

Low pressure, high temperature Metamorphism and Partial melting in the Kuiseb Formation

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Contex

The Damarien Orogen is a Pan-African aged, over 300km long mobile belt produced by convergence of Congo and the Kalahari cratons. The metamorphic zoning of the orogen has been published, and some new metamorphosis work is now being published (Jung et al., 2018).

The upper Damaran Kuisep Formation displays abundant partial melting during the late Damaran Orogenesis (ca. 530Ma). Low pressure, high temperature metamorphic terrains are exceptionally well developed in the Western Damara mountain belt. There are several possible mechanisms leading to high T, low P metamorphism, including crustal thickening followed by crustal extension, or even lithospheric delamination. A detailed structural/metamorphic research is proposed, to be complemented by modeling.

Objectives and Methods

Field work will establish the structural evolution, and the relative timing of metamorphism, which will be quantified using thin section petrography, whole rock and mineral geochemistry (using XRF, SEM, and EMPA). Pseudosection modelling, Raman spectroscopy, and thermo-barometry on selected samples will be performed to obtain quantitative pressure temperature paths. Finally, possible tectonic scenario for the low-P, high T metamorphism will be established.

Literature

Cross CB, Diener JFA, Fagereng A (2015) Metamorphic imprint of accretion and ridge subduction in the Pan-African Damara Belt, Namibia. *J metamorphic Geol* 33:633–648. doi: 10.1111/jmg.12139

Gray DR, Foster DA, Meert JG, et al (2008) A Damara orogen perspective on the assembly of southwestern Gondwana. *Geol Soc London Spec Pub* 294:257–278. doi: 10.1144/SP294.14

Jung S, Brandt S, Bast R, et al (2018) Metamorphic petrology of a high- T/low- Pgranulite terrane (Damara belt, Namibia) - Constraints from pseudosection modelling and high-precision Lu-Hf garnet-whole rock dating. *Journal of Metamorphic Geology* 37:41–69. doi: 10.1111/jmg.12448



WEB sites

Choice of orientation : (supprimer les orientations qui ne conviendraient pas)

2) Geochemistry, Alpine tectonics, Ore Deposits