



DiffSAR methodology for the evaluation of the susceptibility landslides'.

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A new methodology for the assessment of the relative dangerousness (susceptibility) of the areas subject to landslides, developed in a European project called the Riscmass Project (www.riscmass.eu) is presented. The studied area has an extent of about 100 km² and is placed along the western edge of the Crati graben, Calabria (Italy). This methodology, based on the probability of collapse events of a population of landslides, is obtained by a back analysis process of really occurred landslides. By using satellite differential SAR interferometry measurements, we try to define a new method for the valuation of danger and risk, making them less subjective and basing them on measurable physical data, which are directly connected with the instability of the slope. In fact the main problem is not when but where the collapse events will occur. Four instability indices have been defined on the basis of monitored velocity in the landslides and their distance from critical value. The dangerousness indices, I1, I2, I3, represent the uniformity of movement, the condition of local breaking and the proximity of the monitored velocity to the determined critical values, respectively. Besides, a composed index I4 equal to I2 multiplied by I3 has been defined. By using elaborations made in a GIS environment, through soil movements measured by using remote sensing techniques, we were able to assess the dangerousness indices distribution in the landslides. Aiming at obtaining a dangerousness evaluation, an a posteriori analysis has been performed, to identify landslides that in a specific period have been collapsed. So it is possible to determine a relation between the probability of collapse and the dangerousness indices. The obtained results show that as the probability of triggering sensitively increases for instability indices I2, I3, I4 higher than 1,5 presumably assuming a hyperbolic behaviour and values higher than 30 %. It means that the closer to the breakup a landslide is, the more it deforms in the previous years to its

collapse.