

# Lihir Gold Mine, Papua New Guinea

2003

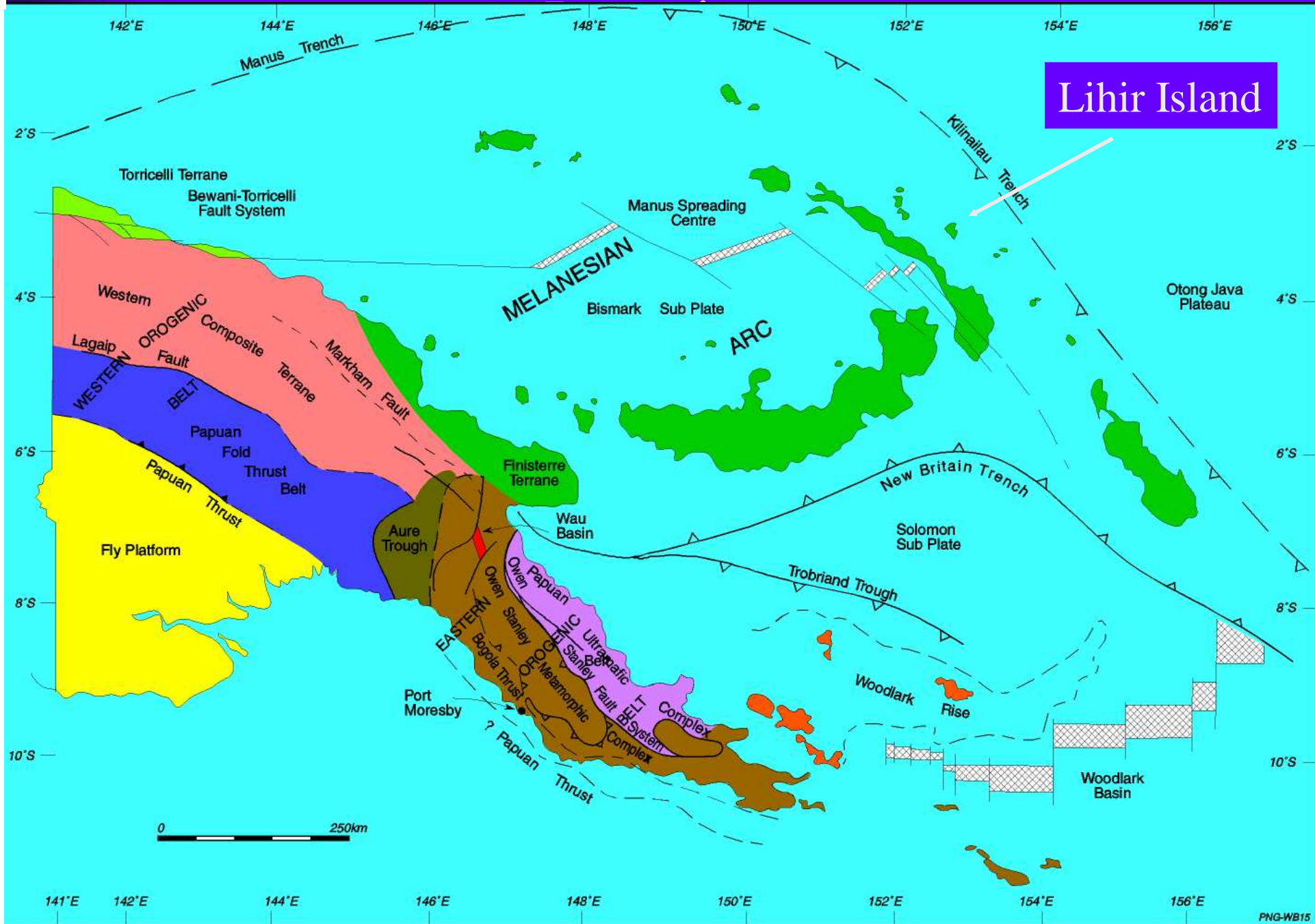
1984

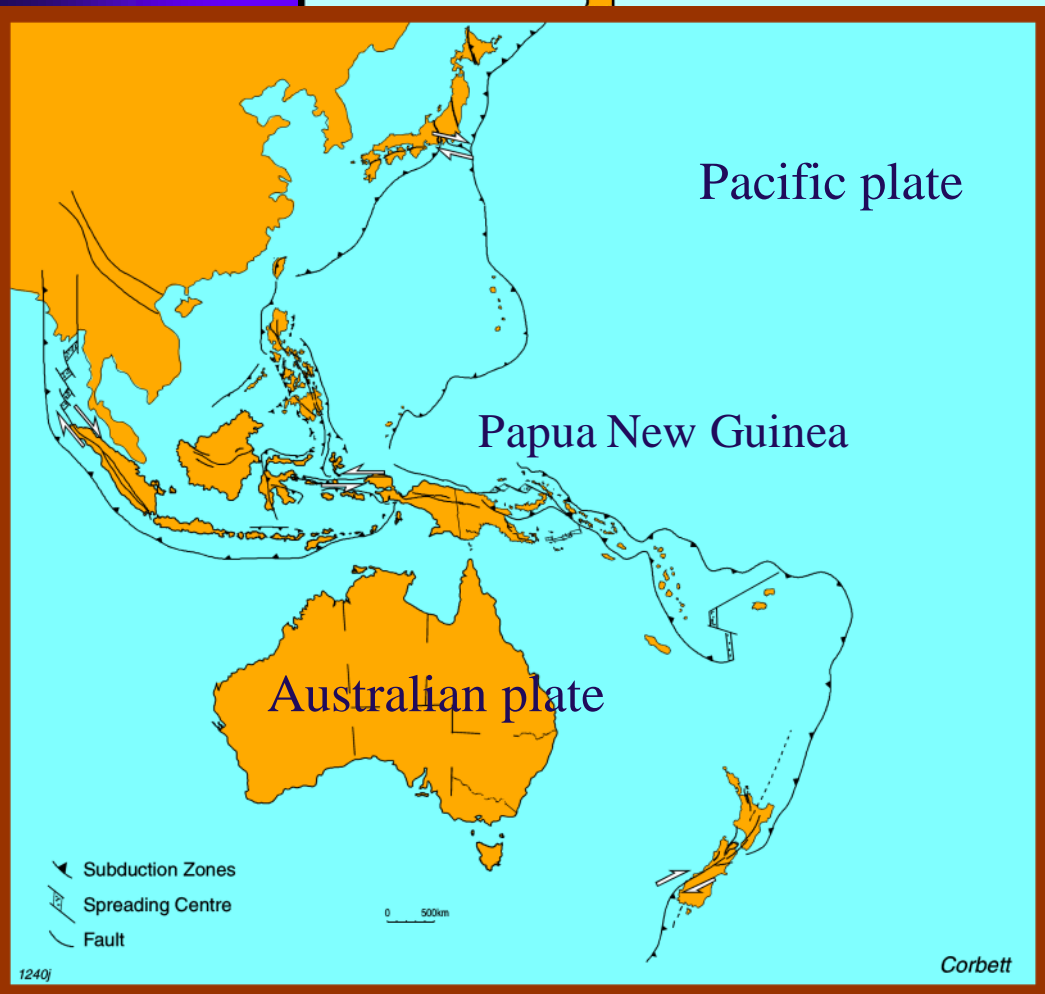
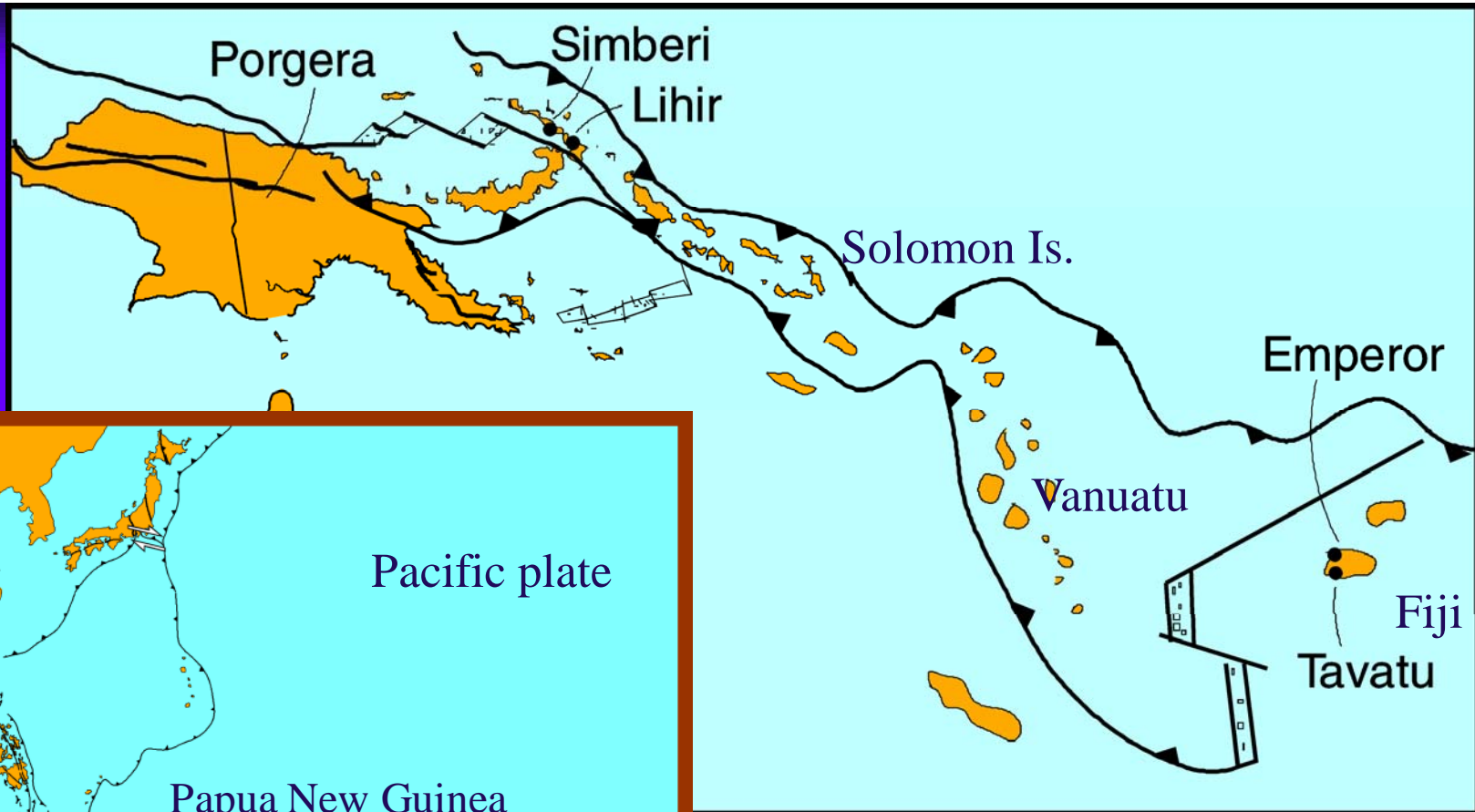


