

Summer 2007/08 interim drought analysis

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Rainfall and river flows

February 2008 followed three months of relatively dry weather. As shown in Figure 1, the rainfall for the four months from November 2007 to February 2008 was significantly below average in all parts of the region except the Kapiti Coast. Of note, rainfall for the four month period was as low as 35% of long-term average on the Wairarapa plains and less than 60% of average in the eastern hills, parts of the Tararua Range, Wainuiomata, Orongorongo Range and Wellington city. Statistical analysis of the rainfall totals for summer (December to February) shows that although in many parts of the region the summer was significantly dry, there was more rainfall than during the summer of 1972/73 (when there was a notable drought) (Table 1).

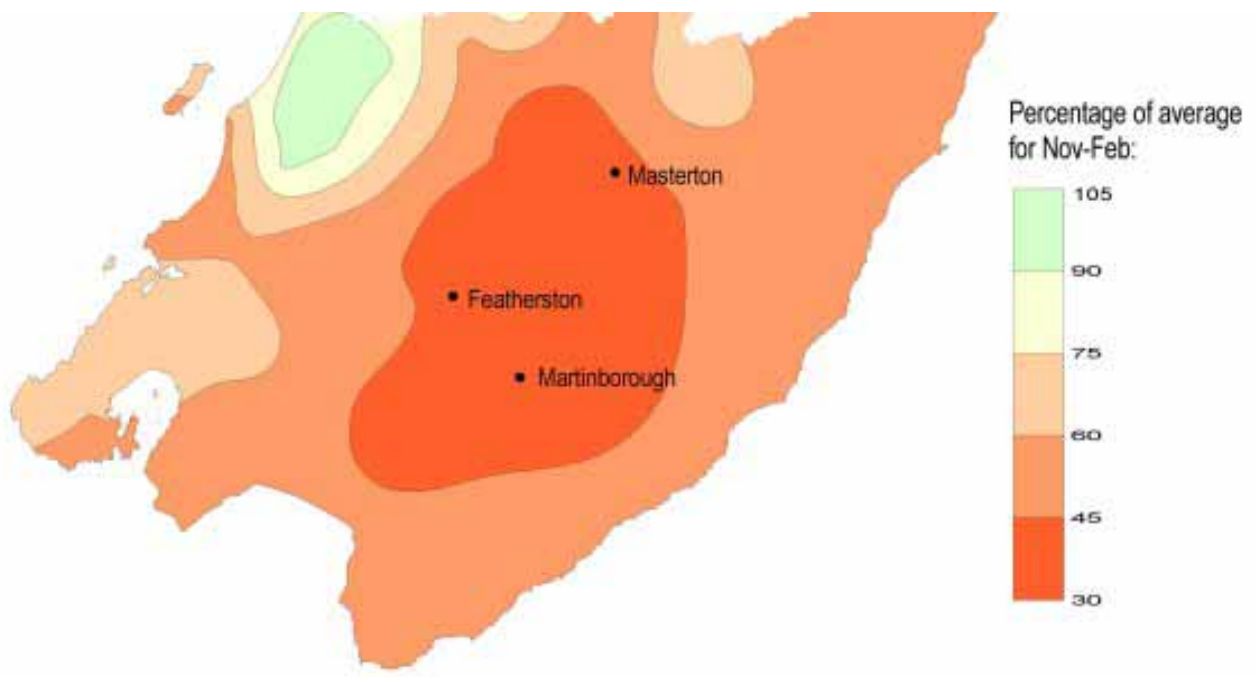


Figure 1: Rainfall during the period Nov 2007 to Feb 2008 as a percentage of the long-term average

The lowest river flows (7-day and 28-day mean flows) experienced during the 2007/08 dry spell to date are most significant for the Wairarapa rivers (Table 2). Return periods in the range 4-15 years have been assigned to the low flows in the Ruamahanga River and its western tributaries, although the 7-day lowest flow in the Ruamahanga River at Waihenga may have been more severe (to be confirmed). In general, the lowest flows were not as low as flows experienced during droughts of

1978 and 1985¹. The Hutt and Wainuiomata rivers have had low flows this year with estimated return periods of 3-4 years. In the Wainuiomata River, lower flows were observed in March / April 2001 and in the Hutt River lower flows occurred in autumn 2003. Note that the eastern Wairarapa river flows will be analysed once the data has been obtained from NIWA.

Table 1: Summer (Dec-Feb) 2007/08 rainfall statistics at key monitoring stations in the Wellington region

Site	Year records began	Long-term summer average (mm)	Summer 2007/08 rainfall (mm)	Summer 2007/08 compared to average	(Previous) driest on record	Comment about summer 2007/08
Karori Reservoir ²	1879	246	160.6	65%	113 mm in 1972/73	In lowest quartile of record
Kaitoke Headworks	1951	466	205.6	44%	204 mm in 1972/73	Second lowest on record, after 1973
Bull Mound (Sth Tararua Range)	1980	904	491.5	54%	538 mm in 1988/89	Lowest on record
Wainuiomata Reservoir [†]	1890	344	168.5	49%	128 mm in 2000/01	In lowest 10 th percentile
Waikanae WTP	1970	263	261.5	99%	117 mm in 1977/78	
Alloa (Featherston)	1964	216	104.5	40%	82 mm in 1972/73	3 rd lowest on record
Tanawa Hut (Eastern Wairarapa)	1956	233	140.5	60%	75 mm in 1997/98	

Table 2: Low flow statistics for 2007/08 to date, for major rivers in the Wellington region

	Lowest 7-day mean flow		Lowest 28-day mean flow	
	Flow (m ³ /s)	Est. return period	Flow (m ³ /s)	Est. return period
Waikanae River at WTP	0.94	2 years	1.13	2 years
Hutt River at Birchville	2.40	3 years	2.83	4 years
Wainuiomata River at Manuka Track	0.13	4 years	0.16	4 years
Ruamahanga River at Wardells	1.9	10 years	2.5	11 years
Ruamahanga River at Waihenga	5.5	30+ years?	8.4	15 years
Waingawa River at Kaituna	1.02	4 years	1.6	8 years

Longer-term perspective

In addition to the recent months of low rainfall, in general 2007 was drier than average. In some parts of the region, October was the only month of 2007 when there wasn't a significant rainfall

¹ At most sites flow records do not go back as far as 1973. There is data for 1972/73 for NIWA's site Hutt River at Kaitoke, and the record for the 2007/08 summer will be analysed once it has been received from NIWA.

