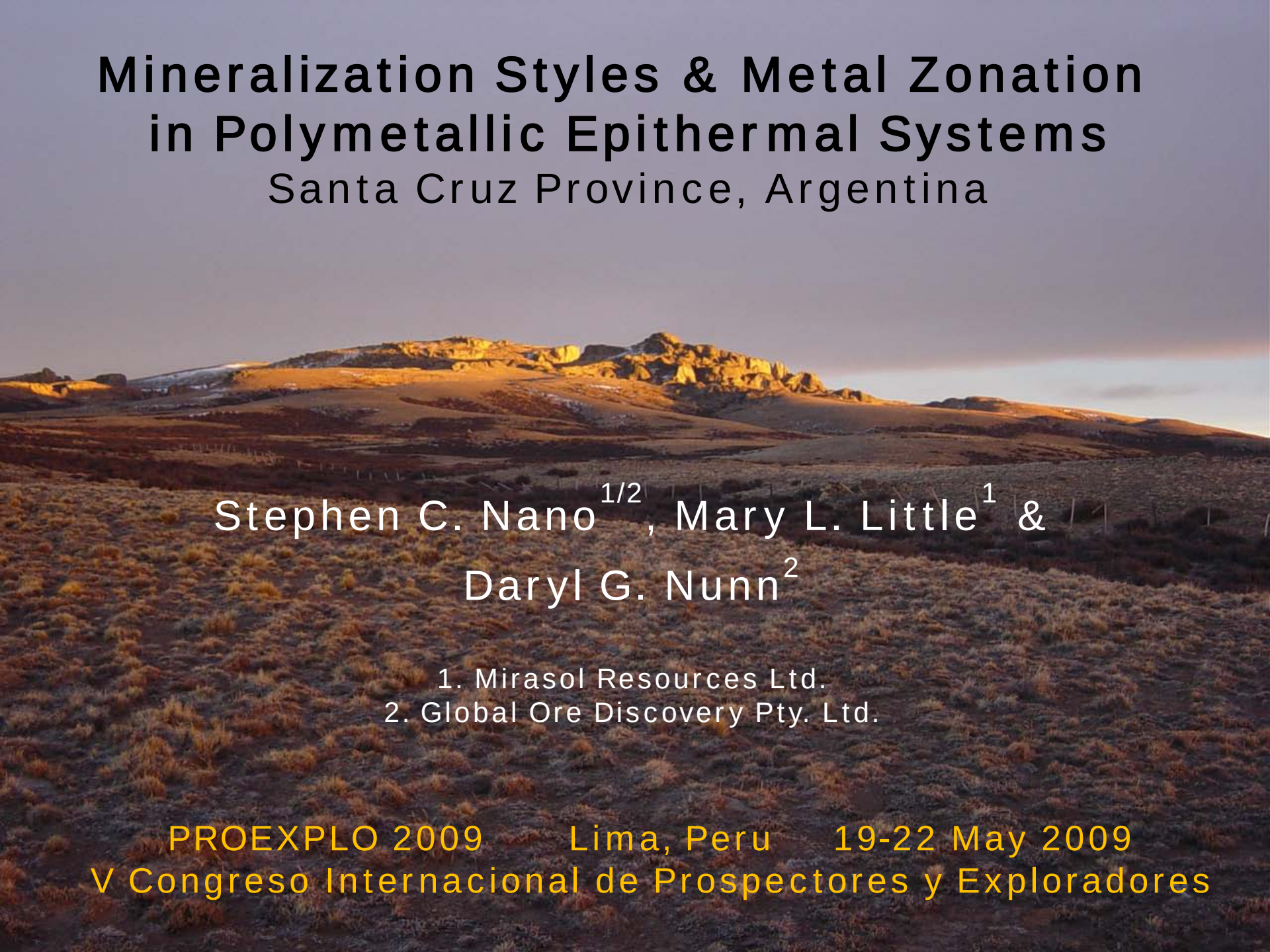
Mineralization Styles & Metal Zonation in Polymetallic Epithermal Systems

Santa Cruz Province, Argentina



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1. Mirasol Resources Ltd.
2. Global Ore Discovery Pty. Ltd.

PROEXPLO 2009 Lima, Peru 19-22 May 2009

V Congreso Internacional de Prospectores y Exploradores

Patagonia - Southern Argentina & Chile, an Emerging Precious Metals Region

- Exploration discovery history in the last 30 years.
- A significant, new Au + Ag + Base Metal Province.
- Geological Setting – Massive extensional regime hosting many Au Ag epithermal deposits
- Modern deposit discoveries of 0.5 Moz to 5.0 Moz gold equiv.
- Last five years have doubled the number of new mineralized systems.
- New concepts, new technology have contributed to Discovery record : *remote sensing; geophysics; new concepts*
- Potential for future discovery in the geological province

Regional Overview

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Recent Discovery History

First Exploration Stage

- 1960s-1970s Fabricaciones Militares investigations
- 1980s SEGEMAR identifies and samples Cerro Vanguardia veins (Genini, et.al.), Cerro Moro

- Provincial Mining Reserves formed

- 1989 Freeport discovers Fachinal, Patagonian Chile (Tippett, Cruzat, Nasi, Moya, et.al.)
- 1989 Bond/Lac discover Manantial Espejo
- 1991 Volcan Hudson erupts (Chile) -2 metres of ash
- 1993 Newcrest discovers Eureka-Cerro Negro, La Paloma (Nano, Heenan, Smit)
- 1995 Yamana discovers Martha
- 1996 WMC discovers La Cantera, Tranquilo (Bajada)
- 1997 Minera Andes discovers Cerro Saavedra - Huevos Verdes (San Jose)

Second Exploration Stage

- 1998 MIM drills ore grade at Cerro Negro
- 1998 AnglogoldAshanti production commences at Cerro Vanguardia
- 2006 Freia vein discovered, San Jose
- 2007 Exeter drills ore grade at Cerro Moro
- 2008 Andean Resources drills ore grade at Eureka

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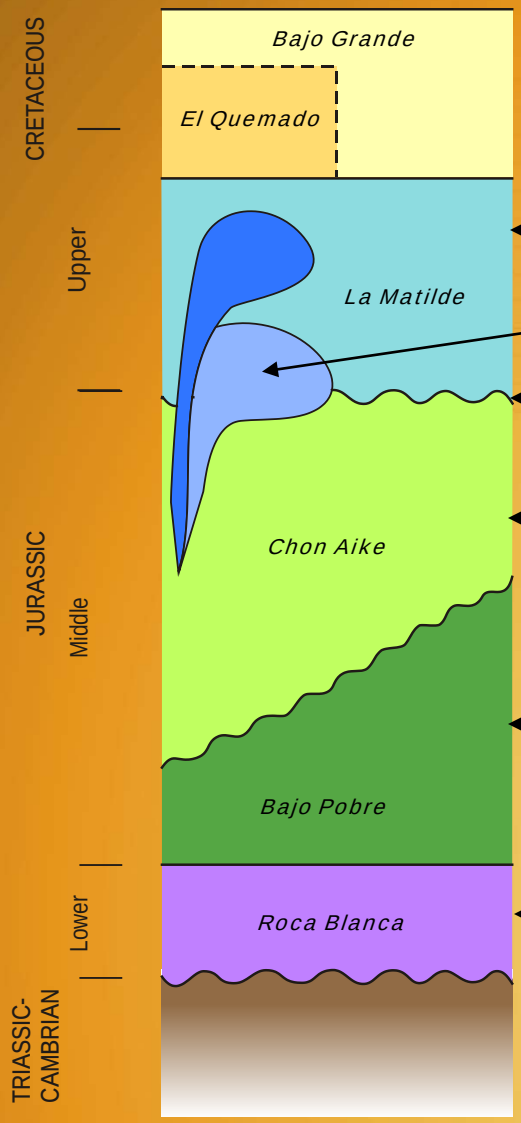
Simplified Volcanic Stratigraphy



Resurgent rhyolite dome/flow/ air fall pyroclastics / epiclastic & Lacustrine rocks

Late Chon Aike/early Matilde flows domes & Dykes rhyolite > andesite

Quiescence/extension erosion/plant communities

Massive rhyolite ignimbrite outpourings, minor dykes/domes, rhyolite > rhyodacite/dacite > andesite

