

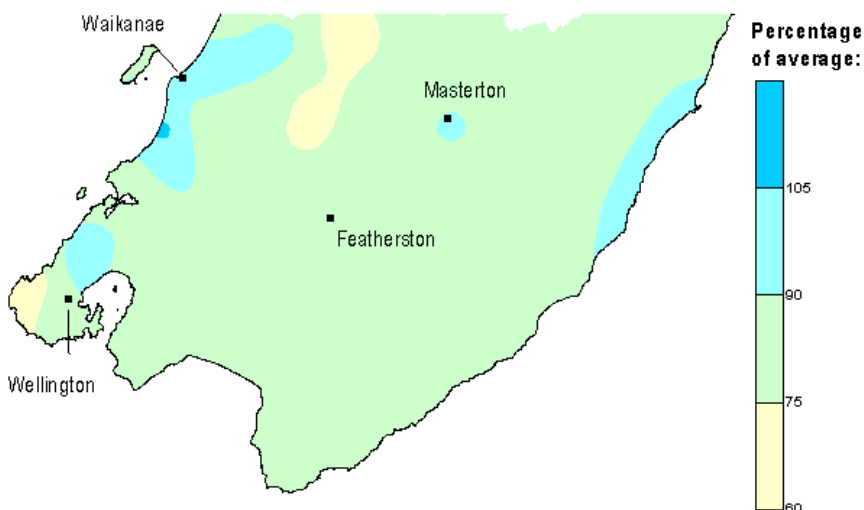


Winter 2011 hydrological summary

Environmental Monitoring and Investigations Department

Winter rainfall in 2011

Winter was relatively dry in the Wellington region, as it was for much of the country. Most Greater Wellington rainfall monitoring sites recorded between 75% and 90% of the long-term average for the winter (June to August inclusive). Sites on the west and east coasts received nearer to normal amounts while the central Taranui Range was the driest area in the region relative to long-term averages with less than 75% normal rainfall (see map to the right and table at bottom of page).



Winter rainfall in 2011 as a percentage of the long-term average for this time of year

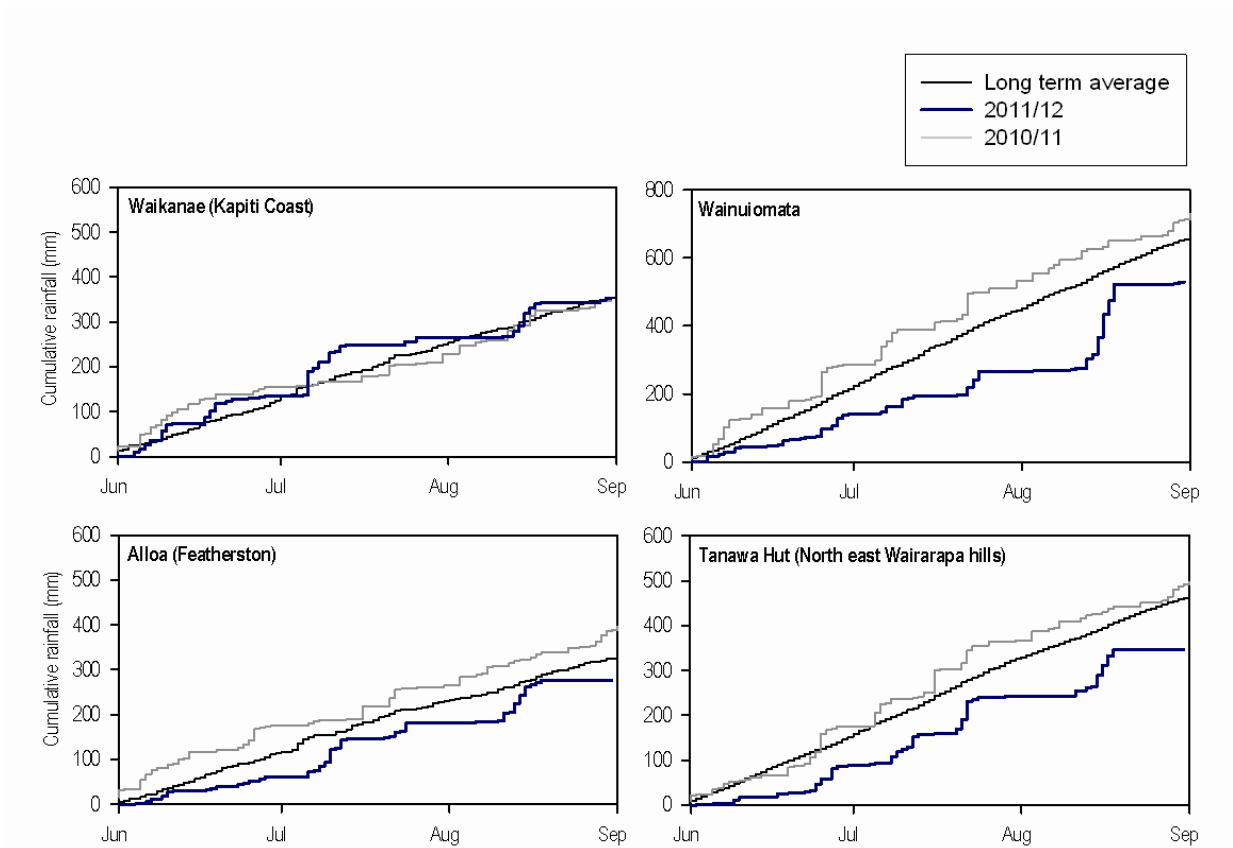
The cumulative rainfall graphs over the page illustrate how dry the winter was in most places compared with 2010 and also provide an indication of the nature and timing of rainfall events.

