
GEOLOGICAL SURVEY
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Sedimentary-hosted Cu systems in the Paterson Orogen

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A/g Manager Geoscience Mapping Through Cover

Co-authors and Acknowledgements

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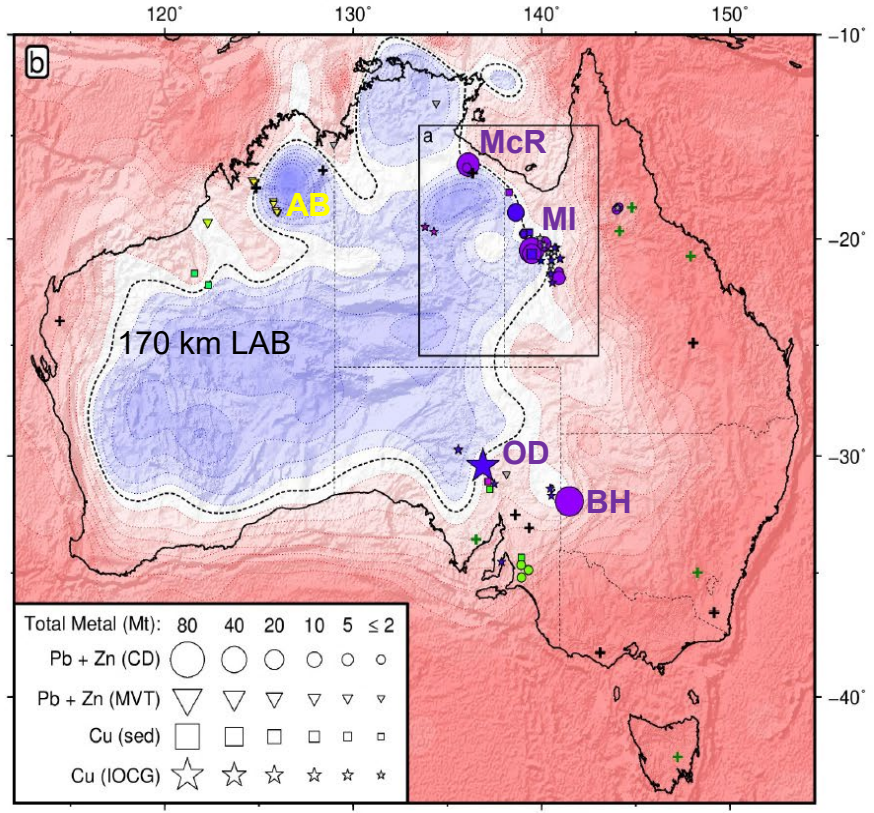
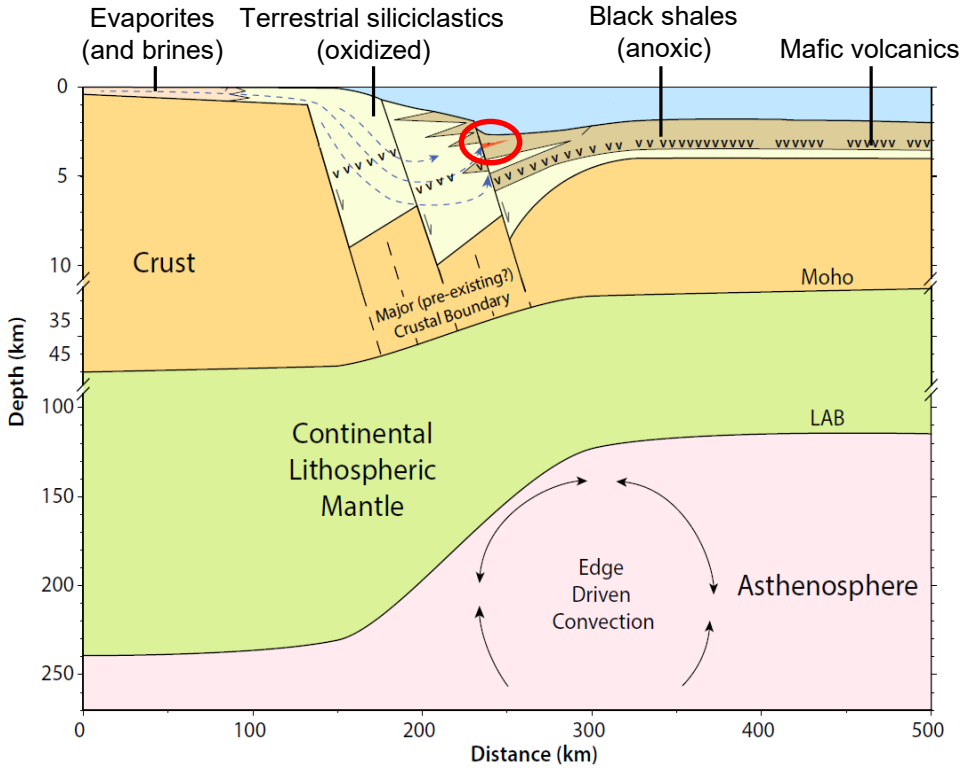
Image courtesy of Paul Polito

