greater WELLINGTON
REGIONAL COUNCIL
Te Pane Matua Taiao

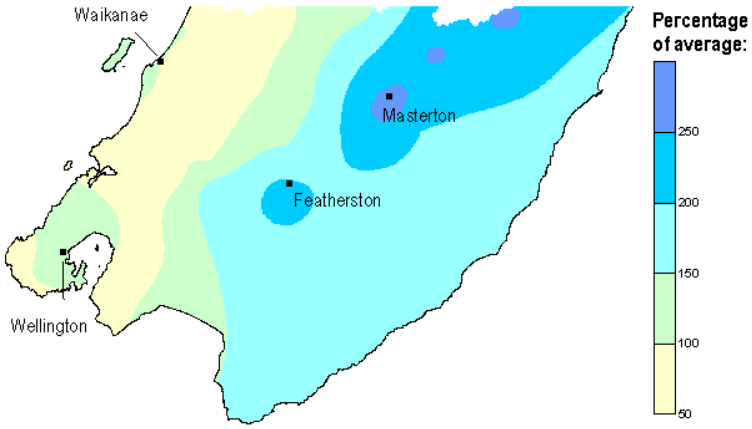
January 2011 hydrological summary

Environmental Monitoring and Investigations Department

Rainfall in January

January was relatively dry in the west of the region and wet in the east. Rainfall was below, or about, average on the Kapiti Coast, around Wellington city and in the Hutt Valley and western Tararua Range but well above average in the Wairarapa, particularly in the northeast.

Most of the rain in January fell in the week between the 18th and 25th and was associated with two low pressure systems that originated in the sub-tropics. The second low tracked in from the northeast and produced particularly steady and widespread rainfall over several days, including 80–120 mm across much of the Wairarapa. Most Greater Wellington monitoring sites registered their highest daily totals for the month on Sunday the 23rd January and these ranged between 35 mm in the west to 115 mm in the eastern Tararua Range. Depth and duration statistics for this event were not particularly significant in most places, although the 24-hour total rainfall recorded at 'Castlehill' in northeastern hill country of the Wairarapa (94.5 mm) had an estimated return period of 1 in 5 years.



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

Given the dry conditions experienced in the Wairarapa since October last year, and the early onset of soil moisture deficits, the steady rainfall in mid to late January was of significant relief (see Soil Moisture section).

