



Volcano monitoring with an infrared camera: first insights from Villarrica Volcano

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This contribution focuses on the first trials of the, almost 24/7 monitoring of Villarrica volcano with an infrared camera. Results must be compared with other SO₂ remote sensing instruments such as DOAS and UV-camera, for the “day” measurements.

Infrared remote sensing of volcanic emissions is a fast and safe method to obtain gas abundances in volcanic plumes, in particular when the access to the vent is difficult, during volcanic crisis and at night time. In recent years, a ground-based infrared camera (Nicair) has been developed by Nicarnica Aviation, which quantifies SO₂ and ash on volcanic plumes, based on the infrared radiance at specific wavelengths through the application of filters.

Three Nicair1 (first model) have been acquired by the Geological Survey of Chile in order to study degassing of active volcanoes. Several trials with the instruments have been performed in northern Chilean volcanoes, and have proven that the intervals of retrieved SO₂ concentration and fluxes are as expected. Measurements were also performed at Villarrica volcano, and a location to install a “fixed” camera, at 8km from the crater, was discovered here.

It is a coffee house with electrical power, wifi network, polite and committed owners and a full view of the volcano summit. The first measurements are being made and processed in order to have full day and week of SO₂ emissions, analyze data transfer and storage, improve the remote control of the instrument and notebook in case of breakdown, web-cam/GoPro support, and the goal of the project: which is to implement a fixed station to monitor and study the Villarrica volcano with a Nicair1 integrating and comparing these results with other remote sensing instruments.

This works also looks upon the strengthen of bonds with the community by developing teaching material and giving talks to communicate volcanic hazards and other geoscience topics to the people who live “just around the corner” from one of the most active volcanoes in Chile.