



Volcanic tremor associated with the geothermal activity of Copahue volcano, Southern Andes region, Argentina

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In this presentation we describe the first results of a seismic field survey carried out at Copahue Volcano, Southern Andes, Argentina, with a dense, short aperture seismic antenna. The aim of this experiment was to record the background seismic activity of this volcanic area and to track the possible source of volcanic tremor. Copahue volcano is an active volcano characterized by few phreatic eruptions in the last 20 years. We used the Zero Lag Cross Correlation technique to measure the wave-field properties (back-azimuth and apparent slowness) of the incoming wave-front to the arrays. The data set analyzed is composed by several volcano-tectonic (VT) earthquakes and the back-ground seismic noise. For VT earthquakes we selected the 6-12 Hz frequency band for the analysis. For the background noise we choose two frequency bands, the first centred at 2 Hz and the second at 4.5 Hz. We were able to locate the source of the VT activity using S-P time, with the array parameters, by a simple ray tracing procedure. These VT events were located mainly in a border of the Agrio Lake caldera, at the South-East of the Copahue volcano, in a depth interval of 1-3 km below the surface. The background noise shown the presence of many well correlated arrivals to the array in the lowest frequency band, superimposed to the uncorrelated background seismic noise. Array solutions for correlated noise show predominant slowness vector components pointing to a well know and exploited geothermal field of Las Maquinitas and Copahue village, located at about 6 km far from the array to the north. We interpret this coherent signal as a volcanic tremor generated by the activity of the geothermal field.