# Mapping and character sampling



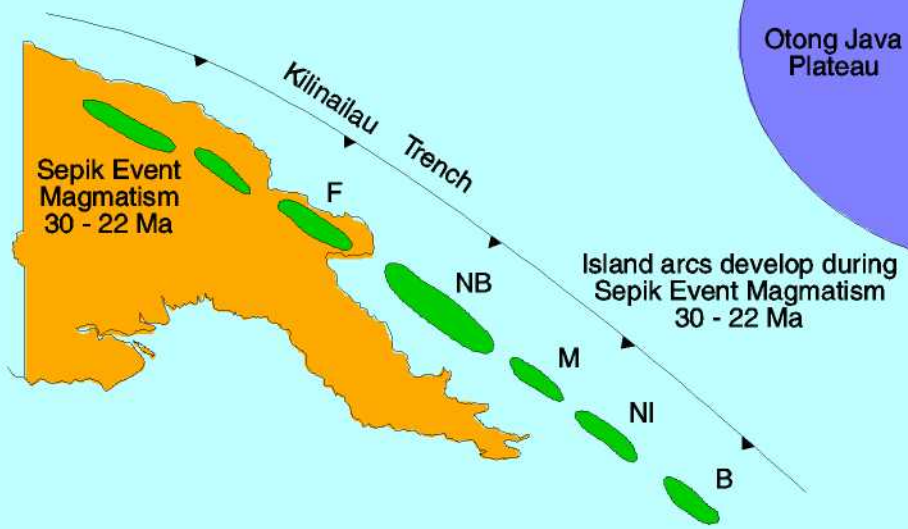
Lihir Island



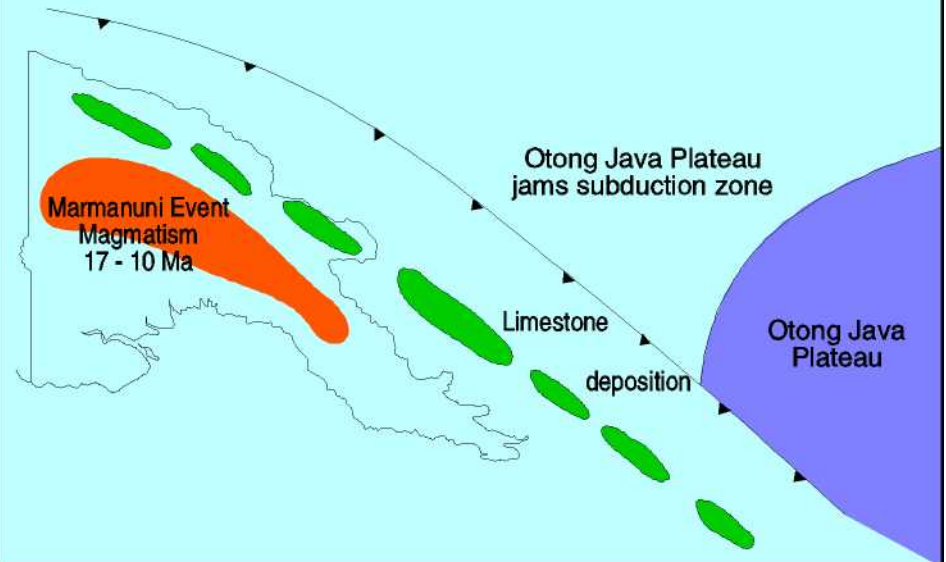


# Lihir Setting

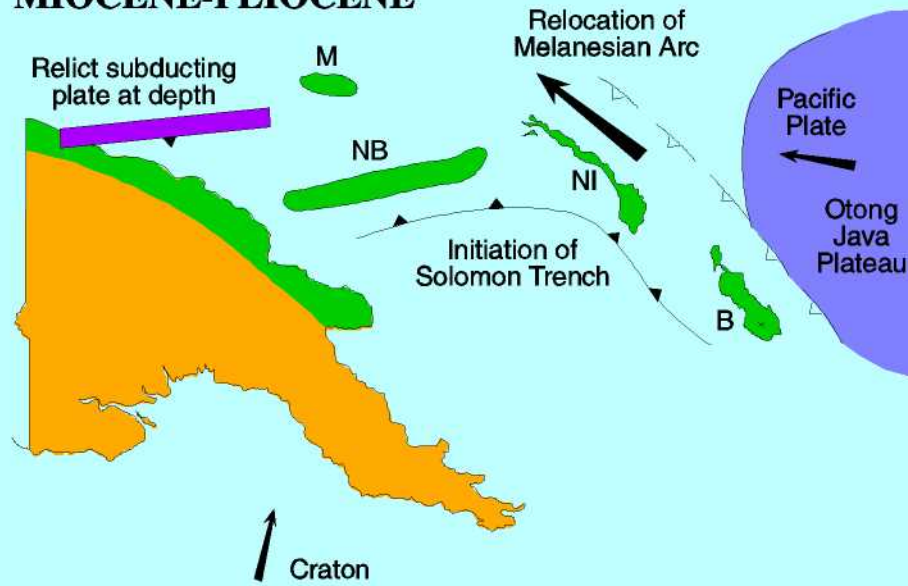
### OLIGOCENE



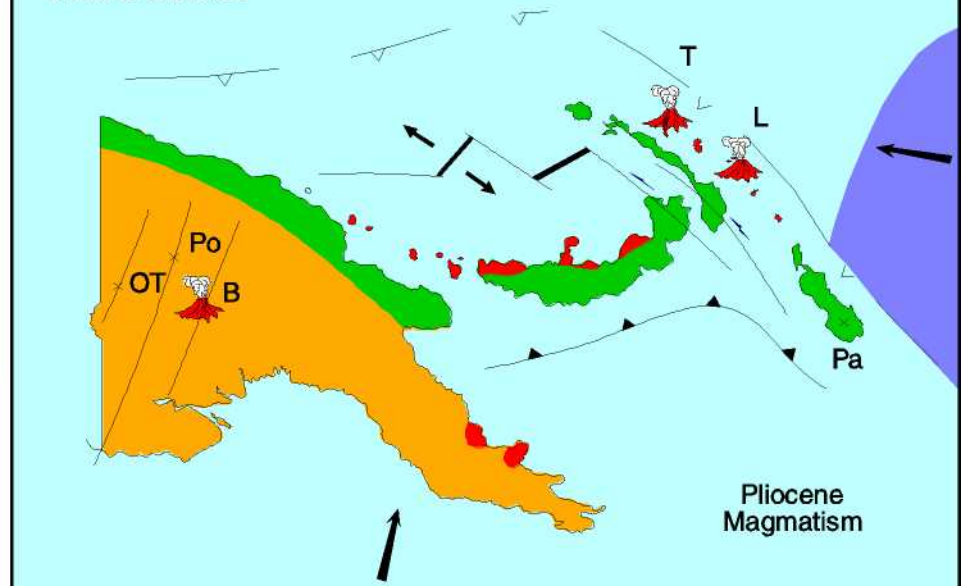
### MIOCENE



### MIOCENE-PLIOCENE



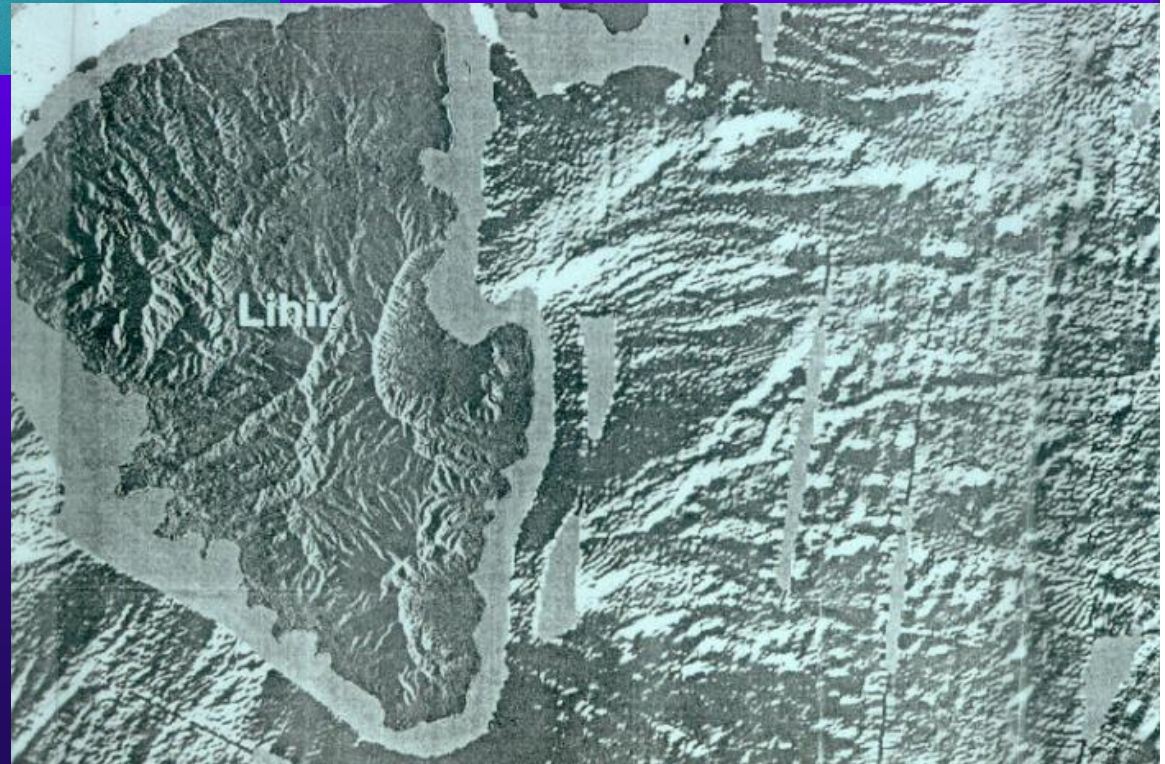
### PLIOCENE





# Lihir Luise volcano

Side looking radar  
and off shore seismic



# Mt St Helens

Post-collapse



