

Terminal deformation and magmatism of the Kuunga Orogeny, Dronning Maud Land, Antarctica.

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Two widely distributed granitic vein types are seen in Sverdrupfjella, Western. Dronning Maud Land (WDML), in Gjelsvikfjella and Central Dronning Maud Land (CDML), Antarctica. The younger generation (P2) comprise 2-mica granites and pink 2 feldspar pegmatites. The older (P1) generation comprises white biotite plagioclase rich pegmatites.

The P2 pegmatites dip mostly shallowly ($\sim 45-50^\circ$) to N and NW and displace the older veins along planes with extensional and compressional top to the south geometries in Sverdrupfjella. Published data on these aplitic veins indicate an age of ~ 480 Ma. In contrast, the older P1's dip mostly $\sim 60^\circ$ toward the S and SW with no displacements in Sverdrupfjella. Similarly oriented local shears show normal displacements to the S and SW. In Gjelsvikfjella, extensional displacements are observed. The structures are consistent with late extension toward the S and SW followed by top to the S and SE compression. In Gjelsvikfjella, these veins have meta-basic cores suggesting near synchronous emplacement. The metabasite veins are correlated with the Stabben Gabbro which has an age of ~ 520 Ma. These veins locally have planar fabrics defined by biotite and are locally folded and boudinaged. The planar fabrics parallel their extensional geometry as well as planar fabrics in the Stabben Gabbro.

Radiogenic Sr and Nd data from the two types indicate relatively juvenile sources for the P1's, in contrast to the P1 granites which were sourced in older crust, similar to Mesoproterozoic TTG gneisses in W. Sverdrupfjella.

Radiogenic Sr/Nd data from basement gneisses hosting the veins in E and W Sverdrupfjella show differences with W Sverdrupfjella characterised by older evolved crust in contrast to the juvenile basement rocks in E. Sverdrupfjella. The two areas are separated by a major thrust fault zone coincident with strong magnetic anomalies. Data from Gjelsvikfjella basement gneisses have juvenile Sr/Nd isotope characteristics to E. Sverdrupfjella. In contrast P2 veins intruded into juvenile basement retain their old signature implying older basement at depth beneath the juvenile basement exposed at surface.

The data, along with recently published data from Gjelsvikfjella and Sor Rondanæ are inferred to reflect the emplacement of a Kuunga Orogeny mega nappe complex with top to the S geometry at ~ 500 Ma.

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