Historic activity and new volcanic unrest: Turrialba volcano, Costa Rica.

Gino Gonzalez[1], Raul Mora-Amador[1], Carlos Ramirez[1], Dmitri Rouwet[2], Rolando Mora[1]

[1]Red Sismologica Nacional (RSN), Universidad de Costa Rica, Costa Rica, [2]Istituto Nazionale di Geofisica e Vulcanologia (INGV), sezione di Bologna, Italy

E-mail: ginovolcanico@gmail.com

The historic activity of Turrialba volcano was studied based on traveller's reports and newspapers of the 19th century. In 1864–1866, the volcano entered a period of magmatic eruptions which can be subdivided in two stages: a pre–eruptive and an eruptive stage. Ash fall reached distances of ∼115 km covering an area of 3400 km^2. By means of GIS, we estimated how a similar magmatic eruption as this, could affect the present population and infrastructure, and we concludes that the ash fall in the most populated areas of Costa Rica, this is important as a prevention measure and an analysis of future risk decision making. In 2005, Turrialba volcano increased seismic activity, gas emissions and acid rain, which affected the S, SW and W sectors of the volcano. After more that a century without eruption, on 5 January 2010 phreatic activity resumed, with emissions of non–juvenile ash which reached San José. The ash contained cristobalite and hematite, which are unhealthy. Moreover, the eruption formed a nested crater of ∼125 m x ∼45 m with a NW–SE direction, with emission of SO_2 in state of combustion and incandescence, manifested sporadic ash eruptions. In June 2011, a fumarolic area appeared with temperatures up to ∼530 °C in the NW intracrater. On 11 January 2012, a sulphur flow occurred (length 175 m), produced by the heating of the system which also led to phreatic eruptions on 12 and 18 January 2012. Another crater was formed in the eastern extreme of the NW crater.