

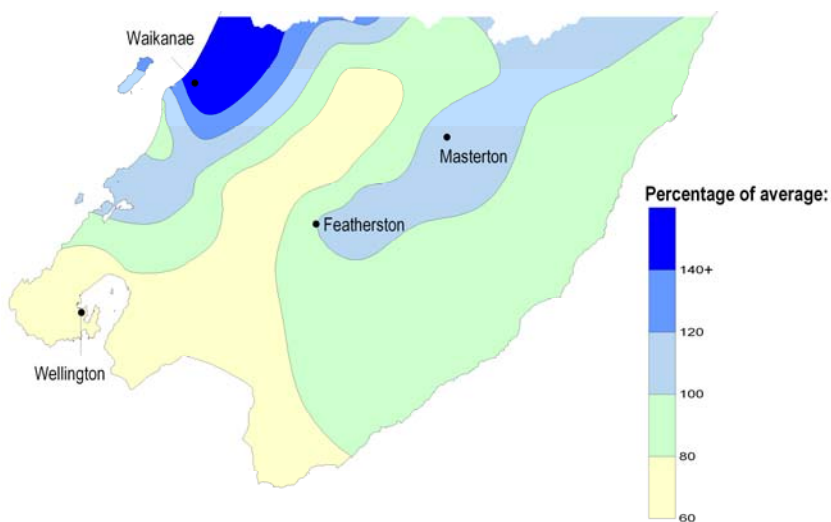


November 2009 hydrological summary

Environmental Monitoring and Investigations Department

Rainfall during November

After a very wet October, rainfall during November 2009 was below average in Wellington City, the south eastern Tararua Range and southern Wairarapa, around average on the Wairarapa plains and in the Hutt Valley, and about one-and-a-half times average in northern parts of the Kapiti Coast.



Rainfall during November as a percentage of the long-term average for the month

The most significant rainfall event for the month occurred on 28 November, when a strong northwesterly airflow brought heavy rainfall to the northern and western Tararua Range. The rainfall resulted in high flows in the major rivers fed from the range, although there were no major floods (see River Flows section).

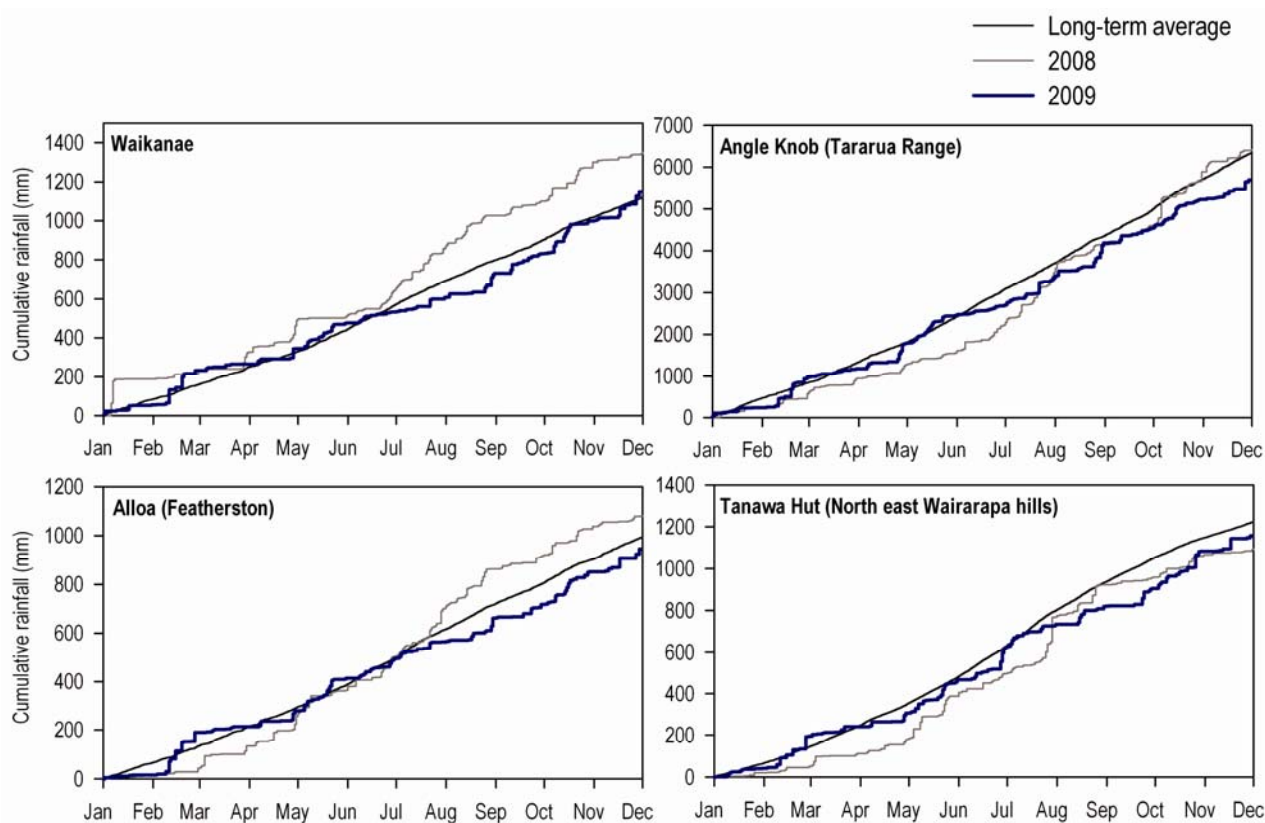
November was windier than normal, and stronger than normal southwest winds affected New Zealand (see NIWA's climate summary for November at www.niwa.co.nz).

