

## **Analysis of the Elastic Energy Released and Characterization of the Eruptive Episodes Intensity's during 2014-2015 at El Reventador Volcano, Ecuador**

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**Abstract :** The elastic energy released through Strombolian explosions has been quite studied, detailing various processes, sources, and precursory events at several volcanoes. We realized an analysis based on the relative partitioning of the elastic energy radiated into the atmosphere and ground by Strombolian-type explosions recorded at El Reventador volcano, using infrasound and seismic signals at high and moderate seismicity episodes during intense eruptive stages of explosive and effusive activity. Our results show that considerable values of Volcano Acoustic-Seismic Ratio (VASR or  $\eta$ ) are obtained at high seismicity stages. VASR is a physical diagnostic of explosive degassing that we used to compare eruption mechanisms at El Reventador volcano for two datasets of explosions recorded at a Broad-Band BB seismic and infrasonic station located at ~5 kilometers from the vent. We conclude that the acoustic energy EA released during explosive activity (VASR  $\eta = 0.47$ , standard deviation  $\sigma = 0.8$ ) is higher than the EA released during effusive activity; therefore, producing the highest values of  $\eta$ . Furthermore, we realized the analysis and characterization of the eruptive intensity for two episodes at high seismicity, calculating a  $\eta$  three-time higher for an episode of effusive activity with an occasional explosive component ( $\eta = 0.32$ , and  $\sigma = 0.42$ ), than a  $\eta$  for an episode of only effusive activity ( $\eta = 0.11$ , and  $\sigma = 0.18$ ), but more energetic.

**Keywords :** effusive, explosion quakes, explosive, Strombolian, VASR

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