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Seventy years of inflation and enlargement of climatically and earthquake triggered rock-slides and taluses: the case of the Skolis Mountain, North Peloponnese, Greece

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The role of mass movements in slope evolution in mountainous areas can be related both to climatic conditions and to earthquakes which act as trigger mechanisms. In the present contribution we analyze the evolution of rock-slides across the Skolis Mountain which during the 2008 incorporated in the epicentral area of a strong earthquake (Mw=6.4). In terms of the qualitative evaluation of the role of the seismicity on the rock slope evolution, we regard that the earthquake plays a crucial role on the evolution of the rock- slides. Our results are based on a series of acquired aerial photographs in order to combine the role of the imposed seismicity on the long-term climatically controlled rock- slides forming taluses. The analysis cover the period from 1945-2015 at time interval of almost ten years. In this period we recognized that the rock-slides increase their width, called hereinafter as inflation, or their length, called as enlargement. The terms of width and length are defined along strike or down slope the Skolis Mountain respectively. Over this time span we pointed out periods where the area of the rock-slides and the taluses are progressively to enormously inflated alternated with periods where the slides are enlarged. Particularly, during Mw=6.4 earthquake the rock- slides are characterized by significant changes. In particular, the rock-slides after the earthquakes show inflation and enlargement, increasing their area up to three times. On the contrary during periods of low seismicity rock-slides show mainly inflation. Inflation mechanism involves coalescence of previously distinct rock-slides. These observations are significant for the identification and the mitigation of an area's hazard especially when includes human activities that are exposed to prominent rock-slide terrains.