Rainfall in the year to date

By the end of November, rainfall totals for 2009 were around average, or up to 10% below average, for the time of the year. Although most places received less rainfall for the year compared to at the same time in 2008, this was mainly due to the dry winter and start to spring in 2009 compared to the previous year. The wet October helped to boost rainfall totals back towards average in most parts of the Wellington region.

Year-to-date rainfall statistics for selected monitoring sites in the Wellington region

	Rainfall during November at monitoring site (mm)	Rainfall for 2009 to end of November (mm)	Percentage of long-term average for year to date
Waikanae	150.5	1,150	102%
Karori	55	1,149	100%
Kaitoke	137	1,896	90%
Wainuiomata	85	1,673	93%
Featherston ('Alloa')	93	943	95%
NE Wairarapa ('Tanawa Hut')	74	1,159	96%
Tararua Range ('Angle Knob')	469	5,695	90%



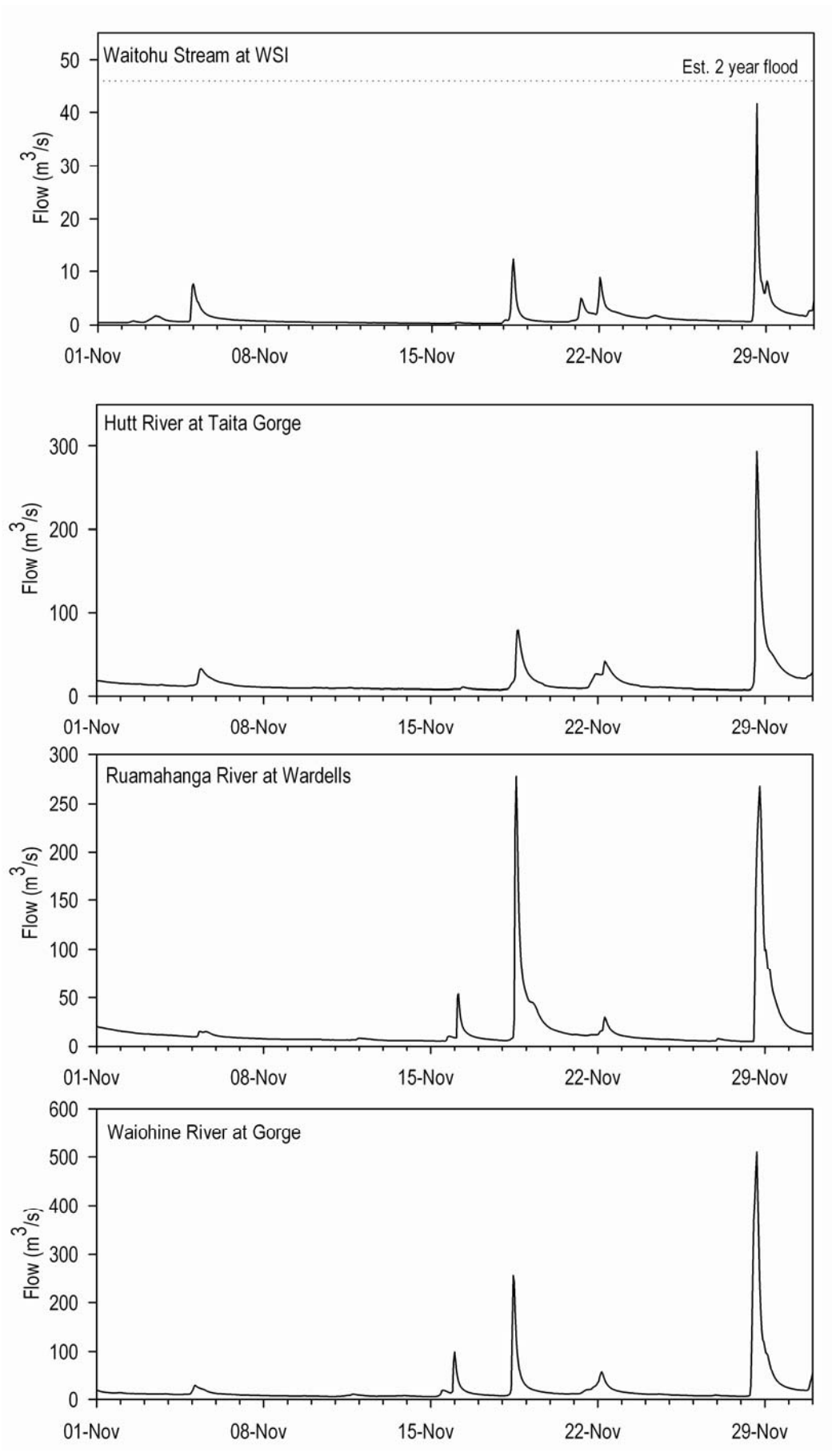
Cumulative annual rainfall at selected sites in the Wellington region

