

# The Geology of the Tujuh Bukit Copper-Gold Project East Java, Indonesia



Strong, Growing and Delivering



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Intrepid Mines Ltd  
(SMEDG 16 June 2011)



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# **Presentation Topics**

**Overview**

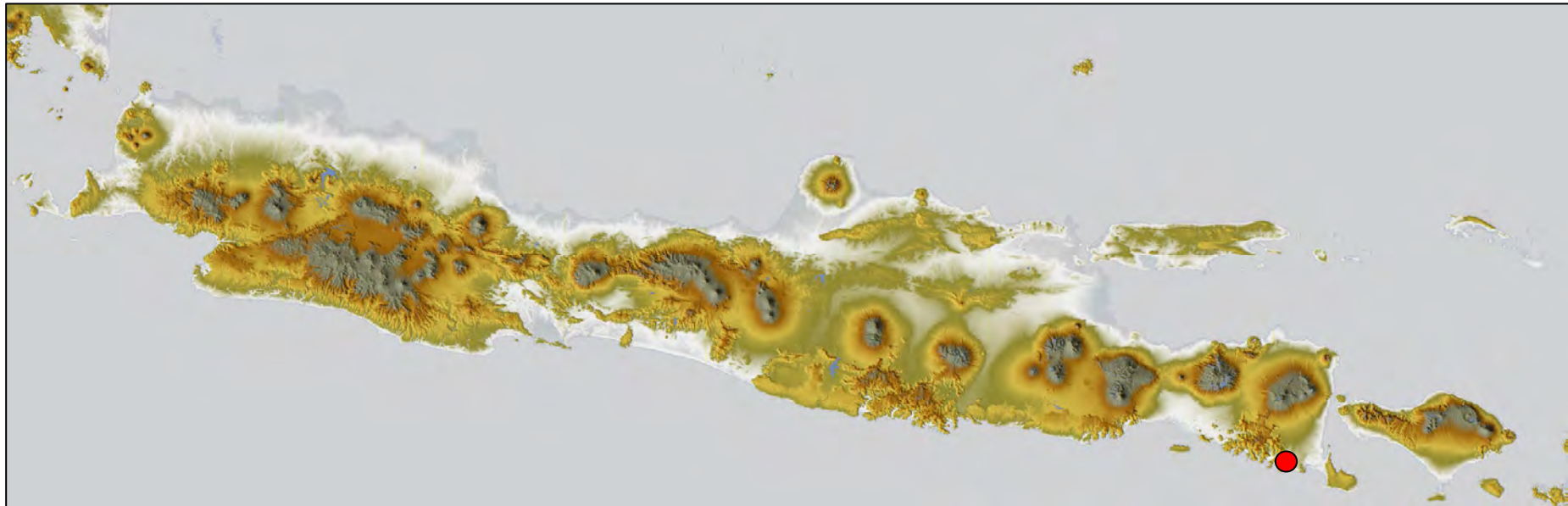
**Arc-Setting**

**Intrepid Mines Exploration**

**Tumpangpitu Geology / Mineralization**

**Tujuh Bukit District Opportunities**







# OVERVIEW



■ Intrepid Mines - PT IMN JV Exploration: 2007 - Present

■ Property : 11,621.45 Ha, Southeast Java  
2 adjoining IUP's – IUP Eksplorasi, IUP Operasi & Produksi

■ Main Prospect –Tumpangpitu: Tonalitic Porphyry Cu-Au-Mo system +  
High Sulphidation Cu-Au-Ag Sulphide + Au-Ag Oxide cap

4<sup>th</sup> OXIDE (+ Oxide Transition) Au-Ag Inferred Resource (HS)

**130Mt @ 0.55 g/t Au, 18 ppm Ag (0.2 g/t Au cut-off) 2.4 MOz Au, 80 MOz Ag**

\* Encouraging Column Leach Results – Heap Leach Potential

1<sup>st</sup> & 2<sup>nd</sup> SULPHIDE Inferred Resource (Porphyry + High-Sulphidation)

Nov 2010: **500Mt @ 0.43% Cu, 0.47 g/t Au (0.2% Cu cut-off) 2.1 Mt Cu, 7.6 MOz Au**

May 2011: **990Mt @ 0.40% Cu, 0.45 g/t Au (0.2% Cu or Au cut-off) 4.0 Mt Cu, 14 MOzAu**

\* Mineralization open on 4 sides and at depth

\* Significant areas of Exploration Potential defined marginal to areas of Inferred Resource

## ■ Surrounding Prospects

Katak – Cu-Au porphyry (5 drill holes)

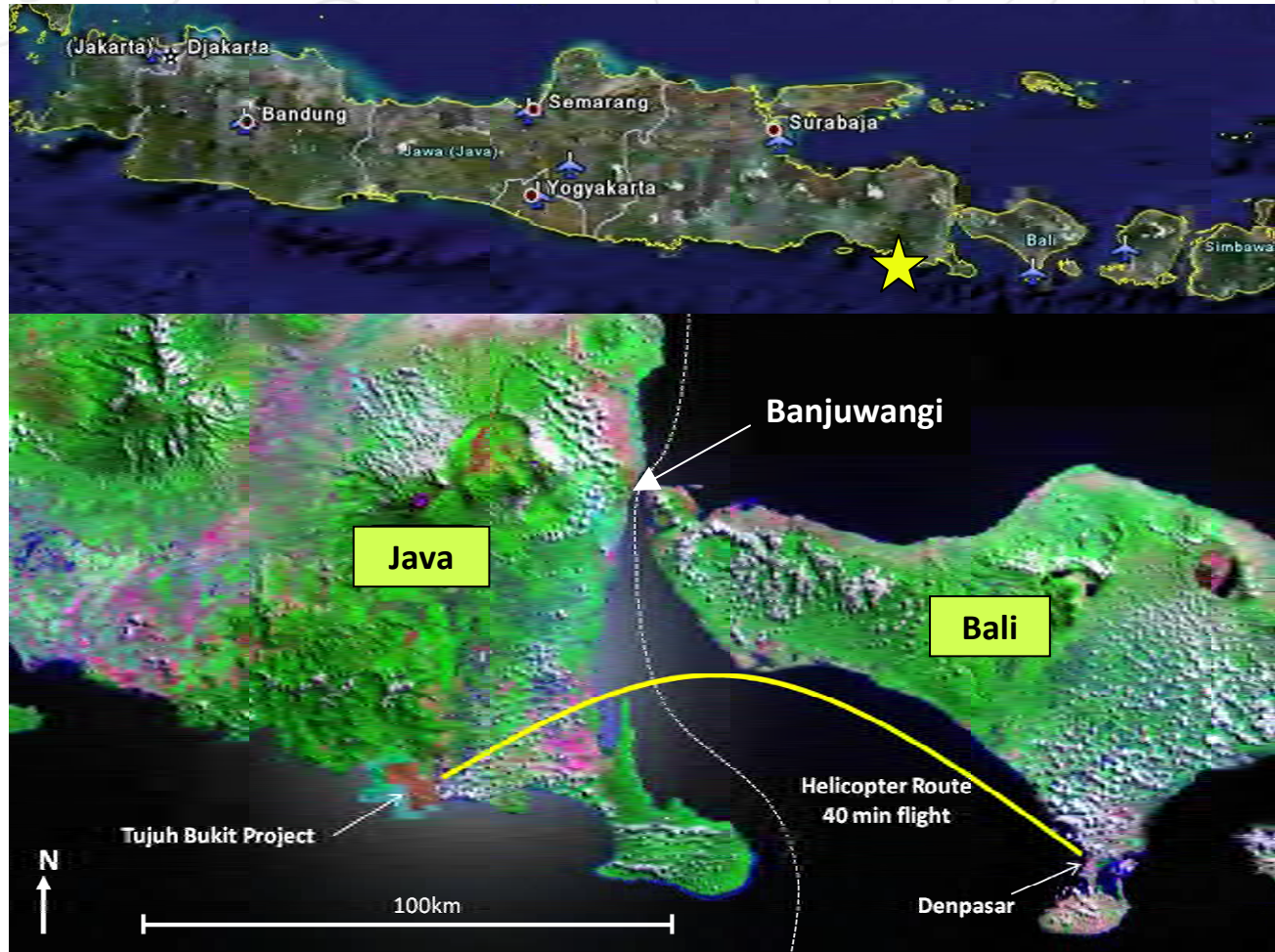
Salakan – HS epithermal on porphyry Cu-Au (Target)

Candrian – HS epithermal on porphyry Cu-Au-Mo (Target). **Drilling in Progress**

Gunung Manis – LS epithermal (Target). **Drilling in Progress**



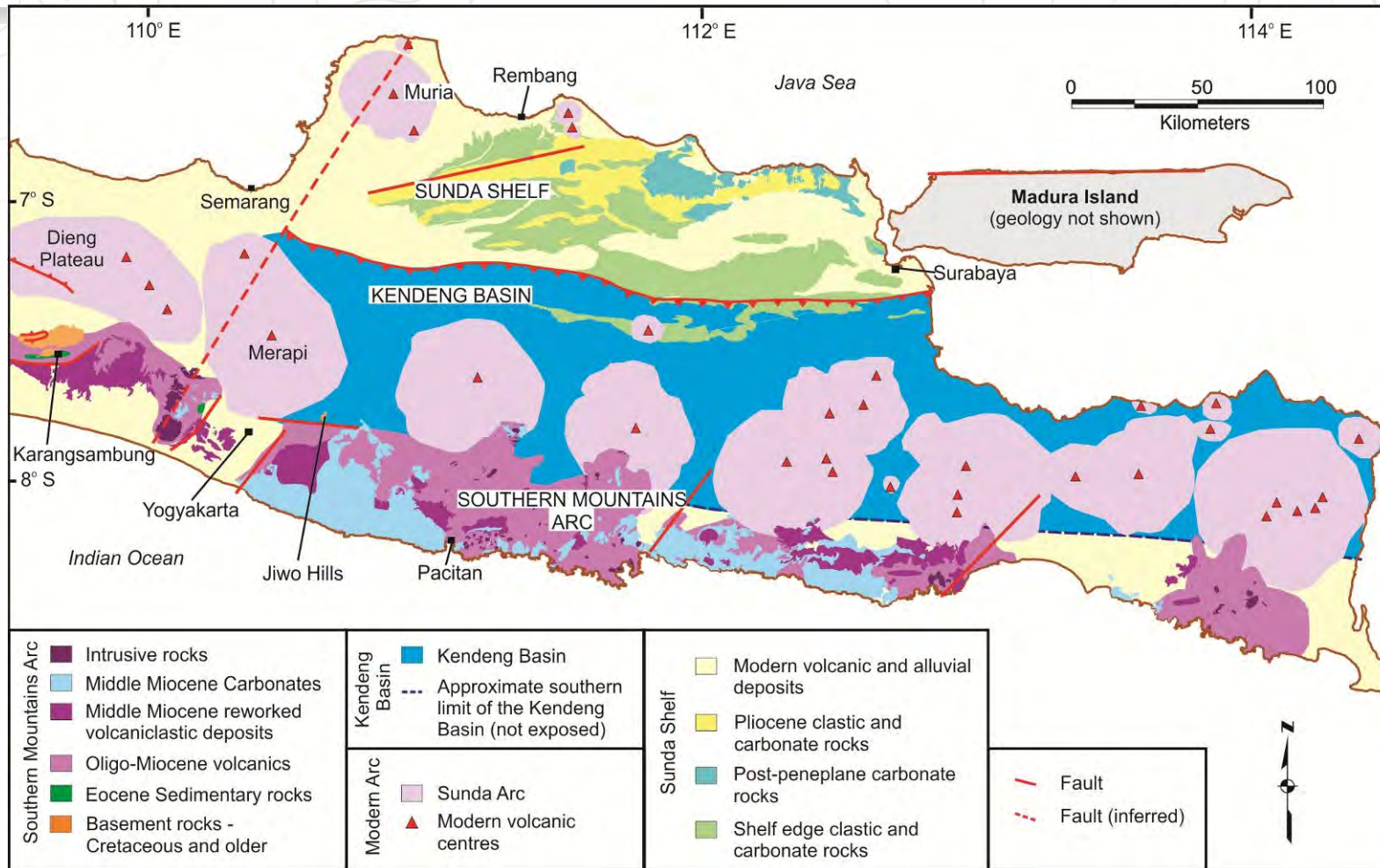
# Location and Access from Denpasar







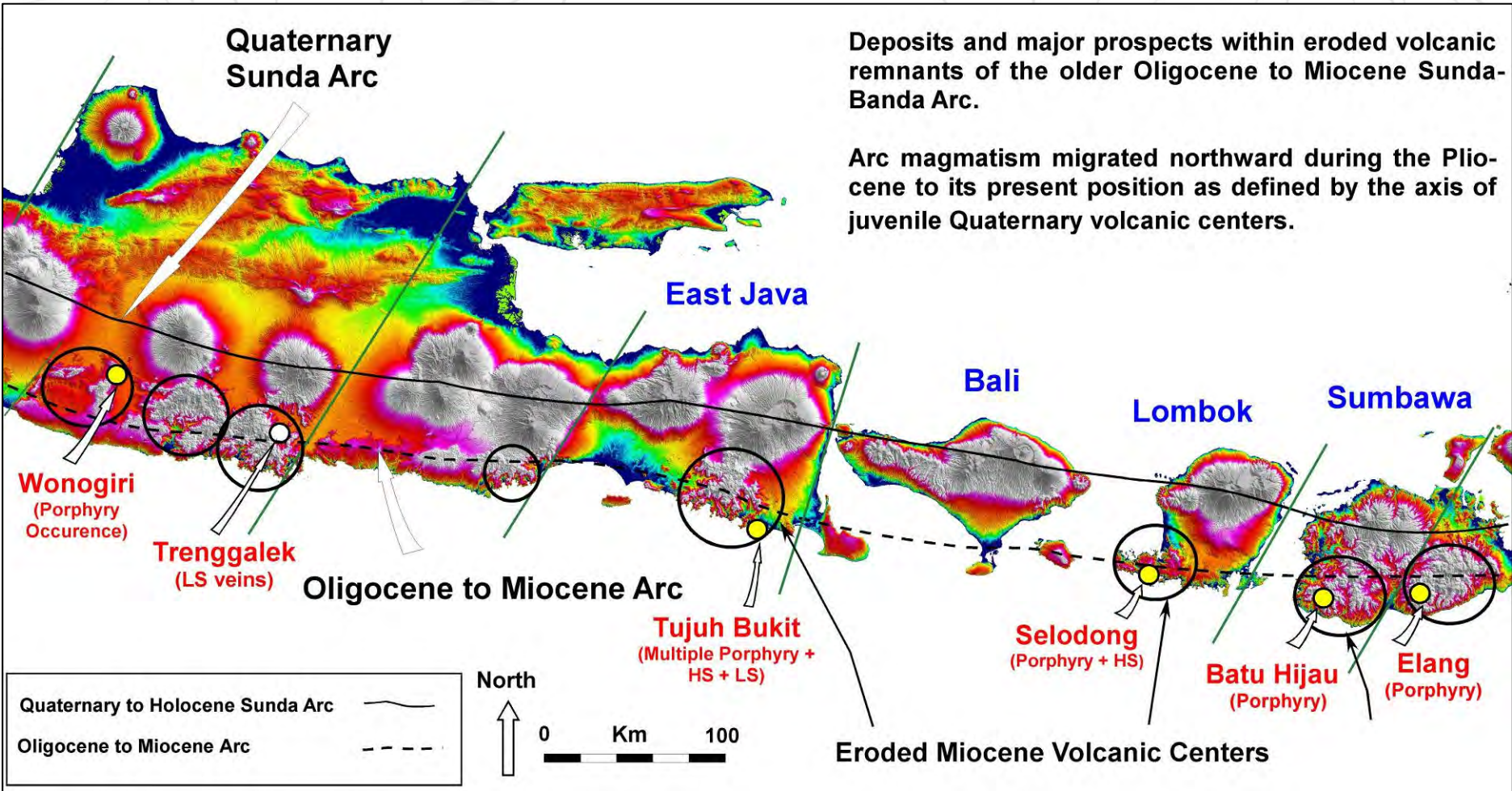
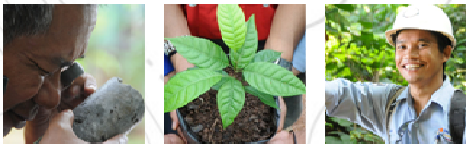
# Southern Mountains Arc



Source: Smyth et.al. 2007



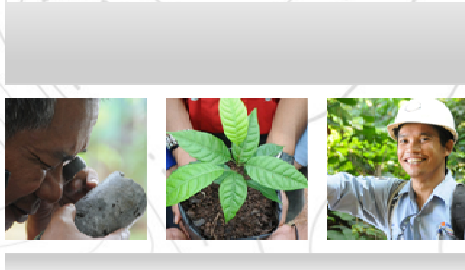
# Emerging Fertile Segment of the Deeply Eroded Miocene Sunda Arc



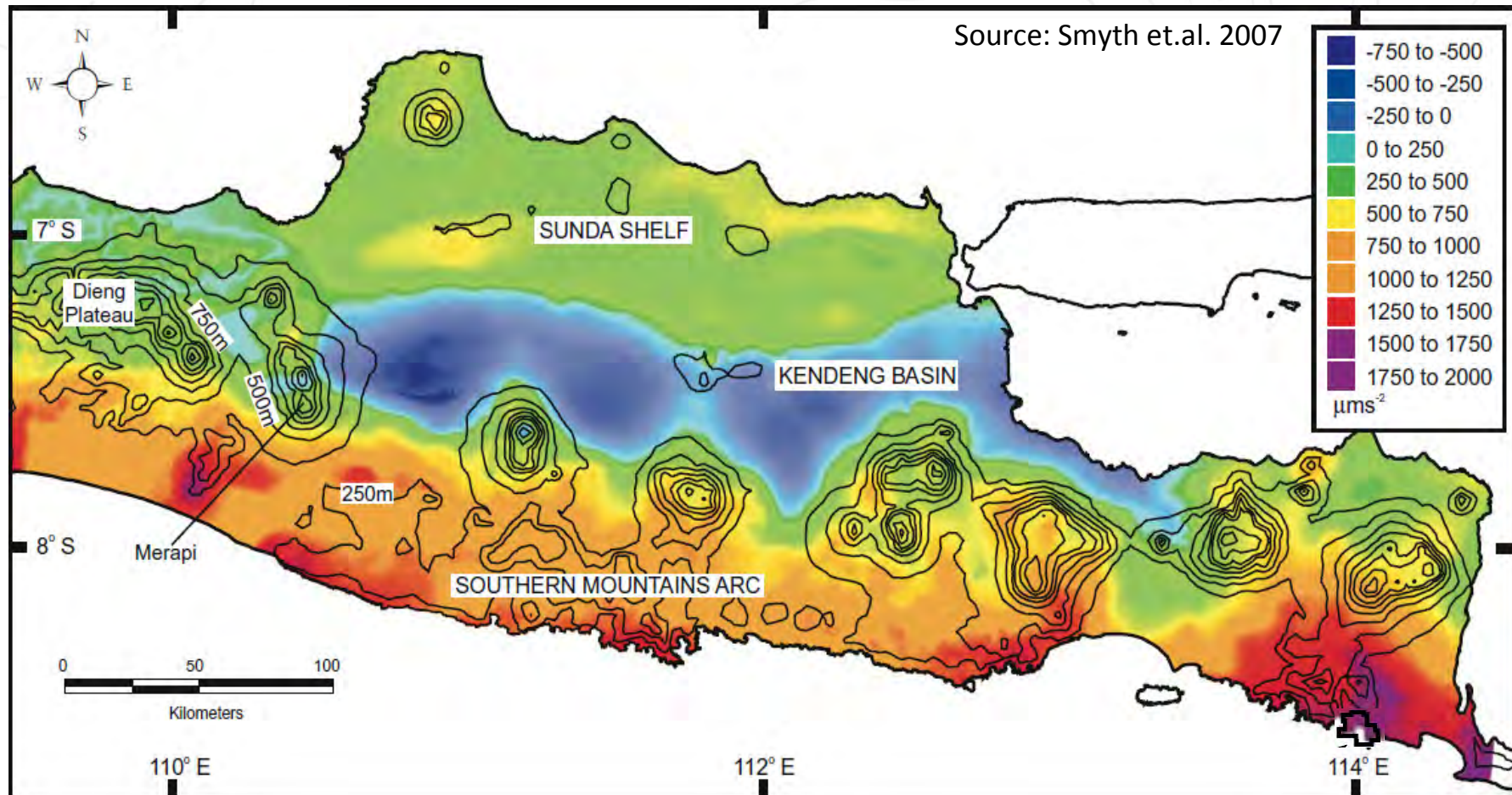
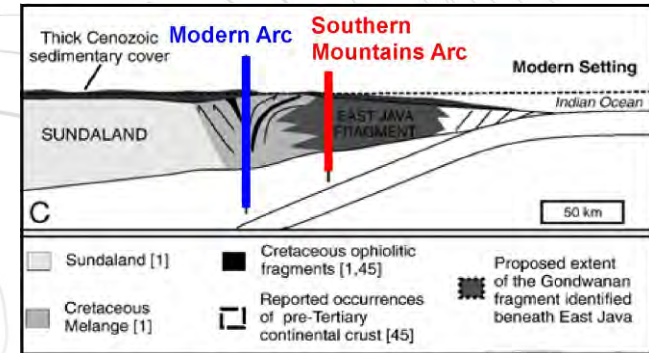
Deposits and major prospects within eroded volcanic remnants of the older Oligocene to Miocene Sunda-Banda Arc.

