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ROCK FALL HAZARD ASSESSMENT IN THE M. SALTA LANDSLIDE, ITALY

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We present the results of a preliminary rock-fall hazard assessment for the Monte Salta landslide, in the Vajont valley (northeaster Italy). The Monte Salta landslide is a rock-fall induced by the presence of the Monte Borgà regional thrust, which uplifts the Vajont limestone (Jurassic in age) on top of the Scaglia Rossa Formation (Cretaceous in age). Above the thrust zone, folded, highly fractured bedding planes dip steeply towards the slope free face, producing a highly unstable setting. In this area, two sets of fractures have been mapped, striking N30 and N110, respectively. The two fracture sets separate large, prismatic blocks that pose a severe threat to the village of Casso, and to the road connecting Casso to Erto and Longarone. Several historical landslide events were reported in the area, of which the first dates back to the XVII century. We determined different landslide hazard scenarios using STONE, a 3-dimensional rock-fall simulation program. The software computes 3-dimensional rock-fall trajectories starting from a digital terrain model (DTM), the location of rock-fall release points (source areas), and maps of the dynamic rolling coefficient and of the coefficients of normal and tangential energy restitution. For each DTM cell the software calculates the number of rock falls passing through the cell, the maximum rock-fall velocity and the maximum flying height. We use this information to ascertain rock-fall hazard. For the study area, we obtained a DTM with a ground resolution of 5x5m trough the interpolation of 5 m contour lines, acquired from topographical maps at 1:5,000 scale. The source areas of rock-falls were identified trough the analysis of medium scale, vertical stereoscopic aerial photographs and field surveys. Parameters controlling the loss of energy at impact points and during rolling were obtained from a detailed (1:10,000 scale) surface geology map prepared through field surveys. Field information on historical rock-fall deposits, and rock-fall trajectories, allowed calibra-

tion of the modelling parameters, and validation of the results. Visual comparison of the model results with the mapped rock- falls confirmed the accuracy of the model.