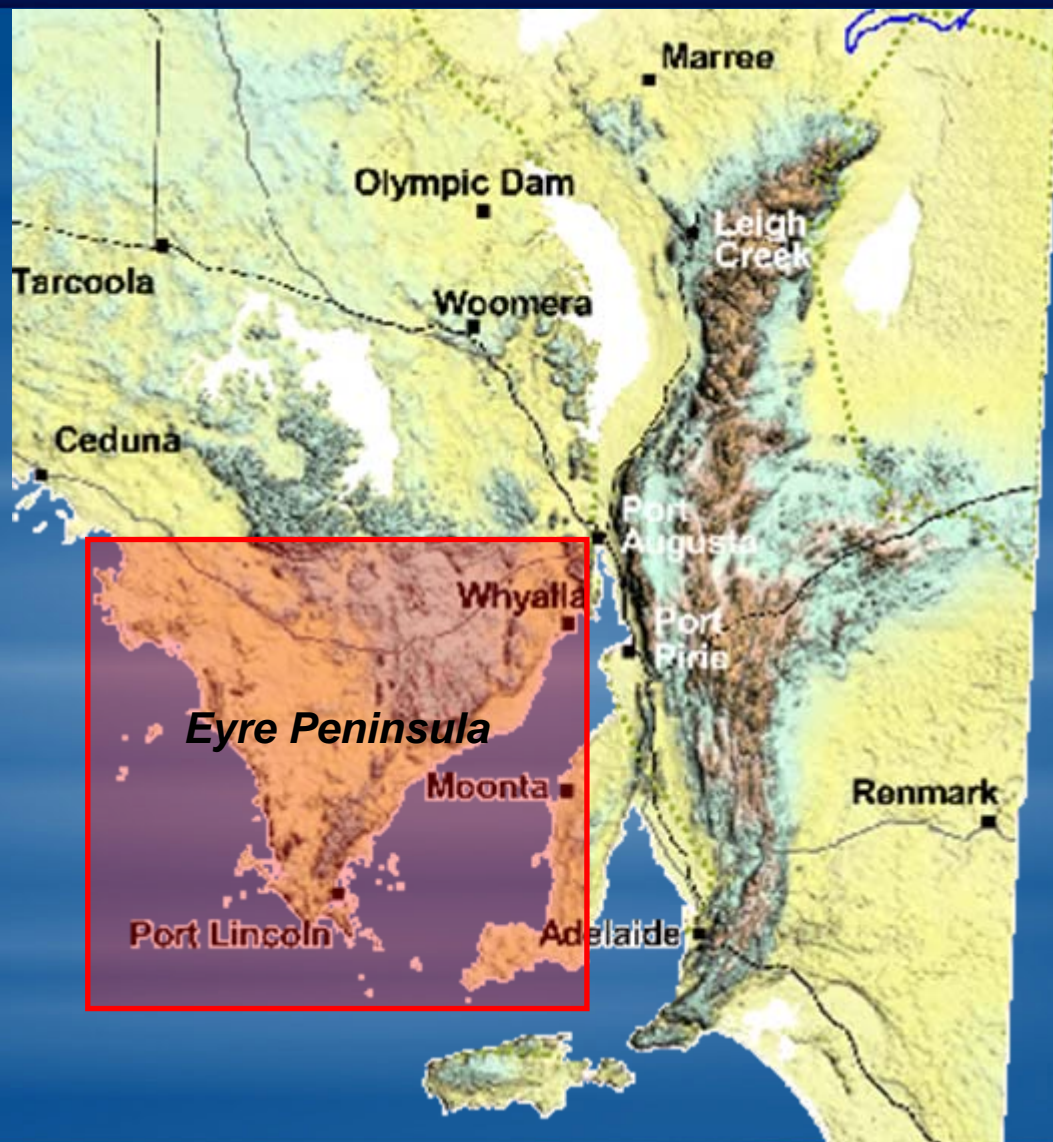
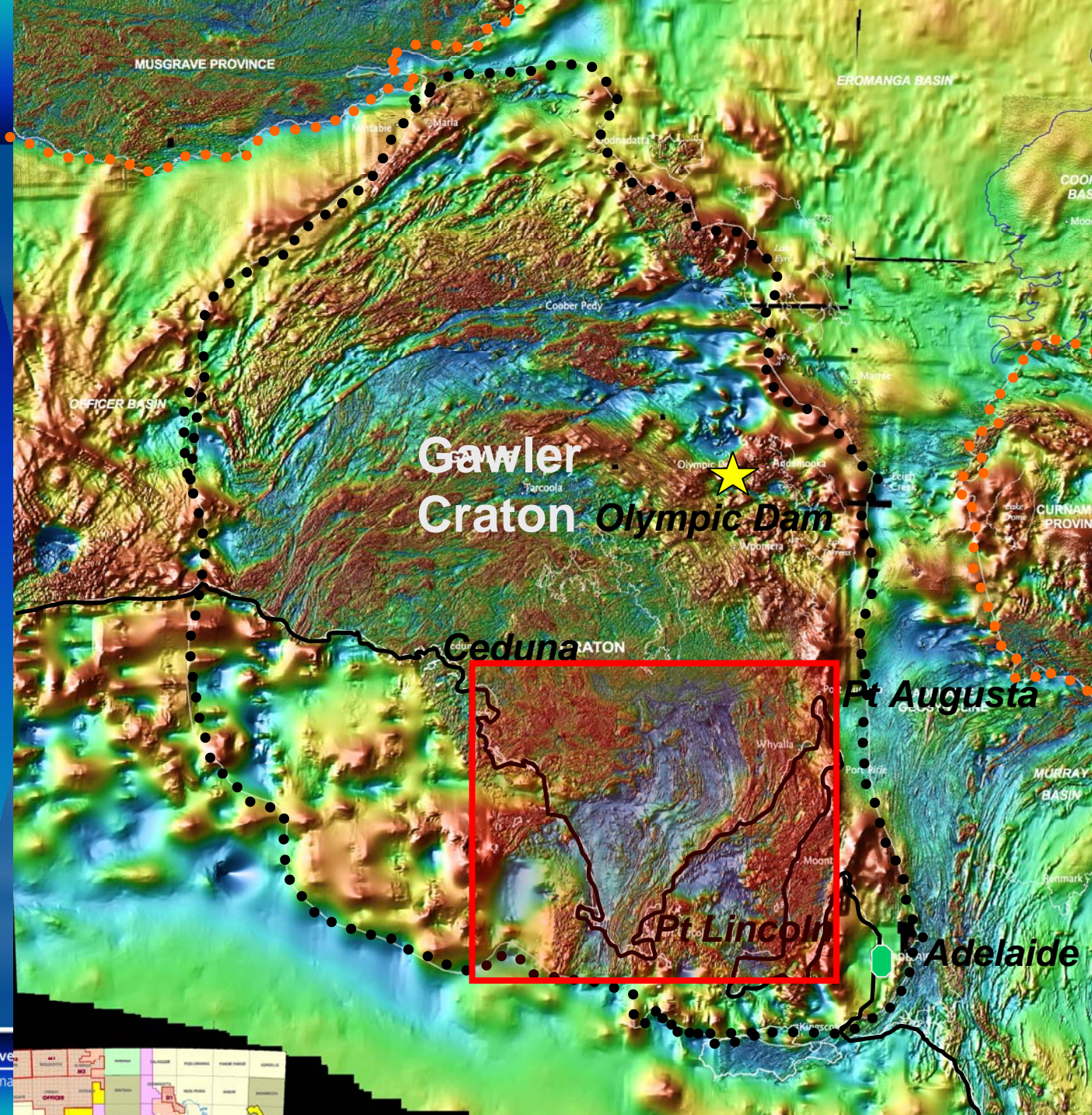


