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Extended Abstracts

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Panafrican Rb-Sr isochron ages of magmatic rocks from northern Cameroon. Preliminary results

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Introduction

In the region of Garoua in northern Cameroon there is a discontinuous non-metamorphic subhorizontal volcano-sedimentary cover that is emplaced discordantly either over the Early Proterozoic basement, reworked during the Panafrican Cycle (~600Ma) or over metasediments and metavolcanics, deformed and metamorphosed during the Panafrican.

This volcano-sedimentary package is represented in the region by several massifs among which two of them Mangbai and Balché have been studied in this paper.

These massifs are grabens or semi-grabens which were individualized since the beginning of sedimentation. These structures, oriented WNW-ESE usually discordant in relation to regional features are probably associated with a NNE-SSW extensional process.

General characteristics of the studied massifs

The massifs are formed by sedimentary units and volcanic rocks¹⁻⁴.

The sedimentary units are composed by medium to coarse grained reddish sandstones derived from the nearby Precambrian basement.

The volcanic rocks are intermediate, tending to trachites, acid rocks as rhyolites and ignimbrites and rare basalts.

Petrographic studies carried out on the Mangbai and Balché magmatic rocks have shown a high similarity regarding facies and lithologic types.

Basic Rocks: they present fluidal doleritic and porphyritic microcrystalline textures. Phenocrysts are plagioclases, pyroxenes and Fe-Ti oxides while the matrix is formed by the same mineral however with slightly albited plagioclases. For Mangbai samples chloritized and epidotized olivines have been observed.

Intermediate Rocks: they show microcrystalline, fluidal and porphyritic textures. They are constituted by feldspars ferromagnesian minerals, interstitial quartz, Fe-Ti oxides and chlorite and calcite appearing as secondary phases. For Mangbai, biotite in an initial chloritization process has also been observed. The matrix is

essentially composed of feldspars, opaque minerals and interstitial quartz. Apatite microcrystals are also found in the Balché rocks matrix.

Acid Rocks: they show microcrystalline textures tending to porphyritic and porphyritic with slightly sericitized plagioclase phenocrysts, alkaline feldspars, quartz and biotite partially oxidized or under a chloritization process. The microcrystalline matrix is composed of quartz, alkaline feldspar, plagioclase, opaque minerals and glass. Ignimbrites are found in Mangbai with silicose matrix, vitreous with plagioclase phenocrysts, alkaline feldspars and quartz.

Results and discussion

The studied volcano sedimentary sequences, in view of their structural position and their lithologies, are similar to the Panafrican molassic grabens of Nigeria (Marandum, Kisemi and Burashica Groups) and of the Benin Republic (Idaho-Mahou and Kandi Basins)⁵⁻⁸.

However, K-Ar ages obtained for three acid volcanic samples from the Mangbai were between 384 and 425Ma⁹ and for one acid volcanic sample from the Balché the age was 440Ma¹. These Late Ordovician-Medium Devonian ages led Bea¹ to suppose that the grabens are not related to the Panafrican molasses but that they would rather represent indications of an extensible process in the limit Early/Late Paleozoic that would have originated the large epicontinental basins such as Tassilis¹⁰ in this part of Gondwana.

Preliminary Rb-Sr isochron age obtained in this work for the Mangbai and Balché volcanism yielded 580±20Ma. This result indicates that the Balché and Mangbai massifs would represent the Panafrican molassic basins.

Considering this result, the grabens from northern Cameroon could be compared with those from the northeast Brasiliano Province¹⁰ (Jaibaras, Cococí, Catolé, Viçosa, Iará) and from the Ribeira Belt¹⁰ (Eleutério, Pouso Alegre, Castro).

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