



Fast deformation processes at Mt. Etna related to dike injection during the 2001 and 2002-2003 flank eruptions

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We investigate the seismic and deformation patterns observed at Mt. Etna during a period which includes the most recent eruptive flank activity, the 2001 and 2002-2003 eruptions. Thanks to the good stations coverage and new tomographic images with a better detail of the shallow layers more precise hypocentral locations can be obtained.

In this analysis we re-calculate 3D hypocentral locations for the two eruptions and for the intra - eruptive period, by using three new more detailed velocity models. Moreover, relative fault plane solutions and the seismogenic strain tensors have been also investigated, focusing our attention on the time interval between the two eruptions. Then, we compared the results with those already published for the 2001 (Musumeci et al., 2004) and 2002-2003 (Barberi et al., 2004) volcanic events and with ground deformation patterns for the same period. This in order to better understand the relation between seismicity, ground deformation and strain patterns during the pre-eruptive 2002-2003 stage and during the eruption dikes emplacement.

Ground deformation data together with the computed seismogenic strain tensor evidence that a continuous magma refilling has occurred since the beginnings of 2002 and that a deeper magma intrusion, occurred few months before the onset of the October 26, 2002 eruption, could have caused an overpressure in the shallow magmatic reservoir.