



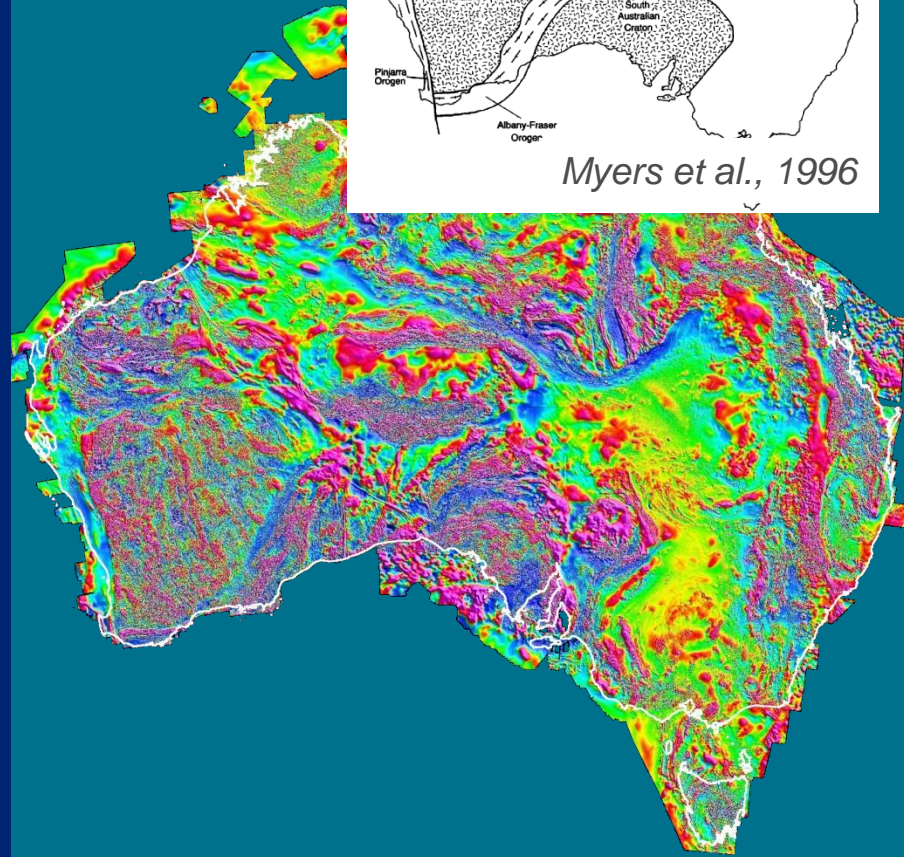
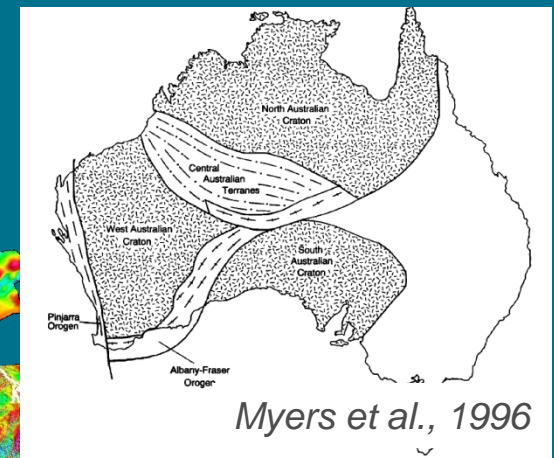
Australian Government  
Geoscience Australia