Geology & crustal architecture of Eyre Peninsula



location

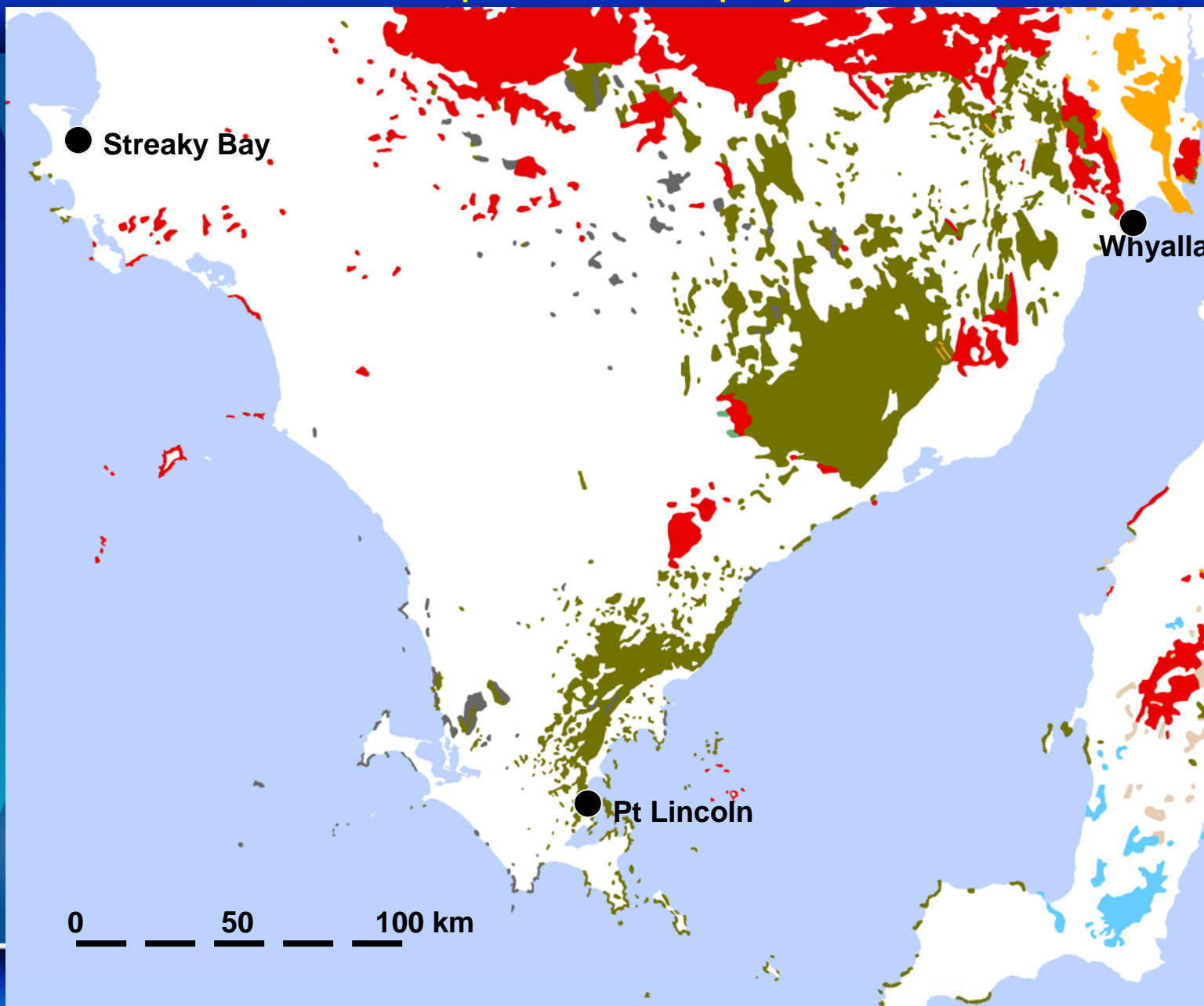




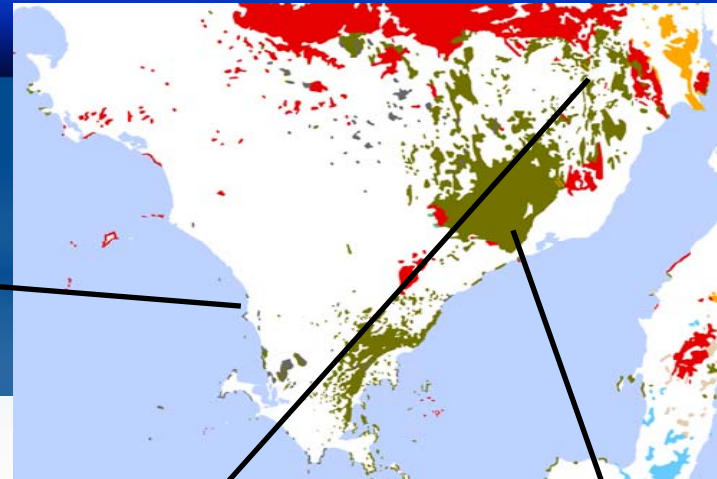
Gover
Prima



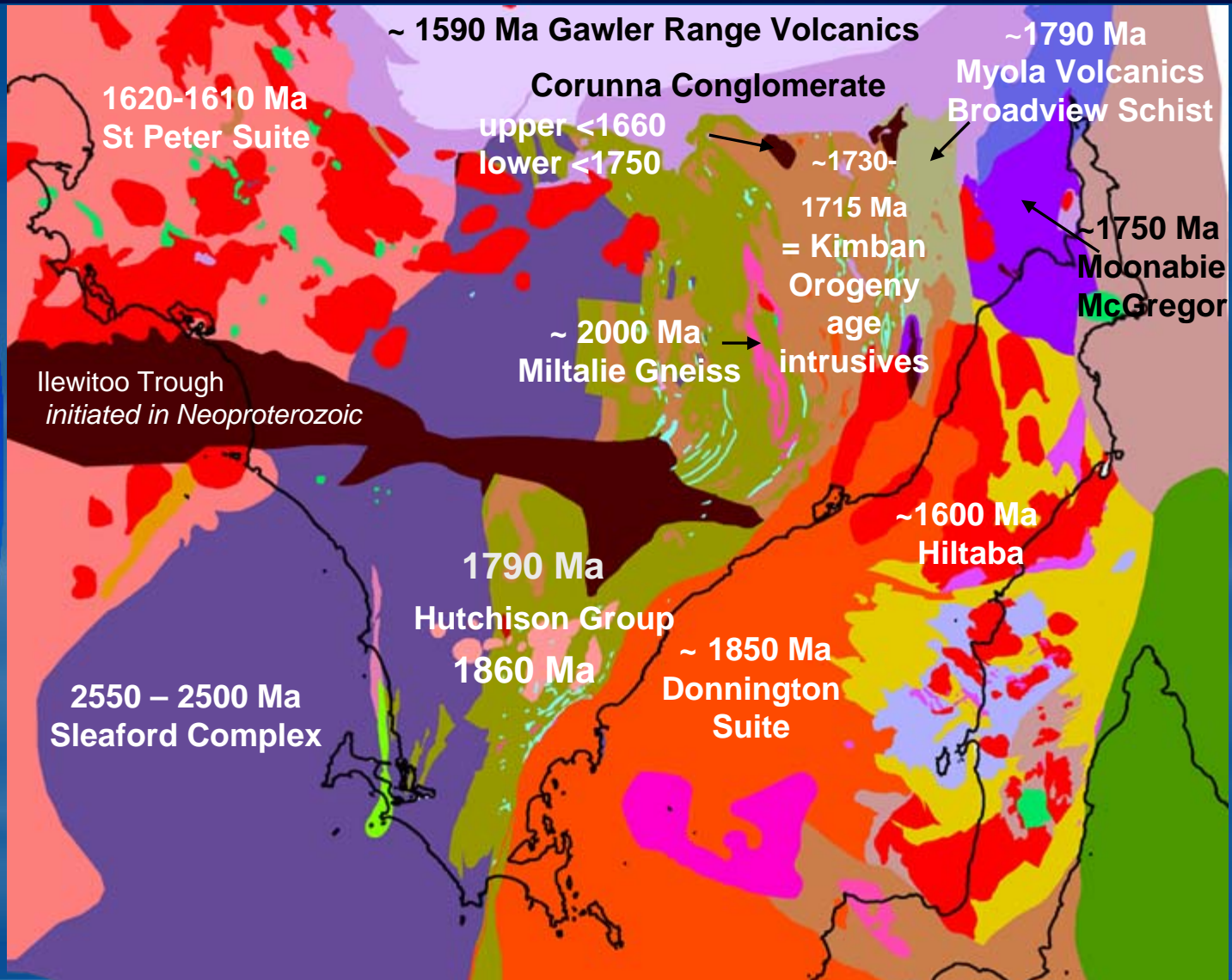
Archaean – Mesoproterozoic outcrop - Eyre Peninsula



