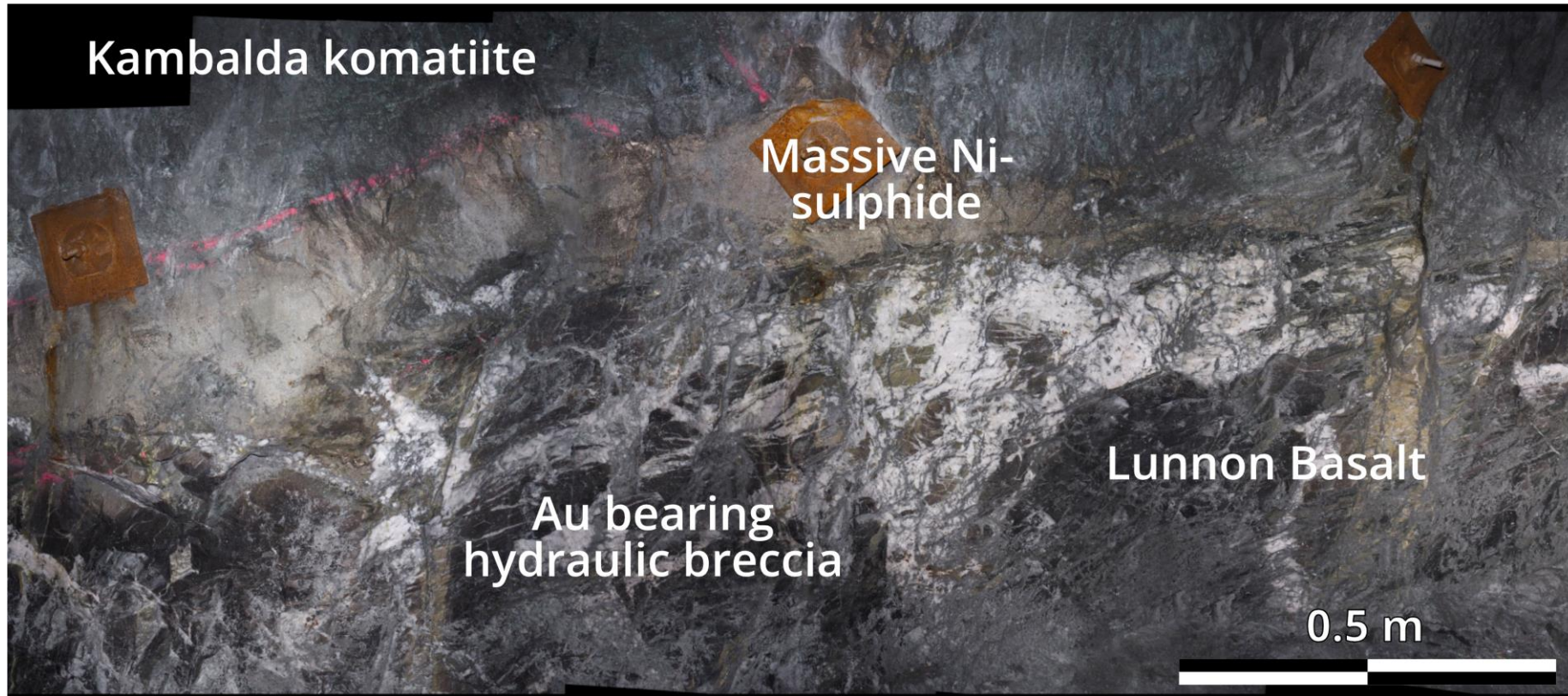


Early structural architecture controls Archaean komatiite-hosted Ni sulphide and orogenic Au mineralisation

Beta-Hunt Au-Ni mine, Kambalda, WA

Lauri Virnes

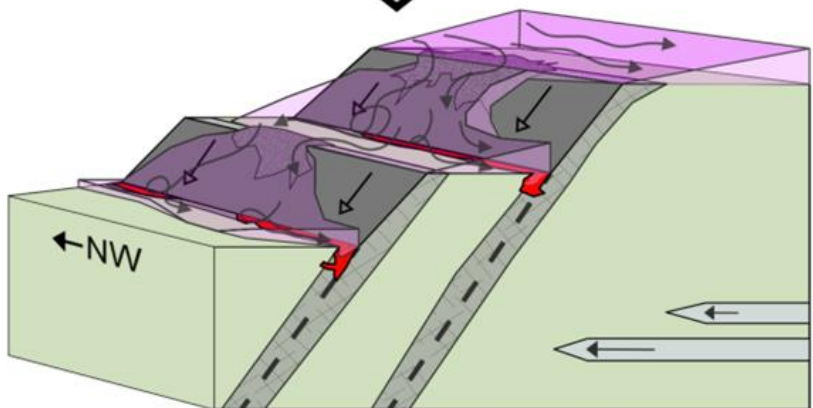


Is there a structural connection between the two mineral systems?