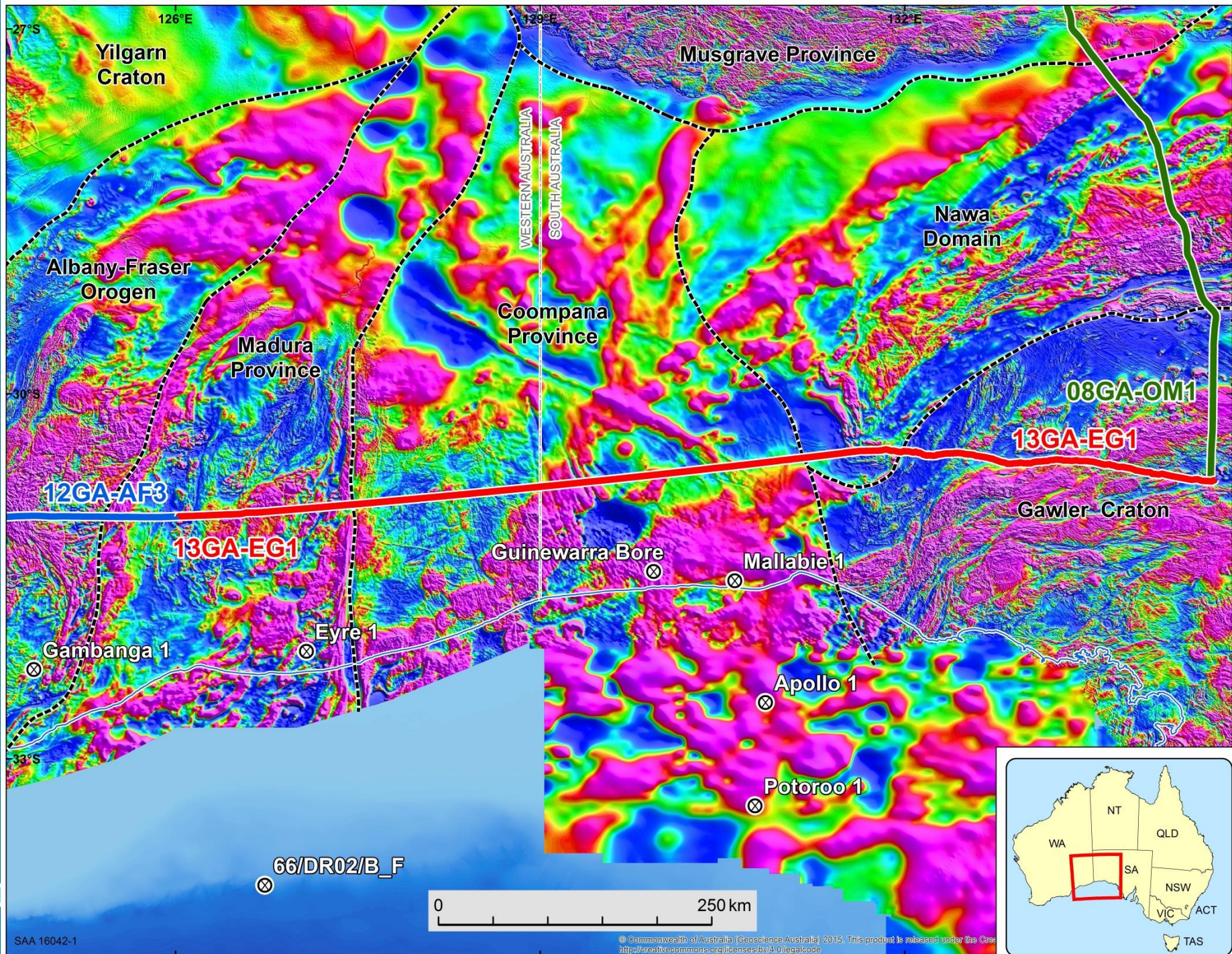


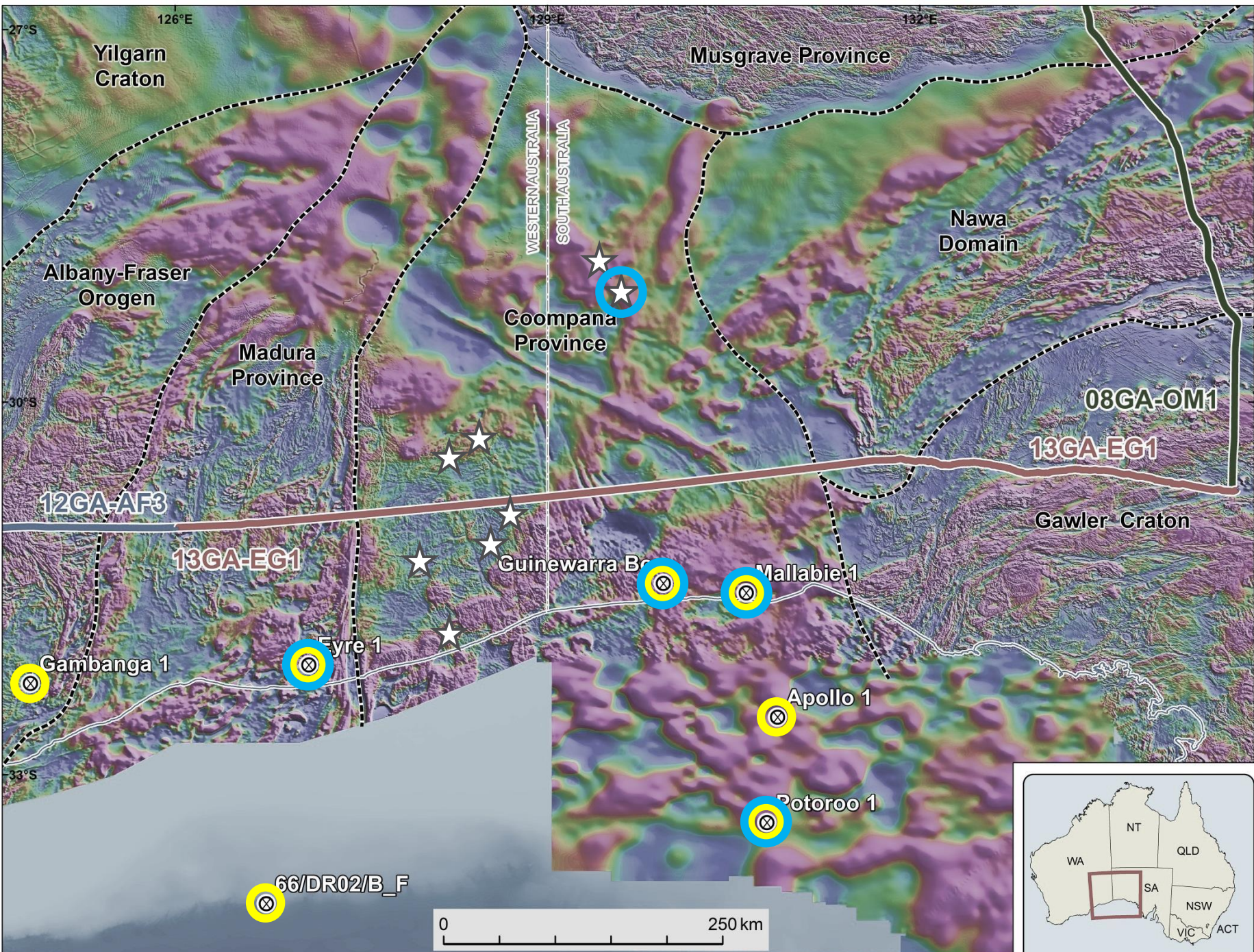
# Geochronological constraints from the Coompana Province, with implications for geological relationships with the Gawler Craton and Musgrave Province