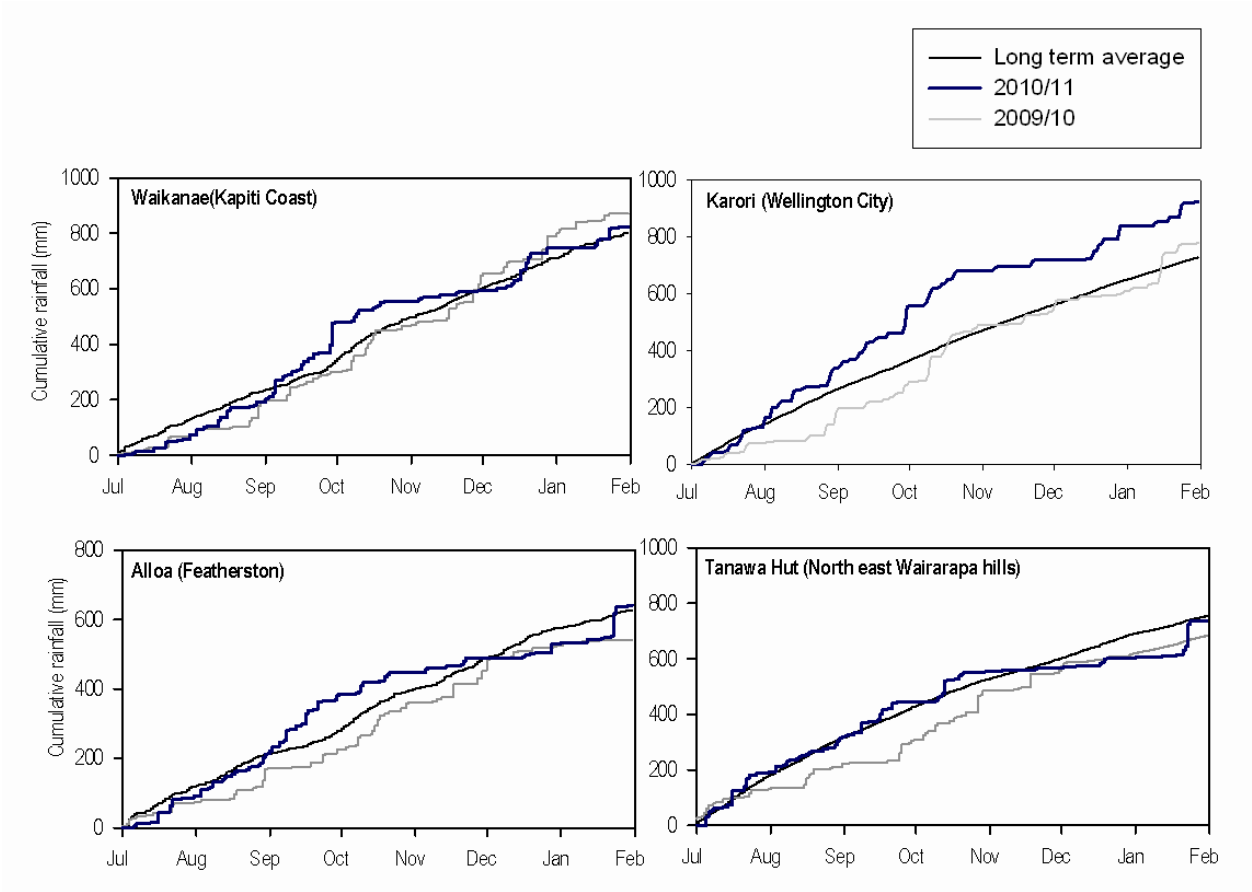
Rainfall since mid-winter 2010

Rainfall since July 2010[1] 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 significance of the mid-January rainfall in the Wairarapa (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 January at monitoring site (mm)	Rainfall for 2010 from July to the end of January (mm)	Percentage of long-term average for year- to-date from July
Waikanae	76.0	823.0	100%
Karori	85.8	923.0	127%
Kaitoke	129.0	1,437	103%
Wainuiomata	89.0	1,041	92%
Featherston ('Alloa')	110.6	640.2	102%
Northeast Wairarapa ('Tanawa Hut')	136.0	734.0	98%
Tararua Range ('Angle Knob')	508.5	4,533	99%

[1] 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.



