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A-type stratoid granites of Madagascar: evidence of Rodinia rifting at ca 790 Ma

Anne NEDELEC (1), Jean-Louis PAQUETTE (2), and Jean-Luc BOUCHEZ (1)

(1) University of Toulouse, OMP, GET, Toulouse, France (anne.nedelec@get.obs-mip.fr), (2) University of Clermont-Ferrand, CNRS, Magmas et Volcans, France

The so-called stratoid granites are sheet-like granites emplaced as conformable sills in the Precambrian basement of central Madagascar. Most of them have A-type affinities (Nédélec et al. 1995). They are everywhere characterized by the same structural pattern evidencing two stages of deformation. The first one (foliations mildly dipping to the west and lineations trending WSW) is regarded as the consequence of synkinematic magma emplacement. The second stage, characterized by interference folds, steeply dipping foliations and subhorizontal lineations trending to the north, corresponds to a more or less pronounced reworking in ductile conditions, regarded as the result of Late Pan-African transcurrent tectonics. To the north of Antananarivo, the stratoid granites are associated with comagmatic quartz-syenites. New U-Pb zircons ages obtained by in situ analyses reveal two group of ages: upper intercept ages of ca 790 Ma, and younger ages of ca 550 Ma corresponding to crystal rims. These new data question the geological significance of former TIMS ages of ca 630 Ma formerly obtained from the same rocks (Paquette & Nédélec 1998). It is suggested that the stratoid granites and syenites were emplaced during a crustal thinning event corresponding to an early Rodinia rifting stage. The Pan-African imprint on these rocks is therefore limited to reheating, tectonic reworking and deep fluid transfer in the vicinity of Late-Neoproterozoic shear zones at ca 550 Ma (Nédélec et al. 2014).