

# **Geochemical survey of hot and cold waters around the Misti volcano, Peru**

## **1 V. Cruz (1) and P. Masias (2)**

1. Instituto Geológico Minero y Metalúrgico INGEMMET, Av. Canadá N° 1470, San Borja, Lima 41, Peru, Apartado 889 (vcruz@ingemmet.gob.pe)
2. Universidad Nacional de San Agustín (UNSA), Av. Independencia S/N, Arequipa.

The summit of Misti volcano (5822 m.s.n.m.) is located at 17 km from the downtown of Arequipa city (~1000000 inhabitants), the second largest and important city of Peru. The piedmont extends to the vicinity of the city and includes the most recent volcanic products of its activity (Sub-plinian eruption ~340 BC - 200 AD). Its actual activity is limited to fumarolic emissions at the summit.

- 2 The hazards related to this volcano are tephra falls, pyroclastic flows and surges that would reach 13 km far from the crater and according to the crater geometry it is probable that the direction of future pyroclastic flows is to the south reaching the suburbs of the city. For which, the Misti appears as one of the highest priority in volcano monitoring in southern Peru.**
- 3 The purpose of this survey has been (1) in a first step to evidence the geochemical characteristics of the hot and cold waters located around the Misti volcano in order to define (2) in a second step an appropriate fluid geochemical monitoring program.**
- 4 (1) The analysis of the waters collected around the volcano displays evident geochemical trends that can be interpreted as mixing processes between fresh meteoric waters, magmatic fluids, sometimes interacting with a deep chloride reservoir. In fact, we can distinguish three types of waters: a) Earth-alkalinechloride-sulfate, b) Alkalinechloride-sulfate and c) Alkalinebicarbonate-sulfate.**
- 5 (2) Since 1999, we began a geochemical water monitoring program of one hot spring “Charcani V” is located to 6 Km of the crater actual between 3250 and 3550 m of altitude, With the purpose of observing the changes in the chemical composition.**
- 6 According to the results obtained during the period**