June was very dry in all areas except the Kapiti Coast. While more rain fell in July and August, there also were long dry spells including almost three weeks with no rain from the last week of July to mid August. Most of the winter rainfall across the region was associated with two main periods of unsettled weather; a stormy two weeks in early July in which a series of mainly northerly and westerly fronts passed over and another week-long period in mid August that began with a bitterly cold polar snap and culminated in heavy prolonged rainfall.

Further indication of the generally dry conditions over the winter months was the relatively low frequency of 'wet days' (where more than 1 mm of rain fell); several lowland or foothill sites recorded only one wet day for every three compared with a winter average that is closer to one wet day for every two.

Rainfall statistics for winter (June–Aug 2011) for selected monitoring sites in the Wellington region

	Total rainfall (mm)	Percentage of normal	Number of wet days (>1mm rain)	Percentage of normal
Waikanae	345	96%	31	92%
Kaitoke	575	82%	44	76%
Wainuiomata	524	80%	33	59%
Featherston ('Alloa')	277	82%	35	68%
NE Wairarapa ('Tanawa Hut')	347	76%	33	82%
Tararua Range ('Angle Knob')	1,630	74%	54	80%



Cumulative rainfall for winter 2011 at selected sites in the Wellington region

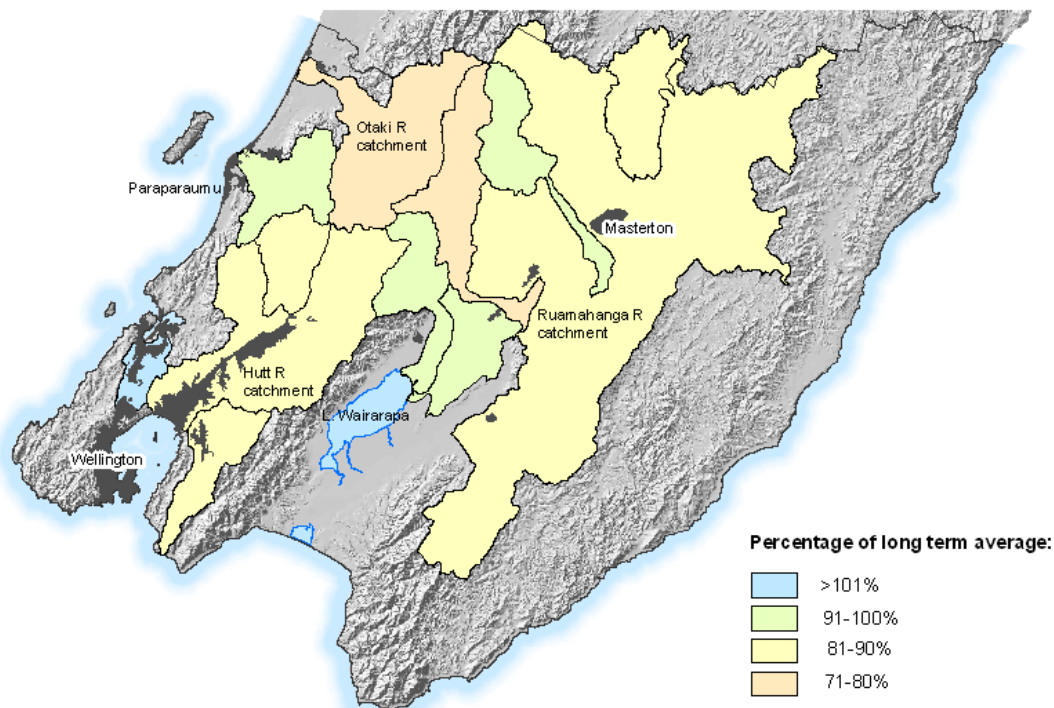
River flows during winter 2011

No significant flood events occurred in the region during the winter. Peak instantaneous river flows at monitoring sites across the region were almost exclusively associated with the series of fronts in the second week of July but were generally well below flood levels (see table below). Peak flows in the Ruamahanga River on 11 July came relatively close to those expected during a 1-in-2 year event, but no significant flooding or damage was reported.

Peak flows during winter 2011 at selected river flow monitoring locations compared with estimated 2-year return period flood peaks

	Peak (instant) flow during Winter (raw data)	Flood with an estimated return period of 2 years
Otaki River at Pukehinau	261 m ³ /s on 11 July	918 m ³ /s
Hutt River at Taita Gorge	202 m ³ /s on 8 July	777 m ³ /s
Wainuiomata River at Manuka Track	9.8 m ³ /s on 19 August	27 m ³ /s
Waingawa River at Kaituna	186 m ³ /s on 11 July	292 m ³ /s
Waiohine River at Gorge	384 m ³ /s on 11 July	895 m ³ /s
Ruamahanga River at Wardells	388 m ³ /s on 11 July	481 m ³ /s
Ruamahanga River at Waihenga	811 m ³ /s on 11 July	1,056 m ³ /s

On average, river flows were relatively low during winter compared with the long-term norm (see map below). Median daily flow was below the long-term average in all main catchments – with the exception of the Porirua Stream – and was lowest in the catchments that have headwaters deep in the Tararua Range; the Otaki and Waiohine rivers. The overall pattern reflects that of the winter rainfall distribution discussed earlier.

