STUDI TRANSFORMASI HUJAN – ALIRAN PADA DAERAH ALIRAN SUNGAI OPAK HULU MENGGUNAKAN MODEL MOCK

INTISARI

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Indonesia merupakan negara tropis dengan curah hujan tahunan cukup tinggi melebihi 3000 mm. Sebagai daerah tangkapan hujan (*catchment area*), keberadaan Daerah Aliran Sungai (DAS) memiliki peranan penting dalam menjaga keseimbangan siklus air baik selama musim hujan atupun kemarau. Penelitian ini bertujuan untuk mempelajari pola transformasi hujan - aliran pada DAS Opak hulu. Model hidrologi Mock digunakan untuk memperkirakan nilai aliran permukaan langsung (*direct runoff)* dan aliran dasar (*base flow*) menggunakan data hujan dan iklim tahun 2011 – 2015. Kalibrasi dan verifikasi Model Mock dilakukan dengan menggunakan data pengamatan debit sungai opak tahun 2011 dan 2012. Kalibrasi menunjukan nilai koefisien korelasi (R) ≥ 0,7 dan koefisien efisiensi (CE) ≥ 0,5 yang menandakan Model Mock mempunyai akurasi yang tinggi untuk digunakan di DAS Opak hulu. Aplikasi Model Mock mengungkapkan bahwa aliran permukaan langsung hanya terjadi pada puncak musim hujan (Januari – April) dengan nilai rata – rata 24,92 mm. Besarnya aliran dasar secara umum mengikuti pola aliran hujan pada DAS Opak hulu. Nilai rata-rata aliran dasar selama musim hujan adalah 64,15 mm dan selama musim kemarau sebesar 36,23 mm. Hasil penelitian ini memperkaya pemahaman tentang karakteristik aliran di DAS – DAS tropis.

Kata kunci : Hidrologi DAS tropis, Model Mock, Transformasi hujan – aliran.

THE STUDY OF RAINFALL – RUNOFF TRANSFORMATION AT THE UPSTREAM OF OPAK WATERSHED USING MOCK'S MODEL

ABSTRACT

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Indonesia is a tropical country with a high density of annual rainfall more than 3000 mm. As a catchement area, the excistency of watershed has an important role to keep the water's equilibrium during the wet season or the day season. The aim of this research is to learn the transformation of rainfall – runoff system at the upper course of Opak watershed. The Mock's Hidrology Model was used to guess the value of direct runoff and base flow using the rainfall and the weather data from 2011 to 2015. The calibration and verification of the Mock's model was perfomed by using the observation of discharge water at the Opak River during 2011 and 2012. The result of calibration showed that the coefficient of the correlation value was greater than or equal to 0.7 ((R) ≥ 0,7) and the coefficient of the efficiency was greater than or equal to 0.5 ((CE) ≥ 0,5). It can be concluded that the Mock's model has a high accuracy to be applied at the upper of Opak watershed. The application of Mock's model revealed that direct runoff was found during the peak of wet season (January – April) with the mean value was 24.92 mm. Generally, the value of base flow followed on the rainfall system at the upper of the Opak watershed. The mean value of base flow was 64.15 mm during the wet season and 36.23 mm during the dry season. The result of this research is enriching the understanding of the flow characteristic at tropical watersheds.

Keyword: Tropical Watershed Hidrology, Mock's Model, Rainfall – Runoff.