$^{40}Ar/^{39}Ar$ constraints on Mesoproterozoic tectonics in the NW Gawler Craton

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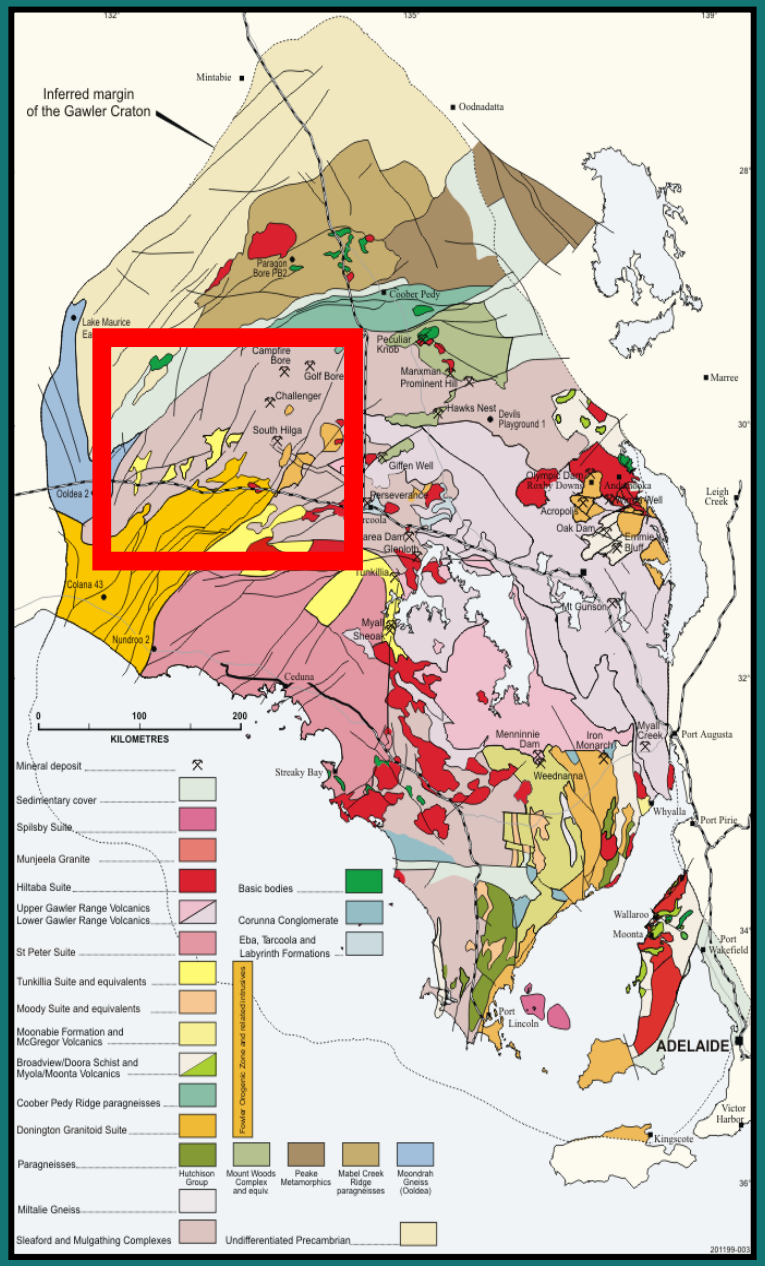

