Testing the suitability of rainfall temporal pattern ensembles for design flood estimation

Melanie Loveridge[1]
Mark Babister[1]
Monique Retallick[1]
Isabelle Testoni[1]

[1]WMAwater Pty Ltd
Sydney, NSW 2000

AUSTRALIA

E-mail: loveridge@wmawater.com.au

Abstract:

As a part of the Australian Rainfall & Runoff (ARR) revision projects (Project 3: Temporal Patterns of Rainfall), a national database containing rainfall events throughout Australia has been developed. The database was created using the Bureau of Meteorology's pluviograph data, along with data from other government or external agencies (totalling 2280 pluviographs across Australia). In order to use these events within a design context, an ensemble of events for a specified location first needs to be derived.

A number of sampling techniques can be used to derive temporal pattern ensembles; the simplest method is to select the top n events from the closest pluviograph station. Another method, is to substitute time for space by pooling all events within a specified region – this allows events to be selection based on Annual Exceedance Probability (AEP). Furthermore, to ensure events are sampled from another location with similar characteristics, a Region of Influence (ROI) sampling technique can be adopted. The current study compares the last two temporal pattern ensemble sampling techniques for a number of catchments throughout Australia. Each method is compared by ensembling the quantiles, using an ensemble of 10 temporal patterns.

Keywords: ARR, temporal patterns, design flood estimation, hydrology.

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