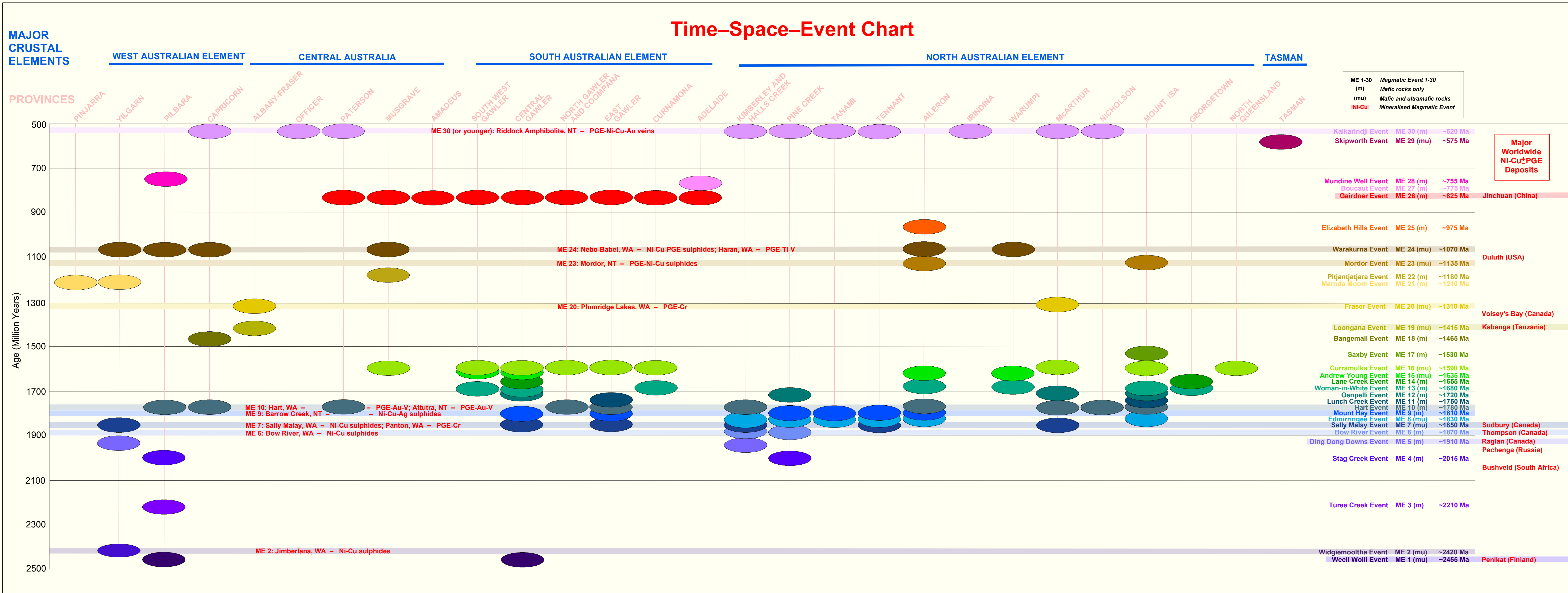


# AUSTRALIAN PROTEROZOIC MAFIC-ULTRAMAFIC MAGMATIC EVENTS (Sheet 2 of 2)

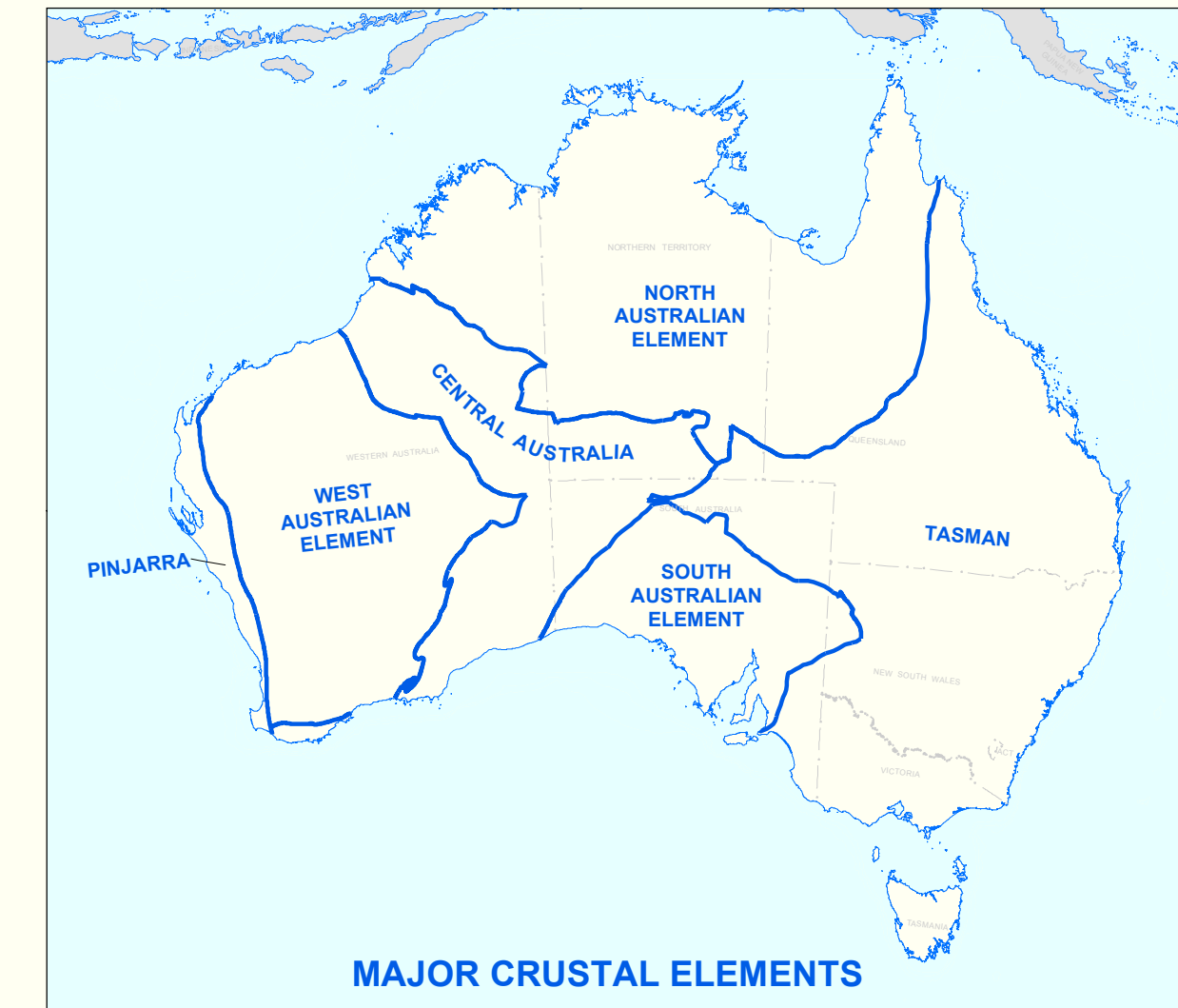


Sheet 1: 1:5 000 000 Map of Proterozoic Magmatic Events  
Sheet 2: Time-Space-Event Chart  
1:10 000 000 Map of Mineral Deposits & Occurrences  
1:10 000 000 Map of Proterozoic Large Igneous Provinces

**Time-Space-Event Chart**  
The presence and correlation of the 30 identified Proterozoic mafic-ultramafic Magmatic Events are represented across 28 provinces. Event names and ages, symbol colours, and provinces (with informal names) are those of the 1:5 000 000 Map on Sheet 1. Horizontal coloured bands indicate the presence of known Ni-PGE-Cr-V-Ti-(Pb)-Cu-Ag mineralisation within certain Magmatic Events, either in Australia or overseas.

