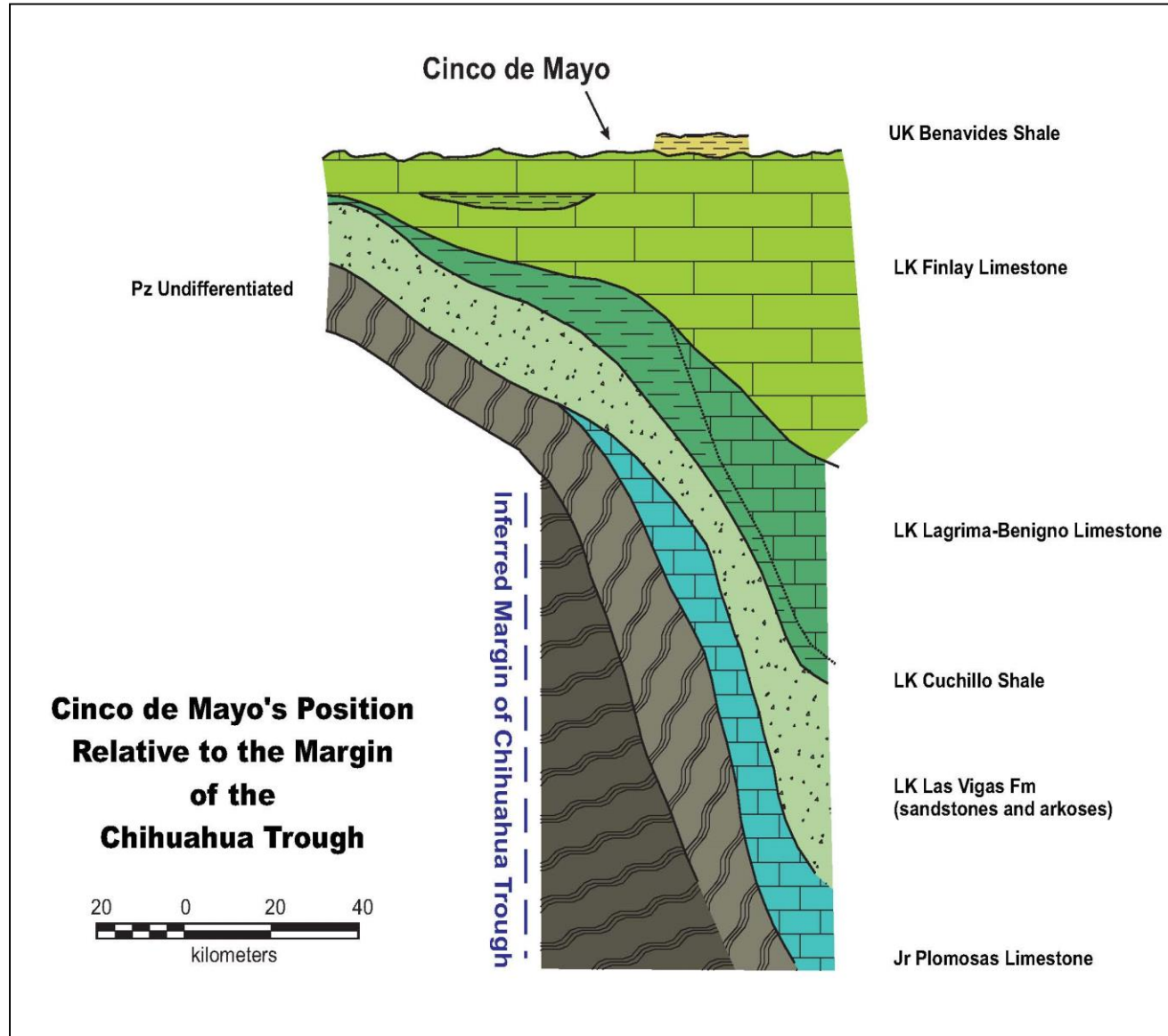
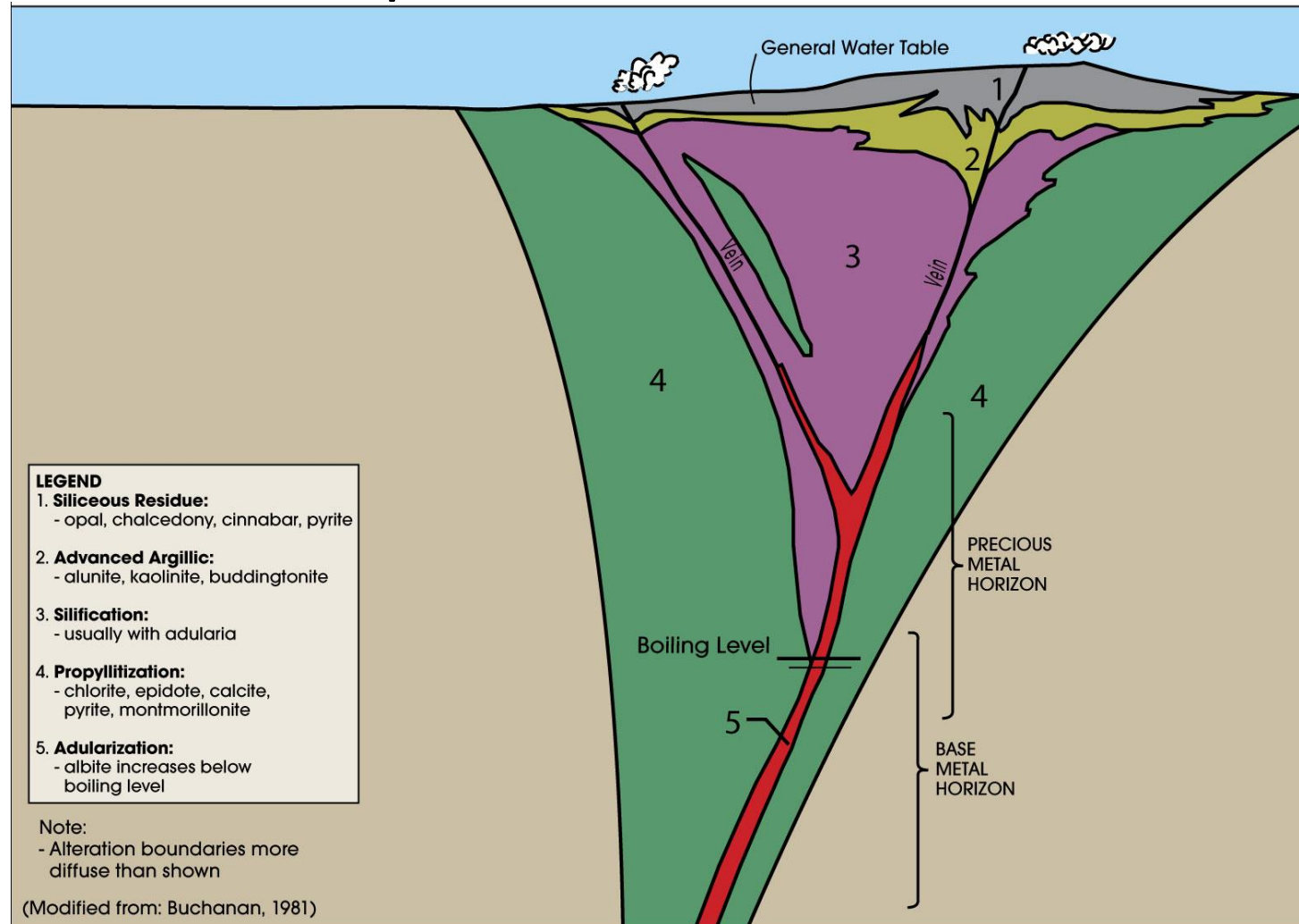


