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Impacts of Climate Change on Reservoir Systems

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There are more and more meteorological disasters throughout the world and these aggravate impacts on both natural environment and human society. The reservoir system is an important component in both water supply and flood mitigation systems in Taiwan. More frequent extreme hydrological events may greatly degrade reservoirąęs abilities to provide services and even danger reservoirąęs safety. Climate change has been identified to cause more extreme events. Hence, the vulnerability of reservoir system due to climate change should be seriously studied. The purpose of this study is to develop methodology and tools to quantify vulnerability of a reservoir due to climate change. The assessment tools include a watershed hydrological model, a reservoir water balance model, and an optimization to modify operational rules. The historical weather data and GCMsąę (General Circulation Models) outputs are used to develop current and future climate scenarios. The climate change impacts on upstream flows and reservoir functions of water supply and flood mitigation are assessed based on these climate scenarios. Finally, the principles and frequency to modify operating rules of a reservoir are studied based on impact assessment as response strategies.