A COMPARISON BETWEEN DIFFERENT METHODS OF STABILITY ANALYSIS CONCERNING THE QUICK MUDFLOWS IN S. FELICE A CANCELLO (ITALY)

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Following an intense rainfall on 4th-5th May, 1998, over 100 mass movements occurred in the Sarno basin and in the surrounding areas, about 30 km east of Naples in southern Italy. The debris flows reached the towns of Sarno, Quindici, Bracigliano, Siano and S. Felice a Cancello, causing 160 casualities and serious damages.This hydrogeological disaster consisted mainly of quick mudflows, starting out from the mountain ridge and falling along the natural gullies and valley down to the plain, after having swept several towns.This paper aims at pointing out the factors inducing this moving landslide through a simulation model performed directly on the spot, adopting the most applied methods of stability analysis, i.e the infinite slope stability, the limit equilibrium analysis, and the numerical finite difference model.The obtained results show the influence of the variation of the hydraulic boundary conditions and point out the two constitutive models of the mudflow (elastic-plastic and viscous models) related to the particular type of stability analysis.