

Land cover changes in Ore mountains and their possible impact on rainfall-runoff process

Abstract

Land cover changes have occurred since the formation of Earth, but increasingly, these changes mainly in anthropogenic characters, a big problem in many places around the world. It is, therefore, necessary to monitor how land cover changes, and its impact on individual natural processes and use these results of studies in preventing or fix possible consequences of these changes.

More and more disciplines are, therefore, also examines this issue.

This paper deals with the assessment of land cover change and its impact on rainfall-runoff process, focusing mainly on mountain basin where this influence manifests itself most expressive, both influencing the water balance of the basin, and influence responses to extreme hydrological events. The findings are applied to the upper basin Chomutovka in the Ore mountains where the thesis evaluates changes in land cover on the basis of aerial photos from 1975, 1987 and the present day (2010). Changes are visualized using digital vectorization and color differentiation of areas of individual land cover types, further processed into a map series and subsequently quantified. According to the results are established the major factors of possible rainfall-runoff processes in the catchment Chomutovka.

The literature's search shows that different land cover changes affect the rainfall-runoff process in relation to other anthropogenic and natural factors. The greatest positive impact on the drainage process has a healthy forest cover, which mainly reduces extreme rainfall-runoff events, but also helps the flow recharged in drier periods. The worst effects are built-up areas that accelerate surface runoff, prevent interception of water into the soil and reduce the amount of water retained in the basin.

Keywords: land cover, land use, rainfall-runoff process, the upper Chomutovka