



## **Geophysical measurements and integrated interpretation of active landslides structure near Swinna Poreba (Carpathian Mountains, Poland)**

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The aim of the paper is presentation of the results of geophysical investigation on the active net of landslides in southern part of Poland and comparison of effectiveness of different geophysical imaging methods. New dam on the Skawa river in Polish Carpathian Mountains has forced the local authorities to move some parts of the local roads to the new, higher located places. Generally, the most of the newly projected roads will be located on the slopes of the surrounding hills, high above of the expected water level of the storage reservoir. Unfortunately, some parts of the mentioned region are influenced by the active landslides. These landslides have various extent - some of them covers approximate area of one square kilometer. It is impossible to set out the new course of the roads by-passing the unstable regions. The only way is to recognize the structures of the individual landslides and take effort to stabilize it. The geophysical survey was conducted to recognize the slip surfaces of individual landslides, especially their depths and extents and to recognize the properties of the rock mass. Several methods of engineering geophysics were used such as: shallow refraction seismic measurements, georadar profiling, DC resistivity sounding and electromagnetic terrain conductivity measurements. The investigations were made on four slopes where new road are planed and where the active landslides were observed. Seven profiles of 1.5 kilometers length were located in most critical parts of the slips. As a result of the seismic profiling the sharp boundaries with a distinctive velocity difference on it was recognized. On most of the profiles almost the same boundaries were identified. Almost the same depths and shapes of the reflection boundaries was the essential results of the georadar profiling with low frequency antennas. The results

of the geoelectrical research showed that in the investigated profiles the high conductivity layers are present at depths near the reflection boundaries. The last stage of the data interpretation was correlation analysis to compare the results of the interpretation of particular geophysical methods. As a effect of the comparison the integrated model of the landslides has been proposed. It was later confirmed by geotechnical shallow drilling.