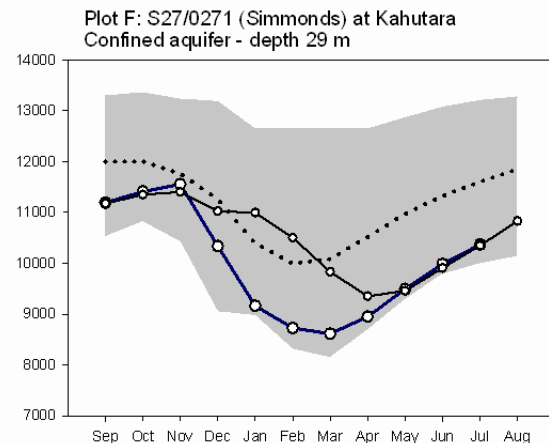
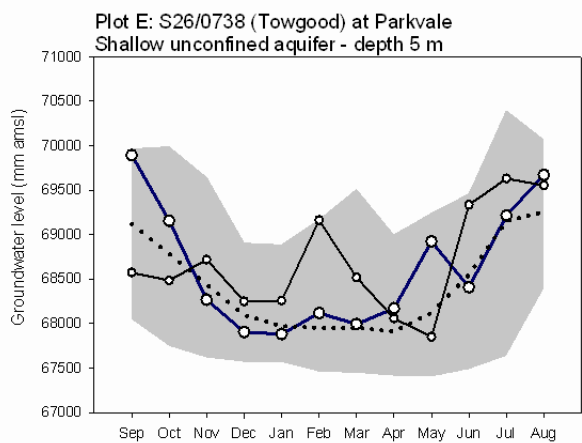
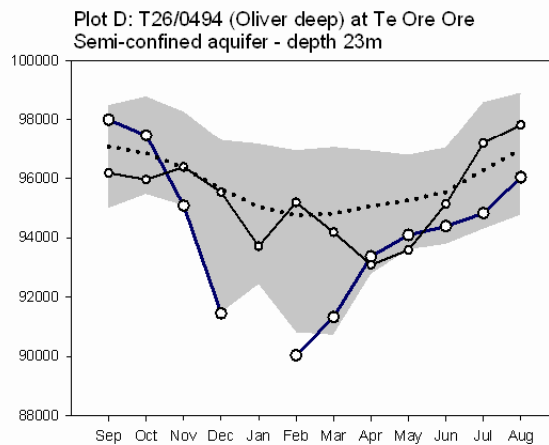
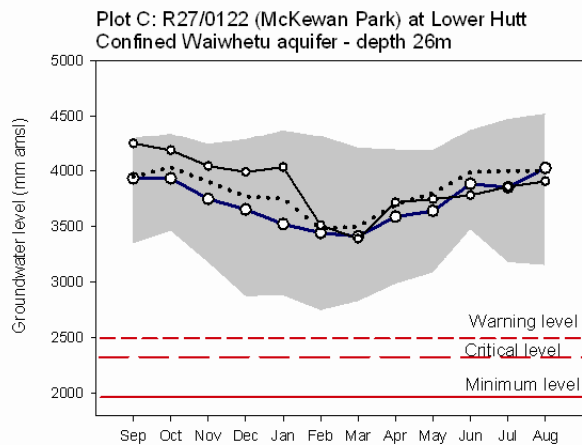
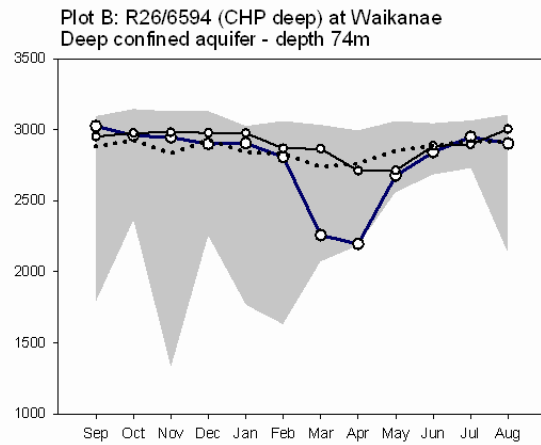
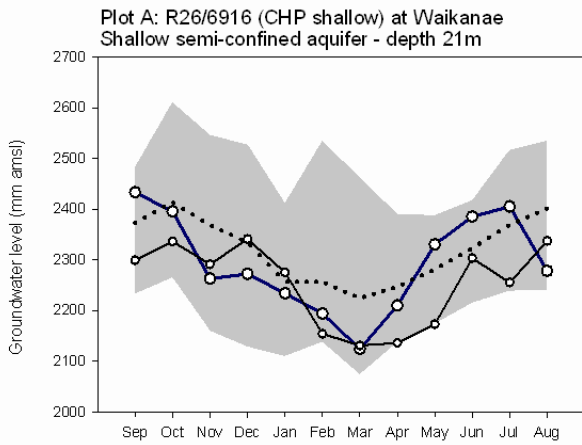
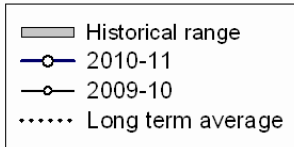


Median daily river flows during winter 2011 (June–August) for primary catchments in the Wellington region as a percentage of long term winter average

Groundwater levels in winter 2011

Groundwater levels in the confined water supply aquifers on the Kapiti Coast and in the Hutt Valley were close to normal for the time of year and similar to levels observed for winter 2010 (see graphs over the page for R26/6594 for the Waikanae aquifer and R27/0122 for the Waiwhetu aquifer); this was despite relatively severe drawdown in the Waikanae aquifer during the past summer. Shallow groundwater levels around Waikanae were well above normal at the beginning of winter, but dipped sharply in August at the selected monitoring site (see R26/6916) – it is too early to tell whether this was the result of a localised, short-lived drawdown or part of a more widespread effect.

In the Wairarapa, confined and semi-confined aquifers in Te Ore Ore (T26/0494) and Kahutara (S27/0271) showed typical winter recharge and recovery trends but water levels were lower than normal for this time of year. This is probably a consequence of relatively severe summer drawdown. Despite the relatively dry conditions over winter, shallow groundwater levels were generally in the normal range.



Mean monthly groundwater levels at selected sites in the Wellington region for the past year (up to 1 September 2011) compared with the previous year and the historical average and range

Climate outlook – spring 2011

The tropical Pacific is currently in the neutral range (neither La Niña nor El Niño), and is expected to remain neutral through the spring, according to the NIWA National Climate Centre. For Wellington and Wairarapa, this means relatively mild and dry conditions are expected to persist with spring rainfall, soil moisture and river levels equally likely to be in the normal or below normal range (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.

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.