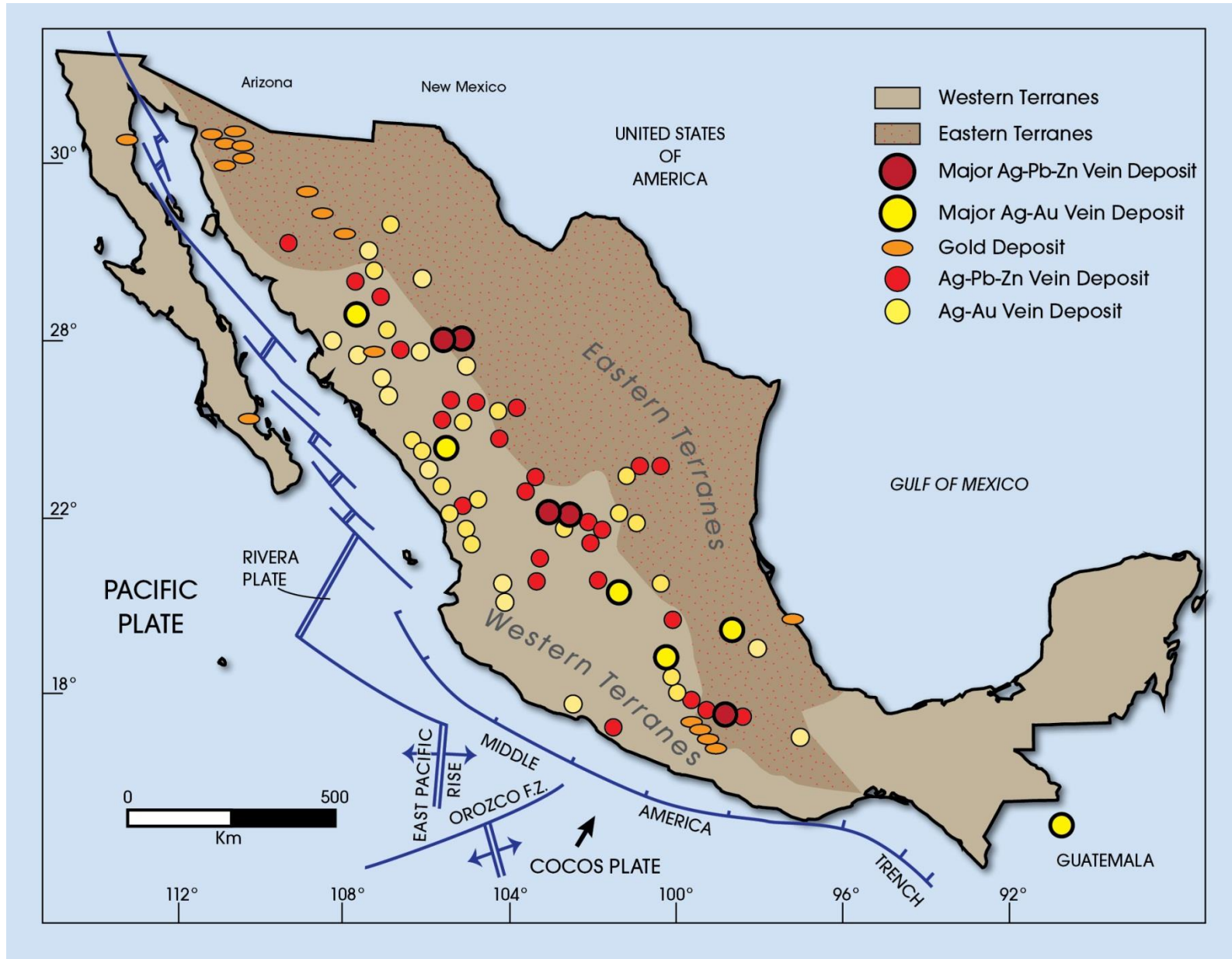
CRD Position Relative to Basin Margins



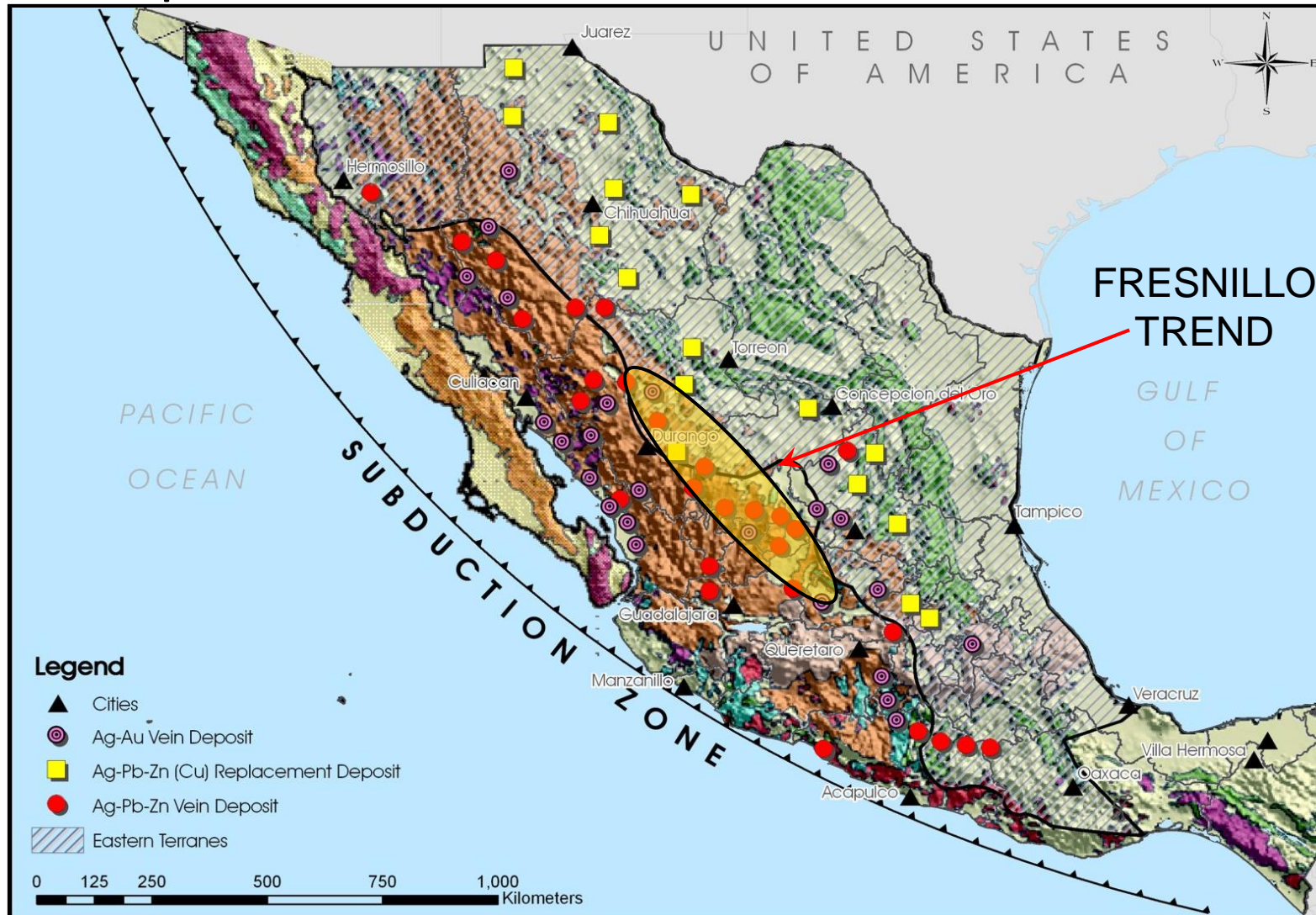
Buchanan's Epithermal Vein Model



Mexico: Basement Terranes and Vein Deposits



Tertiary Mexico & Related Ore Deposits

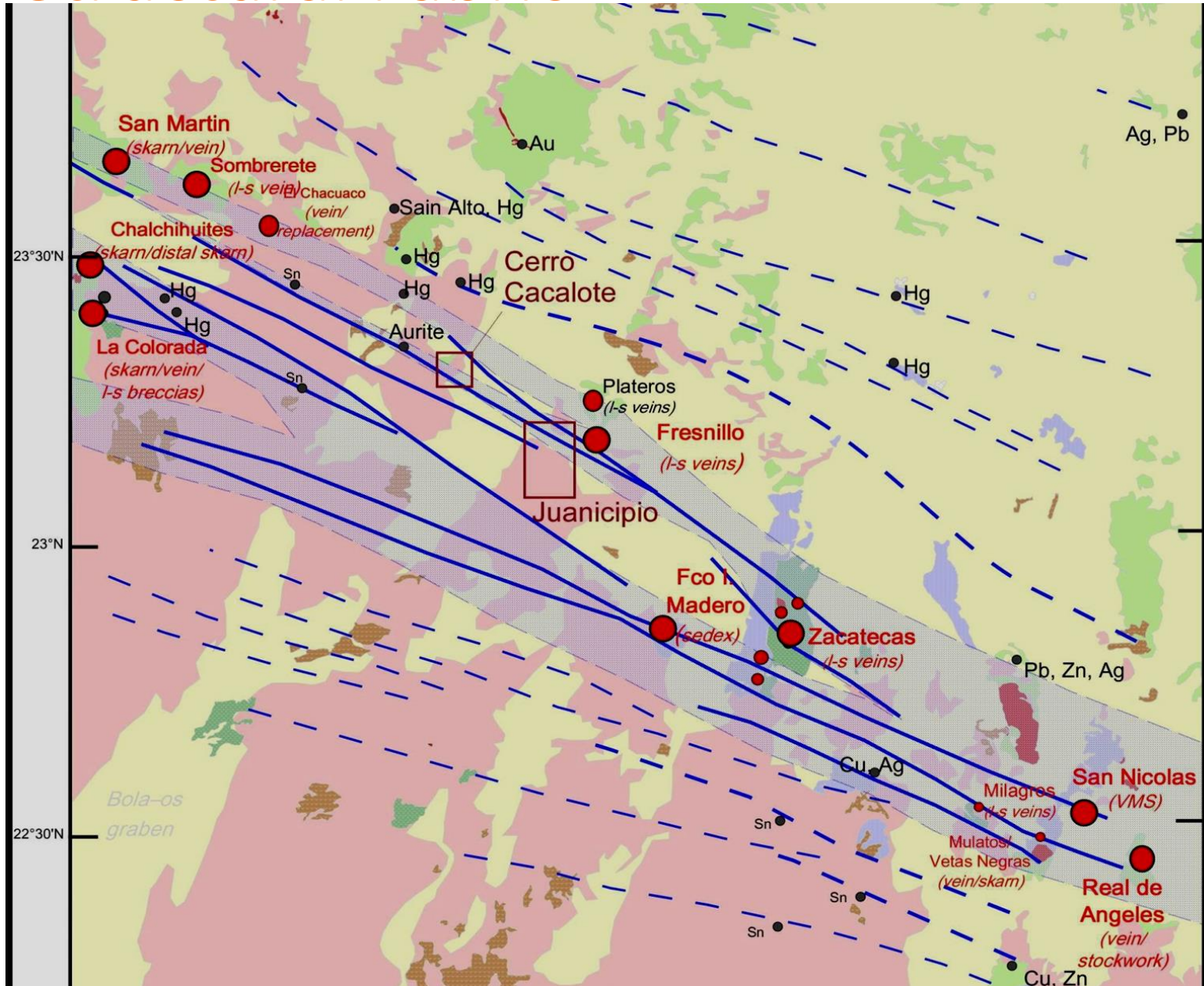


Mexico: Fresnillo Silver Trend



Mexico: Fresnillo Silver Trend

Structural Fabric



MEXICO. WITH SO MUCH SILVER? SILVER?

- **Source**

 - All deposit types Ag-rich

 - Crust either especially rich in Ag or it is more accessible than elsewhere

- **Processes**

 - Long-lived magmatic belt with associated hydrothermal activity

 - Silver moves best in High T- acid fluids...expected with felsic magmatism

 - Certain deposit types associated with felsic magmatism especially prolific

- **Environment**

 - Excellent, structurally-prepared host rocks

- **Timing**

 - Near-perfect timing for magmas and fluids to get to high crustal levels

 - Old enough to be exposed

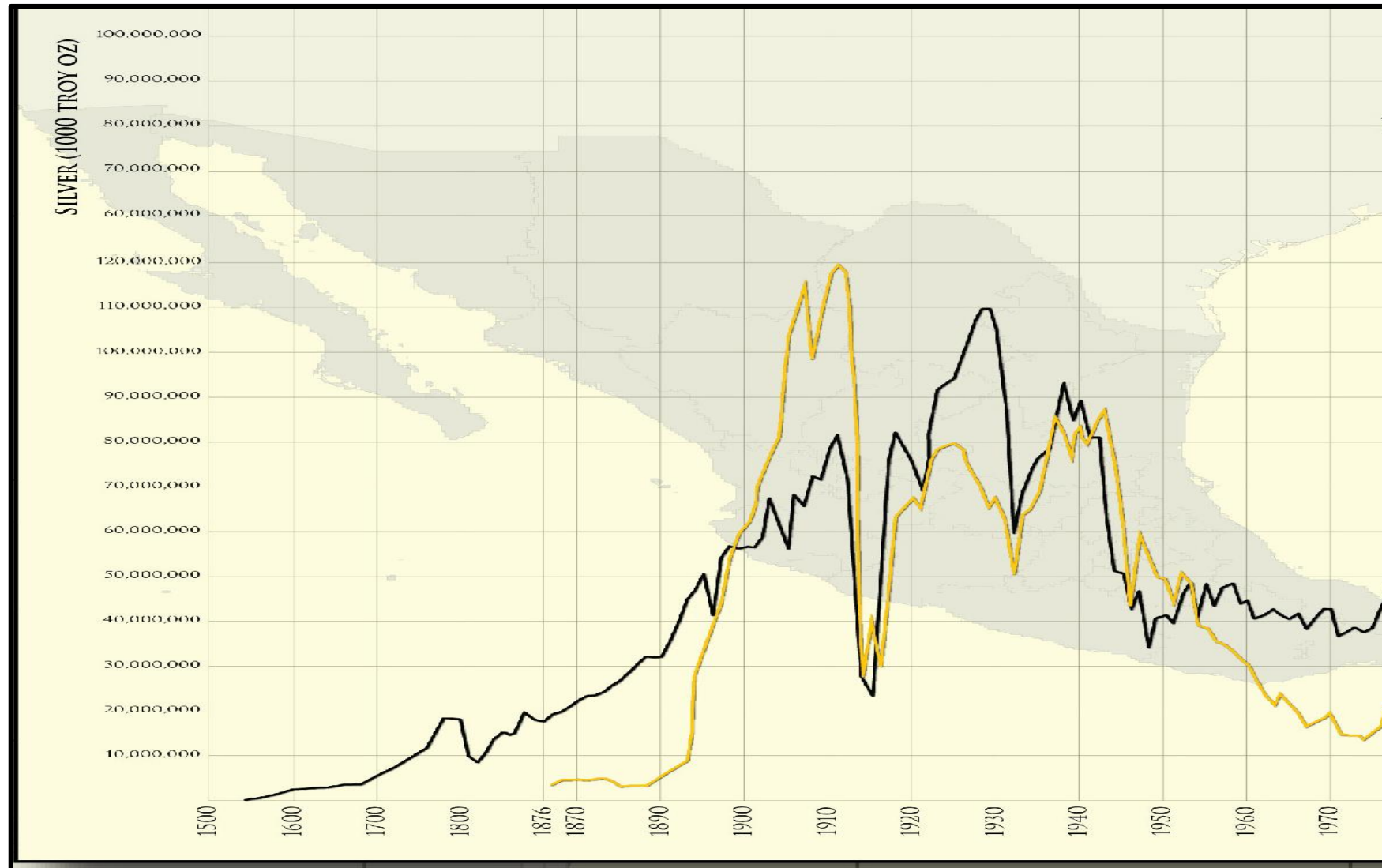
 - Young enough to be preserved

EXPLORATION IS NOT DEAD!!!



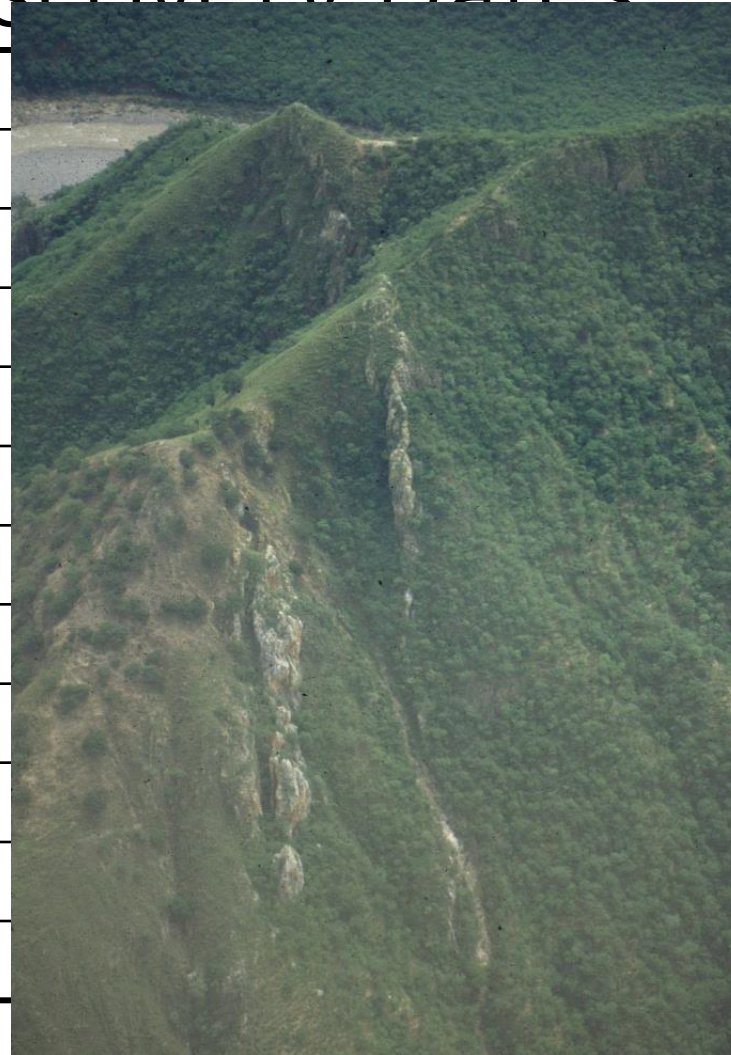
Does any of this help us find ore?

Mexico's Silver & Gold Production 1521-1980











Mexican Districts: Discovery Dates

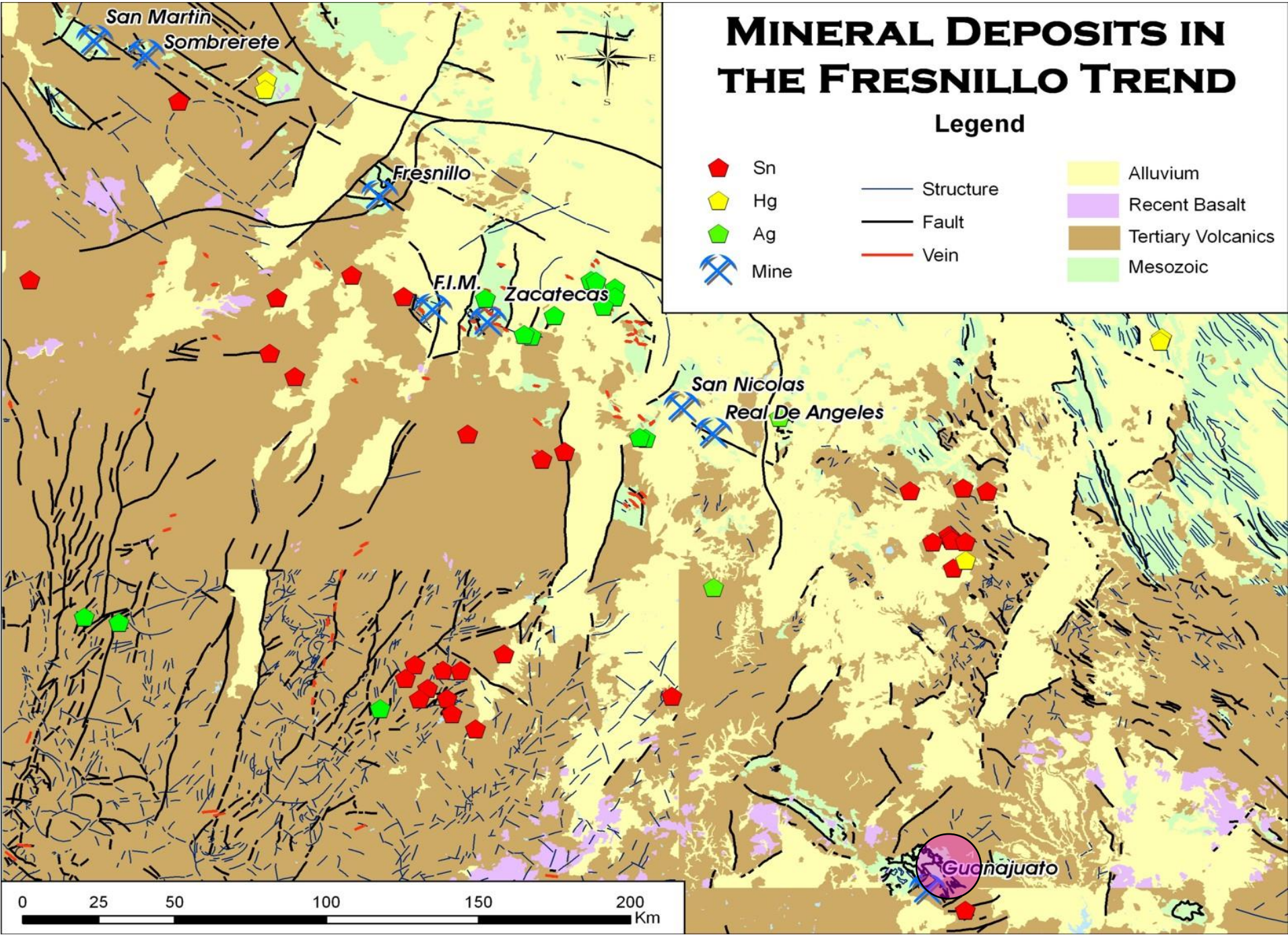
Taxco	1522
Pachuca	1524
Guanajuato	1529
Sombrerete	1542
Zacatecas	1543
Fresnillo	1553
Charcas	1570
Cerro San Pedro	1575
Santa Eulalia	1593
Mapimi	1598
Santa Barbara / Parral	1600
Batopilas	1632



MINERAL DEPOSITS IN THE FRESNILLO TREND

Legend

- | | | |
|--|---|--|
|  Sn |  Structure |  Alluvium |
|  Hg |  Fault |  Recent Basalt |
|  Ag |  Vein |  Tertiary Volcanics |
|  Mine | |  Mesozoic |