1. Massive nickel sulphides (2710 Ma)

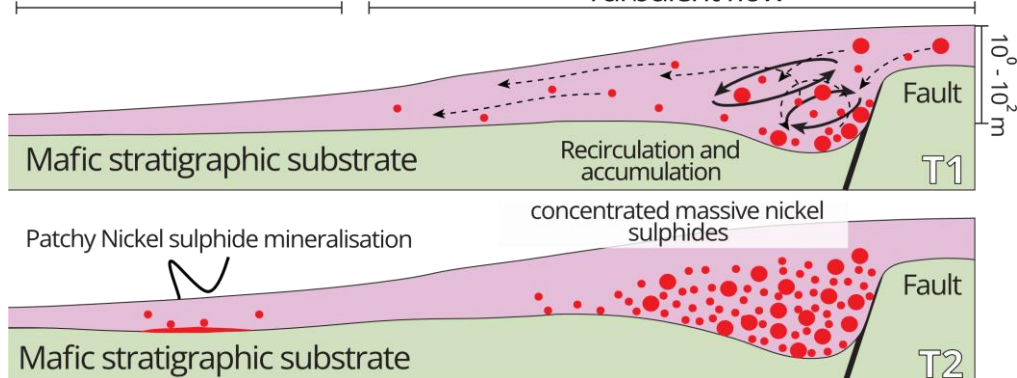
D0



- Basalt
- Komatiite
- Dolerite sills
- Fault damage zone
- Nickel sulphides

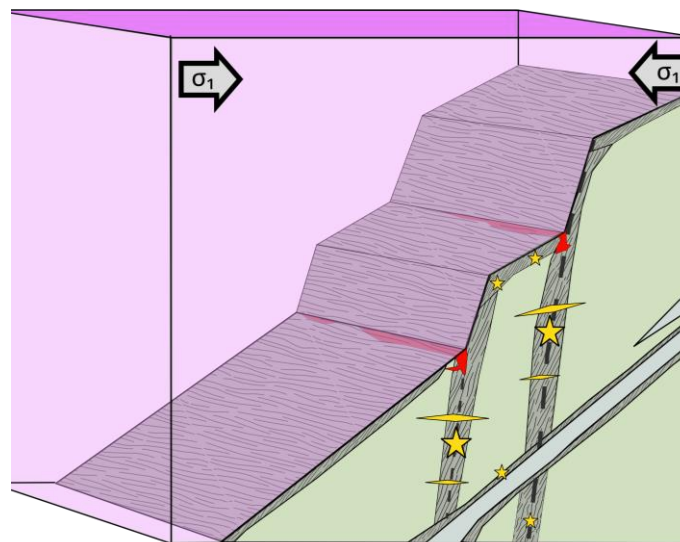
Laminar flow

Turbulent flow



2. Early low-grade gold (< 2680 Ma)

0.3 – 10 ppm



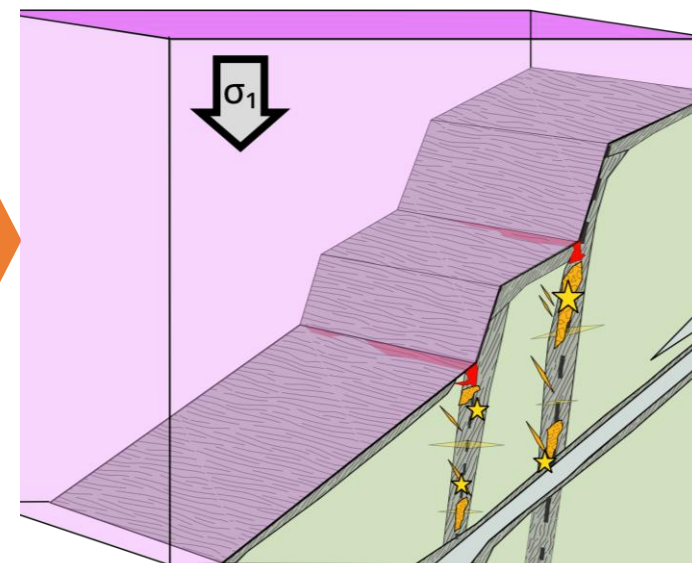
- Flat extension veins
- Foliation
- Gold deposition

