Tectonometamorphic and geochronological constraints of the Palaeoproterozoic northern Nyika subdomain (Ubendian belt, Malawi).

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Résumé

The Ubendian belt extends from eastern Congo through SW Tanzania and NW Zambia across northern Malawi where it merges with the Usagaran Belt. It results from the Paleoproterozoic accretion of microterranes followed by the collision of the Tanzanian and Congo cratons. The Ubendian belt was classically divided in eight terranes, based on rock assemblage, magmatic and metamorphic record. The southernmost terrane, namely the Nyika subdomain, is still hill studied in terms of geometry, timing of magmatism and metamorphism and geodynamic setting.
We present an extensive dataset to decipher the geological history of the northern part of the Nyika subdomain. Our dataset consist of field observation, geophysical survey, LA-ICP-MS U/Pb geochronology on zircon and monazite and a petrological study of migmatitic cordierite-bearing gneisses.

Our U/Pb data show that the Nyika Subdomain records four magmatic pulses: a first one retrieved only as xenocryst between 2200-2150 Ma, a second and major at ca. 2030 Ma. A third a minor magmatic activity is registered at ca. 1980 Ma. This event is coeval with regional granulite facies metamorphism (ca. 780∘C and 0.6 Gpa) that we date by LA-ICP-MS U/Pb on monazite and xenotime at 1977 ± 14 Ma and 1984±13 Ma. It probably represents the collision between the Congo and Tanzania cratons. A fourth event terminates the Palaeoproterozoic history: the intrusion of the Nyika Suite at 1944±7 Ma. Afterwards, no other orogenic events is recorded in the northern Nyika subdomain before the Pan African orogeny.
Finally, we discuss the regional significance of the events recorded by the Nyika subdomain with respect to the nearby Ufipa subdomain and the Bangweulu block in the framework of the Ubendian orogeny.

Mots-Clés: Metamorphic petrology, geochronology, Ubendian belt

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