MAGM-1: Arcos magmáticos fanerozoicos

Miocene to recent geological evolution of the Lazufre segment in the Andean volcanic arc

José Antonio Naranjo[1], Francisco Hevia[1], Victor Villa[1], Cristian Ramirez[1].
(1) Geología Regional, Servicio Nacional de Geología y Minería

The Lazufre bulging zone (25°16S, 68°29W), with 47 km by 40 km, NE oriented intumescence in the area of the Pleistocene-Holocene Azufre, Cordón del Azufre, Bayo and Lastarria volcanic complexes, has been a major focus of study over the past few decades. Since 1998, InSar interferometric analysis has shown structural deformation, likely a result of an active magmatic and hydrothermal system. Our new mapping provides clues about the causes and possible consequences of this deformation, based on the reinterpretation of important structures or regional lineaments. The bulge is located upon the hanging-wall of Pedernales-Arizaro NE-SW trending Middle Miocene major thrust fault. The footwall of this fault was previously affected by a major explosive activity producing the Los Colorados caldera at ~9.4-9.8 Ma, the source of the homonymous 115-185 km^3 ignimbrite. Conjugated at ~30° to the Pedernales-Arizaro thrust, the Imilac-Salina del Fraile oblique, slightly dextral strike-slip fault, constitutes a major structure in the area, which favored the opening of tectonic spaces, parallel to the Los Colorados caldera-Lazufre bulge alignment. Notably, since the Late Pliocene, volcanism has been concentrated in the Lazufre intumescence, including extrusion of ~120 km^3 total lava volume. The lava accumulation rate estimated since Late Pliocene to the present at Lazufre bulging zone area is approximately one third lower than the rate estimated for the generation of the Los Colorados caldera. The migration of volcanic activity from this Miocene caldera area to the northwestern Lazufre bulging zone could be the consequence of local strain field variations which opened tectonic space that favored magmatic ascent and storage. Este trabajo es parte del programa regular de cartografía del SERNAGEOMIN y contó con el financiamiento del Plan Nacional de Geología-PNG. This work is part of the SERNAGEOMIN's regular mapping program and was supported by the National Plan of Geology-PNG.