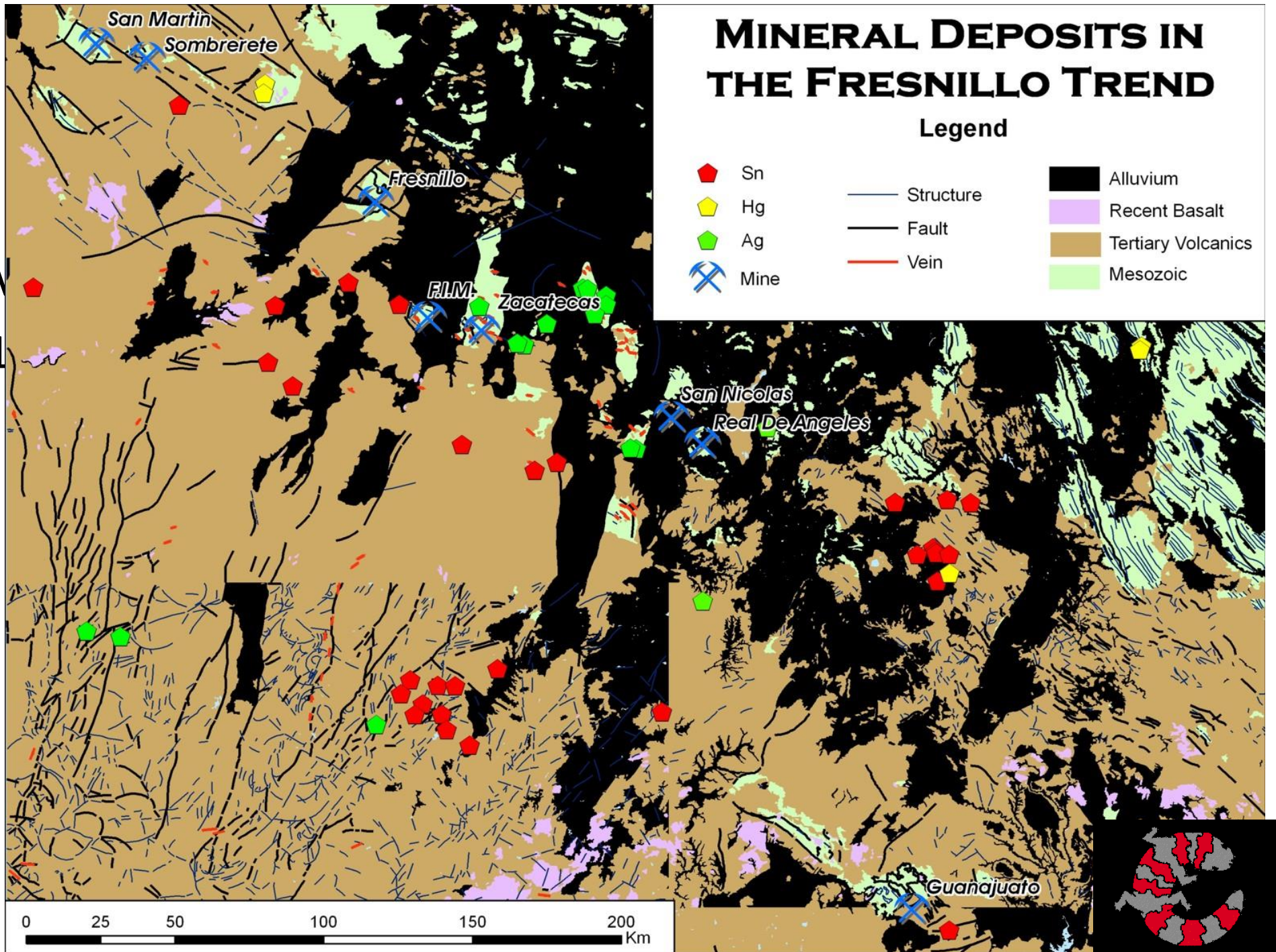


MINERAL DEPOSITS IN THE FRESNILLO TREND

Legend

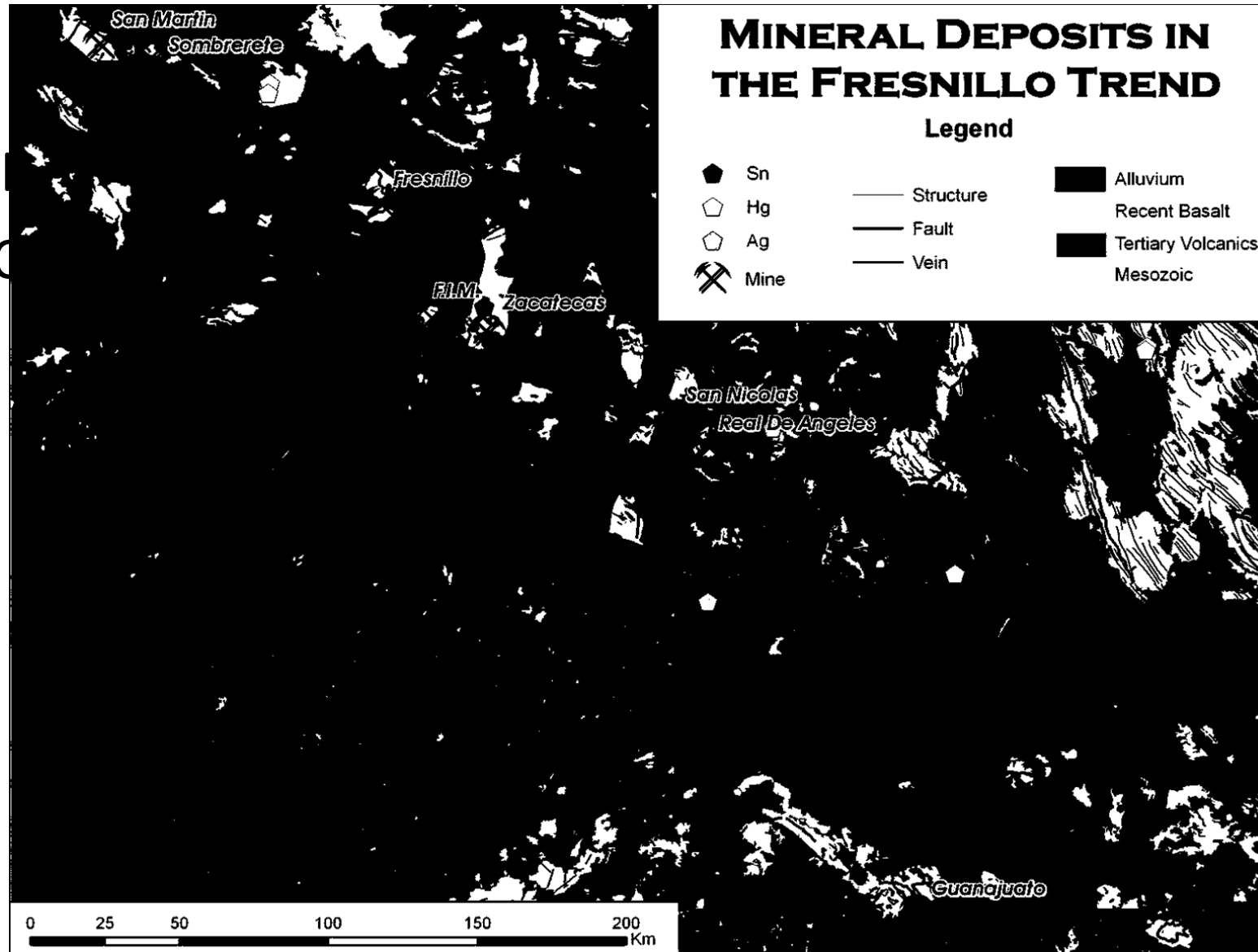


- COV
- COL



Mexico: Explore Through Cover in Known Belts

- COVER
- COLOR



Exploring Through Cover...Cutting the Risks



BLIND EXPLORATION



Geological Model

Location, Location, Location

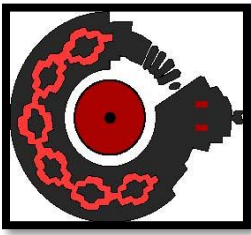
Geophysics

Drilling

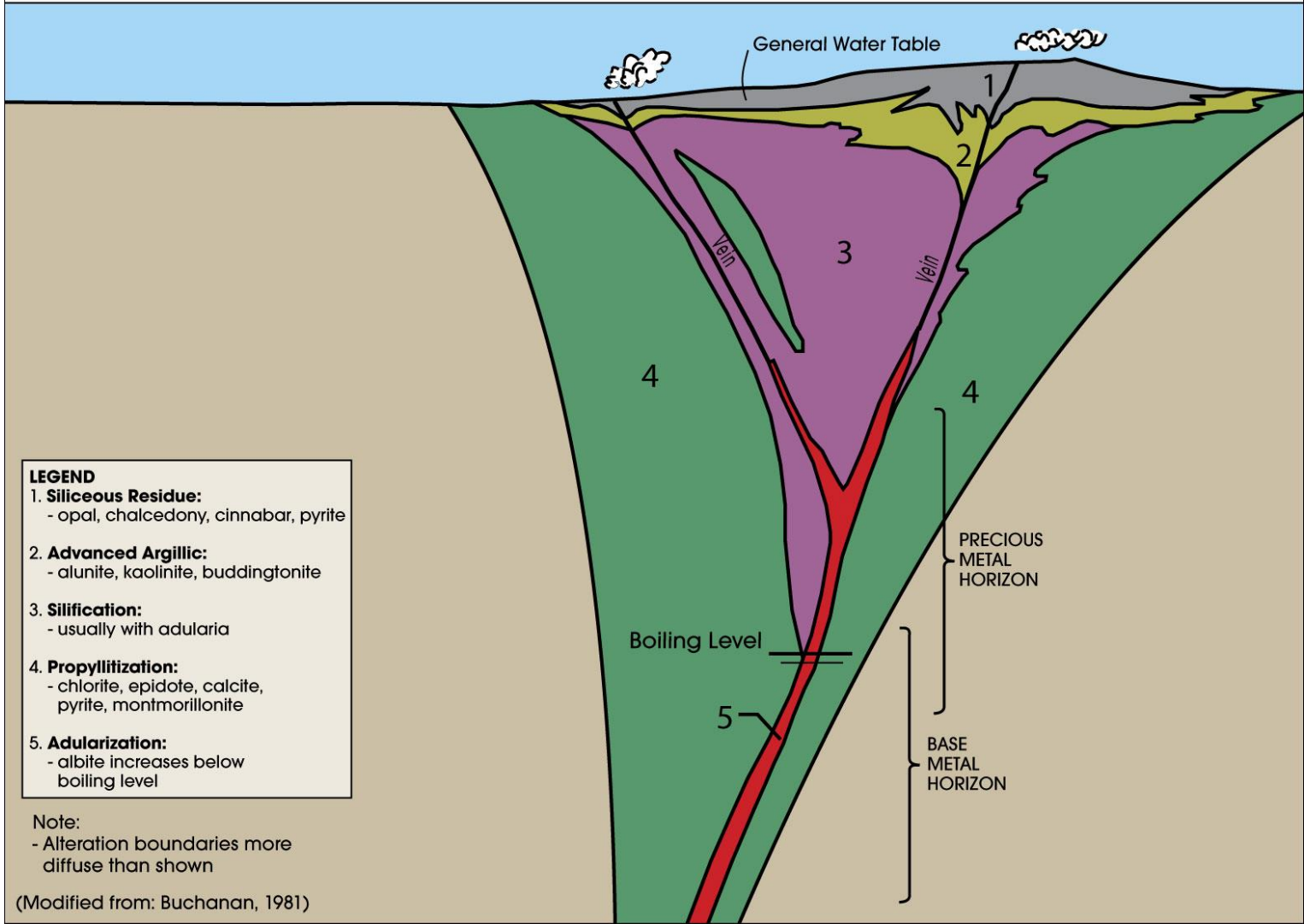
Reinterpretation

Repeat

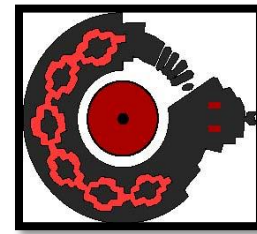
PATIENCE, BELIEF, FUNDING, PERSEVERANCE...REPEAT

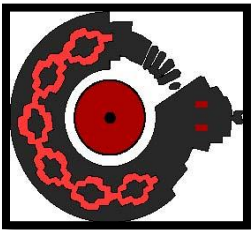


Buchanan's Epithermal Vein Model

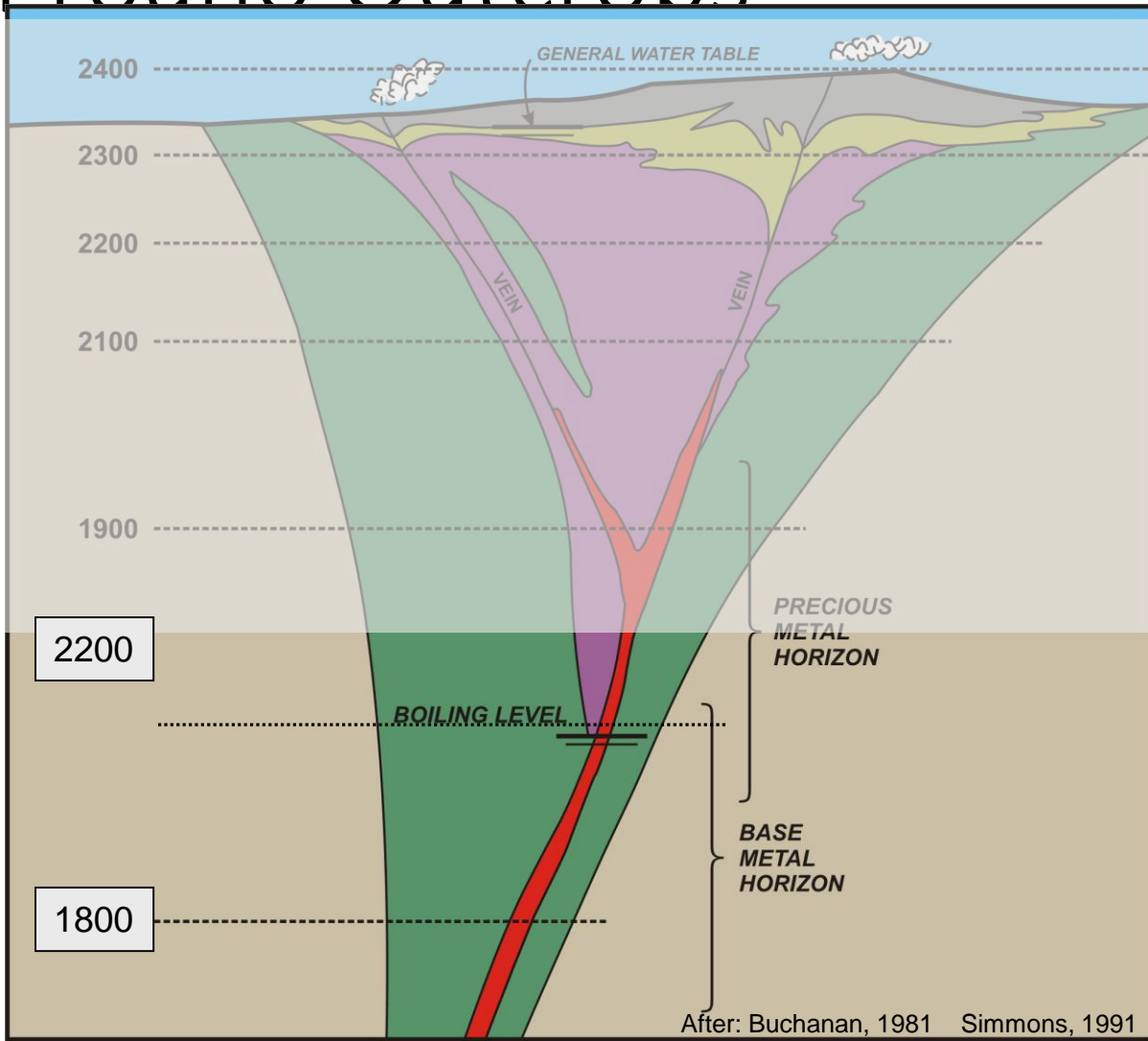


Fresnillo: Cerro Proaño Outcrop Discovery 1553

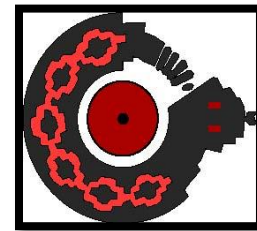




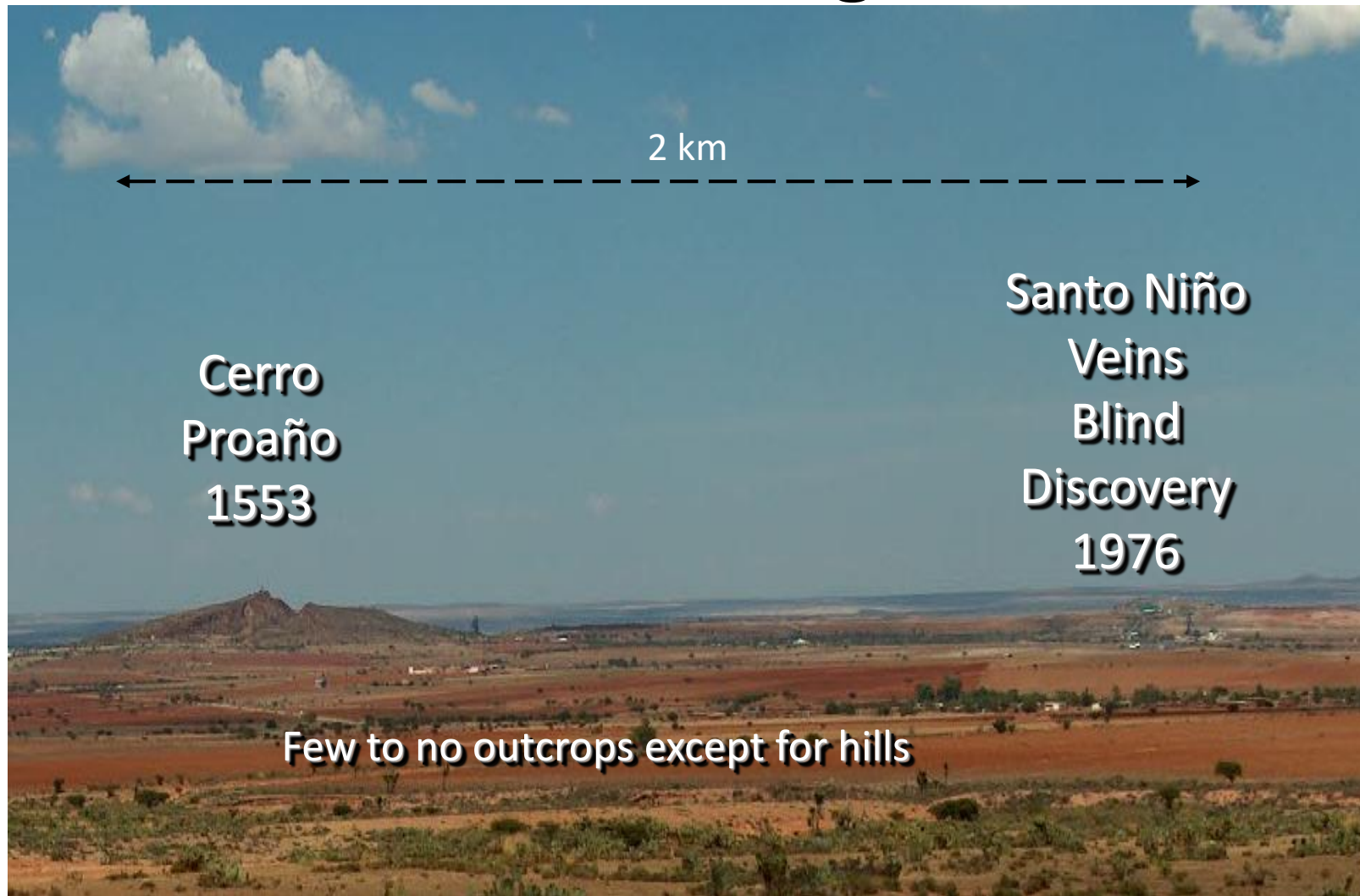
Cerro Proaño Outcrops

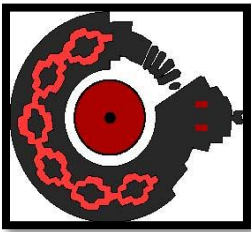


Depth of
Erosion of
Cerro Proaño
Stage Vein
Outcrops

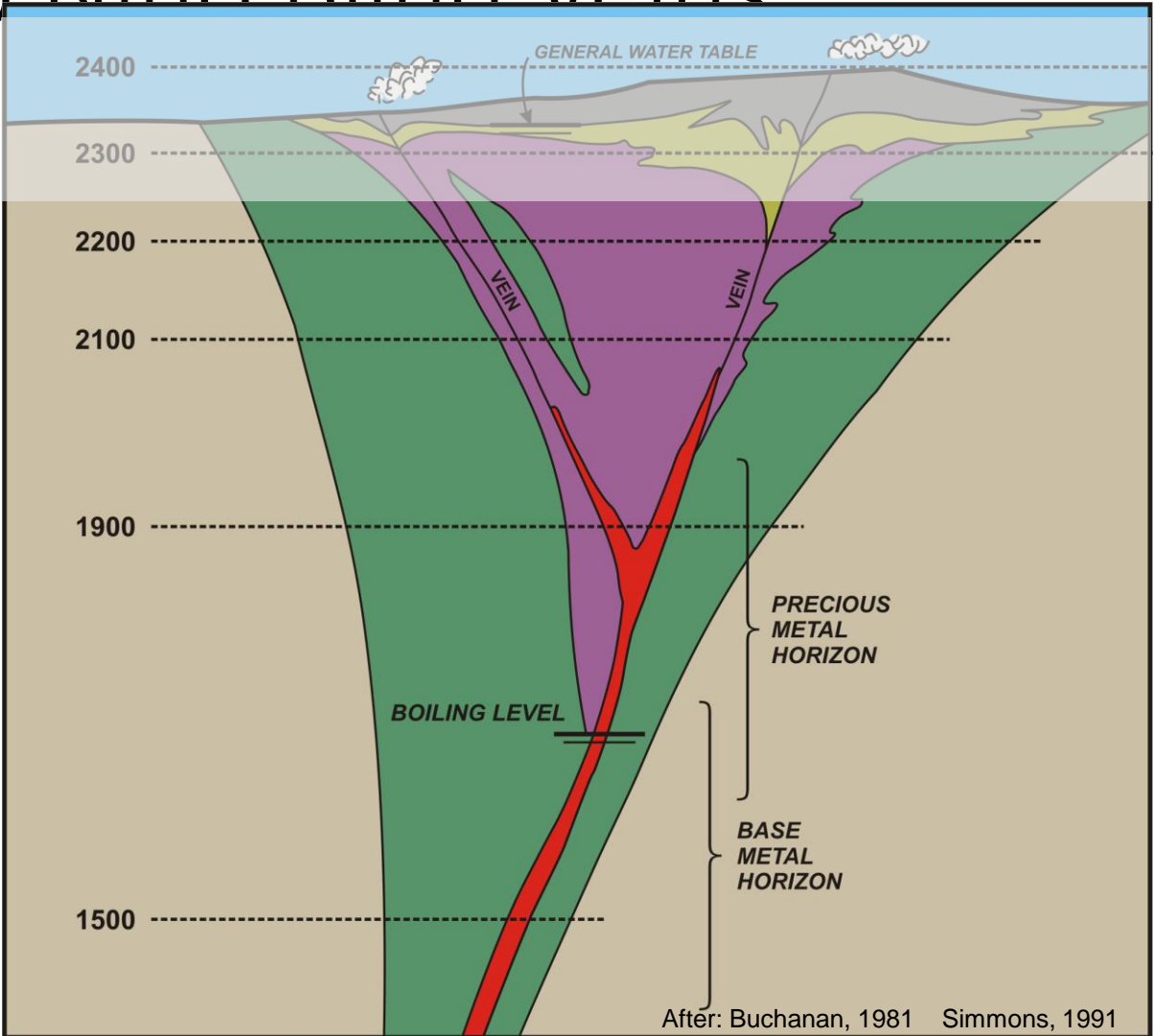


Fresnillo: Historic Mining Area





Santo Niño Blind Veins



Depth of
Erosion on
Santo Niño
Stage Veins

Discovered 1976
No significant surface
expression

ECONOMIC GEOLOGY

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(ISSN 0361-0128)

Volume 83

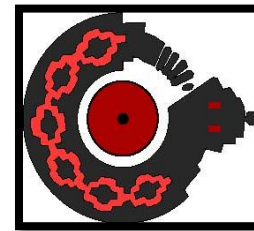
DECEMBER 1988

Number 8

A SPECIAL ISSUE DEVOTED TO THE GEOLOGY AND MINERAL DEPOSITS OF MEXICO

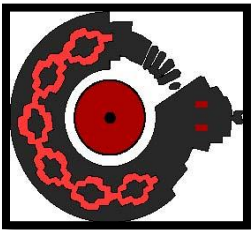
Preface	
Polymetallic Epithermal Fissure Vein Mineralization, Topia, Durango, Mexico: Part I. District Geology, Geochronology, Hydrothermal Alteration, and Vein Mineralogy	Kenneth F. Clark and Guillermo A. Salas P. 1493
Polymetallic Epithermal Fissure Vein Mineralization, Topia, Durango, Mexico: Part II. Silver Mineral Chemistry and High Resolution Patterns of Chemical Zoning in Veins	Robert R. Loucks, John L. Leitch, and Patrice E. Damon 1499
Geology and Ore Deposits of the Bolaños Silver District, Jalisco, Mexico	Robert R. Loucks and Ulrich Petersen 1529
Ore Deposits at the Fresnillo Mine, Zacatecas, Mexico	James I. Lyons 1560
The Santo Niño Silver-Lead-Zinc Vein, Fresnillo District, Zacatecas, Mexico: Part I. Structure, Vein Stratigraphy, and Mineralogy	Delfino C. Ruvalcaba-Ruiz and Tommy B. Thompson 1583
