



Cities on Volcanoes 9

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*'Understanding volcanoes and society: the key for risk mitigation'*

## **The Andean largest disaster induced by the AD 1600 Huaynaputina eruption. Forgotten communities and major challenges ahead: the 'HUAYRURO' project**

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The February-March 1600 Huaynaputina VEI 6 eruption produced a volume of tephra that has been estimated to be four times (Thouret et al., 2002) to seven times (De Silva and Zielinsky, 1998) the volume erupted by the AD 79 Vesuvius. The AD 1600 eruption induced the largest climatic cooling on Earth over the past 500 years (Stoffel et al., 2015). Despite its magnitude and global impact, the AD 1600 Huaynaputina eruption has not been the focus of in-depth research projects so far. We launched a multidisciplinary, international project termed "HUAYRURO" in October 2015 on the south and south-west flanks of the Huaynaputina volcano. Tephro-stratigraphic studies, georadar imaging, combined with magnetic investigation and surficial archaeological observations, have been carried out in three different sites: Coporaque, Calicanto and Chimpapampa, 12 km SW, 14.5 km south and 16 km south of the vent, respectively. A combination of tephro-stratigraphy and georadar imaging clearly revealed the destructive power of pyroclastic density currents. Surficial archaeological findings include both colonial and Incaic fragments of ceramics. Another aim of this project is to gather scientists working on climatic impacts of catastrophic eruptions at both regional and continental scale using several proxies (ice cores, tree rings and speleothems). The HUAYRURO project includes eight tasks as follows: 1) chronicles investigation, 2) sub-surface geophysical prospection, 3) tephro-stratigraphy, 4) archaeology, 5) paleoclimatology, 6) education and public awareness, 7) museography, and 8) integration of all studies in a movie and a book. Ultimately, the HUAYRURO project and the Regional government of Moquegua will promote the construction of an archaeological and volcanological "on site museum" to be open to public in 2022. Such museum is planned to display the outcomes of the long-term scientific investigation with emphasis on both local and global consequences of the AD 1600 Huaynaputina eruption.