

Very Long Period Seismic Signals at Cotopaxi Volcano-Ecuador.

*Gabriela Arias¹

1. National Polytechnic School Ecuador

This work identifies seismic events with very long period (VLP) content that occurred at Cotopaxi volcano (Ecuador) between June 2010 and October 2014. In order to do this, it was necessary to study the spectral content of the signals by decomposing them into their constituent frequencies, done using a discrete Fourier transform.

The existence of a single family, containing half of the recorded VLP events, was recognized by performing cross-correlations between them. The remaining events could not be grouped into families due to the small signal amplitudes, having been considerably influenced by microseismicity. No other patterns of similarity were found between these events.

Each signal was then integrated and filtered to locate the source using P wave polarization analysis, specifically the particle motion method.

Finally, the possible source mechanism of the event family was identified through the comparison and cross correlation with those studied in previous works at Cotopaxi volcano. The proposed mechanism would be that of a crack model, located to the north of the crater at a depth between 2 and 4 km. It is proposed that this crack generated the recorded events between 2006 and 2014 and that it is independent of the resonator which was activated between 2002 and 2014. Both systems would represent a region filled with magmatic fluids that, depending on its volume, suggest a possible renewal of volcanic activity.

Keywords: VLP seismicity, particle motion, source mechanism