



The Effects of Tectonic Settings on the Evolution and Stability of the Teide-Pico Viejo Stratovolcano, Tenerife

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Regional and local tectonics significantly influence the location, evolution, morphology and ultimately, the stability of a volcanic edifice. The aim of the study is to assess such effect on the stability of the Teide-Pico Viejo complex, in central Tenerife. The significance of this study is accentuated by an increase of seismic activity in the area over the last two years. The study combines field measurements and observations, GIS techniques and finite element modelling, together with existing geological data.

Regional tectonics in Tenerife are rather well known yet the intracaldera local tectonics and the evolution of the central zone are still not fully understood. Plio-quaternary central volcanism in Tenerife is characterised by the cyclic construction and destruction of petrologically evolved volcanic edifices, of which Teide-Pico Viejo is the fourth cycle. All the cycles have had vertical and lateral collapses, of a range of magnitudes, associated to them. The removal of material by these two common processes may have caused variations on local stress fields.

In order to carry out a detailed landslide hazard assessment at the twin stratovolcano Teide-Pico Viejo it is essential to understand past and present tectonic regimes. Numerical models prove useful in aiding to constrain a conceptual model of the evolution of stress fields in the central area of Tenerife. Our initial results from numerical models support field observations, showing how local tectonics, together with pre-existing morphology, have determined the location of the Teide-Pico Viejo stratovolcano and how they affect its morphology and stability.