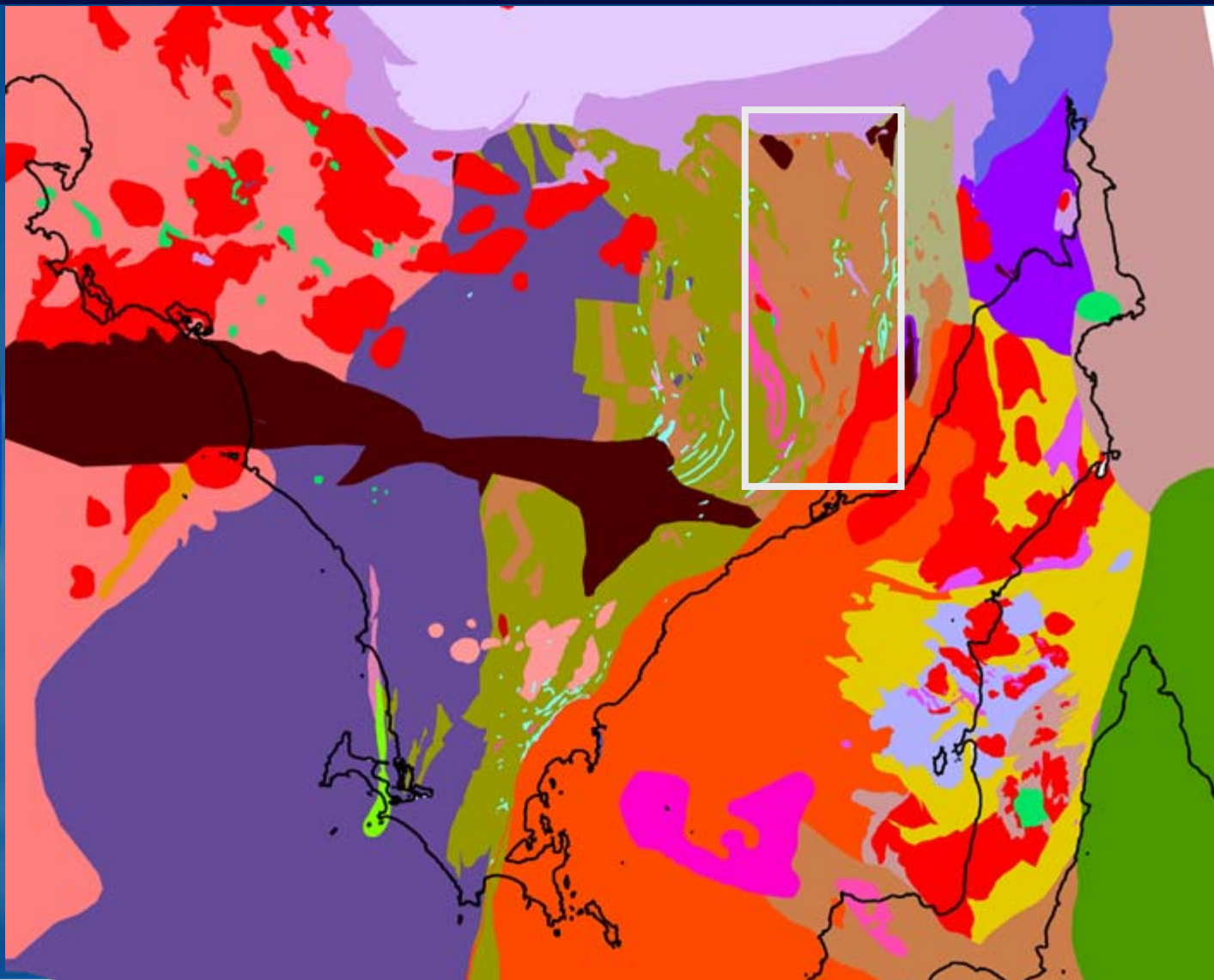
.....countryside



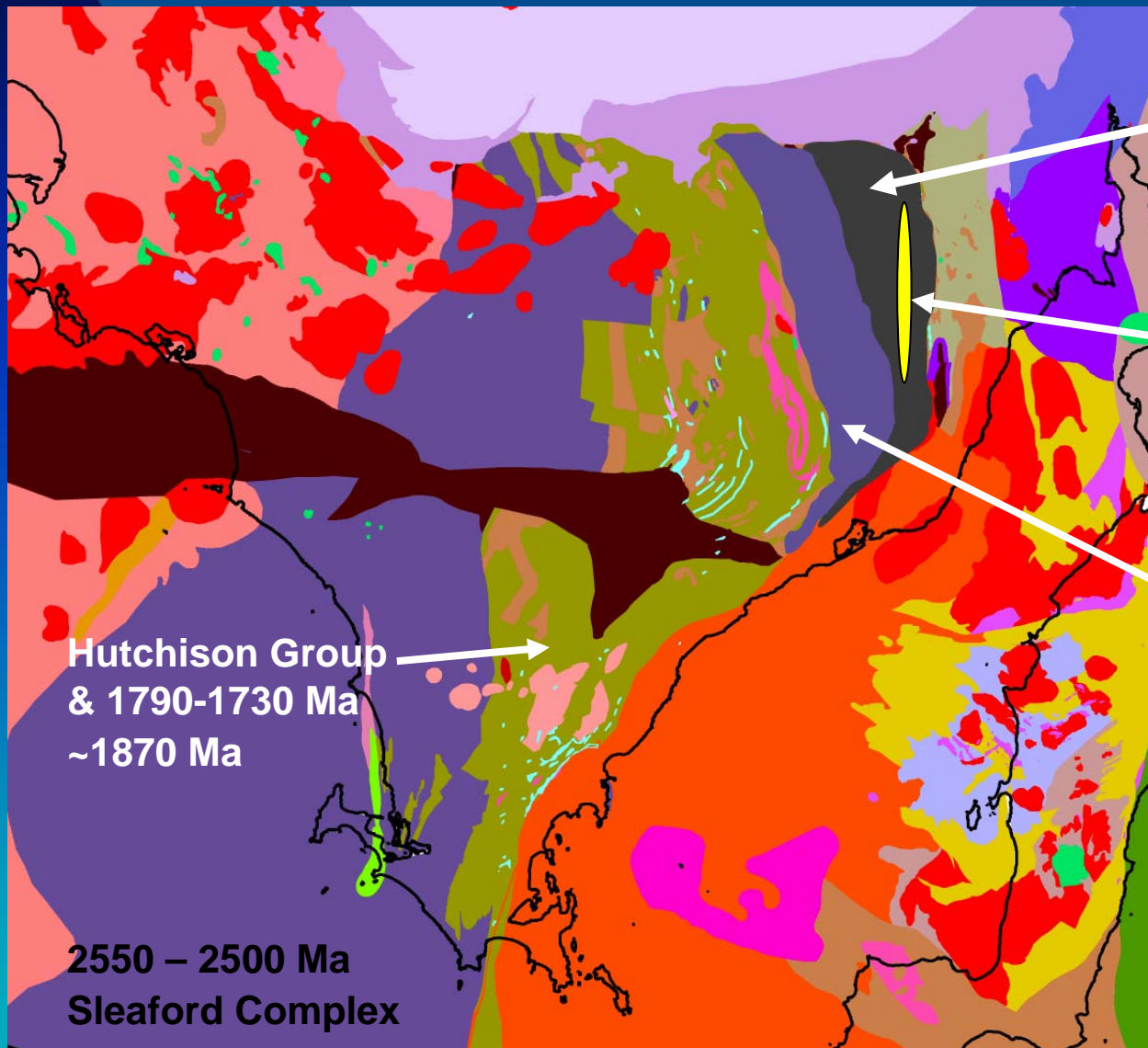
Main Archaean – Proterozoic elements: *solid geology* – Eyre Peninsula



Archaean – Proterozoic elements: *solid geology* – Eyre Peninsula



Archaean – Proterozoic elements: *solid geology Eyre Peninsula II*



New work defined:

3150 Ma Cooyerdoo
Granite

Southern extent -inherited
3150 Ma zr in
Charleston, evolved Nd)