Flood basalts- andesitic volcanic centers

Continental quartz & volcanic sandstone

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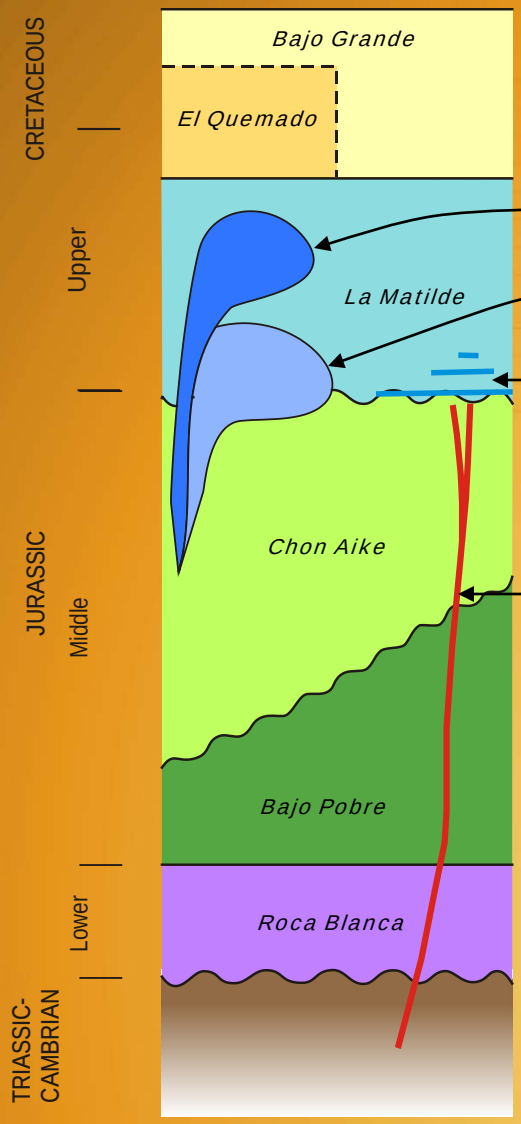
Stratigraphic timing of mineralization



Post mineral dome (rhyolite)

Altered synmineral dome (rhyolite>andesite)

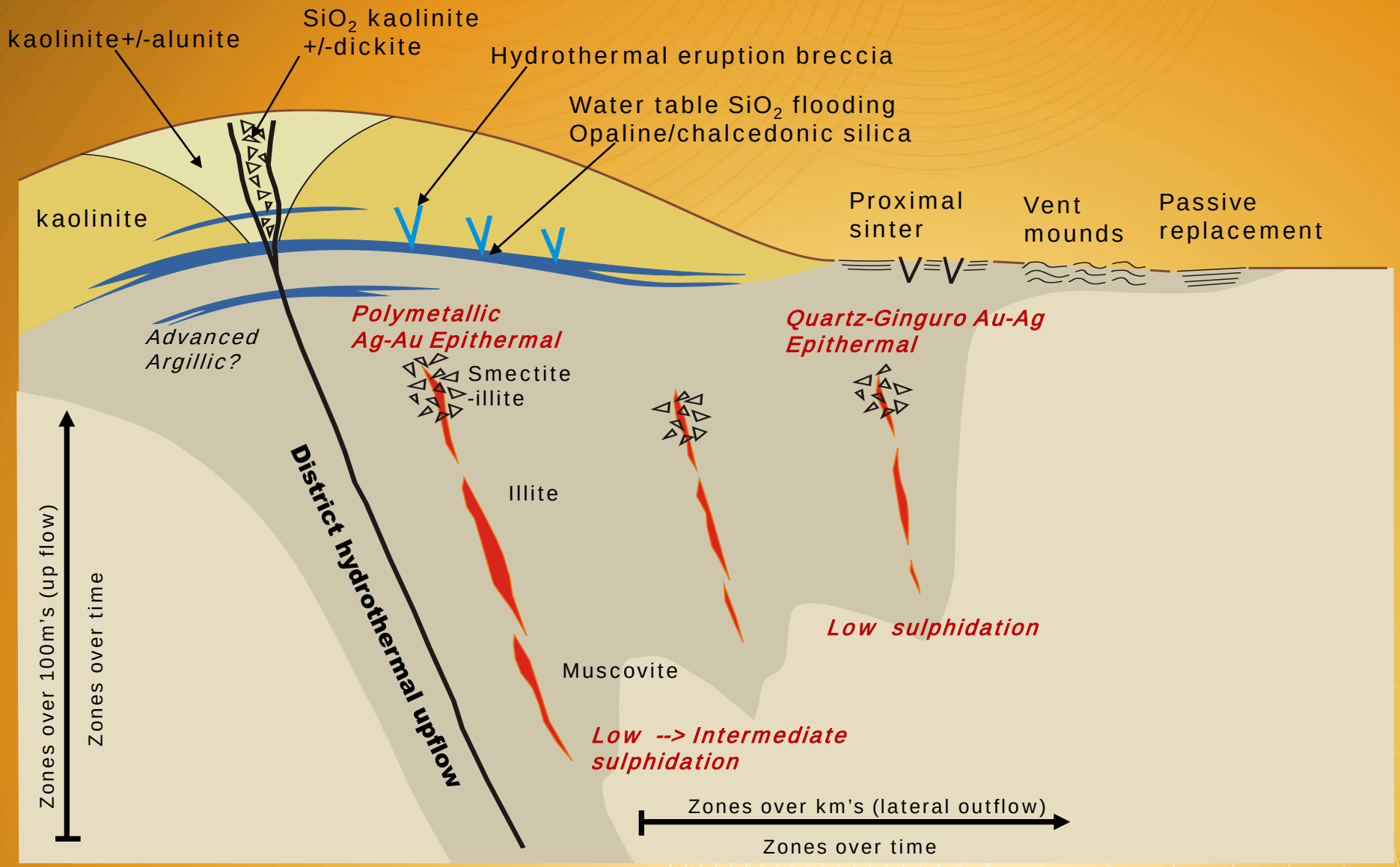
Sinters - Chon Aike quiescence prograde base of Matilda

Epithermal veining hosted in dilatant structures in Chon Aike / Bajo Pobre / Roca Blanca / Triassic sequences

Mineralization late Chon Aike to Early Matilde event - Quiescence / change in character of volcanism

Santa Cruz epithermal model

Polymetallic Ag-Au to quartz-ginguro Au-Ag epithermal



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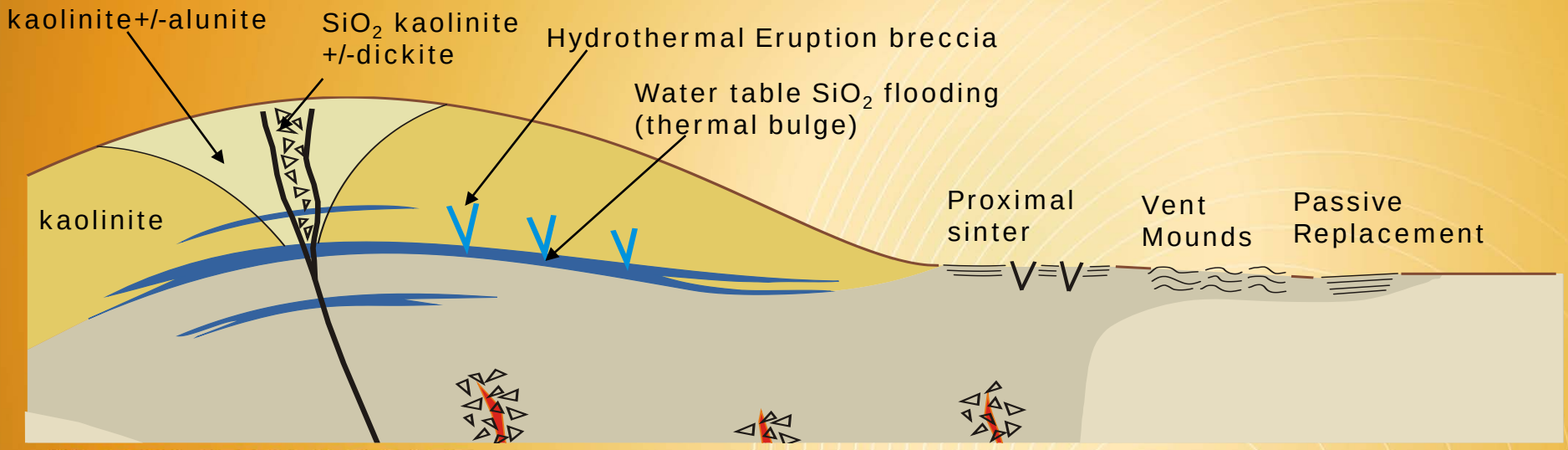
Paleosurface Model



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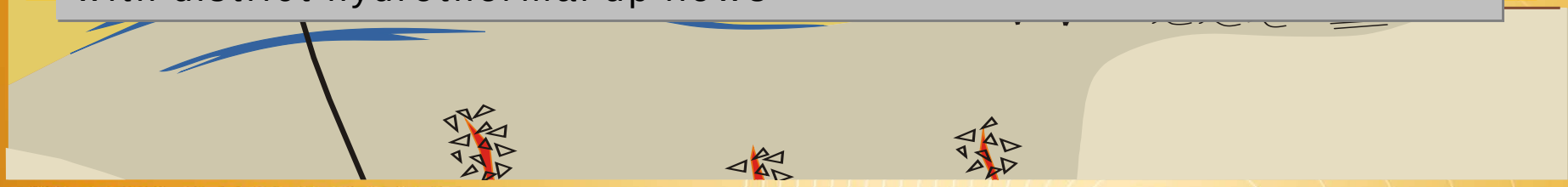
Paleosurface Model – Water table Silica (Silica Cap)




Silica replacement at paleowater table – Extensive areas associated with district hydrothermal up flows