Craton margins and mineralization





From Hoggard et al. (2020)

‘The Gap’

UNCOVER AUSTRALIAN EXPLORATION GEOSCIENCE RESEARCH

EXPLORATION INCENTIVE SCHEME

MinEx CRC

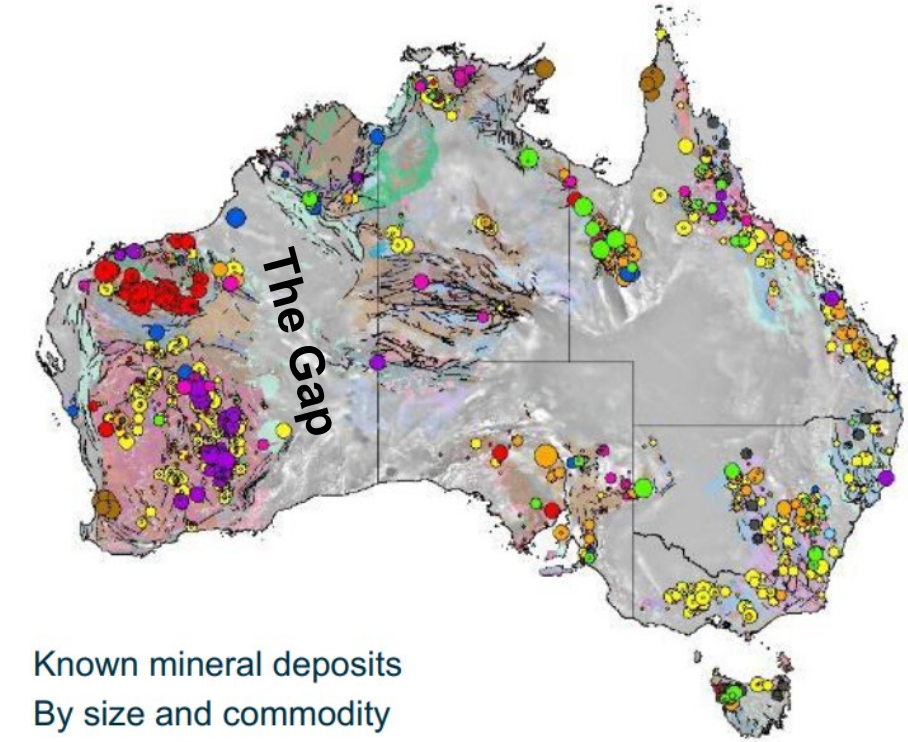
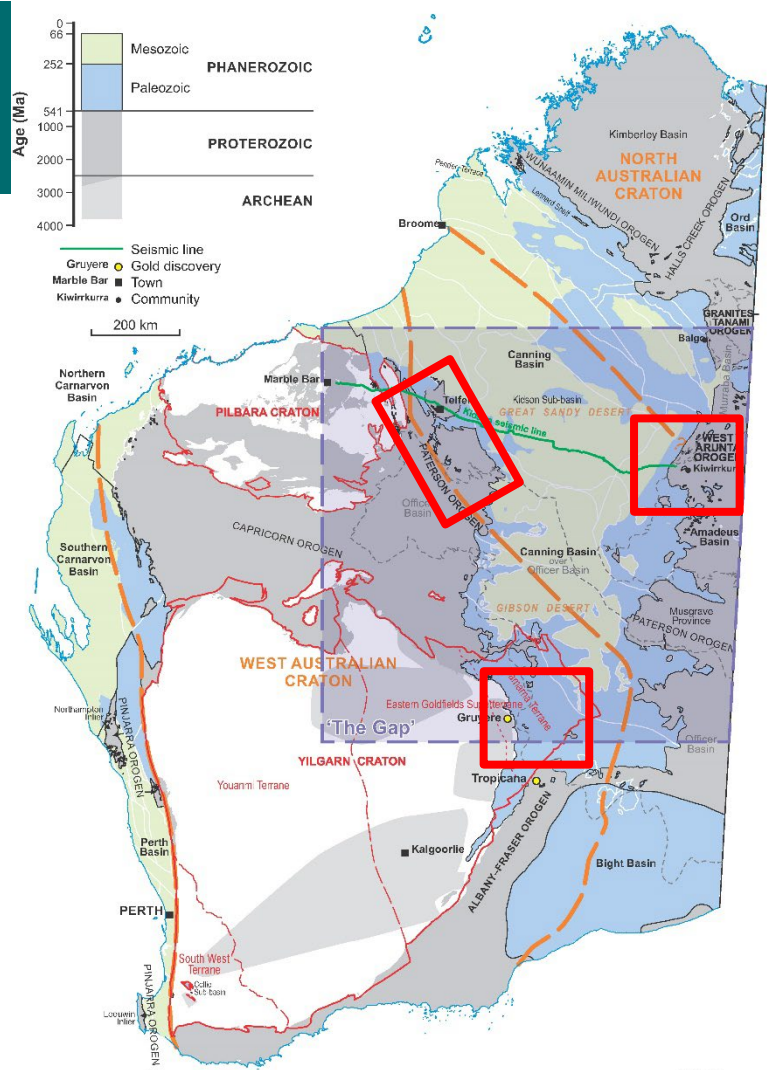
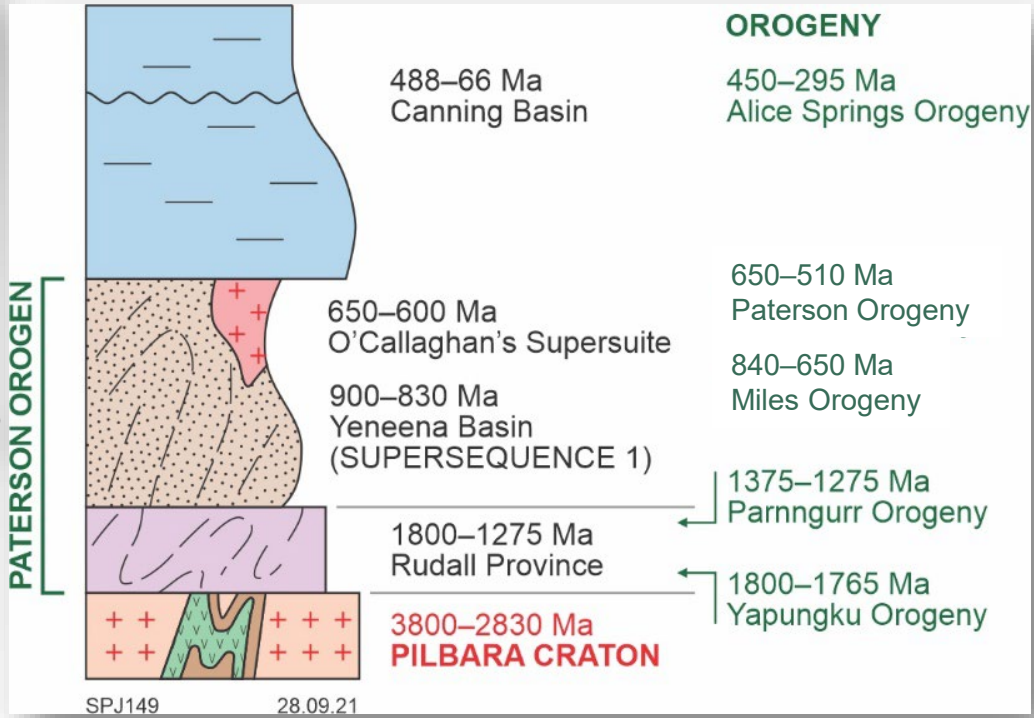