Ductile

3. Late high- and ultra high-grade gold (< 2660 Ma)

10 – 24 000 ppm

10 – 24 000 ppm



- Steep extension vein
- Hydraulic breccia

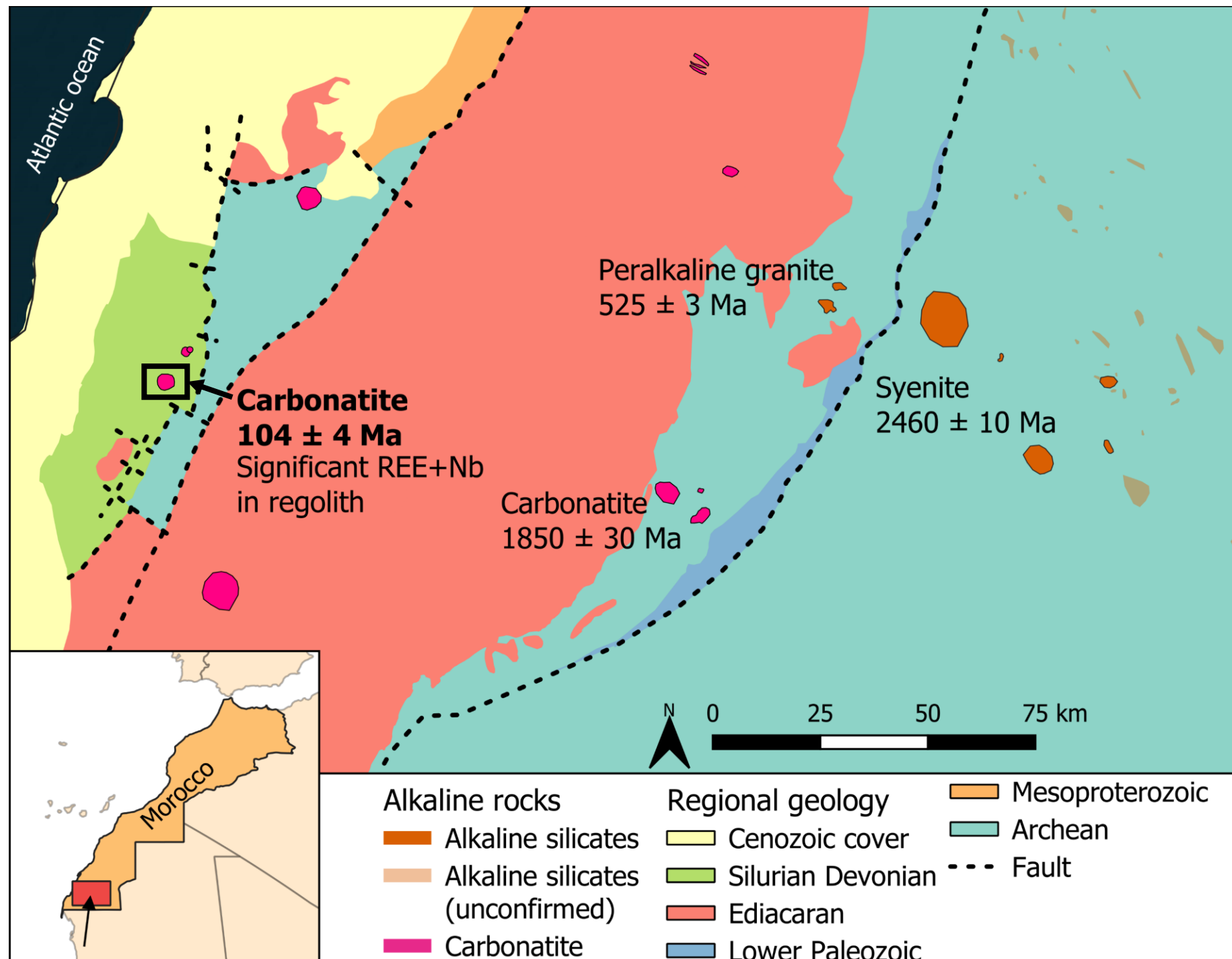
Brittle

Lauri Virnes

