

National Centre for Water Resources

making every drop count

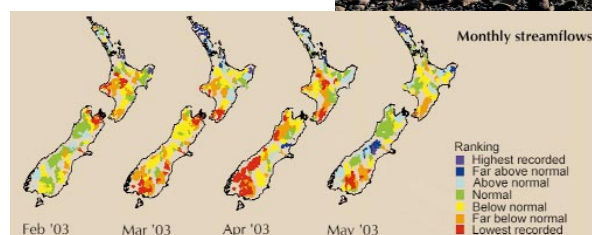


As far as water was concerned, one of the most significant events this year was the widespread drought in summer and autumn. The Target 10% campaign was initiated to reduce demand for electricity as hydro reservoir levels fell. With the very low river flows and groundwater levels there were widespread restrictions on irrigation pumping in Canterbury and Otago, and on domestic water use on the Kapiti Coast. High temperatures also played havoc with ecosystems, with algal blooms plaguing Waikato and Bay of Plenty rivers. The National Centre for Water Resources recently developed a national hydrological model in association with the Ministry for the Environment, Statistics New Zealand, and Landcare Research for use in a variety of national assessments, including water accounts and carbon budgeting.



Peter Mason

The Centre publishes summaries of river flows, river water quality, lake levels, and groundwater levels in its free quarterly newsletter, *Water Resources Update*, which is also available on our website, in collaboration with the Institute of Geological & Nuclear Sciences, Lincoln Ventures, the Ministry for the Environment, hydropower companies, and regional councils. The Centre also operates as a focal point for media and resource managers to contact scientists with technical queries and problems relating to water resources. Our webpage includes a variety of tools and references for use by water managers, including stream health monitoring, lake health monitoring, classification of rivers, stream sampling protocols, and estimates of sediment yield. We are working with a wide variety of clients to implement these tools to help resolve local issues.



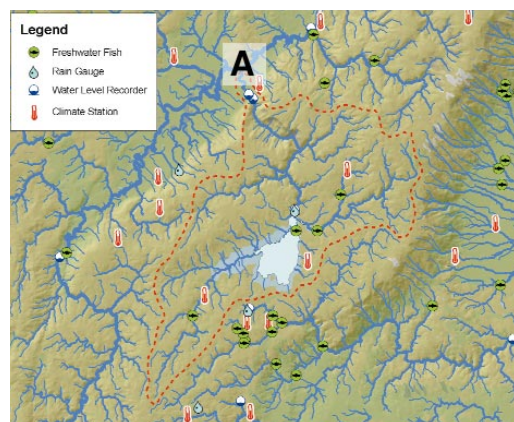
Record low river flows for much of New Zealand, including inflows to key hydropower lakes (Pukaki, Tekapo, Taupo) (data: NIWA, regional councils, energy companies).



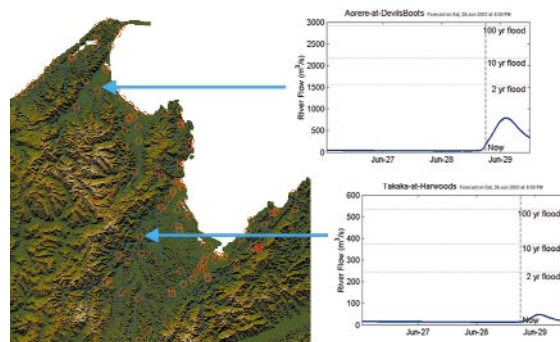
This hydrological model shows details of the sub-catchments, lakes, and streams around Lake Taupo.

The Centre has also developed two major projects – one to unify New Zealand's diverse freshwater databases, and one to build a national flood-forecasting capability. The Freshwater Information New Zealand project (FINZ), which builds on the River Environment Classification, links freshwater data from a wide variety of sources to a common map database. This makes it easier to access when using the Internet and geographic information systems, and enables water managers to make sophisticated spatial queries that recognise the special network structure of freshwater systems.

www.niwa.co.nz/ncwr



A study of site A on the map above would automatically find the catchment upstream of A (the red line) and then search out data from a wide variety of databases, including fish sampling sites and climate records for that catchment. FINZ can also provide basic geographic data on the catchment, including topography, vegetation, and geology.



Trial flood forecasts for rivers in the Tasman Bay and Golden Bay region

Our pilot flood forecasting models are running every day in collaboration with Otago Regional Council, Gisborne District Council, and Environment Bay of Plenty. We are also testing hundreds of locations in nine other catchments, and developing a web-based interface with automatic detection and warning of impending floods for these sites. The flood forecasting models can predict the flood flows in rivers up to 2 days ahead by linking weather model predictions developed in collaboration with MetService to detailed models of water movement in catchments and rivers and real-time measurements of river flow.