



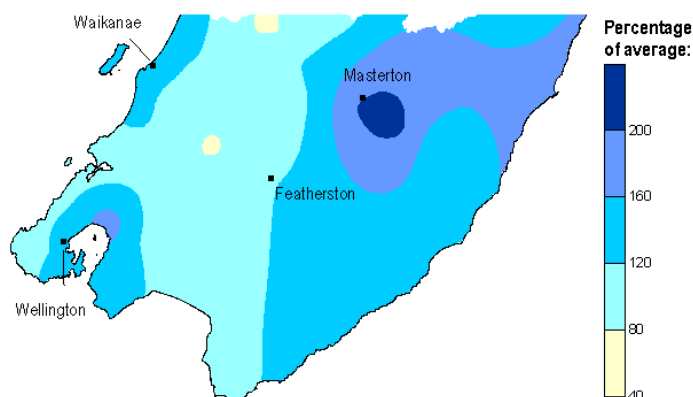
# February and March 2011 hydrological summary

## Environmental Monitoring and Investigations Department

### Rainfall in February and March

Relative to long-term averages, February 2011 was a dry month across the Wellington region and March was a wet month. Rainfall was particularly low in February in the eastern Wairarapa and Hutt Valley. Some Greater Wellington rain gauges measured record lows with as little as 5–15% of the long term February average (for example, Te Marua in the Hutt Valley, around Masterton and in the headwaters of the Taueru and Whangaehu river catchments).

By contrast, the distribution of rainfall in March was almost a reverse of that in February. Eastern parts of the Wairarapa received between 150–220% of normal March rainfall (see map to the right) while the rest of the region, with the exception of some central parts of the Tararua Range, received average to above average amounts for the time of year. Most parts of the region received rainfall on at least 10 days in March. The biggest single event occurred on 22



Rainfall in March 2011 as a percentage of the long-term average for this month

March when a strong, moist easterly airflow (preceding a low that originated in the Pacific) brought some heavy falls, mainly to the Wairarapa but rain was widespread across the region. A very localised cloudburst over the Mana Island / Porirua City area on Sunday 27 March produced 39mm of rain in one hour (measured at the Met Service Mana Island rainfall monitoring site) and resulted in severe but short-lived surface flooding in the CBD.

