Estimation of hourly rainfall design intensity from 24 -hour maximum rainfall in the context of Nepal

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ABSTRACT:

For the estimation of design floods by Rational method or by similar methods there is a need of data on rainfall design intensity of required frequency. In the formation of big floods (monsoon floods), the maximum intensity of rainfall for 1-hour duration seems to be very critical and hence hourly rainfall design intensity should be used in determining the design floods. Unfortunately, most of the rainfall stations in Nepal are equipped with non-recording rain gauges, where data on rainfall intensity are not available. If the actual data on rainfall intensity are not available, one can estimate it by using an IDF (Intensity-Duration-Frequency) curve. However, this curve again needs various coefficients to be defined.

An alternative approach for the estimation of hourly rainfall design intensity is described in this paper. Hourly rainfall design intensity values at 142 selected Meteorological and Rainfall stations of Nepal are estimated and presented.

Keywords: Hourly rainfall design intensity, 24-hour maximum rainfall, Exceedance probability, Return period, Reduction coefficient and Transfer coefficient.