Pre-collapse



Photo 1



Photo 2



Photo 3



Photo 4







Photo 5



Photo 6

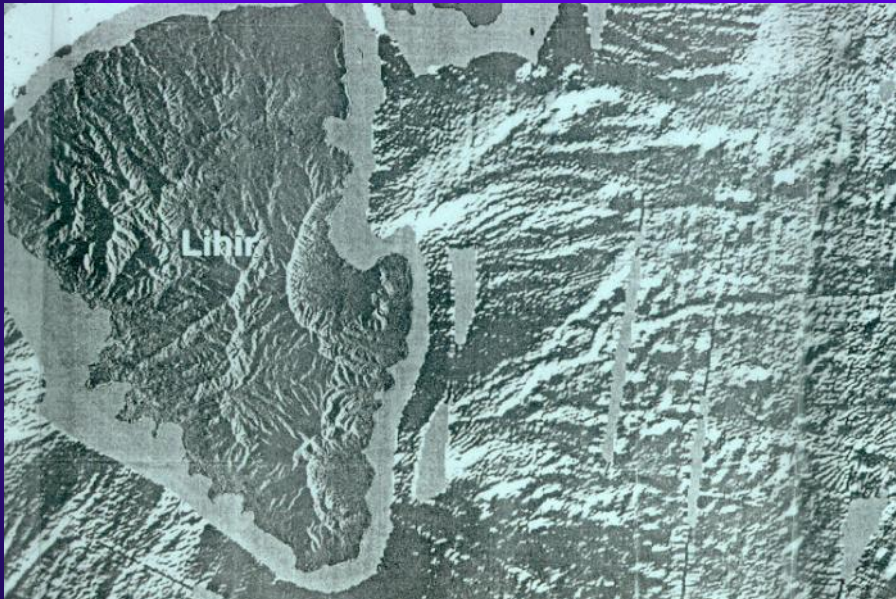


Photo 7



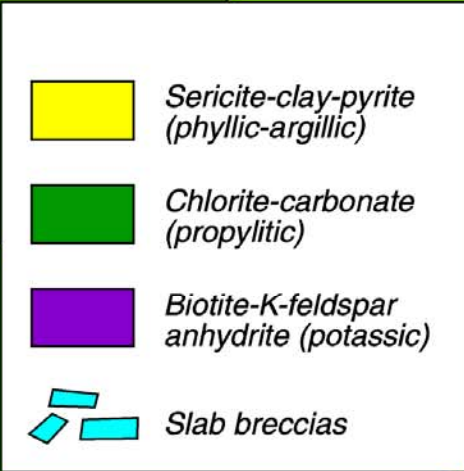
Photo 8

# Lihir collapse







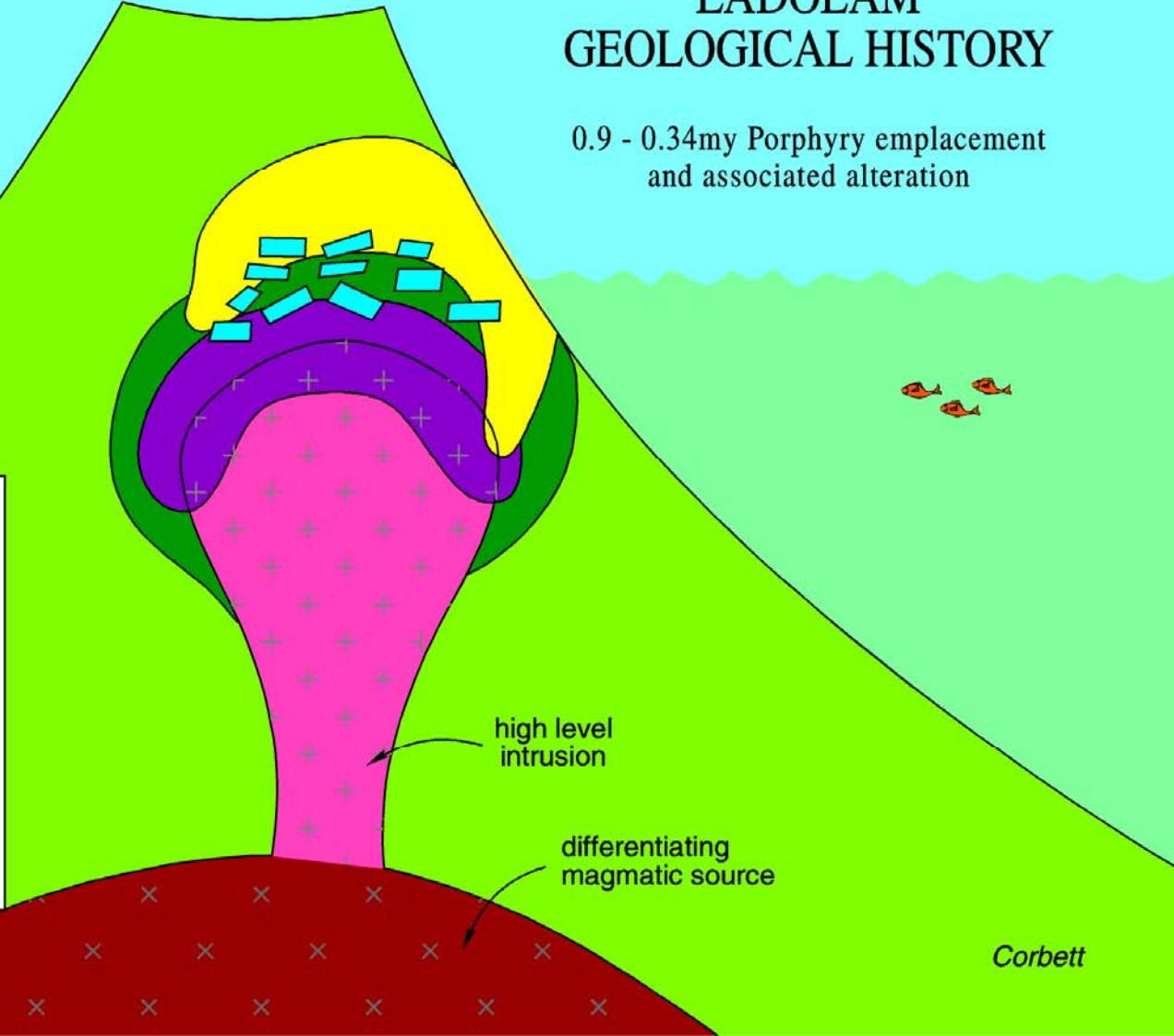
# LADOLAM GEOLOGICAL HISTORY

0.9 - 0.34my Porphyry emplacement  
and associated alteration

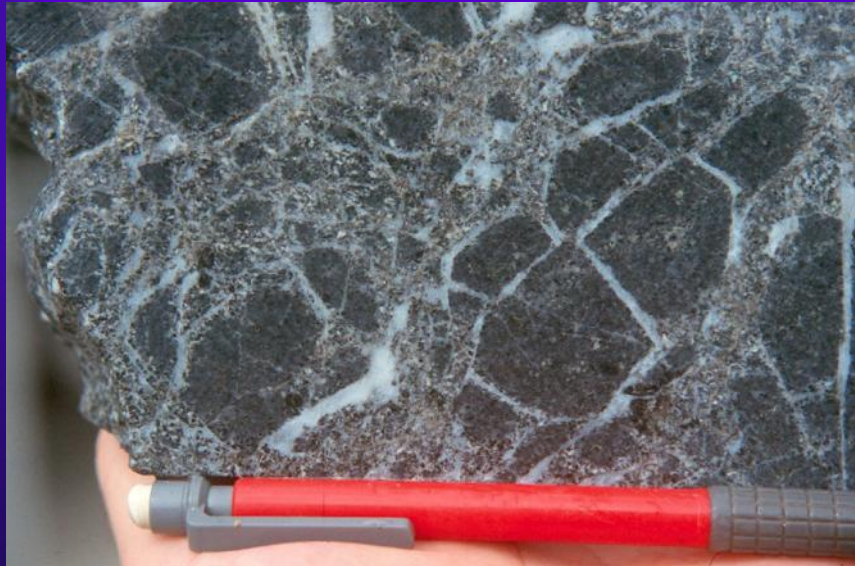
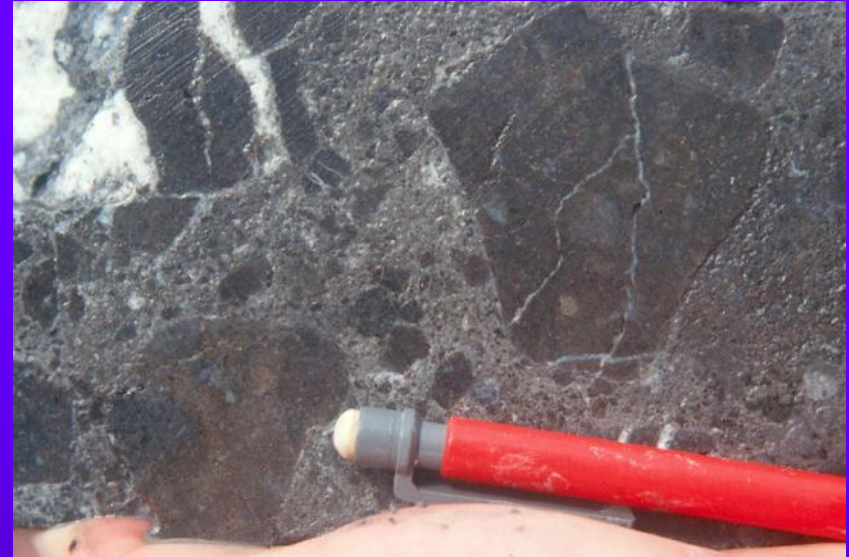


