

Petrogenesis of geological formations in the southeastern West African craton, the case of Koun-Fao in northeastern Côte d'Ivoire: an example of subduction

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Côte d'Ivoire belongs to the West African Craton whose lithological units can be grouped into three major groups: the formations involved in the Pan-African orogeny, the Birimian and Tarkwaian formations to which the study area is associated, and the Liberian and Leonian formations. The Birimian formations are unevenly distributed over the West African craton, with about 35% in Côte d'Ivoire, and consist of volcanic belts and sedimentary basins intruded by granitoids. The Comoé basin, which hosts the study area, is characterized by various geological formations of great economic interest. This study aims to contribute to the improvement of petrogenetic knowledge on these rocks. It is based on petrographic and geochemical data that allowed the identification of the different lithologies and to understand their context of setting. The study area is composed of magmatic rocks such as monzogranites, monzonites, monzosyenites, granodiorites and quartz diorites as well as metasedimentary rocks such as metasandstone, metagreywackes, sericite-chloritoschists, chloritoschists, staurotide chloritoschists and quartzites. The presence of chlorite, epidote and sericite indicates greenschist facies metamorphism. Hydrothermalism is marked by chloritization, sericitization, epidotization and sulfidation. From the geochemical point of view, these magmatic rocks show compositions of monzogranite, syenite, monzosyenite, monzonite and diorite; they are of I type, mostly metaluminous and peralkaline and belong to the shoshonitic series. The metasedimentary rocks are similar to schists, arenites, litharenites and sandstones. Major and trace element analyses show that these formations were emplaced in a subduction environment.