Arc magmatism migrated northward during the Pliocene to its present position as defined by the axis of juvenile Quaternary volcanic centers.



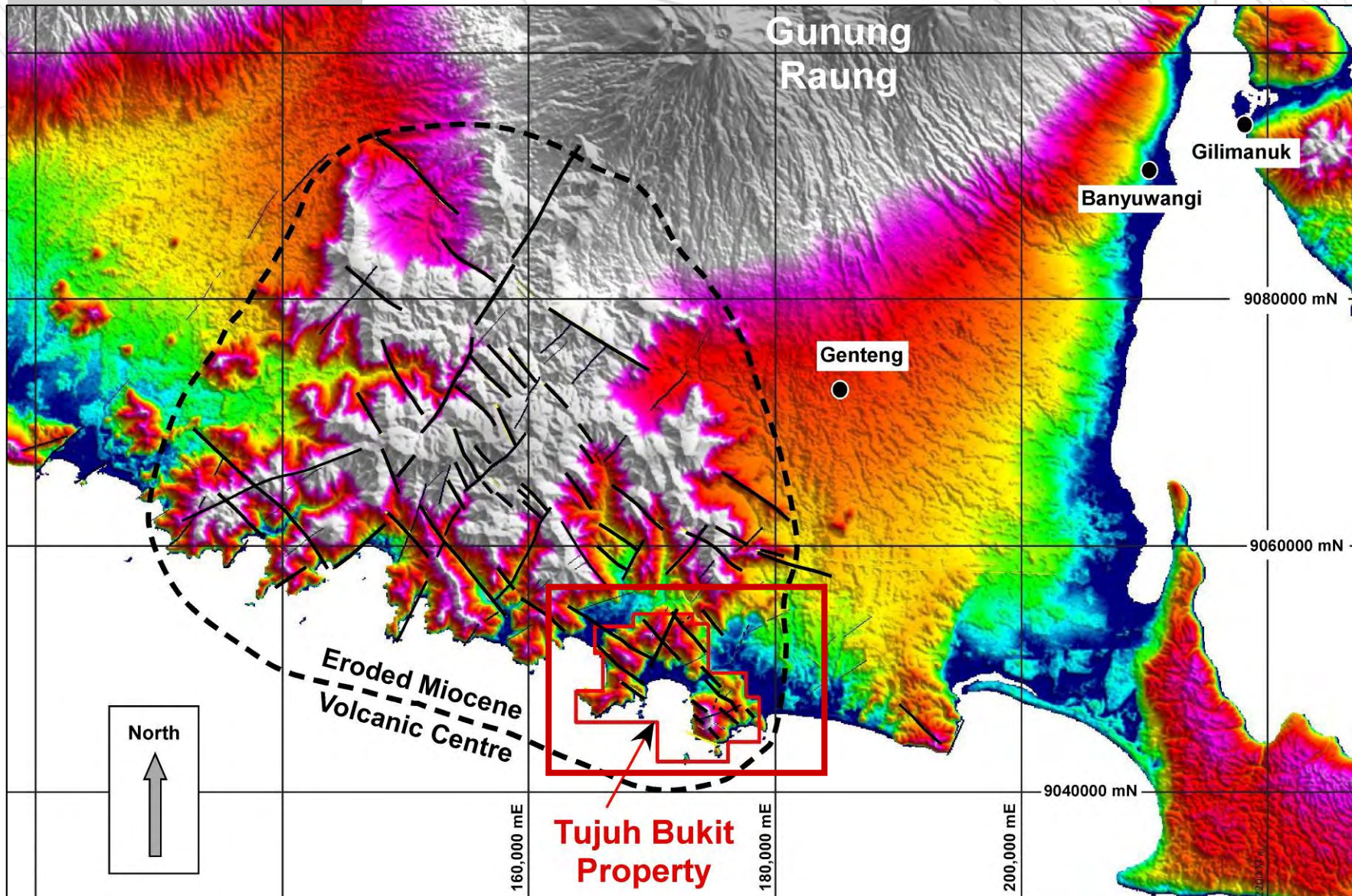


# Bouguer Gravity East Java



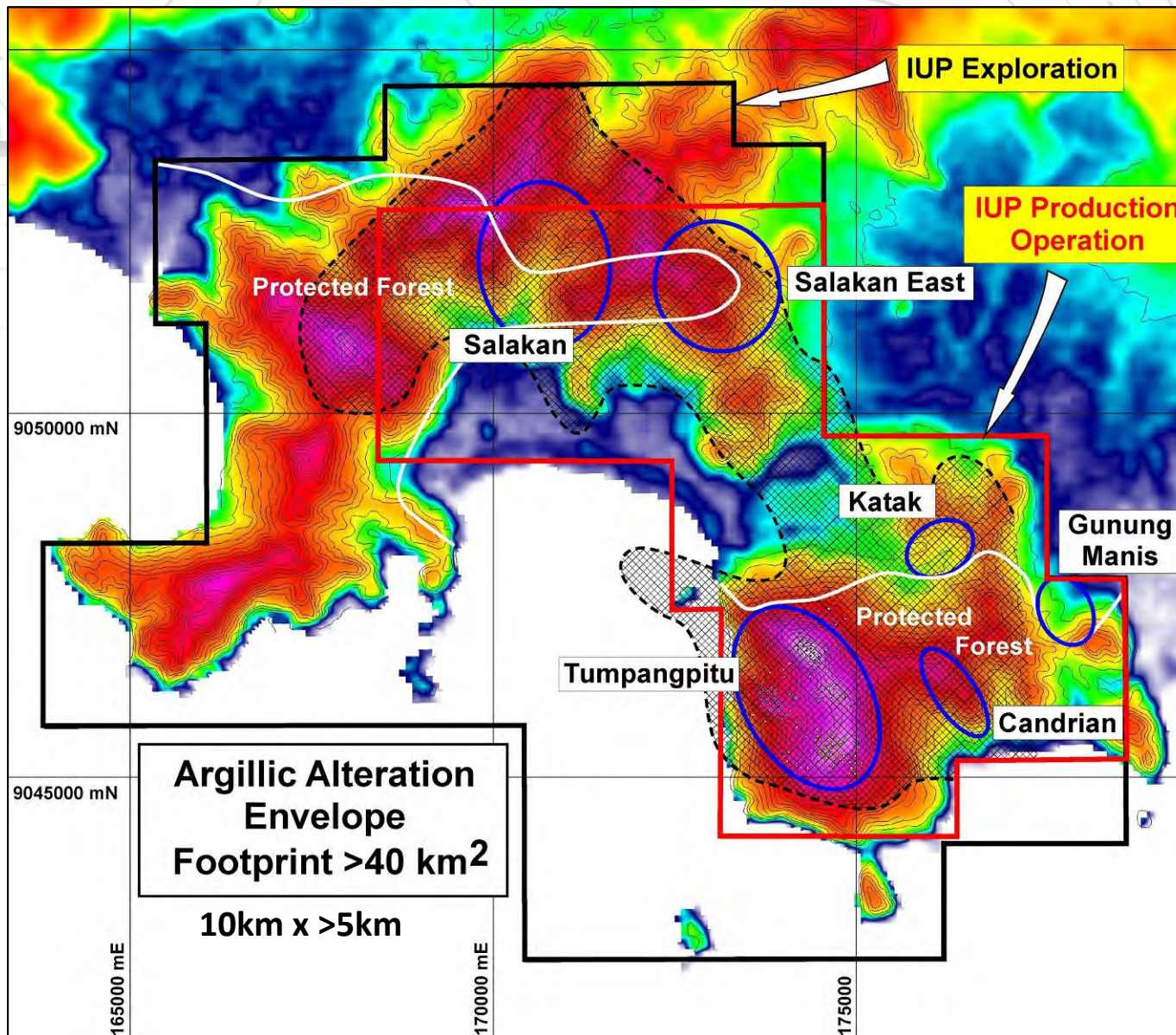


# Deeply Eroded Andesitic-Dacitic Volcanic Centre



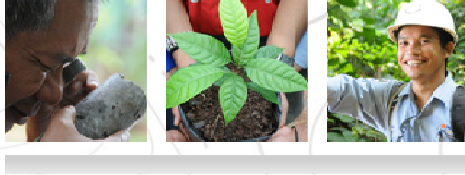


# Permitting and Prospect Locations





# Intrepid – IMN Exploration (2007-2011)



\* The Tujuh Bukit property was visited by M.Norris and B.Rohrlach in August 2006.

Interest in the property was consequently triggered by:

1. **EXTENSIVE DISTRICT-SCALE ALTERATION** (~40 km<sup>2</sup>)  
Overlapping large magmatic-hydrothermal systems.
2. **EVIDENCE OF 2 PORPHYRY SYSTEMS** (P.Merah Is. & Salakan)
3. **BRECCIATION INTENSITY AND EXTENT** - Multi-phase brecciation.
4. **ENCOURAGING EARLY-STAGE DRILL RESULTS** by GVM and Placer.
5. **FERTILE ARC SEGMENT** – Batu Hijau, Elang.  
Regional geochemical & magnetic data indicating multiple apical stock positions.

**Drilling started in September 2007. Initial aim of putting together a Au-Ag oxide resource**

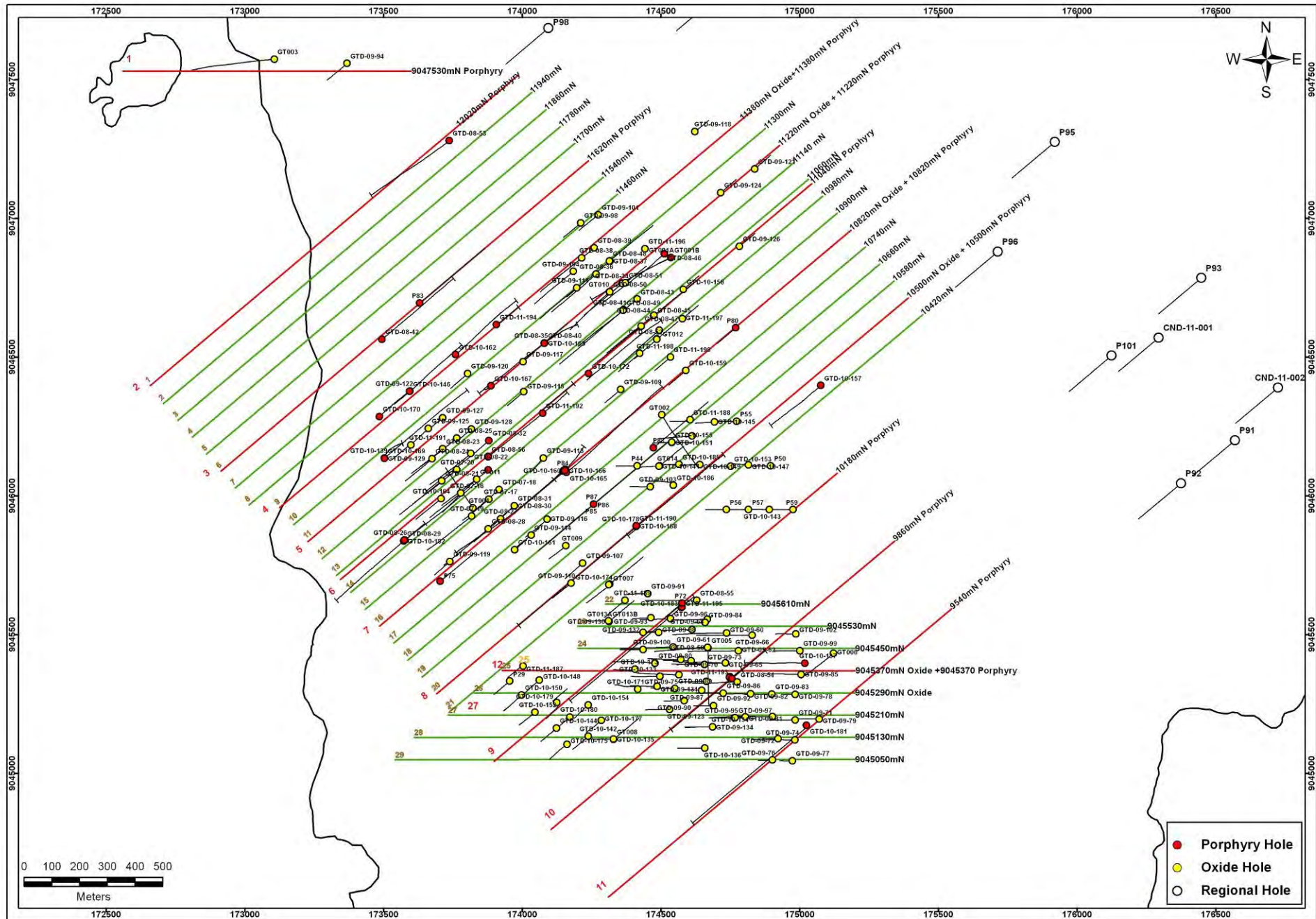


**As of May, Intrepid Mines have drilled 215 holes at Tujuh Bukit for 74,517 m:**

Tumpangpitu Oxide –	146 holes	– 35,250 m
Tumpangpitu Porphyry –	34 holes	– 30,330 m
Katak Porphyry –	5 holes	1,835 m
Candrian -	5 holes	2,508 m
Geotech	8 holes	421 m

