

Water Systems Management for a Changing Climate: In many regions of the world, population growth, and highly variable and a changing climate are increasing the likelihood of major water supply deficits. Under such non-stationarity, the present operational policies have been shown to struggle in managing water reservoirs. Most of the multi-purpose reservoirs do not explicitly use weather forecasts in their operational policies, despite their potential to improve service provisions significantly. This is particularly true for facilities that provide flood protection and water supply, since the potential flood damages are often too severe to accept the risk of inaccurate forecasts. What happens most of the time in such services is that operators must maintain empty storage capacity to mitigate flood risk, even if the system is currently in drought.

To better manage this challenge, our research group at IIT Indore is finding the potential of dynamic and adaptive reservoir management policies that adjust operational rules as new information becomes available, including the utility of weather forecasts, and exploring the potential for groundwater banking. The group uses state-of-the-art optimization algorithms, weather forecasts and climate projections for management of highly complex systems under deeply uncertain hydrology.