Paleosurface Model – Water table Silica

Feeder structure – multiphase breccia
Jasperoidal SiO2 - hematite

Pervasive replacement – chalcedony / opal. Rock textures preserved

Paleosurface Model – Proximal Sinter

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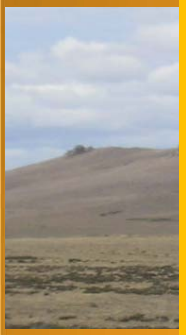
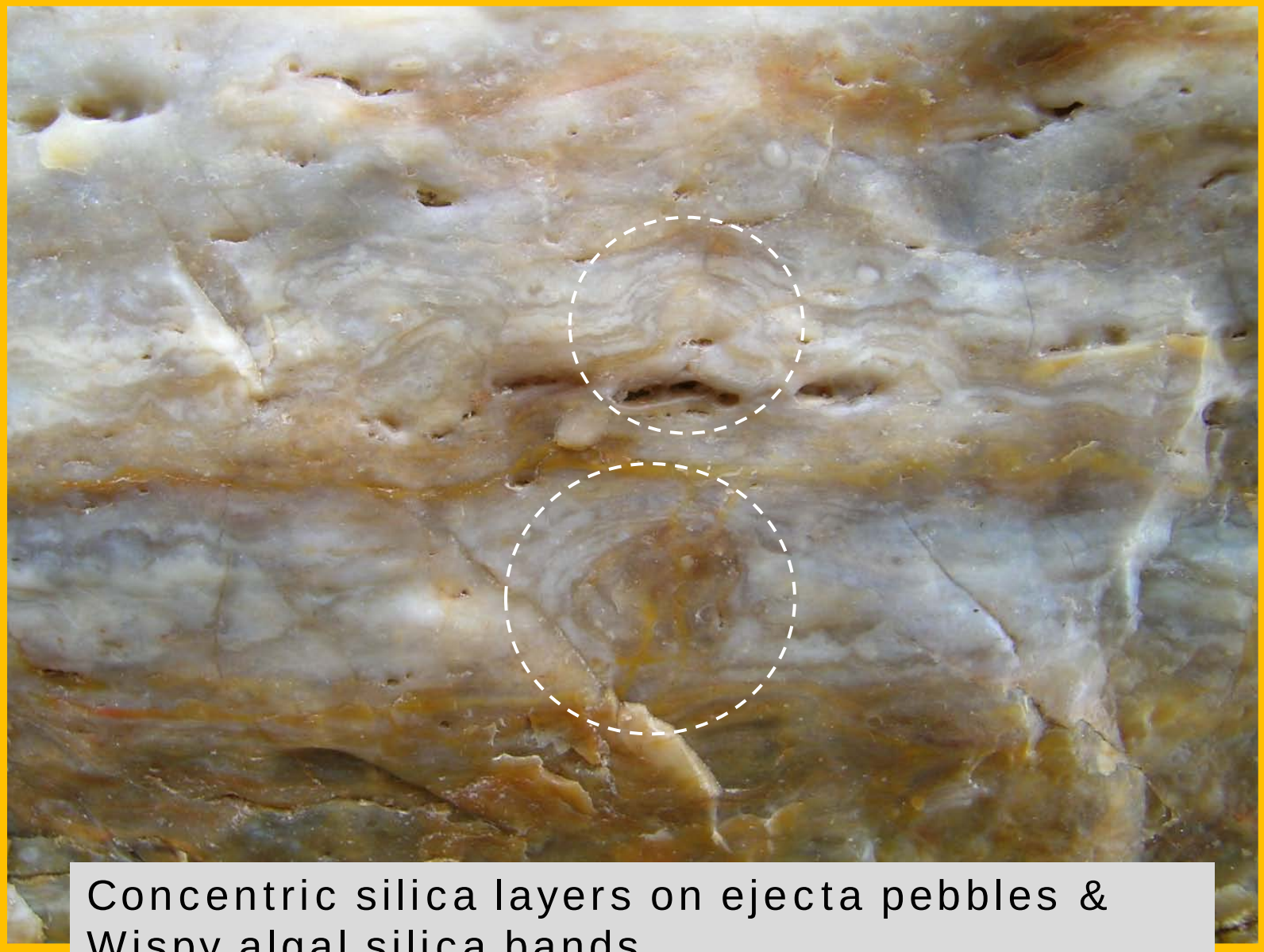
Paleosurface Model – Proximal Sinter



kaolinite

kaolini



Concentric silica layers on ejecta pebbles &
Wispy algal silica bands

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Paleosurface Model – Vent mounds environments

Shallow aqueous. Vents mounds & stromatolites

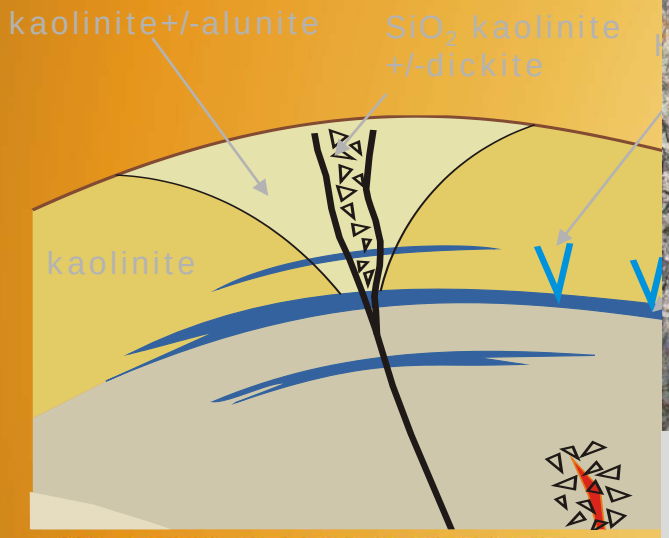
Hummocky ground

Bioturbation

Paleosurface Model - Replacement

Replacement silica

Desiccation cracks - Ephemeral lakes & shallow outflow zones



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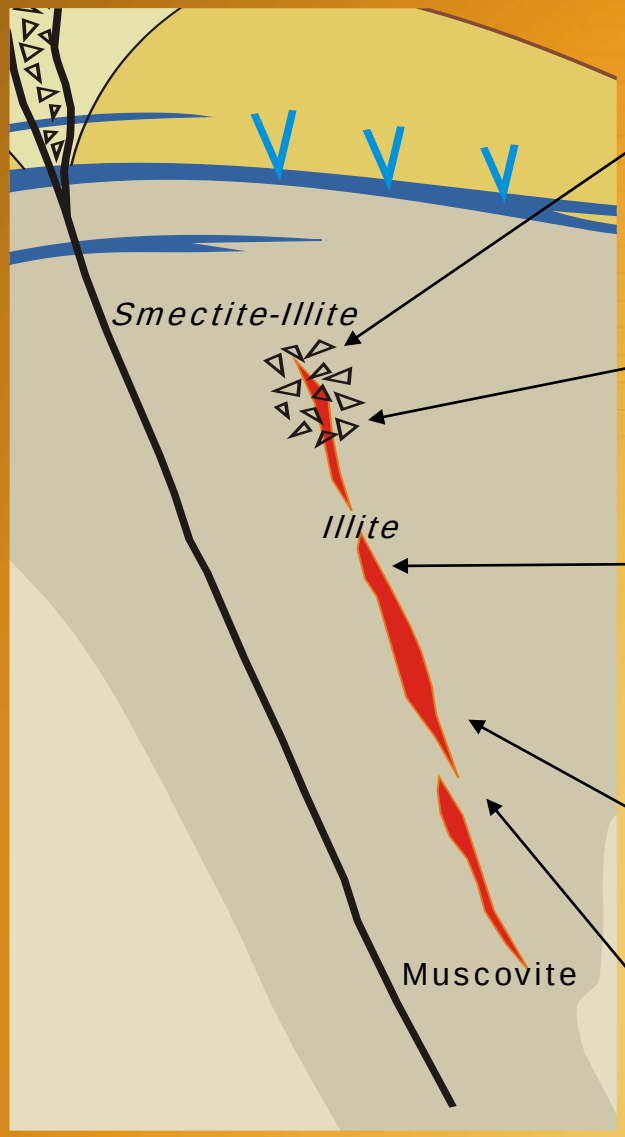
Polymetallic Ag-Au Epithermal

Ag : Au → 100s to 1000s



Wallrock vein breccia – hydrofractured wallrock, chalcedonic silica flooding rare pyrite – Kaolinite alteration of clasts.

Ag-Au chalcedony-adularia sulphide breccias – fine grained pyrite-marcasite-arsenopyrite rare Fe poor sphalerite-acanthite-argentite – Illite alteration

Ag-Au Colloform quartz ginguro veins – Early pyrite. Galena, Fe poor sphalerite, acanthite-argentite, electrum, tetrahedrite. Illite-sericite – Chloritie carbonate gangue

Ag-Au crustiform polymetallic veins – crustiform-colloform sulphide margin largely barren core. Early cubic pyrite. Galena, Fe poor sphalerite, chalcopyrite, electrum, polybasite, acanthite-argentite, tetrahedrite.