**7 drill rigs (Maxidrill) – Tumpangpitu, Candrian, Gunung Manis**





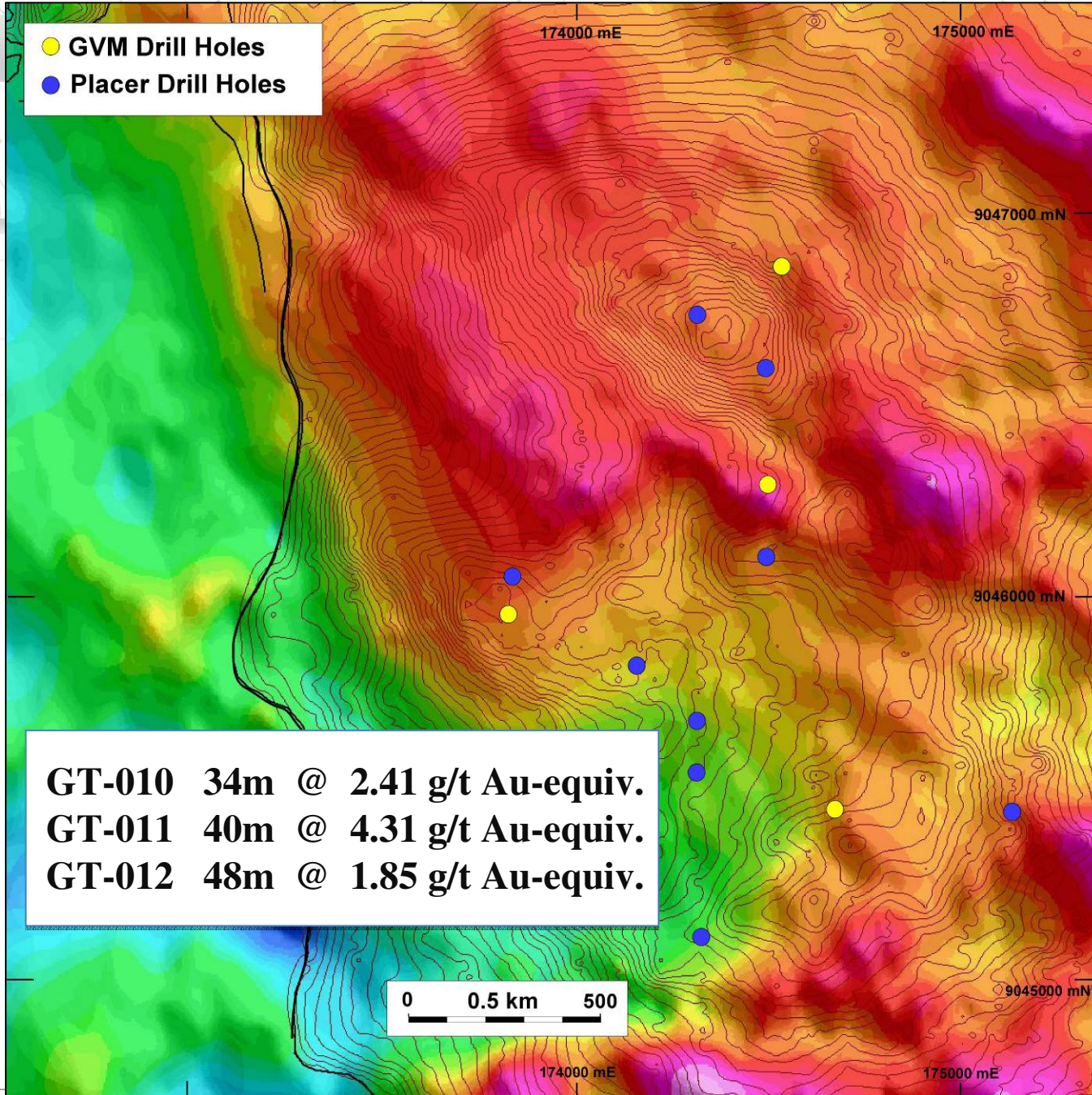


# Tumpangpitu Cu-Au-Mo Porphyry System





- GVM Drill Holes
- Placer Drill Holes



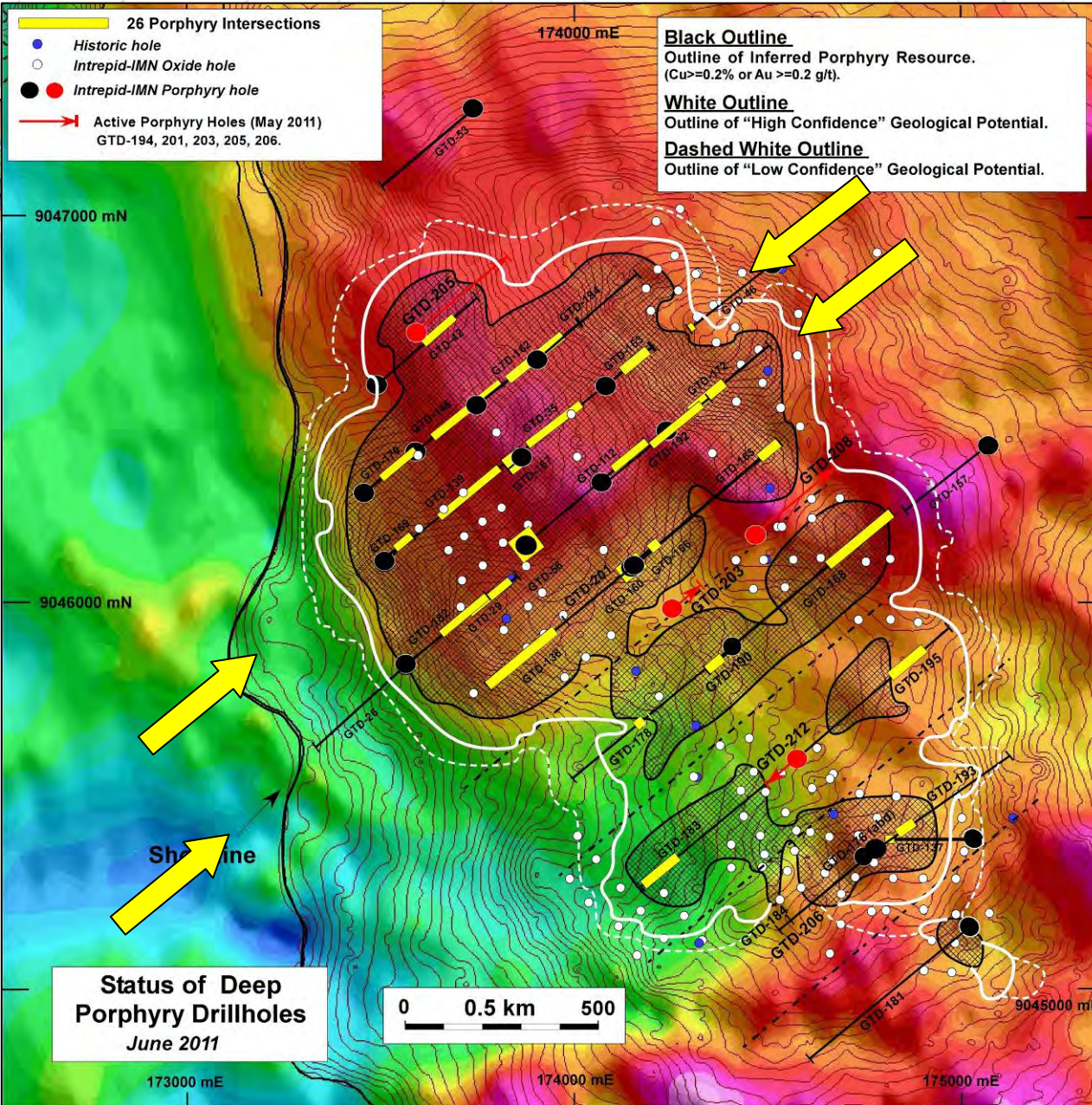
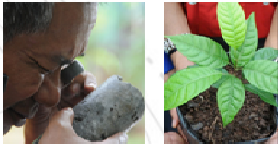
**GT-010 34m @ 2.41 g/t Au-equiv.**  
**GT-011 40m @ 4.31 g/t Au-equiv.**  
**GT-012 48m @ 1.85 g/t Au-equiv.**

0 0.5 km 500



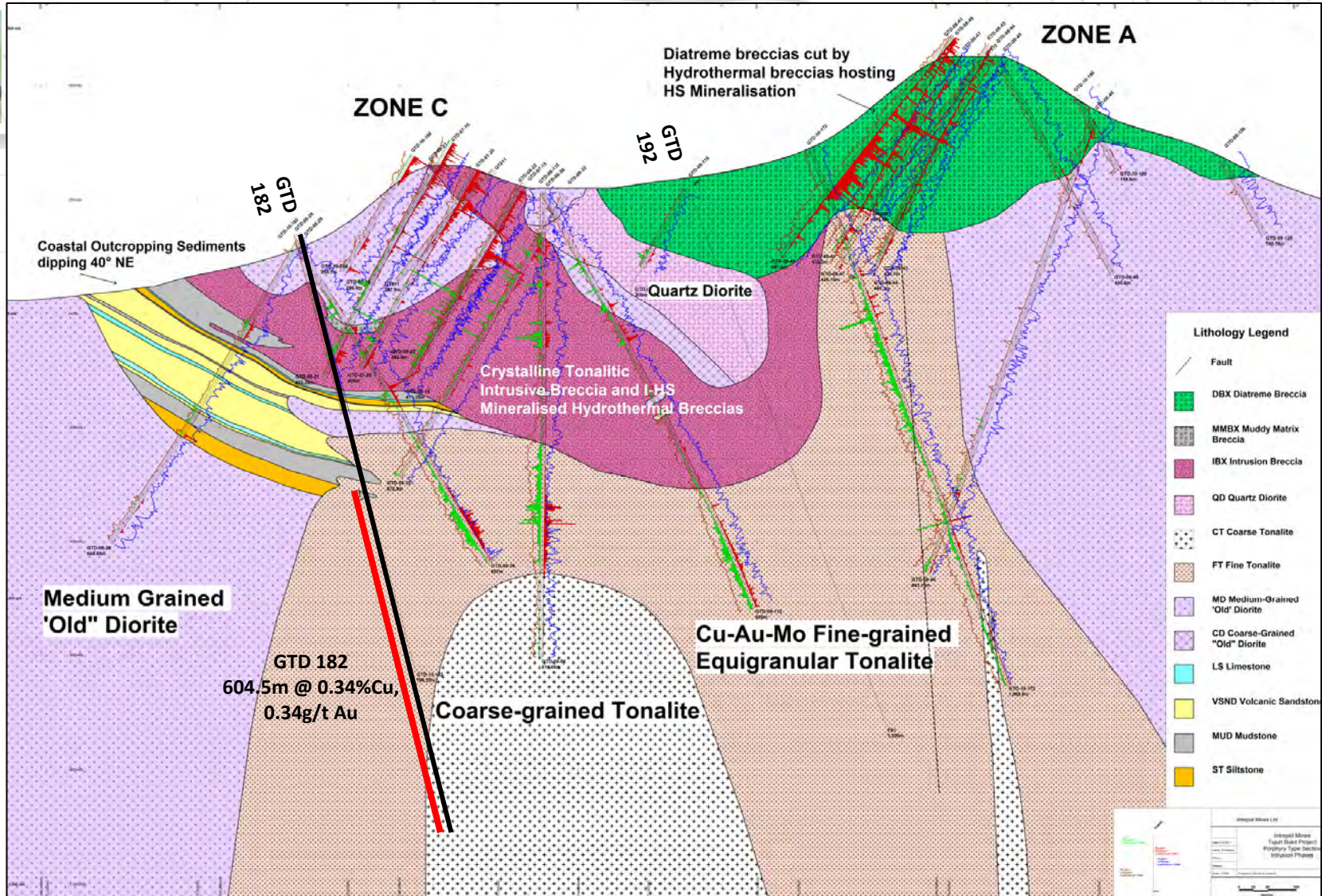






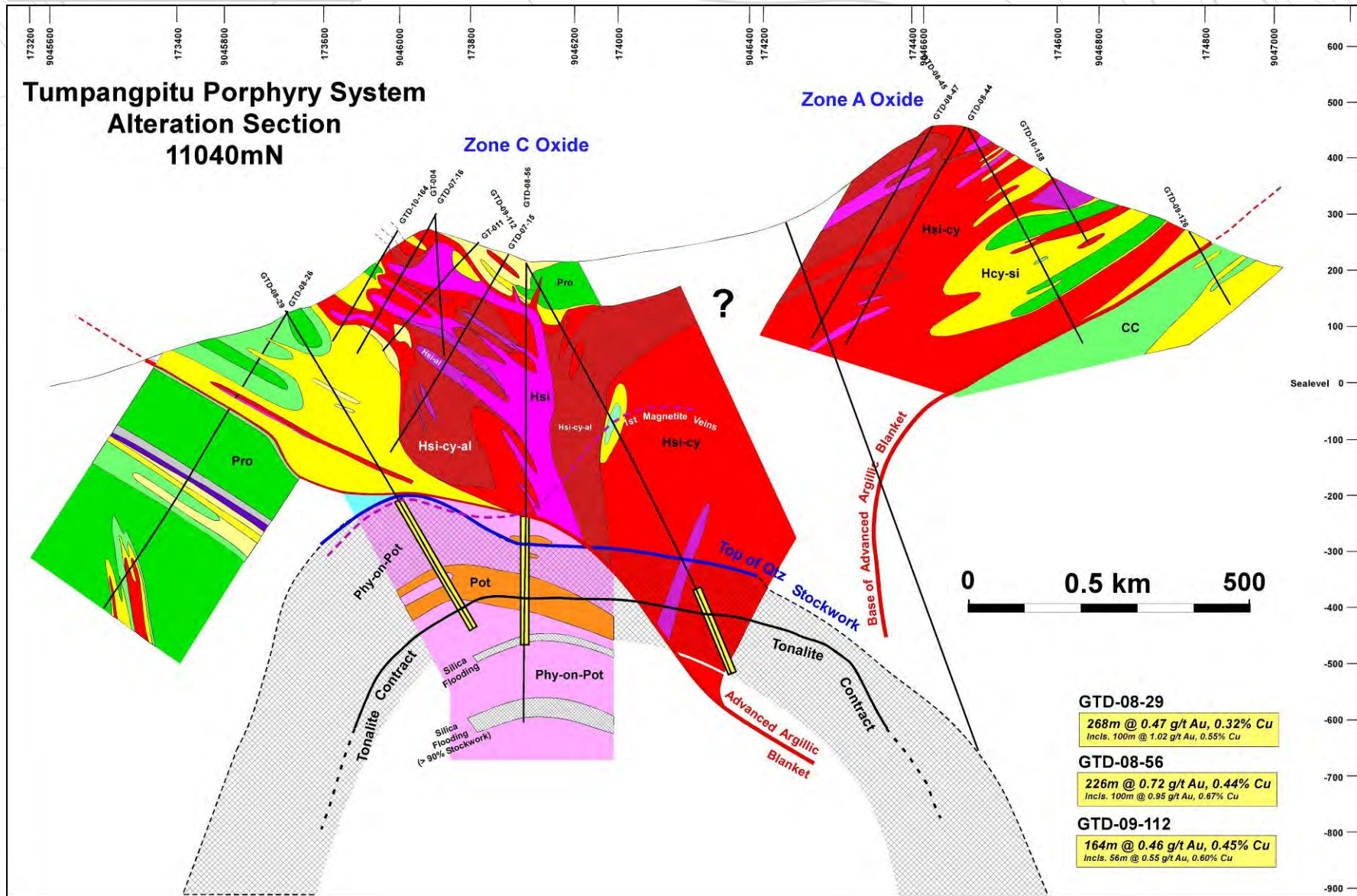


# Lithology Cross-Section 11060 mN



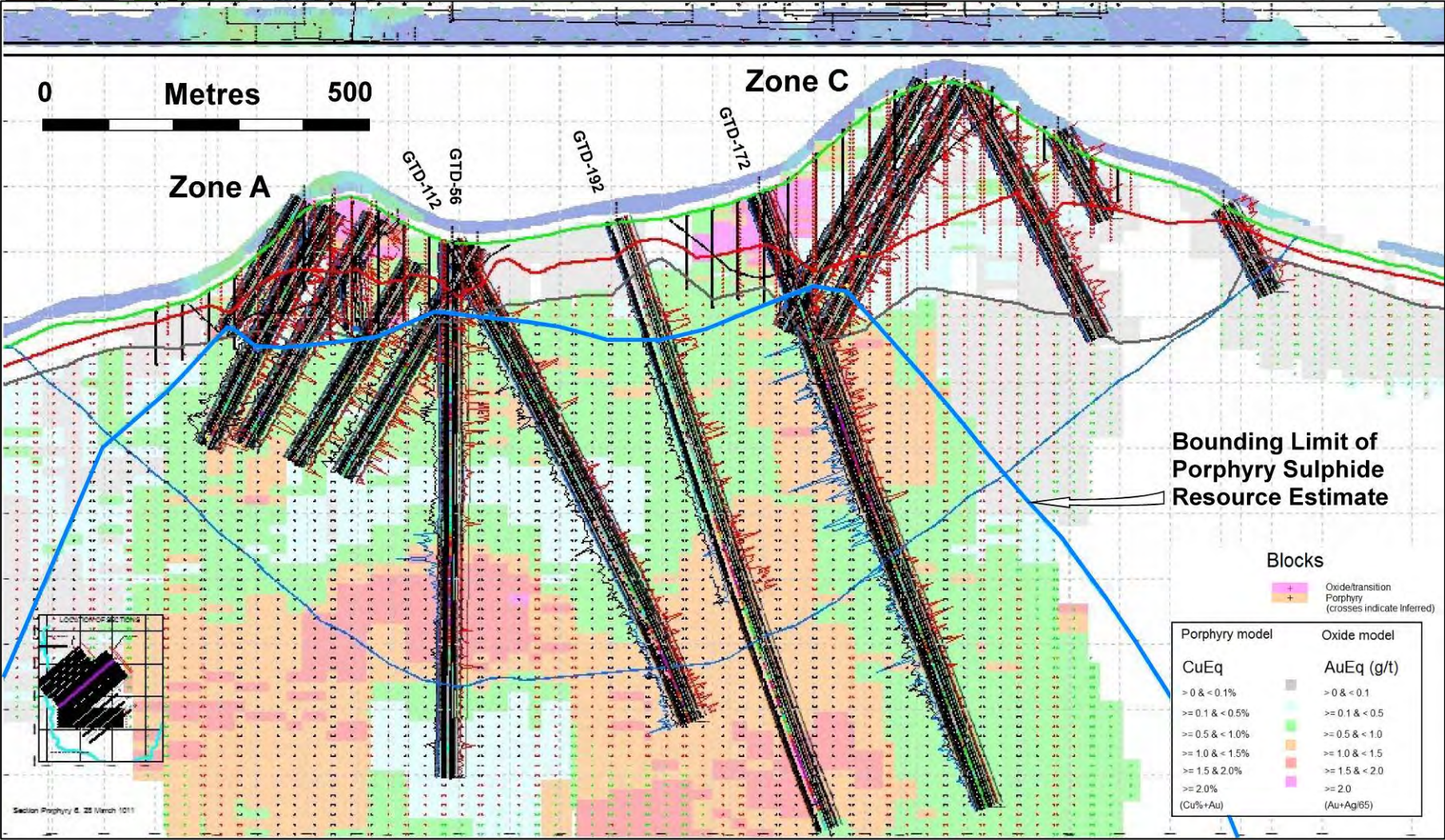


# Alteration Cross-Section 11040 mN



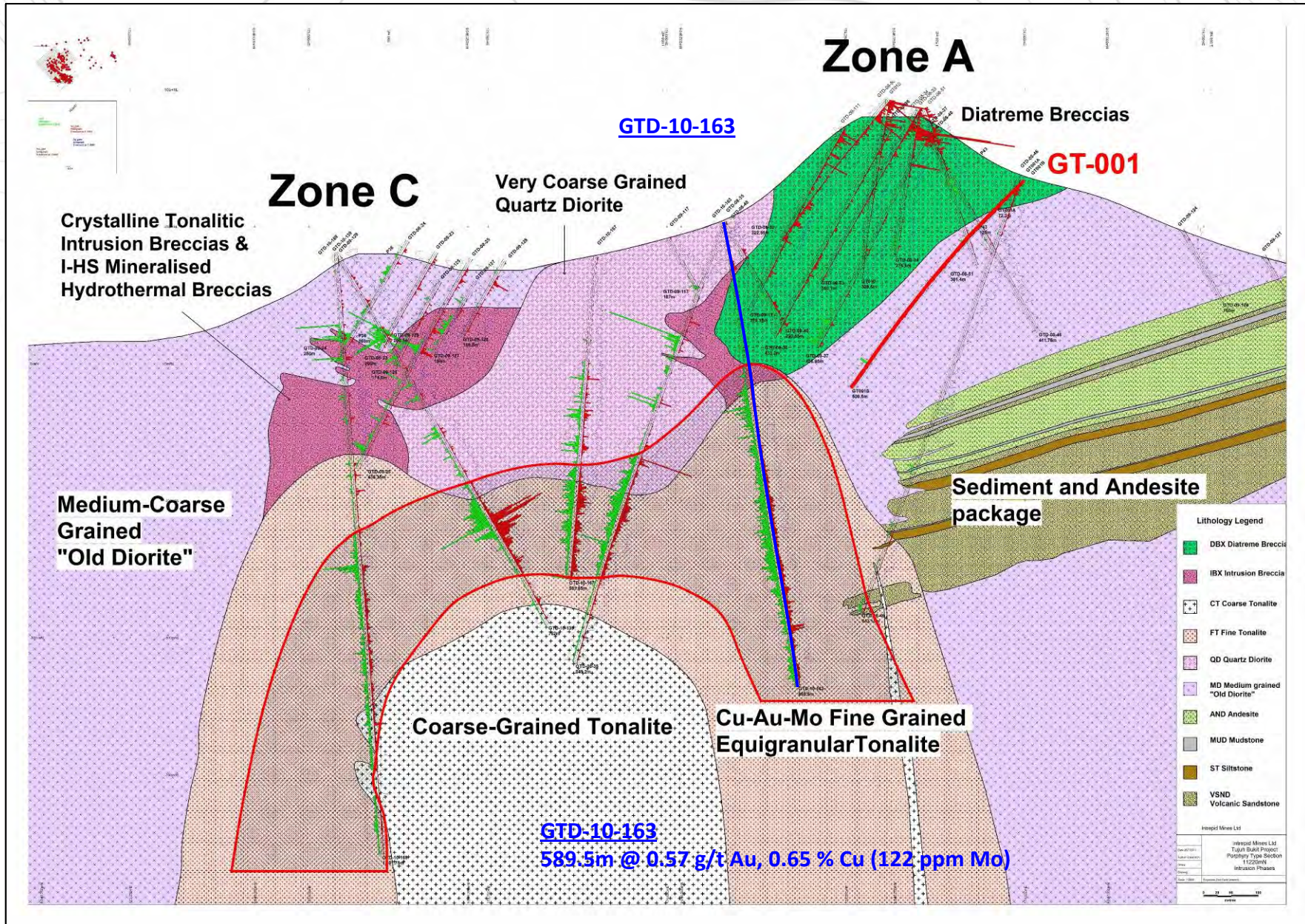


# Resource Cross-Section 11040 mN





# GVM Drill Hole GT-001: An ~80m near miss



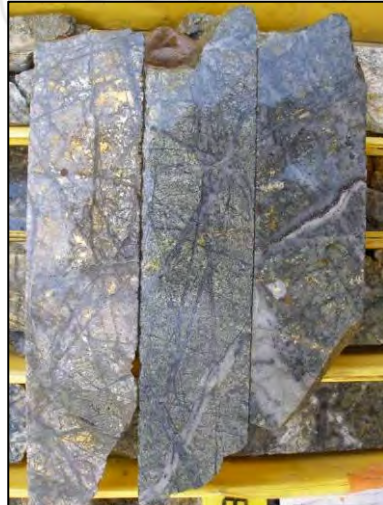


# GTD-08-29 core (1<sup>st</sup> Porphyry Intersection)

268m @ 0.47 g/t Au, 0.32% Cu  
(incls. 100m @ 1.02 g/t Au, 0.55 % Cu)



A-veins with Mt-Kspar



Stockwork in Mt-Chl +/- Se



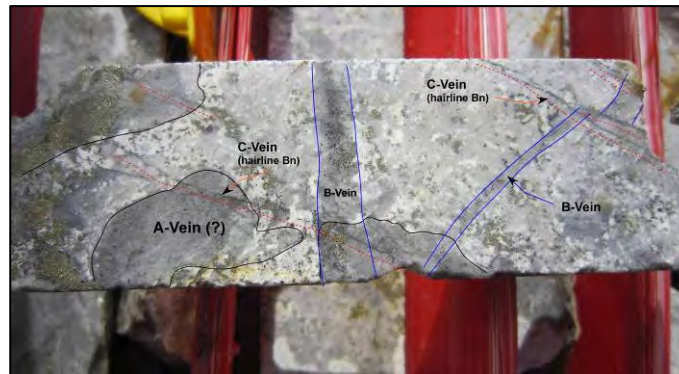
Sheeted veins in sediments



M and B veins in Kpar-Mt alt.



