

## **June 2007 Monthly Flow and Rainfall Report**

### **General**

The weather in June 2007 was a complete contrast to that in May 2007. Where May was a warmer than average month with mostly west to northwesterly quarter winds and few southerlies, June was dominated by southwesterly quarter winds accompanied by rain, snow and strong to gale-force winds.

From 5-10 June, a strong southwest airstream containing several cold fronts lashed the south of the South Island and was accompanied by cold showery conditions with snow on the hills at times.

A series of weaker weather systems then followed with showers at times in many areas, especially in the south and east.

On 21 June, a complex low pressure system moved over from Australia and as it crossed New Zealand, it dragged another cold, very strong southwesterly quarter airstream over the South Island and was accompanied by strong to gale-force southwesterly winds, rain and widespread snow. The air was very cold and brought dry snow which drifted in the strong winds with drifts of upwards of 1.5m deep in parts of South and West Otago. After 3 days of this weather, the southwesterly airstream brought a warmer weather system accompanied by rain which resulted in a very rapid thaw in South and East Otago.

Over the next few days the winds slowly abated and the showers eased.

Late in the month a complex weather system in the Tasman Sea brought widespread heavy rain to western areas and as it was accompanied by warmer temperatures, much of the snow that fell earlier, melted and added to river flow especially in the south and east.

### **North Otago**

Rainfalls varied from about 25% below average to 30% above average in this area. At most sites, rainfall on 29 June accounted for more than 60% of the month's total and resulted in this area now having significantly improved soil moisture.

Total falls at the indicator sites (average monthly totals in brackets) included:

Omarama	48.1mm (37.5mm)	28% above average
Waikoura	40.5mm (45.0mm)	10% below average
Oamaru Airport	43.2mm (40.0mm)	8% above average
Kaura, the Dasher	59.4mm (64.0mm)	7% below average
Islay Downs	38.3mm (44.0mm)	13% below average
Palmerston	37.0mm (50.2mm)	26% below average

Significant falls during the month included: on 22 June, Omarama 15.2mm; and on 29 June, Omarama 26.4mm, Waikoura 27.0mm, Oamaru Airport 32.0mm, Oamaru Township 30.6mm, Islay Downs 16.0mm, Palmerston 21.2mm.

River flows were well below their long term averages throughout the month except on 30 June when rivers rose as a result of the heavy rain on 29 June.

The low flows were unusually low for this time of the year. However, the low flows were not an issue as there were no abstractions for irrigation required during the month.

Farmers report a generally good winter month. The ground was generally hard and dry, a lot of frosts occurred and the rain at the end of the month was quite welcome to improve soil moisture.

### **Central Otago**

Rainfalls were close to or above average in this area during June. Total falls at the indicator sites (average monthly totals in brackets) included:

Lindis Crossing	39.0mm (42.4mm)	8% below average
Cromwell	39.1mm (27.0mm)	45% above average
Alexandra	29.7mm (18.0mm)	65% above average
Hills Creek	43.5mm (37.3mm)	17% above average
Ranfurly	28.9mm (28.0mm)	3% above average
Tima	72.5mm (47.6mm)	53% above average

Notable falls during the month included: on 2 June, Hills Creek 11.5mm; on 22 June, Lindis Crossing 18.0mm, Hills Creek 11.0mm, Tima 14.5mm; and on 29 June, Lindis Crossing 16.0mm, Ranfurly 12.5mm, Tima 10.0mm.

River flows were well below their long term averages for June and were unusually low for this time of the year. Rain at the end of June should result in improved river flows in July.

Farmers report June was a cold frosty month but was a typical winter month. Rain at the end of the month meant that the ground was likely to be muddy for some days.

### **Lakes Wanaka, Wakatipu and Hawea and Surrounding Areas**

Rainfall totals varied from 60% above average to 20% below average in this area. The above average falls occurred in the more northern parts of the region and the below average falls in the more southern parts. Total falls at the indicator sites (average monthly totals in brackets) included:

Makarora Station	191.4mm (167.0mm)	15% above average
Hunter Valley Station	129.6mm (81.0mm)	60% above average
Hawea Flat	N/A	
Routeburn Station	165.0mm (185.0mm)	11% below average
Queenstown	52.2mm (67.0mm)	22% below average

Rain in this area mainly occurred at the beginning and end of the month. There was a period of 13 days between 8-20 June incl. when no rain fell. Significant falls included: on 1/2 June, Makarora Station 23.9mm, Hunter Valley 24.0mm, Routeburn Station 30.6mm; on 21 June, Makarora Station 22.5mm, Routeburn Station 27.3mm; and on 28-30 June,

Makarora Station 126.4mm, Hunter Valley Station 84.6mm, Routeburn Station 77.9mm, Queenstown 25mm.

