



Active deformation of the eastern Trans-Mexican Volcanic Belt based on InSAR persistent scatterers

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We present first results of PS-InSAR (Persistent Scatterer by Synthetic Aperture Radar Interferometry) time-series over the eastern sector of the Trans-Mexican Volcanic Belt including several volcanic systems. The study area covers the Los Humeros and Acoculco geothermal fields. Los Humeros is one of the largest geothermal fields in Mexico connected to a caldera system that has been active from 0.46 Ma until recent. We performed PS time series analysis using the StaMPS method on Sentinel-1 images acquired between October 2016 and December 2017 to resolve ongoing ground deformation. The Sentinel-1 satellite provides regular observations with fine temporal resolution over large areas, which facilitates detection of satellite line-of-sight surface movements important for monitoring geothermal exploration activities. Generally, the interferograms are of good quality with high coherence even on long time scales. Most of the study area is located at high altitudes (above 2000 m) with strong relief. As a result, the interferograms seem to be influenced by topography-related atmospheric phase delays, identified by the high correlation between phase and elevation. We correct the topography-related atmospheric phase delays and compare the InSAR estimated displacements with the available GPS data. Our goal is to obtain the deformation associated with ongoing geothermal activities over the Los Humeros geothermal field and other tectonic processes that might be present in the area. Here we present our first results, which will be further extended to estimate volume changes related with the geothermal exploration by inversion methods.