River flows during November

Due to the strong northwesterly airflow pattern of November, river flows for the month were above average on the Kapiti Coast, but below average in the rest of the Wellington region. In general, river flows were fairly stable for the time of the year. As shown by the graphs, the periods of stable river flow were interrupted by two small floods: on 18 November (mainly affecting Wairarapa rivers) and 28 November. The Otaki River and Waitohu Stream had peak flows just below the threshold of an estimated 2-year return period flood on 28 November, and it was the largest flood through these waterways this year to date. However, in most of the other major rivers of the region the floods recorded during November were not as large as that of late August 2009.

River flow statistics for November 2009 at some of Greater Wellington's flow monitoring locations

	Average river flow for November 2009	Percentage of long-term average	Highest flow during November 2009
Waitohu Stream at Water Supply Intake	1.4 m ³ /s	120%	42 m ³ /s on 28 Nov
Otaki River at Pukehinau	35.0 m ³ /s	105%	880 m ³ /s on 28 Nov
Waikanae River at Water Treatment Plant	6.9 m ³ /s	130%	115 m ³ /s on 28 Nov
Hutt River at Taita Gorge	15.7 m ³ /s	57%	300 m ³ /s on 28 Nov
Wainuiomata River at Manuka Track	0.61 m ³ /s	74%	3 m ³ /s on 28 Nov
Waingawa River at Kaituna	7.5 m ³ /s	68%	145 m ³ /s on 28 Nov
Waiohine River at Gorge	20.2 m ³ /s	73%	525 m ³ /s on 28 Nov
Ruamahanga River at Wardells	16.5 m ³ /s	76%	280 m ³ /s on 18 Nov
Ruamahanga River at Waihenga	53.5 m ³ /s	69%	595 m ³ /s on 28 Nov



River flows recorded during November 2009 at selected Greater Wellington monitoring locations

Groundwater

Despite the low rainfall at the end of winter and start of spring, there was significant recharge to the region's aquifers during the latter part of spring 2009. Groundwater level monitoring results show water levels were generally above average on the Kapiti Coast, around average in the Hutt Valley and below average in the Wairarapa.

Average groundwater levels through November in many parts of the region are a result of continued 'winter' recharge and reduced abstraction for irrigation compared to previous years. Groundwater levels are expected to decline during December with the onset of drier summer conditions. While this has been a positive period in terms of groundwater recharge, many deeper confined aquifers are expected to record levels around long term minima in the coming summer months.

