

Evidence of Cretaceous Metamorphism in the External and Flysch Unites (Rif, Morocco)

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Using K/Ar fine fraction data and apatite-zircon fission track completed by the clays X ray diffraction analysis. We focus to characterize the thermochronologic evolution of the flysch nappes and the External Rif unites.

The K/Ar geochronology reveal in the Jurassic samples ages between 132 and 126 My. And in the cretaceous samples the K/Ar ages give away 82 to 78 My.

The Ketama and flyshs Tizirene unites are dates by fission track method: the apatites delivered a Miocene age (13 and 19 My). However, the zircon extracting from the Jurassic of Ketama and cretaceous sediments of Ketama and Tizirene are dated between 505 to 76 My.

In another hand, the thermal characteristics of zircon and apatite fission track and the newly formed mineral deduced by X ray diffraction analysis have allowed fixing the degree of the two cretaceous thermal events of the Ketama unit. Thus, the first does not exceed 200 °C, the second is 300 to 350°C.

In the Tizirene nappe, the oldest zircon fission track ages and the Miocene apatite fission track data indicate that terrains of these nappe have been reheated to more of 120 °C after their deposit and that the maximal temperature did not reach 220°C during their thermal history. They evoke and confirm thus the diagenetic-anchizone character of the cretaceous flysch sediment.

We thus think that these cretaceous metamorphic events who are contemporaries at those recorded in Algerian Tell, marked an important geodynamic history in the evolution of North Africa.

Keywords: metamorphism, fission track, K/Ar dating, External Rif.