Known periods of tectonism

Sleafordian ~2440 Ma

Kimban ~1730 Ma

Kararan? ~1690 - 1540 Ma

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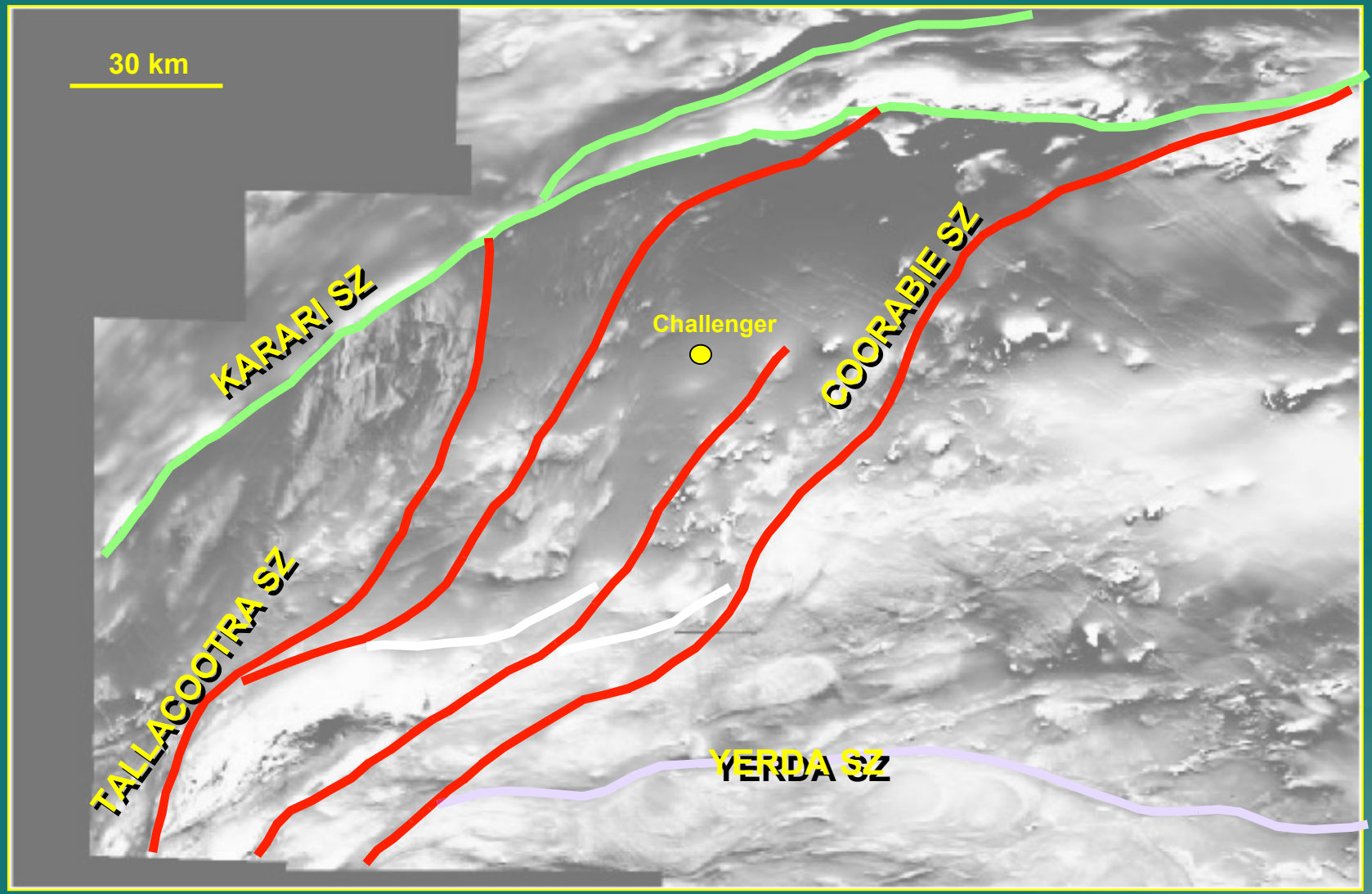
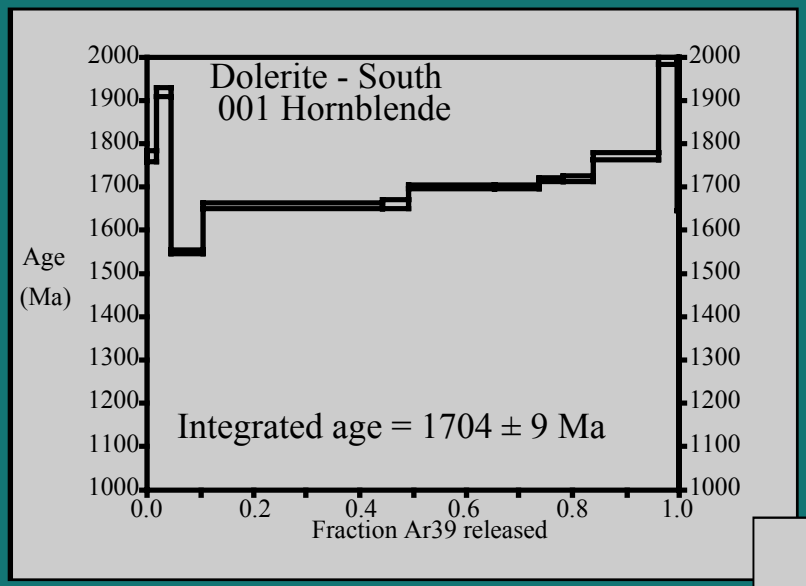
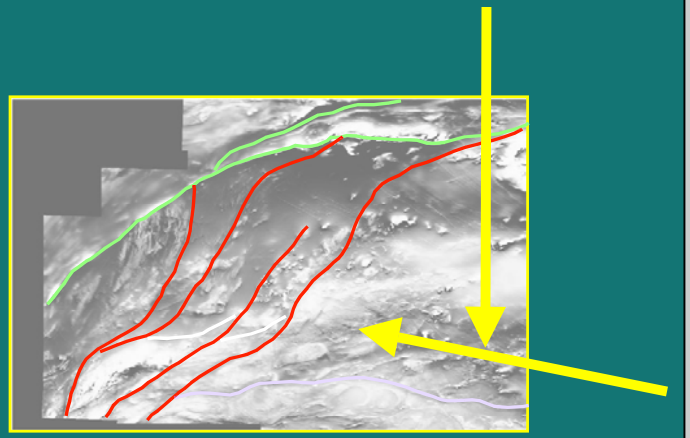
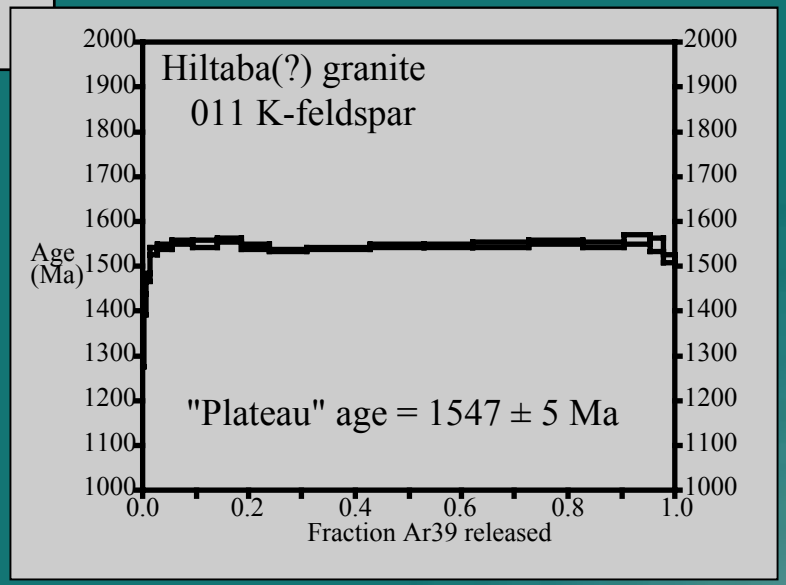