River flows began the month above average but quickly declined as the lack of rain had an effect. All rose again at the end of the month as a result of the heavier rain in the last few days of June. During the month flows were quite low.

Levels in Lakes Wanaka and Wakatipu began the month at 277.56m and 310.03m, 0.50m and 0.20m above average respectively. After 4 June they steadily declined during the month and by 29 June were at 276.74m and 309.72m, 0.30m and 0.15m below average respectively. Rain late in the month saw them rising again on 30 June.

Lake Hawea began the month at 341.67m, 4.3m below full. It rose slowly until 10 June as Contact Energy released only the minimum flow from it. It then fell steadily as Contact Energy released increasingly significant amounts of water and by the end of the month, its level was 340.72m, 5.3m below full.

Farmers report a cold month with snow lying in some places for much of the month. Heavy frosts were experienced during the month.

### **Strath Taieri, Lower Taieri and Dunedin**

Rainfall totals varied from close to average to about 120% above average in this area. Musselburgh Dunedin recorded its first above average monthly rainfall total for the year. The first 5 months have been below to well below average. Total falls at the indicator sites (average monthly totals in brackets) included:

Garthmyl Middlemarch	44.6mm (28.0mm)	59% above average
Musselburgh Dunedin	73.8mm (59.0mm)	25% above average
Lee Flat	137.2mm (63.0mm)	118% above average
Maungatua	111.1mm (59.6mm)	86% above average
Dunedin Airport	71.9mm (44.0mm)	63% above average
Pine Hill	89.0mm (75.0mm)	19% above average
Sullivans Dam	107.5mm (105.0mm)	2% above average

Other raingauge totals in this area included Nenthorn 40.0mm, Deep Stream 88.5mm, Riccarton Road 57.5mm, Ross Creek, 99.8mm, Southern Reservoir 84.8mm.

Significant falls during the month included: on 1 June, Musselburgh 11.8mm, Pine Hill 13.0mm; on 7/8 June, Lee Flat 23.6mm, Maungatua 18.6mm; on 22/23 June, Dunedin Airport 19.8mm, Lee Flat 37.2mm, Maungatua 36.7mm, Pine Hill 18.0mm; and on 29 June Middlemarch 18.5mm, Musselburgh 17.0mm, Lee Flat 18.5mm, Pine Hill 24.5mm.

River flows remained well below their long term averages until 24 June when rain and snowmelt resulted in small rises in most rivers, especially those closer to the coast. Rivers were rising again on 30 June as a result of the rain late in the month.

Farmers report quite a few heavy frosts. While the rain was needed in all areas, unfortunately it makes the ground muddy, but conditions are still quite good for winter.

## **South and West Otago**

Conditions were very wet, cold and at times very frosty in this area. Rainfall totals were all well above average and the snow around 22/23 June made conditions more difficult. Fortunately for the farmers, the snow melted quickly. Total falls at the indicator sties (average monthly falls in brackets) included:

Tuapeka Mouth	120.3mm (53.4mm)	125% above average
Balclutha	121.0mm (49.0mm)	147% above average
Waikoikoi	13.1mm (65.0mm)	108% above average
Slopedown	232.9mm (113.9mm)	104% above average
Clarks Flat	108.5mm (69.0mm)	57% above average

Significant falls during the month included: on 7/8 June, Tuapeka Mouth 24.6mm, Balclutha 38.0mm, Waikoikoi 24.1mm; on 4-9 June, Slopedown 123.6mm; on 22/23 June, Balclutha 21.5mm, Waikoikoi 36.4mm, Slopedown 42.0mm; and on 29.30 June, Tuapeka Mouth 22.4mm, Balclutha 34.0mm, Waikoikoi 29.5mm, Slopedown 33.1mm.

Average monthly river flows in this area were generally above their long term averages for the month and a few significant rises did occur. The rivers rose after the rain on 7/8 June with the Pomahaka at Burkes Ford and the Waipahi at Waipahi rising at least 1.5m over a 3-day period. Following the snow and rain on 22/23 June, the Pomahaka at Burkes Ford rose at least 3m, the Waipahi at Waipahi 2m and the Waitahuna at Clarks Flat about 2m. Flows were rising quickly again on 30 June following the heavy rain of 29/30 June. No serious flooding occurred and flood-warning systems in this area ensure farmers have adequate warning to shift stock.

Farmers report a cold, wet and frosty month. Everything is very muddy and some dry frosty conditions are needed now to dry the area out a little.

**D.W. Stewart**  
**Hydrological Consultant**  
**Raineffects Limited.**

\* Data sources – Private individuals, Dunedin City Council, Otago Regional Council, NIWA