Middleback Range units
~2500 Ma

cover sequence to
3150 Ma basement

Late Archaean protoliths

2520 – 2450 Ma

Minbrie Gneiss

~2800 Ma

Coolanie Gneiss

reworked by 1730 Ma

Kimban Orogeny

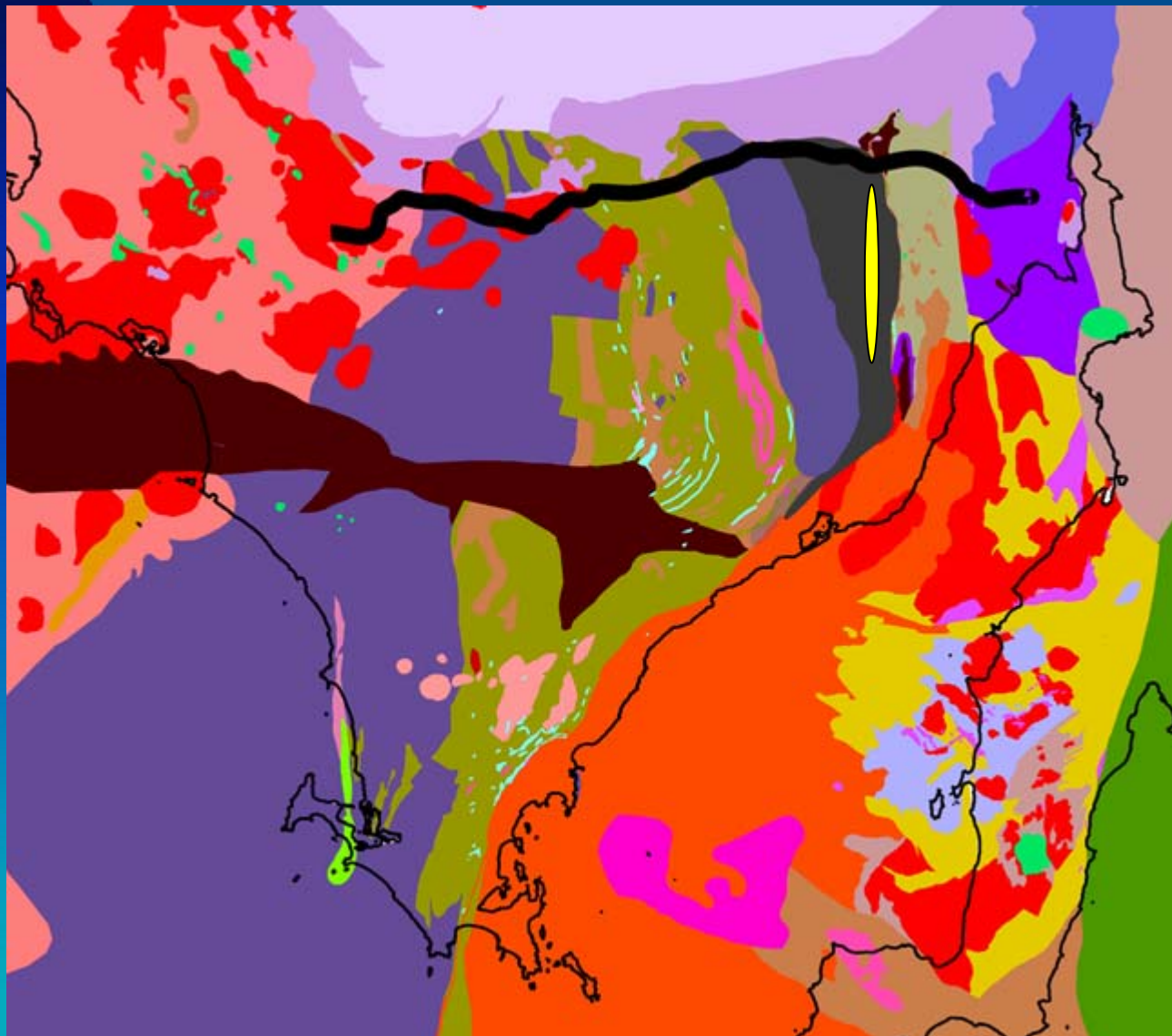
Hutchison Group
& 1790-1730 Ma
~1870 Ma

2550 – 2500 Ma
Sleaford Complex

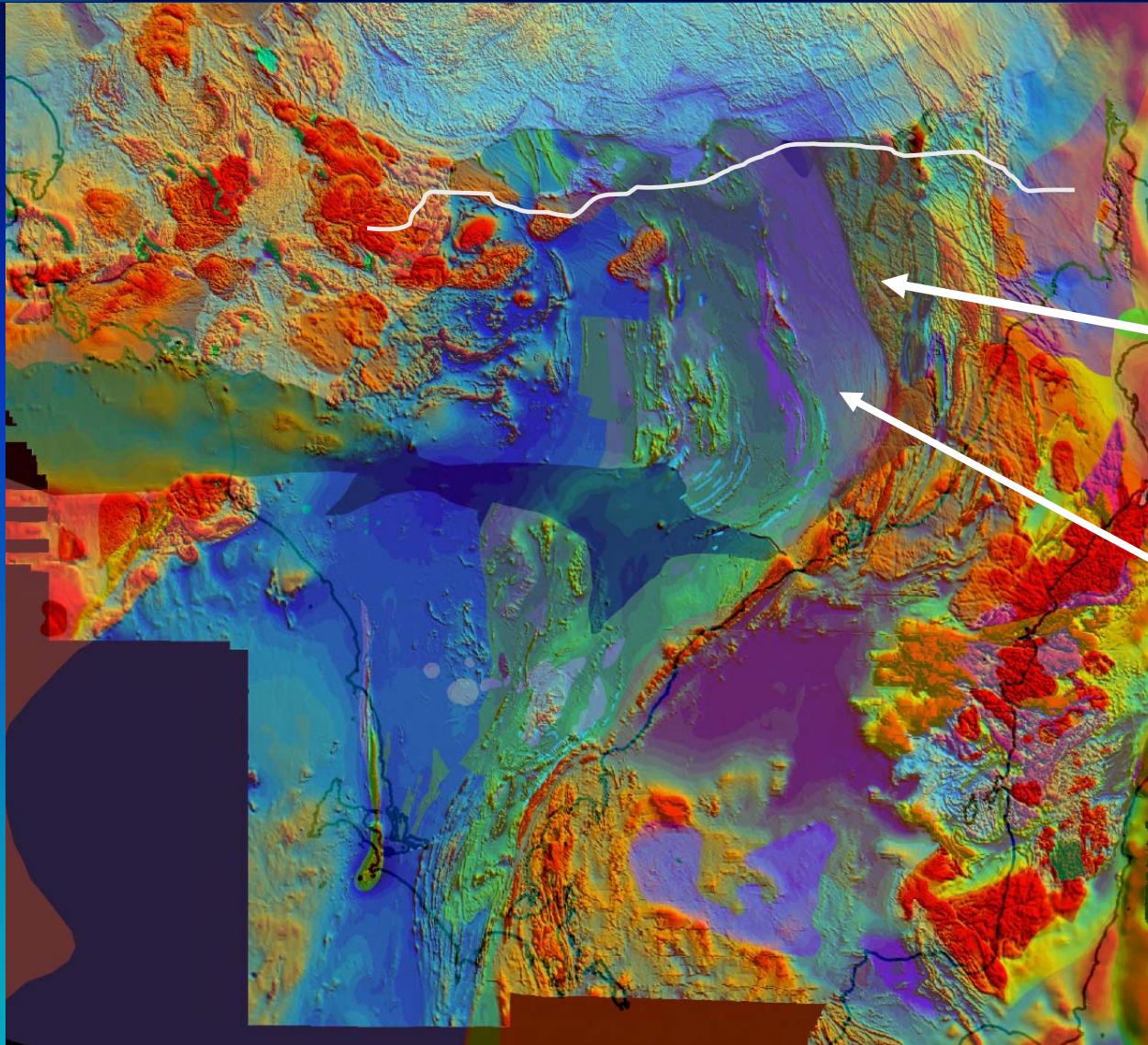


Government of South Australia
Primary Industries and Resources SA

Seismic line location



New solid geology map domains – new boundaries associated with change in magnetics

