



First characterisation of the “Rumi-Pana” rock avalanche deposits (Famatina Range, La Rioja, Argentina)

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Active mountain fronts are subject to large scale slope collapses which have the capacity to run long distances on piedmont areas. Along time, fluvial activity and other gravitatory processes can intensively erode and mask primary features related to the collapses. Therefore, to reconstruct the history of their occurrence, further analyses are needed, e.g. sedimentologic analyses. This work focuses on the occurrence of large rock avalanches in the Vinchina region, La Rioja (28°43'27.81" S / 68°00'25.42" W) on the western side of the Famatina range (Argentina). Here, photointerpretation of high resolution satellite images (Google Earth) allowed us to identify two rock avalanches, main scarps developed at 2575 and 2750 m a.s.l. . There are no absolute ages for these deposits, however, comparing their preservation degree with those dated further north (in similar climatic and landscape dynamics contexts [i]), we can suggest these rock avalanches took place during the Pleistocene.

We carried out a fieldwork survey in this remote area, including classical landslide mapping, structural analysis, deposits characterization and sampling. The deposits reach the valley bottom (at around 1700 m a.s.l.) with runouts about 5 and 5.3 km long. In one of the cases, the morphology of the deposit is well preserved, allowing to reconstruct accurately its extension. However, in the second case, the deposits are strongly eroded by courses draining the mountain front, therefore further analyses should be done to reconstruct its extension. In addition to morphologic interpretations, a multiscale grain-size analysis was done to differentiate rock avalanches from other hillslope deposits: (1) 3D surface models of surface plots (5x5m) have been built by SfM photogrammetry; 2) classical sieving and 3) laser grain-size analysis of deposits. Samples were collected on different parts of the slope, but also along cross sections through the avalanche deposit. This deposits characterization will be combined with results from mapping and image analysis in order to provide a first description of the sequence and extension of events related to the evolution of this mountain front.

[i] Hermanns et Strecker, Structural and lithological controls on large Quaternary rock avalanches (sturzstroms) in arid northwestern Argentina, Geological Society of America Bulletin 1999.