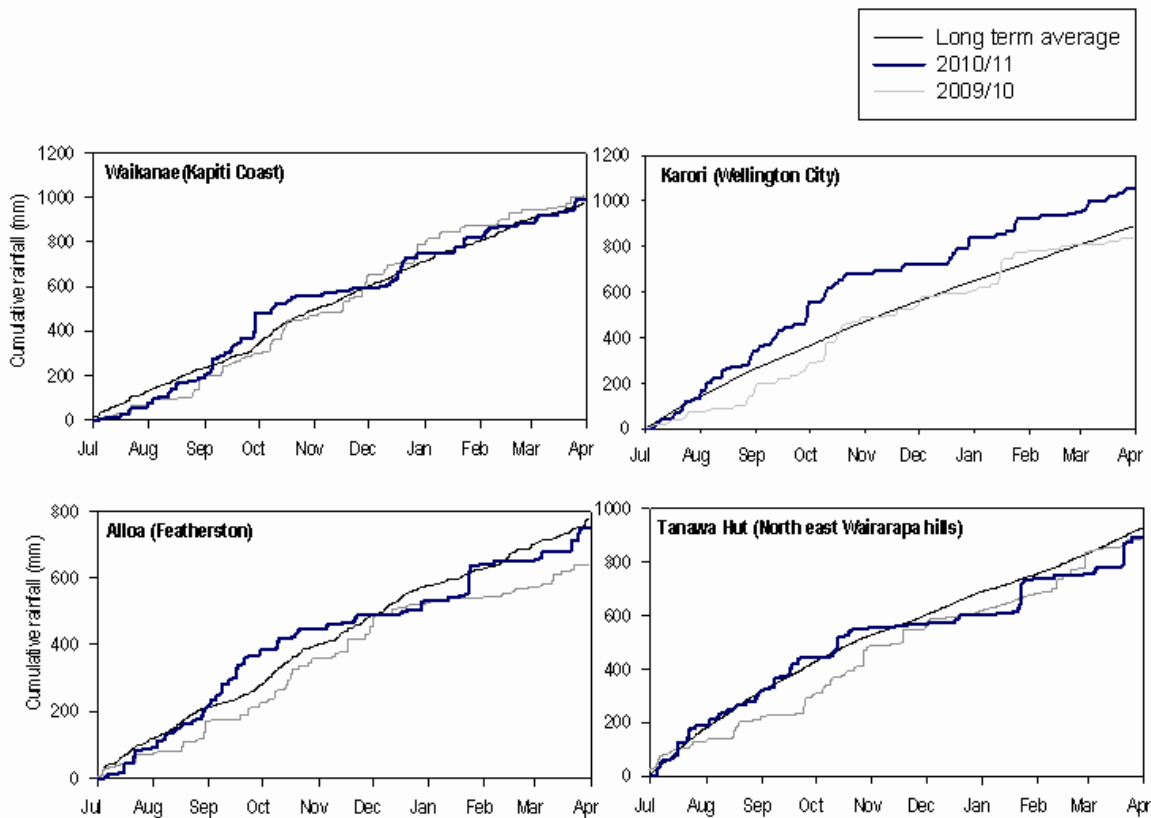
### Rainfall since mid-winter 2010

Rainfall since July 2010<sup>1</sup> is within 10% of the long-term average for the same period for most monitoring sites across the region (see following table). Cumulative rainfall plots on the next page highlight in particular the wetter than average year to date in Wellington City (see ‘Karori’ plot) and the significance of intermittent heavy falls in the Wairarapa over summer for keeping overall rainfall totals close to average (see plots for ‘Tanawa Hut’ and ‘Alloa’).

### Rainfall statistics for the year since July 2010 for selected monitoring sites in the Wellington region

	Rainfall for February and March at monitoring site (mm)	Rainfall for period July 2010 to the end of March 2011 (mm)	Percentage of long-term average for year- to-date from July 2010
Waikanae	168.0	977.0	104%
Karori	129.2	1,047	117%
Kaitoke	165.5	1,602	95%
Wainuiomata	191.0	1,227	90%
Featherston (‘Alloa’)	107.2	747.6	96%
NE Wairarapa (‘Tanawa Hut’)	158.0	891.5	96%
Tararua Range (‘Angle Knob’)	760.5	5,294	102%

<sup>1</sup> The ‘water’ year runs from July to June so that it begins and ends during mid-winter when there is generally plenty of water in the hydrological system.