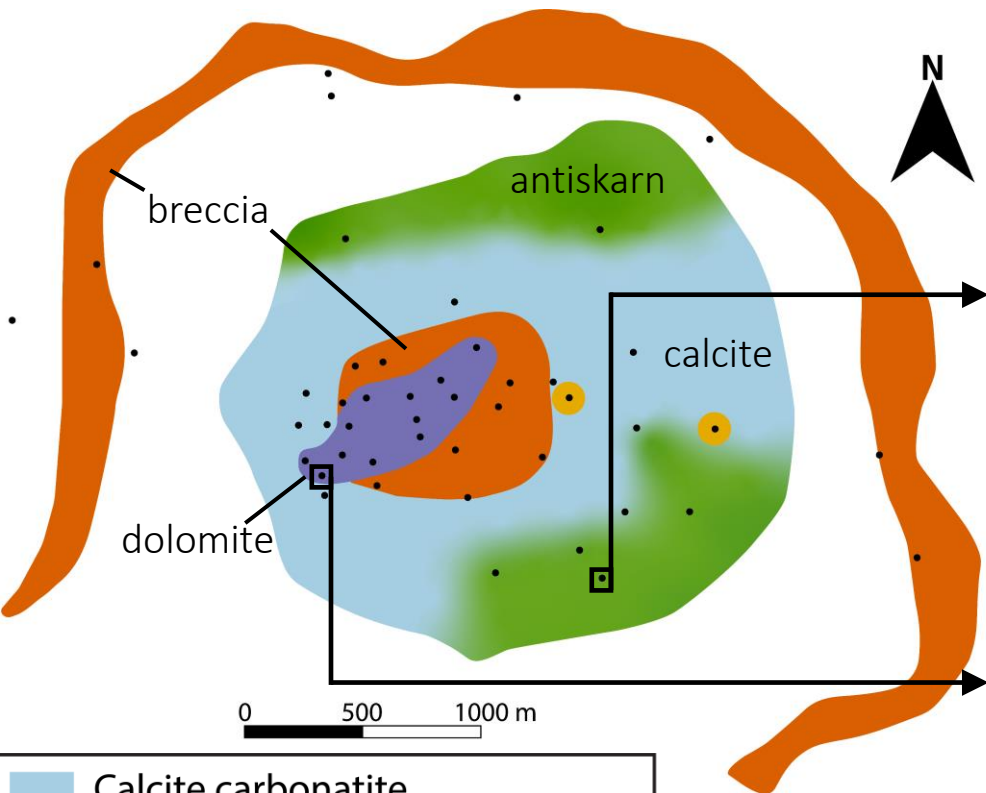


Controls on REE and Nb mineralisation in a carbonatite in southern Morocco

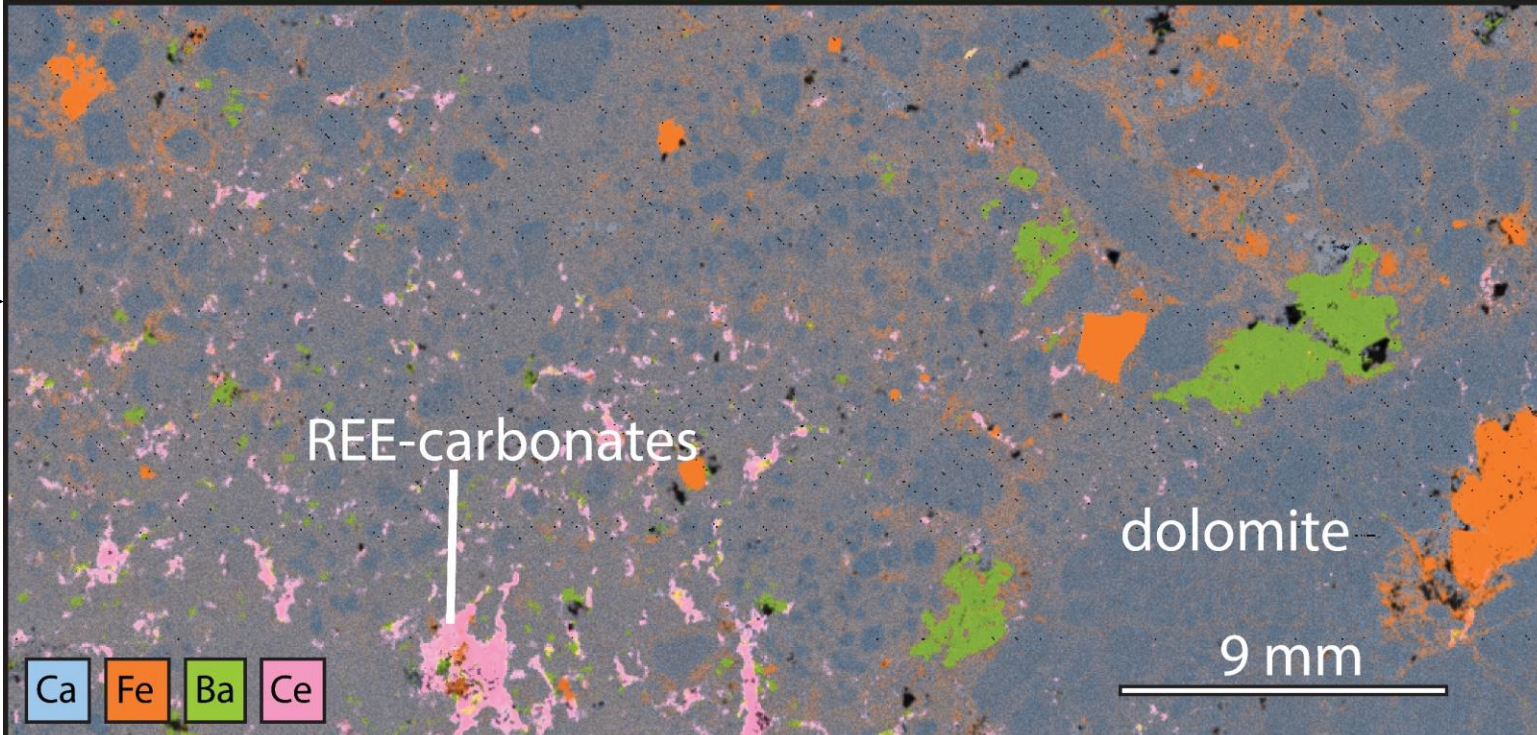
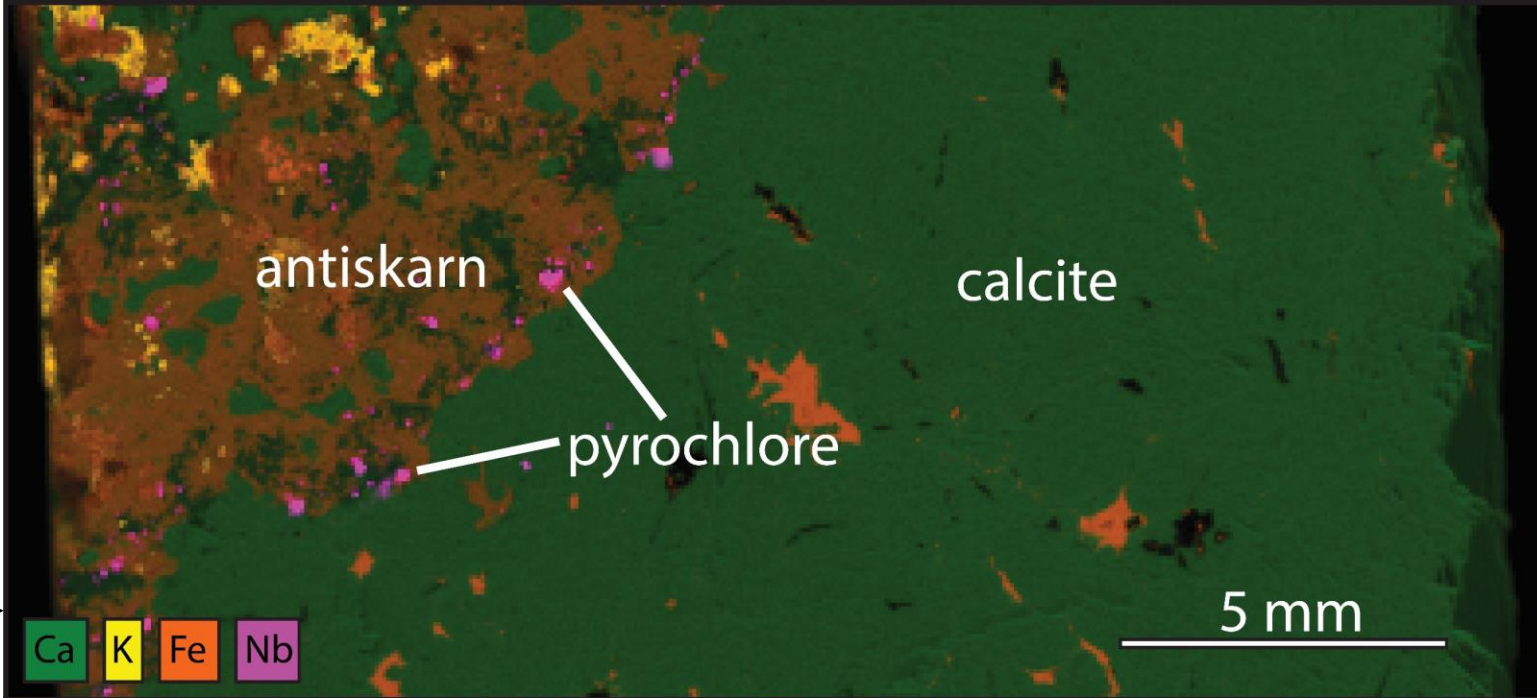
Lucas Tatnell