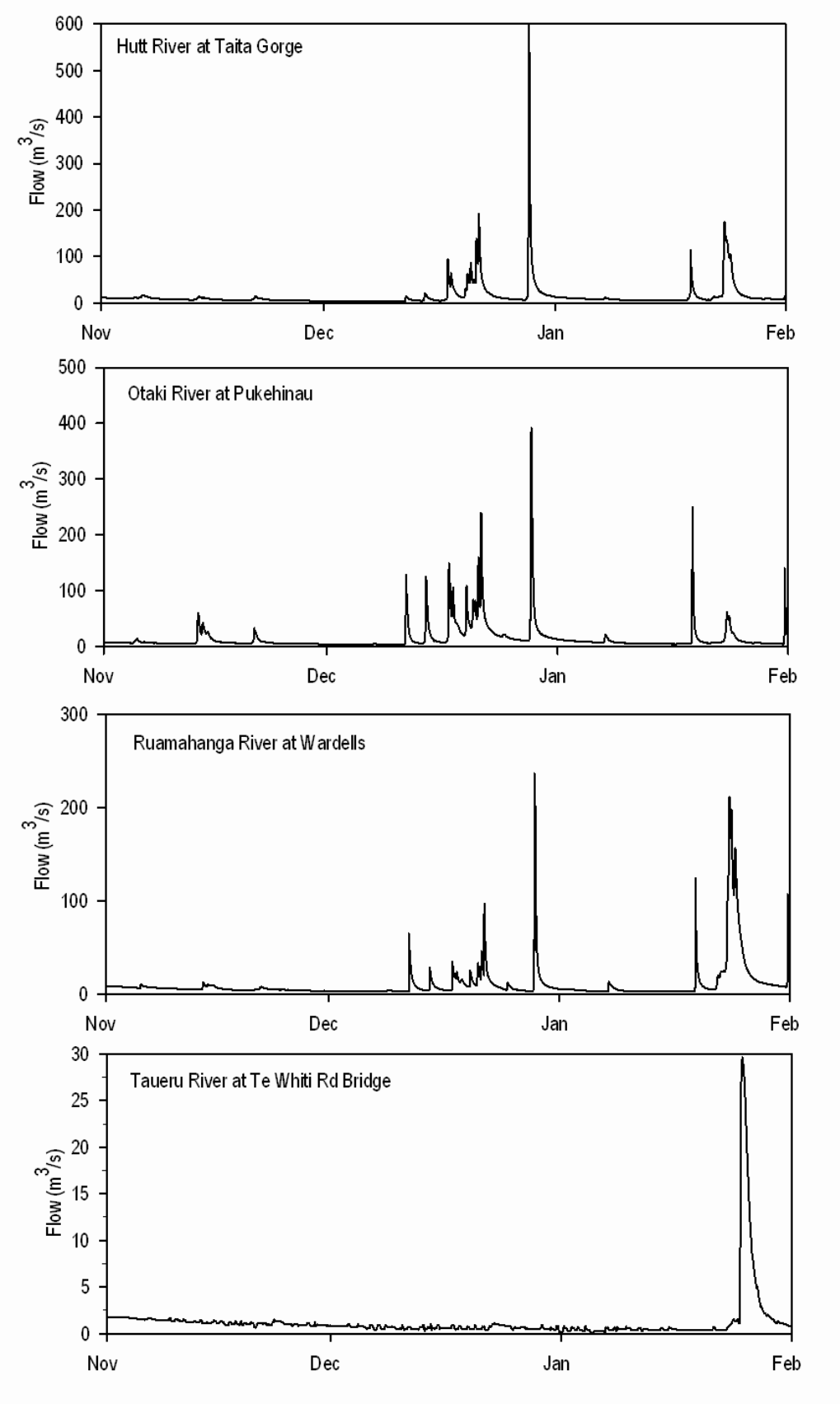
Cumulative rainfall for the year to date since July 2010 at selected sites in the Wellington region

River flows during January

Rivers and streams across the region were in steady recession for the first two weeks of January and generally reached their lowest flows of the month between the 15th and 17th. The minimum 1-day low flow for several rivers and streams (see table below) – including the Otaki and Ruamahanga rivers – was equivalent to their mean annual low flow. The mid-January rainfall produced some substantial fresh flows, most notably in rivers rising in the eastern hill country. For example, the Taueru River recorded its first fresh in more than three months (see graphs on next page), although the fact that the river peaked at only 30 m^3/s (well below what might be considered a significant event) is an indication of the extent to which the rainfall was distributed over a long period of time and infiltrated soils rather than running off.

River flow statistics for January 2011 at selected flow monitoring locations in the Wellington region

