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Using GIS for Lozice paleo-landslide 3D visualization in Rebrnice area (SW Slovenia)

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Area of Rebrnice in SW Slovenia is covered by scree which was created by sedimentary gravity movements. Large quantities of scree are concentrated in forms of sedimentary bodies, formed as multi-component paleo-landslide. Scree is composed of Mesozoic carbonates, which are overthrusted over Eocene flysch, and form steep slopes with scree production. One of the paleo-landslide is called paleo-landslide Lozice, located above the village of Lozice. A big portion of the landslide has already been eroded and some part has been covered with younger sediments. It has a shape of two fans and it covers area of 0,42 km^2. On the basis of the obtained data of 16 boreholes and 8 excavated trenches we aim to define the different sedimentary facieses. Body of the landslide is composed of six sedimentary facieses which were formed as separated gravity mass movements. This facieses are limestone rubble (LR), flysch rubble (FR), mixed rubble of limestone and flysch clasts (MLFR), silty flysch (SF), silty limestone rubble (SLR) and silt mixed with limestone and flysch rubble (SLFR). Facieses SF, FR and LR are the most common and form a stratigraphic order SF, FR and LR from the bottom to the top. Facieses SF and FR intersect in some parts and facies LR lies stratigraphically on the top and covers the whole area of the paleo-landslide Lozice. Facieses MLFR, SLR and SLFR are rare and form lenses in the body of the landslide. Facieses of weathered flysch (WF) and flysch (F) form the bedrock and are not part of the body of the landslide. Parts of the landslide and its crown are covered by younger limestone rubble sediments typical for scree. Body of the landslide and the stratigraphic order of facieses have been visualized in a 3D model in ArcGIS of the landslide. A portion of the paleo-landslide has been reactivated during construction of a motorway and a mass movement has been stopped by construction activities. In the area of the paleo-landslide there can be mass movements in forms of rock falls, smaller slides or creep on the contact of limestone rubble and flysch in the future. There still exists a possibility of catastrophic mass movements, such as a sudden landslide in this area.

Key words: Rebrnice, Lozice, paleo-landslide, sedimentary facies, lidar, 3D model