

EGU22-2677

<https://doi.org/10.5194/egusphere-egu22-2677>

EGU General Assembly 2022

© Author(s) 2022. This work is distributed under the Creative Commons Attribution 4.0 License.



## Monitoring and assessing the developing dynamics of the gully erosion using different mapping techniques

**Milica Aleksić**, Michaela Danáčová, Roman Výleta, Anna Liová, Matúš Tomaščík, and Kamila Hlavčová

Department of Land and Water Resources Management, Slovak University of Technology in Bratislava, Slovakia

The appearance of the water erosion can be found not only in the small mountainous catchments but also in the agricultural hillslopes. Therefore, there is a growing necessity of monitoring and analyzing the potential changes of the features representing water erosion in space and through time. When it comes to monitoring irregular shapes of grooves and gully in the landscape, various modern surveying techniques could be used. The choice of a suitable method and equipment for terrain monitoring depends on the size of the area, its use, the purpose of the research, sufficient accuracy of measurements, weather conditions, and possibly other factors. The field measurements performed in the period 2014 – 2021 will be presented in this abstract. Field measurements were performed in the Myjava hillslope on the selected erosion gully, where throughout the year 2011, seven small wooden check dams were built. The dams had a stabilization purpose. As a part of monitoring, we focused on the dynamics of changes and development of the gully using various modern monitoring and surveying techniques, such as Global Navigation Satellite Systems (GNSS), Terrestrial Laser Scanning (TLS), and Unmanned Aerial Vehicle (UAV). The process of clogging and deepening of the erosive element was evaluated in the selected profiles.

Moreover, the possibility of implementing further protective measures on minimizing the erosion process was also evaluated. Simulations with the physical erosion model SMODERP were also used in the evaluation. The results showed that the length of the erosion gully increased during the monitoring period. However, the gully is sufficiently stable. Clogging appeared in the locations where the stabilizing elements occurred in both the bottom and transverse profiles.