Image courtesy of David Giles

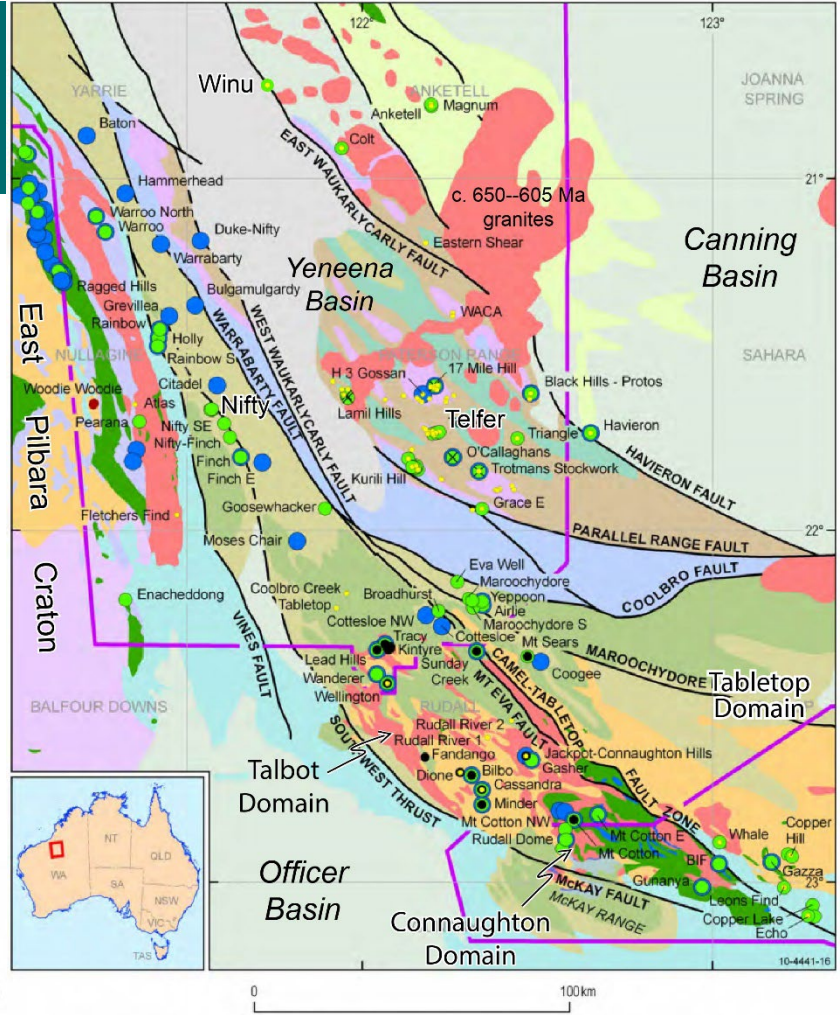


The Paterson Orogen



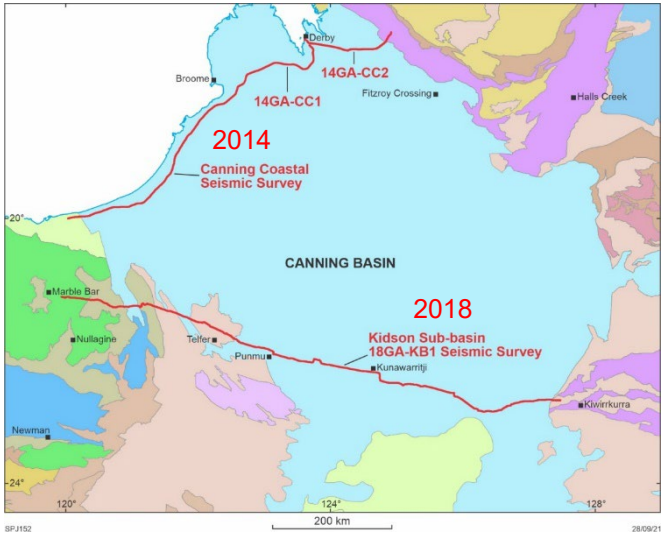
The Paterson Orogen

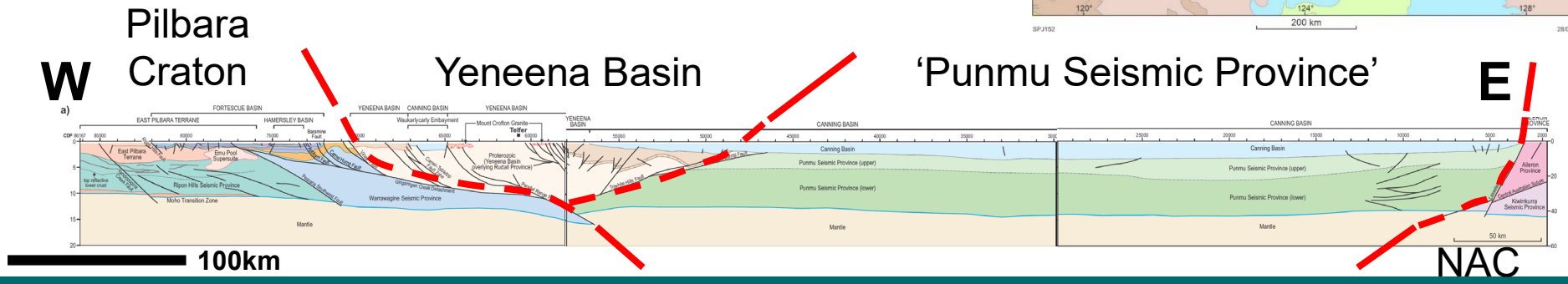
- Low-temperature Cu system related to initial inversion of the Yeneena Basin between about 840 and 790 Ma (**Miles system**)
- Higher temperature Cu–Au–W–Pb–Zn event associated with regional granitic magmatism at c. 650 Ma, remobilization (**O'Callaghans system**)



Crustal architecture: seismic

- Deep crustal seismic lines
- High-density passive seismic traverse along the Canning Coastal Survey
- To be further imaged with WA-Array



