



Using seismic and tilt measurements simultaneously to forecast eruptions of silicic volcanoes

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Independent interpretations of seismic swarms and tilt measurement on active silicic volcanoes have been successfully used to assess their eruption potential. Swarms of low-frequency seismic events have been associated with brittle failure or stick-slip motion of magma during ascent and have been used to estimate qualitatively the magma ascent rate which typically accelerates before lava dome collapses. Tilt signals are extremely sensitive indicators for volcano deformation and have been often modelled and interpreted as inflation or deflation of a shallow magma reservoir. Here we show that tilt in many cases does not represent inflation or deflation but is directly linked to magma ascent rate. This talk aims to combine these two independent observations, seismicity and deformation, to design and implement a forecasting tool that can be deployed in volcano observatories on an operational level.