

Record of the ~540 My collision-stage of Gondwana in NW Angola

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The temporal evolution of the main geological units from Angola remains poorly known until now and, in particular, no clear relationships can be established within the regional context of the Neoproterozoic-Cambrian Pan-African orogenic system from this part of Africa nor on its role during the amalgamation of the western part of Gondwana. Thus, the main aim of this study was to shed lights on the geological evolution of the Caxito-Pedra Boa area (NW Angola). In this zone, outcrops of various lithologies (granulites, amphibolites, granitoids...) can be found. LA-ICPMS U-Pb analyses have been conducted on zircons from three different samples : a leucocratic vein in an amphibolite, a gneiss and a pegmatite. Moreover, laser Ar-Ar datings on amphiboles and biotites have been also performed. Zircons from the leucocratic vein in the amphibolite define a ²⁰⁶Pb/²³⁸U weighted mean age of 539±7 My. Zircons from the gneiss show a complex distribution with a first group of analyses defining a precise age at 538±6 My and ten spots showing older ages ranging from 589 to 678 My. At last zircons from the pegmatite define two groups. The younger analyses yield an age of 544±13 My (n=6) whereas inherited grains have ages ranging from 603 to 2213 My (n=13). Amphiboles Ar-Ar analyses yield ages from 493 to 498 My whereas biotite ages range from 466 to 479 My. These ages are interpreted as cooling ages. Reconstruction of western Gondwana indicates a major high grade event at ~545-535 My which has been registered in the western part of Antarctica and in the Kalahari craton. This event has been attributed to the younger collisional phase of the three main stages registered during the amalgamation history, i.e. at ~650-620 My, ~590-560 My, ~545-510 My. At a global scale, distribution of suture ages suggests a southward younging of collisional events from the Nigeria/Borborema Province to Namibia. The identification of the c. 540 My event in the northern part of western Angola allows to reconsider the global evolution of the suture through time and the collisional history between the various crustal segments involved in the assembly of Western Gondwana. Moreover, the possible connection with the Araçuaí domain of southeastern Brazil should also be considered.

Sustainable development within Kenyas semi-arid climatic communities

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North Eastern Province lies in Kenya with a semiarid climate. The area is only suitable for drought tolerant crop farming, due to erratic and unpredictable rainfall, which frequently causes crop failure. The livestock management systems in this area are historically extensive. Commonly reared types of livestock are cattle, goats, sheep and chickens. The East African goat is the breed traditionally reared by this community, however, other breeds such as the Galla exist. The area is highly tse-tse infested, leading to heavy cattle losses from trypanosomosis. This together with increased human population has compounded the land use problem with more land being opened up by the community for cultivation as farmers look for alternative livelihoods. This has led to development of semi-intensive systems of livestock production.

The grazing land has thus been reduced, creating a major constraint in livestock production despite the use of on farm crop residues for nutritional purposes a practice that is not adequate.

The approach adopted by farmers is communally managed utilisation of locally available goat genetic resources among the resource poor farmers. The Galla goat is an indigenous breed mainly found in the pastoral areas of Kenya. The natural habitat of the Galla is similar to the ecological conditions found in North Eastern. It is well adapted to harsh climatic conditions of the arid and semi-arid lands. The East African on the other hand is distributed all over the East African region and it has the ability to survive under harsh climatic conditions. The Galla and the East African goat are used as a local goat gene pool for the arid and semi-arid lands in Kenya, which the local community is exploiting to harness positive traits. In the case of North Eastern this is achieved through a group approach.

To facilitate this initiative, multiplication of the Galla goat locally is essential for distribution to the local breeders. This will reduce the logistical costs required in procurement of the Galla goat. The more informed and economically able farmers have shown an interest in the multiplication.

Technical support is provided by local personnel from the Ministry of Agriculture and Rural Development and Community-based animal health workers in areas of buck selection, disease control, feeding and general animal husbandry.