GTD-08-42: Sheeted Qtz-Mt veins

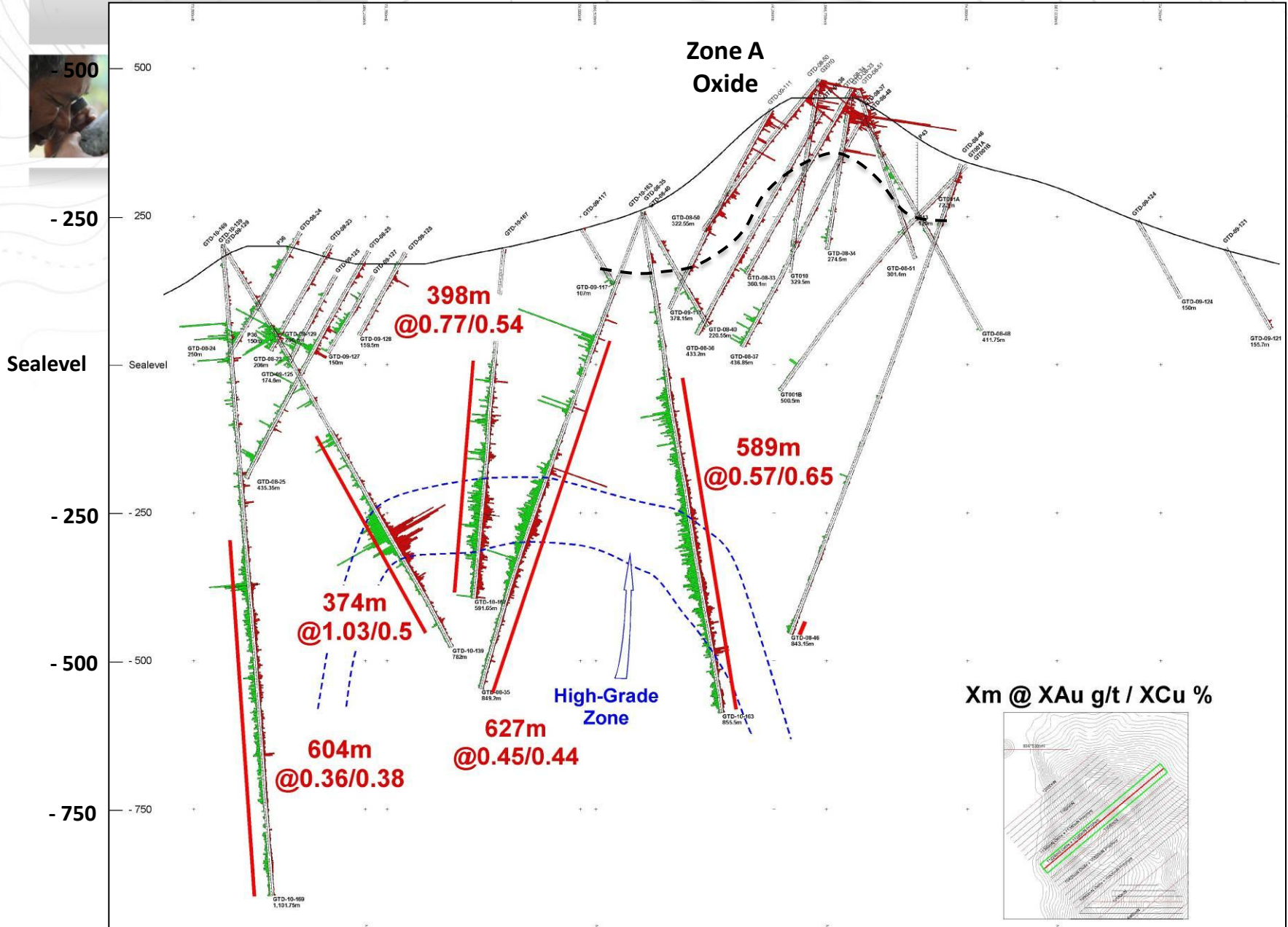


GTD-09-112: A, B, C veins



GTD-09-139









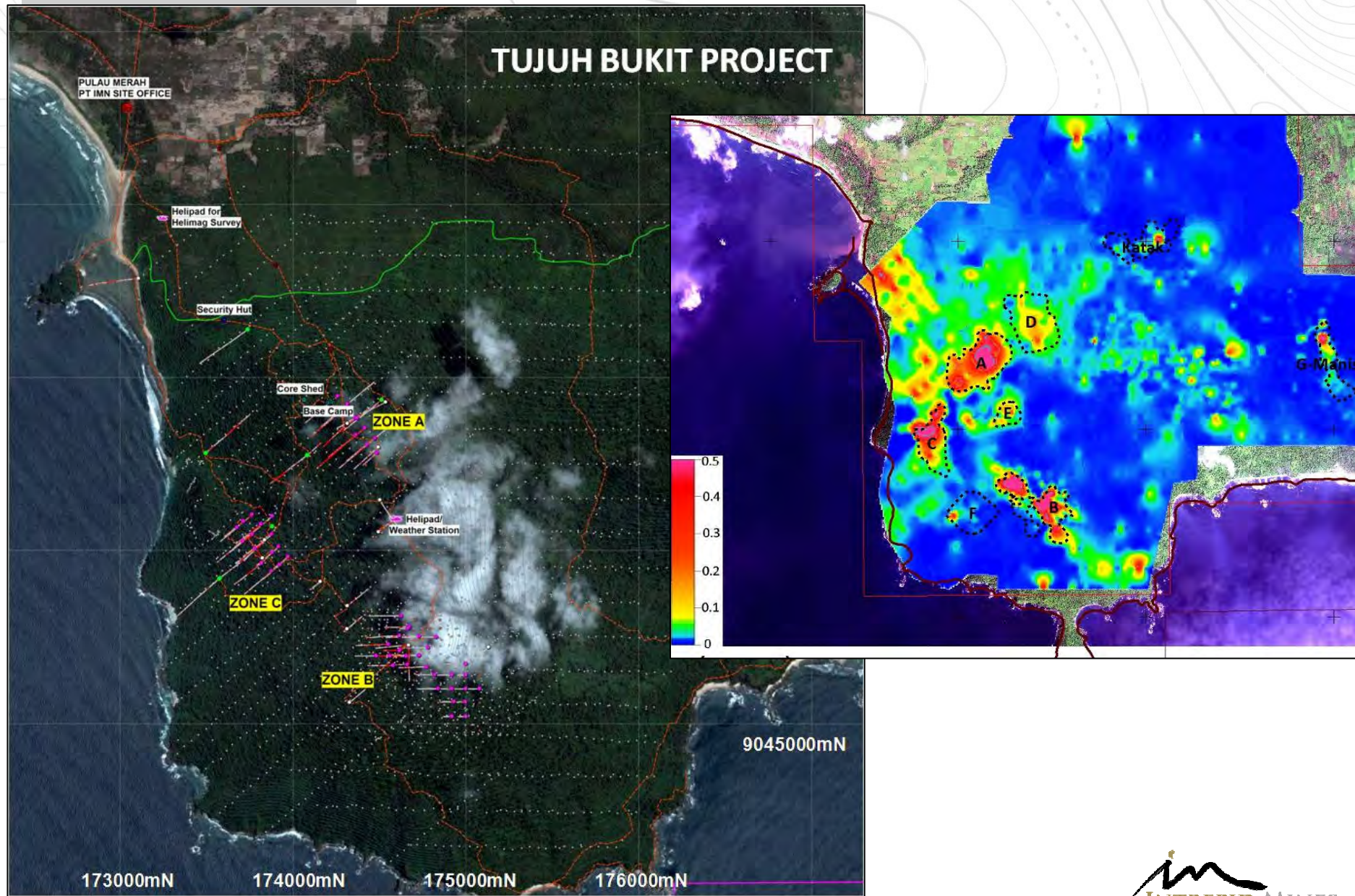






# Tumpangpitu Au-Ag Oxide System

# Soil Au Anomalies and Oxide Zones A-B-C, E-F







## High-Sulphidation Oxide Zones

### Main Features of the Oxide Au-Ag "cap"

**Au + Ag enriched (2-3X).**

**Cu totally leached from surface to between 20-300m depth.**

**Oxide mineralization coincides with NW-trending ridges of leached vuggy silica developed within volcanic breccias.**

**Surface geochemistry (Au, Ag, As, Sb +/- Pb).**

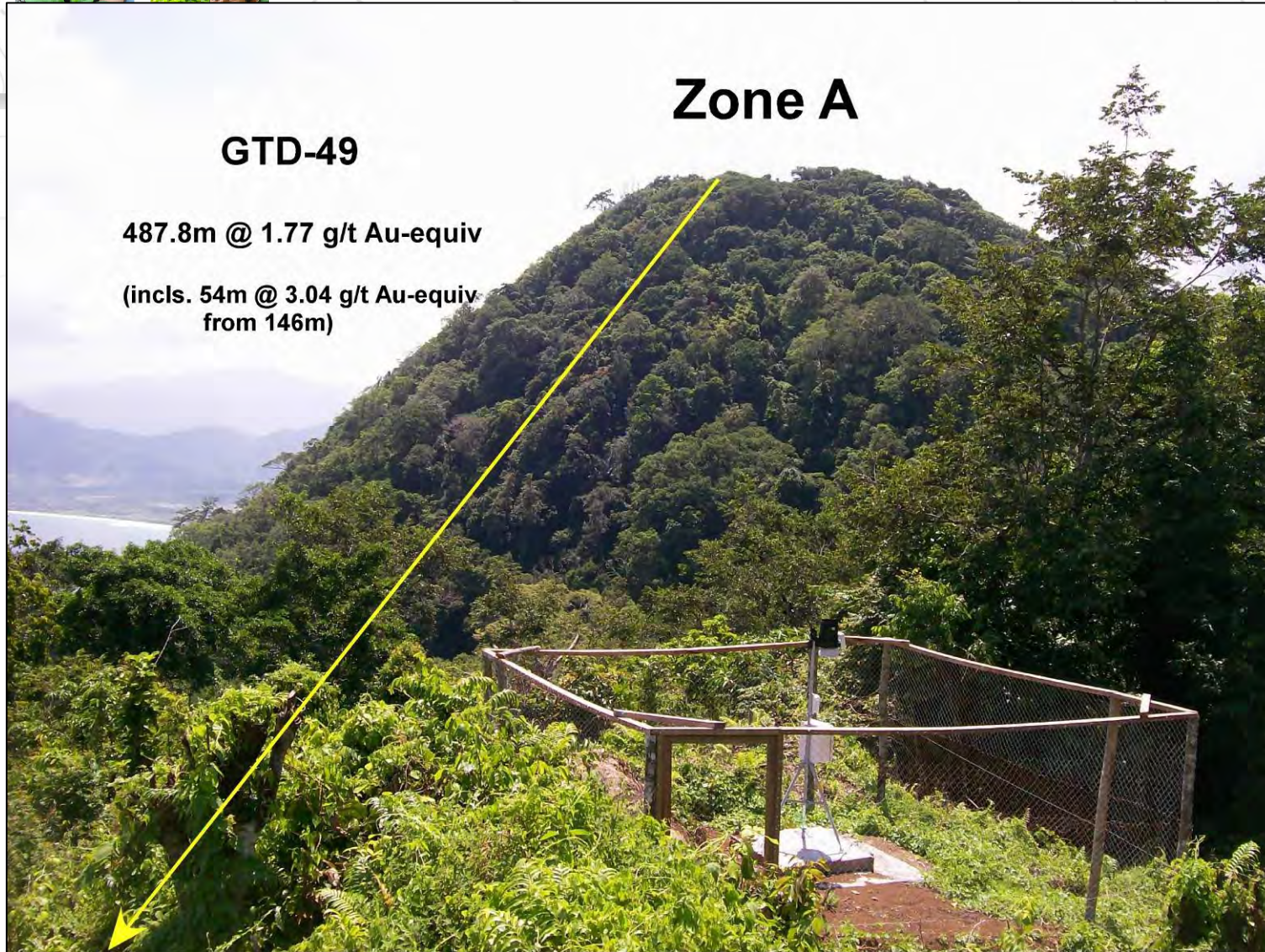
**Zn leached in Adv-Arg zones.**

**Au grade increases in relation to increasingly Fe-oxide (Limonite-Goethite-Hematite) with increasing fracture intensity.**