The Santo Niño Silver-Lead-Zinc Vein, Fresnillo District, Zacatecas, Mexico: Part II. Physical and Chemical Nature of Ore-Forming Solutions	J. Bruce Gemmell, Stuart F. Simmons, and Half Zantop 1597
K-Ar Age Studies in the Fresnillo Silver District, Zacatecas, Mexico	Stuart F. Simmons, J. Bruce Gemmell, and Frederick J. Sawkins 1619
Geologic Reconstruction of Paleosurfaces in the Sombrerete, Colorada, and Fresnillo Districts, Zacatecas State, Mexico	Barbu Lang, Gideon Steinitz, Frederick J. Sawkins, and Stuart F. Simmons 1642
The Zacatecas Mining District: A Tertiary Caldera Complex Associated with Precious and Base Metal Mineralization	Tawn Albinson F. 1647
The Pb-Zn-Cu-Ag Deposits of the Granadéña Mine, San Francisco del Oro-Santa Barbara District, Chihuahua, Mexico	Benjamin F. Ponce S. and Kenneth F. Clark 1668
Geology, Tectonic Environment, and Structural Controls in the San Martín de Bolaños District, Jalisco, Mexico	Glenn J. Grant and Joaquin Ruiz 1683
Batopilas Mining District, Chihuahua, Mexico	Frank R. Scheubel, Kenneth F. Clark, and Elise W. Porter 1703
Mineralogy, Fluid Characteristics, and Silver Distribution at Real de Angeles, Zacatecas, Mexico	Gregg Wilkerson, Qingping Deng, Ramon Llavona, and Philip Goodell 1721
Mineralization at Cananea, Sonora, Mexico, and the Paragenesis and Zoning of Breccia Pipes in Quartzofeldspathic Rock	Mark F. Pearson, Kenneth F. Clark, and Elise W. Porter 1737
Mineralogy and Geochemistry of the San Martín Skarn Deposit, Zacatecas, Mexico	Steven Ensign Bushnell 1760
Sierra de Santa María, Velardeña Mining District, Durango, Mexico	Jeffrey N. Rubin and J. Richard Kyle 1782
	Allen L. Gilmer, Kenneth F. Clark, Jose Conde C., Ignacio Hernandez C., Juan I. Figueroa S., and Elise W. Porter 1802

(Continued on Back Cover)

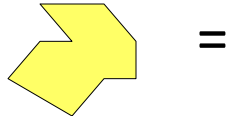


ECONOMIC GEOLOGY DECEMBER '88 SPECIAL MEXICO ISSUE

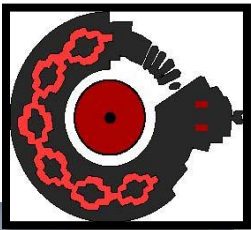
K.F. Clark Editor



Fresnillo District Landsat Imagery



Pervasive
Clay
Alteration



Juaniciniio Area Alteration



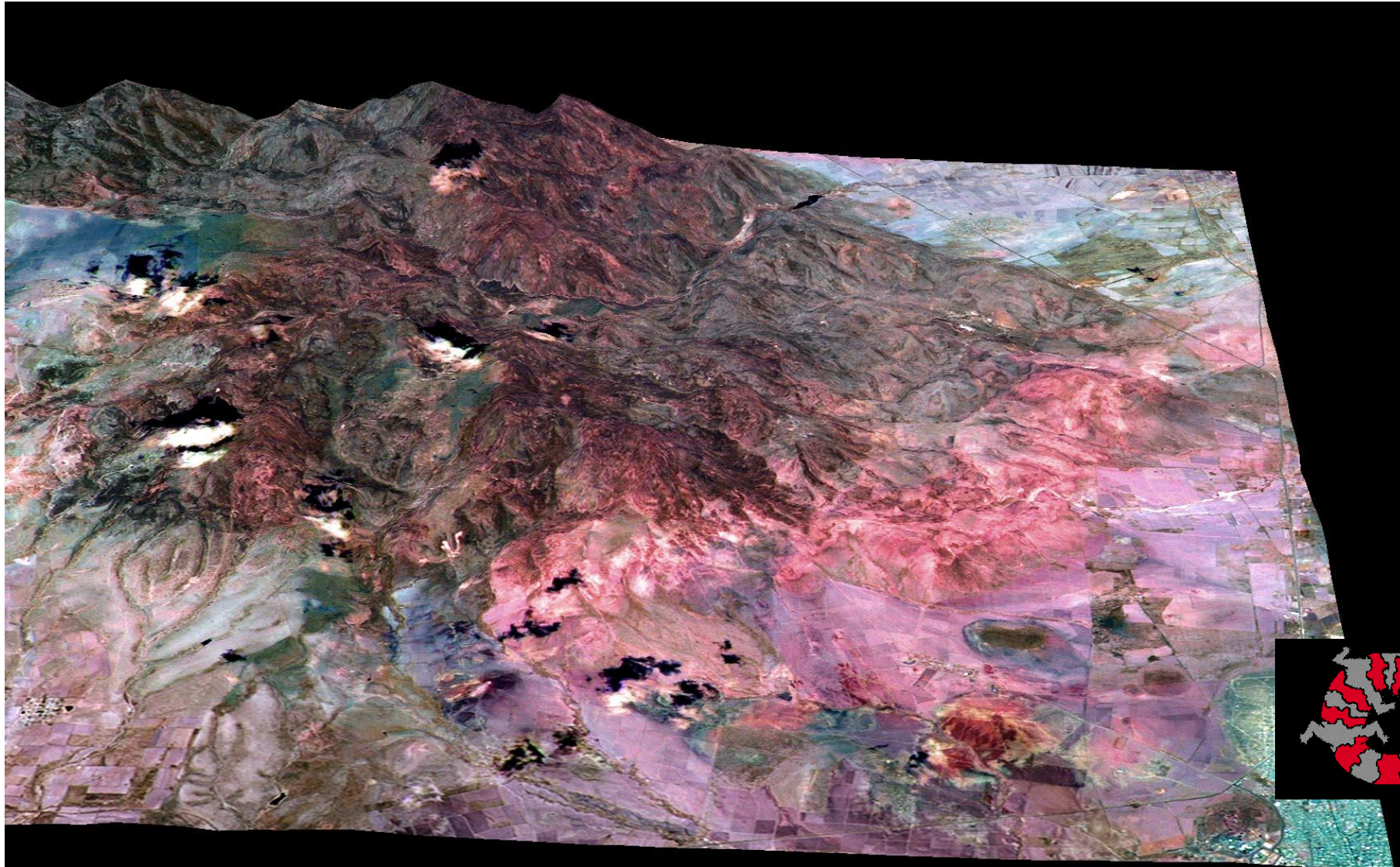
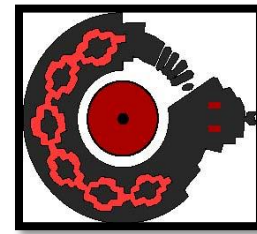
Silicification

