

DESCRIPTION FOR THE GENERAL PUBLIC

Piping is considered as a process of mechanical removal of soil particles by water flow under the soil surface. This process leads to the formation of underground channels called pipes. In the Bieszczady Mts. they form at the depth of approx. 0.70–0.80 m, and maximum even more than 2.00 m. We know that piping occurs under the surface, when the roof of pipe collapses. Then, the closed depressions, sinkholes and sometimes even whole gully may form. The aim of this project is to develop the methods of pipe detection in order to recognize that piping occurs under surface before the pipe roof collapses. Therefore we will use the geophysical methods (electrical resistivity tomography and electromagnetic induction), which allow us to see what happens under the surface. It gives us an opportunity to estimate the length and size of pipes. Moreover, we will analyse orthophotomaps (i.e. satellite photographs of the Earth) and the elevation model derived from the airborne laser scanning (LIDAR). We will use these digital data to localize the surface evidence of piping in the area, where no one finds these forms.

We know that piping is favoured by the existence of macropores in the soil, such as channels drilled by the animals living in the soil. However, we do not know how exactly these macropores are extended and how it impacts on pipe development. We will check if the pressure of air which is entrapped in macropores impacts on the macropore wall, when water suddenly enters to the soil. Does the increasing air pressure cause the destruction of macropore walls? Does it impact on piping initiation? Thanks to the answers to these questions, we will be able to better understand, why piping occurs in the Bieszczady Mts. It is interesting, because piping in the Bieszczady Mts. occurs in Cambisols, which are not considered as a piping prone soil type.

Piping is a very important geomorphological process, which is often neglected and overlooked in research. It leads to the formation of gullies, it may also impact on shallow mass movements. Piping is also an important process of water and sediment transport in the catchment. It may also lead to the soil degradation, which is important for human economy. Therefore, we need to know what impacts on piping, and how we can detect piping forms. It is important not only for a better understanding of the functioning of the natural environment, but also for human activity.