

Explosive volcanism registered in the volcano-sedimentary deposits of the North (Antioquia) of the Central Cordillera, Colombia : relative chronology from fission track dating

¹Toro G., ²Poupeau G., ¹Hermelin M. and ¹Schwabe E.; ¹Grupo Geologia Ambiental, Universidade EAFIT, Medellin, Colombia; ²UMR 5025/CNRS, Université Joseph Fourier, Grenoble, France.

Zircons from superficial volcano-sedimentary formations (SVSF) of the northern part (Antioquia) of the Colombian Central Cordillera were dated by fission tracks. Below a regional stratigraphic marker horizon ("stone line"), the tephras present Cretaceous (Jurassic in one occurrence) and/or Plio-Quaternary zircon fission tracks (ZFT) ages. These zircons are attributed respectively to the crystalline basement or to a volcanic origin.

The apparent absence in Antioquia SVSF of Miocene volcanic zircons might result from erosive processes before and during the main (Pliocene) uplift of the Cordillera. Records of such a volcanism are however found on each side of the Central Cordillera in sedimentary formations of the Cauca and Magdalena valleys.

Zircons from the stone line present ZFT ages >0.44 Ma. The overlaying SVSF (1-1.5 m thick) form a uniform cover onto the landscape. They are composed of several units, among which hypersthene-rich and amphibole-rich tephras. The basal tephra unit is characterized by ZFT around 0.35-0.38 Ma; its areal distribution, thickness (which increases southward) and ZFT ages suggest that the source of this material might be among the volcanic centers of the Central Cordillera South of Antioquia. According to ^{14}C ages of wooden materials, the upper 20 cm of the SVSF were deposited during the last 37 ky.