

Chronological and geomorphological evolution of the fluvial terraces in the South Andean flank of Venezuela Andes. Climate and tectonic implications

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In the present study the first exposure ages via "in situ" ^{10}Be of the system of fluvial terraces located in the middle and lower parts of the rivers Pueblo Llano and Santo Domingo (South-Andean flank of the Andes of Mérida, Venezuela) are discussed. The geomorphological observations and the obtained dates allow us to identify a total of 13 river terraces for the last 200 ka. The results show that the process of terraces formation occurs at a frequency ($10^3 - 10^4$ years) higher than a glacial / interglacial cycle ($10^4 - 10^5$ years), being the global climatic changes and their impact on vegetation the amount of sediments available and the sediment transport capacity of the fluvial system, the main driver of fluvial response. In the upper part of the system, in cold and dry conditions, only fill terraces are formed, which are abandoned in dry and wet periods. During this time, the eroded material is taken to the lower part of the system where equilibrium conditions are reached in the fluvial system and lateral abrasion surfaces are created, which are then abandoned in short cold and dry periods. Our results also allow the spatial and temporal reconstruction of the incision rates, observing a temporary variation in the upper part of the system, while in the lower part, the incision rate has been constant and around 1.1 mm/a for the last 70 ka. Taking into account the geological and geomorphological context, this value could be converted in the uplift rate of the south-Andean flank of the Andes of Mérida.