Bedrock geology



- Calcite carbonatite
- Dolomite carbonatite
- Antiskarn + calcite carbonatite
- Breccia ± mafic rock
- Syenite(?)
- Granite country rock
- Drill hole



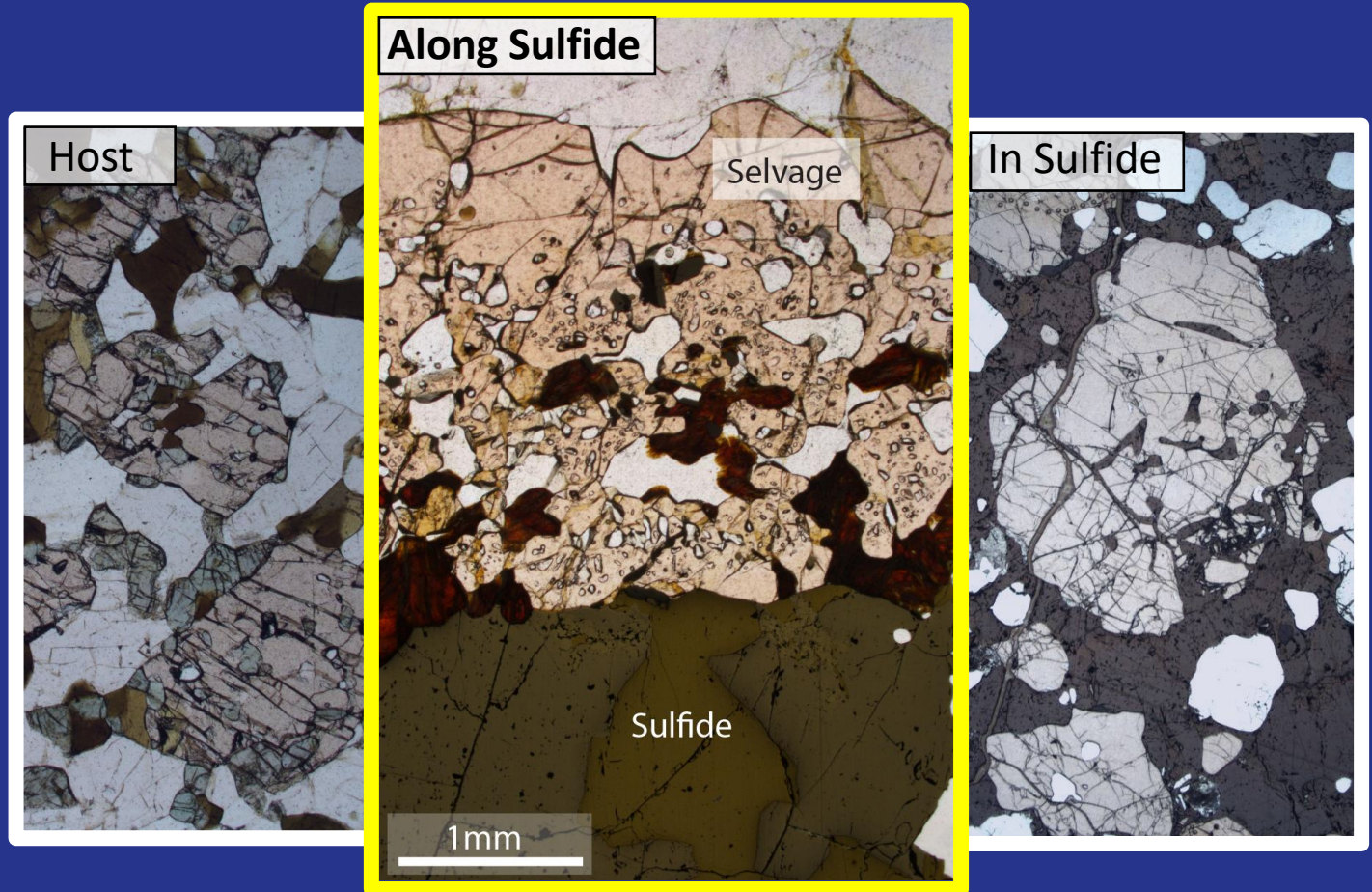
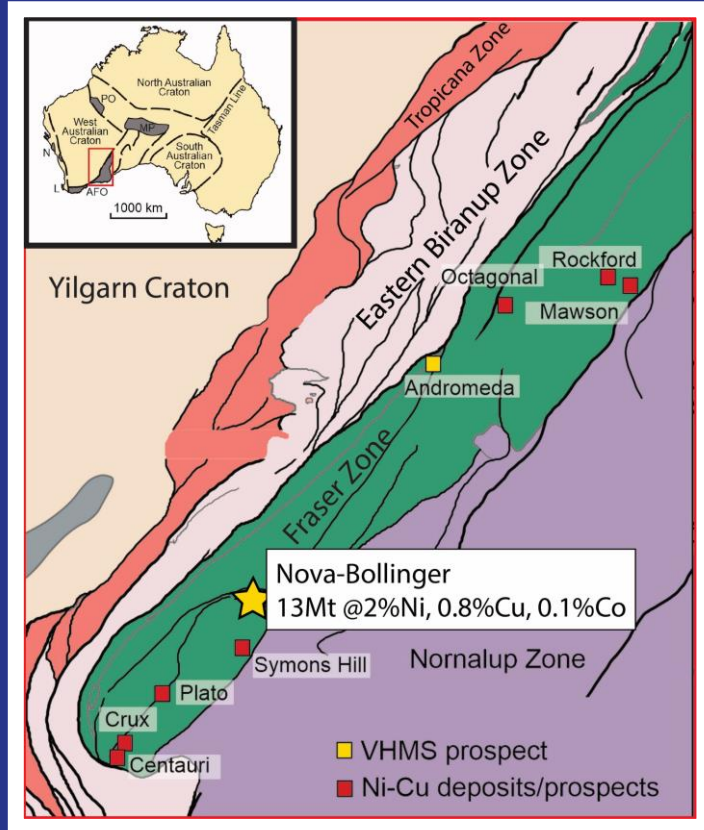


