>> SYNTHESIZE MOUNTAINS OF KNOWLEDGE <<

Submitted Abstract

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1 of 2

Abstract

The snow that falls in mountain regions in New Zealand is a major source of freshwater, but we still struggle to reliably estimate the amount of snow stored in our high alpine regions, how much water can be expected downstream and when it will be released. Mountain rivers in both the North and South Islands of New Zealand feed our largest hydro-electric power schemes, and provide critical water for irrigation, especially during drought. The recognition that the snow contribution to water resources is changing has prompted new efforts to better understand the climate processes governing seasonal snow. Recently, focus has been on developing a regional-scale, real time operational snow cover product with MODIS imagery, supplemented with the acquisition of high spatial and temporal resolution satellite imagery to detect detailed changes in snow variability. These remote sensing approaches, combined with relatively sparse ground based observations, provide important validation and calibration to hydrological and advanced physics-based snow modelling. Review of the progress and challenges of the current remote sensing and snow and hydrological modelling efforts to characterise seasonal snow in New Zealand will be discussed, including projections of the contribution the snowpack makes to the water cycle in key catchments. The end goal of these efforts is to ensure a set of discrete quantitative hydrologic "storylines" are produced for use in decision making by government, communities and industry.

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2 of 2