Ag crustiform polymetallic veins – Early cubic pyrite. Galena, Fe poor sphalerite, chalcopyrite, tetrahedrite, proustite pyargyrite, native silver minor electrum. Quartz adularia vein – illite smectite overprint

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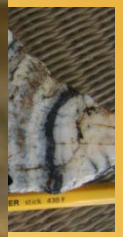
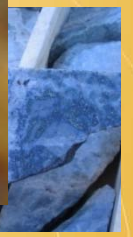
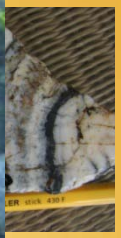
Polymetallic Ag-Au Epithermal

Wallrock vein breccia



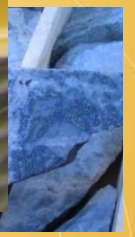


Polymetallic Ag-Au Epithermal



Ag-Au chalcedony-adularia sulphide breccias

Polymetallic Ag-Au Epithermal



Ag-Au colloform
quartz ginguro

Polymetallic Ag-Au Epithermal

Ag-Au crustiform polymetallic vein

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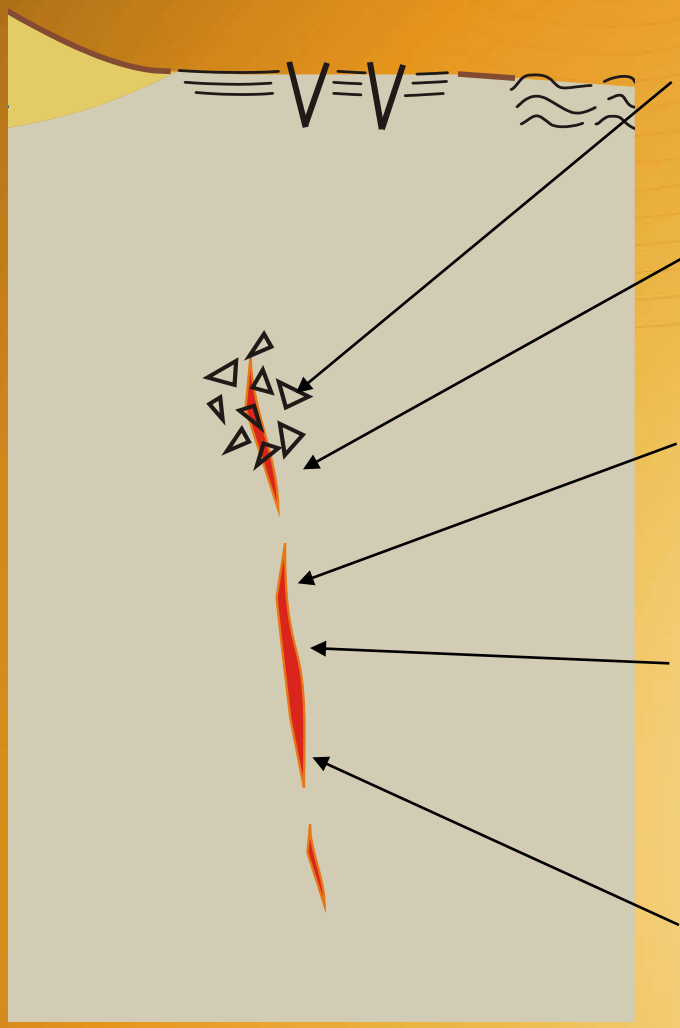
Polymetallic Ag-Au Epithermal

Ag crustiform polymetallic vein

Quartz-Ginguro Epithermal

Ag : Au 1 → 100



Mixed sulphide oxide facies, jasperoidal silica, fine grained pyrite marcasite phases. Mixing of oxidized meteoric and mineralized reduced fluids in structures

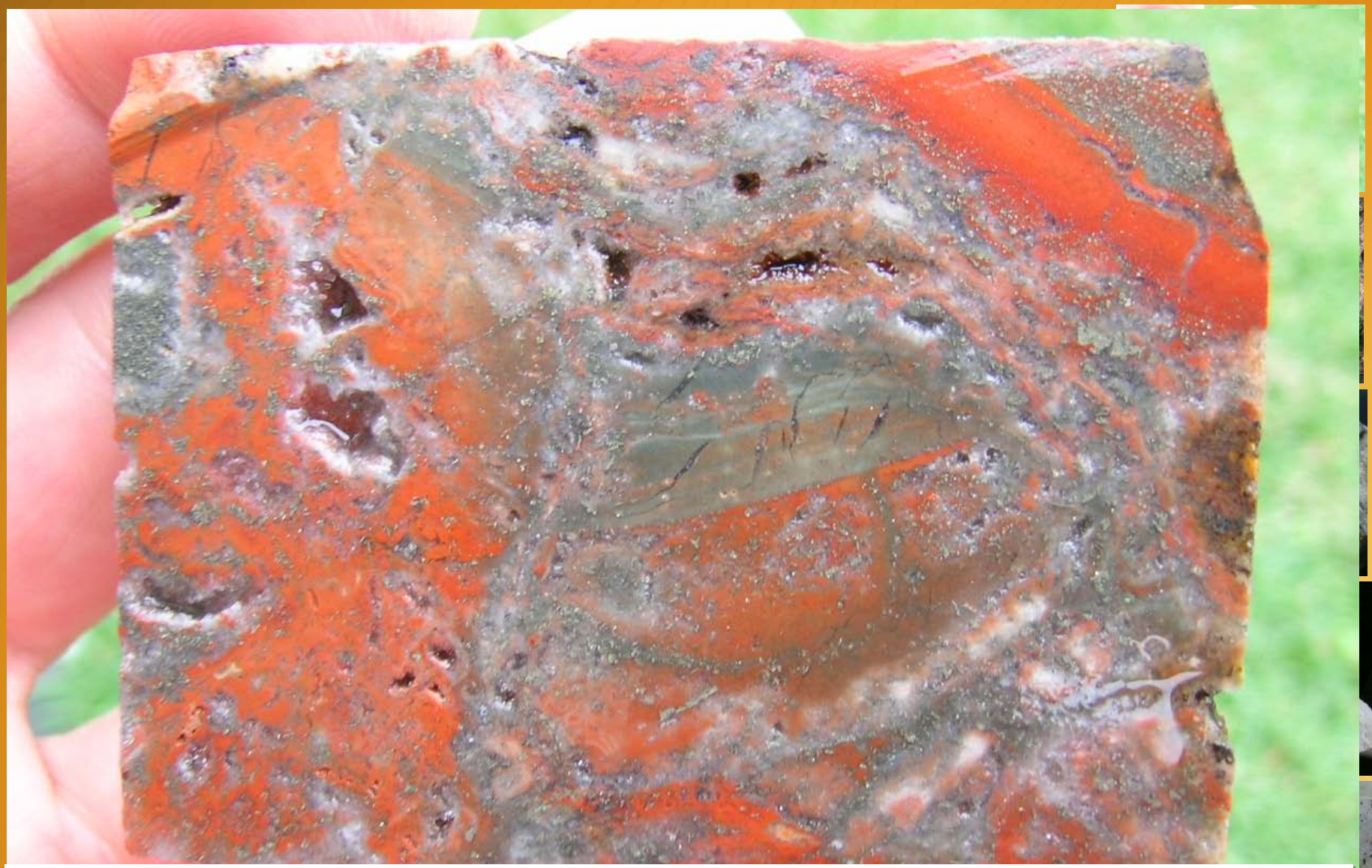
Colloform chalcedony veins with jasperoidal bands. Hematite dominated minor pyrite. Anomalous Au/Ag.

Chalcedonic fine saccharoidal quartz, ghosted wallrock clasts, acanthite-argentite clots – top of ore zone

Felted bladed textures and ginguro, chalcedony>adularia/illite, fine pyrite, acanthite-argentite, electrum and native Ag/Au – main ore zone