Lower Hutt Aquifer

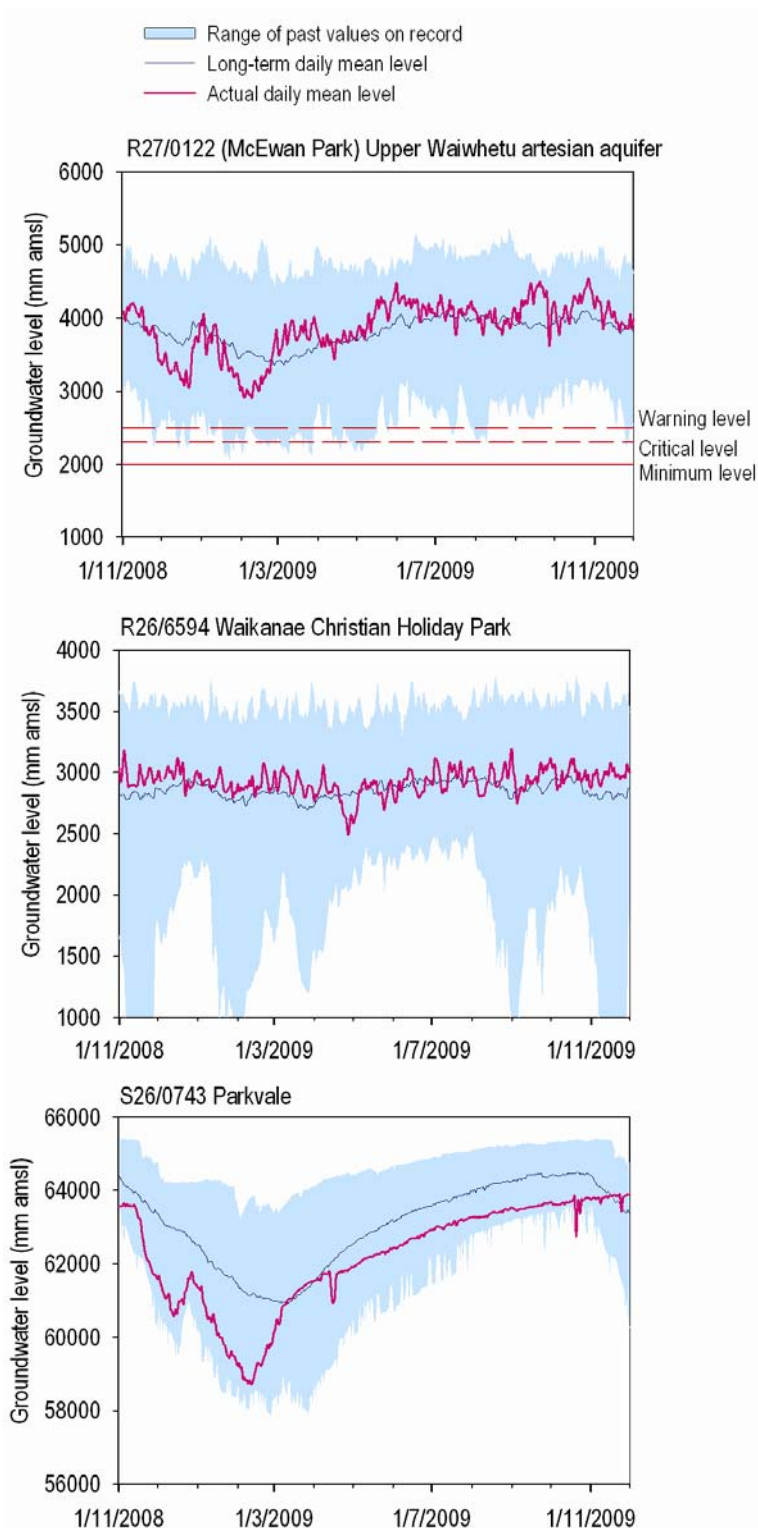
Groundwater levels in the Hutt aquifer remained around or slightly above average during November.

Kapiti Coast

Groundwater levels remained above average across the Kapiti Coast during November. This is evident from the record for borehole R26/6594 located within the Waikanae deep aquifer.

