

Accepted Manuscript

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PII: S1342-937X(18)30084-4
DOI: doi:[10.1016/j.gr.2018.02.020](https://doi.org/10.1016/j.gr.2018.02.020)
Reference: GR 1948

To appear in:

Received date: 2 October 2017
Revised date: 22 February 2018
Accepted date: 22 February 2018

Please cite this article as: Antoine Dillinger, Annette D. George, Luis A. Parra-Avila , Early Permian sediment provenance and paleogeographic reconstructions in southeastern Gondwana using detrital zircon geochronology (northern Perth Basin, Western Australia). The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. Gr(2018), doi:[10.1016/j.gr.2018.02.020](https://doi.org/10.1016/j.gr.2018.02.020)

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Early Permian sediment provenance and paleogeographic reconstructions in southeastern Gondwana using detrital zircon geochronology (Northern Perth Basin, Western Australia)Antoine Dillinger^{*1}, Annette D. George¹ and Luis A. Parra-Avila^{1,2}^{*}corresponding author: antoine.dillinger@research.uwa.edu.au¹ School of Earth Sciences, The University of Western Australia, Perth WA 6009, Australia² Centre for Exploration Targeting and ARC Centre of Excellence for Core to Crust Fluid Systems, School of Earth Sciences, The University of Western Australia, Perth WA 6009, Australia**Abstract:**

The Perth Basin (Western Australia) forms part of a north-trending belt of intracratonic rift basins that initiated in southeastern Gondwana in the Late Paleozoic. Existing provenance studies have highlighted the dominance of Proterozoic zircons derived from southerly terranes such as the Albany-Fraser Orogen, Leeuwin Complex, and more distant provinces in East Antarctica, with limited input from the adjacent Archean Western Australian Craton. New U-Pb geochronology data were acquired using a Sensitive High Resolution Ion Microprobe (SHRIMP II) on detrital zircons from Lower Permian formations exposed in the northeastern Perth Basin. In contrast to previous studies, Archean zircons, showing fine oscillatory zoning, dominate the age spectra with up to 90% grains ranging between 3.0 and 2.6 Ga, indicating that granitic parent rocks of the adjacent craton were a major sediment source during the Early Permian. A minor Paleoproterozoic age population from the Gascoyne Complex of the Capricorn Orogen was likely transported southward and dispersed in the basin by a combination of longshore drift and tidal currents. Meso- and Neoproterozoic detritus became prominent only from the middle Artinskian, and may relate to the establishment of large northward-flowing river systems draining the Albany-Fraser province, the Prydz-Leeuwin Belt, and/or the Wilkes Land in East Antarctica. This study shows that integrating depositional processes

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