30 km
KARARI SZ
Challenger
COORABIE SZ
TALLACOOTRA SZ
YERDA SZ

Wilgena Domain

East of Coorabie SZ







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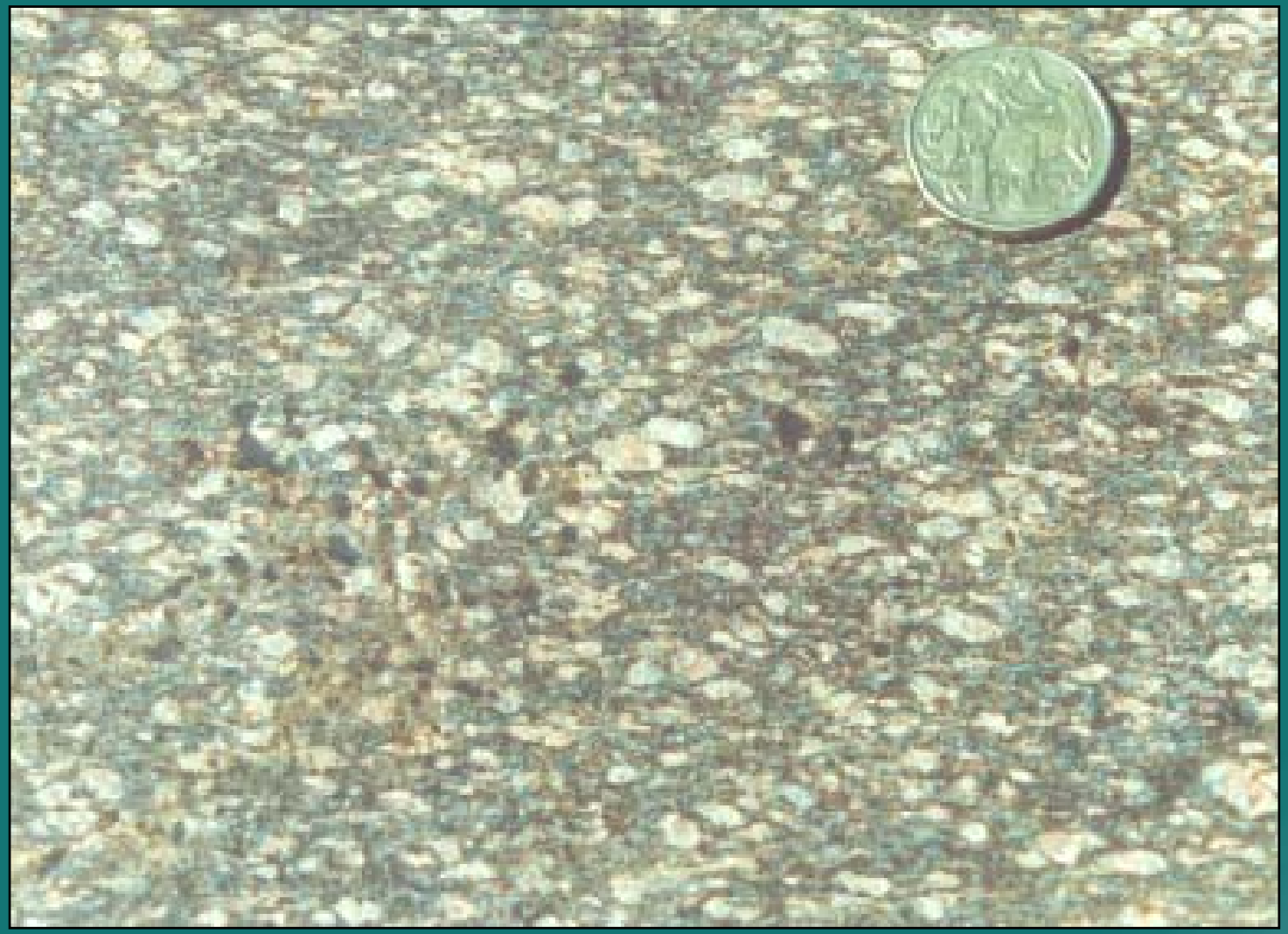
Coorabie Shear Zone



Sinistral

Dextral (Teasdale, 1997)