Time-equivalent magmatism in different provinces does not necessarily imply co-genetic magmatism.

Provinces are grouped as Major Crustal Elements according to the inset map below, adapted from Shaw et al. (1995) Australian Crustal Elements 1:5 000 000 map.



**Distribution of Mineral Deposits and Occurrences**  
Deposits and occurrences of Ni-Cr-PGE-V-Ti mineralisation are overlain on a composite map of Precambrian mafic-ultramafic magmatic rock units, major and minor. Both sulphide and laterite nickel deposits are shown. Data are from Geoscience Australia's OZMIN and MINLOC resource databases.

**Proterozoic Large Igneous Provinces (LIPs)**  
Dashed lines indicate the geographic extent of five Magmatic Events distinguished as exceptionally large emplacements of dominantly mafic magmas. Those shown on this map are expressed only by time-equivalence of intrusion and extrusion; co-genetic magmatism across crustal provinces is not necessarily implied. Colours and unit polygons are linked to the 1:5 000 000 Map on Sheet 1, and to the Time-Space-Event Chart. The approximate eastern limit of Precambrian crustal elements is shown as the Tasman Line.

Kalkarindji LIP: ME 30 ~520 Ma. Extensive preservation of basalt lavas across the North Australian Craton and central Australia; intrusions in the Kimberley and Irindina provinces. Modified after Glass & Phillips (2006). *Geology* 34, 461-464.

Gairdner LIP: ME 26 ~825 Ma. Gairdner Dyke Swarm of the South Australian Craton and the Musgrave province; lavas in the basal stratigraphy of the Adelaide and Anadap provinces; possible correlative in the Paterson province. Modified after Zhao et al. (1994). *Earth and Planetary Science Letters* 121, 349-367.

Warakurna LIP: ME 24 ~1070 Ma. Time-equivalent magmatism in a belt that includes the Musgrave province and crosses the West Australian Craton; dolerite dykes in the southern margin of the North Australian Craton. Modified after Wingate et al. (2004). *Geology* 32, 105-108.

Marnda Moorn LIP: ME 21 ~1210 Ma. Extensive coeval dolerite dyke swarms, with variable geometries of emplacement, intruding the Yilgarn and Pilbarra provinces. Modified after Wingate & Pidgeon (2005). <http://www.largeigneousprovinces.org/05July.html>

Hart LIP: ME 10 ~1780 Ma. Dolerites and basalts within the Kimberley province modified after Tyler et al. (2009). <http://www.largeigneousprovinces.org/09Aug.html>; possible extent encompasses time-equivalent magmatism in eight other provinces across the West, North, and South Australian Cratons, and in central Australia.

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Cartography by G.A. Young, V. Cooper, G. Tobin, S. Mezzomo

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**Other maps in this series:**  
This map is the third and final part of a Geoscience Australia series showing the geographic extent and time-space relationships of Proterozoic mafic-ultramafic magmatism and associated mineral deposits across the Australian continent.

**Part 1: Western Australia** was published in October 2008 and documents 15 Proterozoic mafic-ultramafic magmatic events. Copies of the Part 1 map are available free online at: [http://www.ga.gov.au/image\\_cache/GA8797.pdf](http://www.ga.gov.au/image_cache/GA8797.pdf) in pdf format.

**Part 2: Northern Territory-South Australia** was published in July 2007 and documents 19 Proterozoic mafic-ultramafic magmatic events. Copies of the Part 2 map are available free online at: [http://www.ga.gov.au/image\\_cache/GA8800.pdf](http://www.ga.gov.au/image_cache/GA8800.pdf) in pdf format.

The geological and geochronological information underpinning this map series is summarised in Geoscience Australia Record 2008/15 (GeoCat Number: 66624). Guide to using the 1:5 000 000 map of Australian Proterozoic mafic-ultramafic magmatic events by Hoatson, Claué-Long, and Jareish.

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