

El Reventador: An unusual active volcano in the back-arc of Ecuador

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El Reventador is a stratovolcano of basaltic andesite to andesitic composition, situated in the Cordillera Real approximately 90 km east of Quito, which is one of the most active volcanos of the Ecuadorian Quaternary of Andean Northern Volcanic Zone. El Reventador is located on the basement rocks of Jurassic granitoid intrusions which are covered by volcanoclastic formations (Misahuallá) and Cretaceous metamorphosed sedimentary sequences. The most recent eruptive period after a period of dormancy, El Reventador began with a sub-plinian explosion on the 3rd of November 2002, which has been followed by semi-continuous eruptive behavior that is ongoing. Four phases of lava flow are mapped (A–D) of activity between 2002 and 2009 at El Reventador (Naranjo et al. 2016). Phase E of the eruption at El Reventador began on 9 February 2012 to June 2017. The new phase of the eruption of El Reventado is registered in December 2021.

The current physical morphology of the volcano is about 4km wide horseshoe caldera which is open to the east. From 2002, El Reventador is made of various lava flows, pyroclastic material, ignimbrites, and volcanic breccias. Also, gabbroic nodules, with cumulate texture, were found as cognate inclusions in the lavas. El Reventador is composed of a wide array of basalt to rhyolite, having basaltic andesite and andesite as the most abundant products, with a medium to High-K calc-alkaline affinity. Through the last 20 years of volcanic activity of El Reventador, the lava flows contain fewer mafic minerals and there is an apparent increase in plagioclase and amphibole quantities. Therefore, the volatile budget of the system is a matter of change, which can provide important information about magma sources and the frequency of eruptions. This research document the field observations and petrological and mineralogical differences of various lava flow from El Reventador through the last 20 years of its activity.

References

Naranjo, M.F., Ebmeier, S.K., Vallejo, S., Ramon P., Mothes P., Biggs, J., & Herrera F. (2016). Mapping and measuring lava volumes from 2002 to 2009 at El Reventador Volcano, Ecuador, from field measurements and satellite remote sensing. *Journal of Applied Volcanology*. 5, 8.