Geophysical Research Abstracts
Vol. 14, EGU2012-9359, 2012
EGU General Assembly 2012

Long-Period seismic events at Ubinas Volcano (Peru): their implications and potentiality as monitoring tool

D. Zandomeneghi (1), A. Inza (2), J-P. Metaxian (3), and O. Macedo (2)

(1) International Centre for Theoretical Physics - ICTP , Italy , (2) Instituto Geofísico del Perú - IGP, Peru , (3) Institut de Recherche pour le Développment - IRD, France

Ubinas volcano (Southern Peru) is an active andesitic stratovolcano, located 75 km East of Arequipa City, with an average occurrence of 6-7 eruptions per century and persistent fumarolic and phreatic activity. The most recent eruption, accompanied by explosions and by the extrusion of a lava dome, started on March 2006 with an increase of seismicity and observed fumarole occurrence followed in April by more intense explosions, recorded until May 2009.

To monitor the volcanic activity, the Geophysical Institute of Peru and the Institut de Recherche pour le Développment (France), built up a seismic network around the volcano, installing 4 permanent stations and deploying 8 supplementary temporary broadband seismometers. In addition, in the period May to July 2009, a seismic experiment was carried out on the volcano flanks with 2 cross-shaped dense antennas with broadband seismometers.

As the seismic activity was characterized by recurring low-frequency waveforms, we identify their pattern of occurrence through waveform cross-correlation technique, with respect to major eruptive phases and other observations (as volcano ground deformation from tiltmeters, volcanic product composition, etc). Once established their likely association with the eruptive sequence, we utilize both local network and dense-array data and analyze their location, changes in location, spectral content variations and possible physical explanation. The final aim is to introduce this kind of analysis as quantitative tool to understand ongoing eruptive phases at andesitic volcanoes and possibly to forecast magma/fluid significant movements.