Iron-Oxide
Flooding

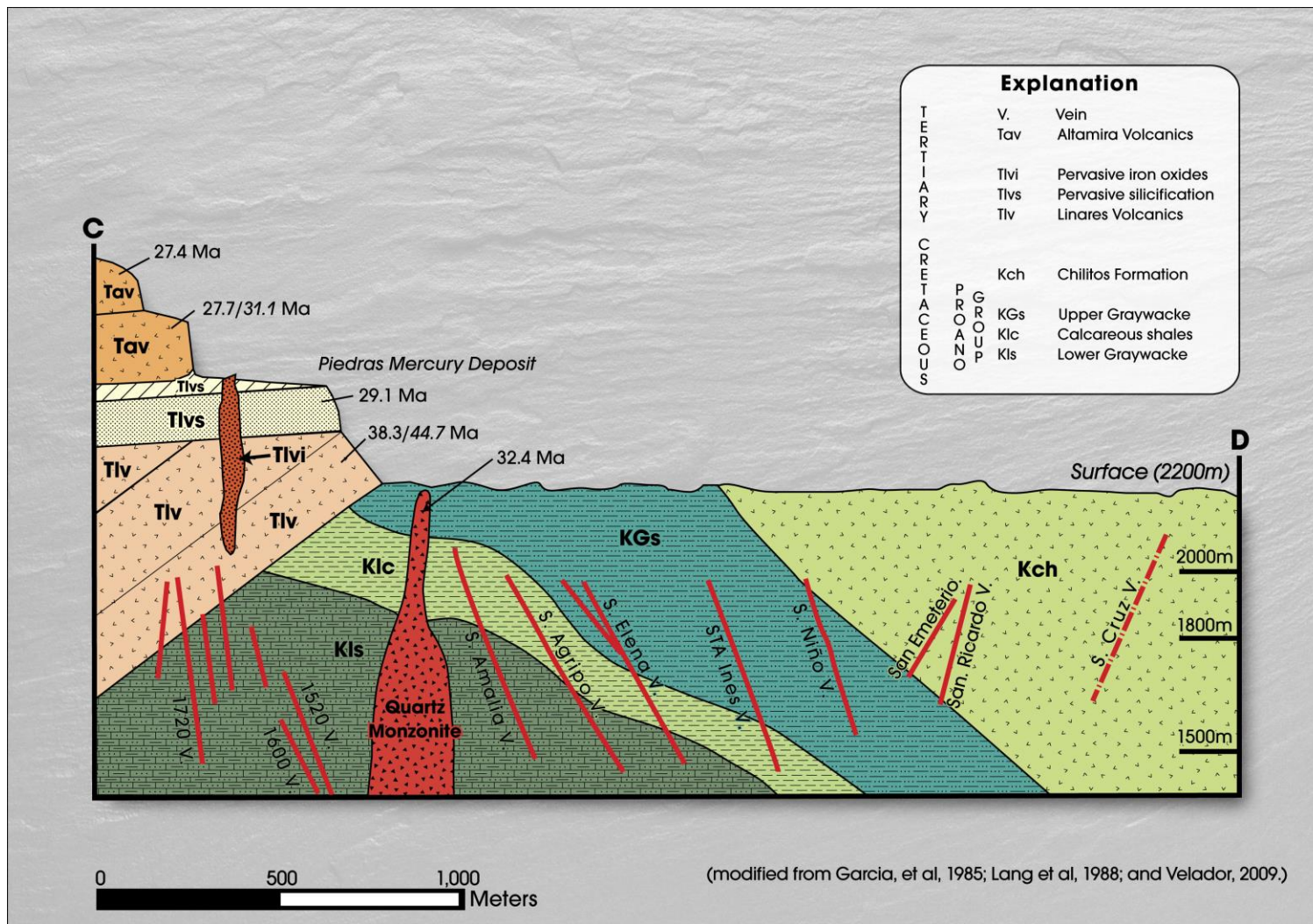
Looking North



Juanicipio Area Alteration



Fresnillo District Composite Cross-Section with Age Relations

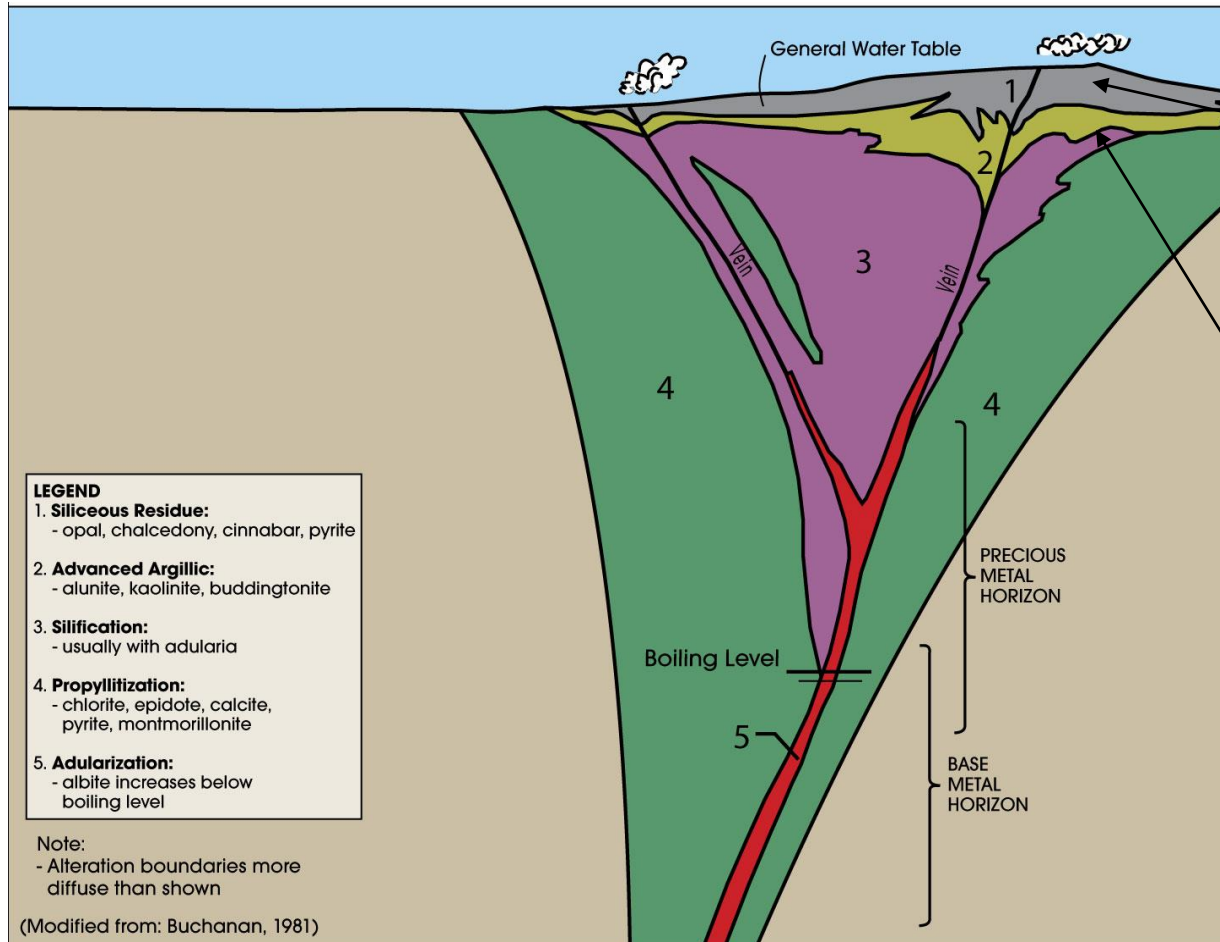
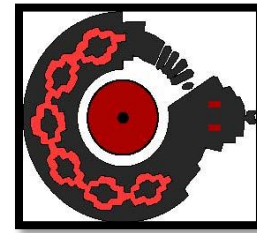


Note: Lang, 1988 dates used in 1995-2003 work. *Velador, 2009 dates in italics*

Lang indicated Mineralization at <32.4 Ma and Juanicipio Alteration at 29.1 Ma.

A maximum 3 Ma span

Buchanan's Model Applied to Juanicipio



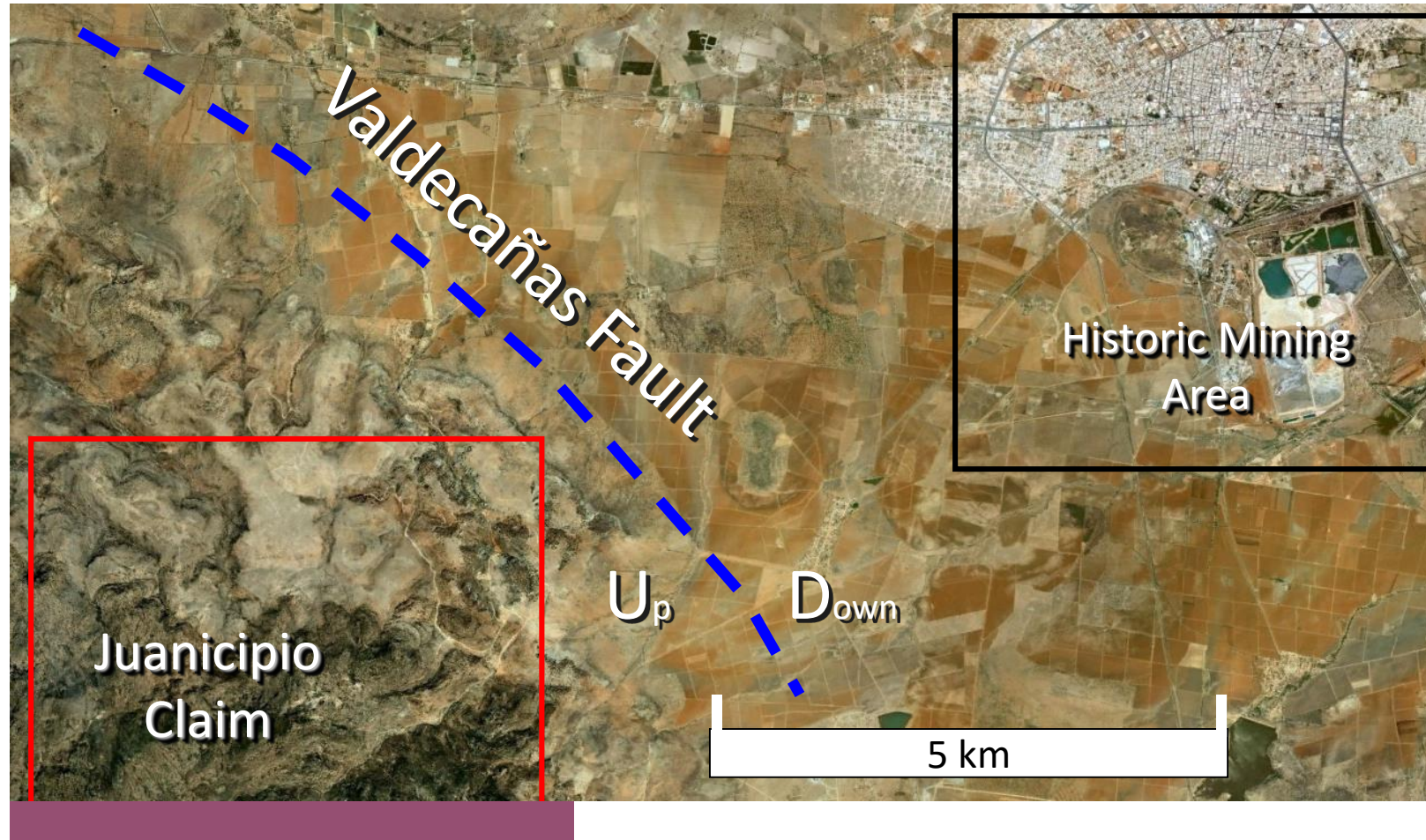
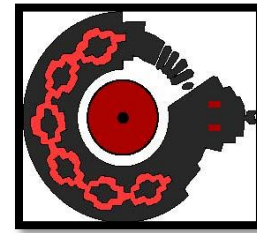
Juanicipio
"Sinter"

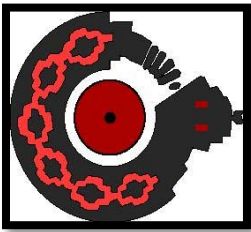
Hg, As
No Au, Ag, BM+

Adv. Arg. Alt

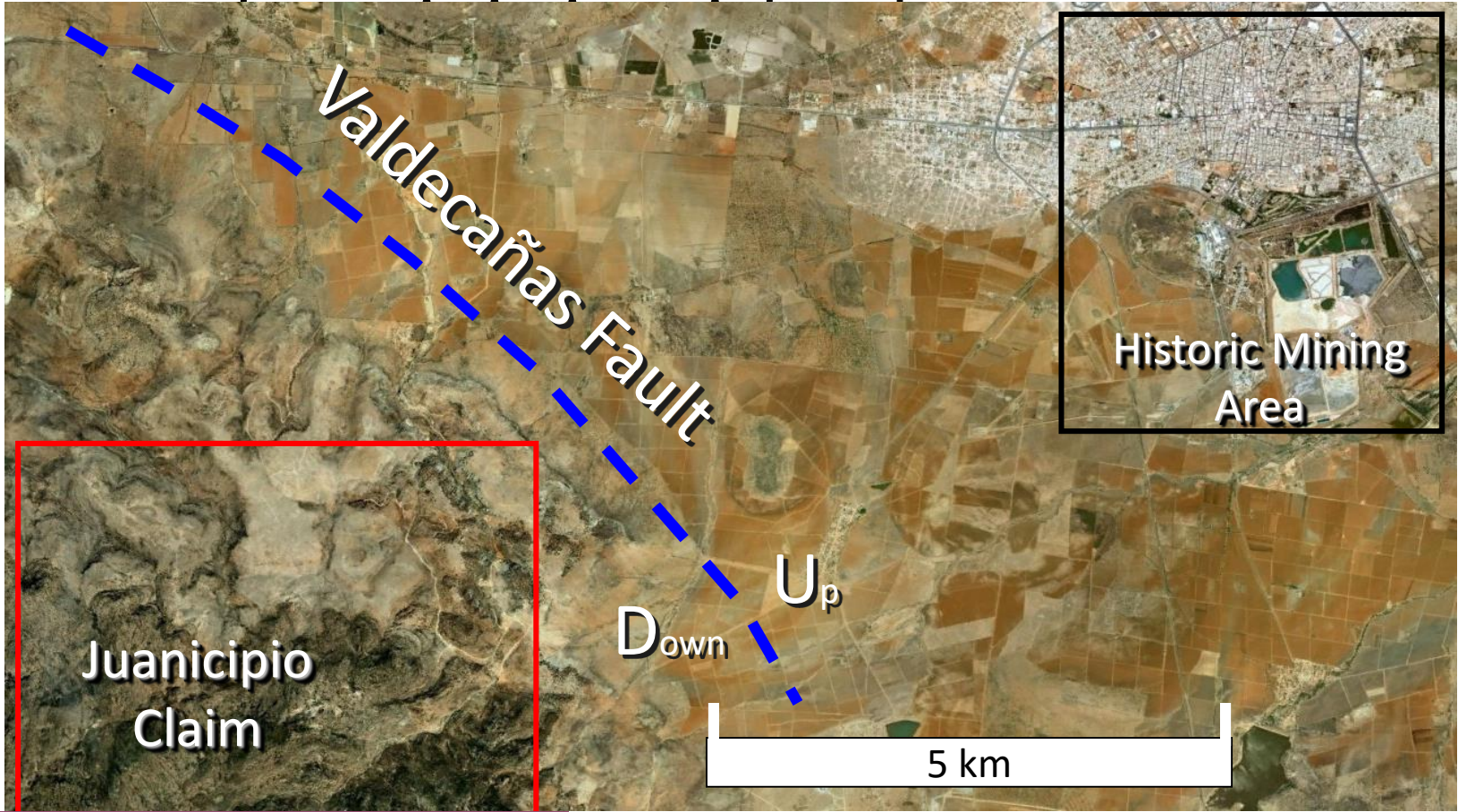
Therefore
Bonanza Veins
At some depth ??