Geoff Fraser and Narelle Neumann  
*Geoscience Australia*

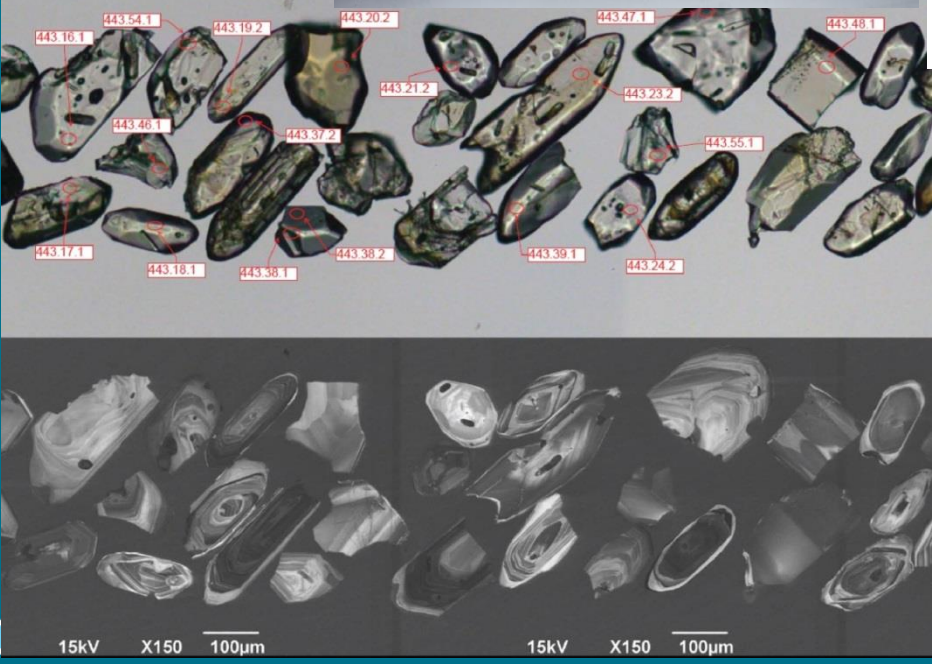
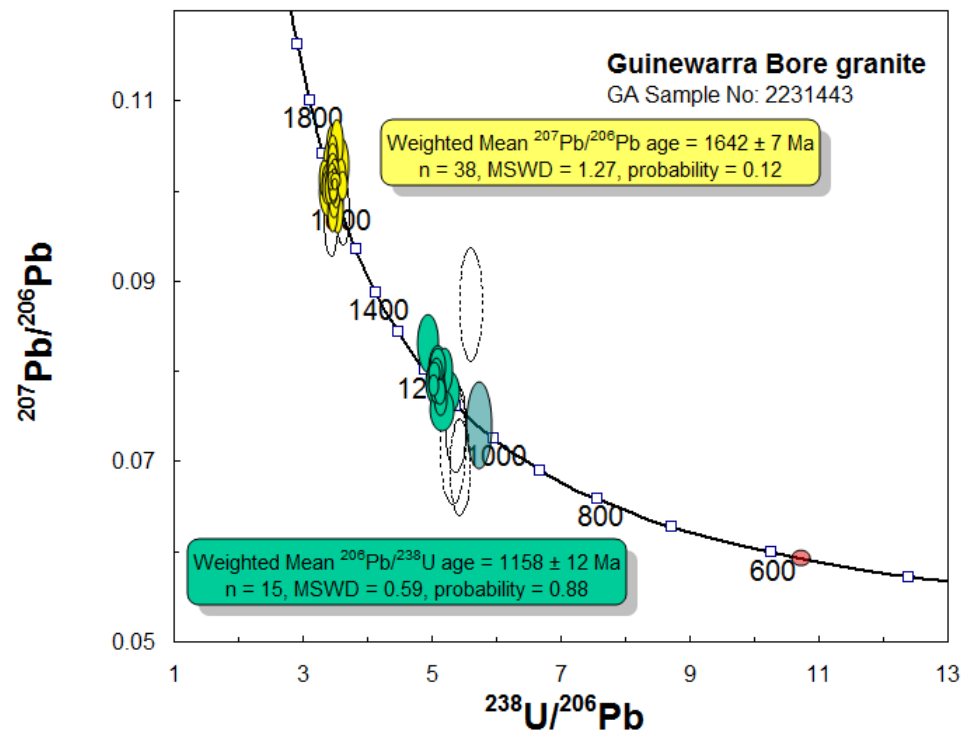
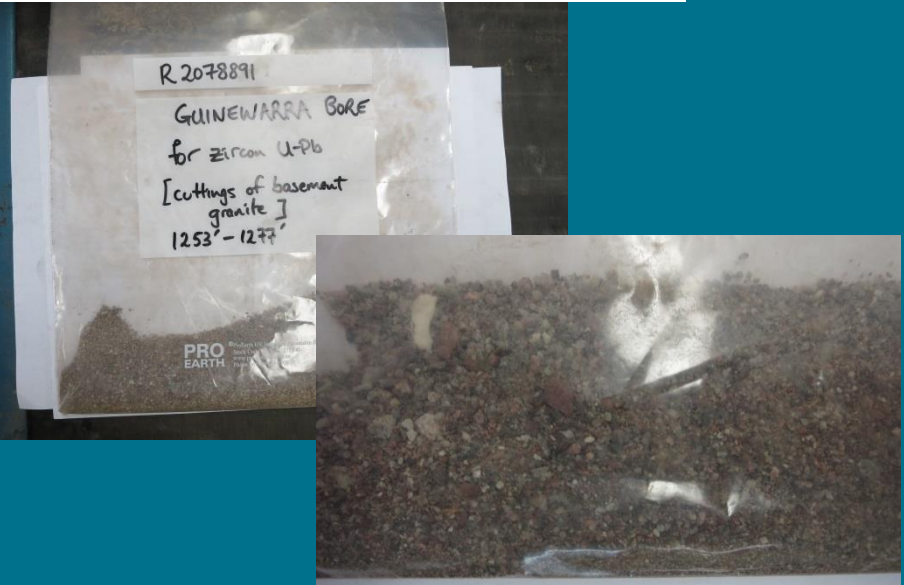
*Acknowledgements: GSSA, Rian Dutch; GSWA, Cath Spaggiari*