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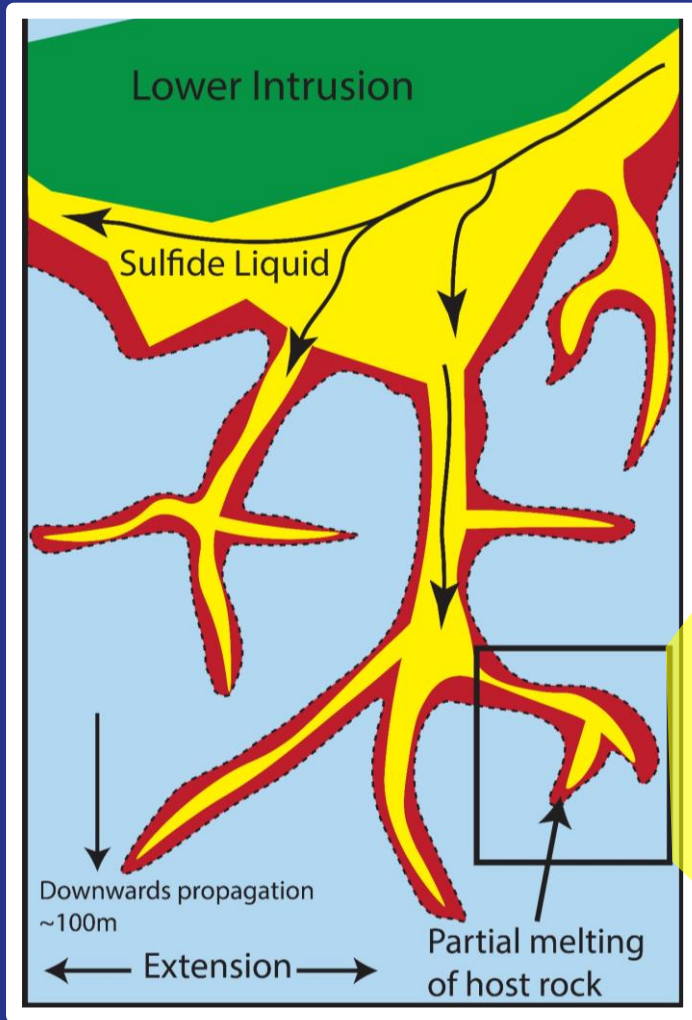
Garnet selvages at the edge of mineralisation in the Nova-Bollinger deposit, Western Australia