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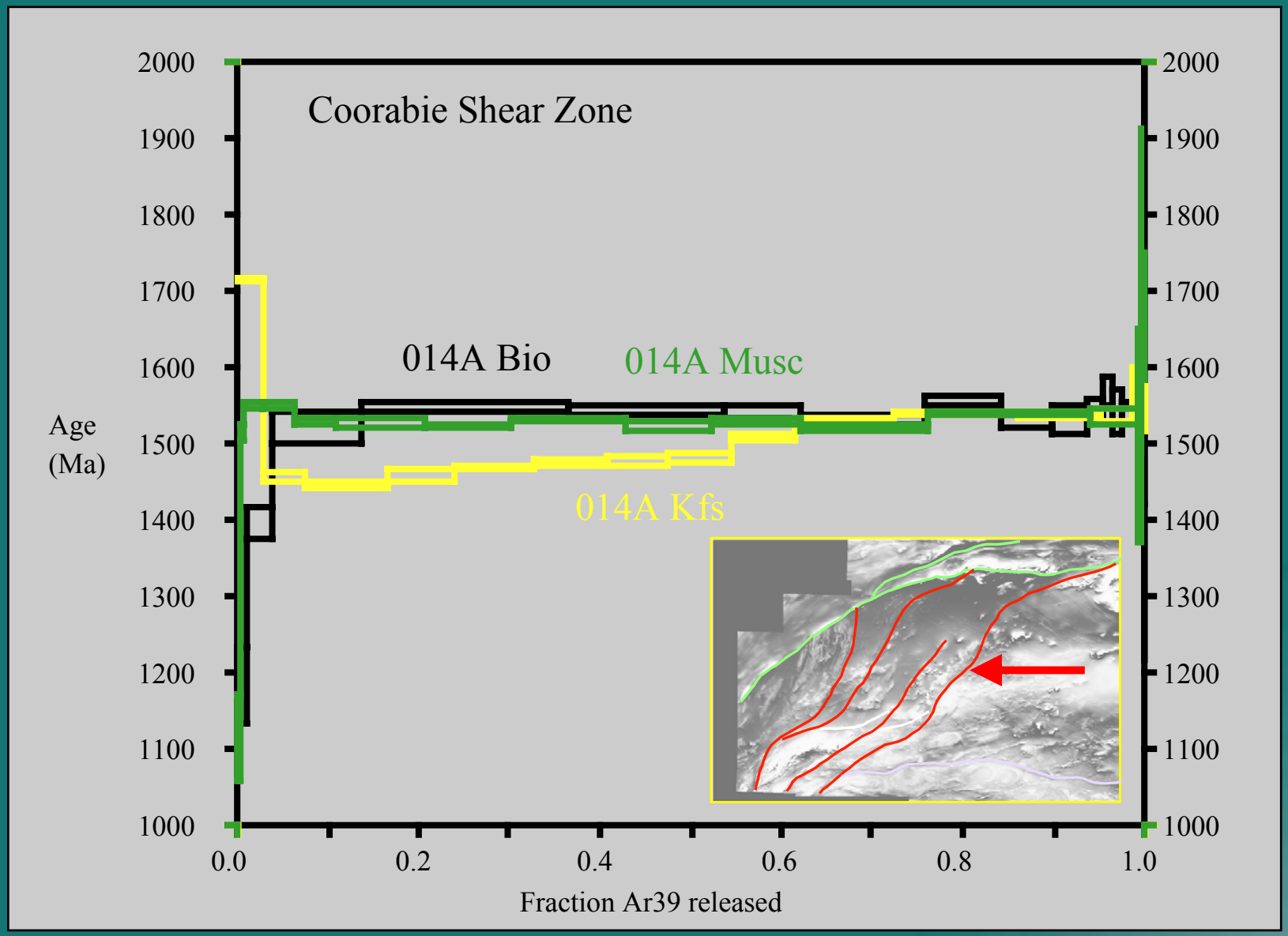
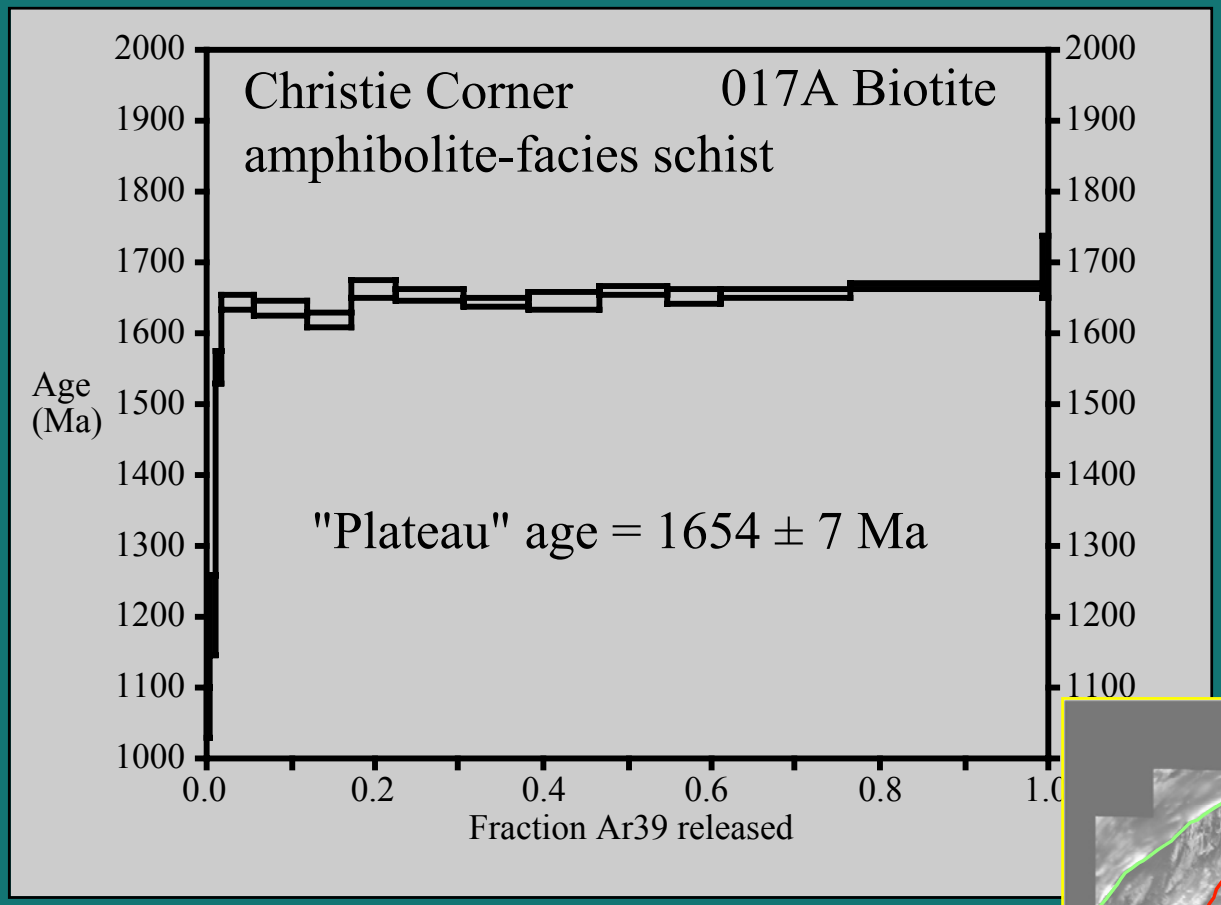
Coorabie Shear Zone ~ 1540 Ma



