



Monitoring of root plate degradation rate – an example from the Tatra Mountains, Poland.

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Tree uprooting has been shown as an important factor causing transport of sediment within slope. While tree uprooting is an instant process, the degradation of root plate, and final deposition of mineral material on the ground surface (formation of tree-throw mound) is long-term.

The aim of the study was to assess the rate of root plate degradation, and to determine the type of the sediment falling off a root plate. To realize this, a monitoring of 7 root plates was carried out. Soil material was accumulating on the collectors which were installed below each root plate during the summer season in 2016. At the end of the summer in 2016 and 2017 samples of the accumulated material were taken for the purpose of the laboratory analysis. For each sample, its mass, particle-size distribution, and volume were determined. The experiment was conducted in the Kościeliska Valley in the Tatra Mountains, Poland. Windthrows in the study area were created in December 2013 during strong foehn wind event.

Results of the experiment show that despite quite similar site conditions the amount of sediment falling off the monitored root plates is highly diversified in space and time. Degradation rates vary by more than one order of magnitude, and do not seem to be controlled by particle-size distribution of the sediment, its mean grain size, or type of the bedrock within a given root plate. Sediment fallen off the root plates is in most cases dominated by coarse particles (>2mm), which constitute up to 96% of the collected samples.