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

Post-eruptive crustal deformation at Cordon-Caulle (2012-2016) revealed with DInSAR

Pablo Andrés Euillades, Leonardo Daniel Euillades, Mauro Hugo Blanco, María Laura Velez, Pablo Grosse, Gustavo Javier Sosa

CONICET & Instituto CEDIAC, Facultad de Ingeniería, Universidad Nacional de Cuyo Instituto IDEAN UBA-CONICET, Departamento de Geología, Facultad de Ciencias Exactas, Universidad de Buenos Aires CONICET & Fundación Miguel Lillo

Keywords: Cordon Caulle, DInSAR, 2011-2012 Eruption, post-eruptive deformation

The 2011-2012 eruption of the Puyehue-Cordón Caulle volcanic complex, located in the Southern Andes (Chile), was associated with a crustal deformation pattern of subsidence reaching ~130 cm (line-of-sight projected), centered in the Cordillera Nevada Caldera, at the NW end of the complex. We here report post-eruptive inflation detected by DInSAR processing of COSMO-Skymed (CSK) scenes between November 2012 and March 2014, and ALOS2/PALSAR scenes between March 2015 and May 2016. Computed deformation time-series, via Small Baseline Subsets (SBAS) processing of the CSK dataset, show an almost linear inflation with a duration of 1.5 years at a mean velocity of about 20 cm/year. Additionally, differential interferograms of ALOS2/PALSAR scenes show a possible uplift event of about 2.5 cm between March and May 2016. Inverse modeling of the results locate the source at -40.49º latitude, -72.27º longitude and a depth of between 9 and 10 km, compatible with determinations based in petrologic and geochemical analyses of the erupted lavas presented in previous works.