



## **Landslides distribution and Landslide Susceptibility Map of Polish part of the Sudetes Mountains (NE Bohemian Massif, Poland).**

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Landslides and mass movement affected areas are poorly recognized in the Sudetes Mountains (NE part of Bohemian Massif). However, their identification is very important for risk evaluation and management and further reduction of hazards. In order to identify existing landslides and construct of the Landslide Susceptibility Map of the Polish part of the Sudetes Mountains several analyzes in different aspects were performed. Based on detailed analysis of topographic maps and LiDAR DEM we identified about 2500 individual landslides and landslides groups. The resulted landslide inventory was used then together with were focus on geographical, geomorphological, geological and tectonic factors to construct area Landslide Susceptibility Map using Weight of Evidence (WoE) method. The resulted Landslide Susceptibility Map showed influence of complex, mosaic structure of the diversified inventory of basement rocks (magmatic, metamorphic and sedimentary) for morphology of slopes and distribution, development and geometry of recognized landslides. Nearly the 70% of the landslides were developed on natural slopes while ca. 30% were developed on exploitation walls and piles in mining areas. The most susceptible to landslides are slopes, which basement is built by Paleozoic and Mesozoic sedimentary, volcanic and volcano-sedimentary rocks. They are especially Sudetic tectonic units like: Intra-Sudetic Synclinorium with Upper Nysa Kłodzka Grabben, Czerwieńczyce Grabben, Bardo Structural Unit, North Sudetic Synclinorium with Wleń Grabben and others). Quite a lot of landslides is located on slopes built by low-grade metamorphic rocks of the Kaczawa Metamorphic Belt. We identified here various types of landslides from falls, topples, translational slides, rotational slides to compound landslides with debris flow etc. Many of them are the Deep-Seated Landslides (DSL) or Deep-Seated Gravitational Slope Deformations (DSGSD) and their development was determined by basement structures (faults, joints, bedding planes). For many landslides, the Pleistocene rocks which cover the slopes are also involved in mass movements. Such landslides are frequent in western part of Sudetes Mountains and in areas (eg. Nysa Kłodzka Valley in Bardzkie Mountains) where the Scandinavian ice sheet crossed the sharp mountain front (escarpment of the Sudetic Marginal Fault). A large population of landslides were developed in Holocene rocks which build the rivers banks. Landslides processes are very rare on slopes which are built by granitoid and medium to high-grade metamorphic rocks. Debris flows of soils and weathered materials are typical for these areas. The slide surfaces of these landslides are mostly the boundary between the basement rocks and the slope cover beds. Large number of landslides was recognized in sand and gravel pits, rock quarries and on piles slopes. Hundreds of landslides were developed in brown coal mine walls and tens on pile in Turosszów mining area. They represent mostly the rotational slides which cylindrical, shear-related slip surfaces. These types are typical for landslide developed in weakly concise the Neogene and the Quaternary rocks. The compound type landslides with rock falls, rock topples and debris flows were recognized in quarries where the Paleozoic and the Mesozoic rocks are exploited. In these case the slip surfaces are mainly controlled by the joints and faults.