

Abstract

During the last decades, human activities such as agricultural and industrial programs have significantly affected land use and land coverage (LULC) conditions. The changing land cover is known as one of main drivers affecting soil properties (such as infiltration or bulk density) and linked processes (e.g., aeration, water storage, and run-off). On the other hand, climate changes affect the hydrological response of both natural and anthropized basins. Even though it is difficult to assess the effect of climate change on hydrological response, it is predicted that future floods can be more intensive than present. In this thesis, we will focus on analysing the impact of LULC changes on hydrology processes such as rainfall-runoff transformation, with different scenarios of runoff generation under climate warming condition. We will take the benefit of using Geographic Information Systems (GIS) and remote sensing techniques combined with hydrological modelling at different spatial scale. Moreover, it is planned to carry out some plot scale analysis under different land covers within fully-controlled runoff generation experiments. Trend analyses of the modelling results and comparisons of the outputs with observed data can shed light on future flood forecasting over the studied basins.

Keywords: Land Use and Land Cover (LULC) changes, climate change, runoff, hydrological modelling, remote sensing.