Tectonic evolution in the Archean Ntem Complex (NW Congo Craton, southern Cameroon) from 2.84-2.7 Ga Contribution from LA–ICP–MS U–Pb zircon and EPMA U–Th–Pb monazite ages.

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This contribution examines the strain pattern of the Archean Ntem Complex, located in the northwestern part of the Congo Craton (southern Cameroon). We carried a detailed field study coupled with aeromagnetic map for the two main greenstone belts (Sangmelima and Nyabisan), focusing on the geometry of structures as well as kinematics, and identifying several lithological facies with distinct petrological characters. The time constraints of magmatism, metamorphism and deformation were obtained by U–Pb LA–ICP–MS dating on zircon and EPMA U–Th–Pb dating on monazite.

The Nyabissan Greenstone Belt is dominated by sub-vertical transpressive shear zones with steeply plunging stretch lineations. There are vertical regional fabric domains with sub-horizontal foliation domains suggesting a strain partitioning at a regional scale. Different generations of syntectonic mafic and felsic intrusions attest to long-lasting progressive deformation.

In the Sangmelima granite-greenstone belt (SGB), charnockites and TTG suites formed between~ 3155 and 2850 Ma. The gabbro intrusion was dated at 2866±6 Ma. Migmatization of the TTG-gneiss, coeval with a sub-horizontal shortening synmetamorphic D1 event, is dated around 2843–2820 Ma using U–Pb LA–ICP–MS on zircon and chemical U–Th–Pb EPMA dating on monazite. Syn-kinematic monzogranite emplaced 2838±6 Ma ago. D_2 is associated with the F_2 folds and C_2 shear zones coeval with the second anatexis period between ~2788–2722 Ma marked by the emplacement of high-K granite that peaked at ~2750 Ma. Ages of migmatisation and syn-kinematic granites (2843 to 2722 Ma) suggest a long-lasting tectonic process in the Sangmelima area. Late Neoarchean granitic pegmatite/aplite dikes and/or veins emplaced during the brittle deformation D_3 and ANC protracted cooling between ~2670–2550 Ma.

A synthesis of all results leads to the reconstruction of the general structure for the Ntem Complex, from the Paleo and Neoproterozoic to the Archean domains. In addition, a new model of Archean geodynamic evolution in the NW Congo Craton from 3.32 Ga to 2.55 Ga is proposed.

Mots-Clés: TTG, Strain partitioning, EPMA U-Th-Pb , Archean Ntem Complex, Congo Craton

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