RAINFALL-RUNOFF MODELLING ON DELUWANG WATERSHED WITH SUBCATCHMENT AREA DEVIDING BASED ON RIVER ORDO

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ABSTRACT

Flood problems commonly occur at North Java Area. Generally, flood problems caused of not properly drainage system and the most influenced factor is the damage of catchment area. Watershed is the location of water conservation but the landuse changing because of human. The result of landuse changing at river basin is the occur of unpredictable discharge on it.

This research will make a rainfall runoff model at Deluwang river basin, Situbondo, with SWMM software. Rainfall data which used in this research is daily rainfall in 2001. The data will be transformed to daily discharge which use some parameters, such as subcatchment area, infiltration, evaporation, Manning’s friction coefficient, and the landslope.

The first model devide Deluwang river basin to 5th river ordo. This step find that the calibration number is -0.507 for Nash method and 2.652 for RMSE method which the rainfall data analyzed by artmatic method. For the 5th river ordo rainfall runoff model which use Thiessen coefficient, the calibration number is -0.499 for Nash method and 2.645 for RMSE method. The second model, devide Deluwang river basin to 4th river order based on Thiessen coefficient. This step find that the calibration number is -2.635 for Nash method and 4.118 for RMSE method. The second model devide Deluwang river basin to 3rd river order. The calibration number is 0.204 for Nash method and 1.923 for RMSE method which using 3rd river ordo. For the 2nd and 1st river ordo, sequentially give the calibration number 0.877 and 0.979 for Nash and 0.759 and 0.313 for RMSE. The best fitting model for rainfall runoff at Deluwang river basin is devide subcatchment with 2nd and 1st river ordo.

Keywords: Deluwang Basin, rainfall-runoff modelling, SWMM