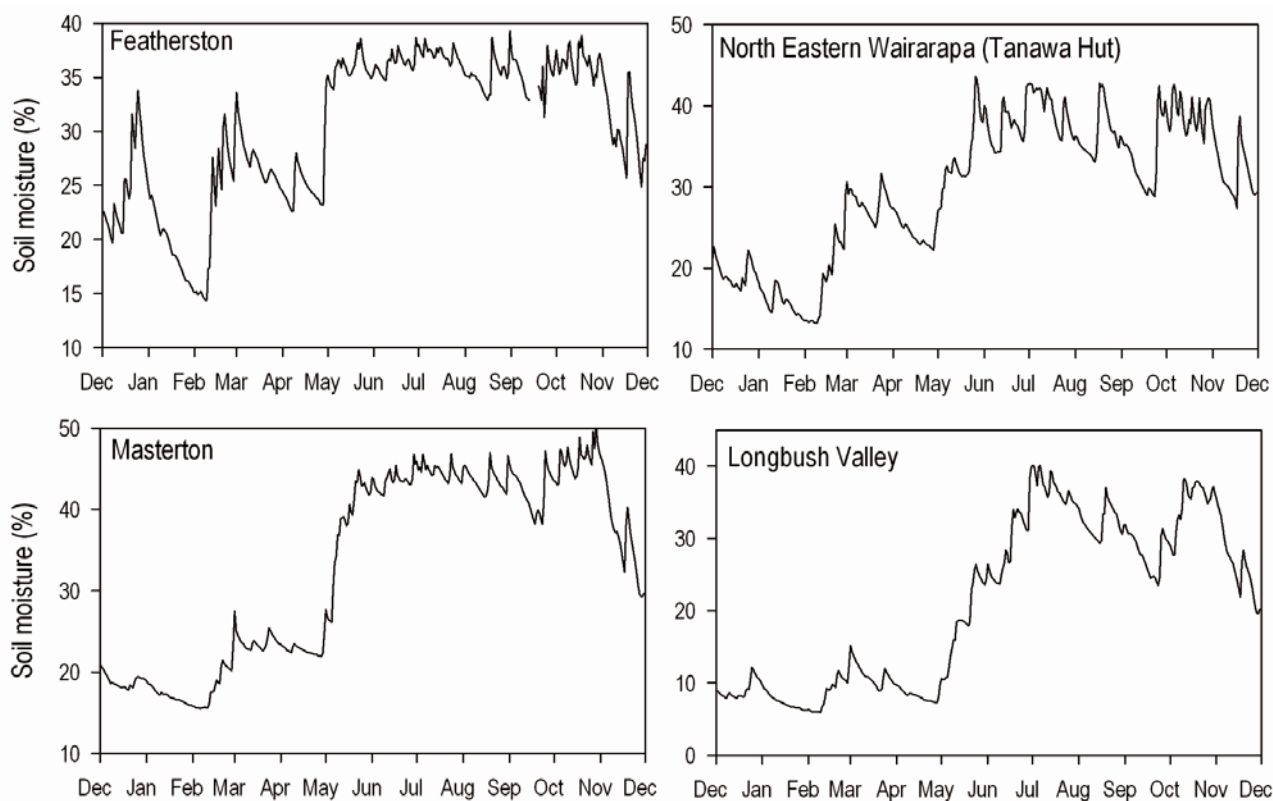
Wairarapa

Groundwater levels in most Wairarapa aquifers were still below average during November, although they were not as low as levels recorded previously for the time of the year. Groundwater level data from the monitoring borehole S26/0743 in the Parkvale deep aquifer showed above average levels by the end of November. This is probably due to above average soil moisture conditions and a later than normal start to the irrigation season. Groundwater levels are expected to decline during December as widespread irrigation commences.



Soil moisture

In general, an overall drop in soil moisture in the Wairarapa occurred during November, after peak moisture conditions in October. However, as shown by the graphs below, soil moisture at the end of November was considerably higher than at the start of December 2008. This has meant a delayed start to the irrigation season.



Soil moisture recorded at monitoring sites in the Wairarapa, 1 December 2008 to 1 December 2009

Climate outlook

NIWA's climate outlook for December 2009 to February 2010 favours about average rainfall, river flows and soil moisture in Wellington, and average or below average rainfall, river flows and soil moisture in the Wairarapa. A moderate strength El Nino is likely to persist through summer before weakening in autumn. El Nino is often associated with colder than average temperatures and dry conditions in the east, due to a predominance of southwesterly winds. See NIWA's climate outlook at 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, river 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.