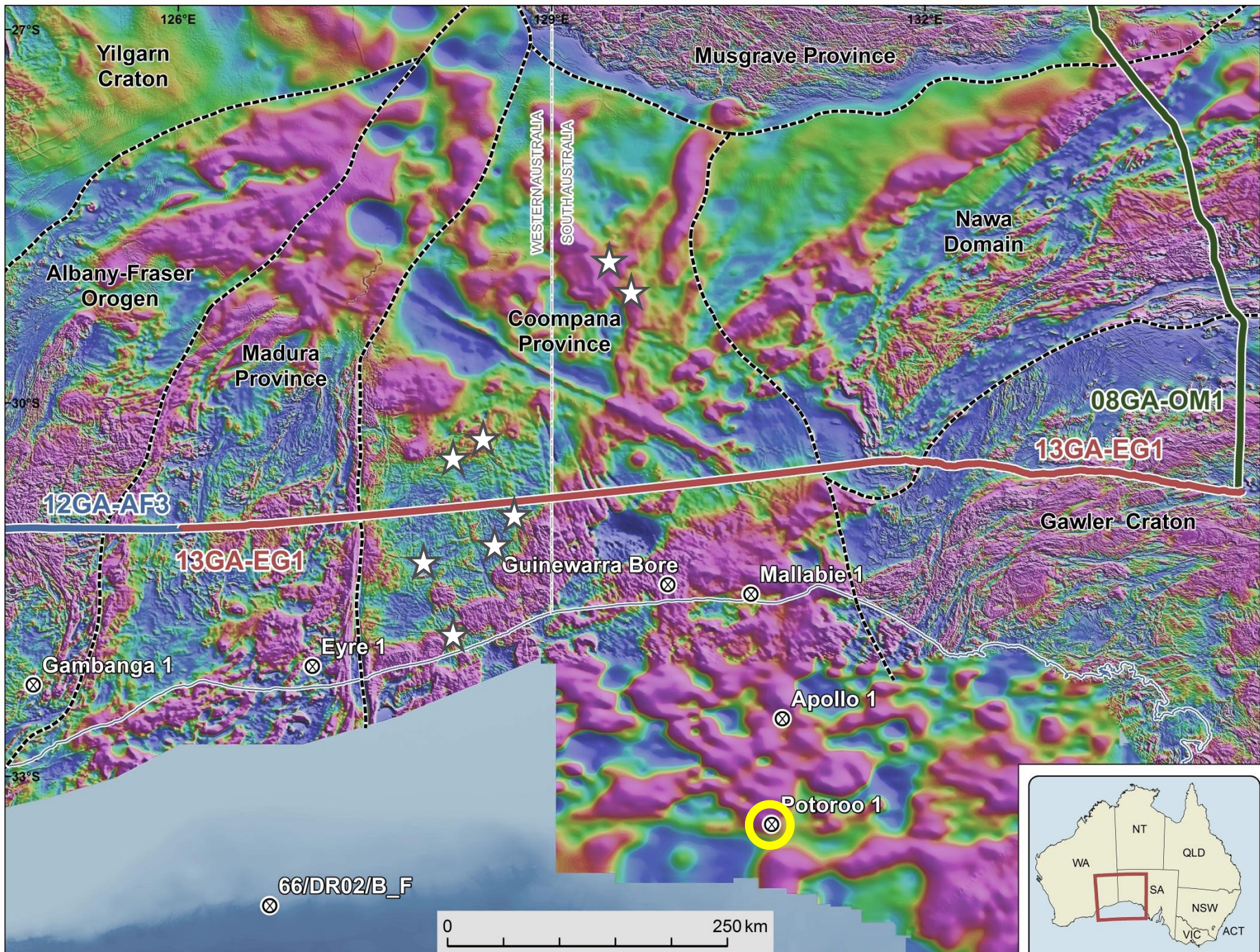
# Guinewarra Bore, granite



## The problem with dating chips

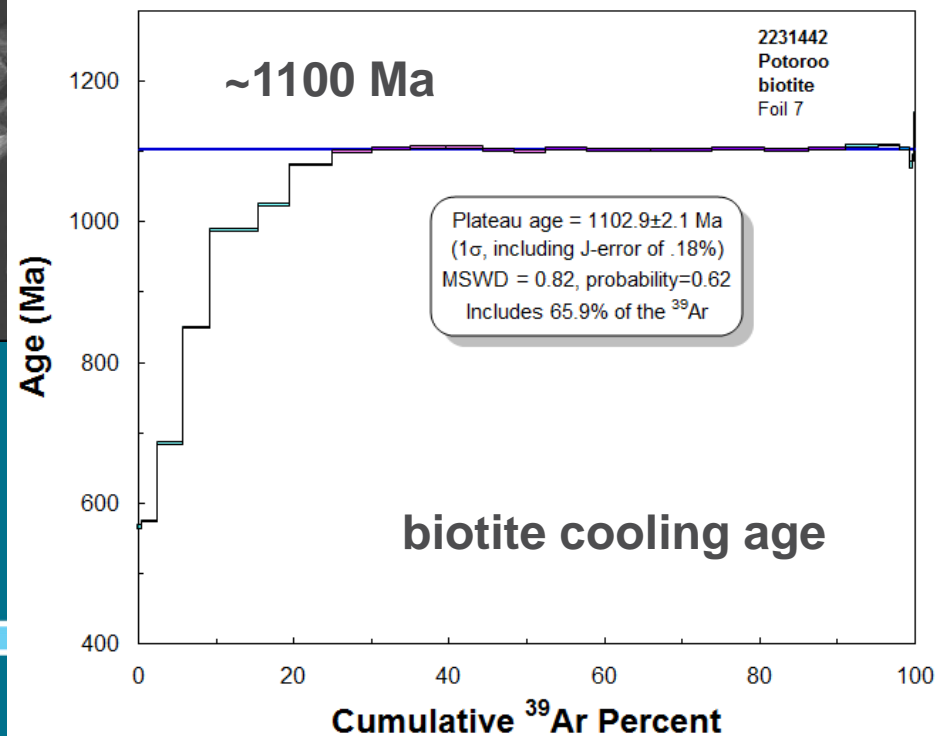
