

Development of a decision support system for the rufiji river basin - Tanzania
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Three stand-alone Decision Support System (DSS) models have been developed at three critical locations within the Rufiji River Basin in Tanzania. The models are the Usangu Basin Model (UsaBaMod) for the headwaters of the Great Ruaha River, which is the main contributor to the Mtera-Kidatu Reservoir System, the Mtera- Kidatu Simulation Model (MteKid) for the optimal operational procedure of the reservoir system, and the Rufiji River Basin Flood Warning System (RBFWS) for the Rufiji floodplain and the Delta. For the UsaBaMod, dry season irrigation was found to be the main cause of the drying up of the Great Ruaha River among the numerous possibilities considered, and that if the dry season irrigation abstractions are restricted to crop water requirements, for example, instead of the constant abstraction methods being employed, then the river would be able to sustain flows during the dry season. Investigations about the possible cause of the failure of the reservoir system have shown that the actual amount of water that was being released from the Mtera Reservoir as spill must have been much higher than what had been recorded. It was also evident from the investigation that while Mtera Reservoir was “struggling” to get refilled in certain years the Kidatu Reservoir recorded large amounts of spill more enough to bring the Mtera Reservoir to its full condition. RBFWS in a form of a user-friendly computer package to generate flood forecasts within the Rufiji River at Stiegler’s Gorge and at Mloka as well as showing the extent of flood inundation in the floodplain with the corresponding flow magnitude had also been developed.