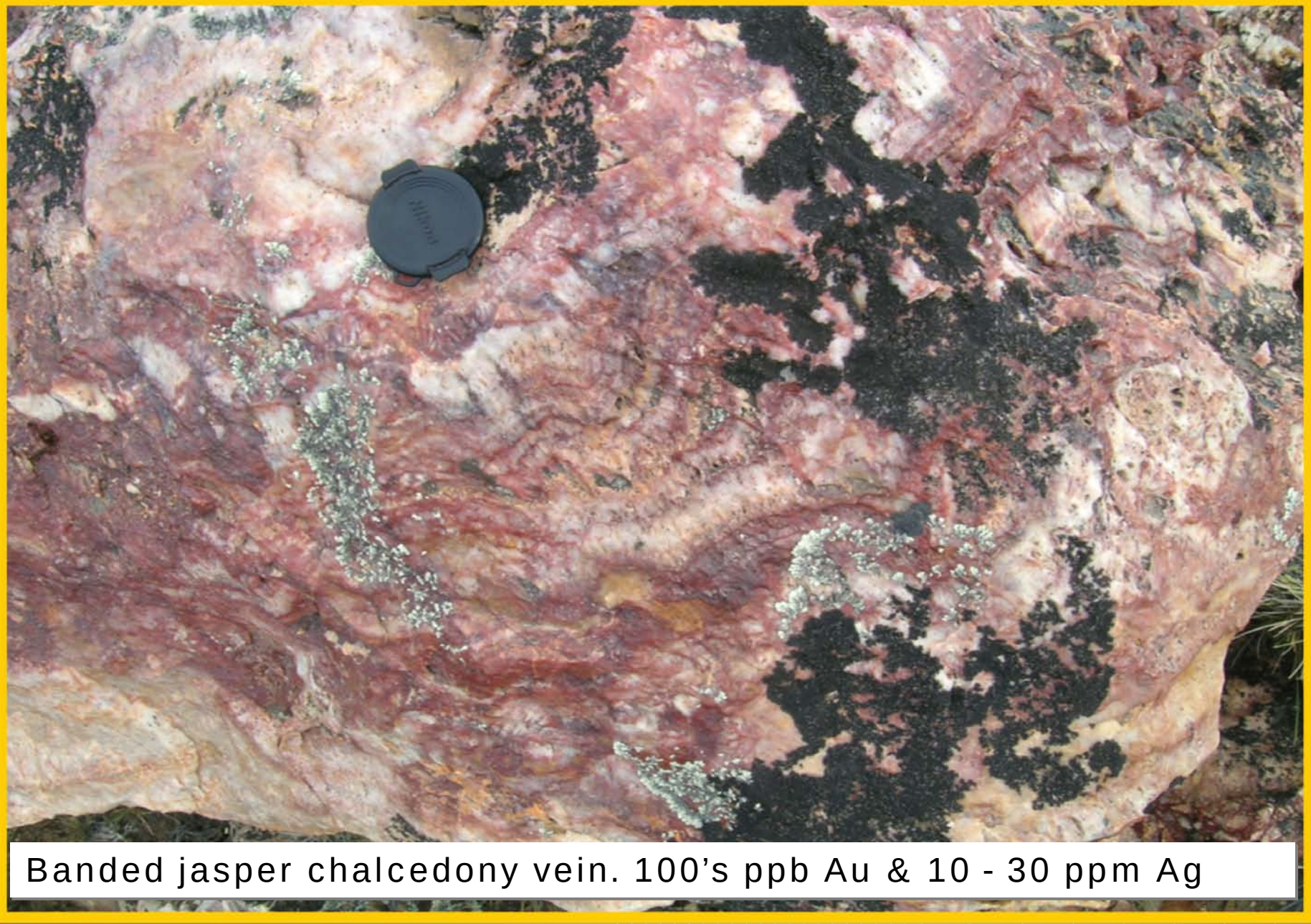
Colloform crustiform quartz and coarse bladed textures. Pyrite rare galena & sphalerite, acanthite-argentite, native Au/electrum – typically base of ore zone

Quartz-Ginguro Epithermal



Jasperiodal silica (hypogene hematite) ➔ chalcedony pyrite.
Mixing oxidized and reduce fluids. 10's ppb Au 1 – 20 ppm Ag

Quartz-Ginguro Epithermal



Banded jasper chalcedony vein. 100’s ppb Au & 10 - 30 ppm Ag

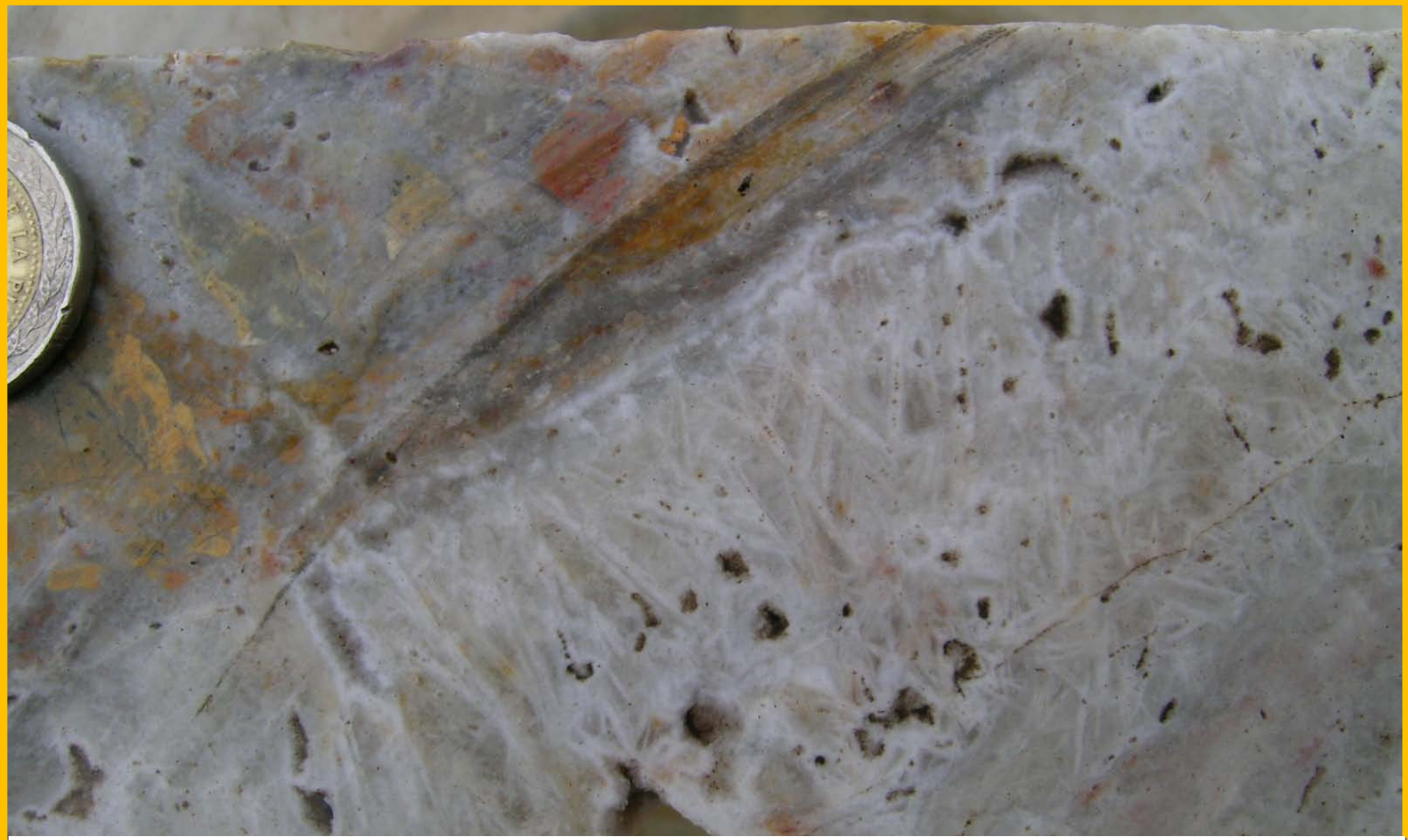
Quartz-Ginguro Epithermal

Chalcedonic-fine saccharoidal silica – acanthite clots
Top of ore zone

Quartz-Ginguro Epithermal

Main Ore Zone - Felted bladed textures Colloform Chalcedony with ginguro

Quartz-Ginguro Epithermal



Crystalline & Saccharoidal quartz + coarse bladed textures typically poorly mineralized (may be ore grade in rare cases)

