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Land Use Change Impact on the Hydrological Response in Code Catchment, Yogyakarta Province, Indonesia

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Yogyakarta is one of the provinces in Indonesia that faced regional problems which are rapid expansions of urban areas due to high population pressure and the conversion of paddy fields and forests into settlements purposes. Population density in Yogyakarta Province has increased by 84% from 532 inhabitants per km2 in 1970 to 979 person per km2 in 2000. The population density reaches 1,079 inhabitants per km2 in 2007. Land use in the recent days is the result of interaction between human and environment. One of the environmental aspects which have been affected by this land use change is hydrologic condition. The objective of this study is to assess the impact on land use change in Code Catchment, in relation with the hydrological response. This response can be obtained by using available hydrological data mainly rainfall data and stream discharge data. Hydrological model can be used to predict the effects land use change has on hydrological response of the certain catchment or region. In this case, past change detection from satellite imagery was mapped using GIS software. Past change result map then predicted for next 15 year. Additionally, hydrological model WaSIM-ETH expected to quantified effects from the land use change by using result from land use projection and several land use scenario. This model was already used in several investigations to determine the effect of land use change and land cover on the water balance. The scenario developed is based on forest and agricultural policy already implemented in this province until 2025. By using this proposed scenario combining with the hydrological model, the land use change effect on the hydrological response can be examined.