

Abstract

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Statistical Analysis for Low and High River Nile Floods

In recent years, Egypt is facing the challenges of a growing population in addition to the related industrial and agricultural activities whose demand continues to grow beyond the limits of the available, nearly constant, water resources. In a situation like that, water resources management is considered to be life death requirement. Improved water resources management plan should include short term and long term planning for the Aswan High Dam Reservoir operation. While short term planning focus on the Nile flood year by year, long term planning defines the operation rules of the Aswan High Dam in terms of water level upstream the dam on certain date (1st of August in each year). This planning could be performed by studying the probabilities of certain floods to occur in so many successive years. The assumed floods could be obtained along with their probability of occurrence using statistical analysis of the historical data of floods arriving to Aswan. In this research, statistical analysis for natural Nile flood from 1900 to 2003 was performed. Different statistical parameters were calculated. Thirteen different flood scenarios were assumed covering low and high floods. Probabilities of different floods to occur were evaluated. The output of that statistical analysis was presented hereafter and the effect of a certain flood was discussed in conjunction with the Aswan High Dam operation rules.