

EDITORIAL

Once again the papers in volume 44 of the Journal of Hydrology (New Zealand) cover some of the key areas that seem to dominate leading-edge hydrology across the globe and the issues that are at the forefront of hydrological science in New Zealand. Interestingly these issues are also occupying more than just scientists at the moment: you cannot pick up a newspaper in New Zealand that does not contain a story about hydrological science, water management or policy. Hydrologists have an immense opportunity to shape the future and ensure that their research is picked up and used. The importance of publishing research results cannot be over-emphasised (although publication in scientific journals may only be a first step in ensuring the results are used and applied by more than just the science community) and so I would like to encourage the submission of papers to the *Journal*.

Since the beginning of last year I have seen a steady stream of papers, of which only the best have been accepted. While the majority are from New Zealand-based authors, it is very exciting to see an increasing number from overseas. One of the benefits of the *Journal* is that we aim to have a very short time between submission and publication, so please consider sending your latest paper in for review.

Interestingly the three papers in issue 1 of this volume covered water quality, hydrologic-geomorphic interactions and impacts of land use; the same topics traversed by this issue, although in quite a different way. Elliot *et al.* applied a hybrid mechanistic-statistical catchment model to predict the mean annual load of nitrogen and phosphorus in streams throughout New Zealand. For nitrogen, the model predicted the measured loads well, while for phosphorus the model fit was not as good. The largest contribution of total nitrogen is from pastoral land uses, together accounting for 70% of the total nitrogen load to the coast. Land used for dairying makes a disproportionately large contribution to the load of total nitrogen in relation to the area of land (37% of the load versus 6.8% of the land). For total phosphorus, the highest contribution of the load to the coast is from erosion (53.2%). Point sources contribute only a small proportion of the load to the coast (3.2% for nitrogen, 1.8% for total phosphorus).

McConchie *et al.* investigated the effects of flow regulation on near-bank velocities and sediment transport potential at a number of sites on the Waikato River. Measurements over the range of regulated flows showed that changes in discharge affected mid-channel average and maximum velocities. However, near-bank velocities remained low relative to those considered necessary to erode, entrain, and transport the bed and bank material. Therefore, while the average velocity may increase with discharge, it is overly simplistic to assume that this leads to an increase in bank erosion. The paper also outlines the effects of near-bank vegetation on erosion resistance and the controls on suspended sediment concentration.

Phillips *et al.* examined the issue of sediment yield following plantation forest harvesting on the Coromandel Peninsula. The paper adds to the body of evidence that harvesting may result in elevated sediment yields. The data also suggest that, in the absence of extreme events, those the size of the annual, or slightly greater, event tend to provide most of the sediment yield.

In issue 2 there are four papers that cover almost the same key hydrological issues as issue 1. The paper by Fuller and Heerdegen again focuses attention on the role of catastrophic flooding in New Zealand; a topic that I am sure will continue to be debated. The paper puts into context the consequences of such large floods on channel morphology and quantifies the extent of changes caused by the February 2004 event.

The hydrologic and geomorphic impacts from the major "flooding" events of 2004 and 2005 (Lower North Island, Bay of Plenty and East Cape) again demonstrate the ongoing need for an enhanced ability to extend flood forecasts. The paper by Ibbitt *et al.* outlines testing of Quantitative Precipitation Forecasting (QPF) and forecast skill in New Zealand. The paper also notes that the short length of hydrologic data can hinder the understanding of catchment systems.

Daughney and Reeves provide an analysis of some of the groundwater quality data collected as part of New Zealand's National Groundwater Monitoring Programme and develop six distinct hydrochemical facies. Interestingly, especially given the ongoing debate about the role of land use or changes in land use on groundwater quality, analyte variations between the facies were related to degree of water-rock interaction, redox potential, aquifer lithology, aquifer confinement and degree of human impact, but bore no obvious relationship to use of the surrounding land. Of course, the conclusions from the paper (like all good research) led to a number of questions; for example, does the wealth of groundwater data collected by Regional Councils fit the suggested facies? I am looking forward to seeing the analysis.

Finally the "note" from Bardsley represents some innovation for the *Journal*. In an attempt to provide a vehicle for recent, often preliminary, research results, many journals now provide more than one paper format (e.g., Short Communications in the Royal Society of New Zealand Journals); "notes" are the *Journal's* mechanism for doing this. To ensure quality control they are subject to exactly the same reviewing process as papers. Bardsley outlines a preliminary assessment of the potential for a pumped storage scheme in Otago. Given the ongoing debate about the role of renewable sources of electricity (and the contributions of the various components) this note is particularly topical.

As editor of this the 44th volume of the *Journal* I would like to express my appreciation to all those who have supported it by reviewing manuscripts. The prompt and extensive reviews received make the editor's and the author's jobs much easier. Reviewing is a time-consuming effort; however, authors do appreciate the well-considered and extremely constructive comments received from reviewers. Hence, the papers published have benefited from the efforts of the reviewers and the reviewers help maintain the standard of the *Journal*. While not always pleasant or easy for authors, this high standard does, eventually, benefit them and the reader.

Many thanks to Eileen McSaveney for her considerable work in copyediting; to Jo Dickson for her layout and production work; and, to Ivan Hatherley and the staff at Caxton for their fine job of producing the *Journal* on a tight schedule. Finally, many thanks to the authors for their ability to maintain a strong flow of manuscripts to the *Journal* and for their willingness to respond to my demands. I look forward to the flow of manuscripts (including "notes") continuing.

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