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Modelling of lahars from Calbuco volcano through the RAMMS software

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The Calbuco volcano eruption of April 22nd 2015 triggered a series of lahars that caused damage to nearby localities. The lahars that occurred on the Correntoso and Blanco Sur rivers were analyzed in this study, for their modelling through the RAMMS software. This software uses the Voellmy law for simulation of granular flows, calibrating three coefficients: μ; ? and cohesion, the two former being frictional parameters and the latter was incorporated to avoid spreading of the flows. For calibration of the models, input parameters that adjust to field data were tested. Through this methodology, values of μ equal to 0.01, ? equal to 400 m/s2 and a cohesion of 100 Pa, for a volume of 2x106 m3, make the simulation reach a distance of 9 km from the start, a maximum height of 13.79 m and a maximum speed of 17.65 m/s, which are first order approximations to the lahars analyzed. In addition, the influence of the resolution of different Digital Elevation Models (DEM) on the results of simulations was tested. The result of this test is that low resolution DEM (30m) the affectation area is overestimated, producing a low-quality associated hazard map. On the other hand, for a better resolution DEM (6m) a greater detail is obtained, and a better estimation of the inundation areas is achieved.