Cities on Volcanoes 9
November 20-25, 2016
Puerto Varas, Chile
'Understanding volcanoes and society: the key for risk mitigation'

Copahue Volcano: Superficial Geodynamic And Geomorphological Evolution Hazards

Rovere Elizabeth[1], Claudia Vaamonde[2], Violante Roberto[3]

[1] SEGEMAR Dirección de Geología Ambiental y Aplicada -

[2]Servicio de Hidrografía Naval.

[3]GEVAS RED ARGENTINA, Asociación Civil sin fines de lucro.

Keywords: Copahue volcano – Del Agrio lake – Geomorphology - Frontier - Hazards

Copahue volcano is bordering Argentina and Chile. The active crater is capped by a glacier, breached eastward to Argentina. The Agrio and Dulce streams have their source from the summit melting glacier and water tables, during periods of inactivity underground springs are formed by runoff of the acidic crater lake. Geomorphological changes over the last 16 years occurred due to the continuous and increasing pyroclastic deposits formed by the activity of Copahue volcano. In addition to the accumulation of tephra, other geodynamic factors have been modifying the geomorphology of the slopes and the stream waters outlet, reflected in the estuary formed in the Caldera Del Agrio lake. These factors are mainly natural (environment, climate and tectonic) and anthropogenic (trails, buildings, ski tracks and paths for animals and mountain resort developments). Through Time-series of satellite images, Radar images SRTM, Landsat TM, Landsat ETM + of RGB bands 742 and Landsat 8 were combined. Mudflows run for the creeks and drain off into the Del Agrio caldera lake. Recently, pH readings of water samples were performed at the mouth of the Dulce and Agrio streams and along the Del Agrio lakeshore. Both streams flow into the lake in different places (one in the north and the other in the south of Caviahue village). Recent measurements of the water properties in both streams show very different values (5.60 and 3.29). These values are similar to those measured in 2010. These analysis and regular measurements through images and field work control, suggest that the water circulation is restricted and, if volcanic activity continues, the lake will probably be divided into North and South branches and two sub-limnic ecosystems. Due to the high level of vulnerability of the town of Caviahue, research, measurements and periodically monitoring of the various dynamic factors mentioned are needed.