

**Geochemical and isotopic investigation into the
tectonic setting of Mesoarchean and
Paleoproterozoic granitoid suites within the
eastern Gawler Craton, South Australia**

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ABSTRACT

A geochemical study into a recently identified Mesoarchean Archean granitoid suite in the Eastern Gawler Craton, South Australia, has found that over a larger area the geochemistry and isotopes are variable. Granitoids of ~3240Ma have been dated using the SHRIMP, which look identical to the cooyerdoo but have trondhjemitic REE patterns. This study has used geochemical and Nd-Sm isotopic data to identify the tectonic setting and source region of Mesoarchean (~3150Ma) granitoids and amphibolites and Paleoproterozoic (~1730Ma) granitoids and amphibolites. The old and young granites are high K, Calc-alkaline, I type granites and are interpreted to have formed in a continental arc setting. There are a few enriched younger and older enriched mafics formed by metasomatism of the mantle. The ~3240Ma and ~3150Ma are interpreted to have been formed by the same tectonic event. This study has shown the eastern Gawler Craton to be even more complex than was thought from the Fraser *et al.* 2010 study.

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