Cerro Vanguardia – Claudia System

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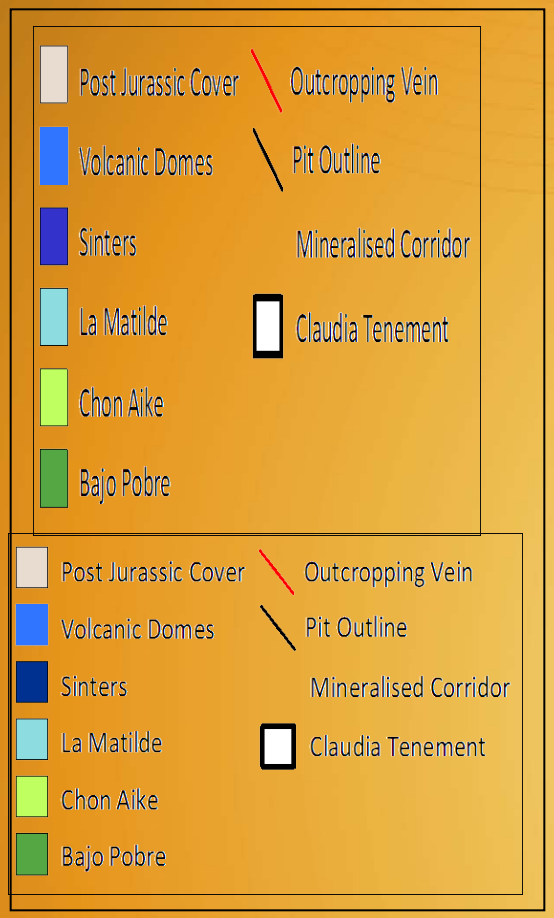
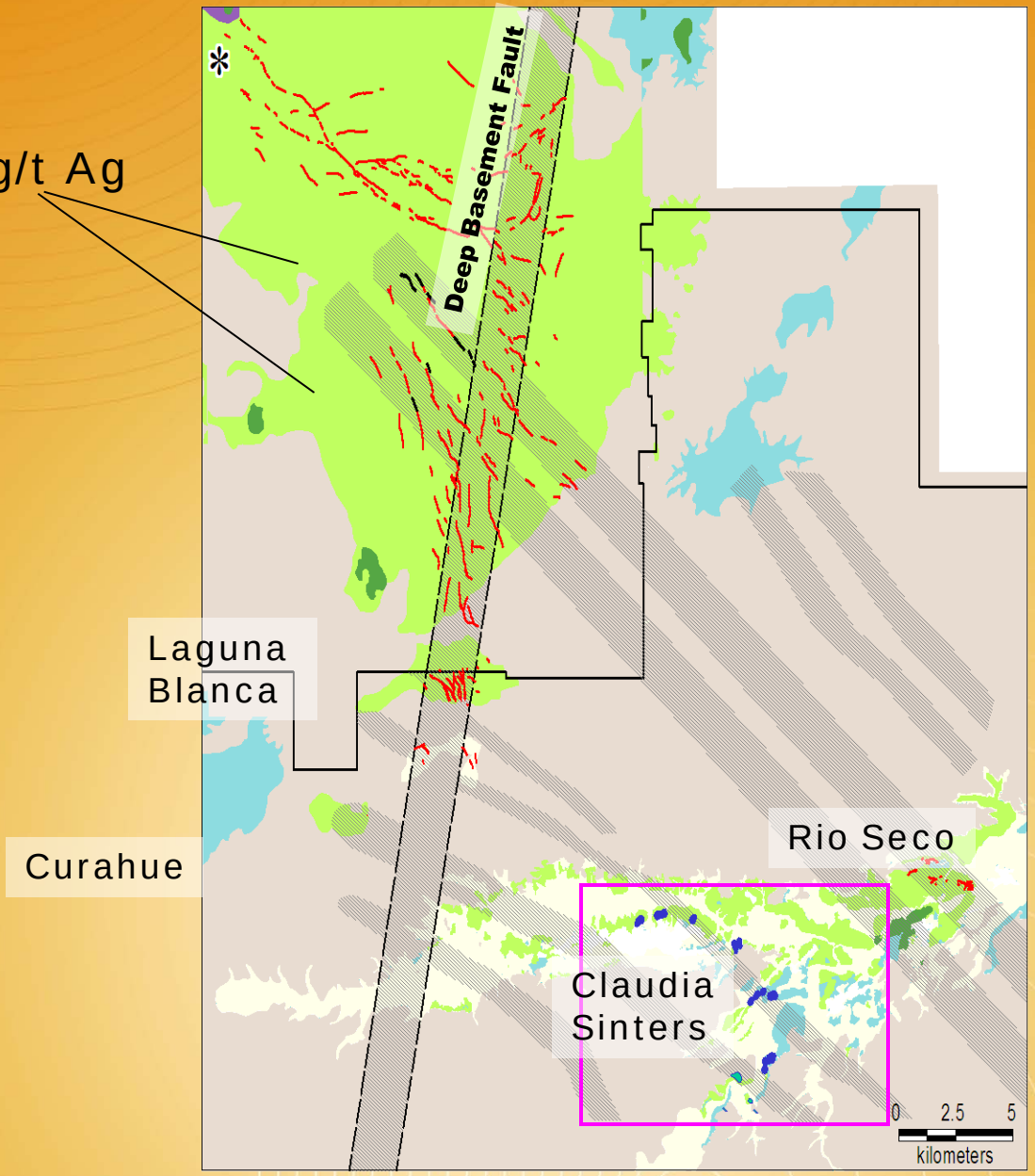
Cerro Vanguardia – Claudia District

Cerro Vanguardia Pits
17.1Mt@8.2g/t Au,105g/t Ag





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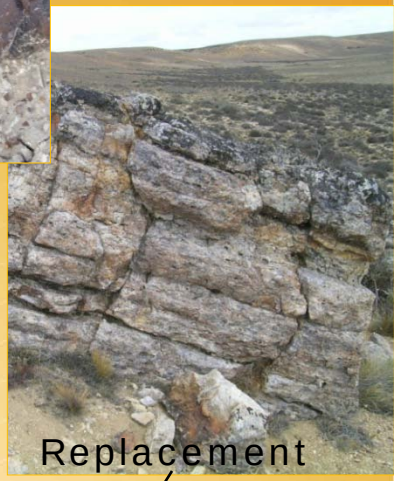
Claudia Sinter System