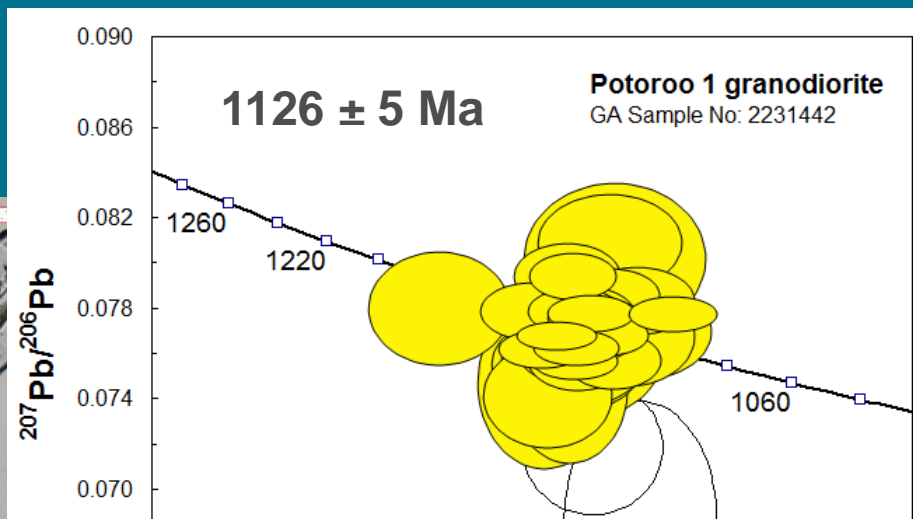
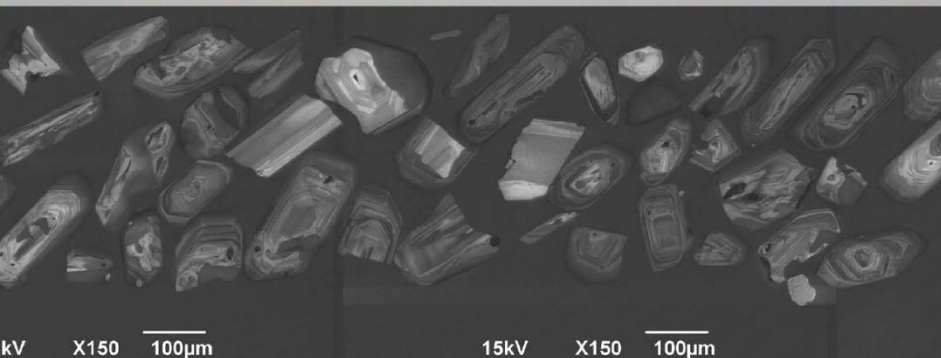
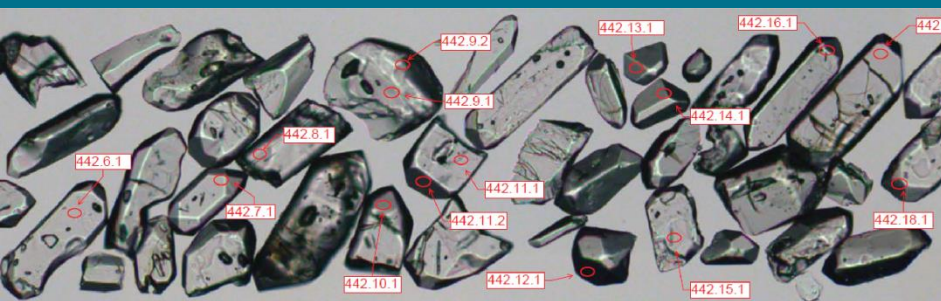


