

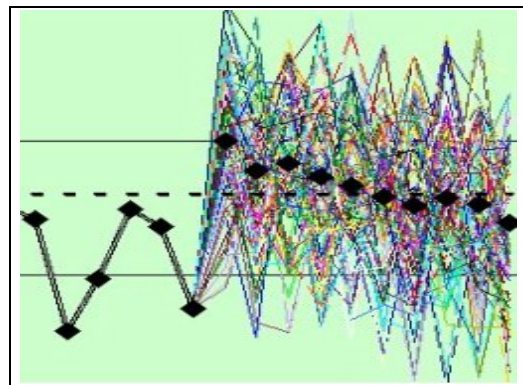
# Developing sequences of Melbourne rainfall totals and a ten-year forecast utilising Monte-Carlo methods

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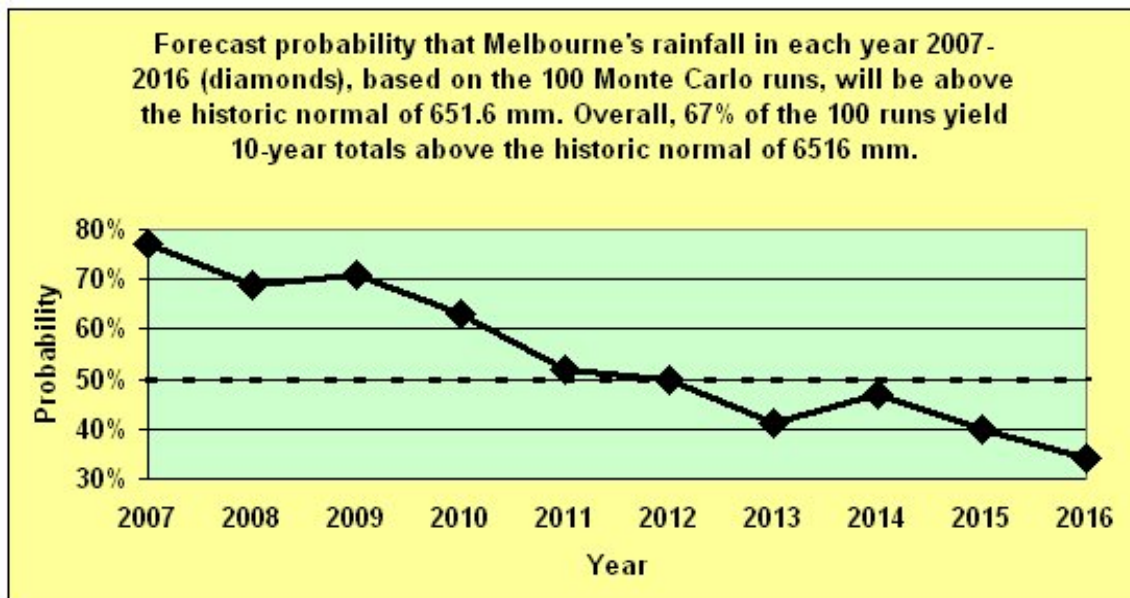
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Wilks (2006) considers that the practical solution to the analytic intractability of sufficiently detailed stochastic dynamic equations is to approximate these equations using Monte Carlo methods. With this approach, a finite sample of data that describes the state of the atmosphere is drawn at random to obtain a probability distribution describing uncertainty. The present paper describes the generation of sequences of Melbourne rainfall totals and a ten-year forecast using such methods. There is growing interest in Melbourne's recent rainfall (Stern *et al*, 2004), the amount received in each of the past 10 years (1997-2006) being below the historical normal (1856-2006) of 651.6 mm. What does this suggest for the next 10 years?

A series of 100 forecasts of rainfall for beyond 2006 is generated utilising Monte-Carlo methods, and 67% of the sequences so generated suggest an above normal 10-year (2007-2016) rainfall total.



**Figure 1** Extract from graphic displaying forecasts generated utilising Monte-Carlo methods.



**Figure 2** 10-year rainfall forecast.

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