Eruption breccia

Prograding sinter

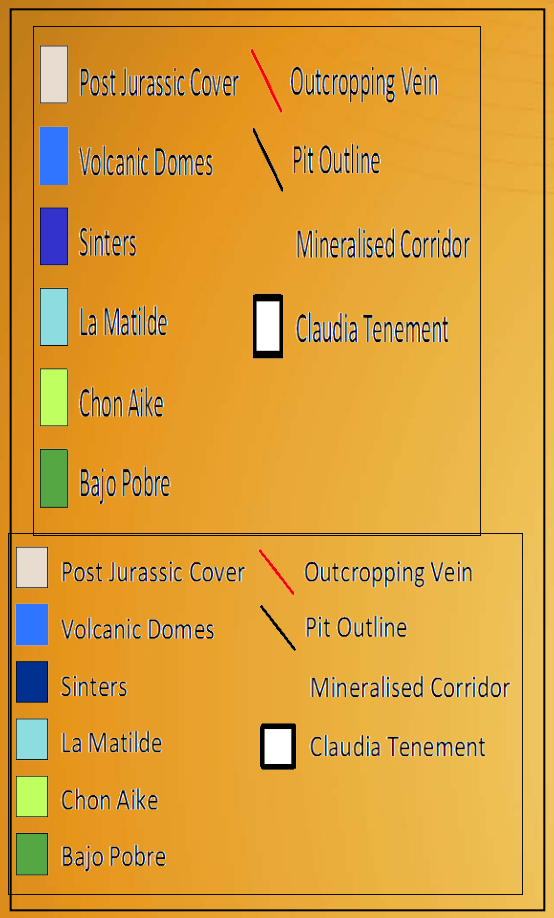
Algal Stromatolites

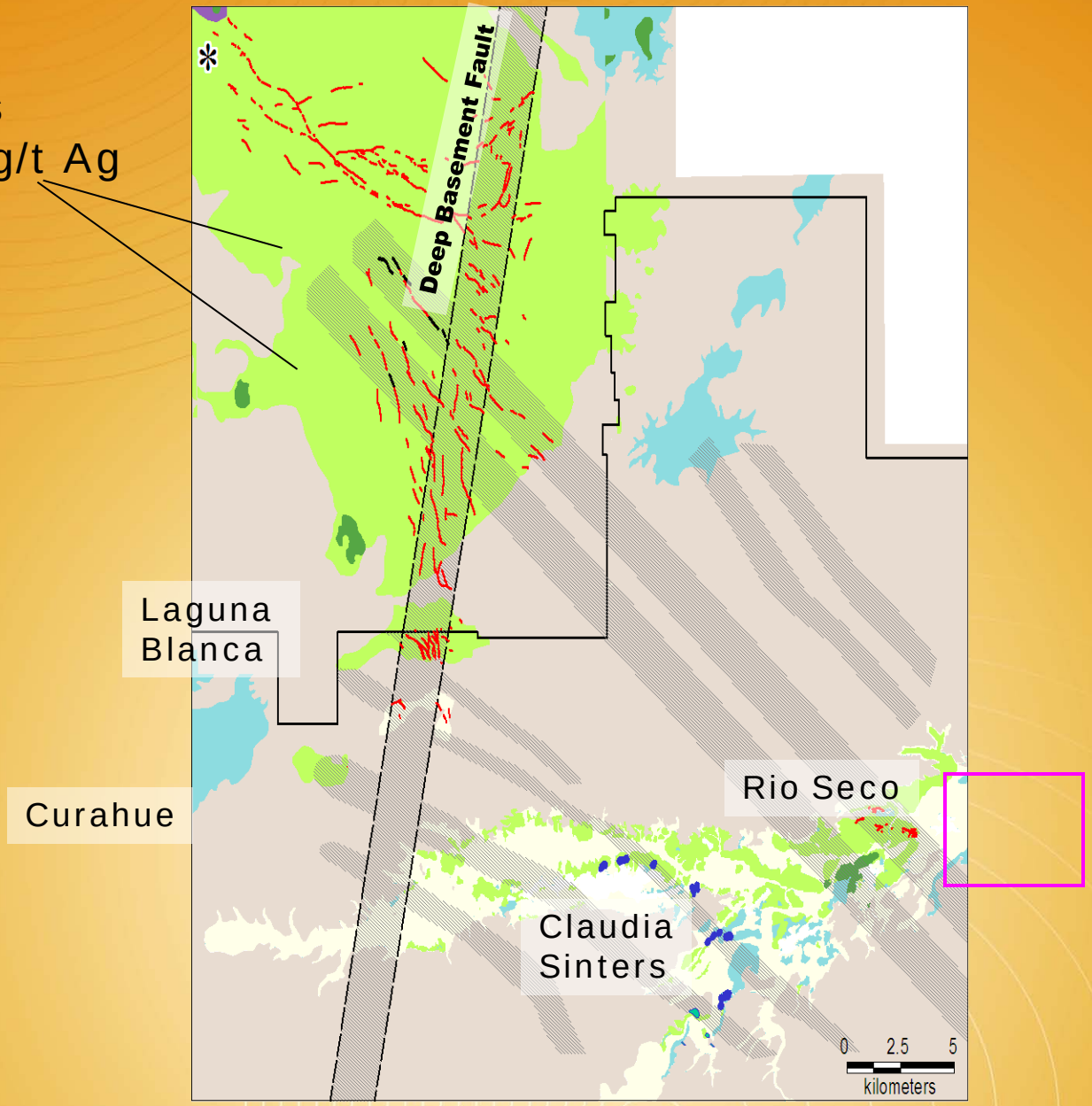


Replacement

Cerro Vanguardia – Claudia District

Cerro Vanguardia Pits
17.1Mt@8.2g/t Au,105g/t Ag





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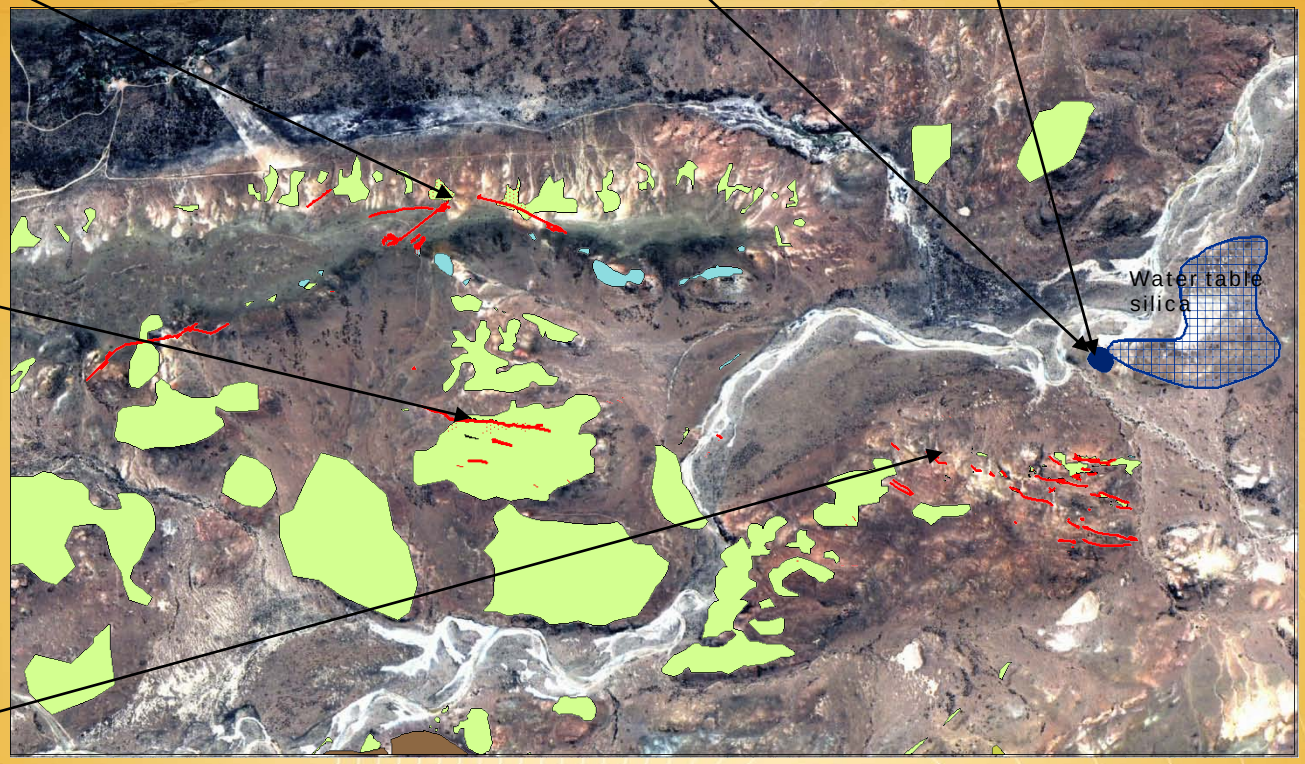
Rio Seco Qtz-Ginguro zone



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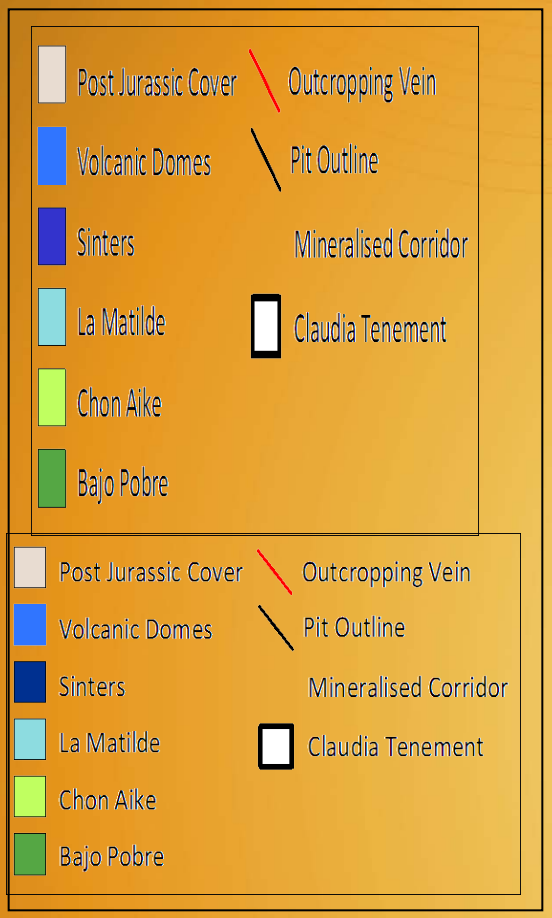
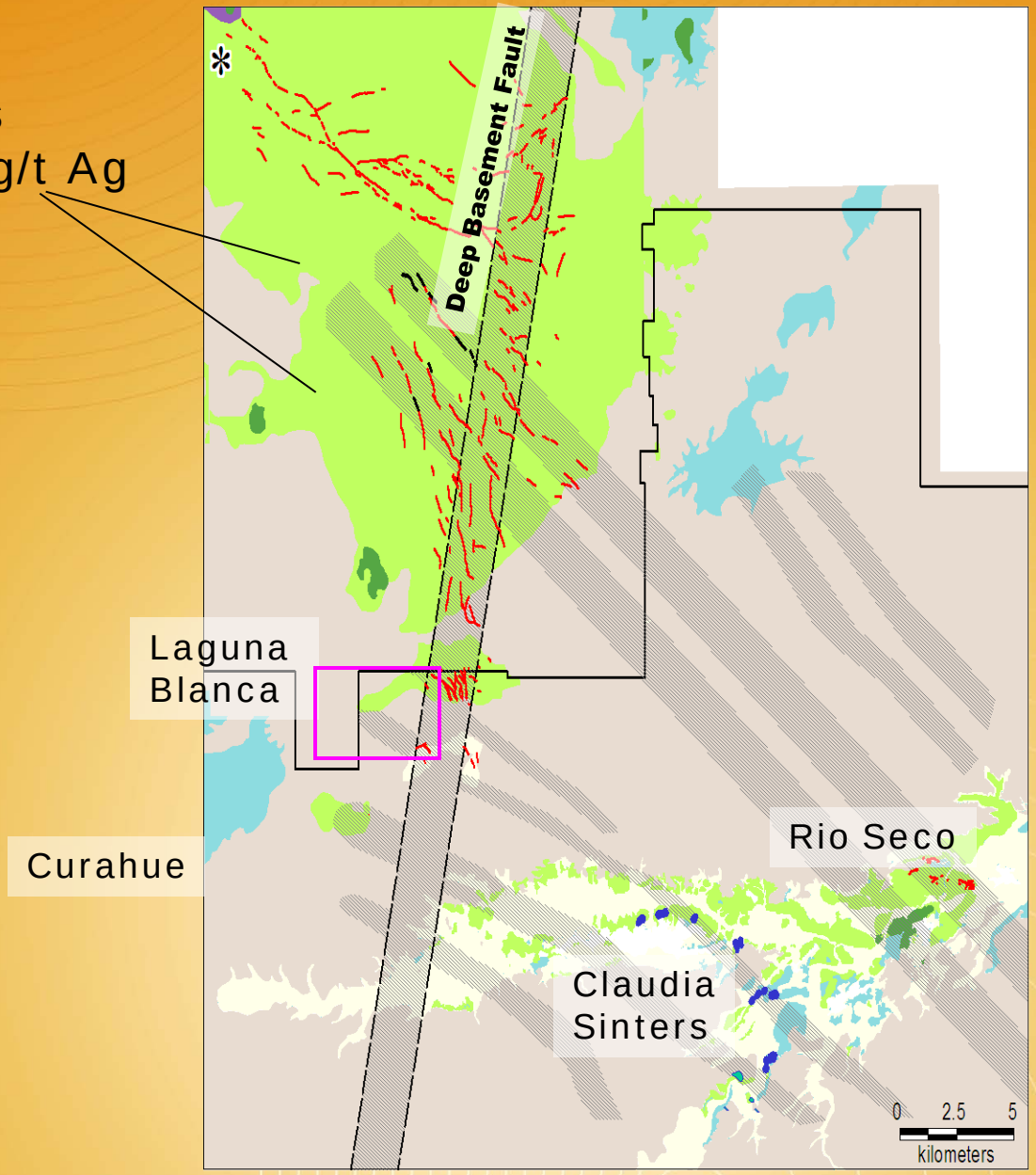
Cerro Vanguardia – Claudia District

