GROUND DEFORMATIONS PRODUCED BY THE SEISMIC EVENT OF SEPTEMBER 22ND 2002, ON THE NORTH-EASTERN FLANK OF MT. ETNA VOLCANO

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On 22 September 2002 an M=3.6 earthquake struck the northeastern part of the Mt. Etna network, on the westernmost part of the Pernicana fault. In order to measure the ground deformations associated to this event, a specific GPS survey was carried out on two small sub-networks, aimed at monitoring the eastern part of the Pernicana fault (ȘRocca CampanaȚ and ȘRocca PignatelloȚ), and on the northeastern part of the geodetic monitoring network of Mt. Etna. The comparison between the results of this survey and those of the previous one, carried out on the whole network on July 2002, shows a ground deformation pattern that affects the north-eastern flank of the volcano. The pattern is clearly driven by the Pernicana fault; indeed, deformations of about 2-3 cm affect all stations lying on the southern side of the fault on Rocca Pignatello and Rocca Campana networks. Significant displacements, up to 2 cm, have been detected also on the upper part of the NE Rift and on the Summit Craters area, while the displacements pattern decrease at lower altitude, suggesting that the dislocation did not further continue towards East along the Pernicana fault. Data inversions have been attempted, in order to model the ground deformation source and its relationship with the volcano plumbing system.