Christie domain



Tomkins (2002)

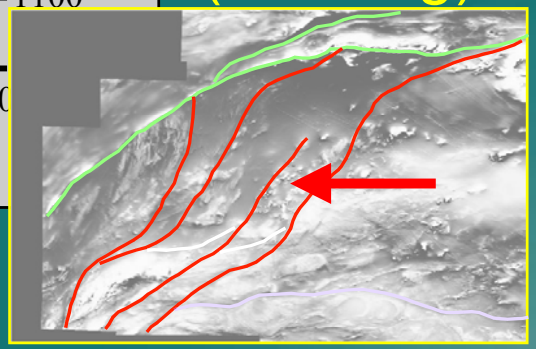
Granulite at ~2440 Ma

Micas 2000 - 1620 Ma

Monazite rim

~1760 Ma

(Fanning)



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Tallacootra Shear Zone

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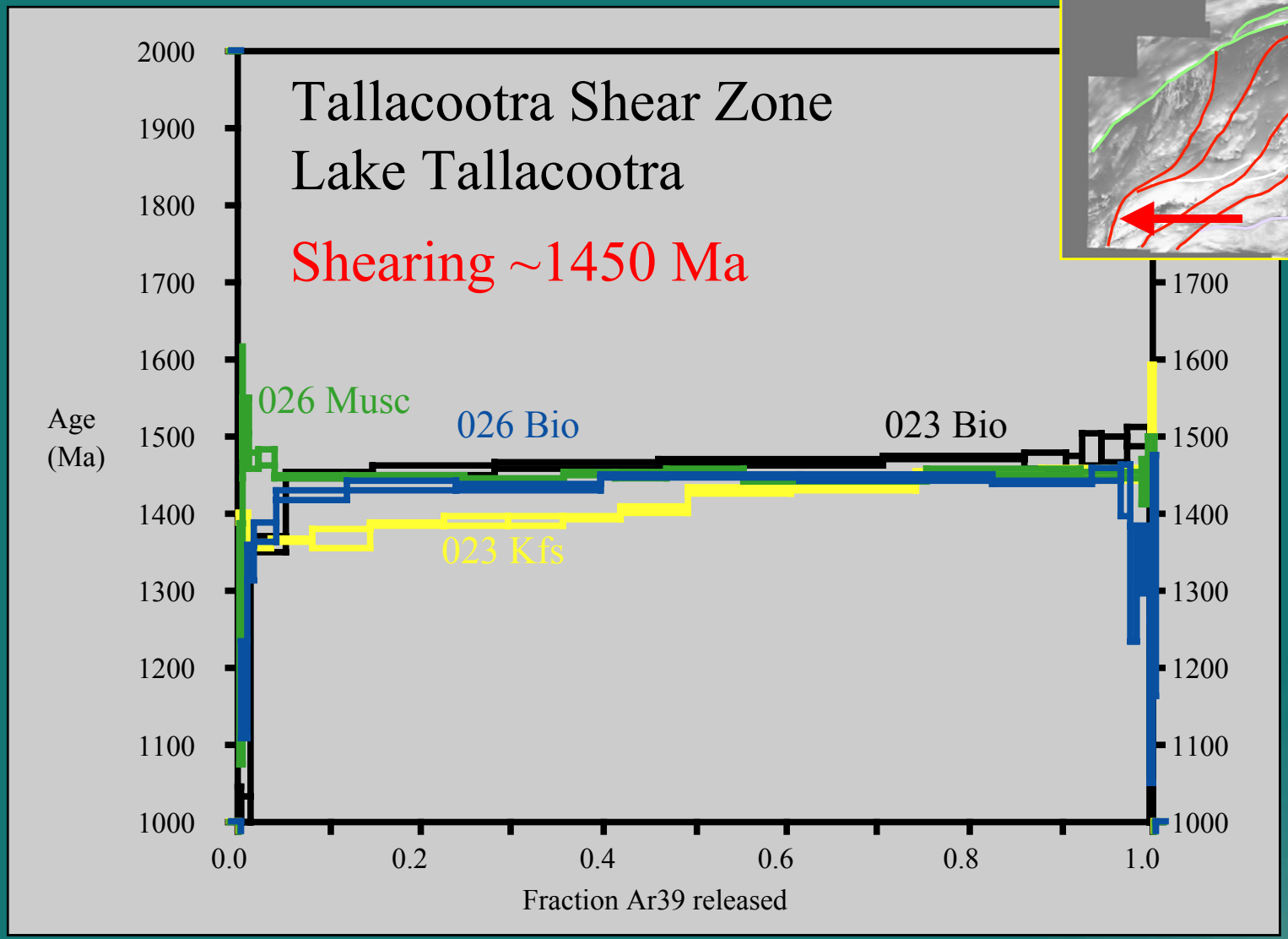
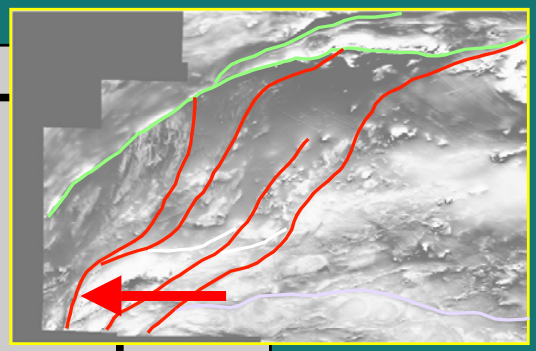
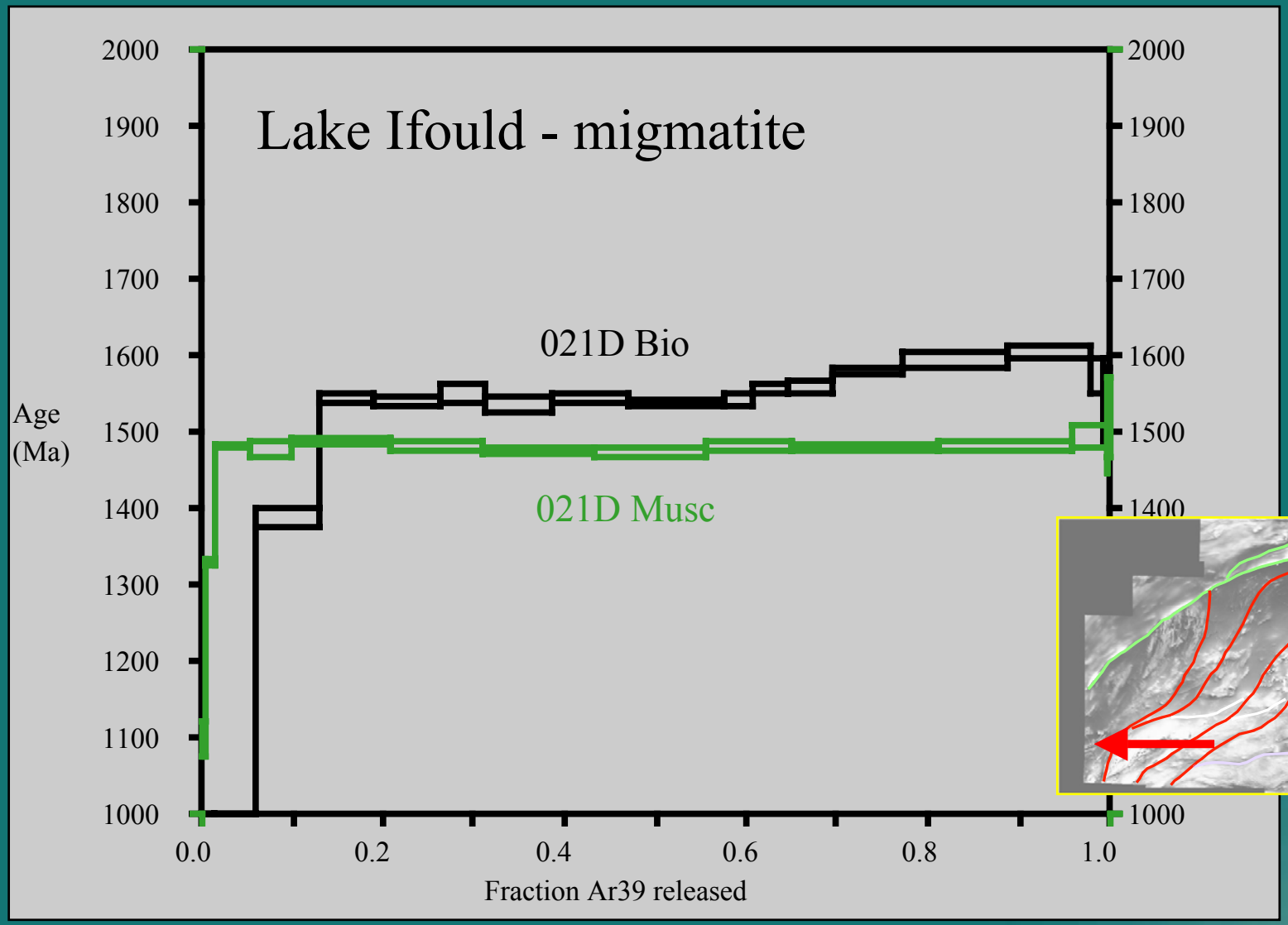
Tallacootra Shear Zone

