



Cities on Volcanoes 9  
November 20-25, 2016  
Puerto Varas, Chile

*'Understanding volcanoes and society: the key for risk mitigation'*



## **Searching for correlations between variations of spectral and dynamical parameters and changes in seismic activity of Copahue volcano during the eruption of December 22, 2012**

Ivan F. Melchor<sup>1-2</sup>, Verónica Montenegro<sup>1-2</sup>, Javier Almendros<sup>3</sup>, Alberto T. Caselli<sup>1-2</sup>

<sup>1</sup>CONICET. Instituto de Investigación en Paleobiología y Geología.

<sup>2</sup>Laboratorio de Seguimiento de Volcanes Activos. Sede Alto Valle y Valle Medio. Universidad Nacional de Río Negro.

<sup>3</sup>Instituto Andaluz de Geofísica. Universidad de Granada.

Keywords: Copahue volcano, volcanic seismicity, volcanic tremor, spectral analysis, dynamical analysis

Although the Copahue volcano (Chile-Argentina border) is one of the most active in the southern Andes (37°85' S, 71°15' W; 2997 m), its seismic activity literature is not abundant. During the last 250 years this volcano has experienced at least 12 low intensity phreatic and phreatomagmatic--magmatic eruption. The last one occurred on 22nd December 2012 (VEI 2) vaporizing the crater lake waters and the hydrothermal system in a few minutes. A three component short--period seismic station located at 9 km of the crater recorded the seismic activity. These seismic signals can provide information on movements of magma inside the lithosphere. Particularly, we will focus on seismic noise and volcanic tremor because they can capture rapid dynamical changes in near real time. Hence, we are analyzing the variations of amplitude, and spectral and dynamical parameters of the whole tremor signal recorded before, during and after strombolian-eruption of Copahue volcano. In attempting to investigate changes in the eruptive style of the volcano, we will aim on searching for correlations of spectral and dynamical variations parameters with changes in temporal distribution of different seismic events present during this period. A better knowledge of the past volcanic behavior during eruptions can constitute an important step to establish a preliminary early warning system for eruptions forecasting.