Stenian-Tonian arc magmatism in west-central Madagascar

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Madagascar occupies an important location in the East African Orogen, which involves a collection of Neoproterozoic microcontinents and arc terranes lodged between older cratonic units during the final assembly of Gondwana. Prior to the discovery of the Stenian-Tonian (1035 - 982 Ma) Dabolava suite, magmatism of this period was not recognised in Madagascar. The Dabolava suite combined with coeval rocks of the Ikalamavony Group represent a magmatic arc and marginal volcano-sedimentary sequence within a continental arc/back-arc tectonic setting based on geochemical characteristics. Tucker *et al*. (2014) postulated that the magmatic arc was built mainly on oceanic crust produced when the Androyen-Anoysen and Antananarivo domains rifted apart during Stenian time. Here we present new U-Pb zircon data that extends the period of magmatism to ~1090-960 Ma. Oxygen and hafnium isotopes in dated zircon and whole-rock geochemical data constrain possible tectonic settings for the Dabolava suite. We then incorporate these new geochemical data into the broader story of Madagascar's Meso- to Neoproterozoic palaeotectonic development.

[1] Tucker, R.D., Roig, J.Y., Moine, B., Delor, C., Peters, S.G., (2014) A geological synthesis of the Precambrian shield in Madagascar. *Journal of African Earth Sciences* **94**, 9-30.