



A feedback process between recurring faulting on the western flank of Mt. Etna and magma intrusions in the shallow crust

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In this study we propose an integrated analysis of geodetic and seismological data in order to investigate the sensitivity of faulting on the western flank of Mt. Etna to magma intrusion within the shallow crust. We compute the strain parameters in this sector of the volcano by the inversion of the EDM distances, measured during the period 1980-2004. The presence of a main NE-SW fault, 6-8 km length, of which no surface evidence exists, has also been investigated by a careful analysis of the most recent strong seismic swarm recorded on April 20-24, 2001, considered a forerunner of the July-August 2001 eruption. Ground deformations and seismicity fault plane solutions, indicate that the observed right lateral ruptures along this tectonic lineament represents the tectonic response of the medium to major stresses applied by the magma push along the S-SE Rift, as also confirmed by Coulomb stress change model analysis.