# Looking north to Zone A



## Zone A

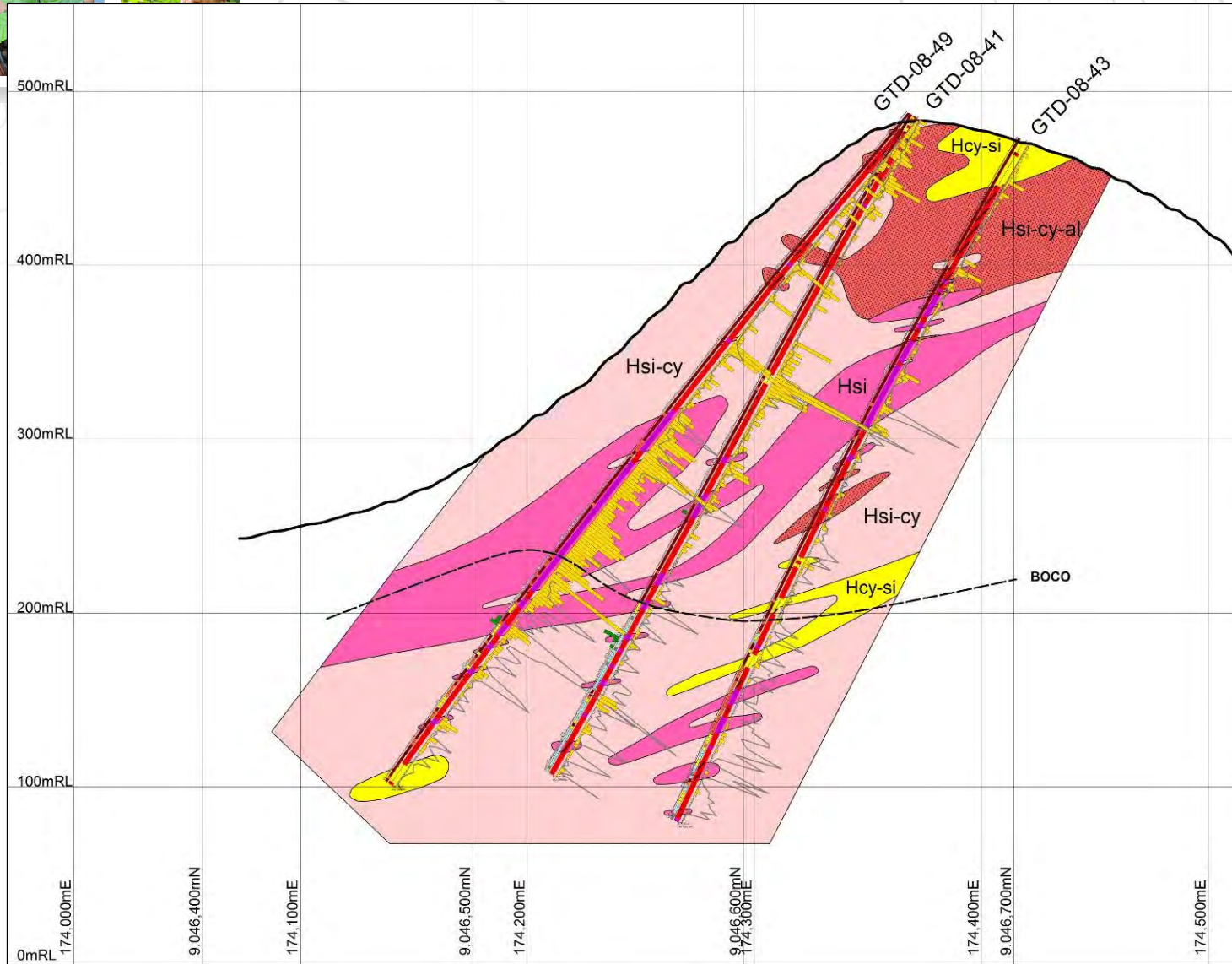
**GTD-49**

**487.8m @ 1.77 g/t Au-equiv**

**(incls. 54m @ 3.04 g/t Au-equiv  
from 146m)**

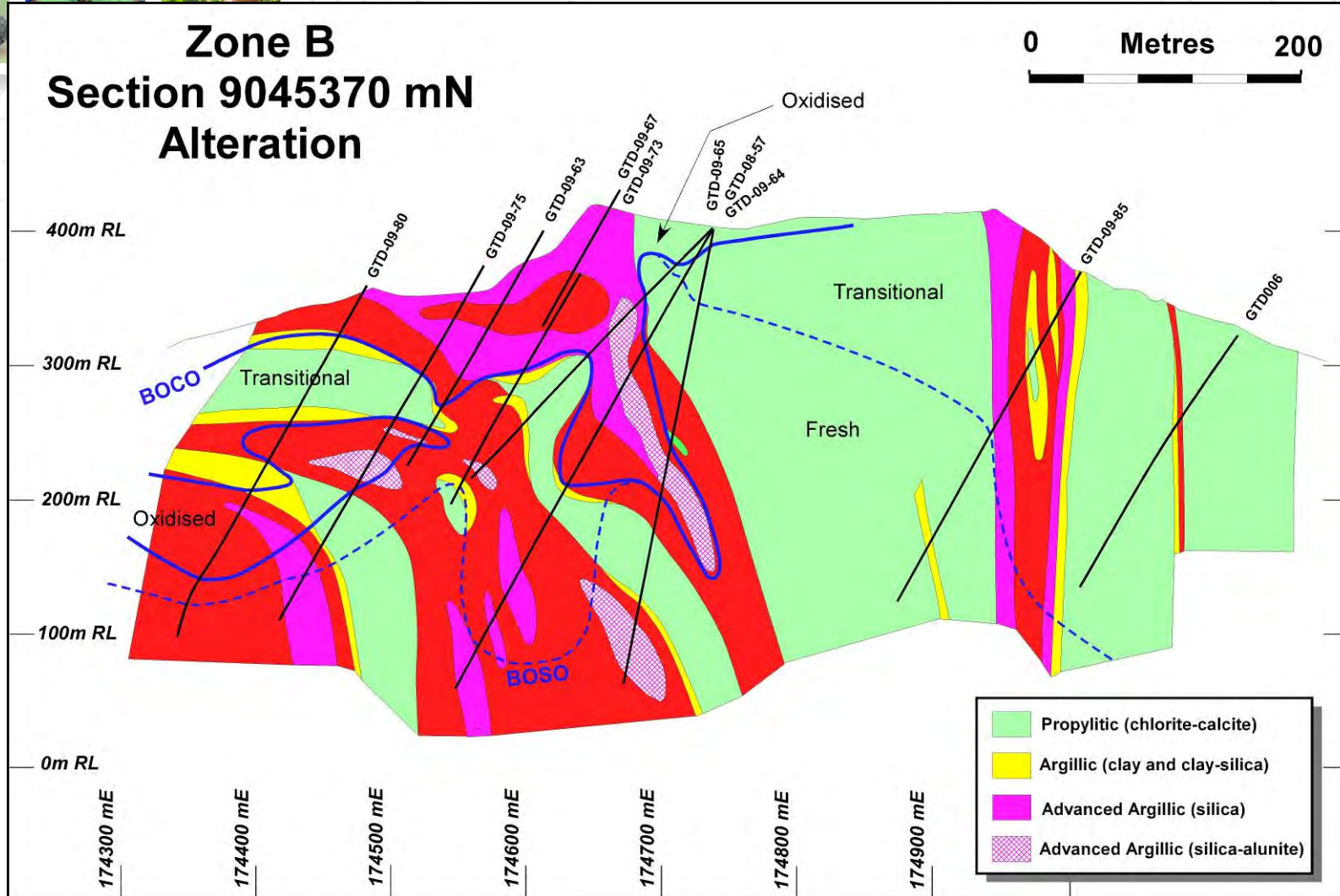


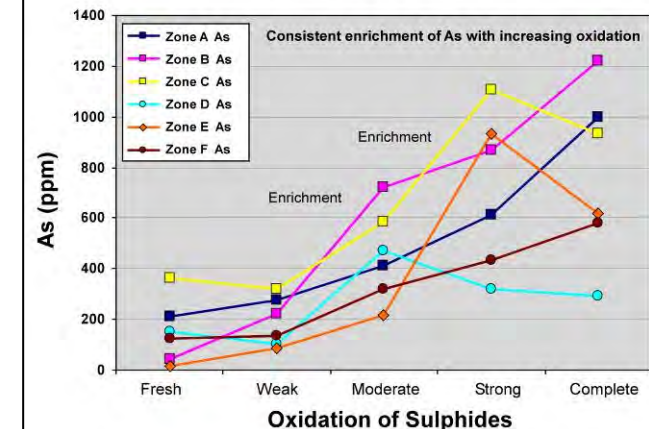
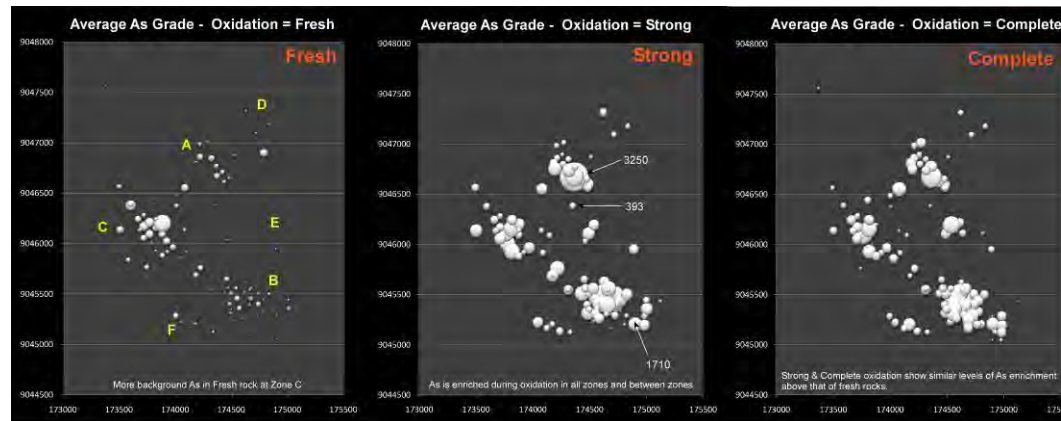
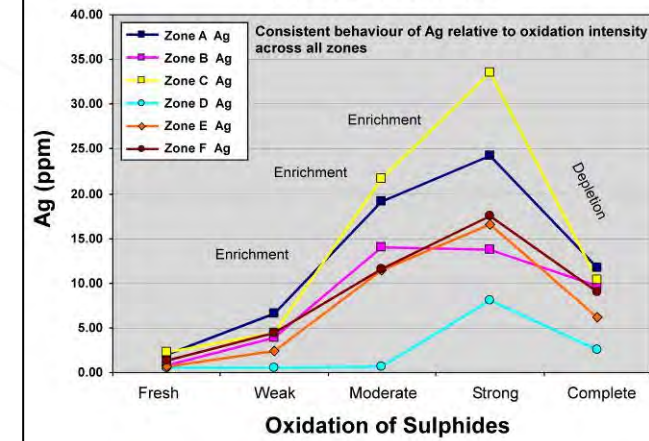
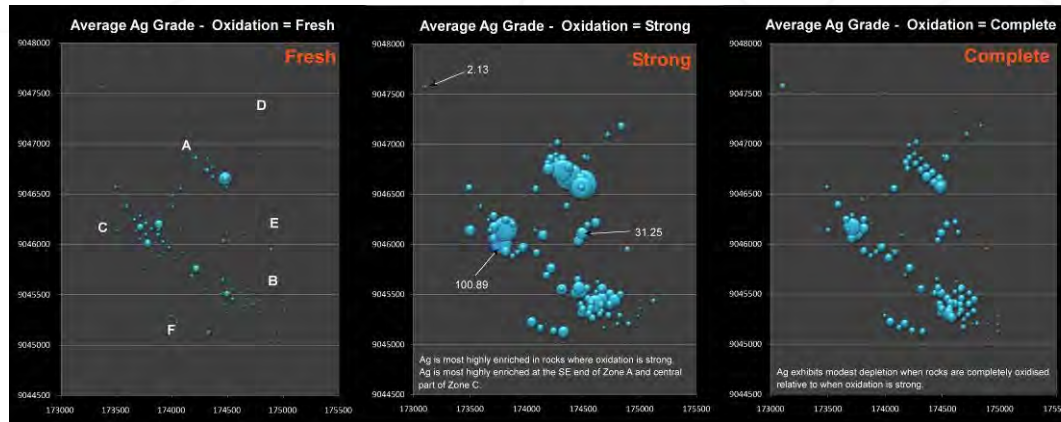
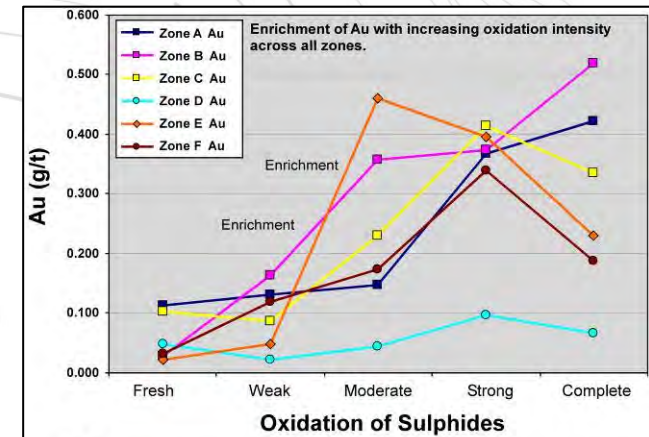
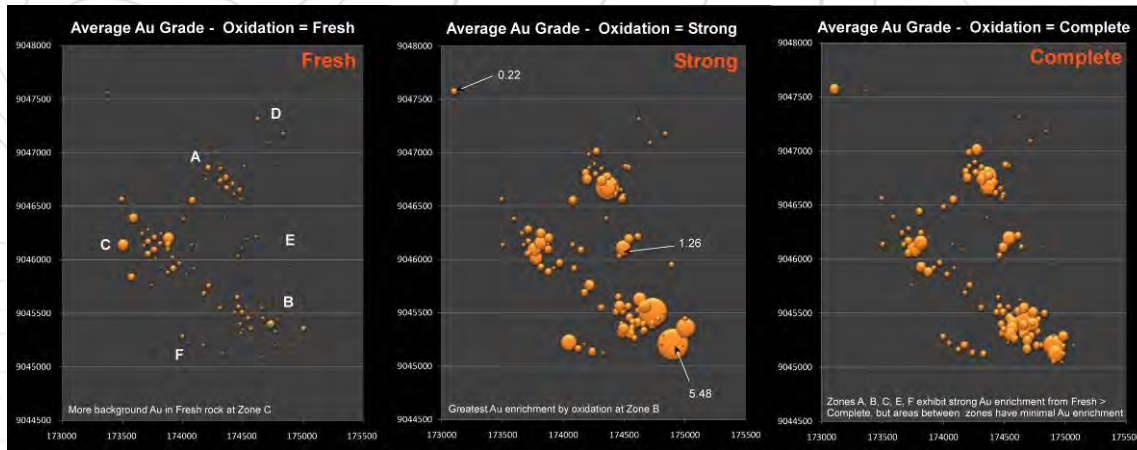
# Zone A – Alteration section





# Zone B Area – Structural Control on HS Lodes and Oxidation Profiles

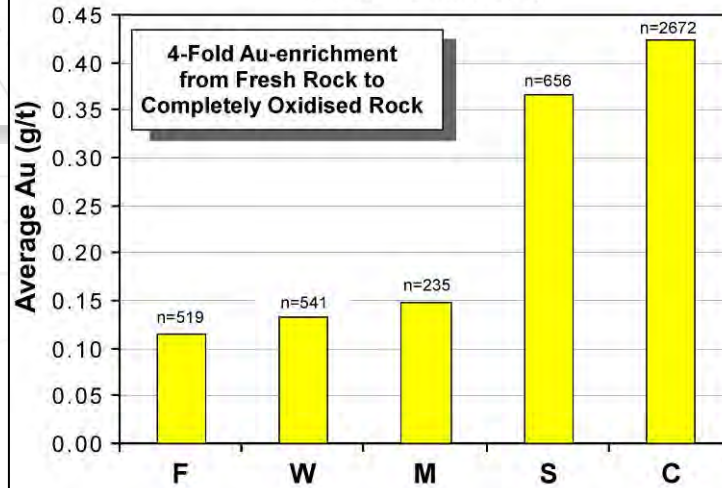




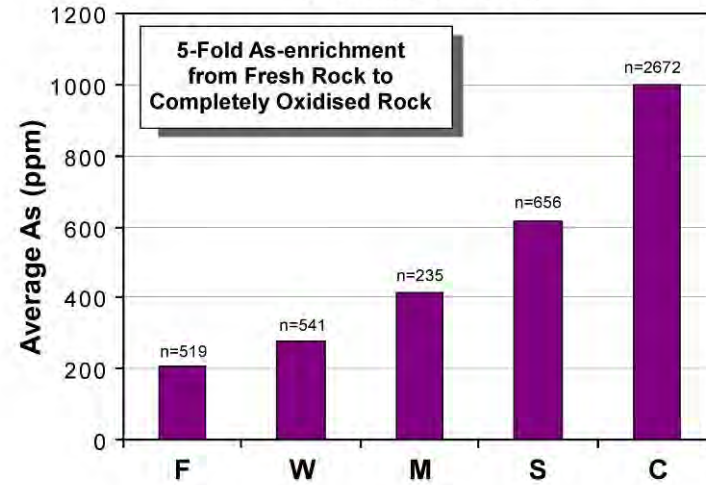




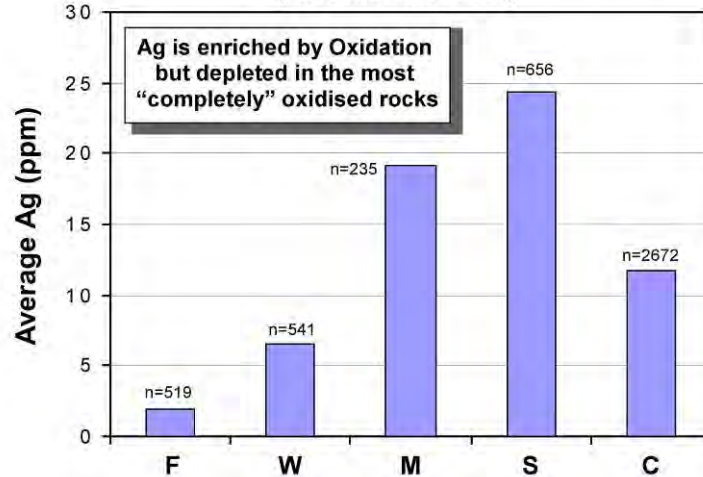
**Zone A Oxidation Intensity Vs Average Au  
(All Grade Intervals)**



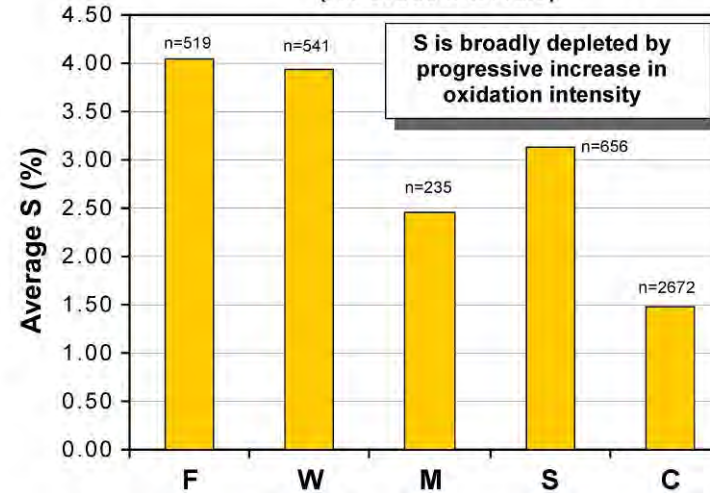
**Zone A Oxidation Intensity Vs Average As  
(All Grade Intervals)**



**Zone A Oxidation Intensity Vs Average Ag  
(All Grade Intervals)**

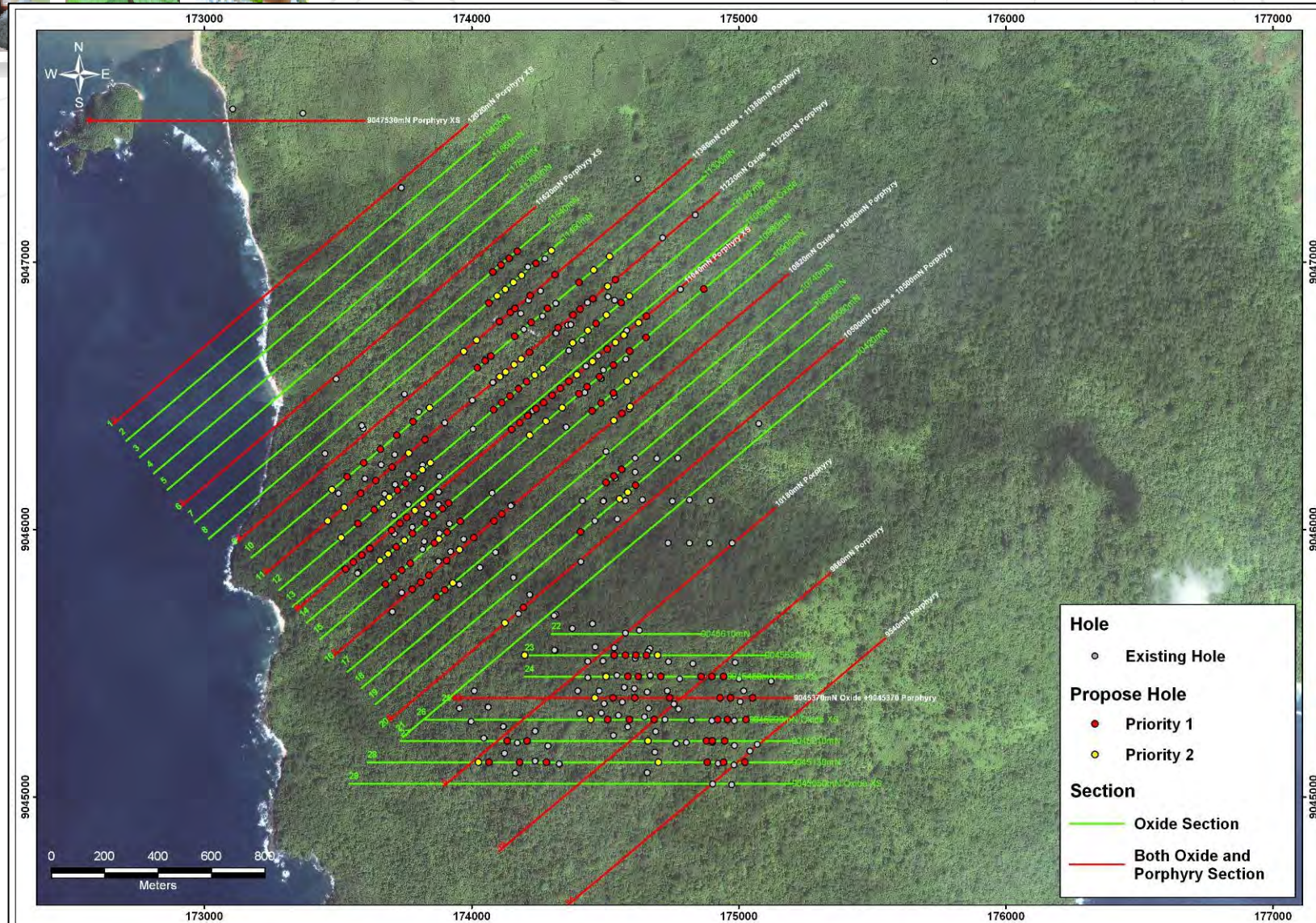


**Zone A Oxidation Intensity Vs Average S  
(All Grade Intervals)**





# Infill Proposed by Hellman & Schofield to upgrade oxide resource from Inferred to Indicated





# Oxidised High-Sulphidation Au-Ag Mineralization



GTD-07-17: Rebrecciation of tuffisite breccias



GTD-07-17: Vuggy acid-leached bx



GTD-08-49: Goe-Hem-Lm veins networks



GTD-09-102: Oxidised HS-sulphide bx vein



GTD-08-56: Sphalerite-Barite-Py-Cc bx veins in steep structures below BOCO.