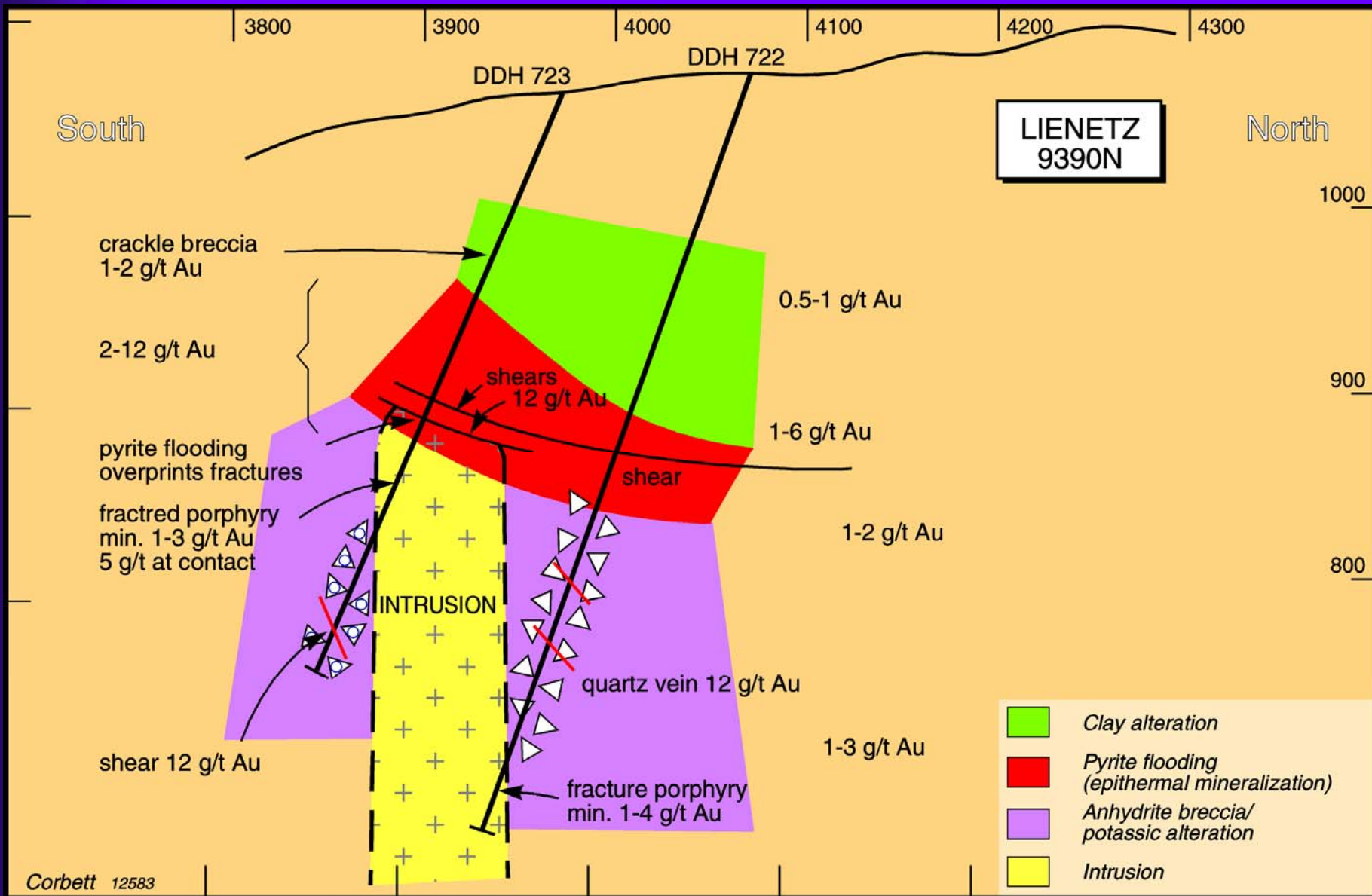
A legend box with a white background and black border. It contains four entries: a yellow square for 'Sericite-clay-pyrite (phyllic-argillic)', a green square for 'Chlorite-carbonate (propylitic)', a purple square for 'Biotite-K-feldspar anhydrite (potassic)', and a cyan square with a diagonal line for 'Slab breccias'.

-  Sericite-clay-pyrite (phyllic-argillic)
-  Chlorite-carbonate (propylitic)
-  Biotite-K-feldspar anhydrite (potassic)
-  Slab breccias



# Porphyry style alteration

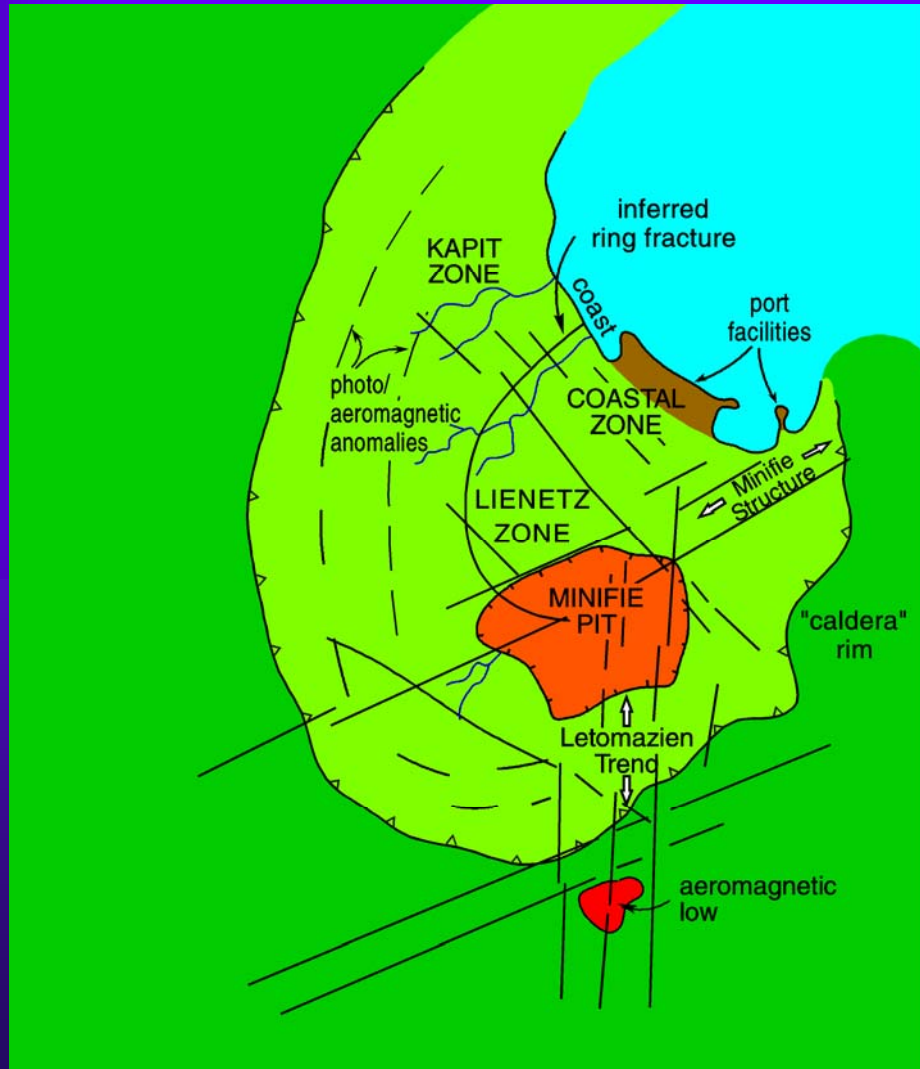




# Stages of alteration and mineralisation

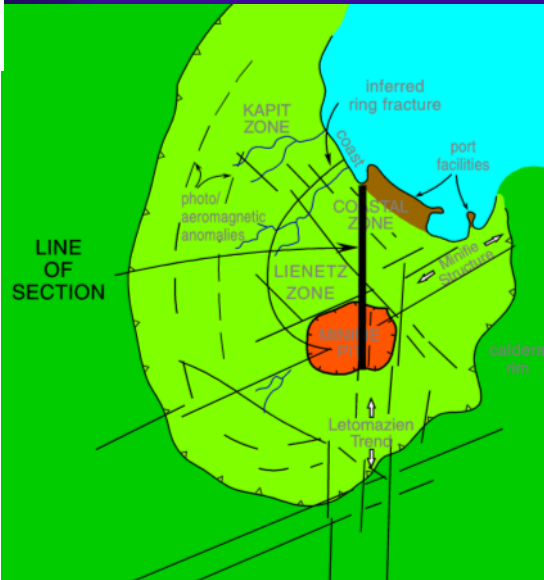
- ◆ Porphyry related potassic-propylitic alteration – magnetite, orthoclase, biotite, anhydrite with minor Au (>300 deg C)
- ◆ Kfeldspar-pyrite – secondary Kfeldspar -> illite, pyrite-arsenian pyrite with encapsulated Au
- ◆ Quartz – chalcedony-pyrite-Au with anomalous Sb and Ba (150-200 deg C)
- ◆ Geothermal – continuing advanced argillic-argillic alteration

