



Inflow Analysis of a Hydropower Plant Reservoir

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Hydrological models also known as rainfall runoff models are tools used to simulate the flow in a river system and provide an understanding on the hydrological processes in catchment areas. Rainfall runoff models have proven to be useful in decision making for watershed management and water use planning. A study focussed on hydrological modelling of watershed of Karacaören I Reservoir was undertaken in order to obtain potential variations in inflow to the reservoir. The objective of the study is to assess inflow into the Karacaören Reservoir that is located on Aksu River in Antalya Basin at the Mediterranean coast of Turkey. Due to its reservoir structure feeding the power plant, total energy production in Karacaören I HEPP is significantly affected by the variations in the inflow. Therefore energy generation is sensitive to fluctuations in river flowrates and hence to meteorological conditions. Within the scope of this study, a hydrological model has been developed to simulate streamflow from the drainage area of the Karacaören I Reservoir. The model was calibrated by the use of performance parameters such as Nash-Sutcliffe Efficiency (NSE), correlation coefficient and Percent Error Volume. Calibrated model was used to analyse the response of the catchment under different meteorological conditions, mainly rainfall scenarios. Synthetic meteorological conditions to represent dry, average and wet years are generated to be used in the simulation of inflow into the reservoir in order to optimize the reservoir use. The results are aimed to provide guidance on relevant operational decision making so as to increase resilience in energy generation from the power plant.

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