



A slippery mechanical boundary at the western flank of Cumbre Vieja volcano

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Joint interpretation of InSAR ground deformation using elastic modelling and a new gravimetric structural model suggests the existence of a reduce strength layer that releases the gravitational stresses of the Cumbre Vieja volcano. Ground deformation determined by InSAR shows an elongated subsidence area covering the western flank, mostly of the motion should be vertical. Non-linear inversion for a planar fault model of the LOS deformation shows a minimum in the misfit function that is congruent with a set of model parameters drawing a subhorizontal fault system at 3-2 km depth with a maximum of 12 mm/yr of downslope slip motion at depth. Analysis of the gravimetric inverse model suggests coherently a horizontal to gentle sloping zone of relative lower density within the same range of depths and strike orientation. Both results are coincident in showing a possible structural weak layer or fault system at these depths. Geometric prolongation to surface is not well resolved neither with the ground deformation modelling nor the three dimensional spatial resolution of our gravimetric model. Further investigations should be carried out to better define this geological structure.