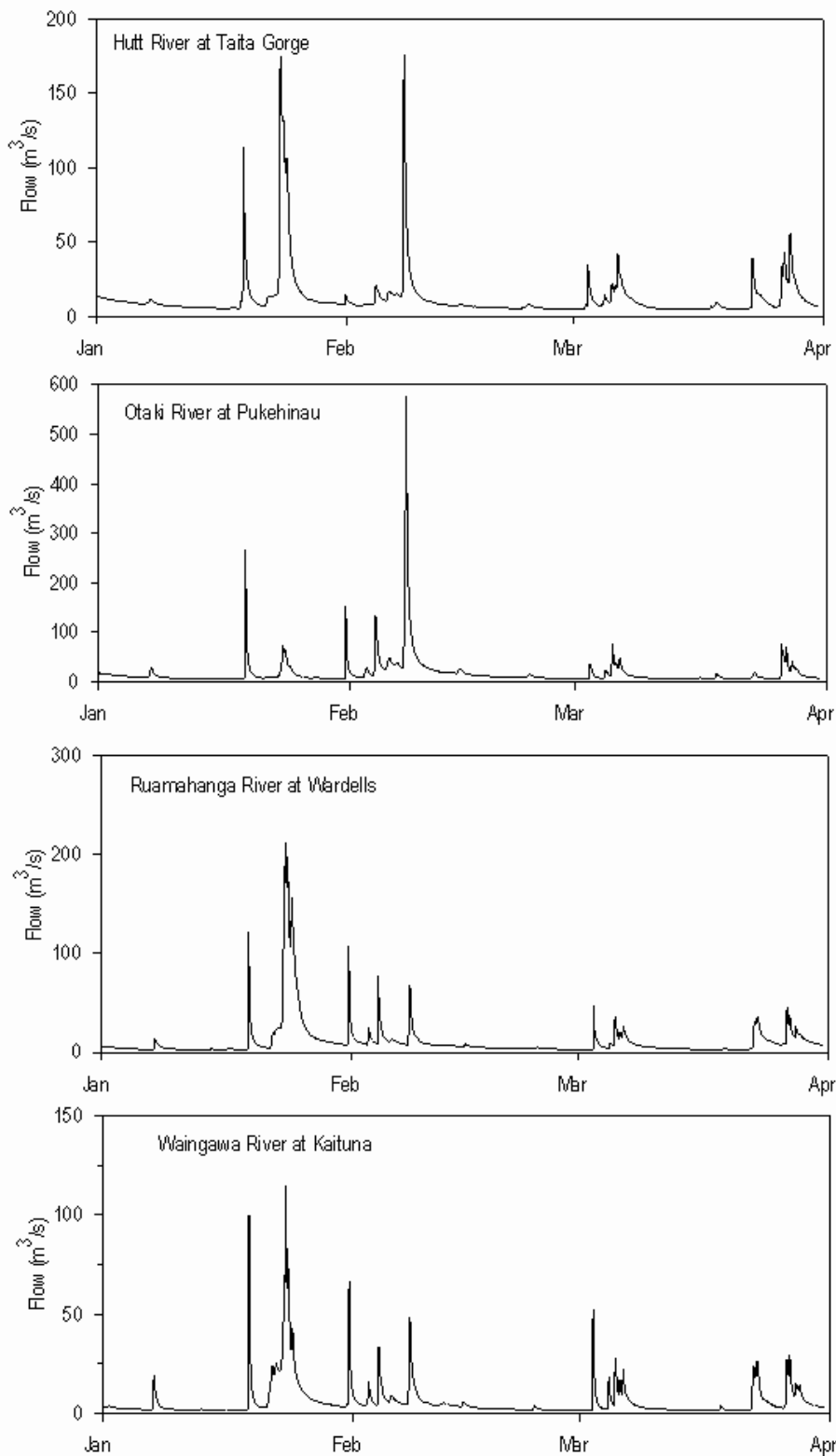
Cumulative rainfall for the water year-to-date since July 2010 at selected sites in the Wellington region

### River flows during February and March

Mean flows in rivers and streams across the region were generally below average during February and March (see table below). This reflects a general lack of rainfall in February (and of large fresh flows during both months). However, flows did not recede to significant low levels, or for long periods, due to an increased frequency of rainfall in March. While the minimum 1-day low flow for some rivers and streams in the Wairarapa – including the Ruamahanga River – was equivalent to their mean annual low flow, flows did not drop much further. None of the heavy rainfall events (7 February, 22 March and the localised rainfall in Porirua on 27 March) resulted in significant flood flows.

### River flow statistics for February and March 2011 at selected flow monitoring locations in the Wellington region

	Average river flow for February/March 2011 (m <sup>3</sup> /s)	Percentage of long-term February/March average	Lowest 1-day flow during February/March (raw data)
Otaki River at Pukehinau	18.84	95%	5.03 m <sup>3</sup> /s on 21/3
Akatarawa River at Cemetery	2.53	78%	1.14 m <sup>3</sup> /s on 21/3
Hutt River at Taita Gorge	10.46	72%	4.33 m <sup>3</sup> /s on 15/3
Wainuiomata River at Manuka Track	0.26	63%	0.14 m <sup>3</sup> /s on 21/3
Waingawa River at Kaituna	5.01	73%	1.32 m <sup>3</sup> /s on 20/3
Waiohine River at Gorge	14.72	86%	4.09 m <sup>3</sup> /s on 1/3
Ruamahanga River at Wardells	8.44	65%	2.41 m <sup>3</sup> /s on 20/3
Ruamahanga River at Waihenga	29.68	64%	8.60 m <sup>3</sup> /s on 1/3