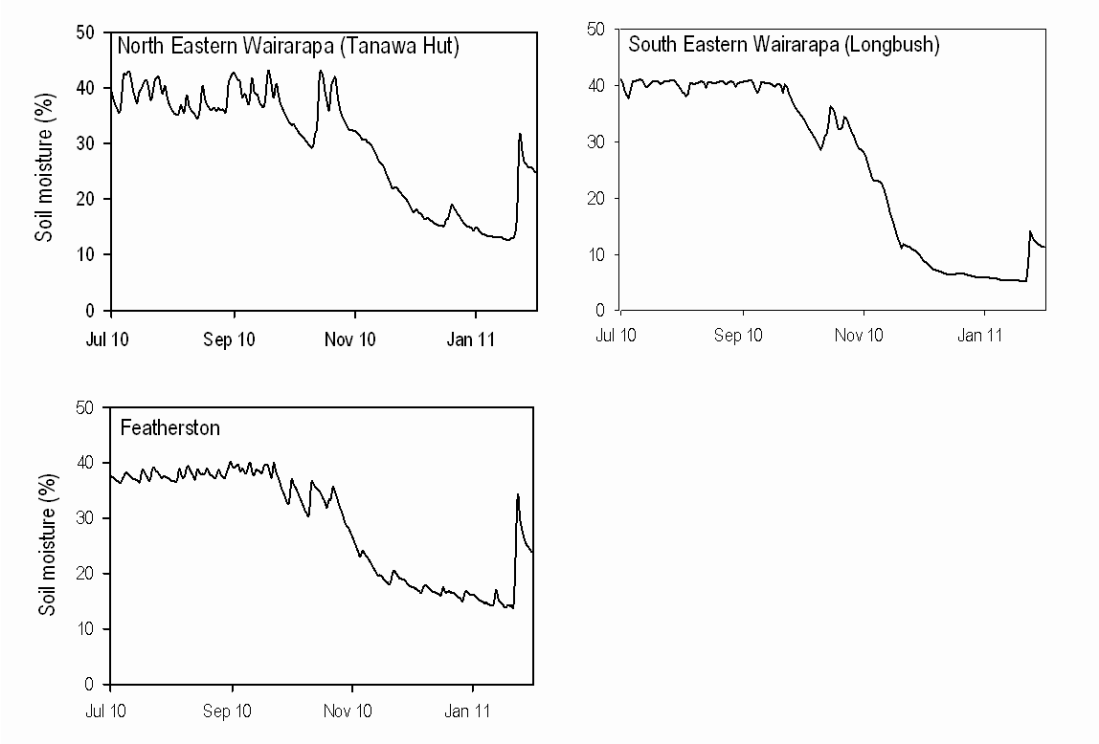
	Average river flow for January 2011 (m^3/s)	Percentage of long-term January average	Lowest 1-day flow during January (raw data)
Otaki River at Pukehinau	11.0	48	4.77 m^3/s on 16/1
Akatarawa River at Cemetery	2.68	71	1.37 m^3/s on 16/1
Hutt River at Taita Gorge	14.9	88	5.31 m^3/s on 15/1
Wainuiomata River at Manuka Track	0.34	61	0.20 m^3/s on 17/1
Waingawa River at Kaituna	8.20	121	1.33 m^3/s on 17/1
Waiohine River at Gorge	18.4	115	3.70 m^3/s on 16/1
Ruamahanga River at Wardells	15.8	134	2.62 m^3/s on 12/1
Ruamahanga River at Waihenga	46.8	103	7.95 m^3/s on 17/1



River flows recorded during the period November 2010 to January 2011 at selected monitoring locations in the Wellington region

Soil moisture levels in the Wairarapa

Soil moisture content at Greater Wellington monitoring sites in the Wairarapa was low at the start of January and continued to decline for the first two weeks (see graphs below). NIWA monitoring data showed most parts of the Wairarapa were experiencing 'severe soil moisture deficit' during this time (i.e., more than 130 mm of deficit). These conditions were relieved following the mid-January rainfall and the month ended with soils being much wetter than normal for this time of year (e.g., deficits in the range 70–100 mm around Masterton and Martinborough).



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

Climate outlook – February to April 2010/11

NIWA's climate outlook for February to April 2011 indicates that the equatorial Pacific remains in a strong La Niña state and this is expected to persist to the start of Autumn. Whether La Niña continues into winter in a weaker state is uncertain at this stage. Across the whole Wellington region, seasonal rainfall for the period February–April is likely to be near normal, or above normal, and soil moisture and river flows are likely to be above normal. Temperatures are likely to be above average in the west and equally likely to be either normal or above normal in the Wairarapa (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.