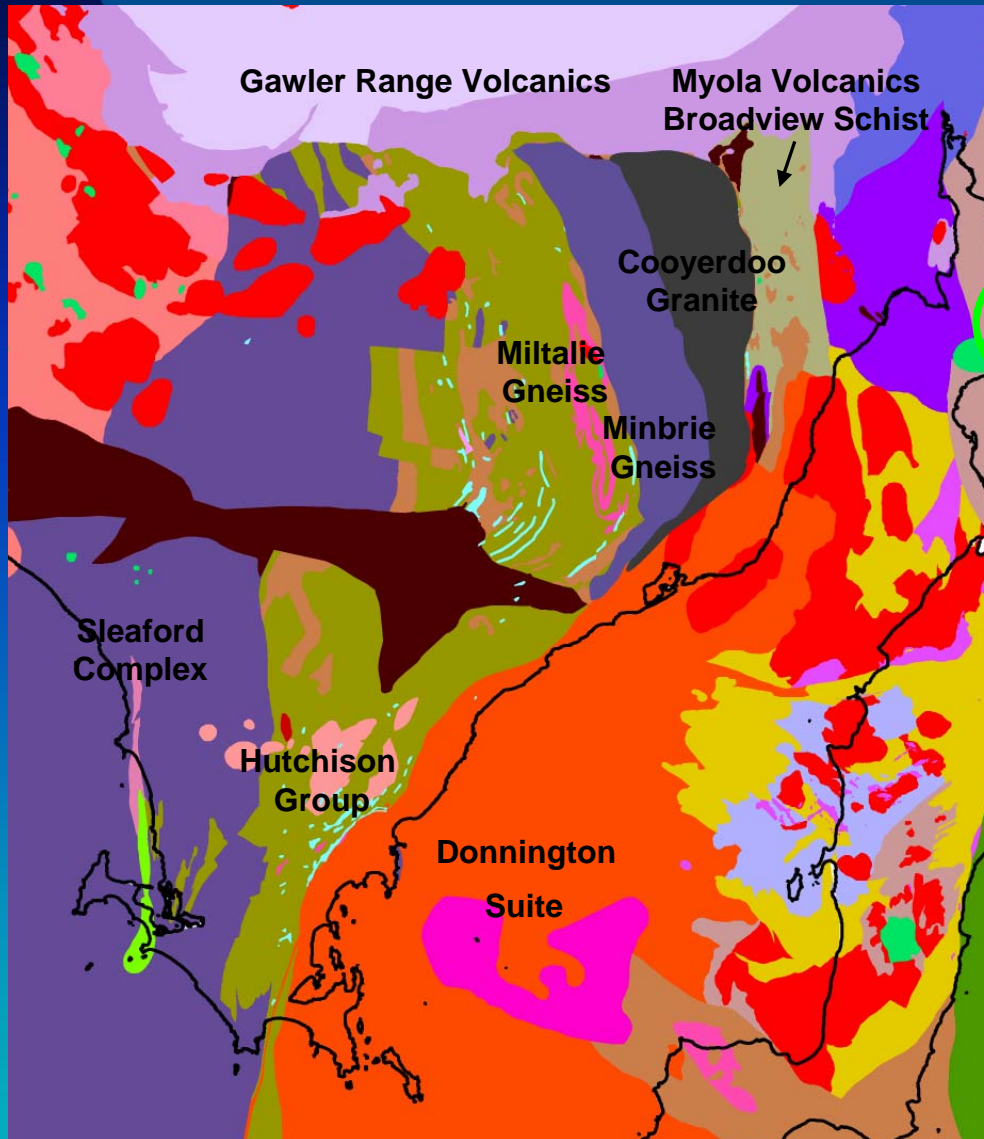


3150 Ma basement
Cooyerdoo Granite

Late Archaean reworked by
Kimban



arrangement of elements? major tectonothermal events - Eyre Peninsula



1600 Ma Olarian orogeny

1730 – 1690 Ma: Kimban Orogeny

Greenschist to granulite facies

850° 7-9kb

dominant in the arrangement of E.P.