Tallacootra Shear Zone





Lake Ifould - west of Tallacootra SZ



Mica ages older than Tallacootra SZ

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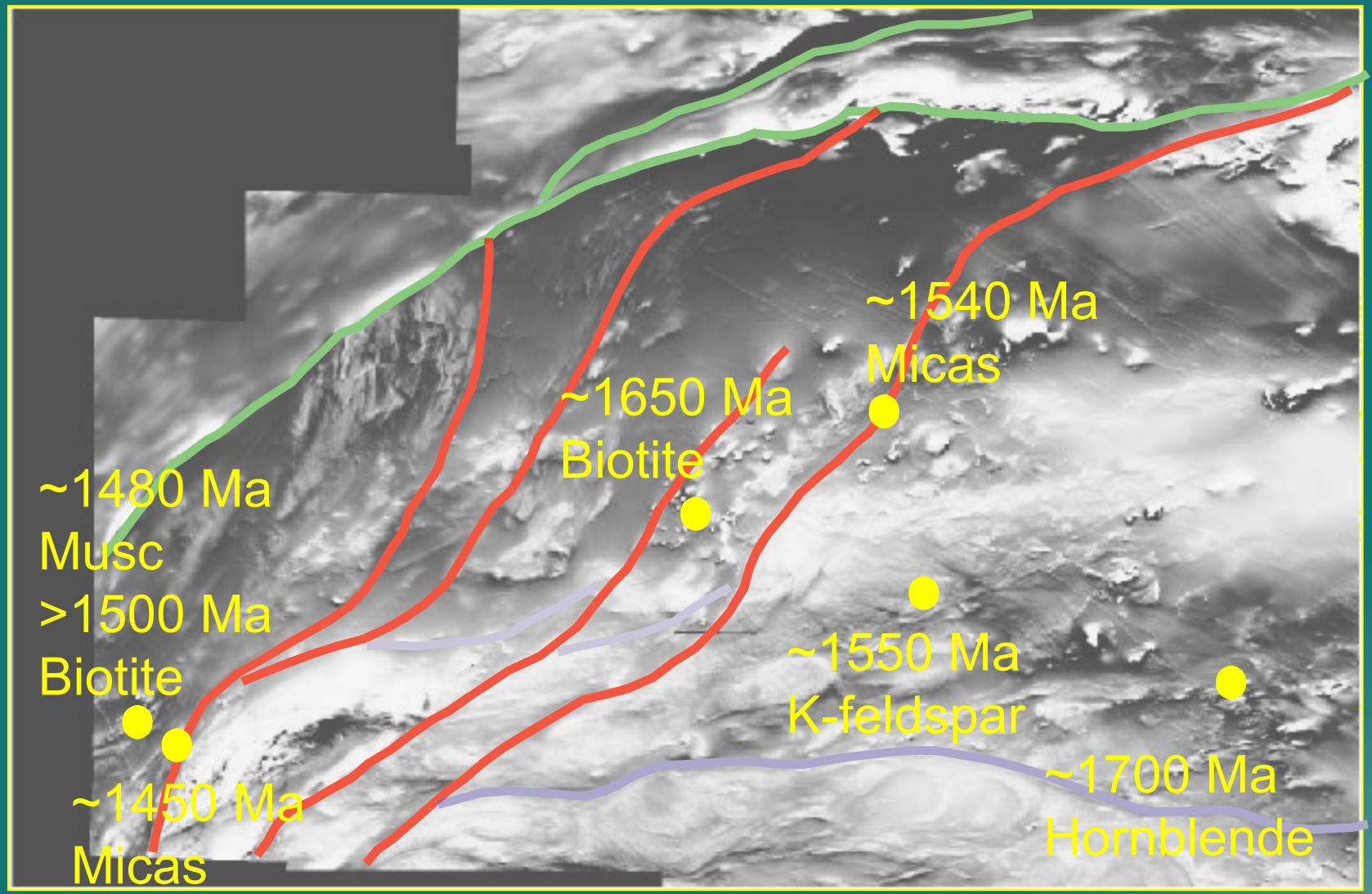
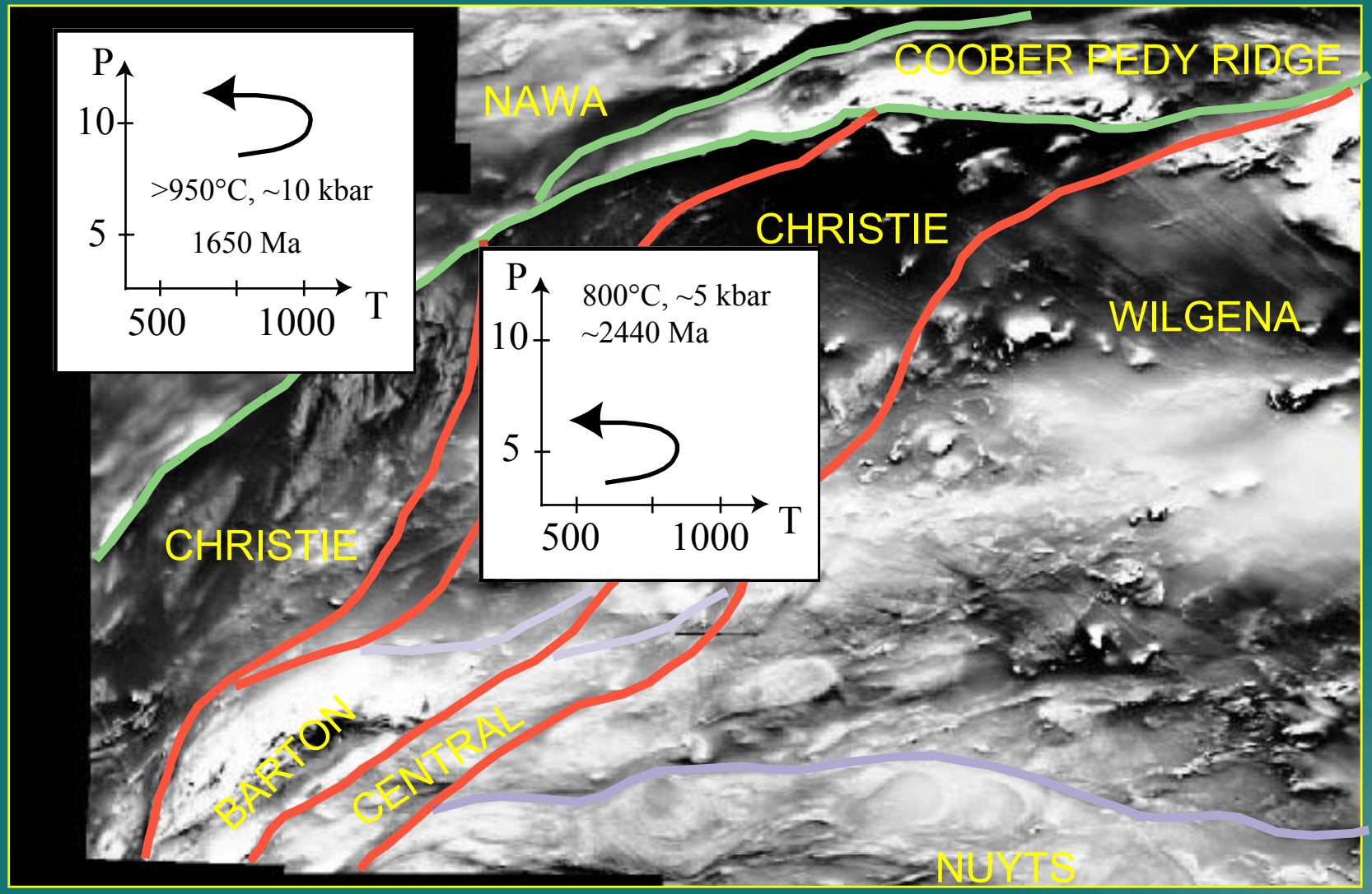

