



Geotechnical Investigations on Sediments from Alluvial Fans in the Upper Sava River Valley, NW Slovenia

A. Petkovšek (1), M. Maček (2), and M. Mikoš (3)

(1) University of Ljubljana, Faculty of Civil and Geodetic Engineering, Ljubljana, Slovenia, (2) University of Ljubljana, Faculty of Civil and Geodetic Engineering, Ljubljana, Slovenia, (3) University of Ljubljana, Faculty of Civil and Geodetic Engineering, Ljubljana, Slovenia (mmikos@fgg.uni-lj.si, +386-(0)1-2519897)

In order to estimate whether any alluvial (torrential) fan should be rather classified as a debris cone (mainly formed by debris flows; at least occasionally threatened by debris flows) we performed a combined field and laboratory investigation on selected alluvial fans in the Upper Sava River valley between Rateče (border to Italy) and Jesenice in NW Slovenia. This work was done as a part of three year targeted research project “Debris flow risk assessment in Slovenia”. This region was chosen due to its high potential for debris flow generation. In the distal or/and in the proximal part of each of the selected alluvial fans (Trebiža, Suhelj, Presušnik, Koroška Bela, Javorniški Rovt), one or two sedimentological trenches reaching over 5 m in depth were excavated. For each trench we assured qualitative geological (sedimentological) inventory and description of lithological structure, and in some trenches we tried to assess age of the sediments. From selected layers in different depths in the majority of trenches sediment samples have been taken for further geotechnical laboratory investigations. The main aim of the study was to assess transport properties of sediment material to flow in the form of a debris flow. We compared elaborated values of the main geotechnical parameters (grain size distribution, USCS classification, natural water content, Atterberg limits, plasticity index, density, dry density, shear strength as a function of sample water content) of these sediment samples with known corresponding values for samples taken in the past from other active landslides (Macesnik, Slano Blato) and debris flows (Stože, Strug) in Slovenia. The comparison of the samples' shear strengths as a function of sample water content has shown that samples from selected alluvial fans don't contain enough fines and are less sensitive to water content as the samples taken from the Stože debris flow, that was in November 2000 with the magnitude of over 1 million m³ the largest debris-flow event in Slovenia in the last century.