Joshua Chong

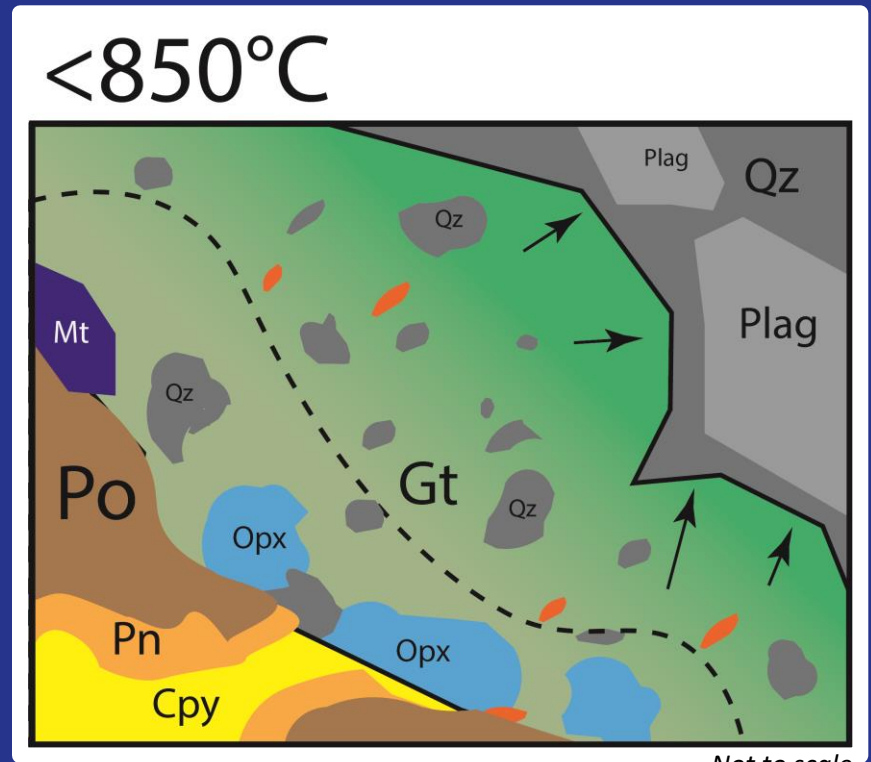
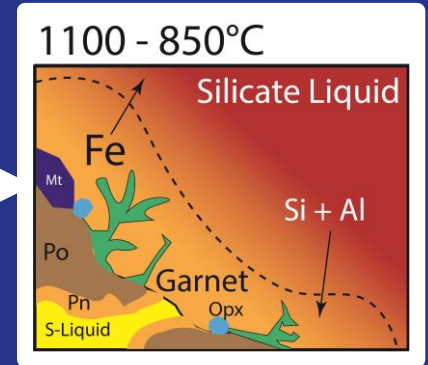
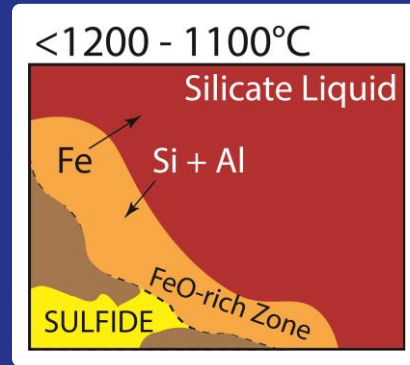
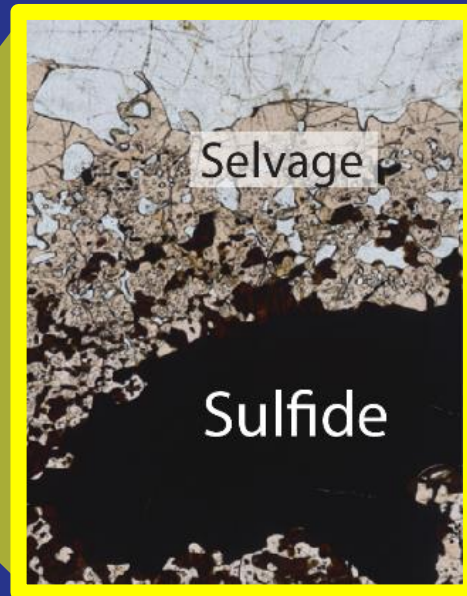
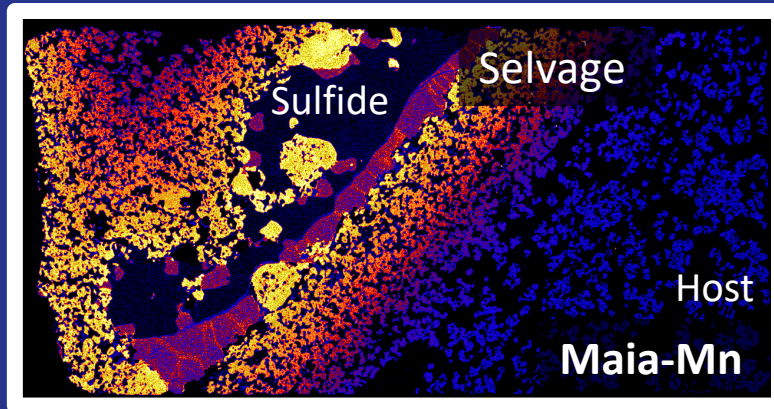


What is recorded when sulfide liquids infiltrate host country rocks undergoing granulite-facies metamorphism?

How did these selvages form?



Not to scale



Not to scale

Implications for processes in mid-crustal terranes



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Kununurra ▲

Lake Argyle

The Speewah Ti-V Deposit:

building a new petrogenetic model

Alex Eves

Argyle Diamond Mine

Halls Creek ▼



Speewah
Ti-V Deposit



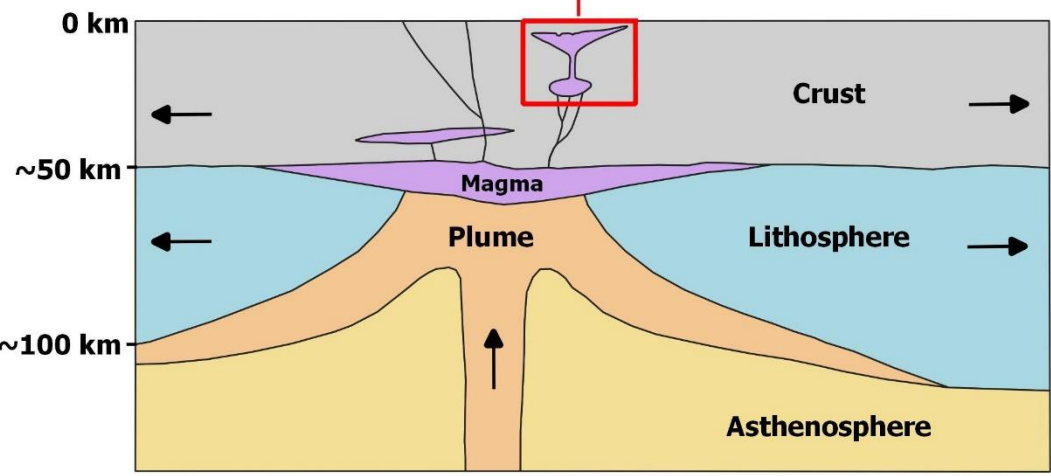
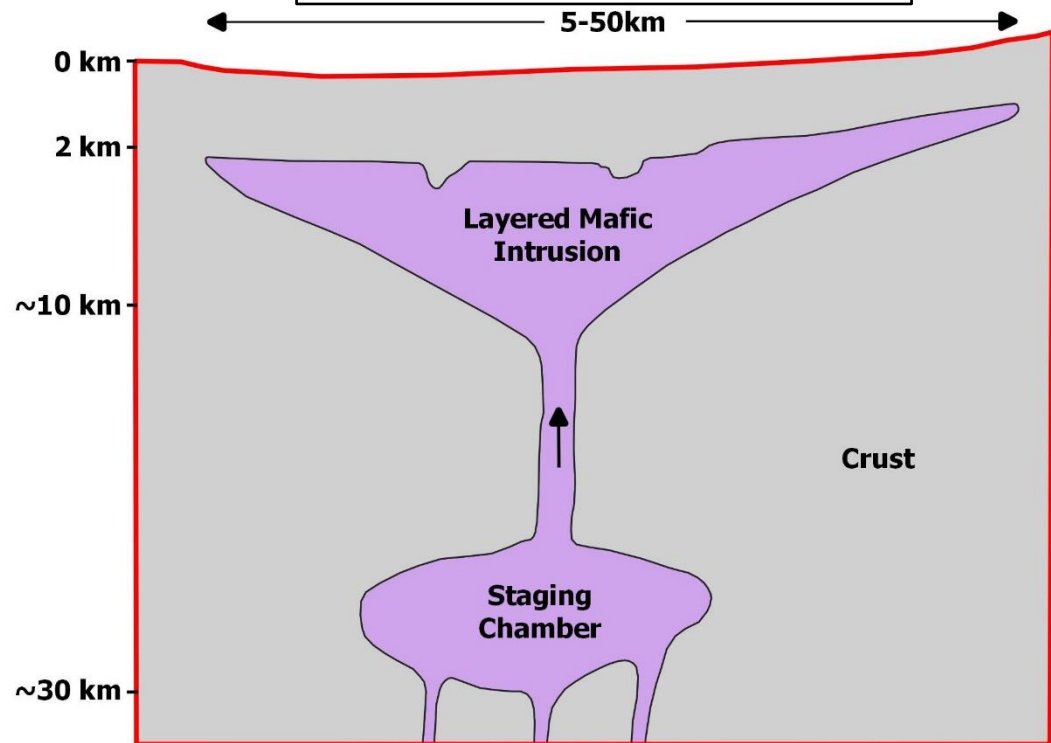
Speewah