Fresnillo: conception in 1998, District side down

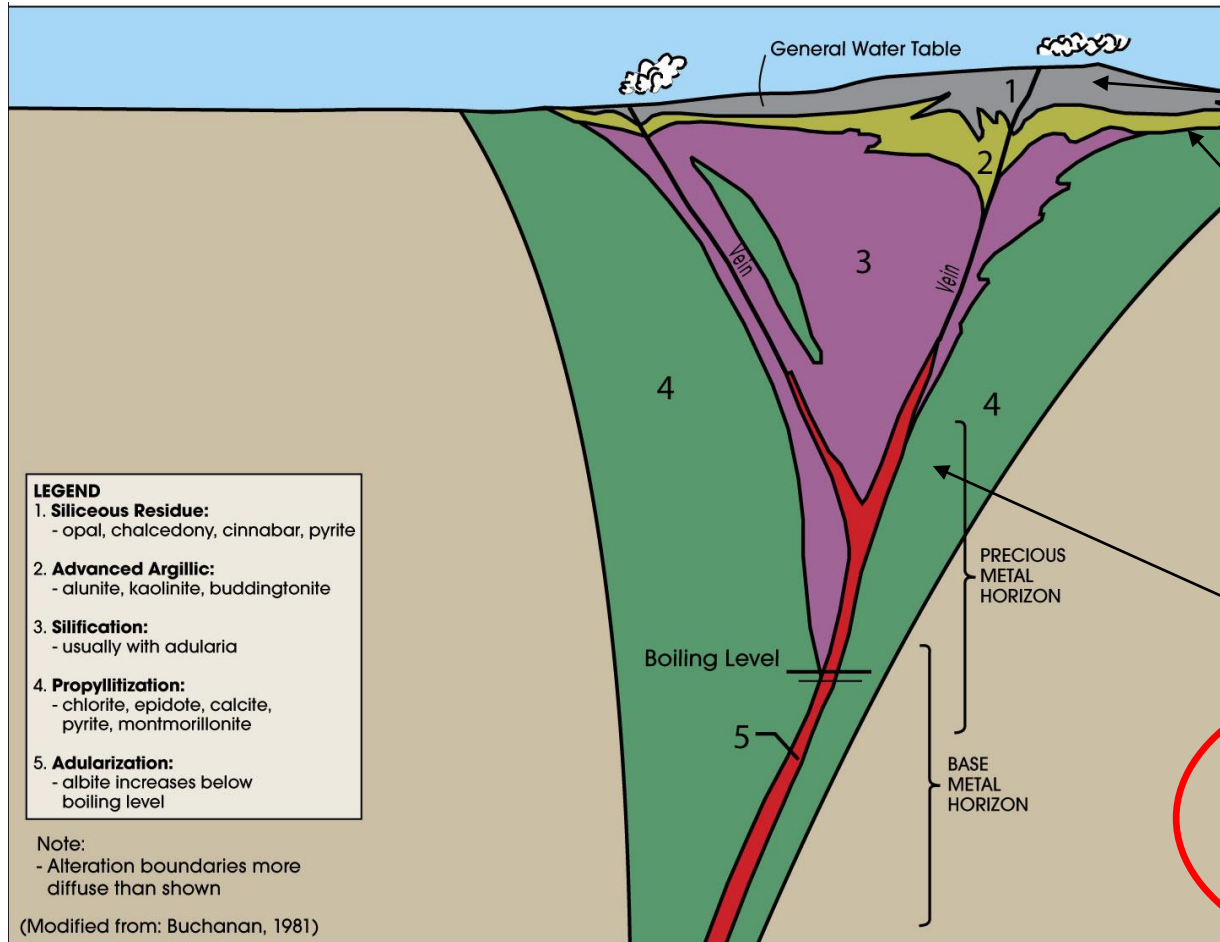
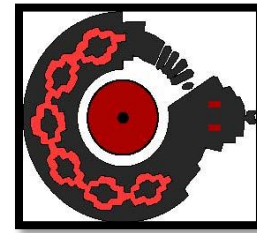




Fresnillo: Re-Interpretation



Buchanan's Model Applied to Juanicipio



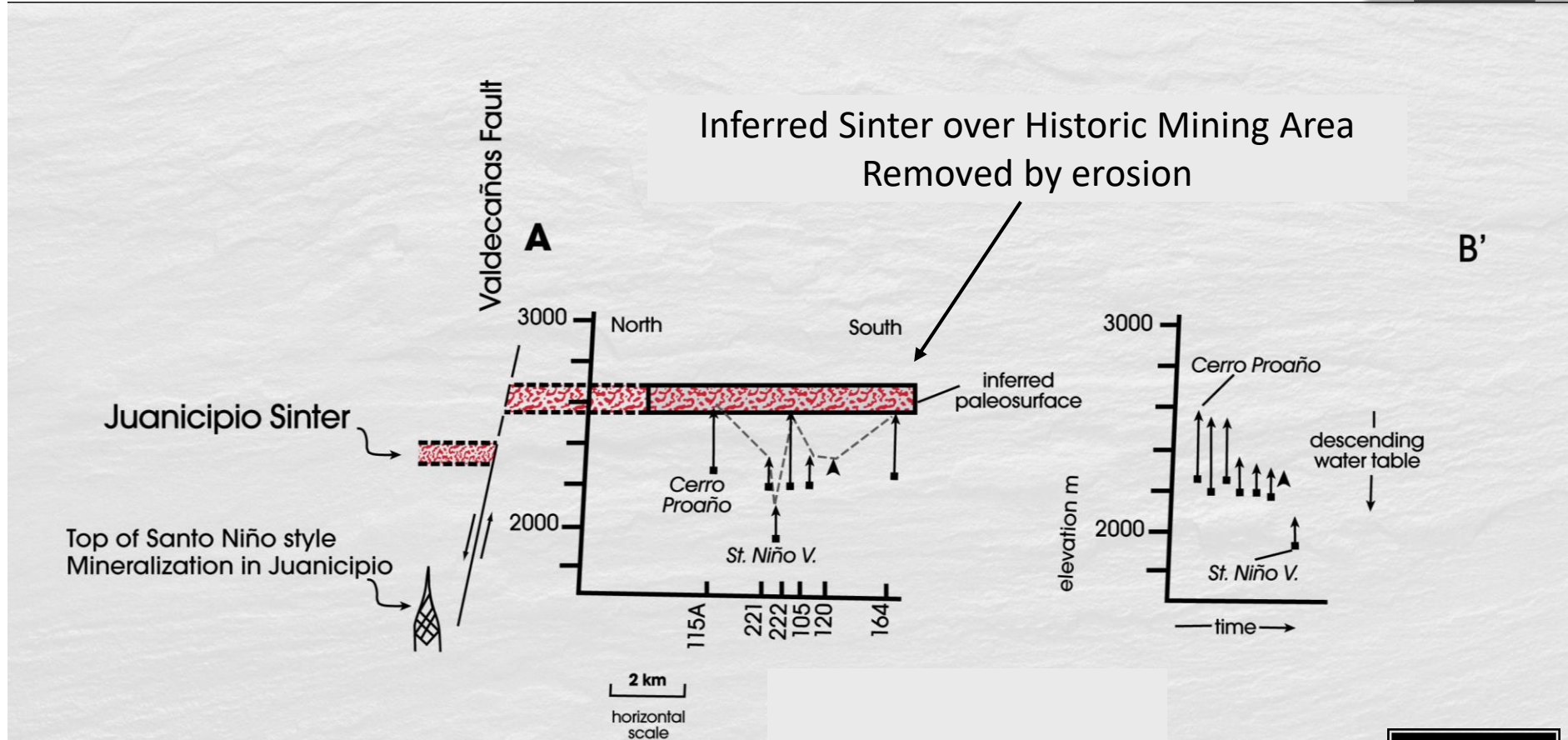
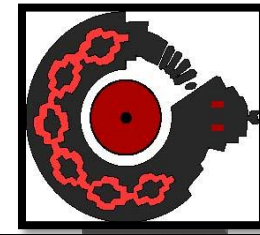
Juanicipio
"Sinter"

Adv. Arg. Alt

Therefore
Bonanza Veins
At some depth

But HOW Deep?
and in which
Faults?

Depth to Veins under Juanicipio "Sinter"

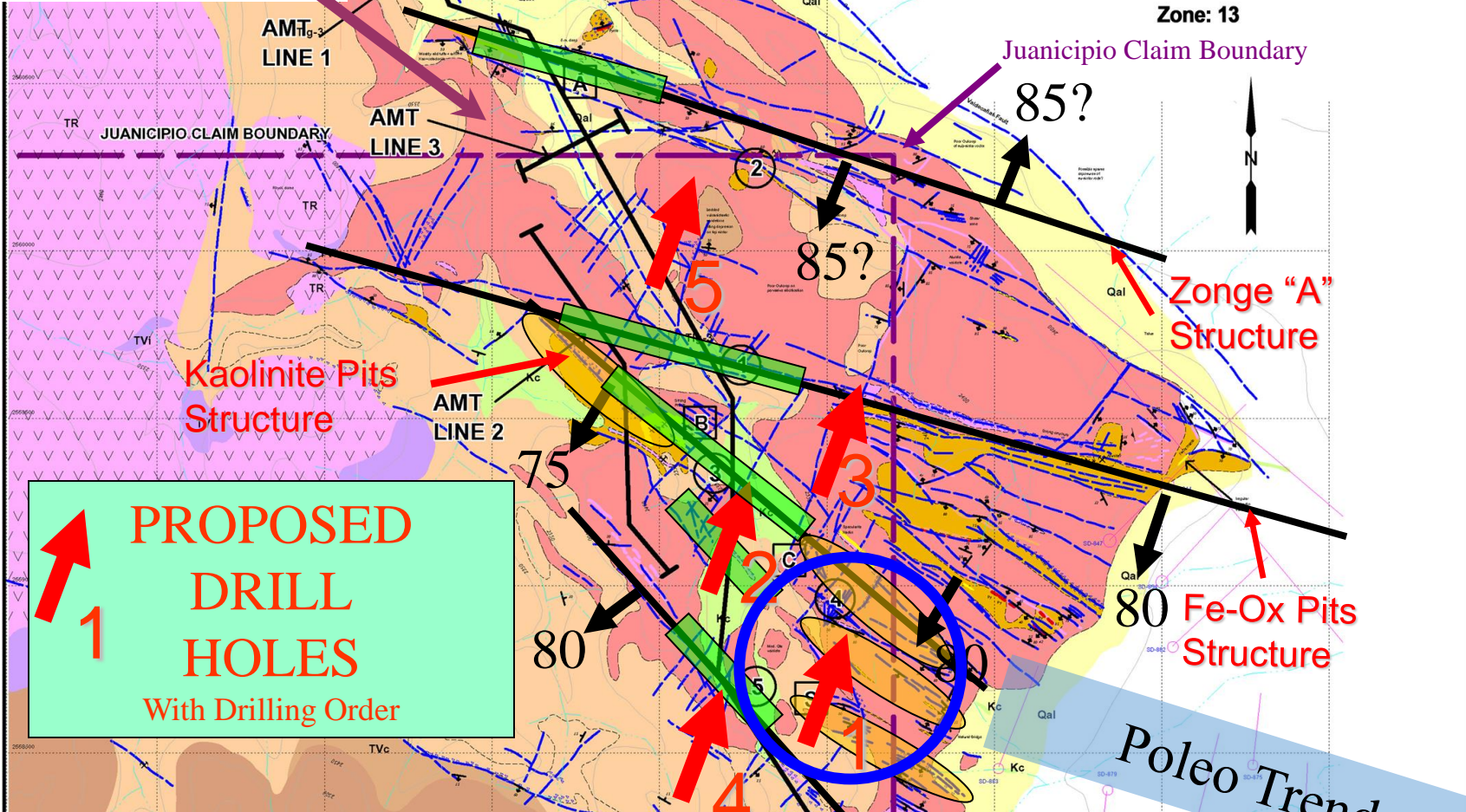


2001 Estimate was to hit veins at 1800 m depth



PERVASIVE SILICIFICATION

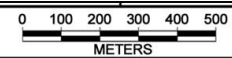
PROJECTION: Universal Transverse Mercator
Datum: NAD27 for Mexico
Zone: 13



PROPOSED DRILL HOLES
With Drilling Order

- HOLE DEFINITION INGREDIENTS**
-  Strong Structs. w/ Favorable Trend
 -  Structures w/ Strong Argillization
 -  NSAMT Anomalies
 -  Relation to "Poleo Trend"

JUANICIPIO PROJECT



2
0
0
3

MAG Silver's First Hole, DDH JI03-01, May 2003
Juanicipio Vein @ 1850 m elev.

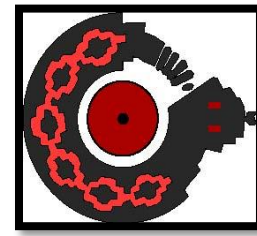


Amethyst

PYRRARGYRITE
&
SULFIDES

1.5 m INTERCEPT RAN: 10.9 g/T Au = 0.35 oz/T Au
730 g/T Ag = 21.5oz/T Ag
Minimal Zn & Pb