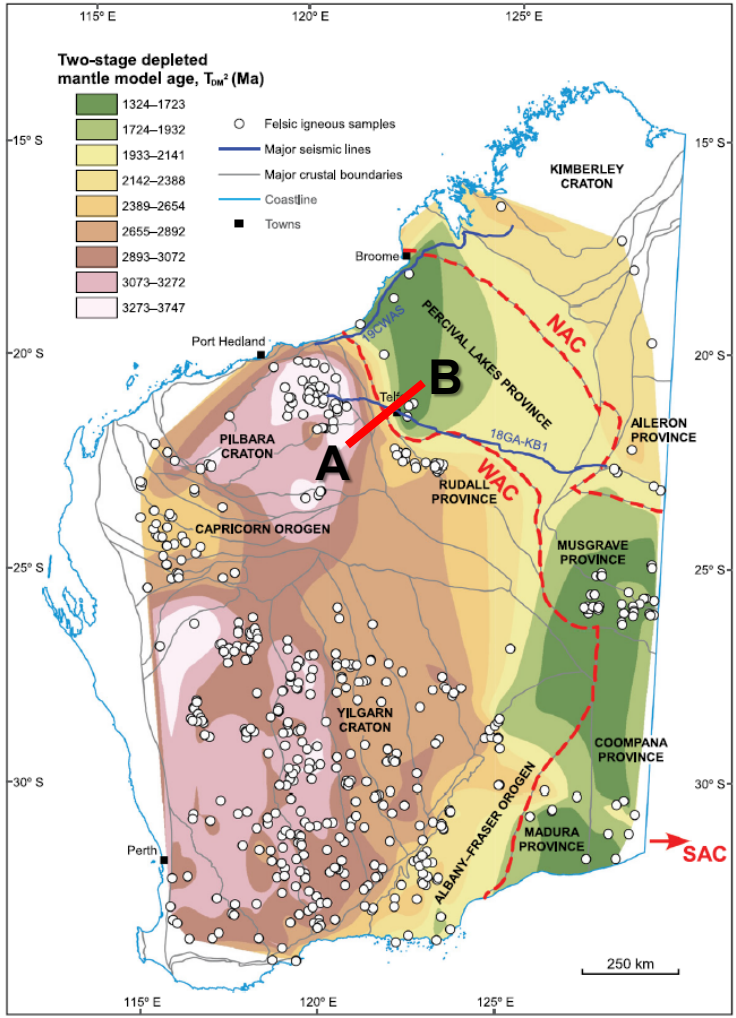


Crustal architecture: isotopes

Zircon Lu–Hf (felsic igneous rocks)

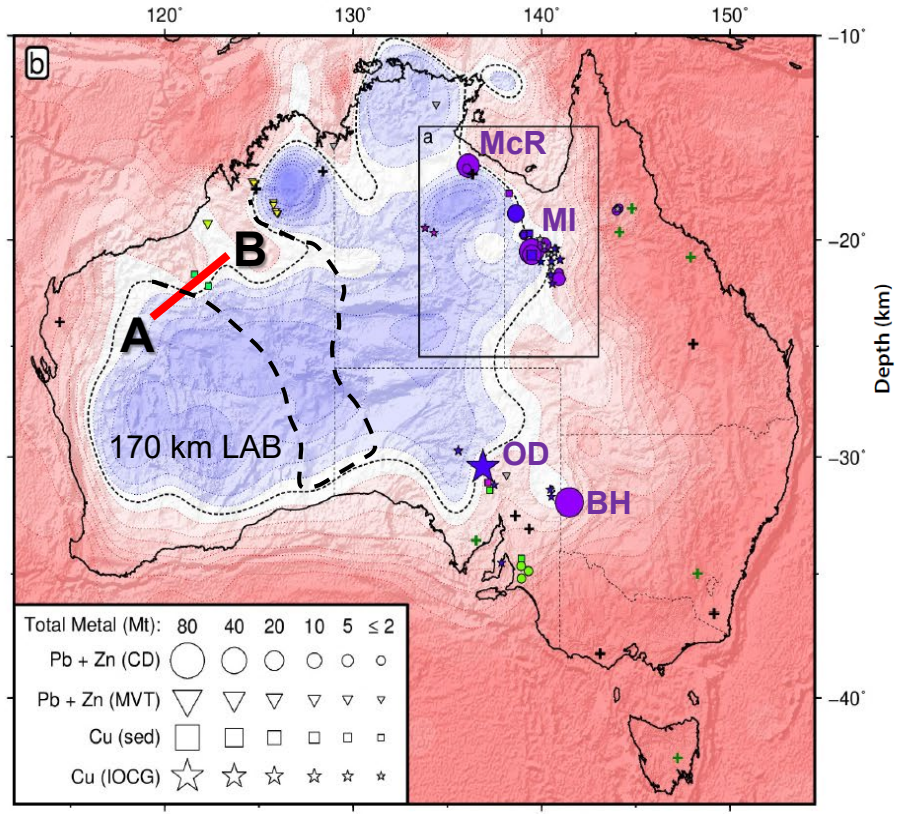
Percival Lakes Province:

