

FLOOD ANALYSIS OF RESERVOIRS IN VISAKHAPATNAM DISTRICT BY USING PROBABILITY METHODS

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ABSTRACT

Visakhapatnam city located on the east coast of India with geographical co-ordinates $17^{\circ} - 15'$ and $18^{\circ} - 32'$ northern latitude and $83^{\circ} - 54'$ and $83^{\circ} - 30'$ in eastern longitudes (Figure 1) and witnessing a rapid expansion of residential and other built – up areas in both horizontal and vertical expanses. The district receives average annual rainfall of 1202 mm, of which south west monsoon accounts for 55.9% of the normal while north east monsoon contributes 6.8% of the normal rainfall. The Visakhapatnam region has been attacked by the number of floods during the past and present. To determine the magnitude and frequency of floods for Visakhapatnam district by gumbel distribution the water level readings of the reservoirs have been collected for 20 years (1993-2012).

The probability plot and flood – frequency curves by gumbel distribution of each reservoir are prepared using three different plotting position formulas which are weibull, gringorten and L-moments. It is found that L- Moments method is best fit for flood frequency curves, with some limitations which are good for small samples of data, when compare with gringorten and weibull methods. For the successful analysis of any probability method, data must be available for a minimum period of 20years.

KEYWORDS: Flood Frequency, Gringorten, Gumbel Distribution, L-Moments, Weibull