Fresnillo plc Team

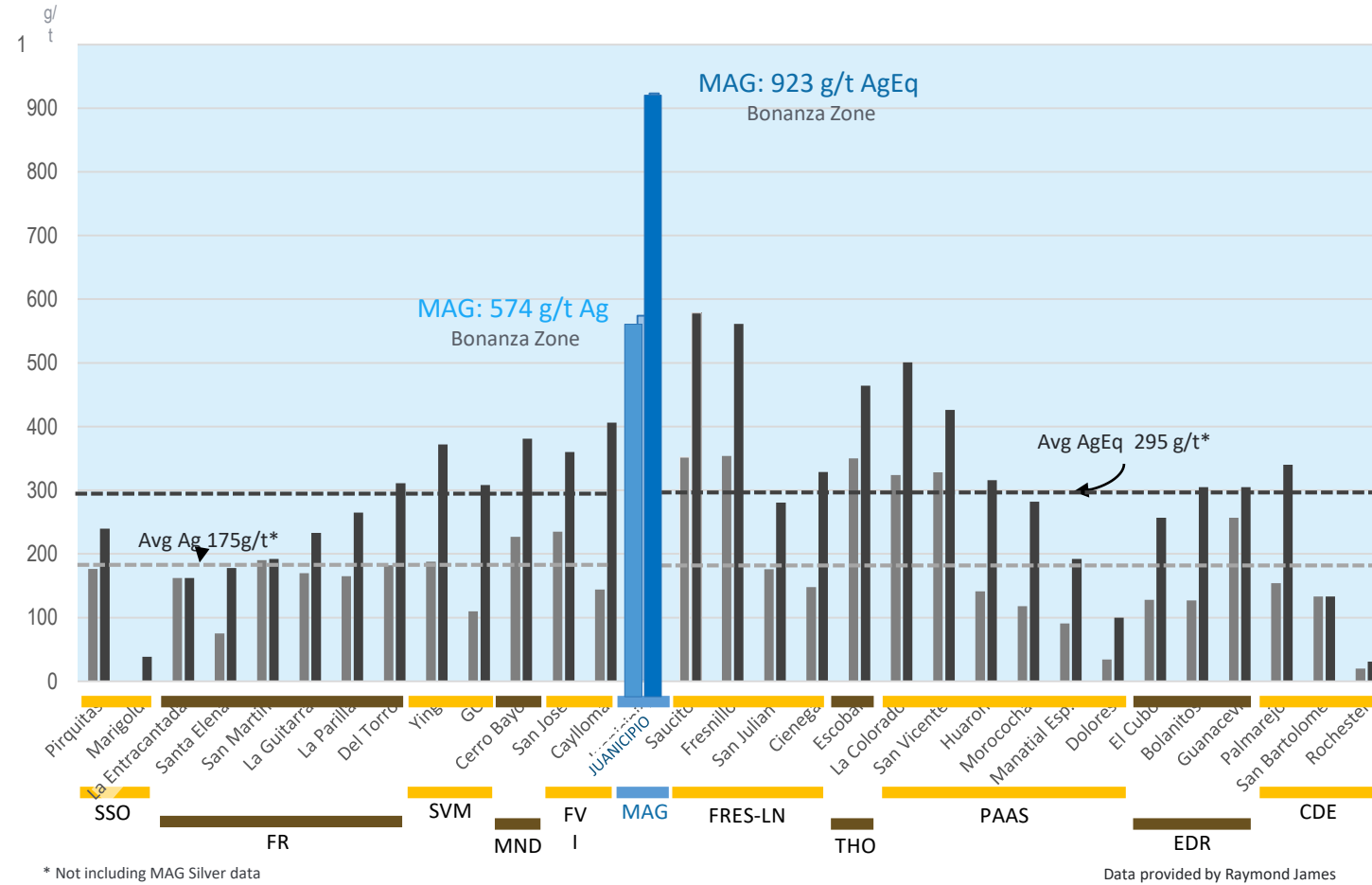


6.35 m

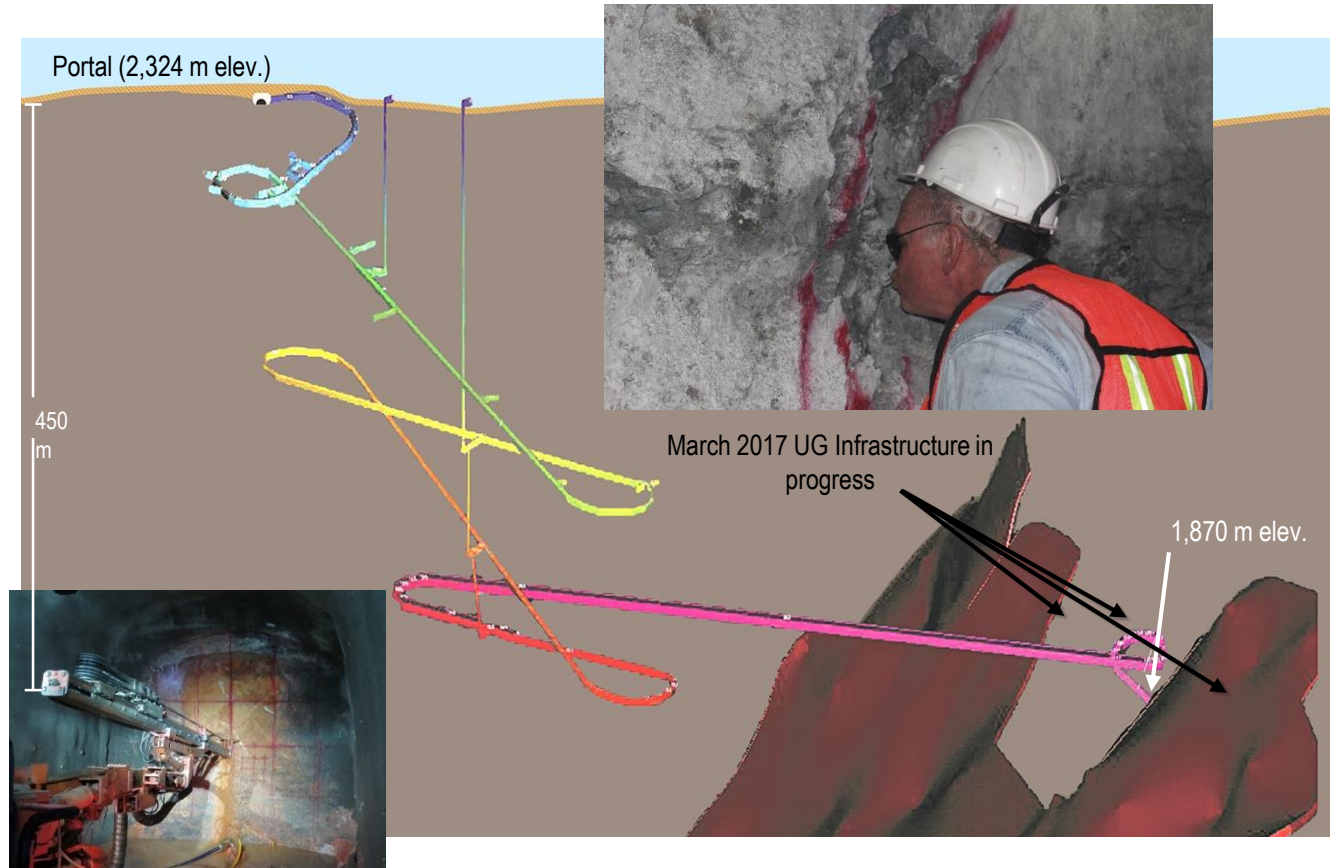
@ 1798 g/T Ag (56 oz/T); 2.91 g/T



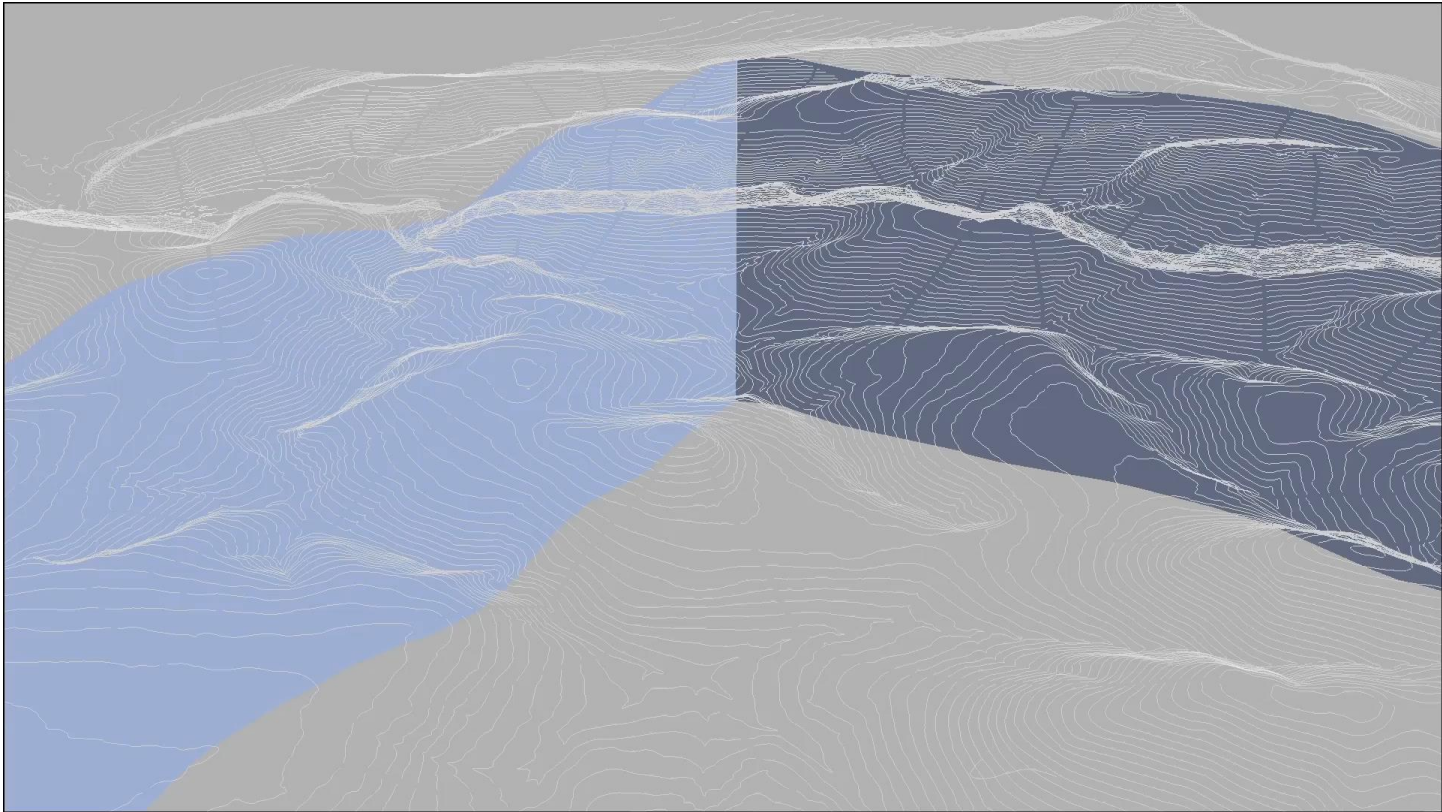
Average LOM Grades: Comparison



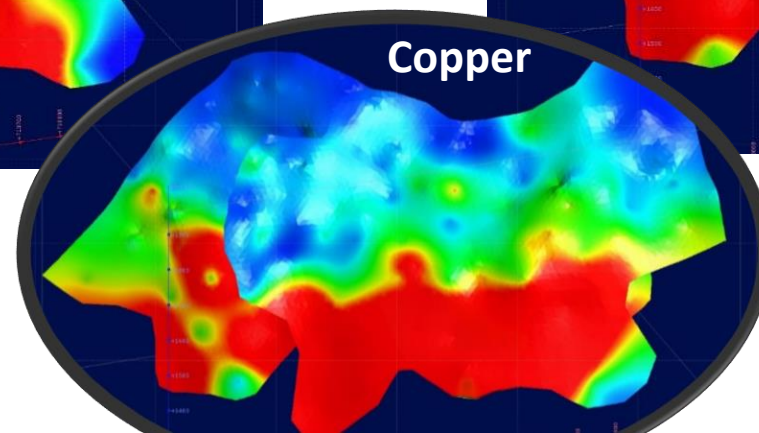
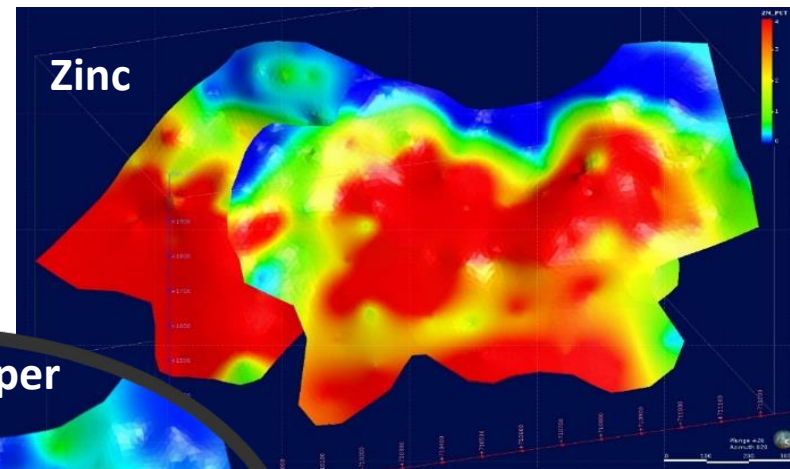
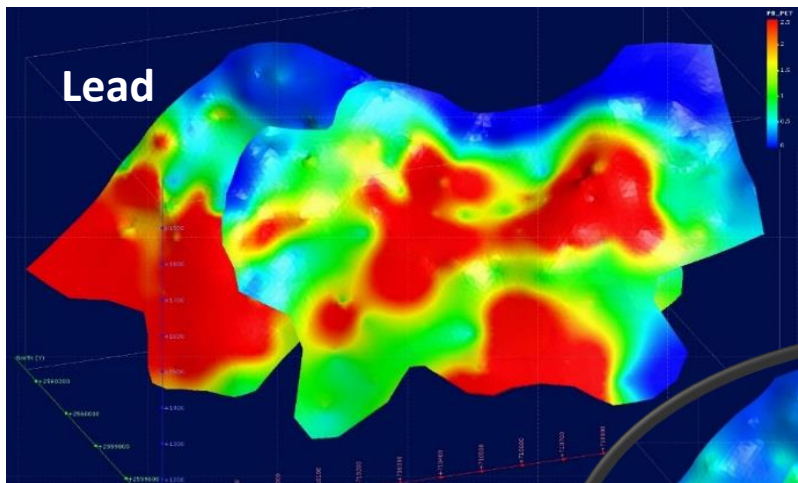
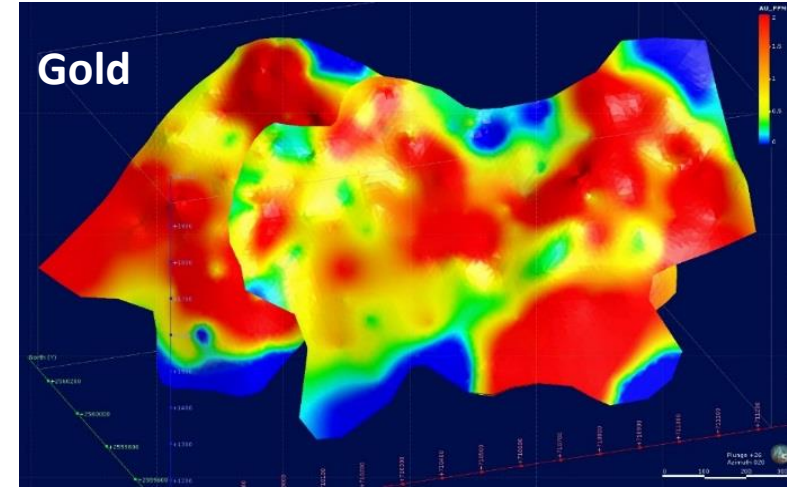
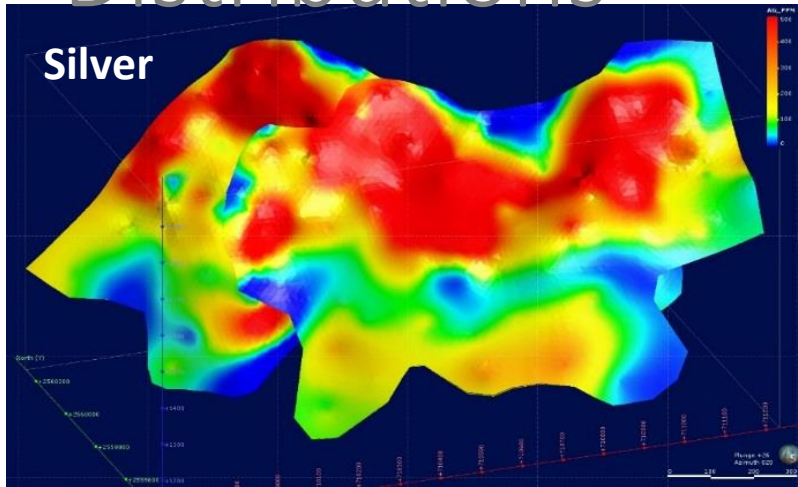
Current Ramp Progress