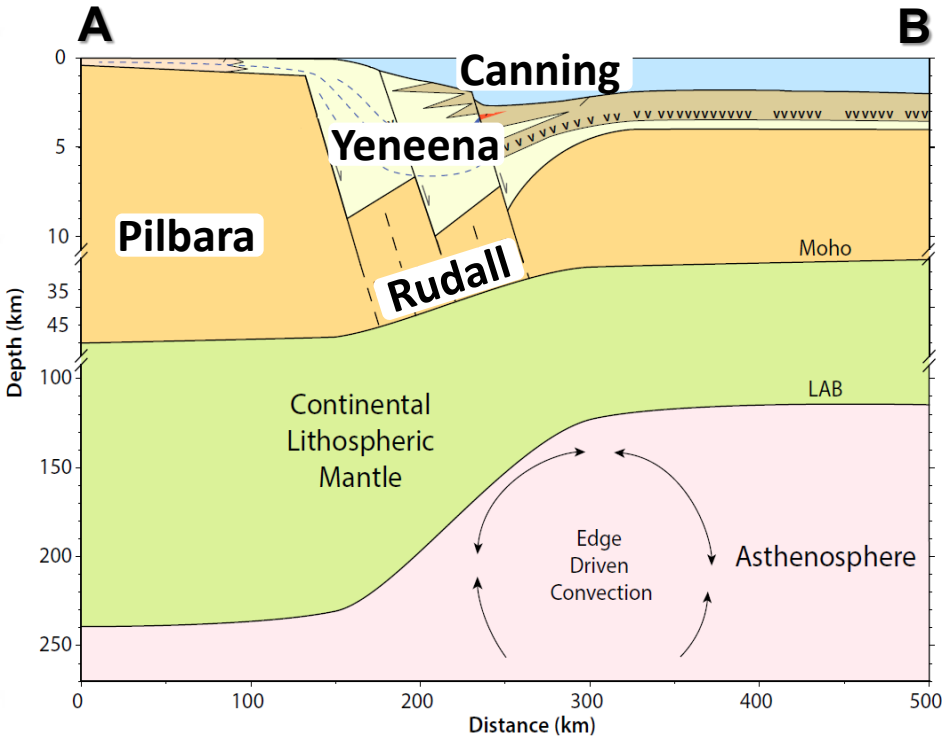
- isotopically distinct from WAC and NAC (juvenile)
- Paleo- to Mesoproterozoic model ages
- oceanic crust? Madura and Coompana Provinces



From Lu et al. (2022)

A true craton margin





From Hoggard et al. (2020)

NDI Drilling in the Paterson Orogen

MinEx CRC Project 7.1: Understanding a Mineral System from the Inside Out

CT drilling program to assess the distal footprint around a major sedimentary-hosted Cu deposit:

- Hyperspectral characterization (mineralogy)
- Geochemical characterization (whole-rock, mineral)
- Geochemistry of regolith + sedimentary bedrock + interface
- Petrophysics (background and alteration)
- Petrophysics to regional-scale geophysics to geology


Coiled tubing drill rig