



Stress transfer in the Lazufre volcanic area, central Andes

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We generated a 13-year InSAR time series from 1995-2008 to investigate the spatiotemporal characteristics of two neighboring volcano's deformations for the Lazufre volcanic area, Central Andes. The data reveal two scales of uplift initiating during the observation time: (1) a large-scale uplift started in 1997 that shows an increase of the mean uplift rate of up to 3.2 cm/yr, now affecting several eruption centers situated in an area larger than 1800 km² and (2) a small-scale uplift located at Lastarria volcano, which is the only volcano to show strong fumarolic activity in decades, with most of the clear deformation not observed before 2000. Both the large and small inflation signals can be explained by pressurized magmatic or hydrothermal sources located at about 13 km and 1 km deep, respectively. To test a possible relationship, we use numerical modeling and estimate that the deep inflating source increased the tensile stress close to the shallow source during the period preceding the first sign of deformation observed at Lastarria. We discuss how the deep inflating source may have disturbed the shallow one and triggered the observed deformation at Lastarria.