GTD-10 -166: Banded Sphalerite-Barite-Py-Cc veins cut by dickite veins.



## Diatreme Facies (Zone B region)



GTD-09-60 (93.90m): Accretionary lapilli in milled breccia



GTD-09-88 (~120m): Charcoal wood being cycled downward in a diatreme vent.



GTD-09-107: Muddy-matrix breccias from a high-level diatreme maar lake facies.



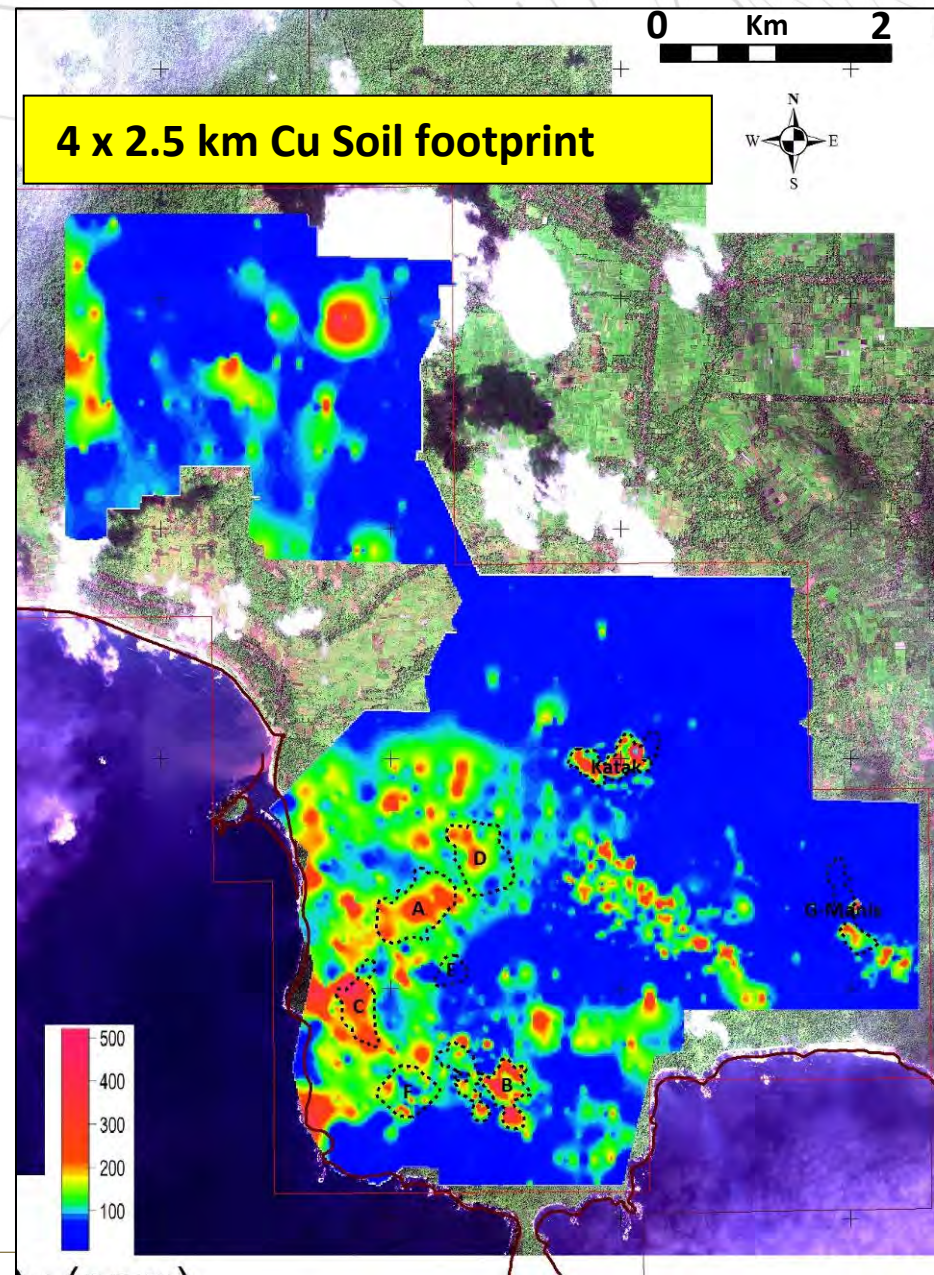
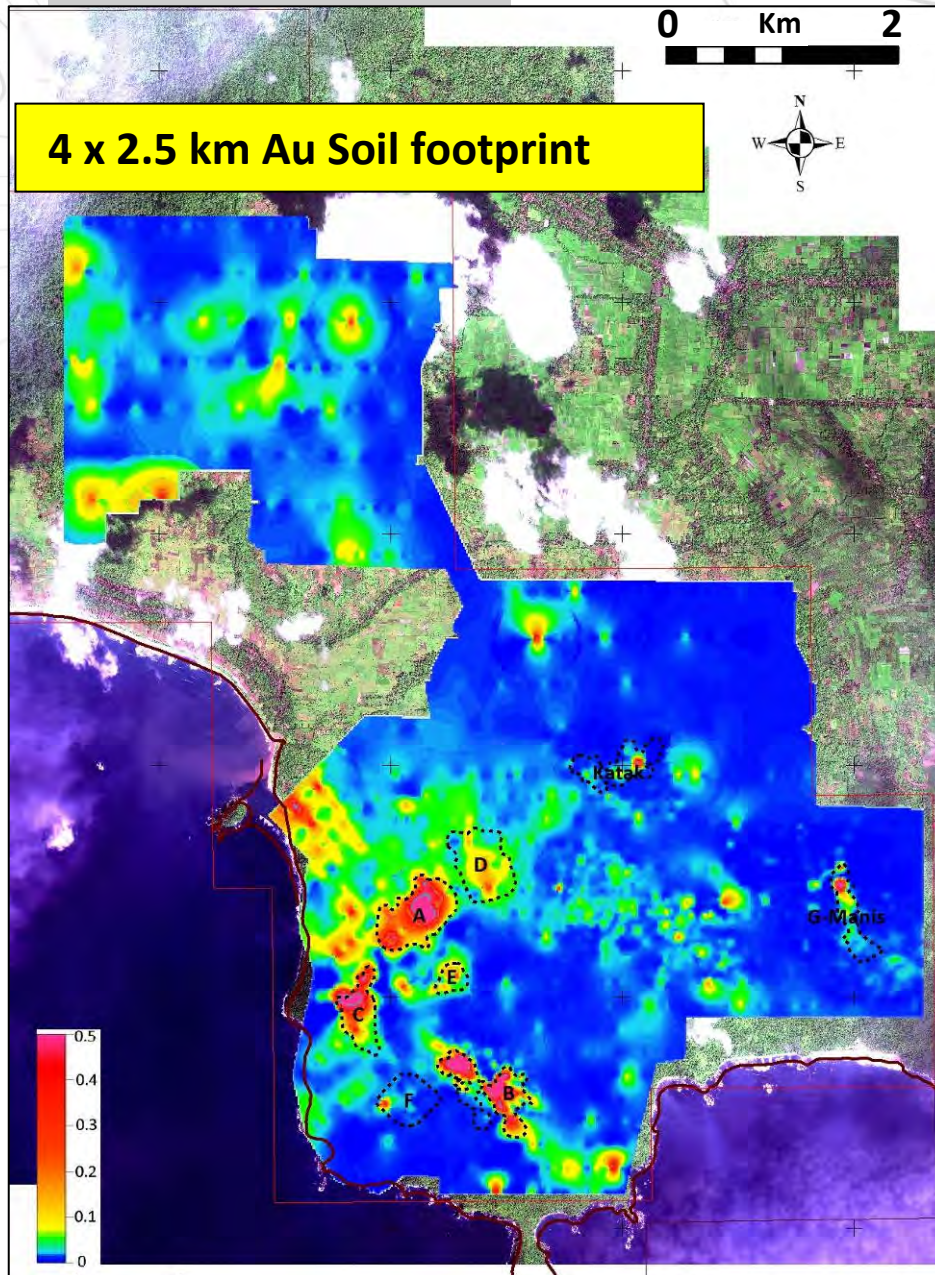
GTD-09-65 (108m): Porphyry Qtz-Mt B-veins rucked upward in diatreme mill breccia.



GTD-07-22: Porphyry Qtz stockwork in a clast within advanced -arg altered mill breccia.