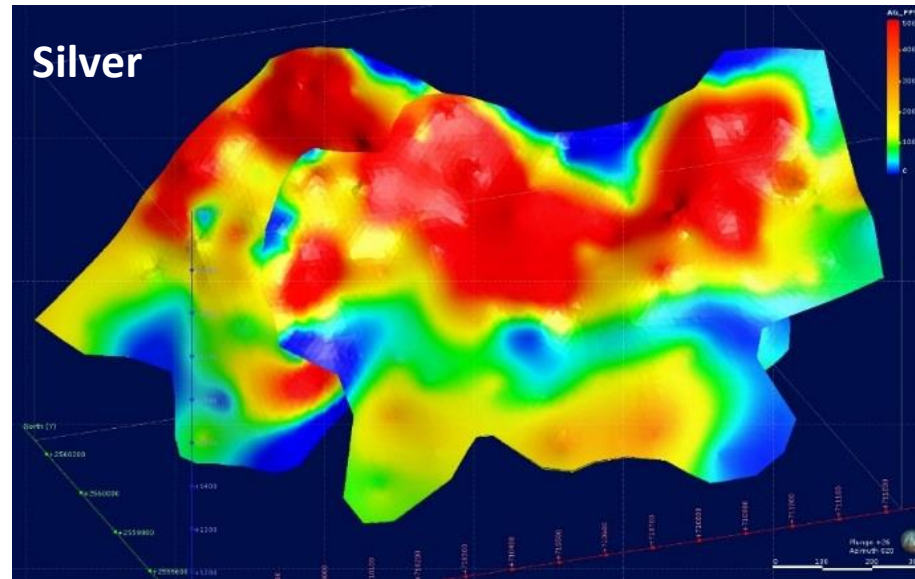
Valdecañas Vein – 3D Video



Valdecañas – Metal Grade Distributions



Valdecañas – Metal Grade Distributions



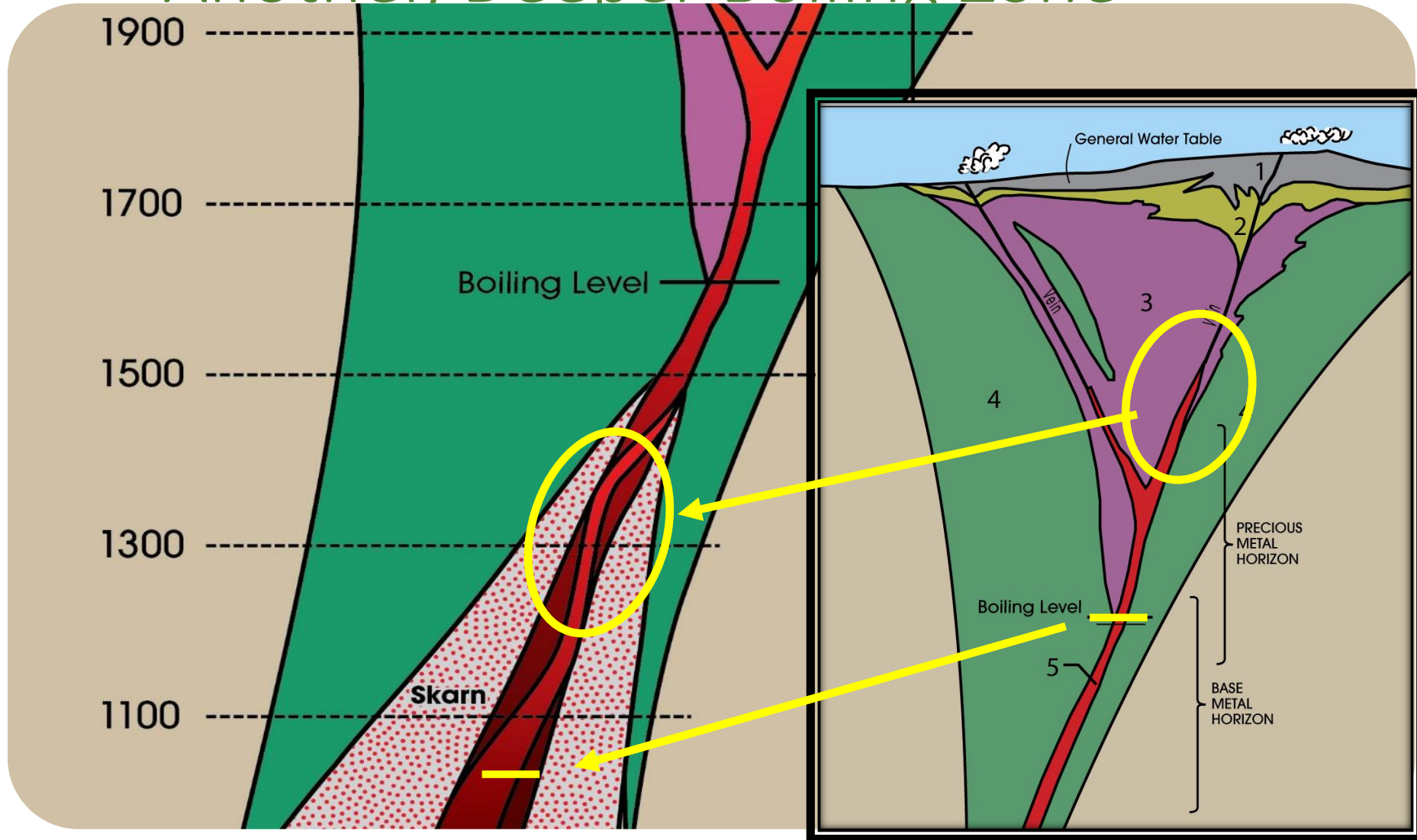
Increase/repeat of high Silver and Gold in the Deep Zone may be Further evidence for stacked boiling and repeat of metals zonation



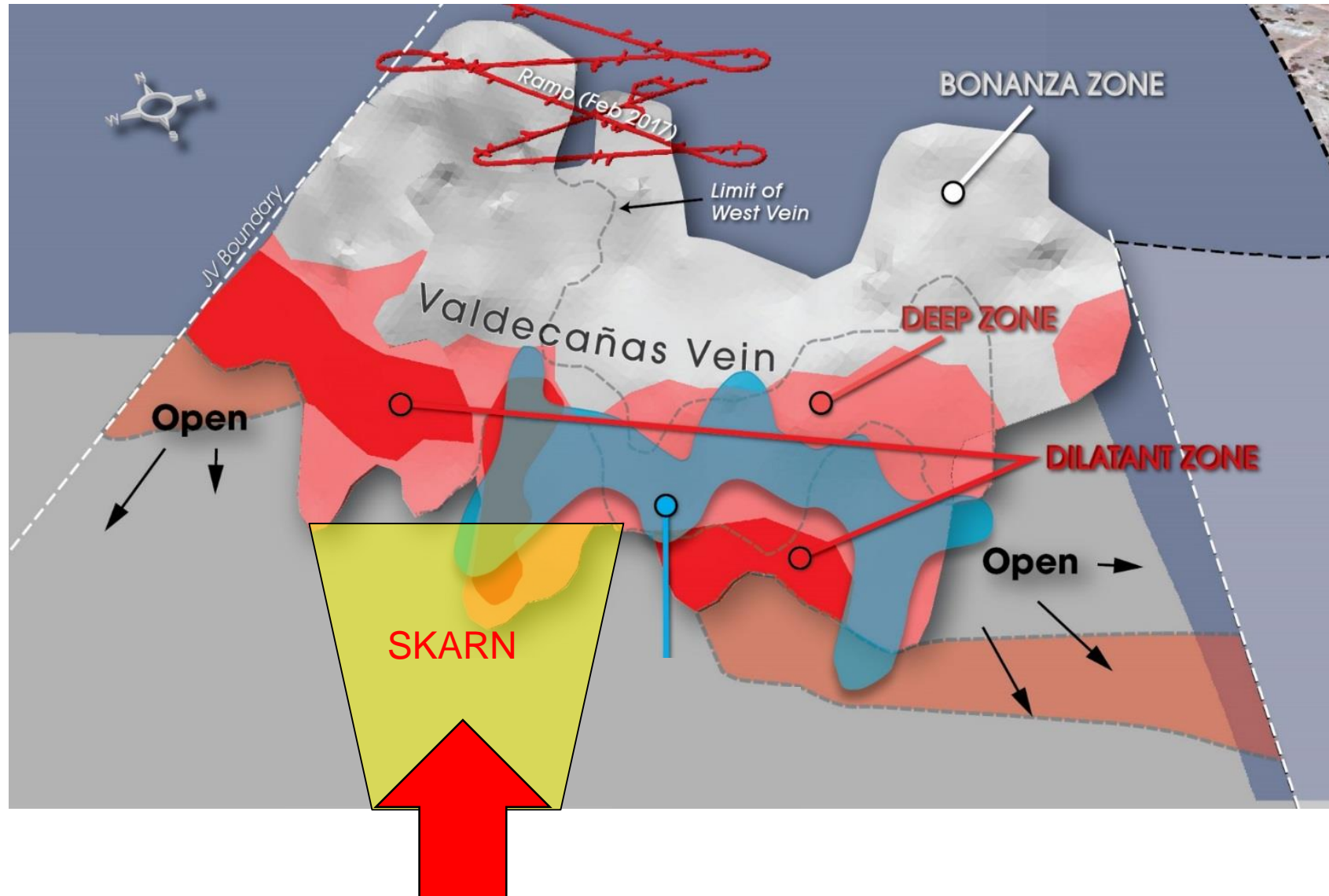
variscan vein stacked boiling

Interpretation:

Another, Deeper Boiling Zone

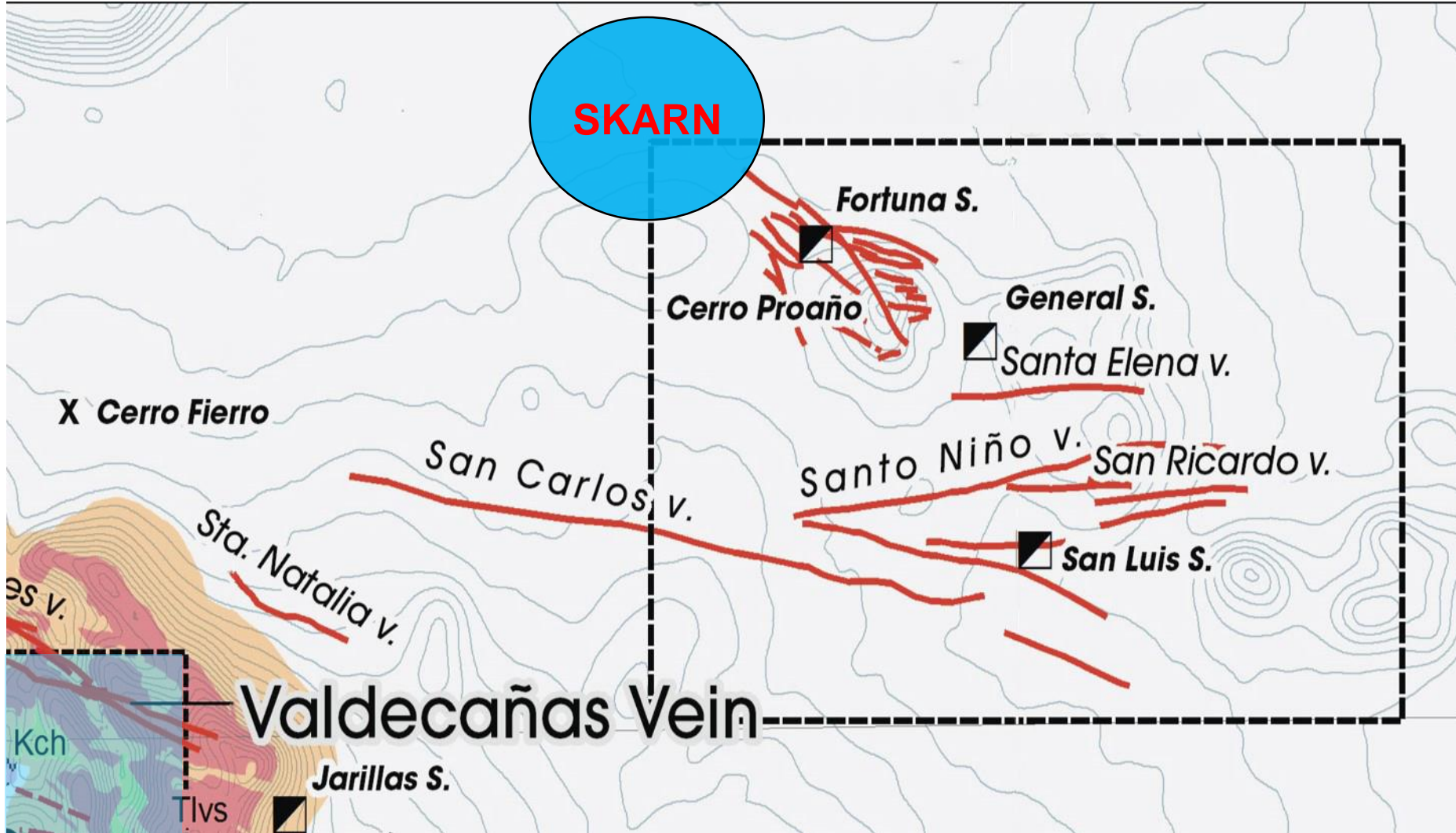


Valdecañas Vein: Repeatedly Active, Structural Intersection, + Skarn + B-minz = Ore Fluid Upwelling Zone?

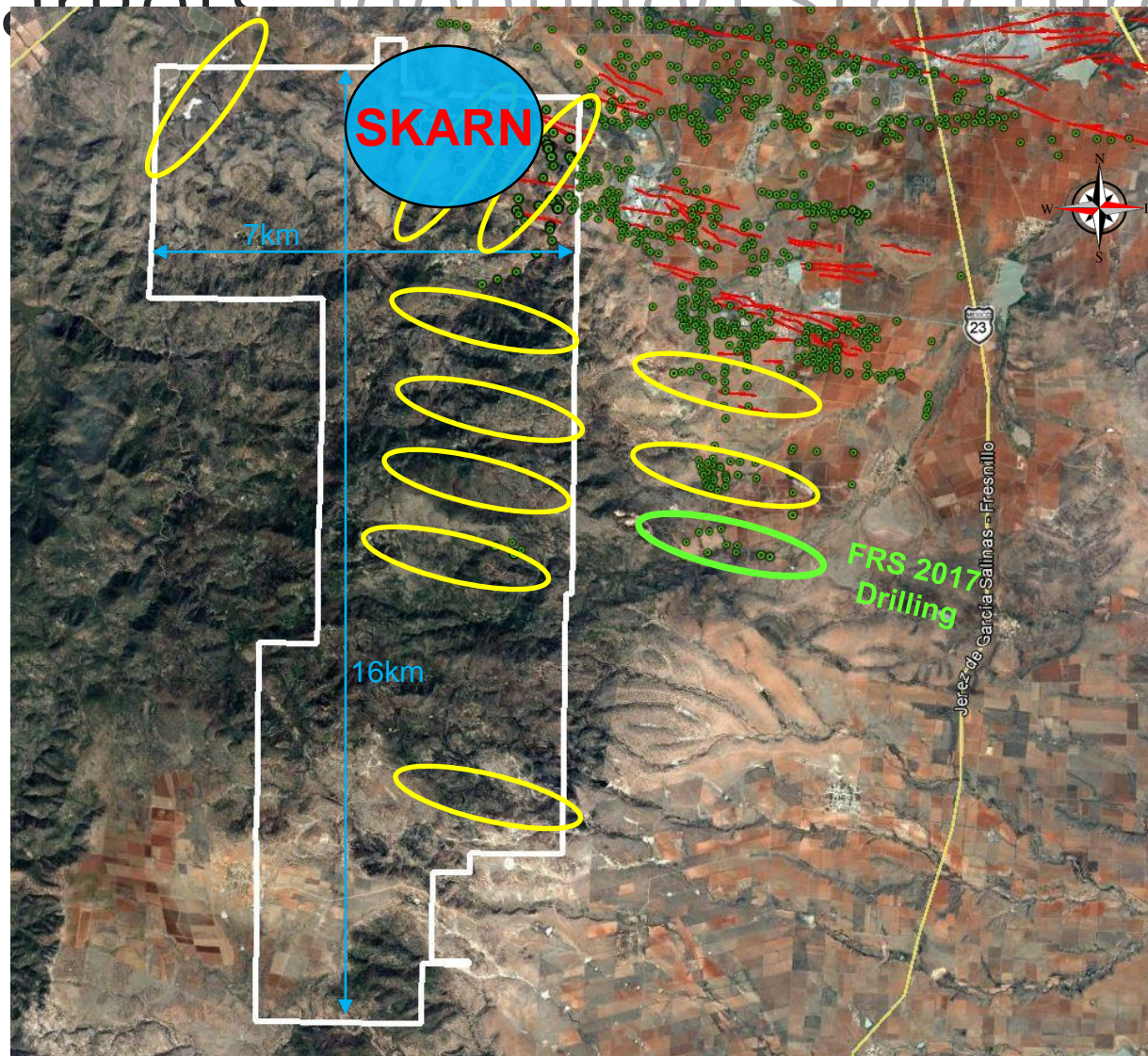


Skarn Zone in Historic Mining Area

Area

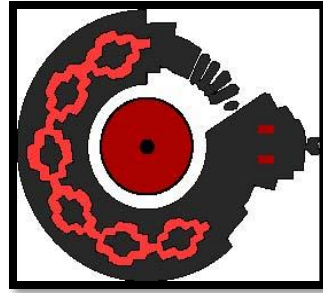


Regional Targets: Identified Structures



Mexico's Silver & Gold Production 1521-2010





Thank You



UTEP Entrepreneurial Geology Program

El Paso, Texas

October, 2013

Peter K.M. Megaw

IMDEX Inc.

MAG Silver

Minera Cascabel S.A. de C.V.