Western
Australia



Centre for **EXPLORATION**
TARGETING

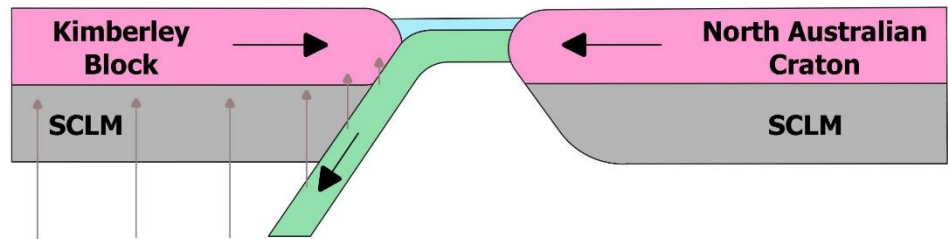
Model #1 - Mantle Plume



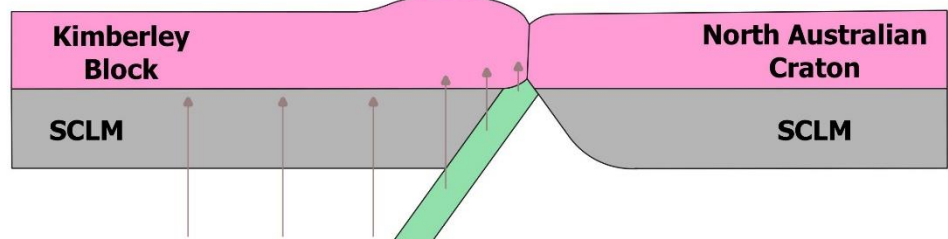
Modified from Ivanic (2019) – GSWA Report 192

Model #2 - Lithospheric Melting

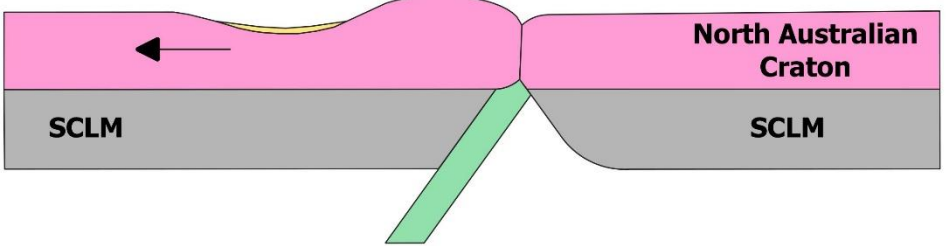
A. Subduction, with metasomatism of SCLM and lower crust



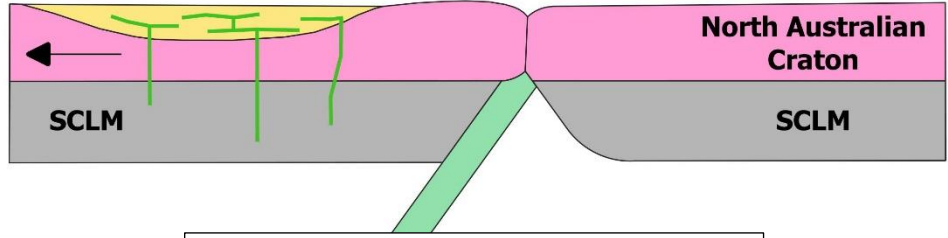
B. Cratonisation & ongoing metasomatism



C. Start of post-orogenic collapse and erosion



D. Extension, sedimentation and decompression melting of SCLM



Modified from Griffin et al. (2000)