# Intrepid Gridded Soils (Au and Cu)

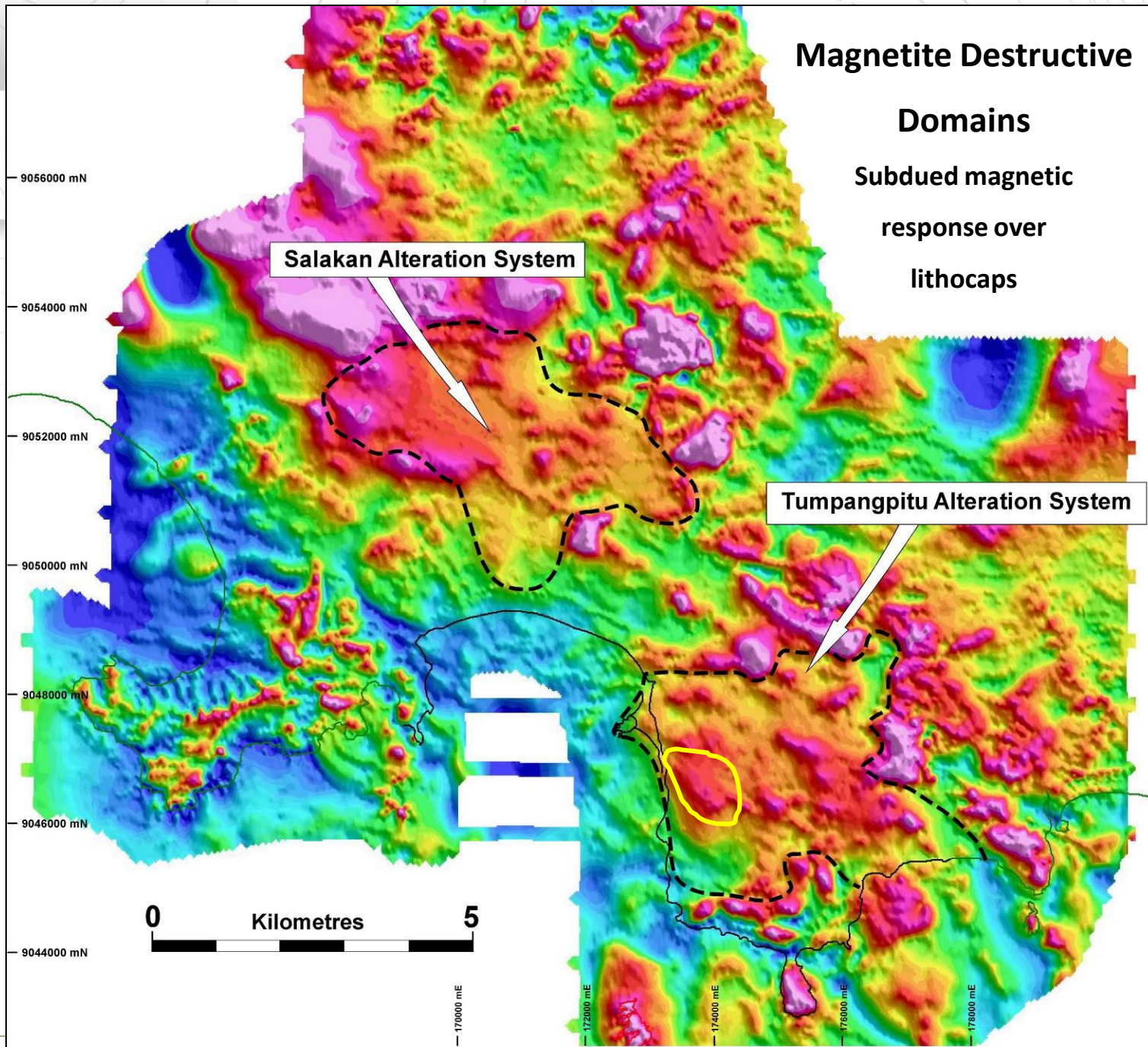






# Magnetite Destructive Domains

Subdued magnetic response over lithocaps

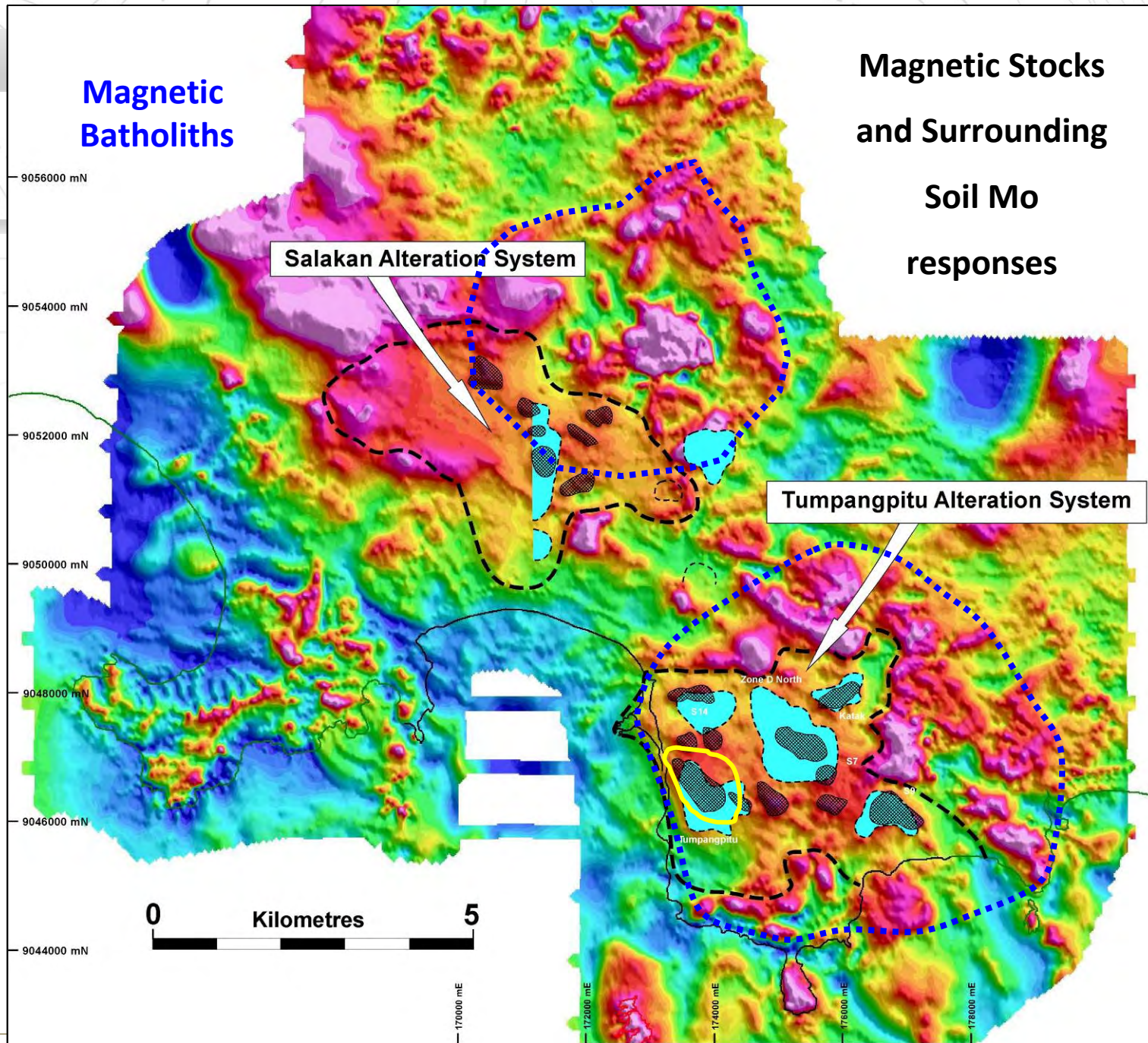






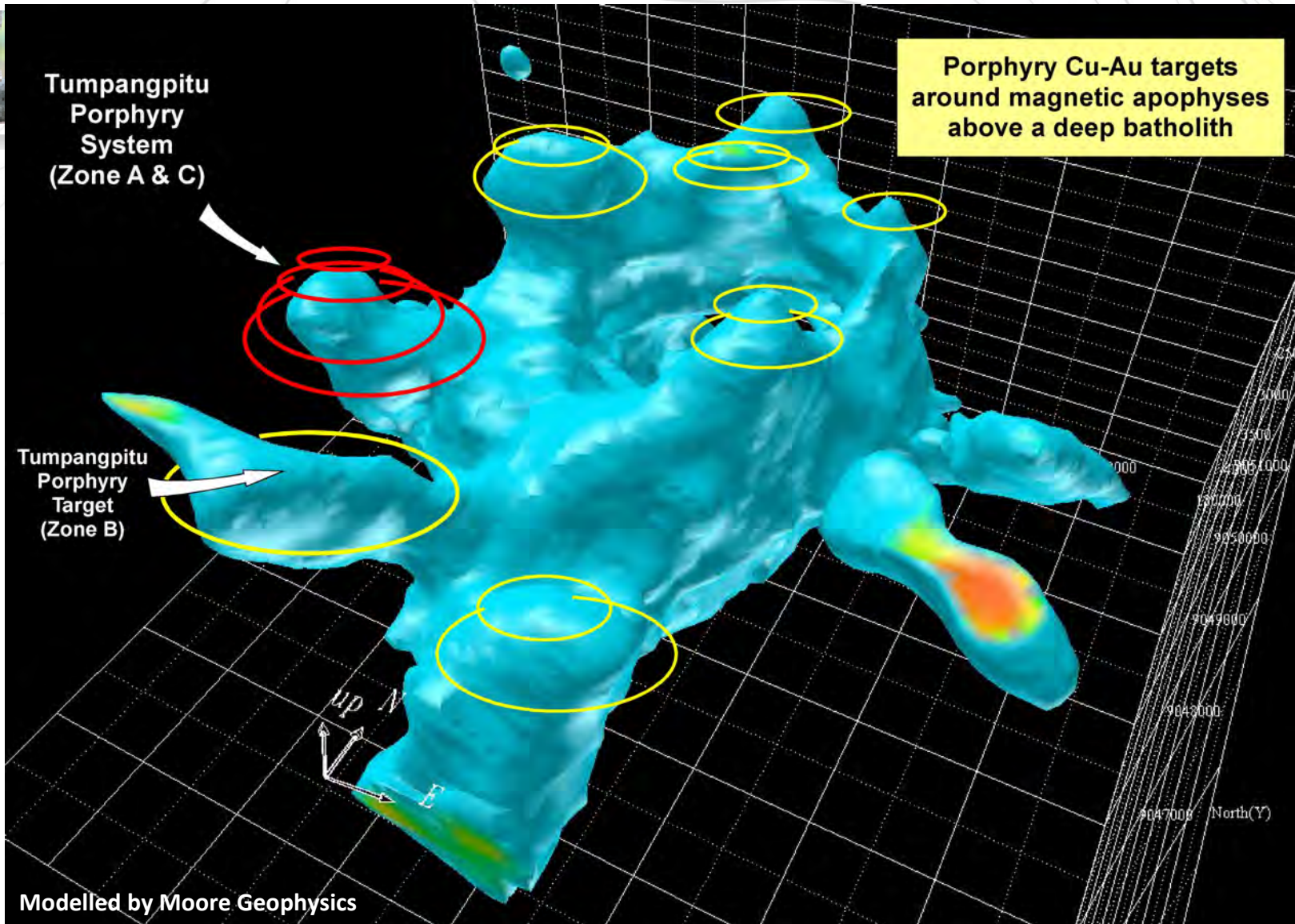
**Magnetic  
Batholiths**

**Magnetic Stocks  
and Surrounding  
Soil Mo  
responses**



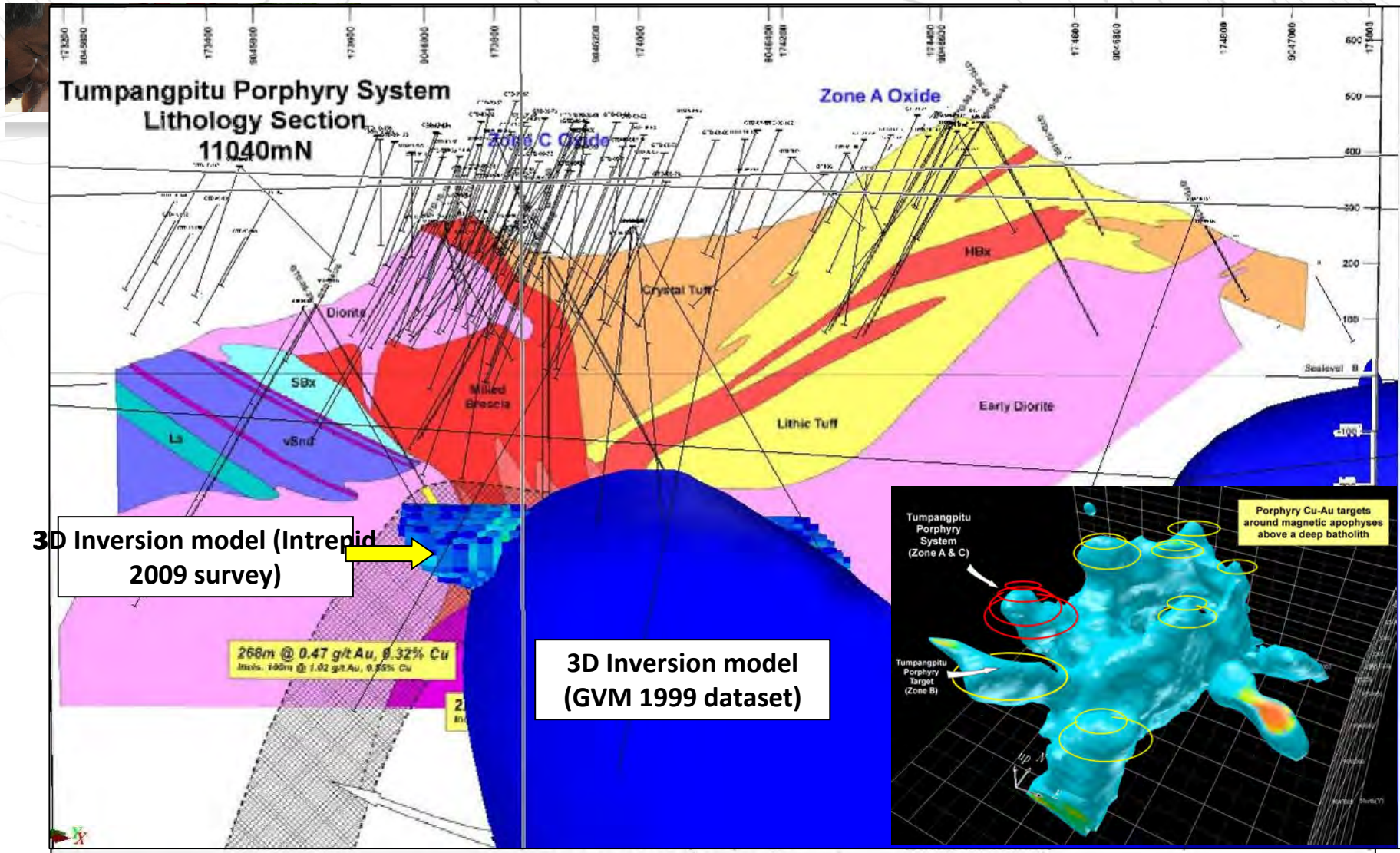


# 3D Inversion Model – Tumpangpitu Batholith



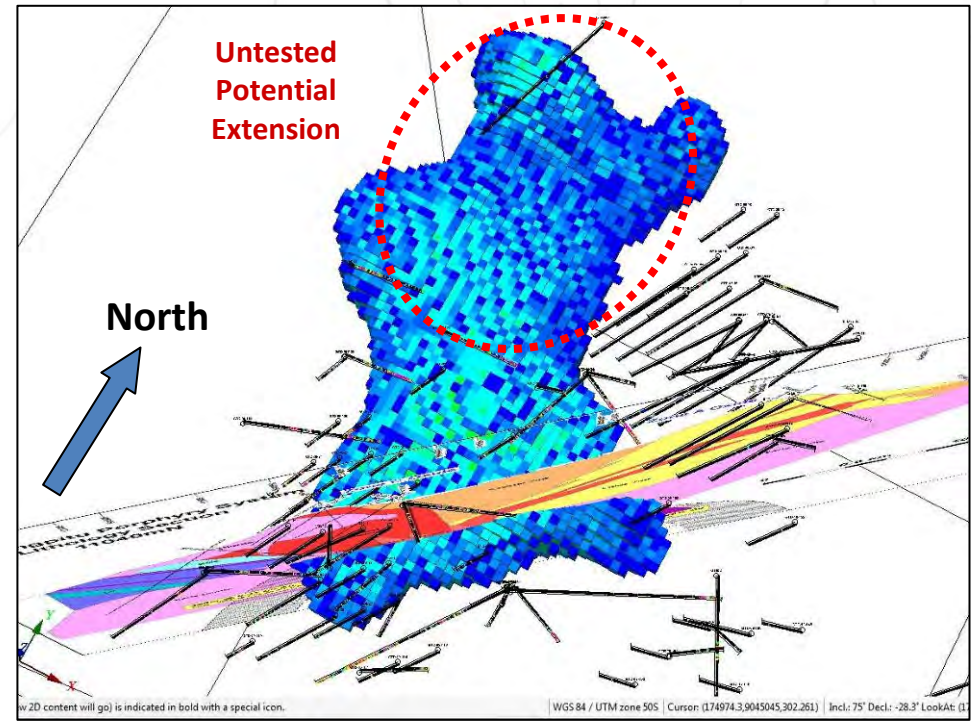
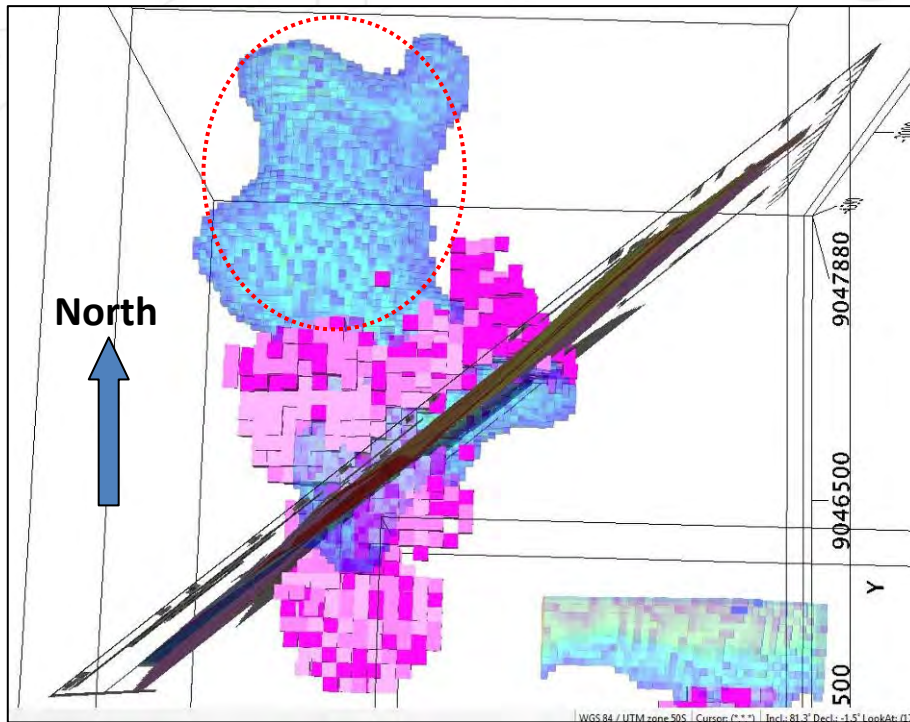


# Drilling, Lithology and Magnetic Inversion Models





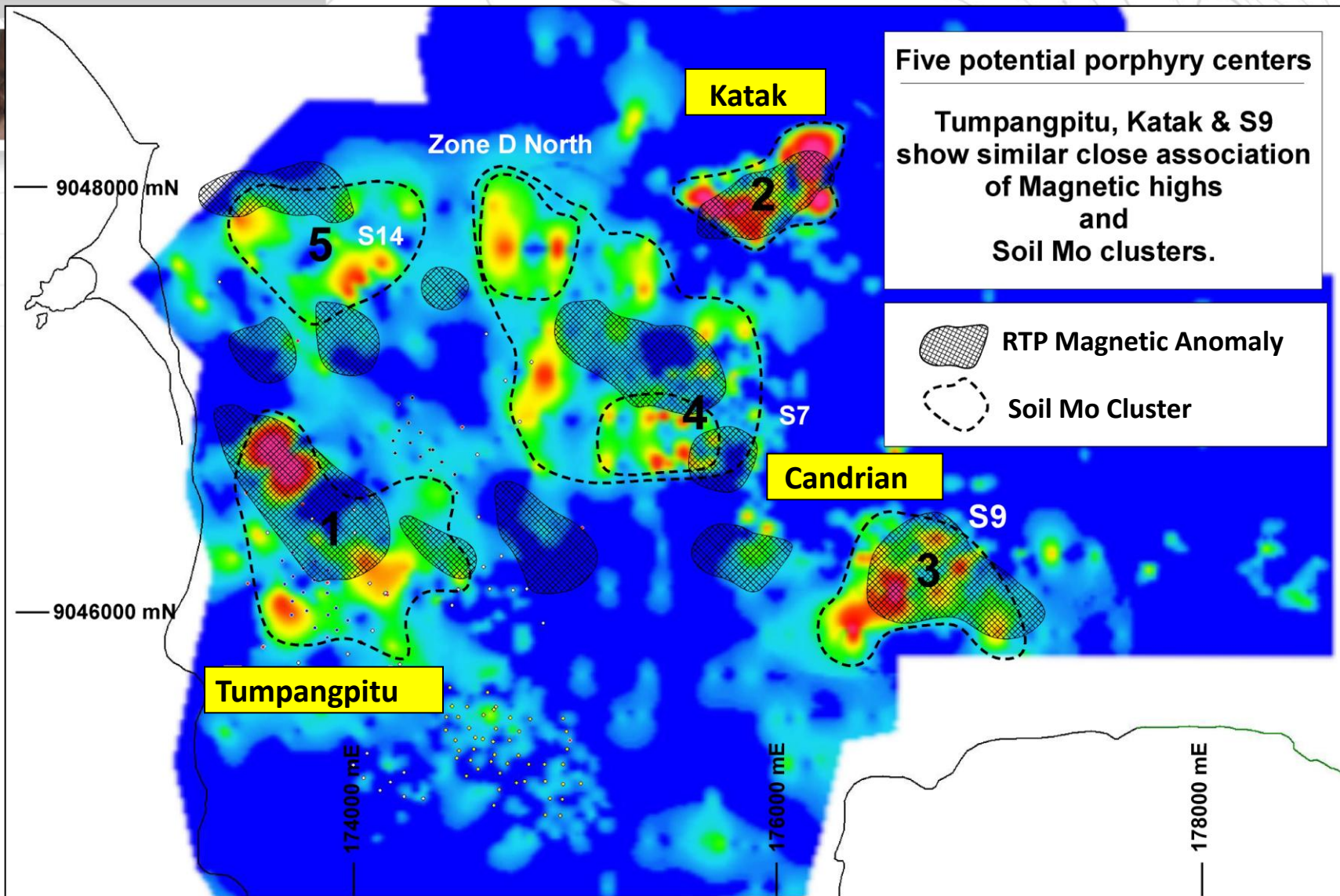
## Tumpangpitu Magnetic Model Sulphide Resource Block Model (0.7ppm Au cut-off)