1855- 1845 Ma: Cornian Orogeny

High T low-med P – 750° 6kb

localised, S.Y.P. only

~ 2000 Ma: Miltalie Event

? Low to medium P granulite

? geometry vergence

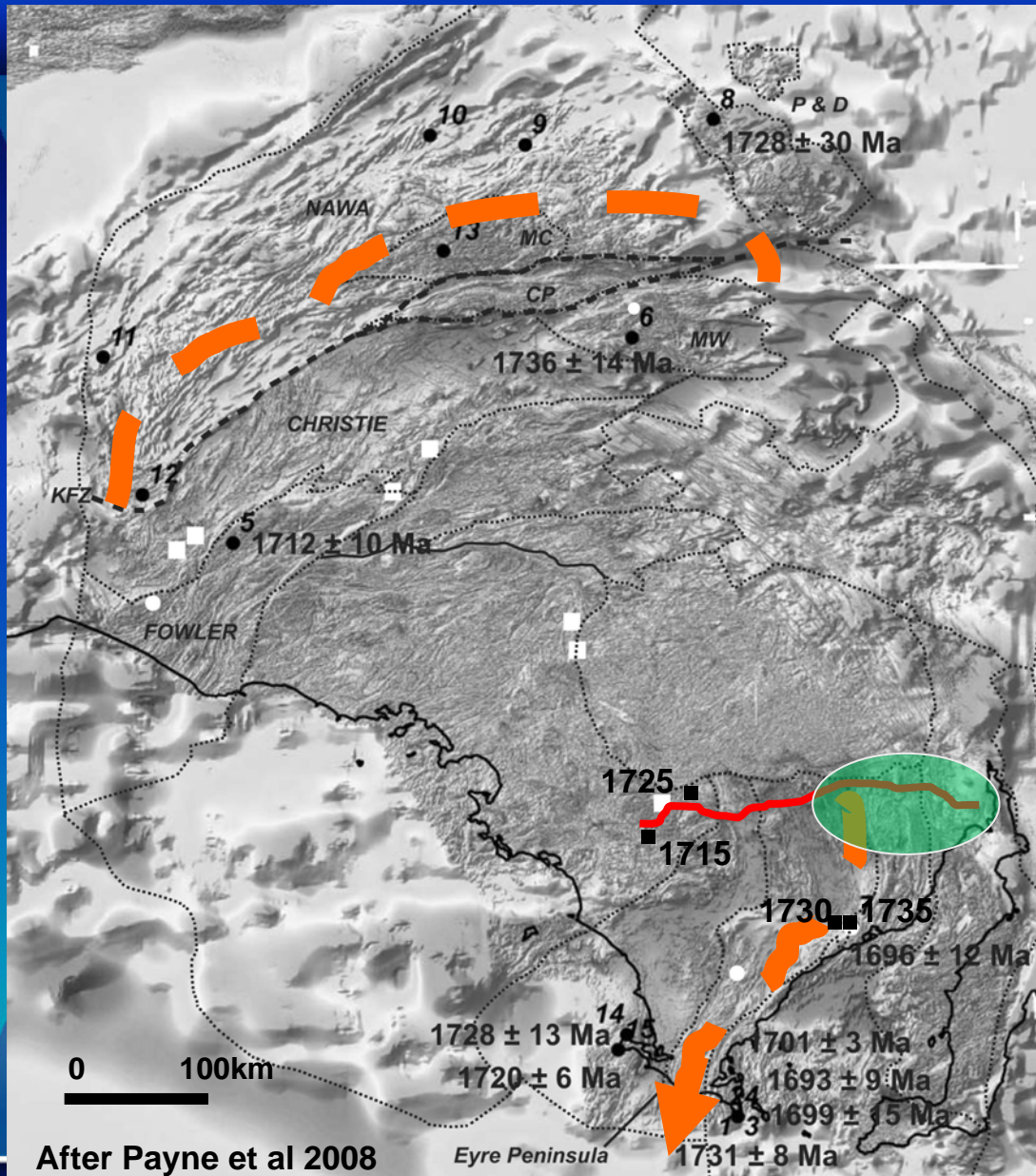
2480-2420 Ma: Sleaford Orogeny

High T, low mod P/ g.s. – 850° 6Kb

? geometry - vergence



Extent of Kimban Orogeny



After Payne et al 2008

Few data points for Kimban Orogeny

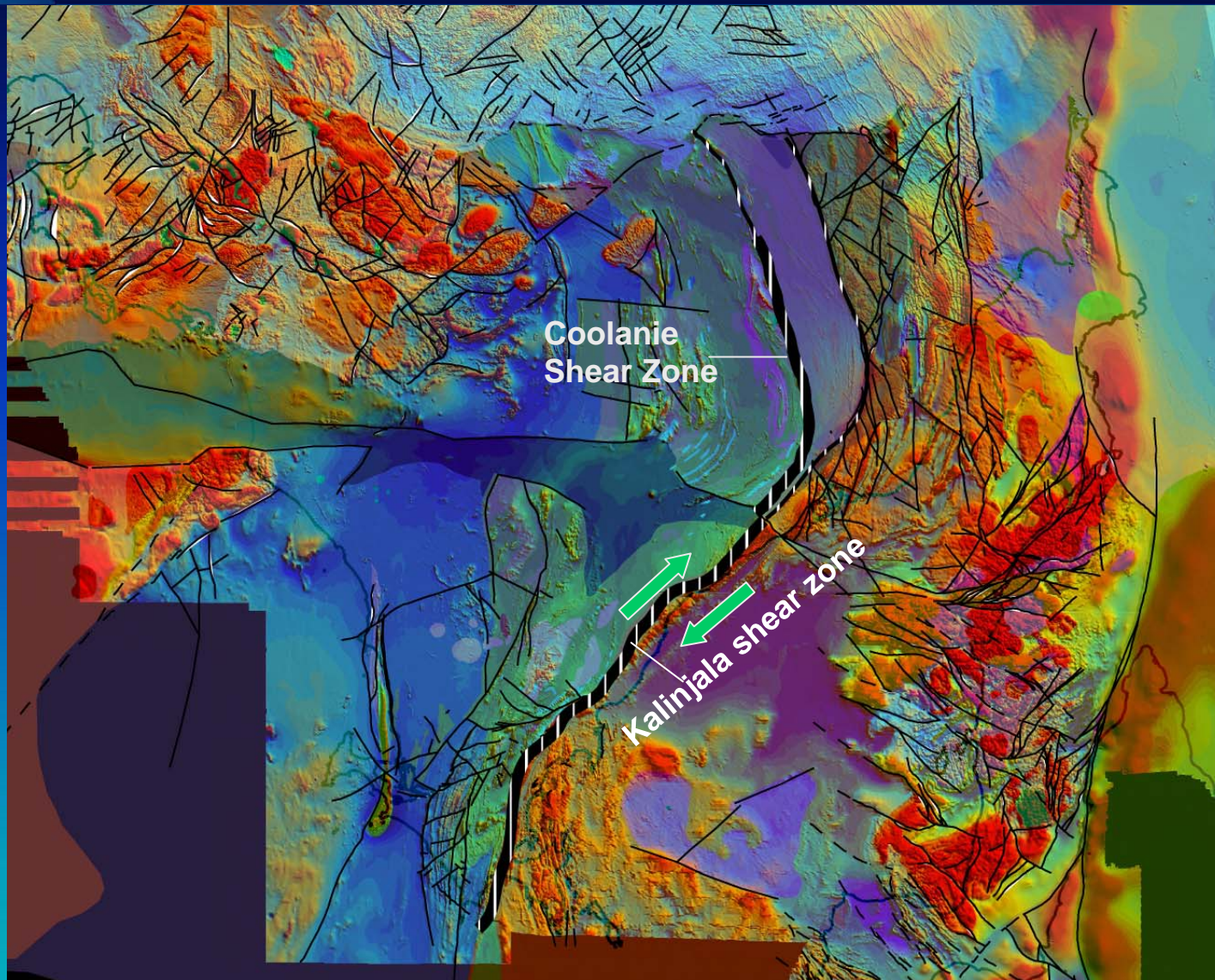
Kimban part of a bigger system
Antarctica &? Strangways in NT

Extensive linear belt

Kimban in NEEP?

Complex series of basins and
basement blocks in NEEP – no
constraints on timing of
deformation

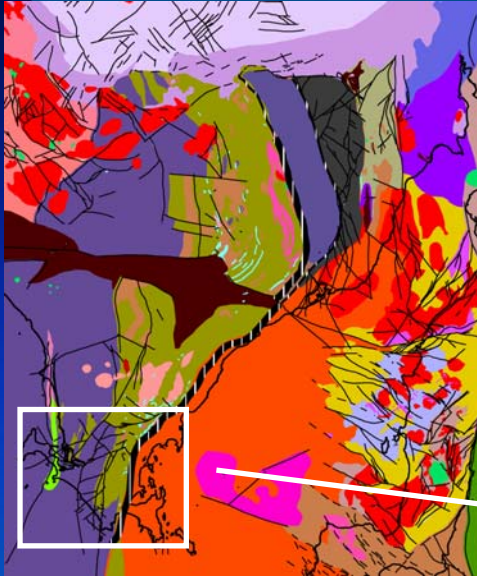
crustal scale expression of the Kimban Orogen



linear expression
of Kimban orogeny in
SEP is shear zone



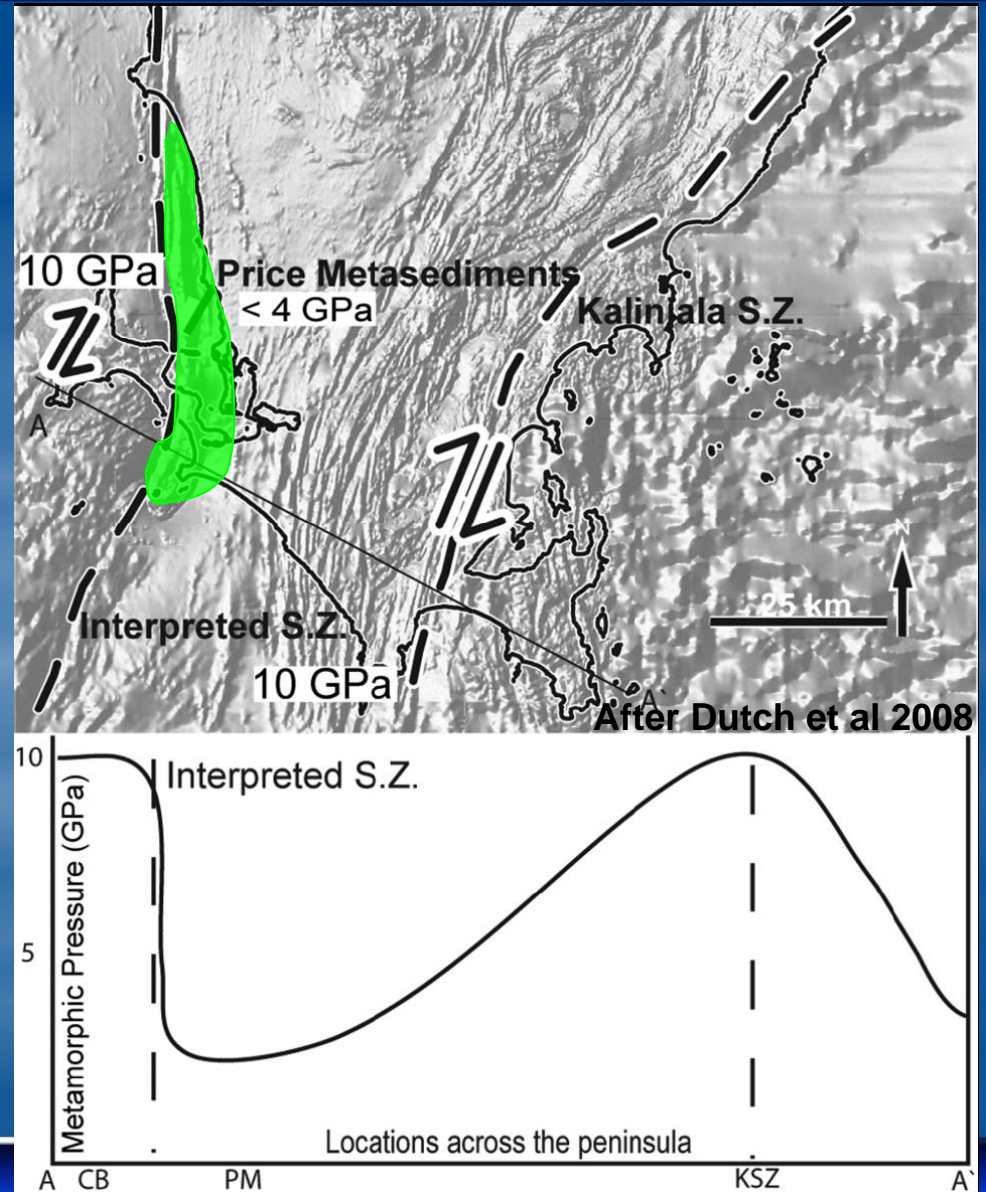
In more detail.....characteristics of Kimban Orogeny



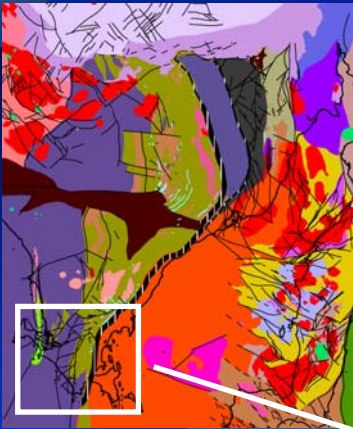
Series of panels, abrupt variation in mm grade

