

The runoff from a landscape is a natural process which is very complicated. It's not simple to express the runoff process in general because it depends on many factors that participate more or less in its course.

The main aim of this paper is the explanation of rainfall-runoff process in Lomnice River basin, the land use changes description and the evaluation of anthropogenic modifications of Lomnice River. All of these elements influence the course of hydrological extremes. Another parts of this thesis concentrate on floods (especially flood 2002) in the Lomnice River basin and on water systems of Blatensko which is the third largest of all water systems in the Czech Republic.

The relationship between a rainfall and a runoff in Lomnice River basin is being assessed with the help of the simple- and double-mass curve method, regarding possible changes caused by anthropogenic impacts. This part contains the analysis of trend in development of land use, the analysis of air temperature and snow parameters as well.

Great anthropogenic changes of river channels and river floodplain can evoke dramatic geomorphological effects. The methodology of research - anthropogenic modifications of Lomnice River is based on a field survey of anthropogenic transformation of a riverbed and river floodplain. Then the geoinformatical analysis of acquired data using GIS software was carried out. In larger part of the study area is relatively high intensity of modification.