

VOLCANIC CAVES OF COSTA RICA

Andrés Ulloa^{1,2*} & Guillermo Alvarado^{2,3}

1. ZRC SAZU Karst Research Institute, Postojna, Slovenia.
2. Centro de Investigaciones en Ciencias Geológicas, Universidad de Costa Rica
3. Instituto Costarricense de Electricidad

*Contact mail: grupopangeas@gmail.com

Abstract

Costa Rica is a volcanic arc located in a complex geotectonical triple junction, where the Middle American Trench separates Cocos and Caribbean plates, and the Panama Fracture Zone separates the Cocos and Nazca plate. The arrival of the Galapagos tracks and Cocos Ridge to the subduction has produced ceased of volcanism in a 195 km gap within the Talamanca Range and changes in the composition of volcanic rocks from basaltic to andesitic trend. With more than 400 volcanic focus (from relict to active volcanoes) is to be expected that volcanic caves should be abundant in Costa Rica. However, the predominant andesitic composition of the magmas makes difficult the development of traditional lava tubes. In addition, the tropical climate and weathering are factors that influence negatively the conservation of volcanic caves. This work shows for the first time a review of the volcanic caves in Costa Rica, as well as some of their speleogenetic features. There are four lava tubes (pyroducts), two possible volcanic pit caves, four volcanic complex caves (genesis associated to tectonics, erosion, dissolution, collapse and high temperature degasification), four mould caves, three caves developed on pyroclastic rocks and several caves in associated to talus and stream-cut (lateral and wave). Most of the Costa Rican volcanic caves have non-traditional origin. Therefore, the study of these caves will give us clues for understanding the speleogenesis of “non-traditional” volcanic caves.