Price metasediments ~ greenschist between granulites

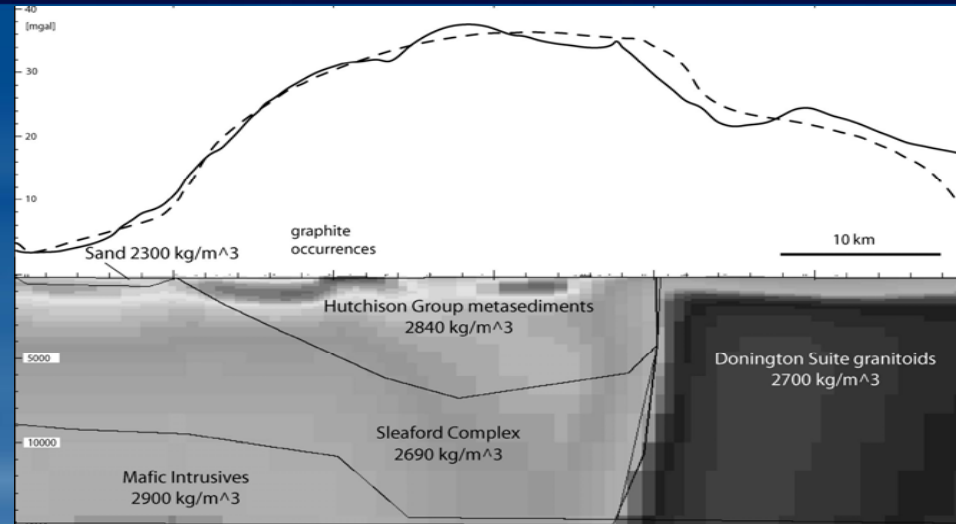
Steep mm gradients



Characteristics & geometry of Kimban Orogeny



Gravity model for the southern Gawler Craton



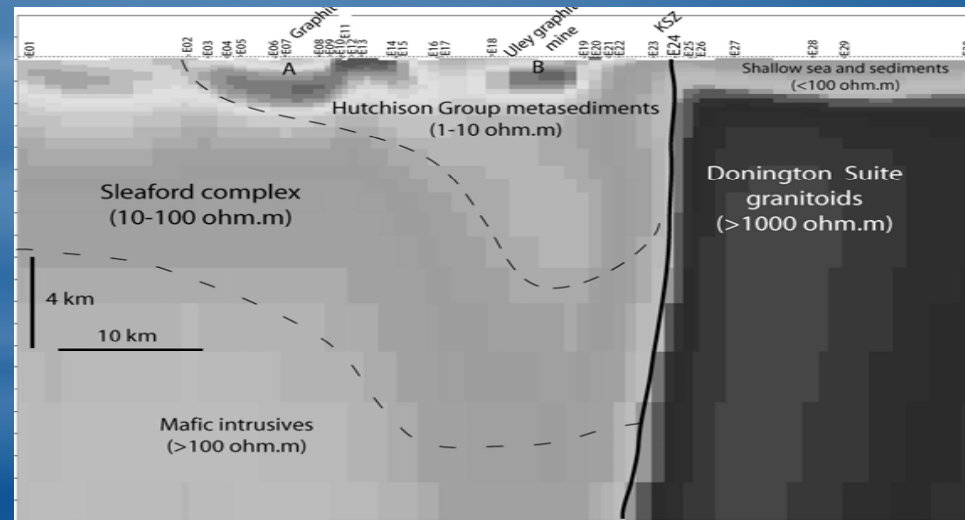
E

After Thiel *et al* 2005

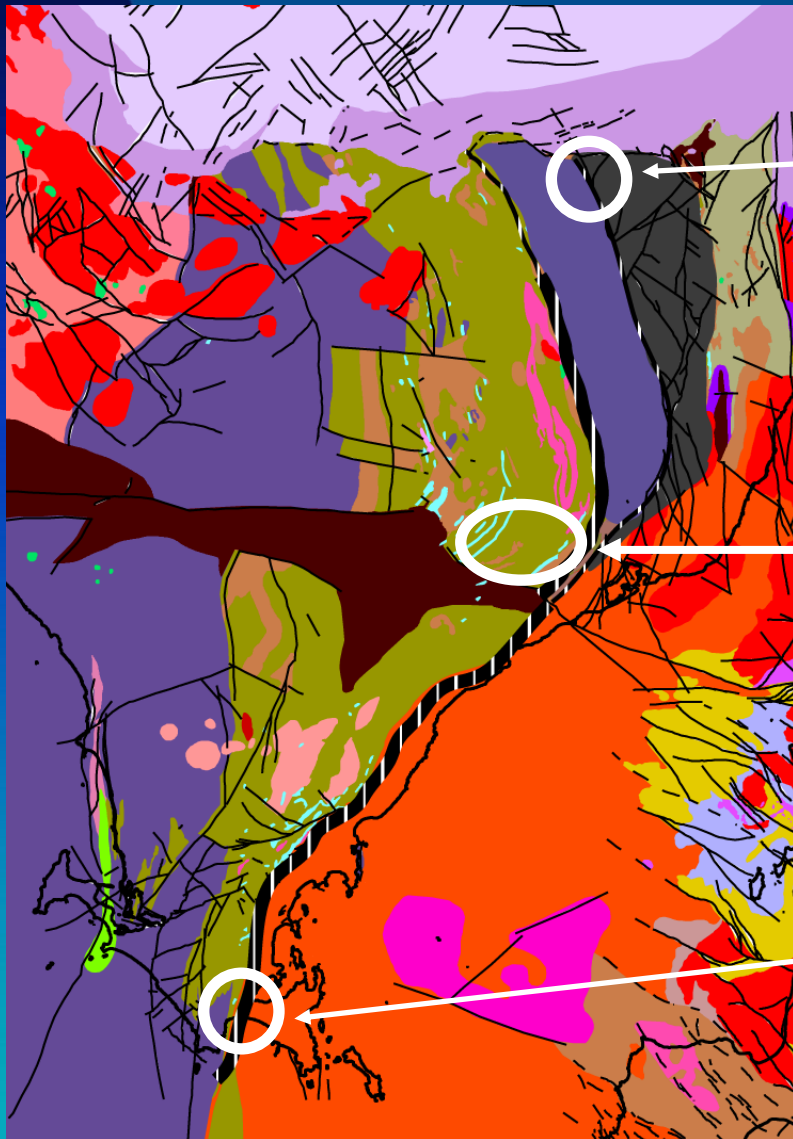
W

2D resistivity model

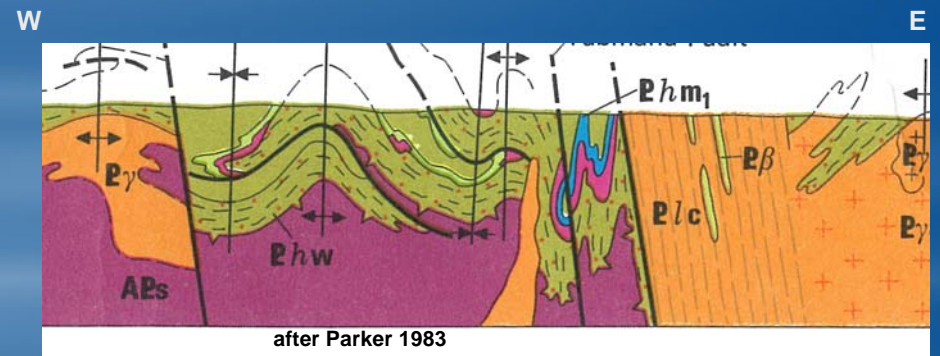
Kalinjala Shear Zone =
steep – west dipping