# Minifie Pit



## LUISE "CALDERA" REGIONAL STRUCTURE

0 1km

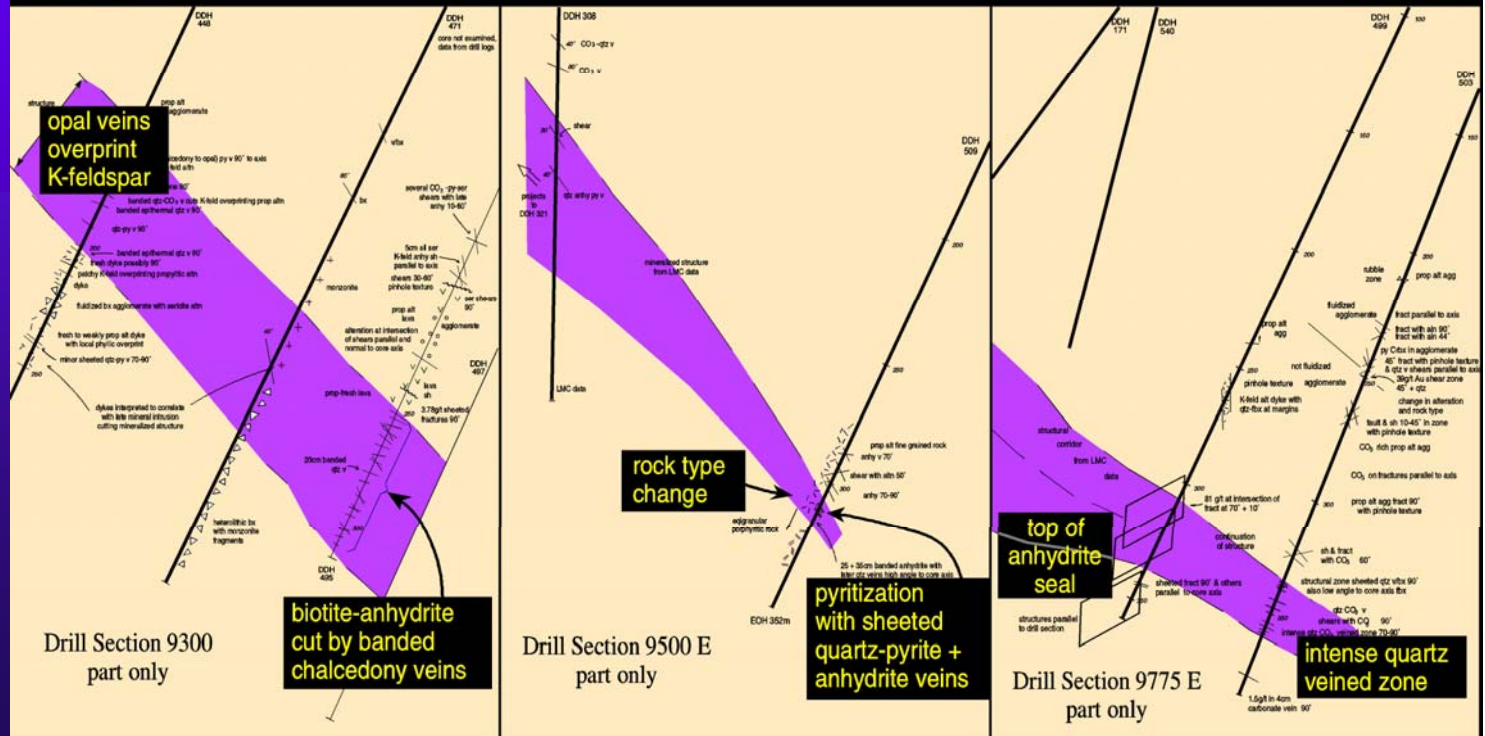


# NS long section

## Minifie Drill Sections

South

North



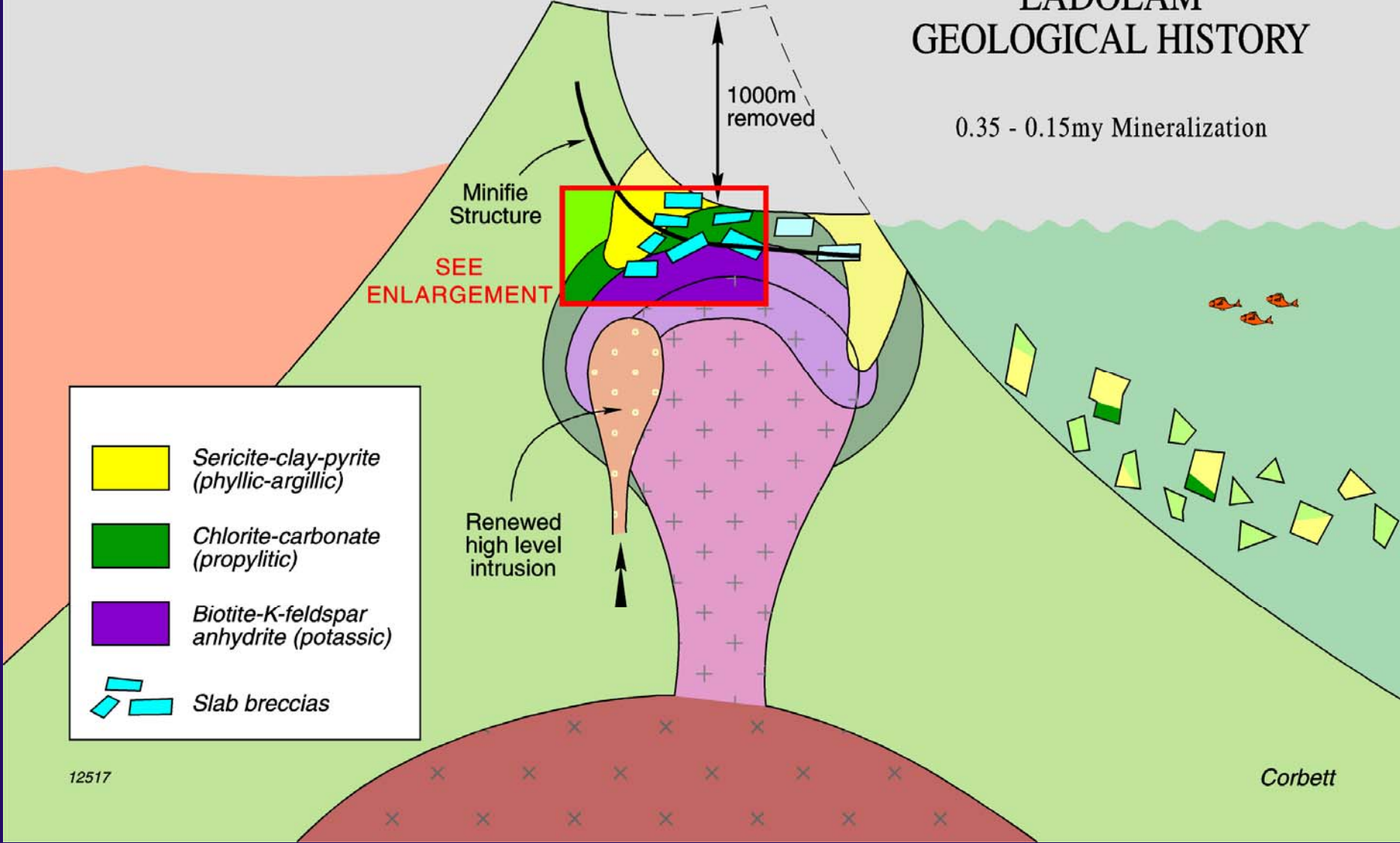






# Minifie structure



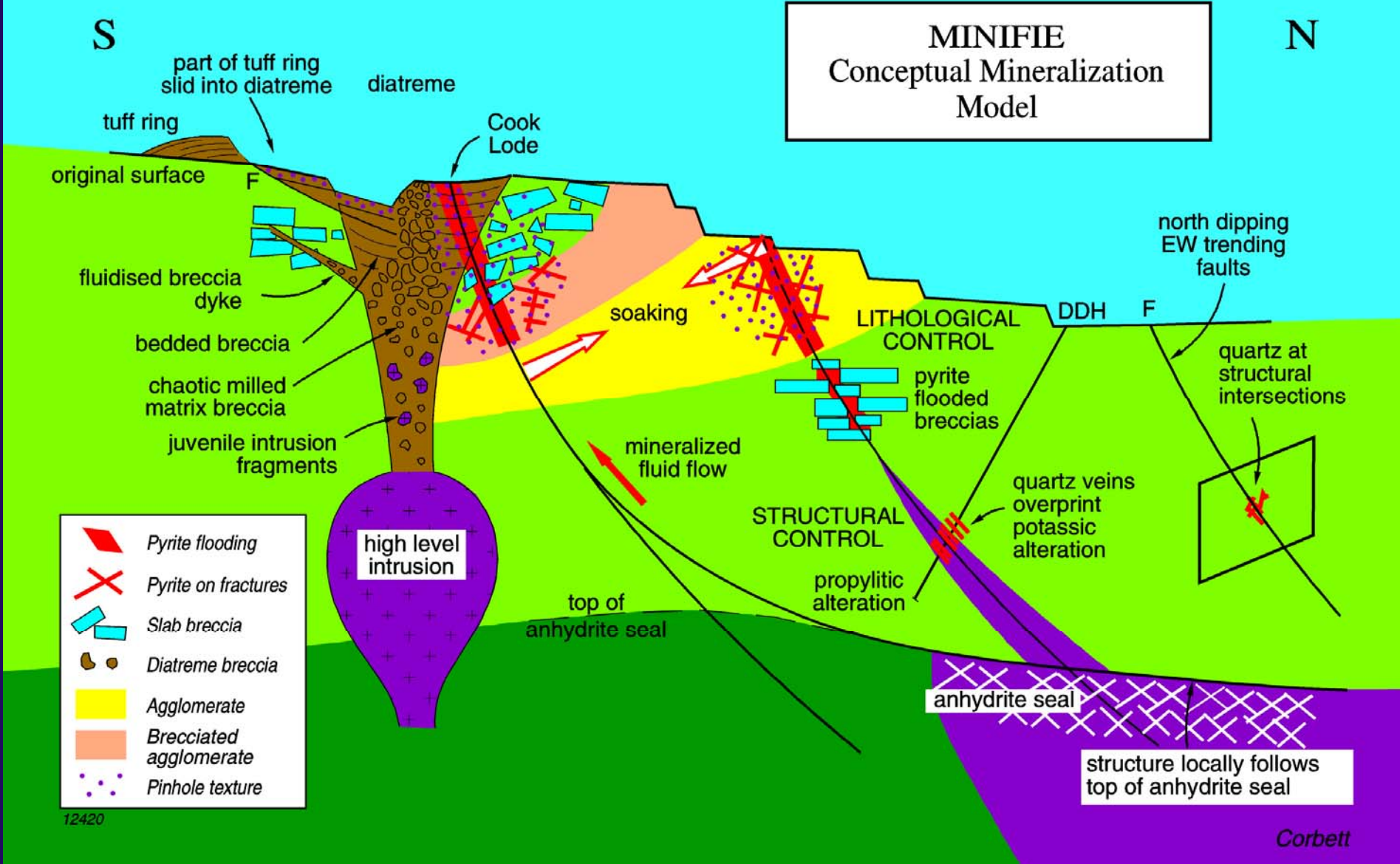
# LADOLAM GEOLOGICAL HISTORY

0.35 - 0.15my Mineralization



-  Sericite-clay-pyrite (phyllic-argillic)
-  Chlorite-carbonate (propylitic)
-  Biotite-K-feldspar anhydrite (potassic)
-  Slab breccias

