

Monitoring important insights on Villarrica volcano March 3, 2015 eruption

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Villarrica volcano eruption on March 3, 2015 is the first eruption of this volcano which has been monitored with a denser monitoring network than ever, comprised by 7 seismic, 5 GNSS, 2 tiltmeters, 2 DOAS, 1 Multi-Gas and 1 infrasonic stations, as well as 3 IP cameras. Long period events and tremor was the most characteristic seismicity preceding the eruption with an intense increase in its energy one month before it, as well as some spectral changes and recording of short outstanding episodes of tremor. As eruption was approaching the number and intensity of infrasound events were increasing. VT seismicity and deformation did not show a high rate of occurrence before eruption but after it, suggesting a replenishment of magmatic reservoir. Stress tensor determination using focal mechanism of VT earthquakes showed a 90° rotation with respect to regional stress supporting this idea. Also measures or relation CO₂/SO₂ showed increased values before eruption (Aiuppa et al, 2015) as well as seismic noise analysis. Locations of LP and VT events showed some relation with magmatic chambers suggested by petrological studies. Here we make a general analysis of these data which have enriched our knowledge on signs for a new eruption in the future.