Short Duration Areal Reduction Factors: Sydney, Melbourne and Brisbane

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Abstract

Short duration Areal Reduction Factors (ARFs) have traditionally received little attention, with previous studies being conducted on small-areas. Due to the increased availability of sub-daily rainfall data, as well as computer processing power, it is now viable to undertake a larger-areas study of short duration ARF, using methods similar to that developed for the long duration ARFs. This paper describes the application of this method for the data rich regions of Sydney, Melbourne and the Brisbane Gold Coast regions.

In this study, short duration ARFs are calculated throughout Australia. The ARFs are calculated by first creating an Annual Maximum Series for areal and point rainfall at each gauge; assuming a circular catchment with the centroid at the gauge location. The Generalised Extreme Value distribution (GEV) was then fitted to each series, and design areal and point rainfall could then be extracted at various quantiles. The analysis was run on a range of durations (from 1 to 18 hours), AEPs (50% to 1%) and catchment areas (10 to 5000 km^2). These values are regionalised across Australia and the interim values from ARR revision Project 2: Spatial Rainfall.

Keywords: Areal reduction factors, ARR, hydrology, surface interpolation.

Due to production deadlines, this paper is currently unavailable.

The paper will become available on the local paper server and one the ARR website (http://www.arr.org.au/) at a later date