

Eakawit Jornpradit 2013: Dynamic Decision Support System for Reservoir Operation. Doctor of Engineering (Water Resources Engineering), Major Field: Water Resources Engineering, Department of Water Resources Engineering. Thesis Advisor: Associate Professor Suwatana Chittaladakorn, Ph.D. 137 pages.

The reservoir operation problem which counts on water usage change and climate change needs the solution tool to approach the new update reservoir operational rule influenced by the dynamic climatic data and mechanized by the dynamic decision support system. The new proposed solution is the guidance as the ideological line that additionally enhance the conventional rule curve which inform as the prohibitive limited line to be the promoted line to suggest that the water kept in the reservoir should be placed on the amount of storage capacity that will be the most appropriate at any time. The methodology was designated the components which comprise three computerized modeling processes i.e. the data synthesis, the long-term operational rule in acquisition, and the periodical short-term in operation. The case study area adopted the update secondary data from Sirikitti Reservoir, Uttaradit province and Papayom Reservoir, Phatthalung province, Thailand, to simulate for the population set of the optimal result of the long-term operational rule. Subsequently, the periodical short-term operation was demonstrated by using the most likely line, MLL line in short, of the optimal operational rule as a guideline.

The result of the data synthesis was shown that the population of the daily synthetic data is able to imitate from the sample daily archetype data on the statistical acceptance. By using the data in the simulation model with the optimization process, the MLL line was acquired for the long-term operational rule. For the wet and the dry year conditions, the input data were sorted by ordinal amount to half divide it into the greater than and lesser than normal data. The most likely line on the wet year data or MLLW and the most likely line on the dry year data or MLLD were attained. The periodical short-term operation was exhibited by using the MLL for the normal year, the MLLW for wet year, and the MLLD for dry year conditions. By complying with the water release rate suggestion, the line of storage volume was converged to the most likely line on the periodical decision and to keep close the best ideal of the operational rule which mean the risk of flood and drought could be alleviated.

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