~1540 Ma
Micas
~1650 Ma
Biotite
~1480 Ma
Musc
>1500 Ma
Biotite
~1550 Ma
K-feldspar
~1700 Ma
Hornblende
~1450 Ma
Micas



~1710 Ma meta monazite in Barton SD

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Major Points

Tectonic juxtaposition in Mesoproterozoic

1540 Ma, 1450 Ma, and younger? (Karari)

Younger than “Kararan orogeny” - currently defined as 1690 - 1540 Ma

No direct evidence yet for Grenvillian activity - but possible along Karari Fault

Future Work

Karari Fault

Yerda Shear Zone

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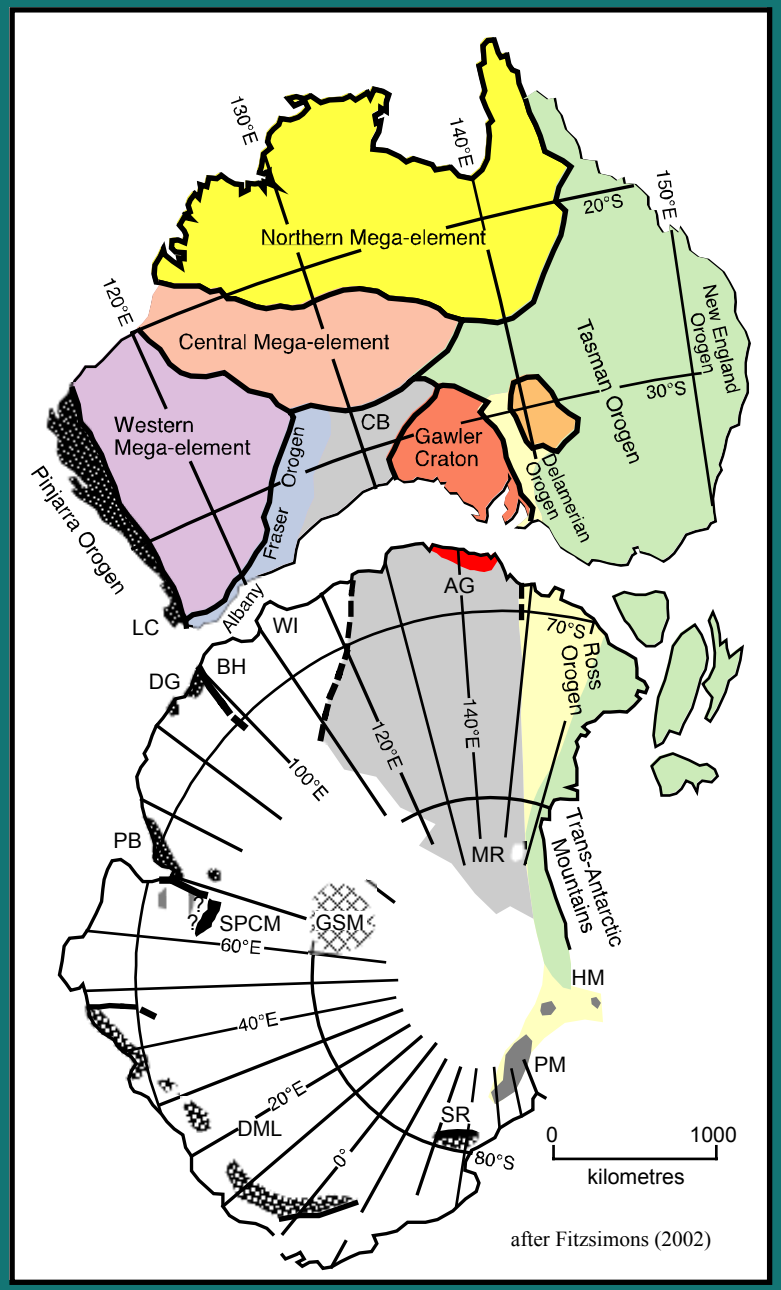

Mesoproterozoic Tectonic setting

Collision from NW?

"proto-Yilgarn"
Daly & Fanning, 1998

Nawa- Coompana-Nornalup
Fitzsimons, 2002

Musgraves?

Antarctic correlations?