C-03: Estimation of flood peaks for ungauged catchments using synthetic flood hydrograph

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Synthetic flood hydrographs are often used in the planning and designing of water resources development works, as gauged data are rarely available for sites of interest. The earlier method of estimating peak flows for a design was the application of rational and empirical formulae. This was considered unacceptable for engineering applications during subsequent times. Efforts to synthesize the hydrograph were intensified in the early 1930s with the introduction of the Unit Hydrograph theory and many other synthetic Unit Hydrograph methods such as Snyder's, S.C.S., Williams and Clark.

Snyder introduced a synthetic hydrograph relating basin lag to basin size and shape. This method was tested in many countries with varying success and it was found that the best way to apply his technique is to derive coefficients from gauged streams in the vicinity of the problem basin and use these coefficients for ungauged catchments.

In the late 1960s Snyder's parameters for several catchments in Sri lanka were estimated by Ranatunga & Jayaratne. However, with the course of time, due to environmental and other land use changes, it was felt that these parameters needed review.

This paper is the outcome of research work undertaken from 1994 to 1996 by close monitoring of 9 small catchments in Sri Lanka. Snyder's model was calibrated for these catchments and the paper recommends the parameter of the model with broad classification for steep, moderately steep and flat catchments of Sri Lanka.