# MINIFIE Conceptual Mineralization Model



12420

Corbett

# Lihir diatreme breccia rocks



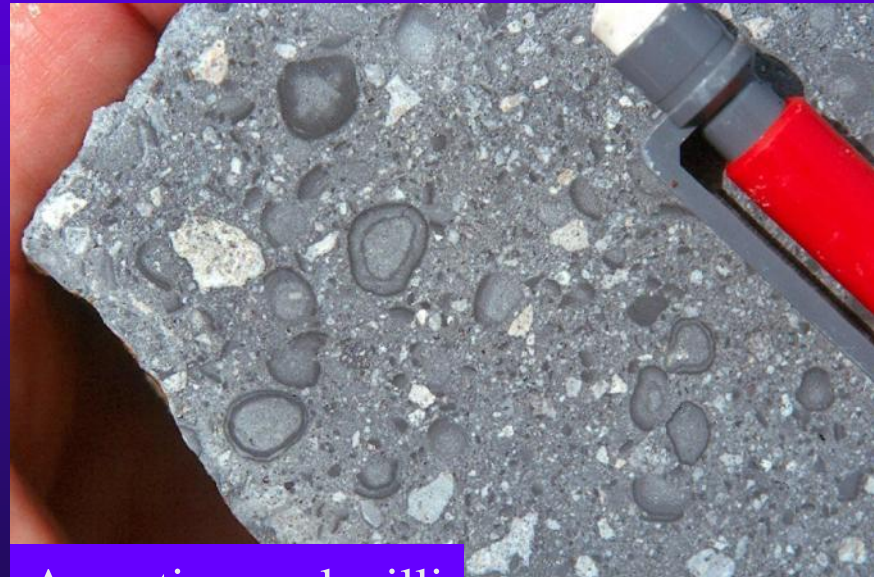
Tuff ring



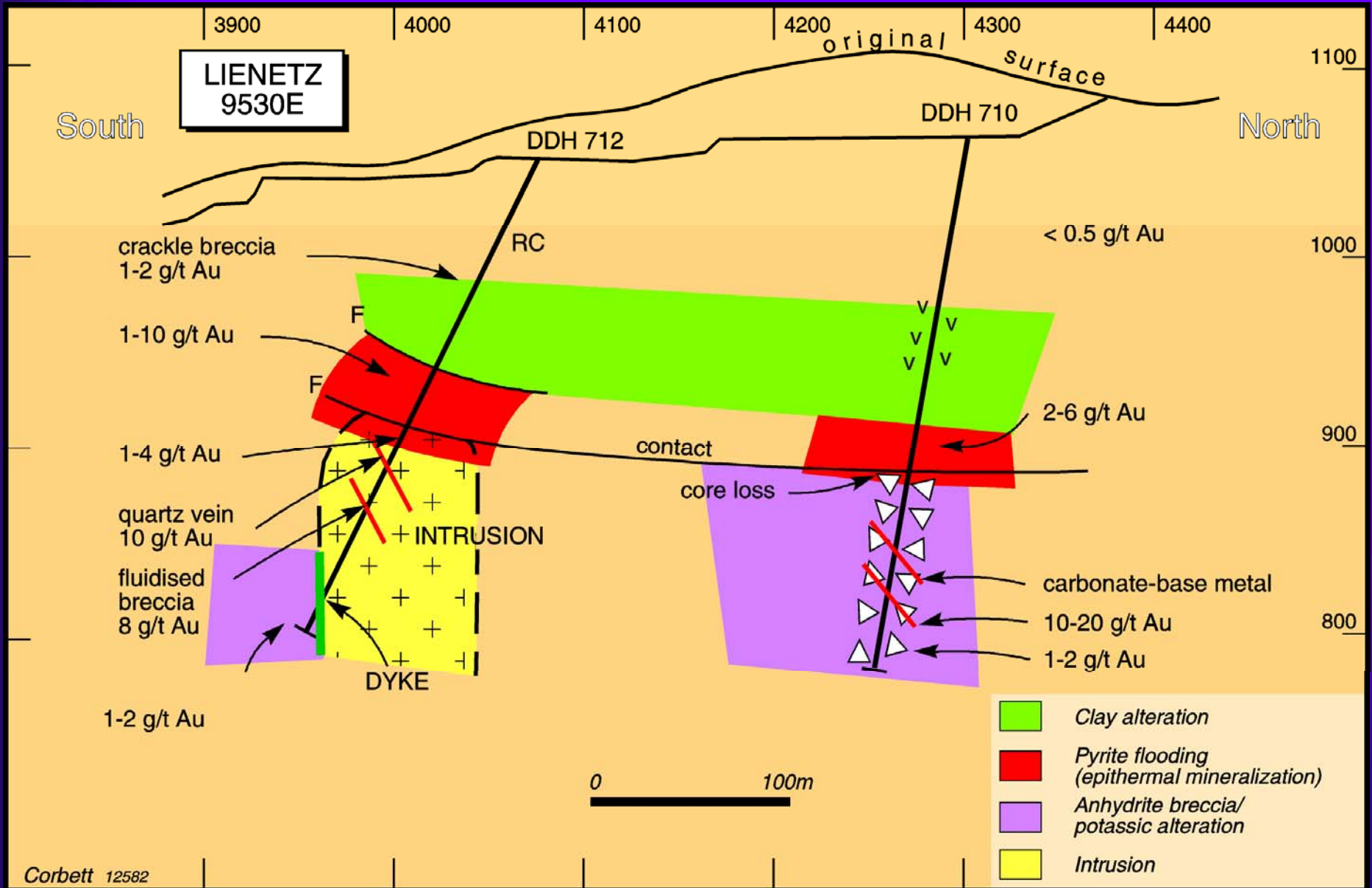
Carbonised wood



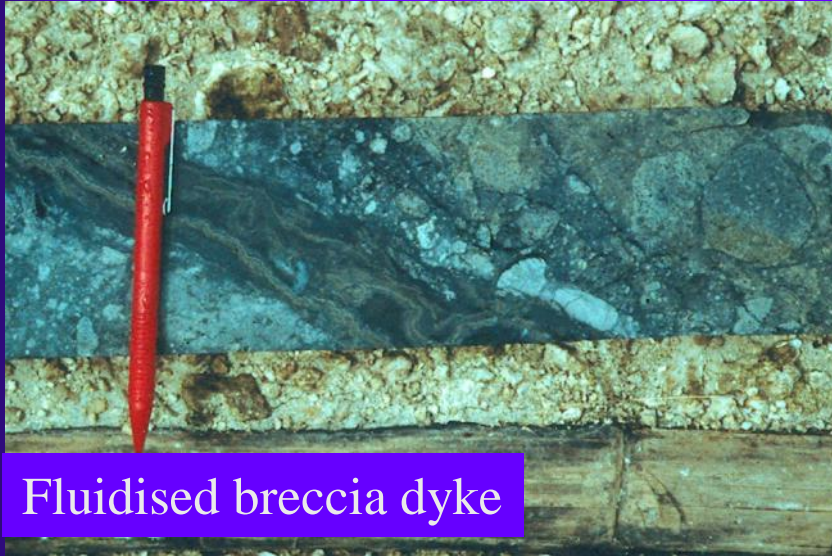
Juvenile intrusion clasts



Accretionary lapilli



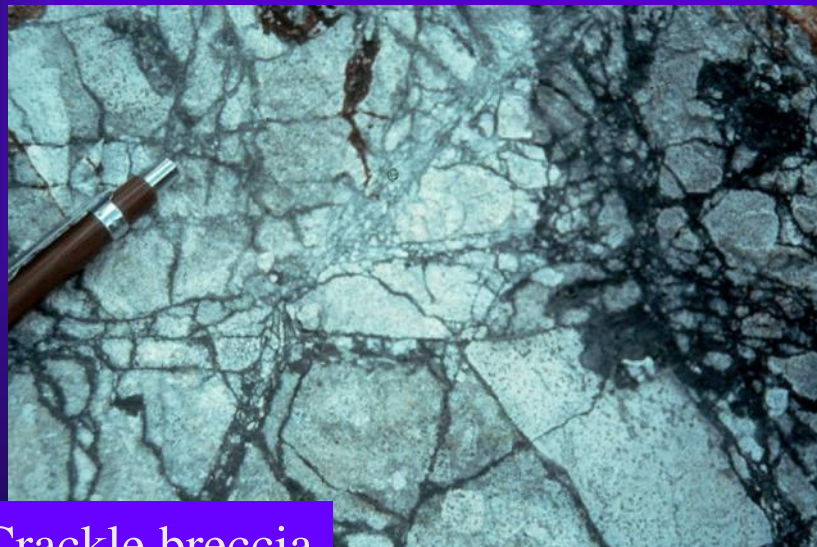
# Lihir - structural control



Fluidised breccia dyke



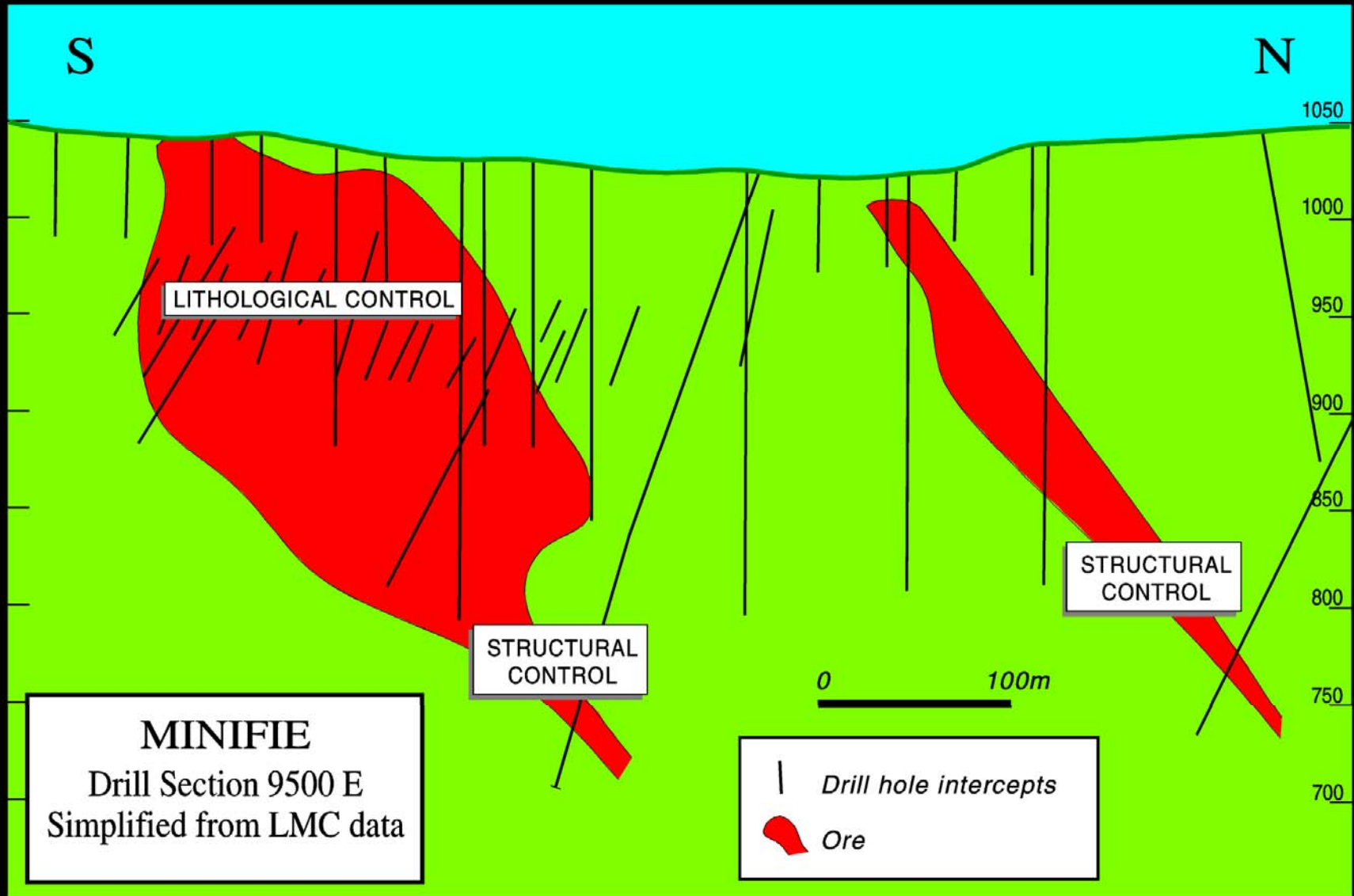