**Near 1-to-1 Correlation between High-Au and Strong Magnetics**  
**Untested potential to the north**

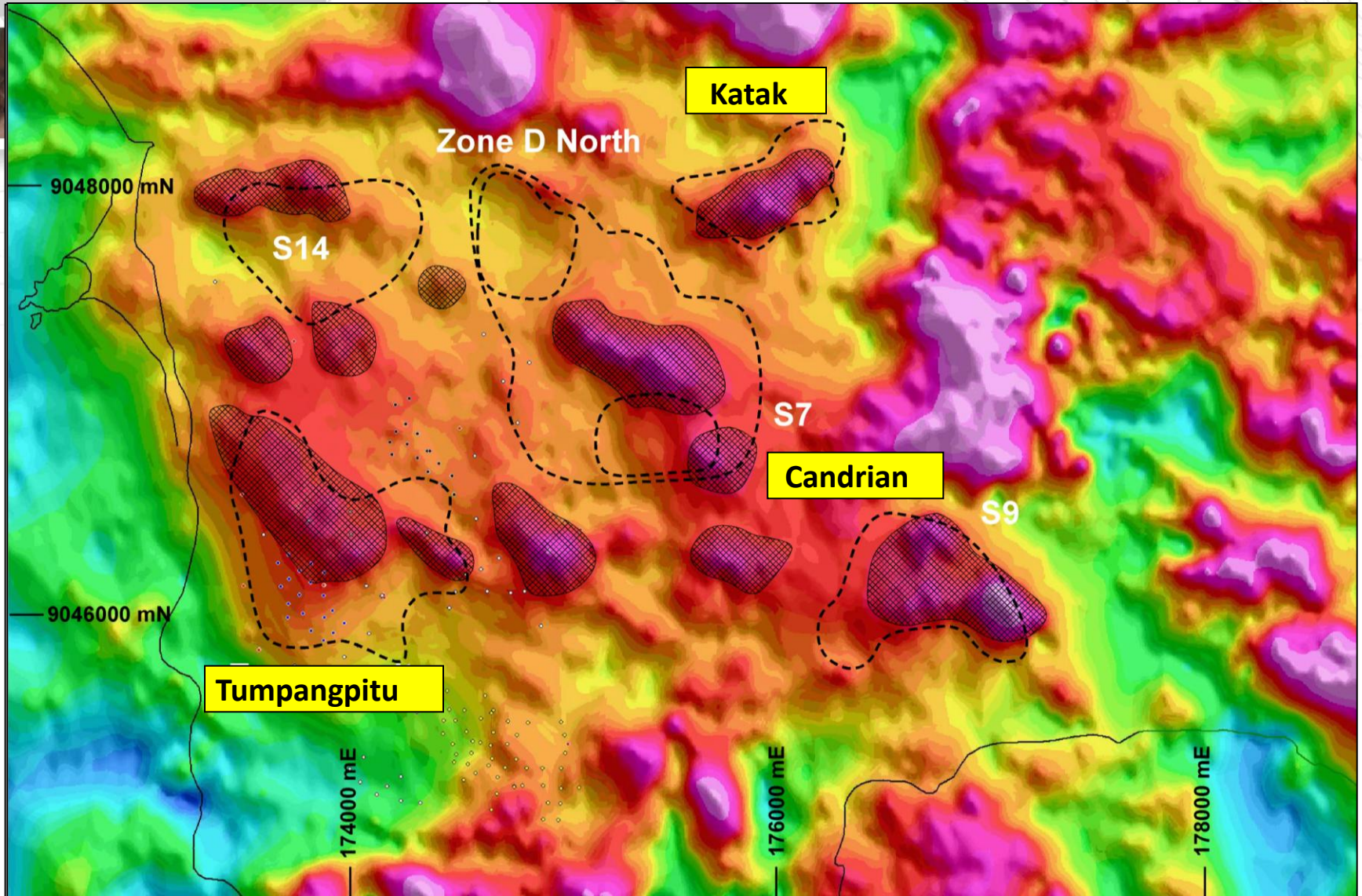


# Mo Anomaly Clusters in Soils



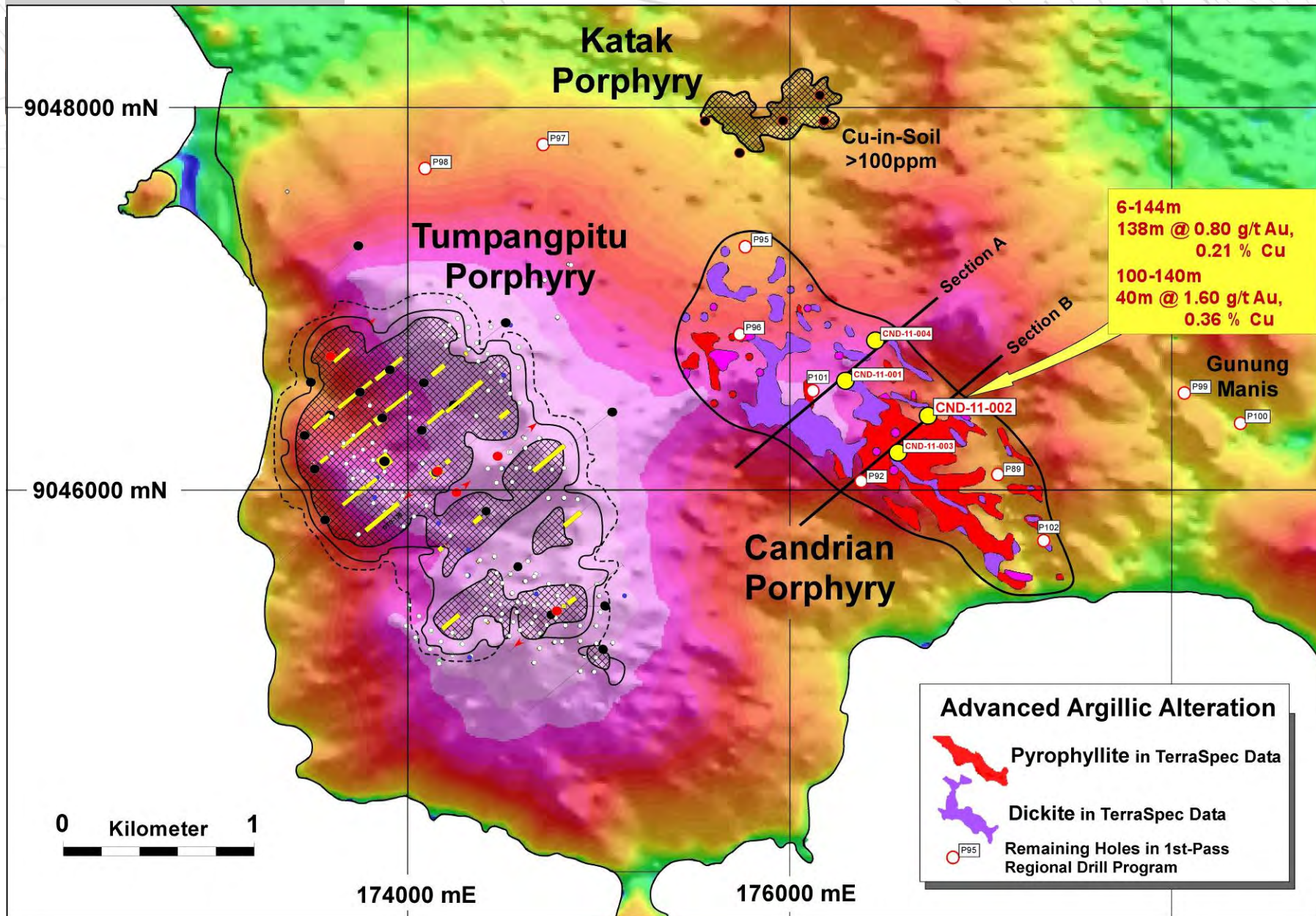


# Mo Soil Anomalies Clustered Around Magnetic Highs



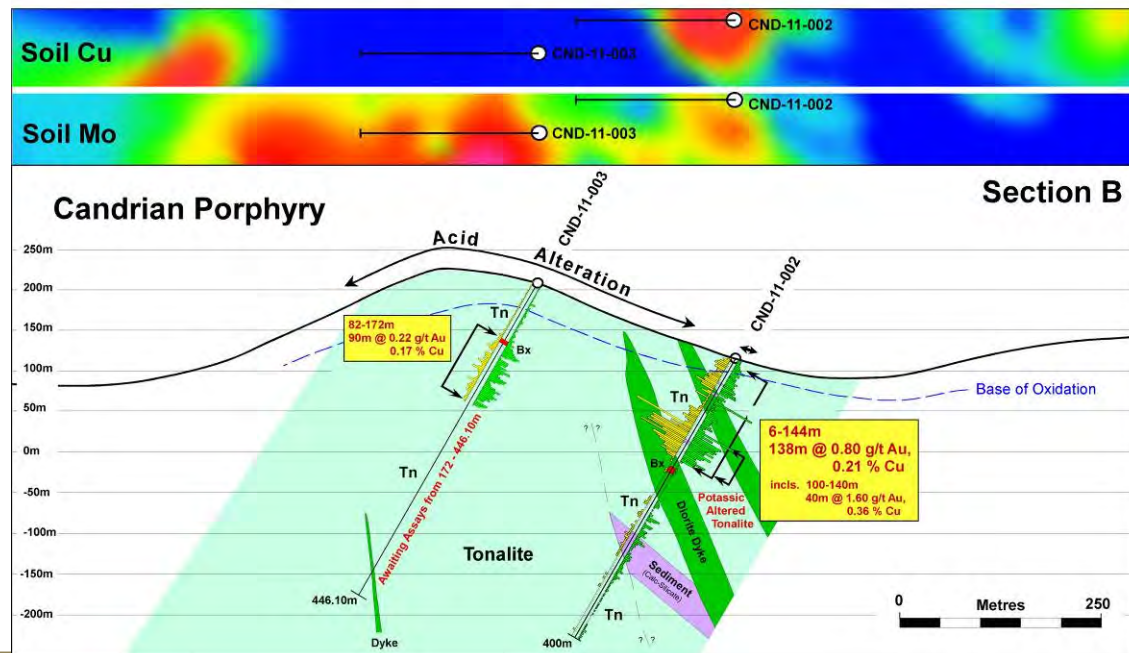
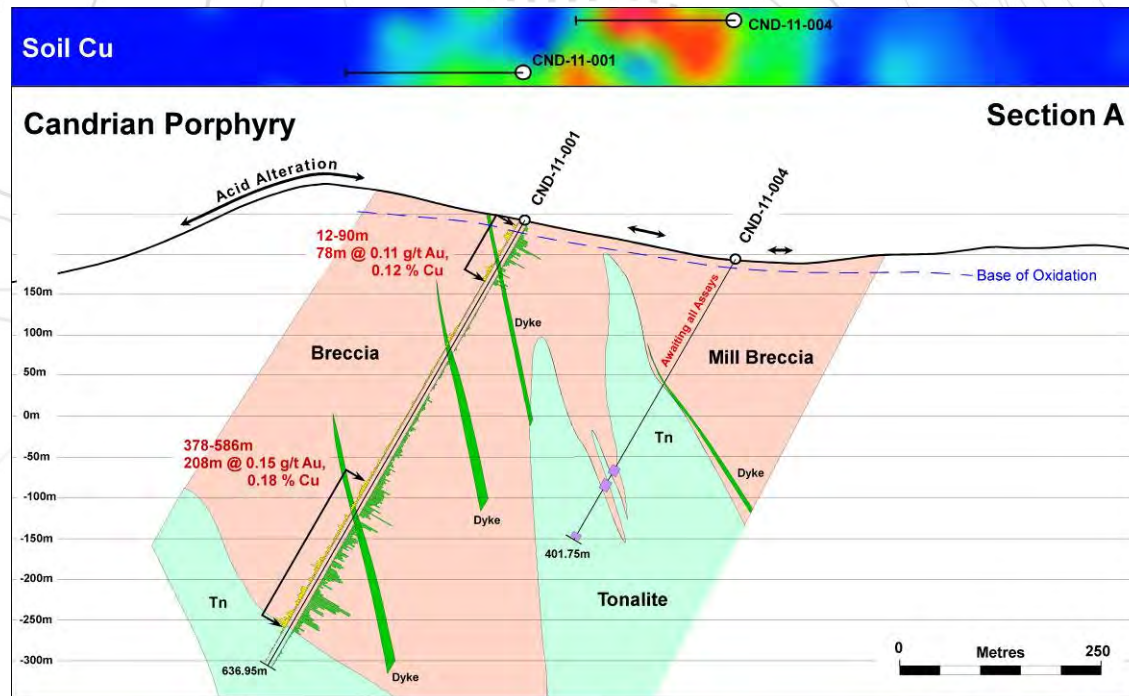
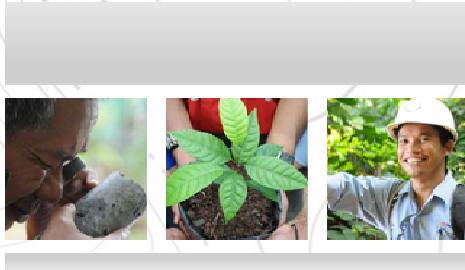


# Candrian Porphyry System



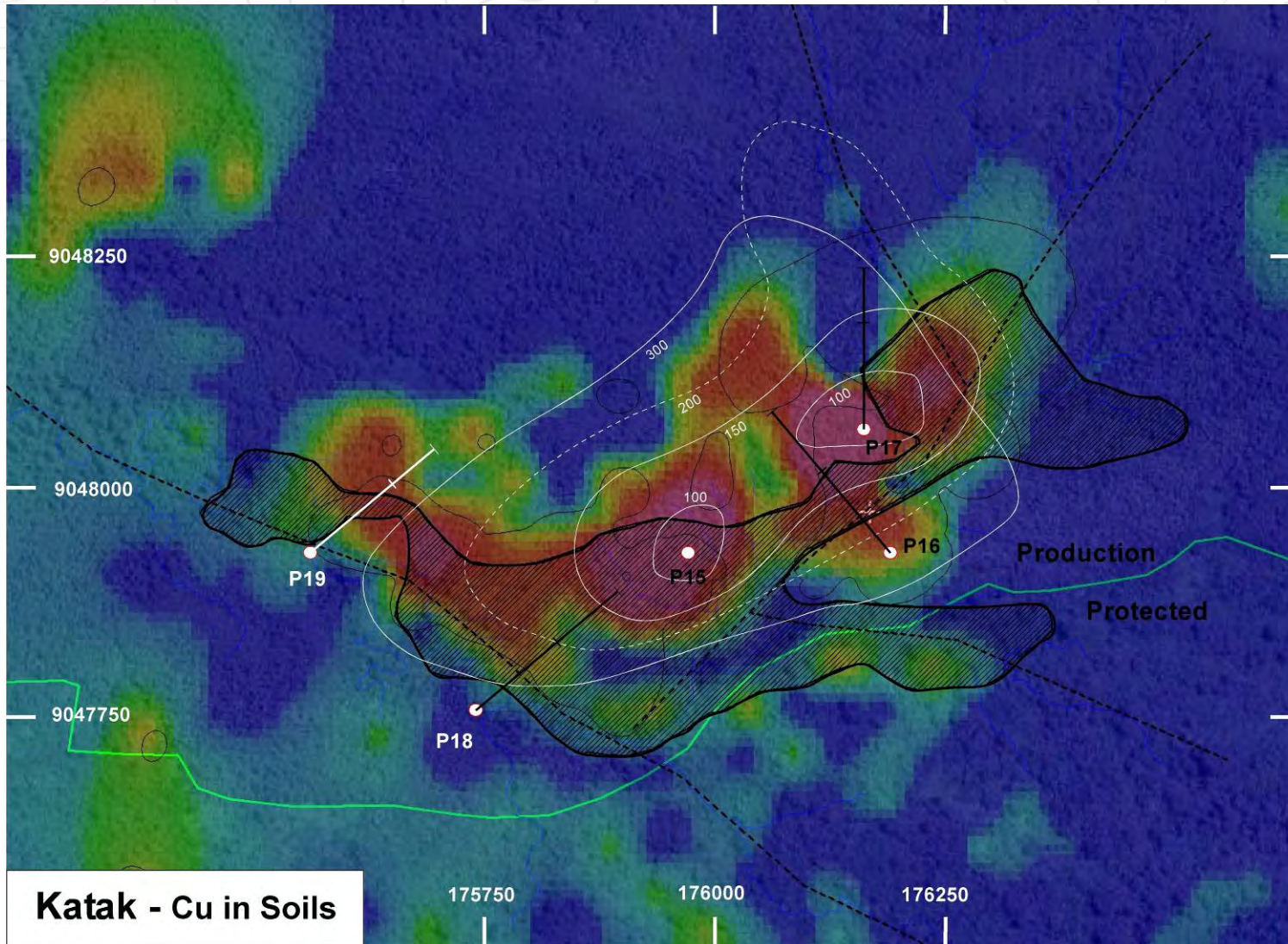
**Advanced Argillic Alteration**

- Pyrophyllite in TerraSpec Data
- Dickite in TerraSpec Data
- Remaining Holes in 1st-Pass Regional Drill Program

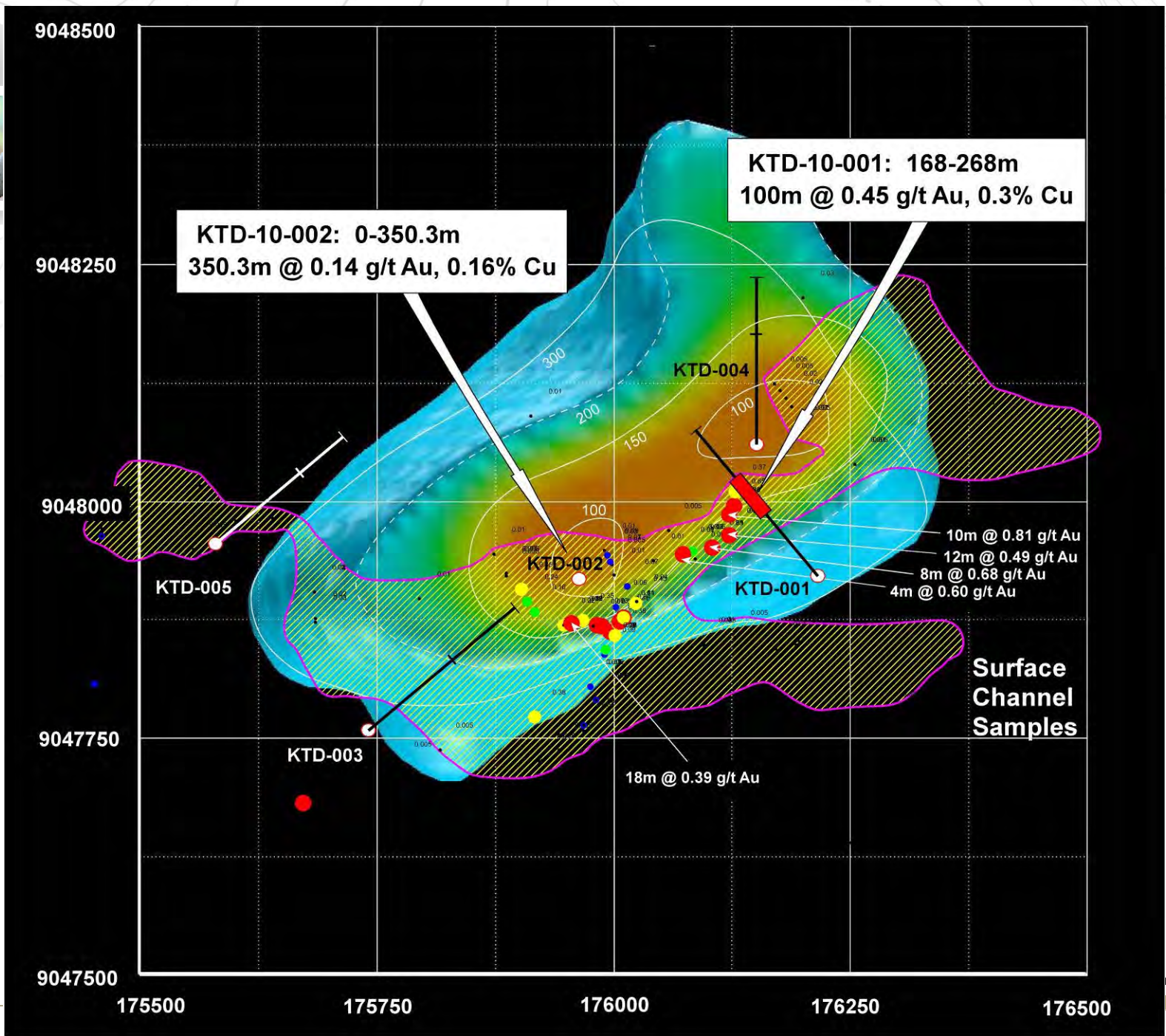




# Katak Porphyry System





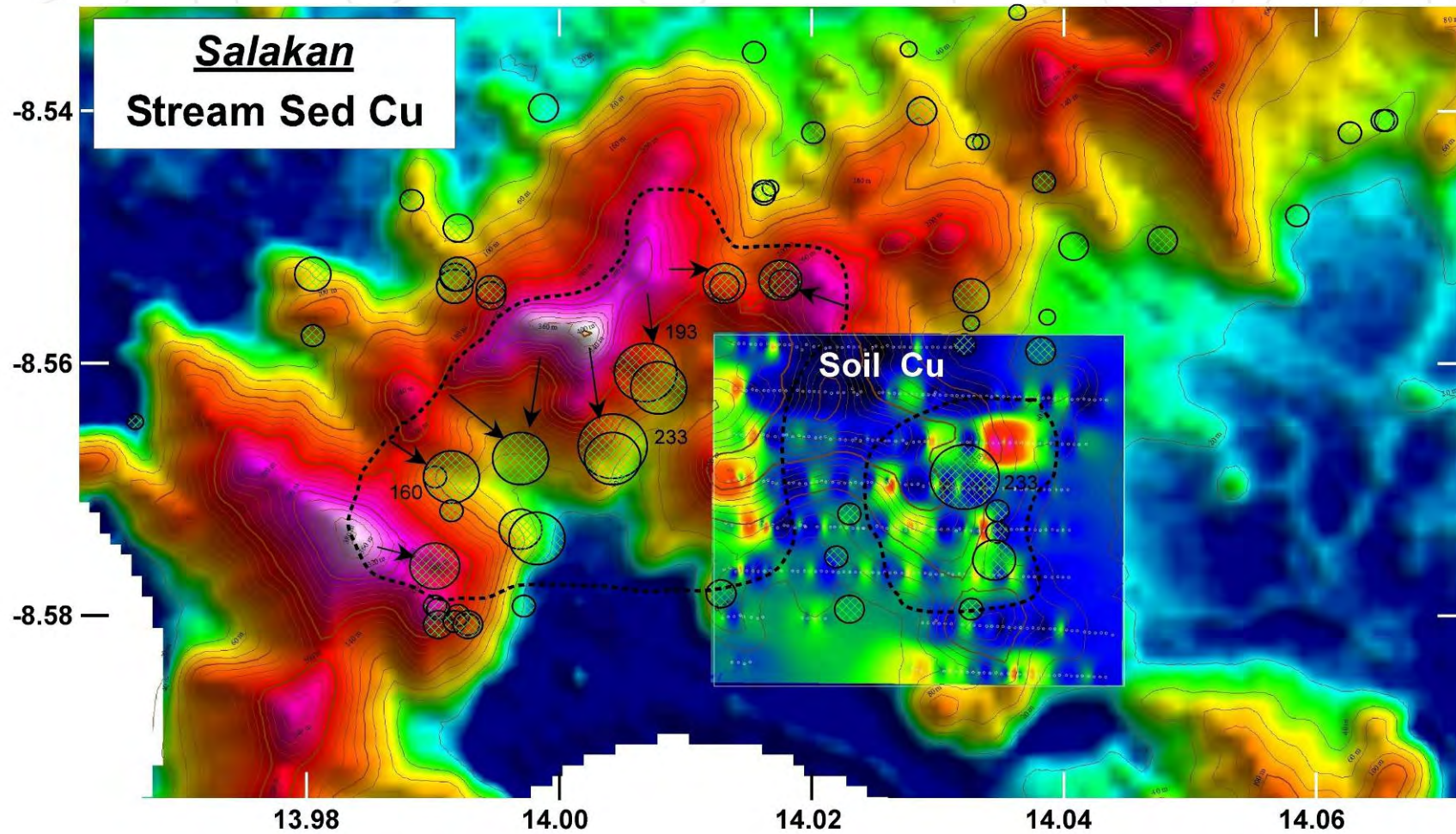






# Salakan Porphyry Project

## -80# Stream Sediment Cu and Soil Cu







**Outcropping Quartz Stockwork**



**Sulphide-cemented Silica Breccias**

**Goethite-Hematite Breccias**



**Reconnaissance Mapping**





Thank you (Terima Kasih) to PT Indo Multi Niaga  
and **ACKNOWLEDGMENTS** to the  
**Tujuh Bukit Geology Team**

