8th International Symposium
on Andean Geodynamics
(ISAG)

Twenty years of the Tungurahua Volcano Observatory during the 1999-2016 eruptive period

P. Ramon[1], P. Mothes[1], M. Hall[1], H. Yepes[1]

[1]Instituto Geofísico, Escuela Politécnica Nacional (IG-EPN)

The last eruptive period of the Tungurahua volcano began in October 1999, the Geophysical Institute of the National Polytechnic School (IG-EPN) since then decided to install and operate a local Observatory (OVT) in order to maintain a close surveillance of the activity of the volcano with the presence of its scientists, to serve as the basis of the monitoring system that had already been installed in the volcano, to implement an Early Warning System of the Volcano (EWS) and to be the base of the investigations that were carried out on the activity of the volcano, among other purposes. Until June 2006 the activity of the volcano was manifested with 5 different eruptive episodes, where the major effects were significant ash falls and the presence of mudflows. With this type of activity, it was evident to the IG that an Early Warning System (EWS) of the volcano that would allow for Disaster Risk Reduction (DRR), the OVT that was in charge of the monitoring and evaluation of the threat, should be available. it was designated as the base and beginning of said system and from it actions were taken for its implementation, the pertinent authorities and communities were trained about their participation and role within it. At the same time, thanks to an initiative of the OVT and Civil Defense personnel, the creation of the Tungurahua Observers (Vigías) Network began, a group of volunteers settled in the foothills of the volcano, who took charge of the visual monitoring of the volcano, sending and receiving information about the activity of the volcano, communicating the information to their communities, and being an important part of the EWS. Their participation in the EWS was very important and definitely favored the safety of people in their communities.

In July and August of 2006, the largest eruptions of the period occurred, with the generation of pyroclastic flows, lava flows, ash falls and associated lahars. The EWS was already constituted and operational, demonstrating its efficiency during these events, since there were virtually no victims, except the death of 5 people who died after not following the EWS recommendations. On the other hand, the participation of the Vigías group was critical, since they took the ecessary actions so that the people of their communities stayed out of the impact zones, without being affected. From 2008 to 2016, 19 eruptive episodes occurred with the generation of pyroclastic flows, lava flows, ash falls and associated lahars; timely warnings made by the OVT within the SAT, allowed taking the corresponding actions without registering a single victim during those eruptions.

At the end of these 20 years of the OVT operation there is a positive balance of its actions. It was possible to implement a functional SAT whose contribution to Disaster Risk Reduction (DRR) was decisive during the eruptive process of the volcano. The conformation of the Vigías group and its participation within the EWS has been very important for the objectives of RDD, which has aroused the interest of other similar institutions in the international arena. We hope that our experience will serve as a contribution to the mitigation of risk in other similar situations.