



Can the magnitude 6.8, Southern Greece, earthquake trigger seismicity at Mt. Etna and cause a perturbation in its plumbing system?

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On January 8, 2006 at 11:34 (UTC) a strong earthquake of magnitude 6.8 occurred in Southern Greece. Immediately after the passage of the above mainshock surface waves, at 13:19 (UTC), a seismic swarm of 51 events occurred on the southern flank of Mt. Etna volcano. Concurrently, an abrupt increasing of volcanic tremor was observed at all stations of the permanent seismic network, lasted several days, followed by a strong explosion-quake occurred on January 12, 2006 (13:05 UTC). It is worth stressing that this event is one of the most energetic of the last decade. Triggering of seismicity and eruptions by large earthquakes has been reported for many years, but only recently has the phenomenon been considered. In some cases, the triggered activity is associated with geothermal and magmatic areas, implying that fluids are an important component of the triggering process. This is the first time that at volcano Etna seismicity seems to be triggered by a large earthquake occurred hundreds of kilometers away. On this basis we present some preliminary results which evidence a possible correlation between the passage of the Greece strong earthquake surface waves and i) the seismic activity which followed it; ii) the concurrent abrupt increase of the volcanic tremor; iii) the strong explosion quake which marked an abrupt decrease of the tremor amplitude. Our findings seem to confirm that the transient stresses produced by strong earthquakes could trigger seismicity and also cause notable perturbation on the plumbing system in volcanic environments. Further careful investigations on similar phenomena that could have been occurred in the recent past, since the broad-band seismic permanent network has been operating at Mt. Etna, are in progress.