Forrest Zone; Wingate et al., 2015



# Potoroo 1 – petroleum exploration hole (Shell, 1975)

- 220 km offshore
- Coompana Prov. on continental shelf?
- drill-chips from base of hole

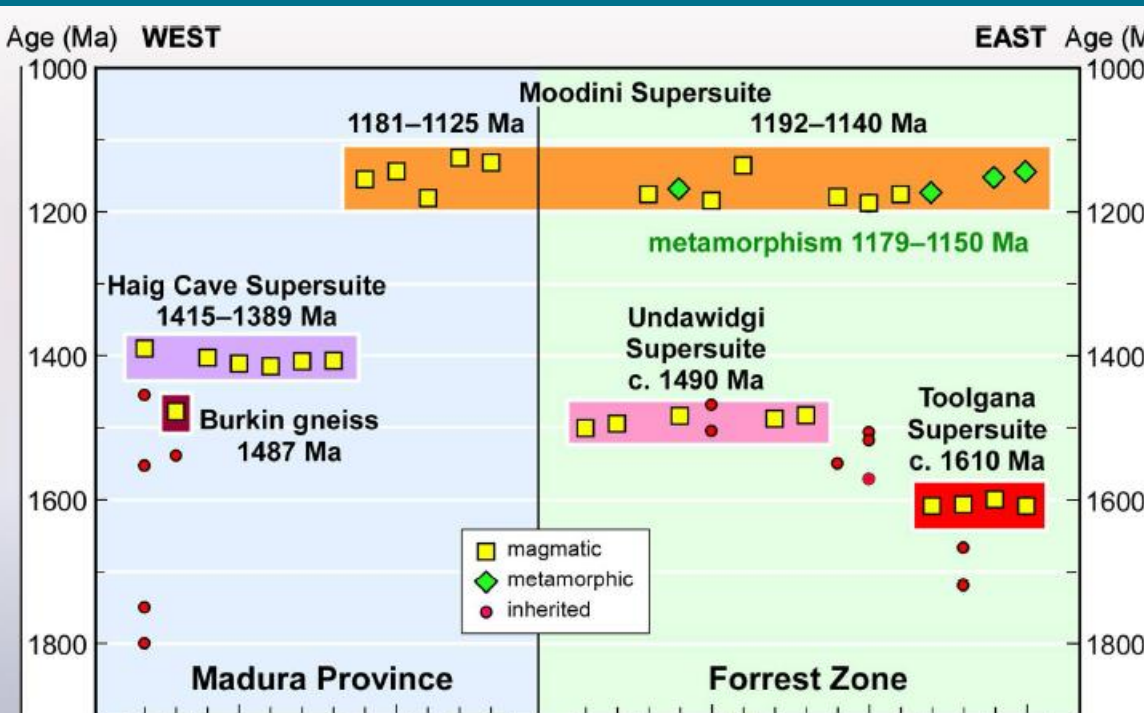


# Madura

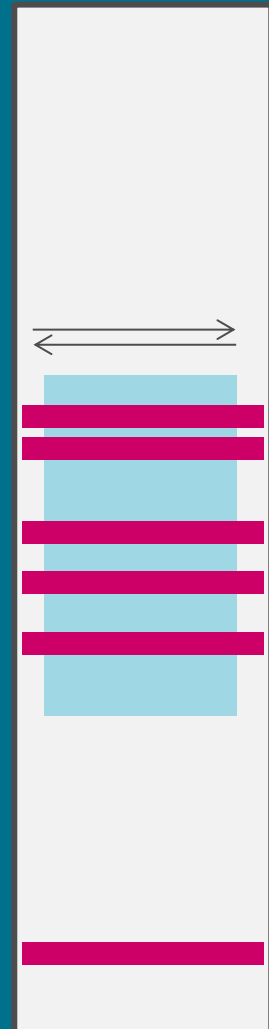
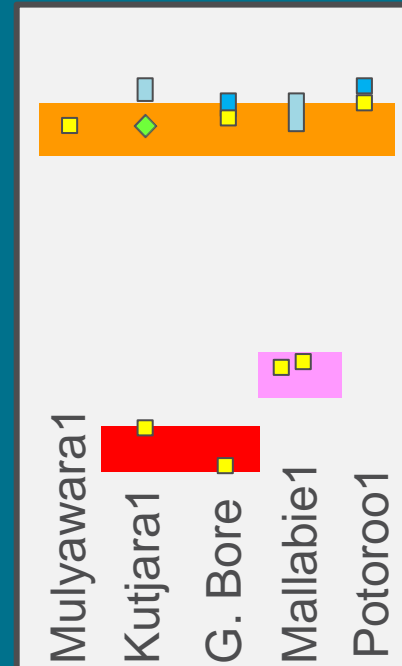
# West Coompana

