

DATING BY FISSION TRACKS OF THE MANIZALES AND CHINCHINÁ FORMATIONS (CALDAS, COLOMBIA)

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In the western central region of Colombia, there are some neogene basins associated to the Romeral Faults System (sinistral, with hundreds of kilometers in length), one of them is the so called Chinchiná-Palestina Basin into which two lithostratigraphic units can be differentiated.

The Manizales Formation is 45 m thick and is constituted by mudrocks, lignites, volcanic conglomerates and sandstones and tuffs; its origin was related with floodplains associated to meandering streams and alluvial fans. The Chinchiná Formation is composed of matrix-supported and clast-supported volcanic conglomerates, attains 8 m in thickness and was originated from alluvial fans.

Until now there is not any absolute dating of these lithostratigraphic units; their ages have been defined by correlation with another formations and by stratigraphic relations with the basement (metamorphic, metasedimentary and metavolcanic rocks from the Late Cretaceous). The Manizales Formation has been correlated with a volcanosedimentary unit, the Irra-Tres Puertas Formation (Late Miocene – Early Pliocene?). Taking into account that Chinchiná Formation rests unconformably on Manizales Formation, its age has been established as Late Pliocene – Early Pleistocene (?).

It is important to define an absolute dating in order to reconstruct the evolution in time of the Chinchiná – Palestina Basin, particularly to correlate it with volcanism related to a subduction between Pacific and South American Plates.

To get this aim a dating by fission tracks in zircons and apatites was carried out. The procedure consisted initially in a sieving to get the 65-75 microns fraction, after the standard method was used and a magnetic separation was made using Franz Magnetic Separator. The next step was counting of 100 to 200 grains of zircons and apatites. The resulting material was sent to a Nuclear Reactor. At present, we are waiting for the irradiated samples to make the counting of fission tracks and calculate the ages employing the programme HeFTy.