

Abstract

Water Balance of the Aswan High Dam Reservoir to Sustain Severe Floods

The operation of the Aswan High Dam is considered to be a very important and complicated issue. Its complication is due to different engineering and political rules that should be followed. This operation should manage the arriving water to the reservoir in order to sustain Egypt share in addition to the calculation of losses due to evaporation, seepage, and spill water. In a previously published research, based on probability analysis, the authors had proposed to raise the water level of the Aswan High Dam Reservoir on 1st of August of each year to 178.00 meters above mean sea level instead of 175.00 meters that is currently applied. The reason for this recommendation is to sustain periods of low floods that might be similar to the drought periods that happened from year 1918 to year 1927 and from year 1978 to year 1987. They were also concluded that the maximum probable flood is about 125 Billion Cubic Meters per year. In this research, Aswan High Dam Reservoir water balance model was developed, calibrated, verified, and used for predicting the reservoir balance under different high and severe flood conditions. Investigation of methods that can be used in order to apply this raise of level to 178.00 meters was performed. The operation rules of the reservoir under the proposed water level were also studied in cases of the reservoir full and different values of high and severe flood occurs.