



Landslides in Seismically and Volcanically Active Areas of Greece and Adjacent Regions: A Review

Georgia Diakogianni, Anna Fokaefs, and Gerassimos A. Papadopoulos

National Observatory of Athens, Institute of Geodynamics, Athens, Greece (gdiakogianni@yahoo.gr; anna@noa.gr; papadop@noa.gr, +3010 3490165)

The active lithospheric subduction along the Hellenic Arc and Trench combined with the westwards movement of the Anatolian block cause high rates of crustal deformation in Greece and its adjacent areas. The seismicity, both shallow and of intermediate depth, is also very high with earthquake magnitudes up to about 8. The island arc of the South Aegean Sea is characterized by Plio-Quaternary volcanism with at least three volcanic centers being active in historical times. The most important of them is the famous Thera (Santorini) volcano which after its giant Late Bronze Age eruption (17th century BC) erupted many times in the historical period, the last eruptions taking place from the 1920's to 1950's. Historical reporting of earthquakes in Greece goes back to 6th century BC. It is known that many of the Greek earthquakes were associated by several types of ground failures, such as landslides, liquefaction in soil, rockfalls, surface fault traces and ground fissures, etc. Data compilations of such ground failures were published in the past and empirical relations were produced between the earthquake magnitude and parameters of the ground failures. In addition, ground fissures were also documented in association with aseismic processes but as a rule in association with active faults, e.g. in Thessalia, Central Greece as well as in the residential zone of Patras city, NW Peloponnese, during the 1990's. Some of these cases were still damaging causing important social unrest. Active volcanic eruptions were also reported to cause several types of ground failures. Ground fissures were again observed during periods of volcanic dormancy, e.g. in the late 1990's in the caldera ground of Nissyros volcano, SE Aegean Sea. We updated the data sets for ground failures caused by earthquakes in Greece and its adjacent areas by adding new data from the historical period but also from recent earthquake cases, e.g. by the "storm" of strong earthquakes occurring in the Hellenic Arc during 2008 (Papadopoulos et al., EOS, 2009). The data sets include not only observations for land ground failures but also failures reportedly caused by earthquakes in coastal zones and in the sea floor, such as earth slumps and turbidites. A data set of ground failures generated by volcanic eruptions was also compiled. Moreover, we compiled observations on ground fissures opened either aseismically near active faults or in volcanic areas during dormant periods. Our data compilations contain also descriptions by eyewitnesses and field pictorial material. The intention is to organize a data base containing all the data and the material collected.