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Applicant UNESCO Global Geopark

Tungurahua Volcano Geopark, Ecuador

Geographical and geological summary

Standard Map

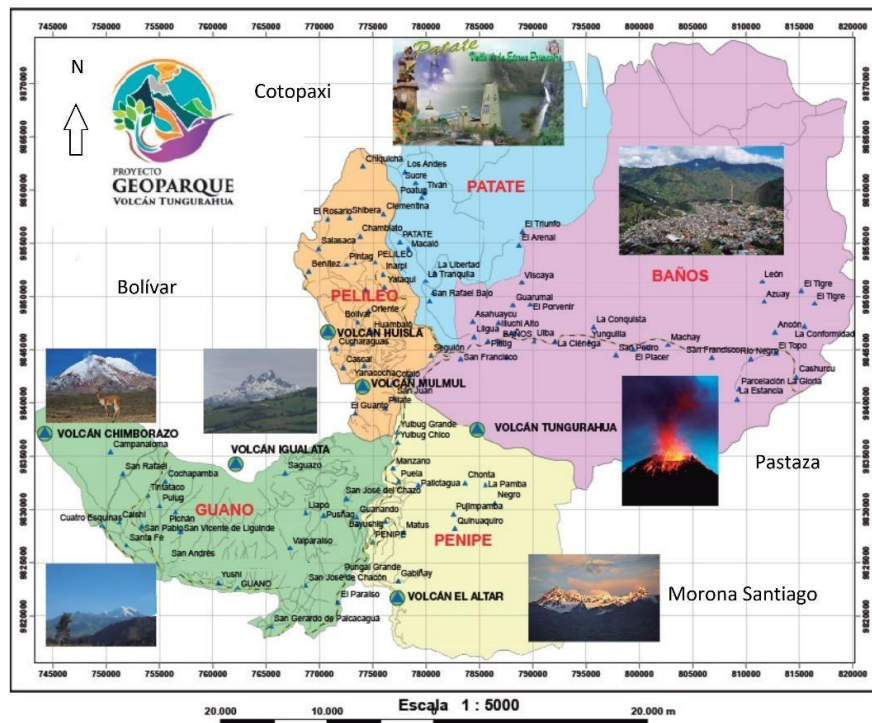


- Aspirig Global UNESCO Geopark

It is located in Ecuador, at Southamerica northwestern area.

Coordinates:

00°55'00 and 01°34'00 S
78°06'51" and 78°31'60"W



1. Physical and human geography summary

Tungurahua Volcano Geopark Project TVGP, (00°55'00 and 01°34'00 S. 78°06'51" and 78°31'60"W), is located in the center of Ecuador, South America. It covers 2,397 square kilometers, including five cantons: Baños de Agua Santa, Patate and Pelileo belonging to Tungurahua province, Guano and Penipe to Chimborazo province. Which are close and around the Tungurahua volcano, at the center of the country. Tungurahua is among the most densely populated in the whole Ecuador (170/km²). Its cantons are: Baños de Agua Santa, Pelileo, Patate (which are part of the project), and Ambato, Quero, Cevallos, Tisaleo, Mocha and Pillaro.

Chimborazo province has a lower density of population (97/km²) although it still represents the ninth most densely populated province in Ecuador. Chimborazo cantons are: Guano, Penipe (which belong to the project), Alausí, Chambo, Chunchi, Colta, Cumandá, Guamote, Pallatanga and Riobamba.

Inside the area project, there are 37 parishes. Most of them are, therefore, rural ones, with the exception made normally of the capital city; even so, the most of the people used to live at the cities than at the rural areas.

2. Geological Summary

The area of the Project Geopark Tungurahua Volcano includes parts of the Cordillera Oriental or Real (Mama Tungurahua itself), of the rich Interandean Valley and of the Cordillera Occidental (Taita Chimborazo). The Andes have probably grown by compression, uplift, intrusion, crustal thickening, and volcanism. Indeed, the active continental margin of Ecuador is still characterized by the subduction of the Nazca Plate below the South American Plate, at a mean rate of 58 mm/ yr. (Trenkamp et al., 2002).

The Cordillera Occidental contains remnants of a Cretaceous island arc overlain by Lower Tertiary volcanic and volcanoclastic rocks. A series of Tertiary intrusions are found along the western flank of this cordillera. Active volcanoes of the Pliocene/Pleistocene age occur along the western and eastern flanks of both the western Cordillera Occidental and the eastern Cordillera Real. The Interandean Valley (35 km wide) separates the Cordillera Occidental from the Cordillera Real.

The Cordillera Real is composed of metamorphic rocks and composite calc-alkaline batholiths of Triassic to Tertiary age. The Oriente, which lies immediately beyond the area of the Geopark Tungurahua Volcano consists of series of Cretaceous back-arc sedimentary basins occurring as flat-lying sequences in the Amazon Basin.

Between the Agoyán bridge and the Agoyán waterfall, there is the site of the Tres Lagunas Granite (Late Triassic-Early Jurassic) (Litherland et al., 1994). This is probably the most unmistakable lithology of the Ecuadorian Andes. Discontinuous outcrops are found also from Colombia to Peru with narrow slivers occurring in the Alao-Paute unit in the Interandean valley (Litherland et al., 1994) and Pujilí fault (Hughes and Piltasig, 2002).

Furthermore exist another geological intrusive body, which is a light grey, coarsegrained porphyritic metagranite, only above Agoyán waterfall, there is a sub-vertical magmatic banding defined locally by differences in grain size and mica content. Litherland et al. (1994) mapped both contacts of the granite as major faults in Baños corridor. There is a well exposed part beneath Agoyán Bridge, a crucial location for the geological history of the Cordillera Real.