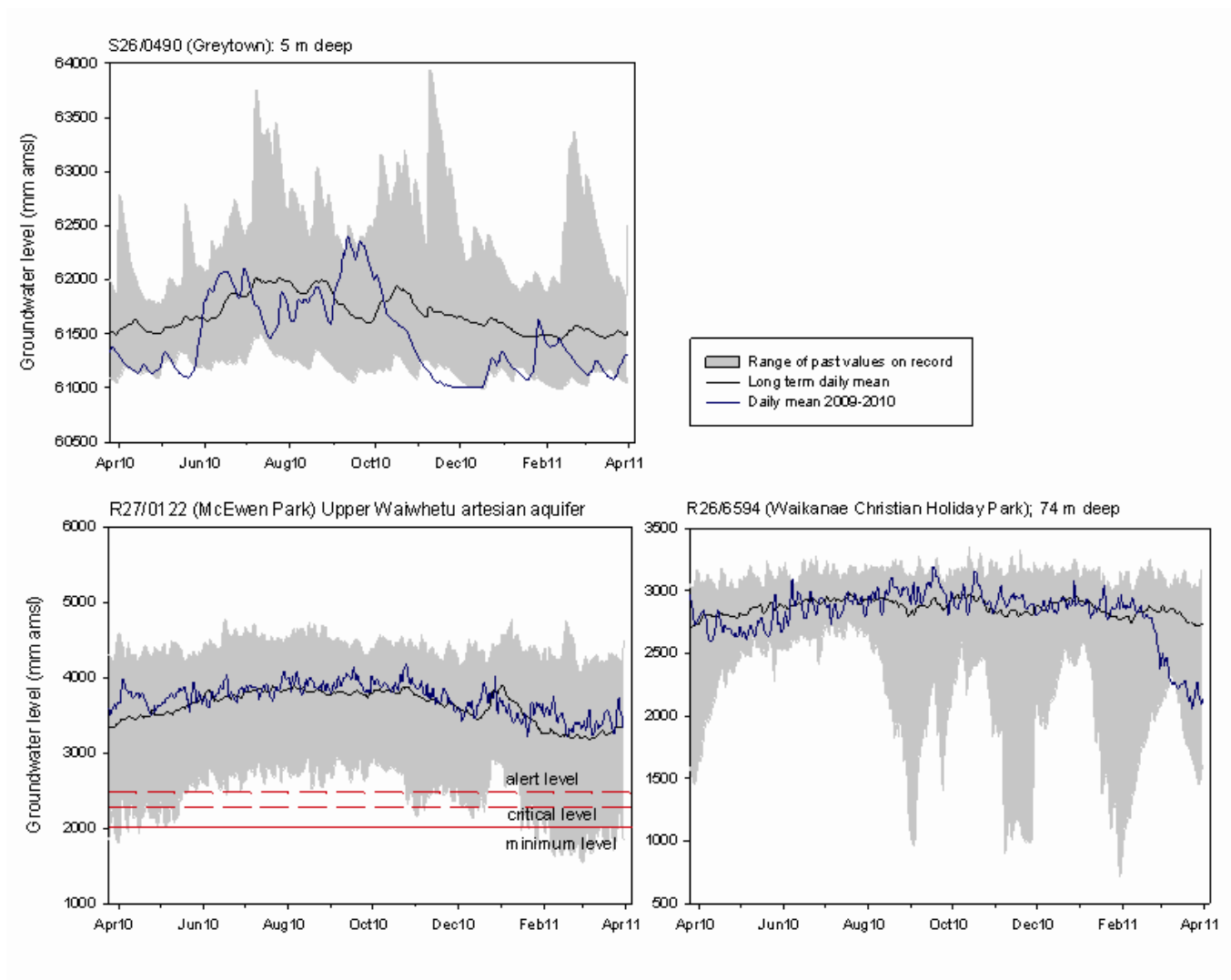
River flows recorded during the period January to March 2011 at selected monitoring locations in the Wellington region

## Groundwater levels

After an unseasonably early decline in groundwater levels in early summer, many aquifers in the Wairarapa have held steady or recovered during the period January to March (e.g., see below the shallow groundwater monitoring site S26/0490 near Greytown). At the beginning of April, groundwater levels in most aquifers were a little below average for the time of year.

Shallow groundwater levels on the Kapiti Coast have shown a fairly typical seasonal decline, but remained within the historical range for most monitoring sites. Deep aquifer levels in the Waikanae area declined sharply by up to a metre in mid-Feb (eg see R26/6594 monitoring bore record) and this is thought to be related to water supply bore-field testing being conducted by Kapiti Coast District Council.