Feeder



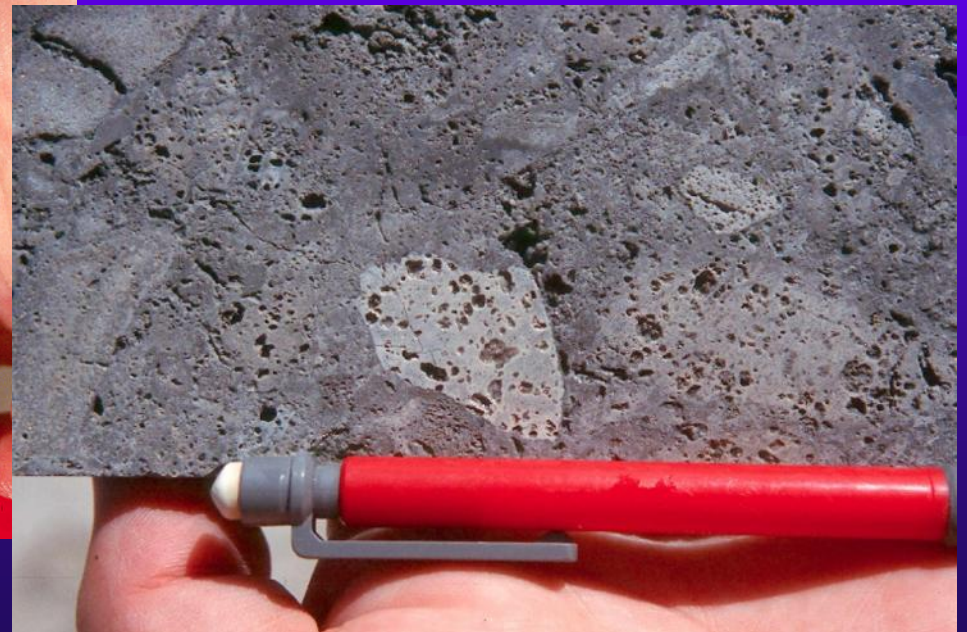
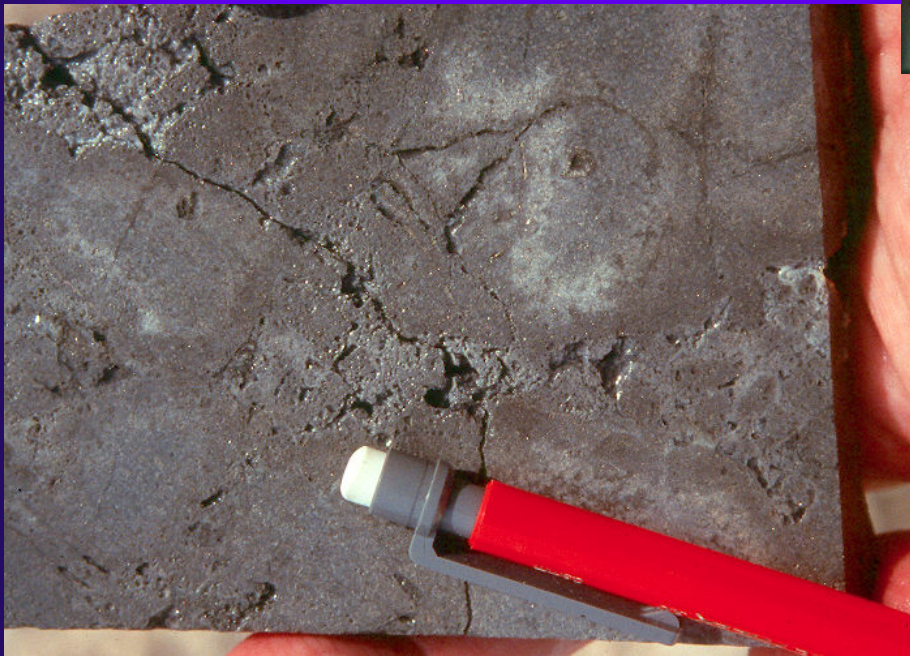
Crackle breccia



Mosaic breccia



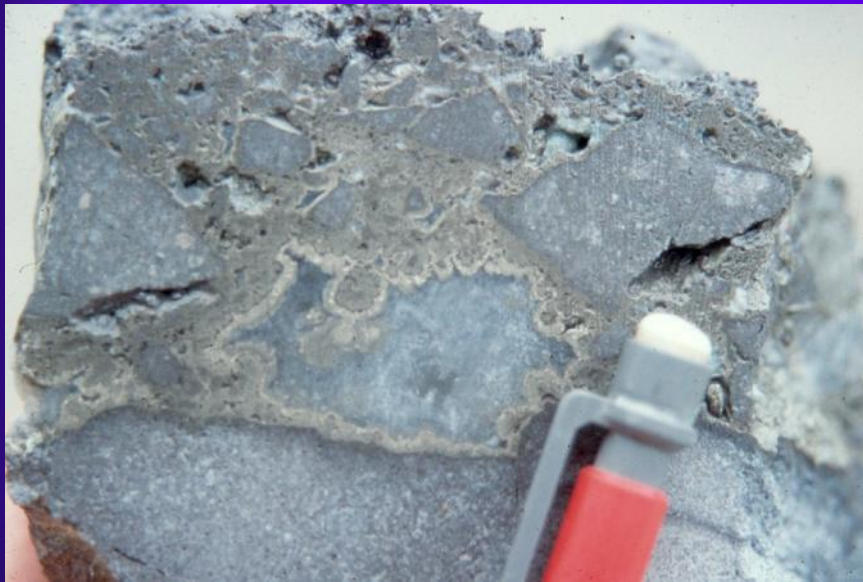
# Lithological control





# Lihir – epithermal event

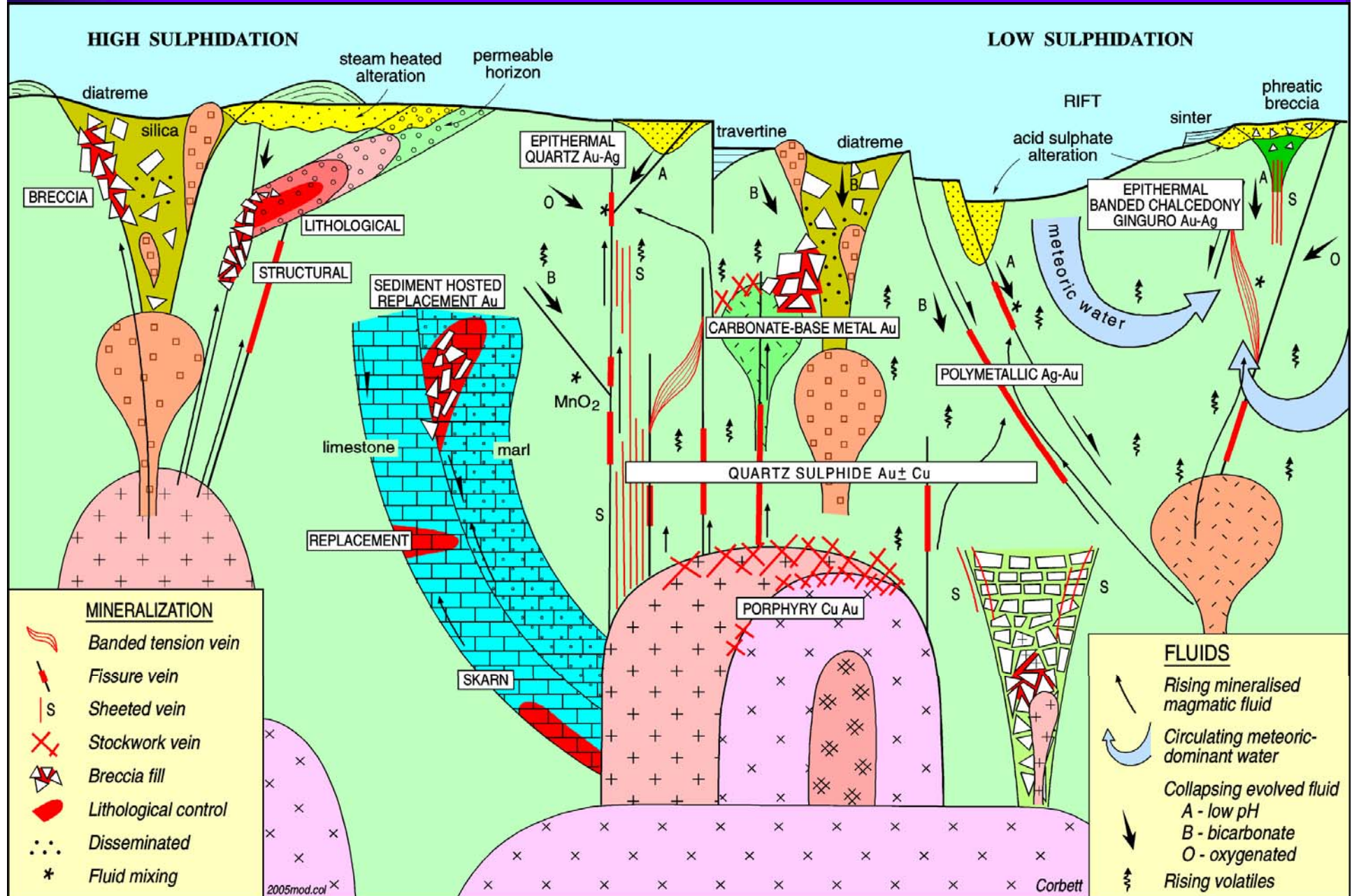
123 g/t Au



# Stages of alteration and mineralisation

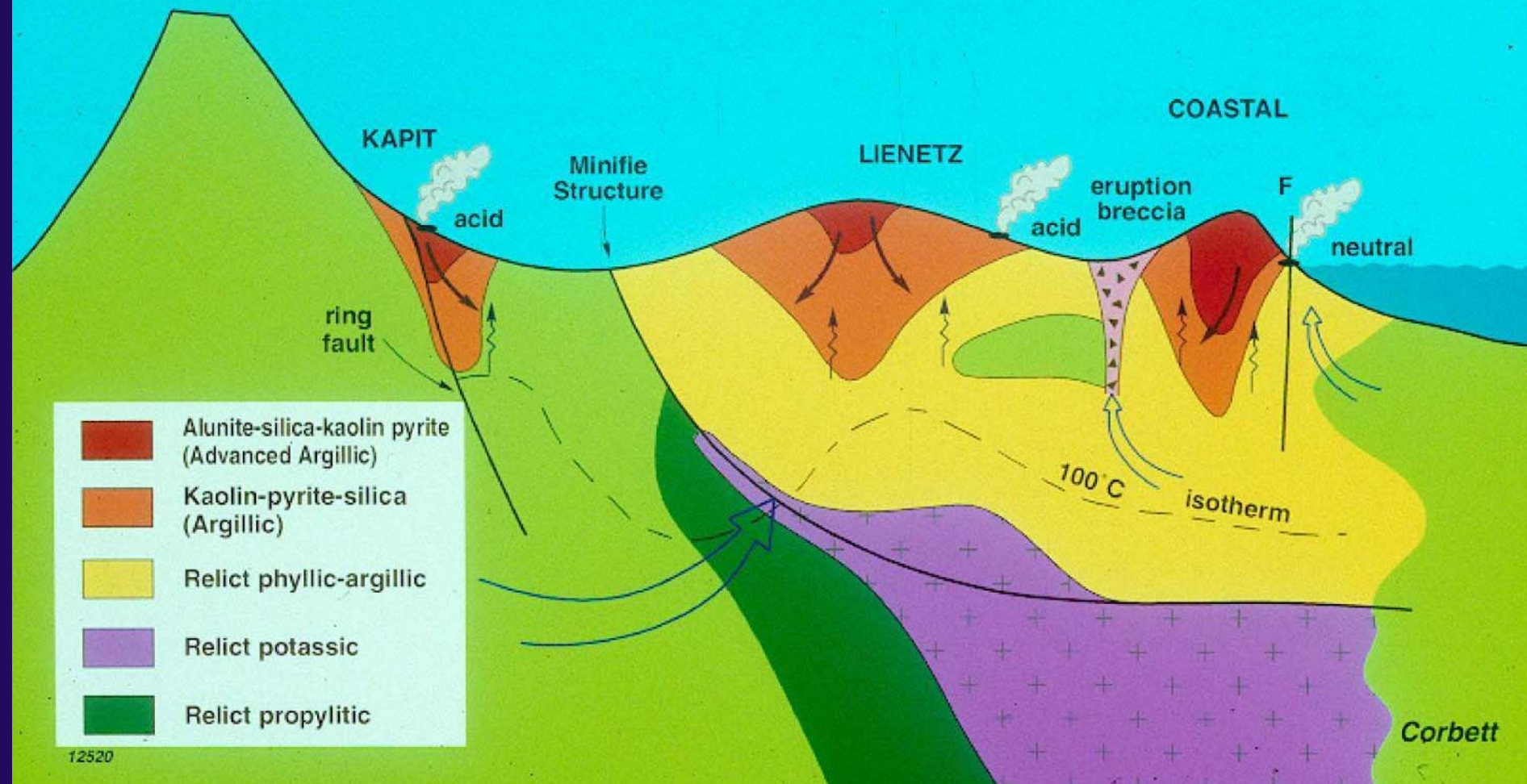
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# Styles of magmatic arc Au



