

Assessment of volcanic hazards at Ubinas, Peru

Marco Rivera⁽¹⁾, Jersy Mariño⁽¹⁾, Vicentina Cruz⁽¹⁾, Lourdes Cacya⁽¹⁾,
Jean-Claude Thouret⁽²⁾

(1). INGEMMET, Dirección de Geología Ambiental. Av. Canadá 1470, San Borja, Lima - Peru
mrivera@ingemmet.gob.pe

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

Ubinas (16° 22' S, 70° 54' W; 5675 m asl.) is known as the most active volcano in southern Peru during historical times, with 23 episodes of high fumarolic activity since AD 1550. Near the Ubinas volcano located around 6 towns with approximately 5000 inhabitants.

Since August 2005, the Ubinas volcano has shown a gradual increase in fumarolic activity similar to the last crisis in 1996-97. On 27 March 2006, fine ash fell on the hamlet of Querapi, which is located 4 km S of the vent only. Between 28 March and 13 April 2006, degassing was relatively strong. On 14 April (6:25 pm), an explosive event triggered a 800 m-high column of gas with some ash, which fell on Querapi and on the town of the Ubinas district, affecting ca. 3,000 people, cattle, and cultivated lands. On 20 April (10:50 am), a column of gas as high as 3 km above the vent produced ash that was dispersed a few km west of the volcano. Deposits of a very small volume erupted before 23 April consisted in lithic ash 6 cm thick on the floor of the summit caldera. Also inside the caldera are distinguished hydrothermally-altered blocks that measure up to 70 cm in diameter, probably emitted during April 20. These characteristics suggest that the activity of Ubinas volcano was *phreatic* before 23 April 2006. The April 27 (6:30 pm) an explosive eruption was reported that emitted ballistic incandescent blocks that ascended beyond 800 m high above the caldera rim. These blocks are scoria of andesite composition, which might suggest the beginning of a vulcanian-type eruption similar to the one exhibited by Ubinas in AD 1677 (Simkin & Siebert, 1994) depositing a grey scoria flow of 1 m of thickness, to 1 km to the west of the crater.

Based on tephra having been erupted until 29 April 2006 and on historical deposits, we suggest that the Ubinas volcano may produce the following deposits in the upcoming week: 1) Tephra-fall, consisting in ash, lapilli, and ballistic bombs. 2) scoria and ash-flow deposits, and; 3) strombolian deposits if the newly erupted andesite (56.7-57.2 % SiO₂) turns more mafic yet.

References

Simkin T. and Siebert L., (1994) - Volcanoes of the World - A Regional Directory, Gazetteer and chronology of volcanism during the last 10,000 year. Smithsonian Institution, Global Volcanism Program, Washington DC.