



Lava flow hazard at the new South-East Crater of Etna volcano

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The summit area of Mount Etna has frequently undergone major morphological changes due to its persistent eruptive activity. Since its creation during the 1971 eruption, the Southeast Crater (SEC) has been the most active of the summit craters of Etna. At first, it was a degassing pit located close to the southeast base of the Central Crater cone. During the first 40 years of activity, SEC erupted quite frequently producing almost one hundred of lava flows. Between 2011 and 2016, more than 50 lava fountains occurred, leading to the formation of a new pyroclastic cone (NSEC) on the eastern flank of the SEC. All SEC eruptions are likely to give rise to lava flow, which is the greatest hazard presented to the tourist facilities on the south flank of Etna. For this reason, in 2011 we produced a lava flow hazard map for SEC eruptions using the 2005 DEM as topographic base, where the NSEC was not yet formed. Here we present the new 1-m DEM of Etna updated to 18 December 2015 obtained from high resolution stereo Pléiades images (0.5 m). Processing of Pléiades data was performed by using the DEM Extraction Module of ENVI through three steps: epipolar image creation, image matching, and DEM geocoding. This DEM was used as the new topographic base to produce the first hazard map from lava flow inundation in the NSEC area allowing key at-risk zones to be rapidly and appropriately identified.