# LADOLAM GEOLOGICAL HISTORY

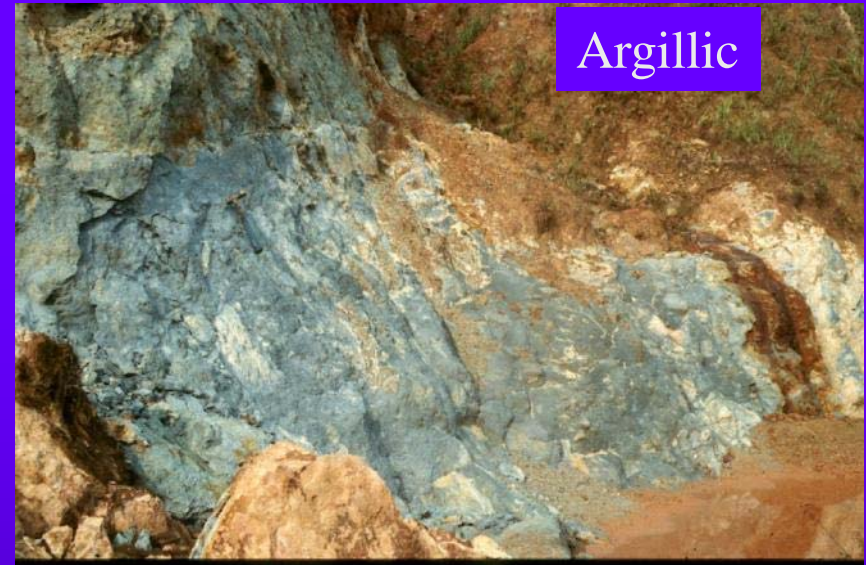
0.15my - Present Geothermal



Advanced argillic



Argillic



Smectite overprints potassic alteration





# Lihir – active geothermal

Kapit hot springs  
1984

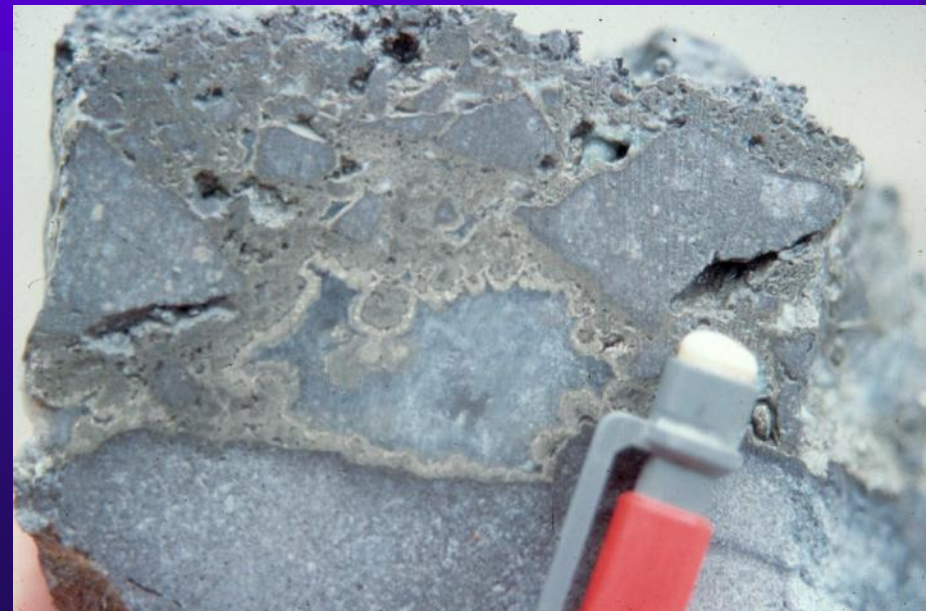
Minifie pit 1999



# Lienetz pit 2006



# Conclusion - Character sampling





# Stages of alteration and mineralisation

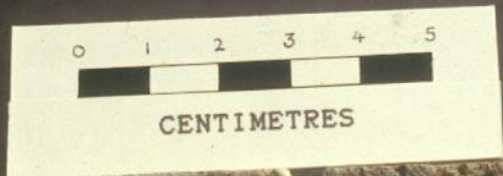
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Kfeldspar-arsenian pyrite  
13.1 g/t Au

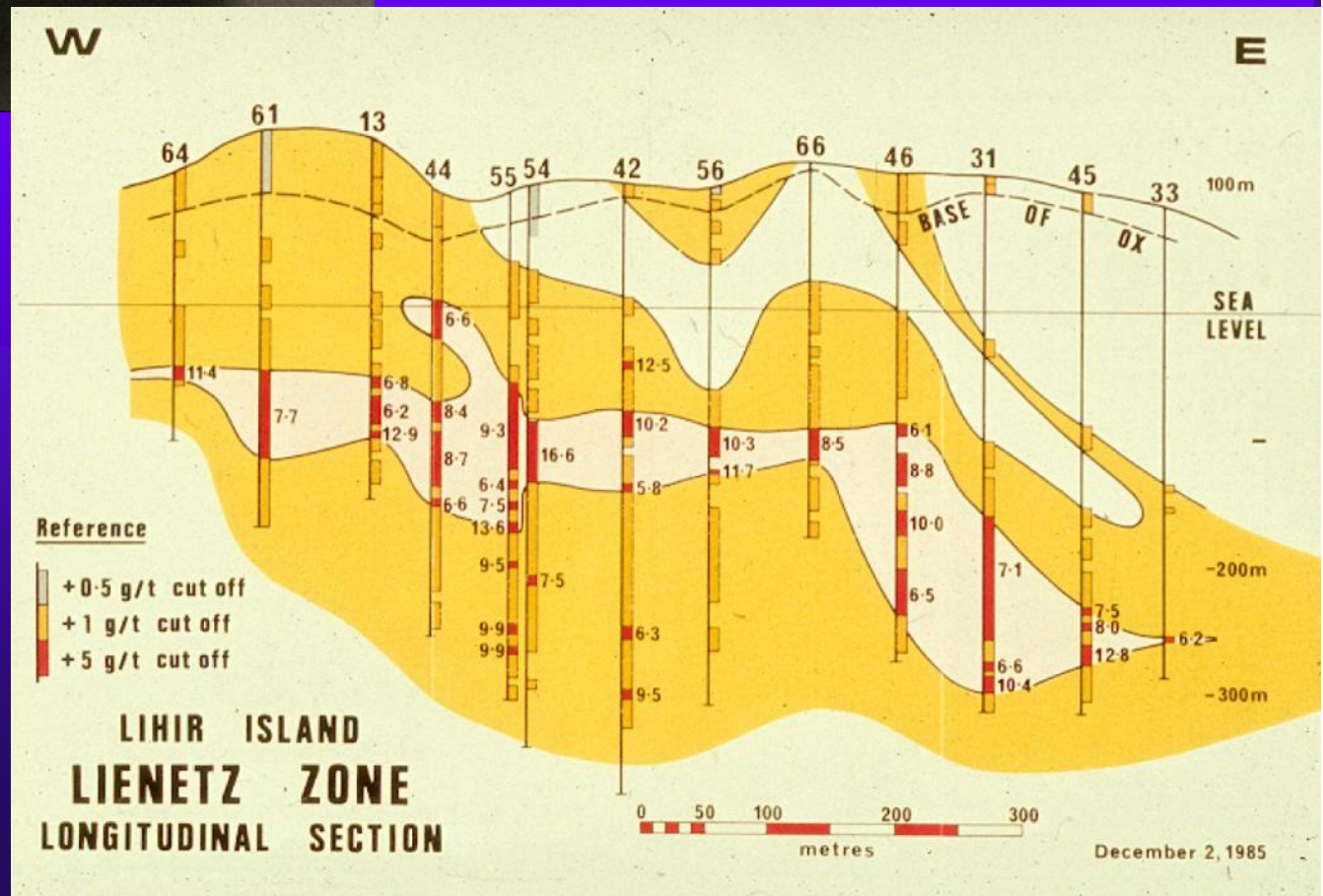


Other vughy  
Kfeldspar-pyrite



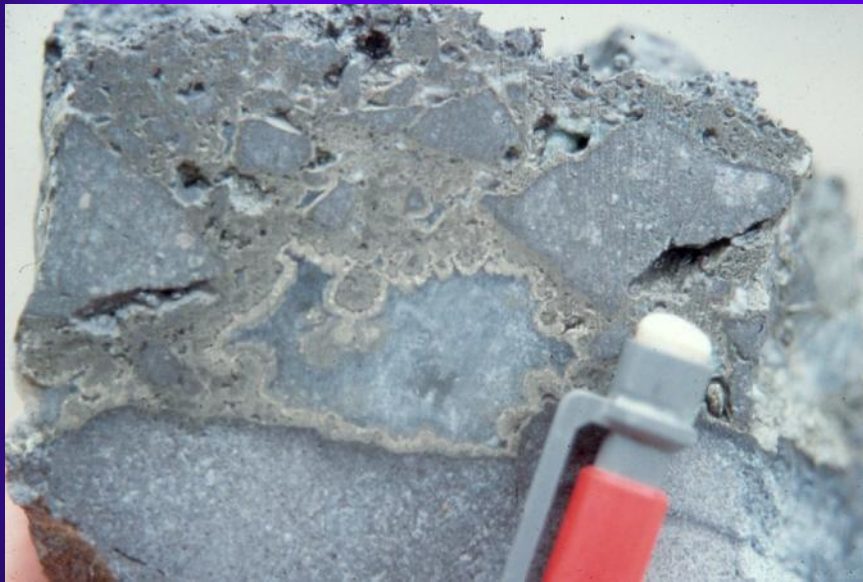


# Conclusions 'boiling zone'



# Conclusions epithermal event

123 g/t Au



# Lihir Gold Mine

## Role of carefully selected petrology

