AOGS 2006

Quantifying Uncertainty in Flood Forecasting

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There is a growing interest in knowing the uncertainty in flood forecasting and the resulting flood warnings. This is borne out of the fact that the processes involved in flood forecasting have inherent uncertainties in them. The procedure used in flood forecasting consists of a number of steps. The first step is rainfall measurement and forecasting rainfall during a flood event. The rainfall is then transformed into flow using a combined water balance and runoff-routing model. There are uncertainties associated with rainfall measurement/forecasting, model and flow measurements. As a first step in quantifying the uncertainty in flood forecasting, the uncertainty in rainfall forecasting is considered in this study. Using radar and rain gauge data, the uncertainty in rainfall forecast is first estimated. A number of ensemble rainfall forecasts are generated and the resulting floods are estimated by using a widely used runoff-routing model URBS. This approach is applied to a number of flood events from Georges River catchment in Sydney, Australia and the results will be presented.