

Preparation of Updated Volcanic Hazards Map for El Misti Volcano, Peru

J. Mariño (1); M. Rivera (1); J-C Thouret (2); G. Salas (3); L. Cacya (1); C. Siebe (4); R. Tilling (5)

(1) Instituto Geológico Minero y Metalúrgico del Perú (INGEMMET), Av. Canadá 1470, Lima 41, Perú. jmarino@ingemmet.gob.pe

(2) UMR 6524-CNRS Laboratoire Magmas et Volcans, Université Blaise-Pascal, 5 rue Kessler, 63038 Clermont Ferrand cedex, France.

(3) Universidad Nacional de San Agustín de Arequipa, Escuela de Geología, Av. Independencia s/n, Arequipa, Perú.

(4) Departamento de Vulcanología, Instituto de Geofísica, UNAM, 04510 México, D.F., México.

(5) Multinational Andean Project: Geoscience for Andean Communities. Los Altos Hills, CA 94022, U.S.A.

The city centre of Arequipa -second largest city in Peru (about one million people)- is located 17 km away from Misti Volcano (5822 a.s.l.) and about 3.5 km vertically below it. During the last 50,000 years, vulcanian and sub-plinian eruptions at Misti have produced about ten sizeable piroclastic flows and twenty tephra falls (Thouret et al., 2001). However, numerous ash falls, pyroclastic flows, and lahars from prehistoric subplinian eruptions, as recent as 2,000 years ago, have affected the region of Arequipa around the volcano. Misti's only well-recorded historical activity consisted of small eruptions during the mid-15th century (Chávez, 1992). The Chili River and the main ravines (Pastores, San Lázaro, Huarangal, Huarangueros, Agua Salada) drain the W, S, and SE flanks of the volcanic edifice and cut through Arequipa city. Channeled through them, numerous pyroclastic flows and lahars have reached 12 to 25 km distance from source. Should El Misti Volcano awake in the future the volcanic and hydrological hazards associated with renewed eruptive activity and rainstorms would pose a serious threat to the people, infrastructures, and economy of Arequipa and its environs. Even though a number of volcano hazards maps and assessments have been made in recent years, these have not been entirely satisfactory due to the required detail or appropriate scale for use by decision makers in the preparation of contingency plans and risk-reduction measures. In recognition of El Misti's enormous potential volcanic threat, the national geological agency of Peru -Instituto Geológico Minero y Metalúrgico del Perú (INGEMMET)- recently has initiated a project to make a detailed geological map and updated volcanic hazard map of El Misti Volcano. This new map will be completed in December 2006.