² Driest on record taken to be the driest in the last 50 years

deficit (Figure 2). Of note, at Alloa (Featherston) the 12 month period from 3 February 2007 was the second driest since records began in 1964 (the driest 12 month period on record was in 1972/73). As a result, soil moisture levels are now significantly below average for the time of the year.

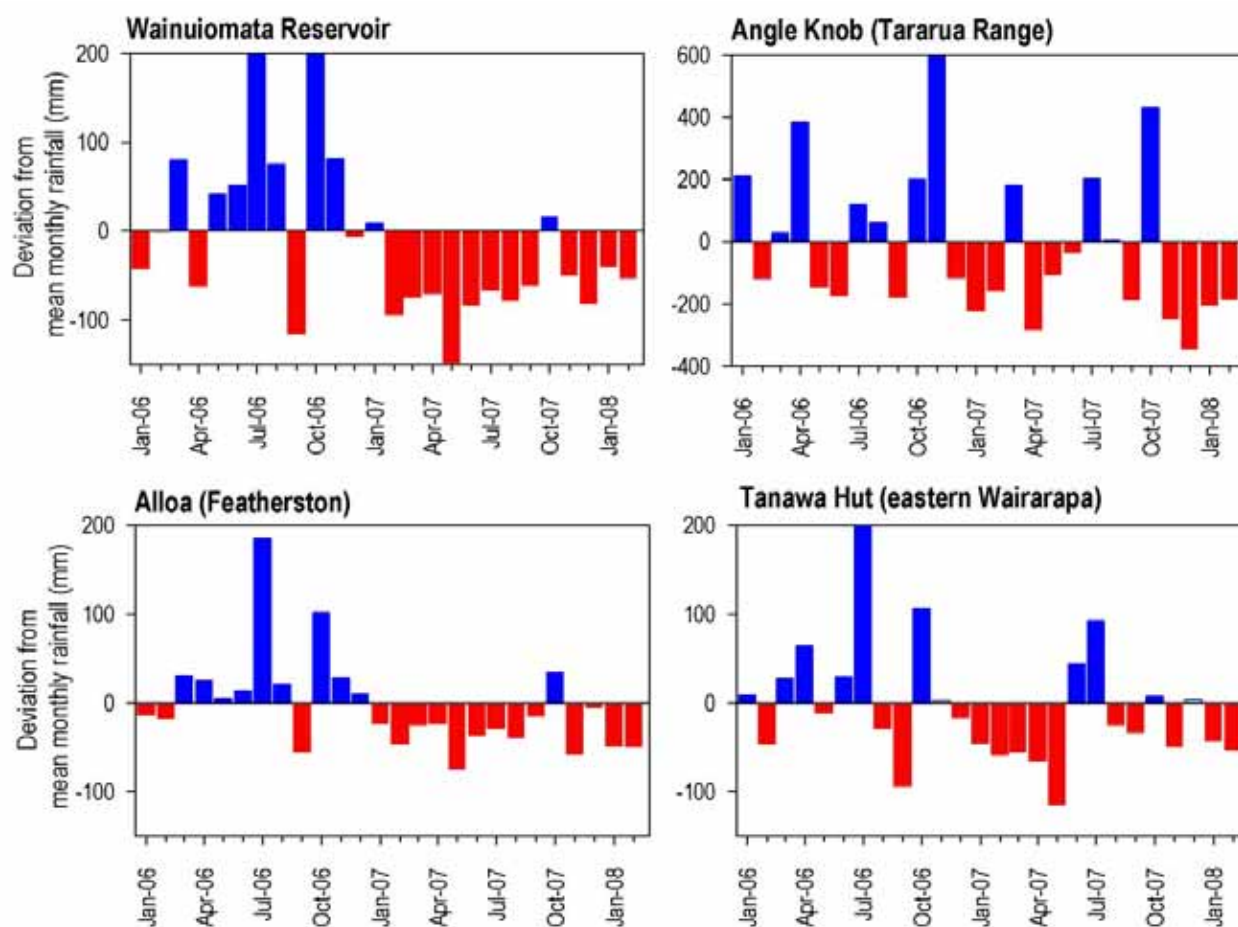


Figure 2: Monthly rainfall as deviation from average at selected sites in the Wellington region, since January 2006. Blue bars indicate rainfall was above average and red bars indicate rainfall was below average.

The extended dry spell during autumn 2007 was linked to El Nino, whereas the current drought is occurring during La Nina conditions. The La Nina is expected to persist through autumn 2008. La Nina conditions can lead to low rainfall throughout the Wellington region, but particularly on the Wairarapa plains, Kapiti coast, Hutt Valley and Wainuiomata. For comparative purposes, the last La Nina occurred in 2000/01 and the last strong La Nina was in 1988/89. These events are associated with some of the lowest historic flows in the Wainuiomata, Hutt and Ruamahanga rivers.