# East Coompana

# Gawler



Spaggiari et al., 2015



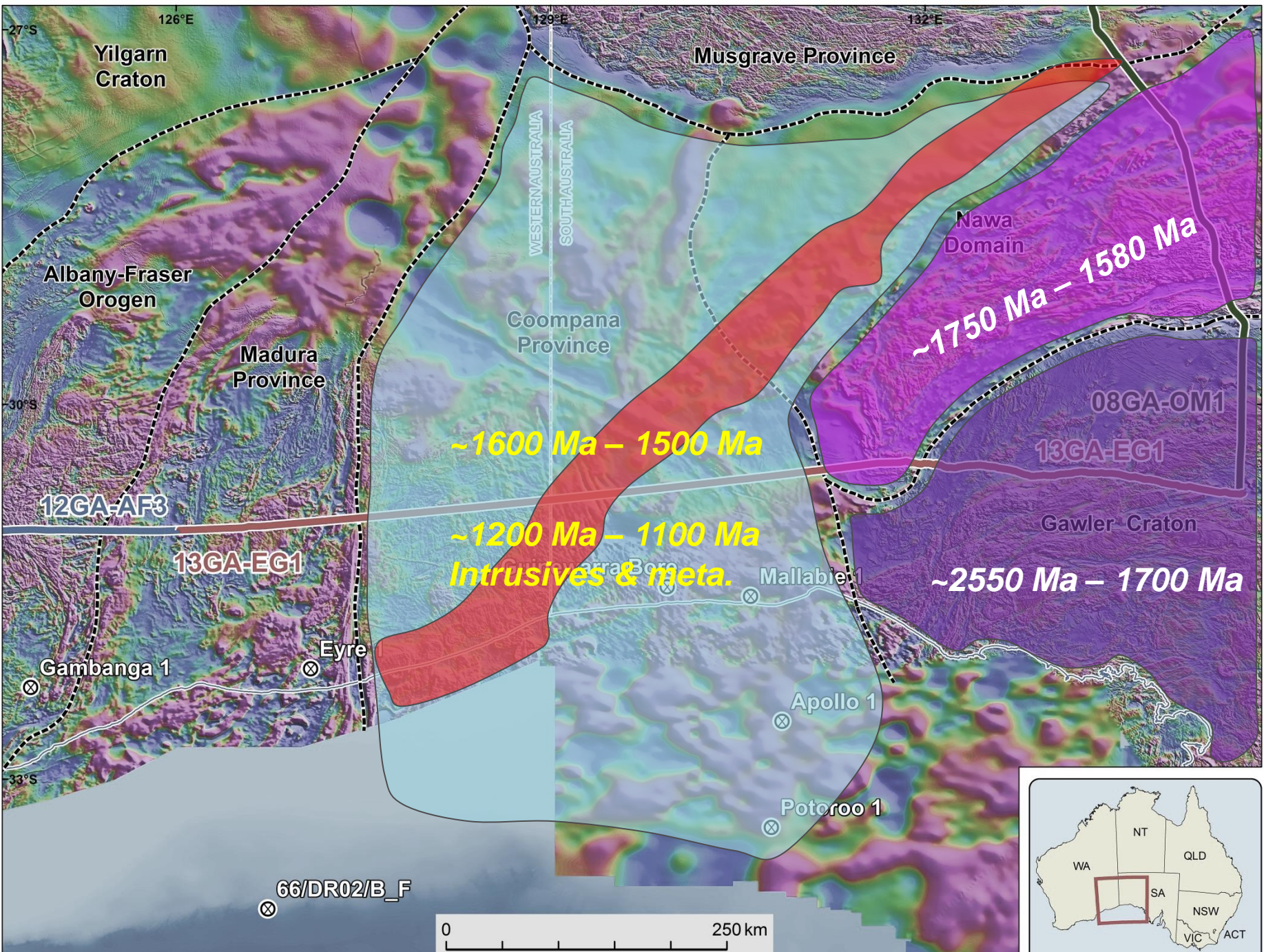
## Coompana

No rocks >1650 Ma  
 Major Grenvillian mag. & meta  
 Ar cooling ages all Grenvillian

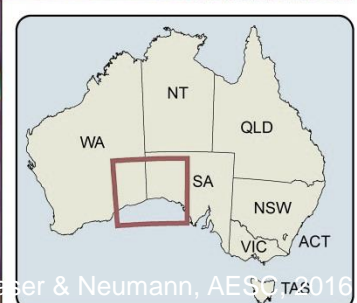
## Gawler

Most rocks >1690 Ma (incl. Archean)  
 No Grenvillian overprint  
 Ar cooling ages pre ~1500 Ma  
 Shearing ~1440 Ma



