



Zircon Lu-Hf constraints on recently  
proposed models for the tectonic  
assembly of Proterozoic central  
Australia

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## **ZIRCON LU-HF CONSTRAINTS ON RECENTLY PROPOSED MODELS FOR THE TECTONIC ASSEMBLY OF PROTEROZOIC CENTRAL AUSTRALIA**

### **U-PB AND ZIRCON LU-HF FROM CASEY INLIER**

#### **ABSTRACT**

The Arunta region, central Australia, is interpreted to record evidence for the complex evolution and growth of the Australian continent during the Paleoproterozoic and Mesoproterozoic. The Warumpi Province, in the southern Arunta region, has been proposed to be an exotic terrain that has accreted to the more northerly Aileron Province in the North Australian Craton during the ca1640 Ma Liebig Orogeny.

The Casey Inlier has been identified to contain the boundary between the Aileron and Warumpi Provinces. U-Pb dating indicates ages of ca1652-1670 Ma granites to be the Warumpi Province and the ca1756-1774 Ma granitic to be the Aileron Province. New Lu-Hf zircon analysis undertaken in this study revealed that the source regions of both provinces are isotopically indistinguishable. U-Pb and Lu-Hf analysis of detrital zircon in a quartzite cover sequence provides a maximum depositional age of ca1311 Ma and an isotopic signature that is characteristic of the Musgrave Province. This suggests that the Arunta region was proximal at this time. Field observation indicate a pervasive NNW-SSE strike fabric with east side up shear dated at ca 1730 Ma age, with a later west side up shear fabric attributed to be ca 1140 Ma shear fabric. The data obtained in this study combined within previous evidence for shared histories indicate the Warumpi Province was not exotic to the Aileron Province and it is most unlikely that a suturing event occurred at ca 1640 Ma.

#### **KEYWORDS**

Aileron, Warumpi, Casey Inlier, Lu-Hf, U-Pb, Zircon

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