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Precise microbeam dating defines three Archaean granitoid suites at the southwestern margin of the Kaapvaal Craton

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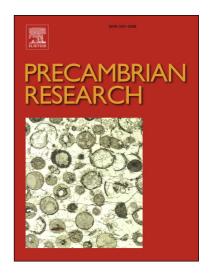
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- 1 Precise microbeam dating defines three Archaean granitoid suites at the southwestern 2 margin of the Kaapvaal Craton. Cornell¹, D.H., Minnaar², H., Frei³, D., Kristoffersen⁴, M. 3 4 ¹ Corresponding Author, University of Gothenburg, Box 450, SE 40530 Sweden, email: 5 6 cornell@gvc.gu.se 7 ²Council for Geoscience, 280 Pretoria Street, Silverton 0184, South Africa. email: 8 minnaarh@yahoo.com ³Department of Earth Sciences, University of the Western Cape, Private Bag X17, 7530 9 Bellville, South Africa, email: dfrei@uwc.ac.za 10 ⁴ Department of Geosciences University of Oslo, Post-box 1047 Blindern, N-0316 Oslo 11 12 Norway. Email: magnus.kristoffersen@geo.uio.no 13 14 **ABSTRACT** Precise microbeam U-Pb zircon dates have been determined for 17 granitoid samples which 15 crop out along the southwestern margin of the Kaapvaal Craton. In the Marydale High two 16 17 main types of granitoid are distinguished mainly by their normative Quartz - Alkali Feldspar – Plagioclase mineral proportions. The Draghoender Granite type is generally tonalitic to 18 19 trondhjemitic and some samples have very low heavy Rare Earth Elements, probably originating as melts of eclogitic protoliths. Their ages vary by ~50 Ma from 2946 ±9 Ma to 20 21 $2892 \pm 6 \text{ Ma}$ (2 σ), reflecting a long period of magmatism possibly due to subduction. The 22 granodioritic to monzogranitic Skalkseput Granite type intrudes the Draghoender granite in 23 places and has a coherent age of 2901 ± 14 Ma. These two granite types thus overlap in time 24 and space. The more evolved Skalkseputs type could have been derived by melting of the 25 Draghoender type during assembly of the Kaapvaal Craton by collision of the Kimberley and 26 Witwatersrand Terranes. 27 A third granite type is exemplified by the 2721 ±6 Ma monzogranitic Steenkop Granite 28 Gneiss which occurs south of Prieskapoort, and corresponds in age to a 2718 ±8 Ma 29 monzogranite dyke which intrudes a 2871 Ma Skalkseput monzogranite. The previous age of 30 2718 ±8 Ma for the Skalkseput Granite probably also dated a Steenkop-type dyke. A basal
- conglomerate to the Zeekoebaard Formation of the Ventersdorp Supergroup has a single 2720
 ±4 Ma detrital zircon population.
- 33 South of the Marydale High a narrow strip of Draghoender-type Granite extends to
- Franzenhof where it is exposed in a Dwyka glacial outwash surface and is dated at 2931 ±9

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