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Rainfall and snowfall measurement in Aoraki/ Mt Cook National Park, New Zealand

Tim Kerr  
Ian Owens  
Department of Geography  
University of Canterbury

Roddy Henderson  
NIWA  
Christchurch

The hydrology of Aoraki/Mt Cook National Park is of national significance for hydro-electricity generation, agriculture, tourism, recreation and conservation. A major component of this hydrology is the precipitation regime. Many assessments of the precipitation regime have been made based on stream flows, glacier mass balance, topography, analogy to similar catchments, and personal experience. These assessments vary considerably one from the other. Few precipitation measurements have been taken in the catchment to assess the validity of these estimated distributions.

A network of ten precipitation gauges is to be installed in Aoraki/ Mt Cook National Park to help characterise the precipitation regime. The gauges consist of simple 2 m high standpipes combined with a water level sensing data logger. The gauges have been designed to manage extreme precipitation events, sub-zero ( $^{\circ}\text{C}$ ) temperatures, Kea (*Nestor notabilis*, an intelligent and destructive alpine parrot), evaporation, high winds and dynamic glacial-surfaces.

Gauge sites were selected based on the following criteria:

- Safe location (distant from potential avalanches, rockfalls, crevasses)
- Accessible by foot throughout the year
- Not on a slope
- Unlikely to be buried by snow
- Low visual impact
- Low environmental impact
- Sampling different precipitation magnitudes

The measurements are to be made for a complete year from April 1<sup>st</sup> 2006 until April 1<sup>st</sup> 2007. The 5 min data logging will enable single rain events to be captured. Measurements taken at the new gauges will be compared to those taken at nearby long term gauge sites to enable extrapolation beyond the single year. It is envisaged that the new information will provide valuable input to snow storage and rainfall-runoff models, probable maximum precipitation estimates, and climate change scenario investigations.

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