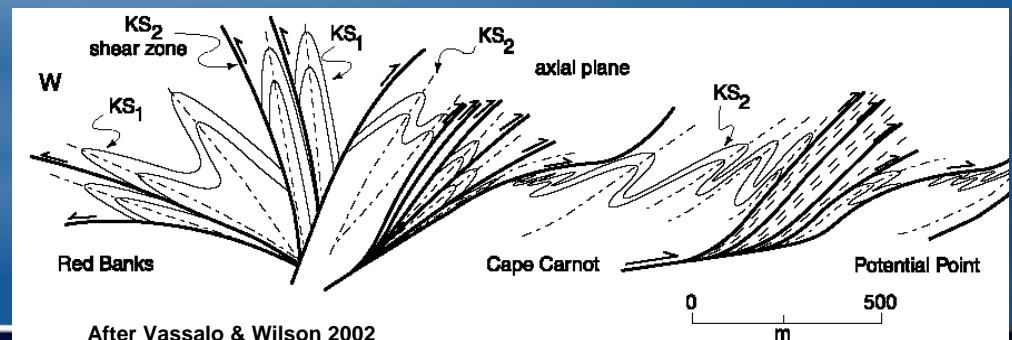
Characteristics of Kimban Orogeny



Shallow N plunging folds, horizontal lineation



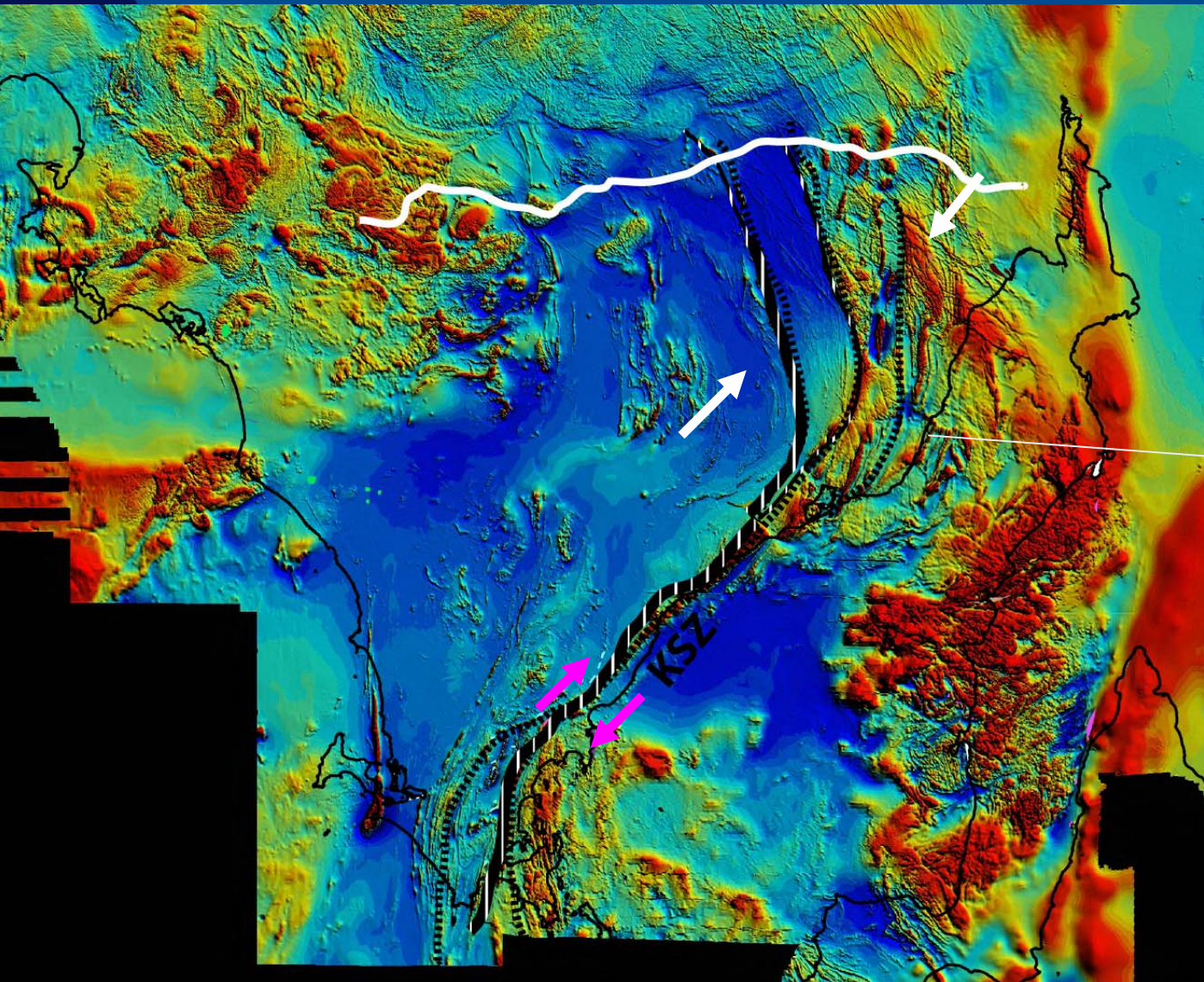
tight – isoclinal w verging recumbent folds - polyphase



Triclinic system – sheath folds, upright imbricate folds, (+ve flower structure)



Kimban Orogeny – broad geometry



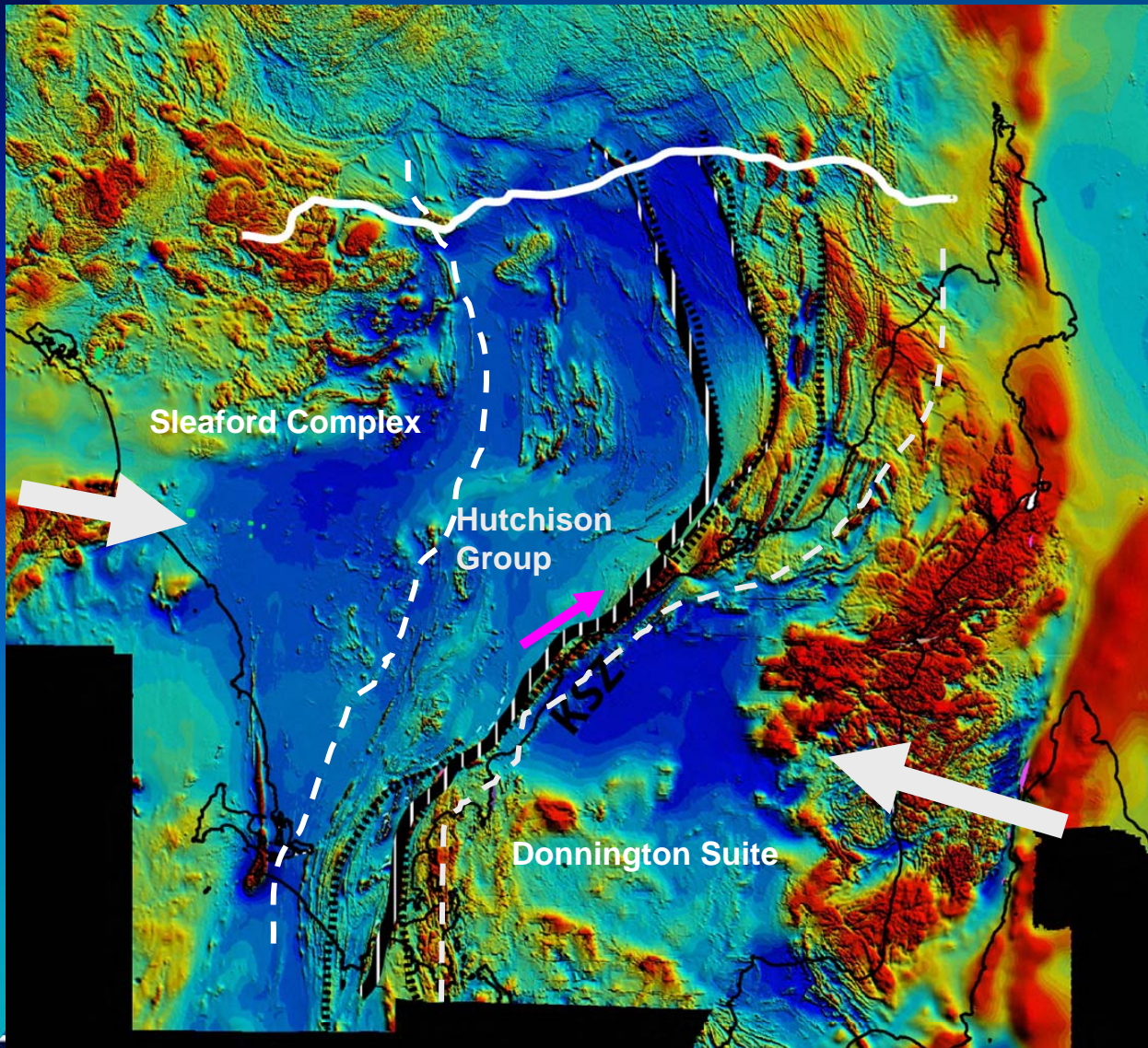
Main event
-dextral
-transpressional
-system

•horsetail splay

restraining bend

•under compression
positive flower structure

summary



Series of Archaean to Meso-Proterozoic complexes

Been through multiple deformations

now aligned in a N-S trending Belt – predominately as a result of Kimban deformation

oblique section through kimban

