Geophysical Research Abstracts, Vol. 8, 11086, 2006
SRef-ID: 1607-7962/gra/EGU06-A-11086

U-Pb dating of plutonic rocks involved in the nappe tectonics in southern Cameroon: consequence for the Pan-African orogenic evolution of the Central African Fold Belt

S.F. Toteu (1), R. Yongue Fouateu (2), J. Penaye (1), J. Tchakounte (2), A.C. Seme Mouangue (3), W.R. Van Schmus (4), E. Deloule (5), H. Stendal (6)

(1) Centre for Geological and Mining Research, BP. 333, Garoua, Cameroon, (2) DST Faculté des Sciences Université de Yaoundé-I, B.P. 812, Yaoundé, Cameroun, (3) Ministère des Mines, de l'Eau et de l'Energie Yaoundé, Cameroun, (4) Dept. Geology, 1475 Jayhawk Blvd.-Room 120, Univ. Kansas, Lawrence, KS, 66045, USA, (5)Centre de Recherche Pétrographique et Géochimique, B.P. 20, 54501 Vandoeuve les-Nancy, France, (6) Geological Survey of Denmark and Greenland (GEUS), Øster Voldgade 10, DK-1350 Copenhagen, sftoteu@yahoo.fr / +237 994 8341

TIMS-ID and SIMS U-Pb dating on zircons from metaplutonic rocks involved in the Pan-African nappe of southern Cameroon allow definition of three groups of subduction-related intrusions: group-I intrusions represented by the Masins metagabbro in the Lomie region yielded 666±26 Ma; group-II intrusions represented by the Mamb metasyenogabbro and the Yaoundé pyriclasite yielded ca 620 Ma and are broadly coeval with the deposition of the Yaoundé metasediments; group-III intrusions represented by the Elon augen metagranite and the Ngaa Mbappe metamonzodiorite yielded ca 600 Ma.

From these data, we conclude that the horizontal structures that characterize the southern part of the CAFB are the results of a southward stacking of nappe units of different ages and or different crustal levels onto the Congo craton. In the Yaoundé region, the emplacement of the Yaoundé nappe started between 616-611 Ma under the peak conditions of the granulite metamorphism and continued until 600-590 Ma under medium- to low-grade conditions. This implies a multi-stage nappe emplacement with the oldest nappe at the south and the youngest toward the north.

Our study has also demonstrated a rapid geodynamic evolution for the Yaoundé Group with sedimentation, burial and exhumation from depth (ca 40 km) in a very short time range of about 20 Ma. A similar evolution (less than 10 Ma) has been recorded for the Lom basin located further north of the Yaoundé Group. Such a rapid orogenic evolution is characteristic of extensional basins developed on back-arc settings.

Finally, the construction of southern Cameroon proceeded by a multi-stage evolution characterized by a long-lived development and reworking of magmatic arcs associated with rapid opening and closure of sedimentary marginal basins in relation with a northward subduction.