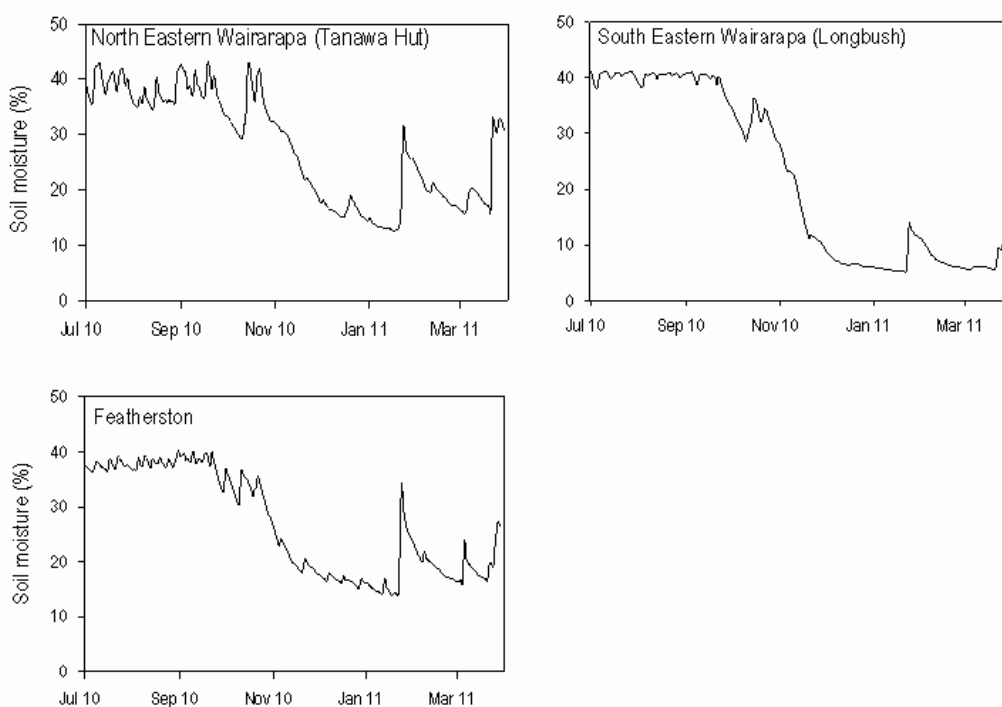
Groundwater levels in the upper Waiwhetu artesian aquifer (R27/0122) have tracked about average and well above alert thresholds for saline intrusion.



Groundwater levels over the past year recorded at selected Greater Wellington monitoring locations

## Soil moisture levels in the Wairarapa

Soil moisture content at Greater Wellington monitoring sites in the Wairarapa received a boost from heavy rainfall at the end of January (see graphs below). During February, moisture levels dropped off steadily as there was no significant recharge but recovered somewhat in March, most notably in the eastern hill country (e.g., see Tanawa Hut record). NIWA monitoring data showed sites near Masterton, Martinborough and Castlepoint experienced 'severe soil moisture deficit' (i.e., more than 130 mm of deficit) during February and March for a total of between 5 and 15 days (mostly occurring towards the end of February). By the end of March, no significant deficit existed at these sites.



Soil moisture content for the period July 2010 to March 2011 at Greater Wellington monitoring locations in the Wairarapa

## Climate outlook – April to June 2011

NIWA's climate outlook for April to June 2011 indicates that the La Niña event is continuing in the tropical Pacific, but is weakening. Neutral conditions are expected in the tropical Pacific by the beginning of winter. In the west of the Wellington region, seasonal rainfall, soil moisture and river flows for the period April–June are likely to be near normal. In the Wairarapa, rainfall, soil moisture and river flows are equally likely to be near normal or above normal (see <http://www.niwa.co.nz/our-science/climate/publications/all/seasonal-climate-outlook>).

## More information

This summary is based on data from selected monitoring locations in the Wellington region. Greater Wellington monitors rainfall, river flows, groundwater levels and soil moisture at many locations that may not be mentioned in this summary report. Maps of site locations and up-to-date data can be found at [www.gw.govt.nz/monitoring](http://www.gw.govt.nz/monitoring).

**Disclaimer:** This report is based on data that have not yet been quality checked. In particular, flow data may be subject to change following adjustment of rating curves. Greater Wellington accepts no responsibility for any interpretation or use of the provisional data in this report.