Forecasting Inflows for the Upper Waitaki Storage Lakes in New Zealand

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Abstract

An approach linking a climate generator, which utilizes multiple discriminant analysis (MDA) and multivariate chaining (MVC), to the University of British Columbia (UBC) Watershed Model was implemented to simulate the response of the Upper Waitaki Watershed, New Zealand. This approach was applied to the catchment for comparing inflow estimates to observed inflows under conditions where a short-term or long-term forecast of flow to the lakes can be obtained by using weather information. This could be as a weather forecast from the local MetService or where a series of daily weather data can be estimated using historic records in addition to local climatic indices in a multiple discriminant analysis routine. The approach was tested on the 1992 drought and showed that had the Electricity Corporation had available such a tool better estimates of the low flows could have been made which would have created the opportunity for improved management of power generation.

Keywords: UBC Watershed Model, multivariate chaining, multiple discriminant analysis