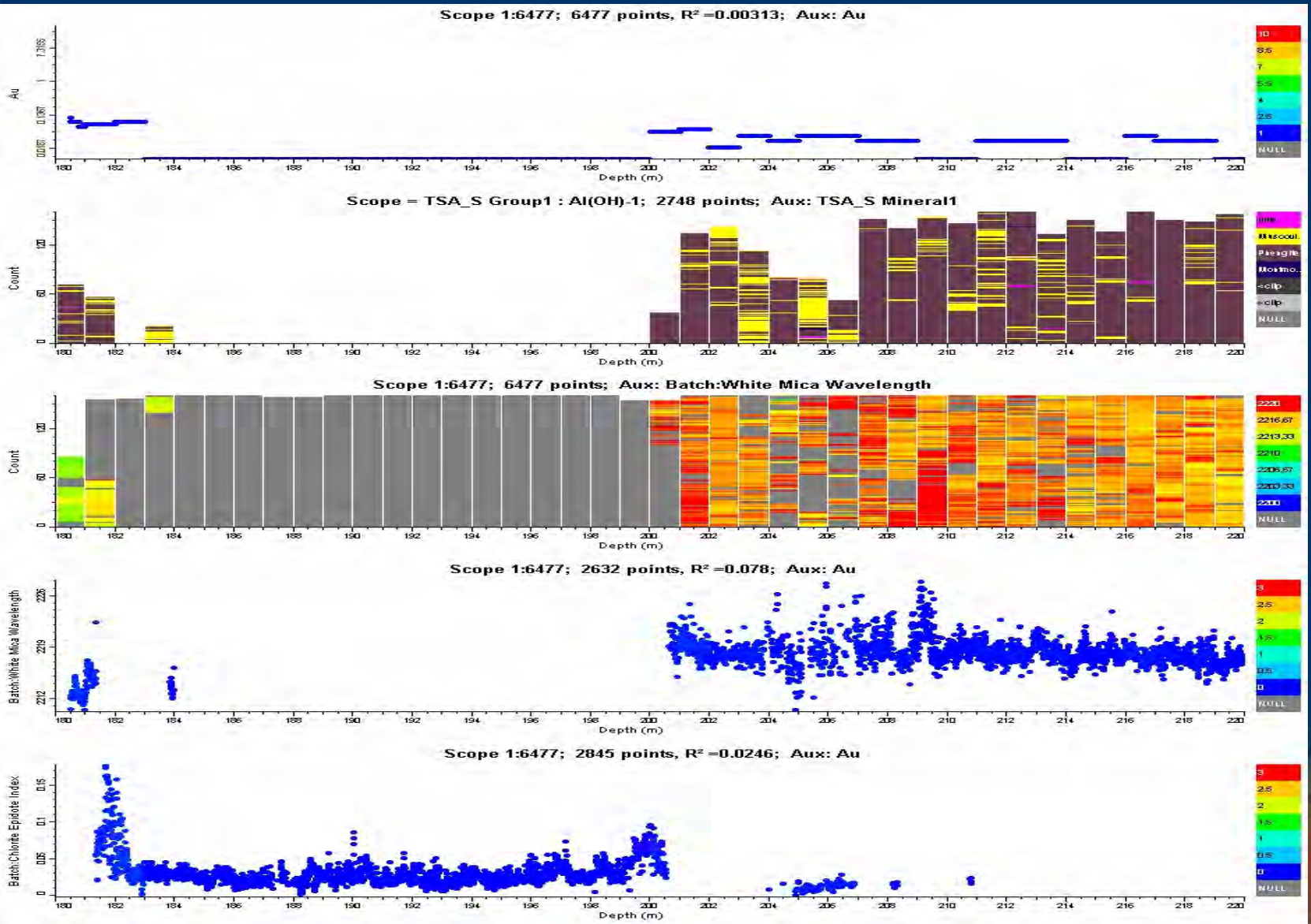
Au>3

Au=0

Au>3

Au=0

Tunkillia Hylogger Diamond Holes #5



Au>3ppm

Au=0

Muscovite

Phengite

2220nm

2210nm

2200nm

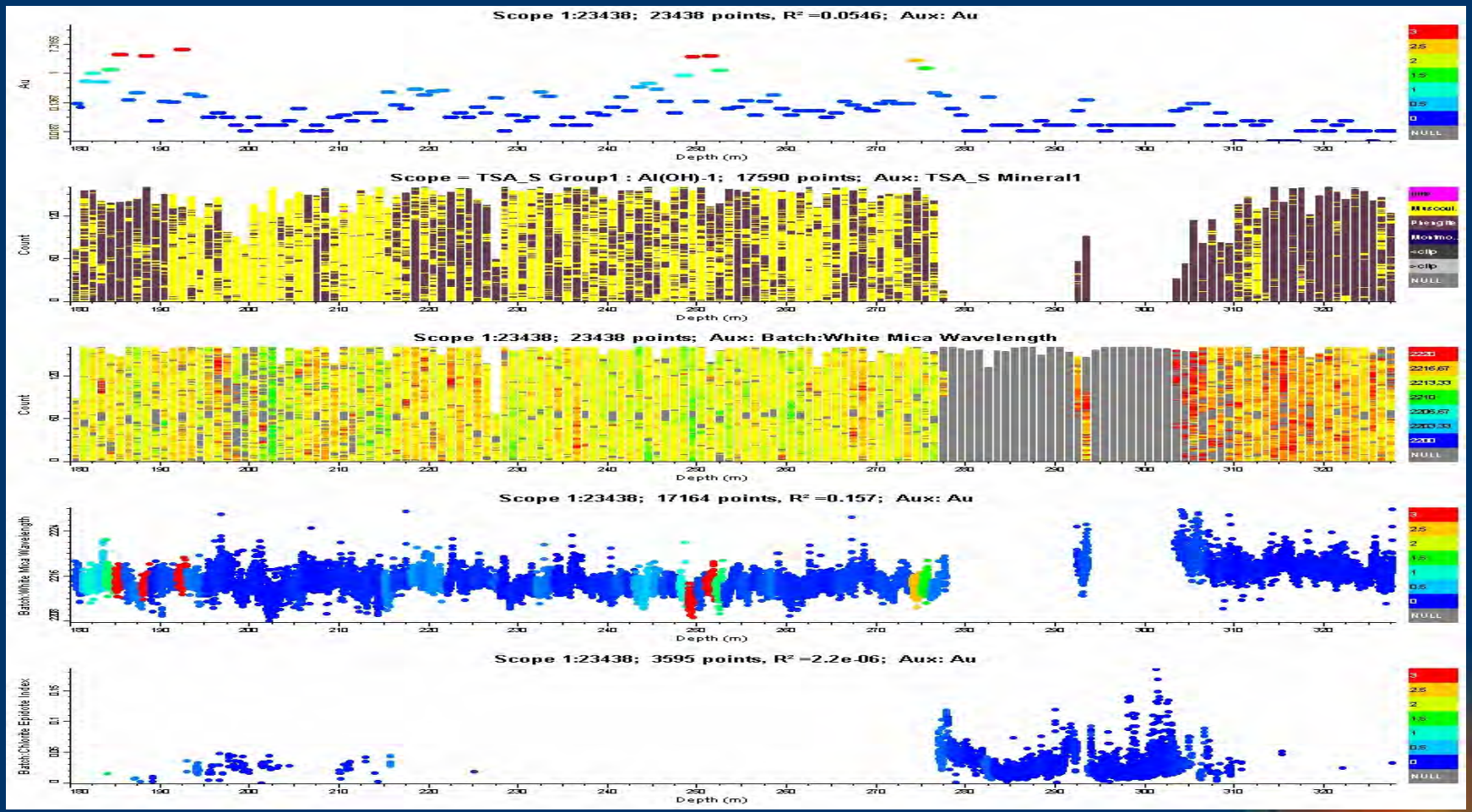
Au>3

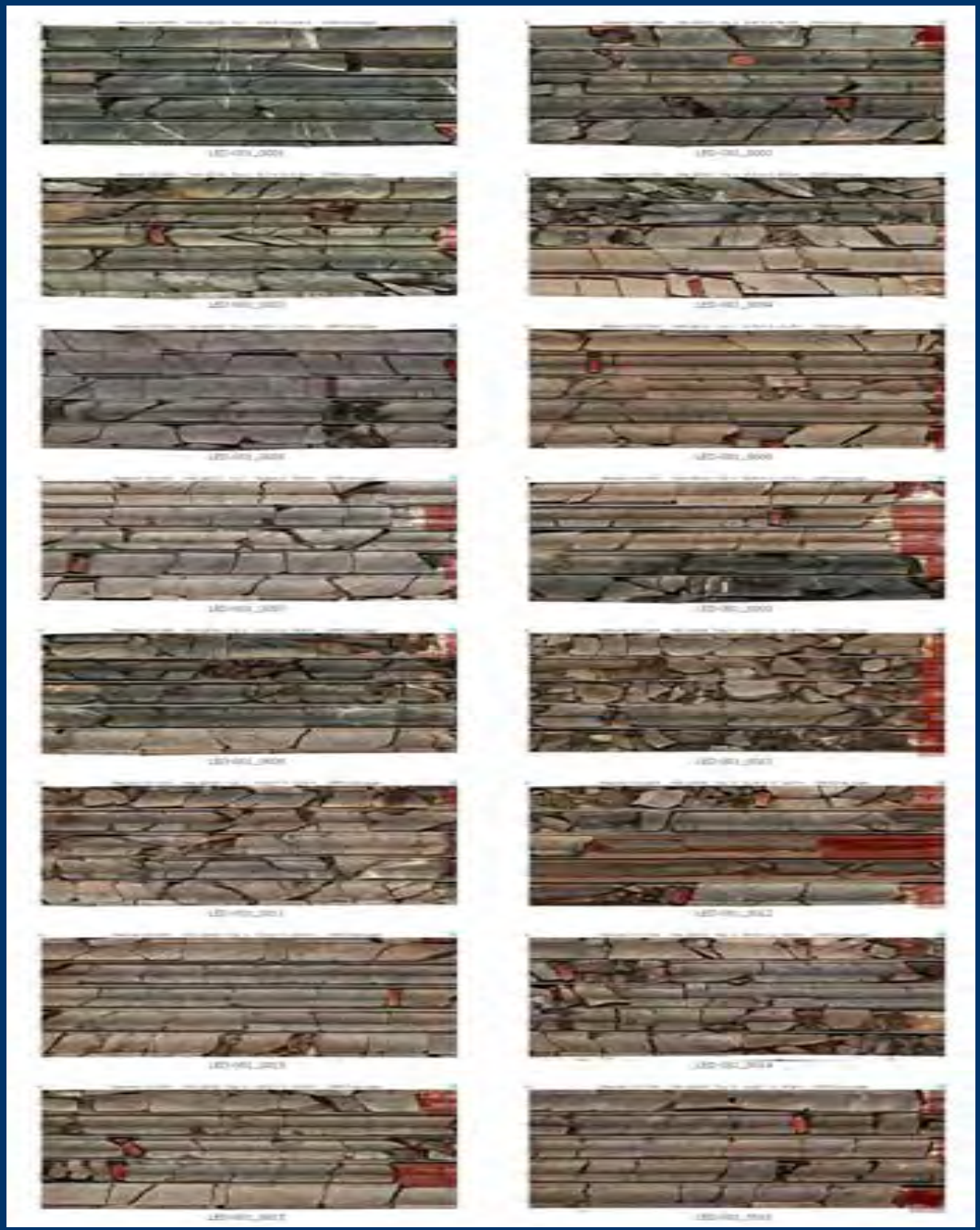
Au=0

Au>3

Au=0

Tunkillia Hylogger Diamond Holes #6





Hylogger Atlas

contact sheets, summary histograms, interpreted mineralogy available on web – soon!

Conclusions

- High Au shows some correlation with white mica composition (phengite-muscovite) as well as mica crystallinity and wavelength shifts, possibly representing an increasing in acidity due to mixing of metamorphic muscovite and hydrothermal fluid in the altered granitic host rocks
- Alteration in mafic dykes – chlorite-carbonate well delineated
- Au predominantly confined to granite host, high Au in mafic areas appears to occur on margins / fracture zones

Acknowledgements

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