

Abstract

One of difficulties in hydrological analysis in Thailand is lacking of hydrological data both in quantity and quality. This study aims to synthesize streamflow for ungaged basins or basins with few data. The first part of the research is to try to use storage routing model, which is well known and applicable in Japan, to synthesize daily streamflow in Thailand Nan, Mun, East coast gulf, Tapi, Thale sap songkhla and Peninsula east coast river basins were selected as study area with drainage area varying from 35 to 336 km². Daily rainfall from 21 rainfall stations during 2520 to 2544 were used in the study. Daily streamflow data from 14 gaging stations during 2520 to 2544 were selected to be analyzed in the study. The results of the study reveals that model be fairly applied to synthesize daily streamflow in Tapi and Peninsula east coast river basins with average error of about 27%. However it can not be used to estimate peak flow correctly, because topographic information is not considered in model parameters. It is therefore appropriate for case of simulation in normal year and in the period out of rainy season. For the rest of test basins, it is found that the model is not applicable because low quality of both rainfall and streamflow data particularly for insufficient spatial distribution of daily raingage causing incorrect areal rainfall distribution.

For the second part of the research, it is aimed to use physical characteristics of the basin to estimate monthly streamflow data. Thale sap songkhla river basin was selected as study area with drainage area varying from 127 to 1562 km². Land use, soil type and rock type were selected as physical characteristics of basin. Monthly rainfall data from 7 rainfall stations during 2530 to 2539 were used in the study. Monthly streamflow data from 5 streamflow gaging during 2530 to 2539 were used in the study.

Comparison of estimated monthly streamflow and observed ones reveals that only rock type can be used as physical characteristics of the basins to estimated monthly streamflow with average error of about 40%

However, it is recommended to further develop such method of estimation by considering more physical characteristics such as topographic information and by regrouping physical characteristics in another way in order to obtain more accurate estimating.