C-01: Reliability studies of multi-reservoir systems using stochastic techniques

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Generation of synthetic hydrologic time series was important not only for sizing future reservoirs, but also for determining releases for existing reservoir systems. Reliability of these releases became an integral and important part of the operating policy of the reservoirs. In the case study reported, 36 years of stream flow records at a multi-reservoir system in Sri Lanka were analysed statistically and 700 traces for each reservoir were generated stochastically and maximum release for each month were determined knowing the reservoir capacities. Fitting an extreme value distribution to these releases, a reliability curve was obtained. These releases were used to compute the hydroelectric power that can be generated from the reservoir system. When compared with the total power requirement of Sri Lanka, it was seen that 52% and 55% of the total power requirement can be met, if the releases were conmsidered to be at the probability levels of 99% and 42.92% respectively.