Cerro Vanguardia Pits
17.1Mt@8.2g/t Au,105g/t Ag





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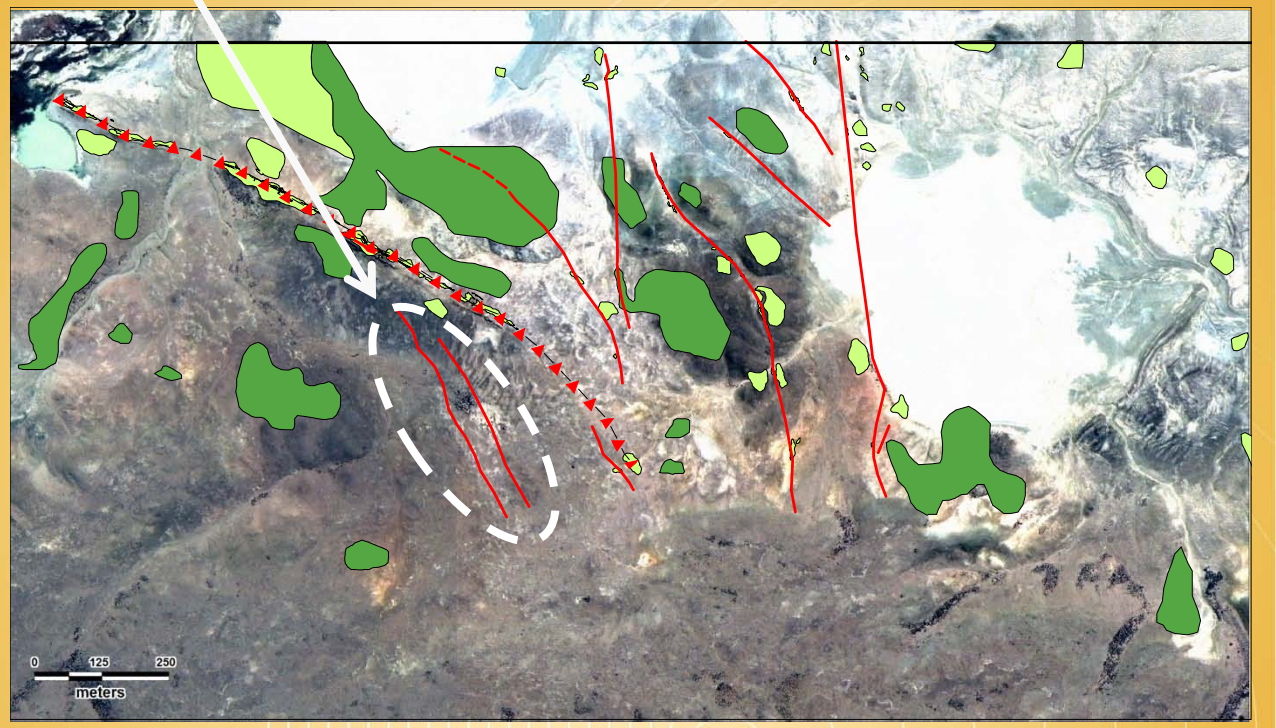
Laguna Blanca – Early Polymetallic to late Au Ag epithermal



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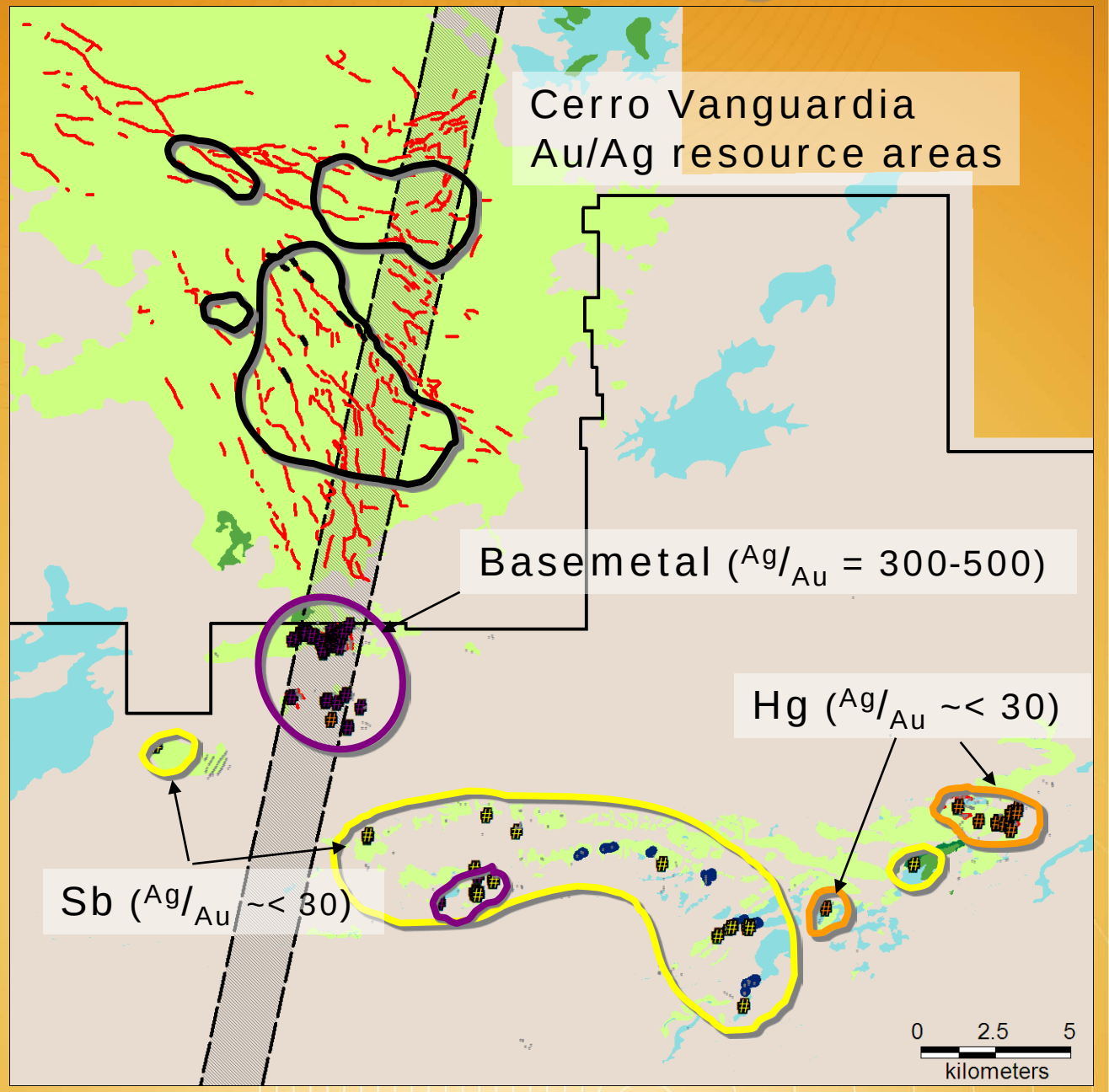
Epithermal Metal Zoning



Rock Chip Sampling

- # Base metal + Ag/Au 300-500
- # Antimony + Ag/Au <30 (approx.)
- # Mercury + Ag/Au <30 (approx.)

- Post Jurassic Cover
- Volcanic Domes
- Sinters
- La Matilde
- Chon Aike
- Bajo Pobre
- Outcropping Vein
- Pit Outline

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Summary

- Mineralization late Chon Aike to early Matilde event .

- Common spatial association with altered rhyolite +/- dacite - andesite dykes & domes

- Polymetallic Ag-Au to Quartz ginguro Au-Ag epithermal (Corbett) with Low to intermediate sulphidation (Hedenquist) character

- Zone vertically over 100s of meters & laterally on a district scale over 10 km's from proximal polymetallic Ag-Au to more distal quartz ginguro Au-Ag

- Mineral district 10's of km's in diameter – Cerro Vanguardia 25kms (Co.Vanguardia-Claudia – 35-40kms)

- Zoning patterns are important exploration tools to help vector in poorly exposed large mineral systems