# Outcomes from a pilot study to investigate pre-burst rainfall depths for Australian catchments

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*Abstract*

*The estimation of loss values and pre-burst rainfall depths for design flood estimation is inextricably linked. It is important that this pre-burst rainfall is accounted for when combining loss values derived from the analysis of complete storms and design rainfalls constructed from analysis of rainfall bursts (such as IFD2013).*

*As part of ARR Project 6 a pilot study was undertaken to investigate the pre-burst rainfall depths associated with the events selected to estimate loss values. The analysis was undertaken for 38 catchments and burst durations between 3 and 72 hours. It was found that pre-burst rainfall varies both with location and duration.*

*The pre-burst rainfall was shown to be correlated with design rainfall depths, and a prediction equation was developed between pre-burst and IFD2013 design rainfalls. There was a consistent trend for the pre-burst values to reduce for longer durations; a prediction equation was developed that relates the pre-burst depth for any duration to the value for 6 hours. For 3 hour bursts there was significant variability in pre-burst which could not be explained by simple rainfall characteristics.*

*The value of pre-burst has been presented in both absolute terms and also as a function of the depth of the burst. No correlation was evident in the ratio of pre-burst rainfall to burst rainfall with the severity of the burst, which implies that the pre-burst rainfall is a fixed proportion of the burst depth. This has important implications for design flood estimation and it is recommended that this is further investigated.*