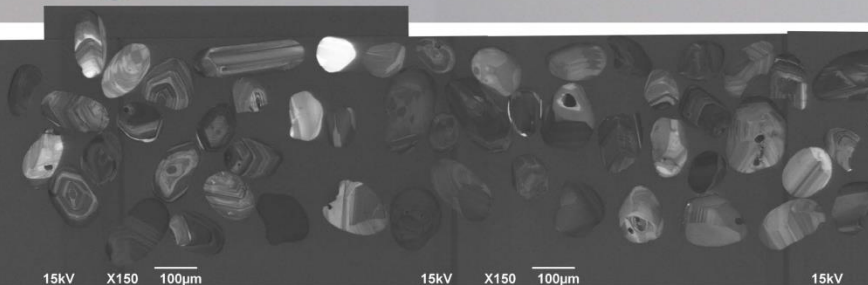
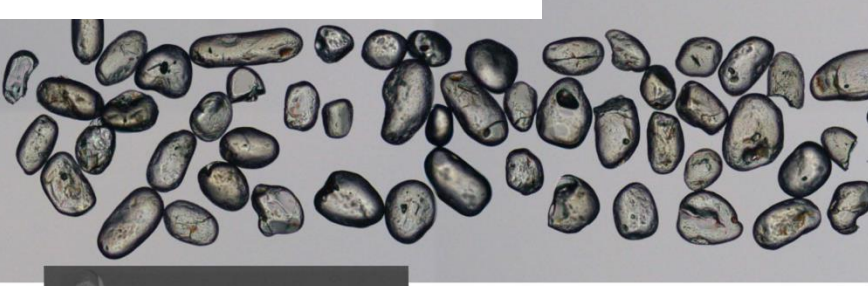


SAA 16042-1



# Mallabie1: Officer Basin?

Sandstone ~2162 feet



15kV X150 100µm 15kV X150 100µm 15kV

Arkose ~4019 feet



15kV X150 100µm 15kV X150 100µm 15kV

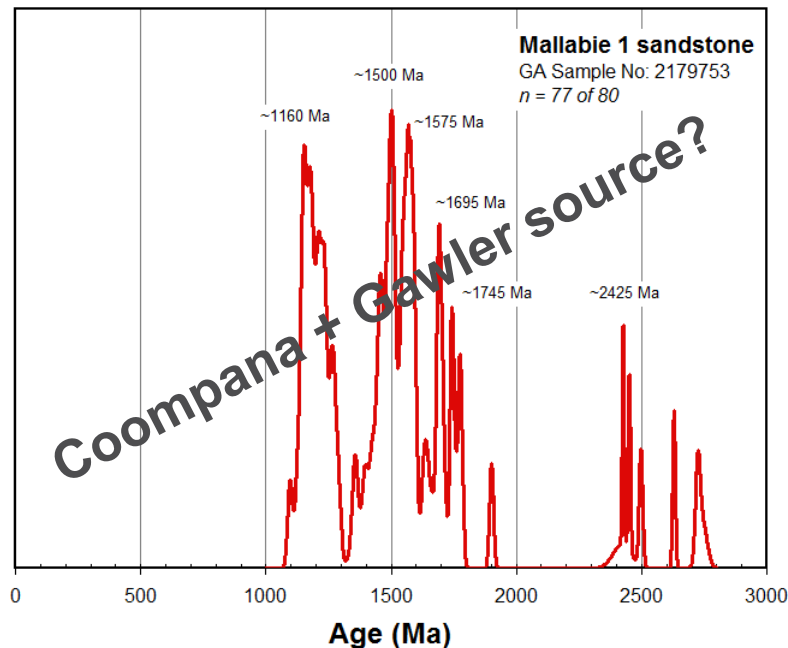


basalts

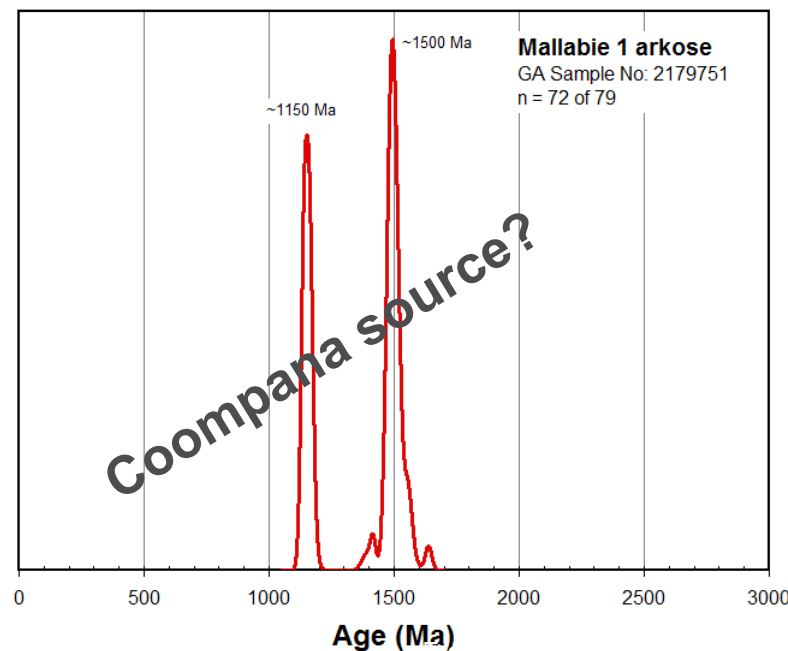


1500 Ma

Relative probability



Relative probability



# Conclusions

Expanded evidence-base for age and event-history of Coompana Province

- (although still scanty)

Coompana Province distinct from Gawler Craton: protolith ages, magmatic & metamorphic ages, cooling ages

No geochron evidence for any difference between Forrest Zone (ie western Coompana) and eastern Coompana

For geochronology, drill-chips are a poor second compared with diamond core. We can measure ages from chips, but without the context and confidence of core, the meaning and value of those ages is ambiguous

