

RAINFALL & RIVER FLOW MONTHLY REPORT

OTAGO REGIONAL COUNCIL

January 2006

In Brief

The wet conditions that prevailed over the last two weeks of December 2005 continued on into the early part of this month. Two widespread rain events in the first and second weeks helped keep river flows in North Otago and the Pomahaka and Taieri rivers at normal summer levels, and increased the level of lakes Wakatipu, Wanaka and Hawea. Fine weather dominated over the last two weeks of January, however, and as temperatures soared and the need for irrigation water increased, river flows dropped away very quickly.

By the end of the month, all rivers monitored by the Otago Regional Council were flowing below normal, and restrictions on supplementary permits for consumptive water use in the Kakanui River were in place. Lake levels were also declining again in Wakatipu and Wanaka.

The cumulative effects of the long dry period in 2005 mean that even heavy rainfall events do not have a long-lasting impact on river flows in catchments such as the Manuherikia, Taieri, Kakanui and Shag. Above normal rainfall over a period of several months is needed to increase flows back to average levels in these rivers.

Summary text and graphs are provided for the following districts:

- North Otago
- Dunedin
- Lower Taieri and Strath Taieri
- South Otago
- Central Otago
- Queenstown Lakes.

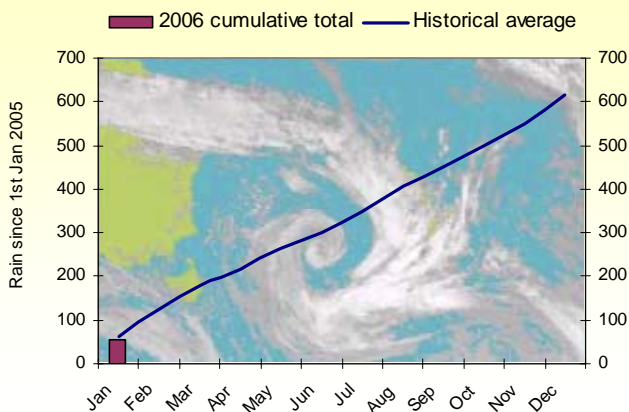
A summary table of flow and rainfall is attached to this report, which gives more detail on sites in each of these areas.

Rainfall & river flows around the region

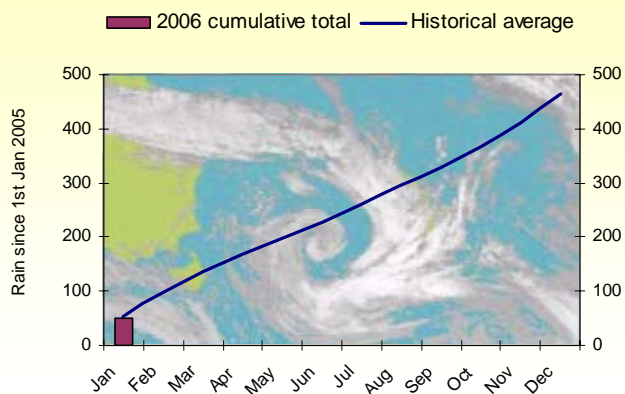
North Otago

January rainfall totals were close to average for most sites in North Otago, with the exception of Oamaru, which received **77mm, 68% above** normal. Other gauges within the North Otago district received between 50 and 66mm, and were all within plus or minus 20% of normal for January.

Accumulated rainfall totals for Shag Valley

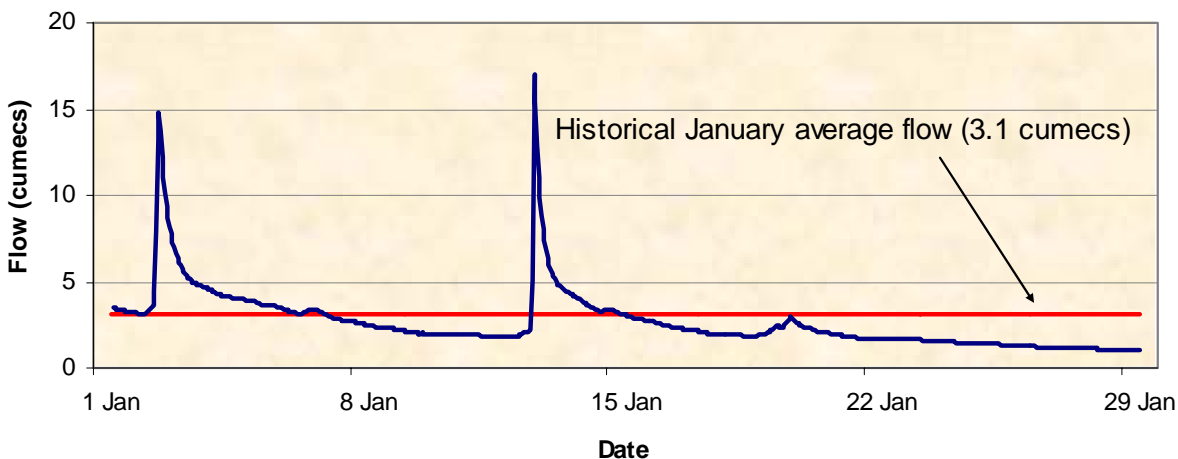


Accumulated rainfall totals for Kakanui



January rainfall was slightly below normal at both Shag at Stoneburn, and Kakanui at Clifton Falls. Stoneburn recorded **55mm (14% below** normal), while Clifton Falls received **52mm (5% below** normal).

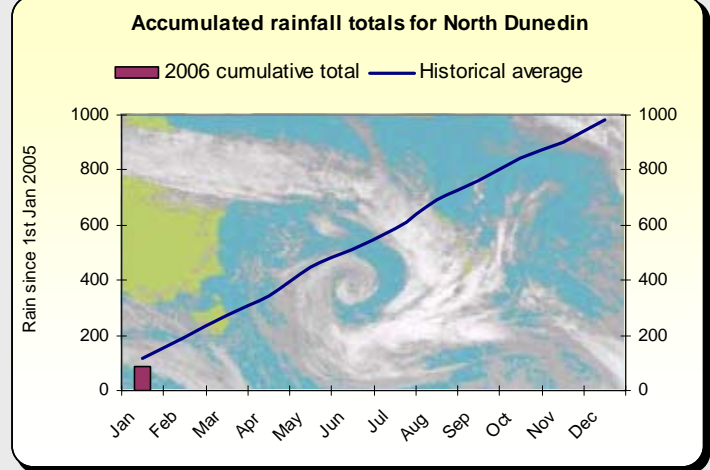
River Flow: Kakanui at Clifton Falls



Two small flow events in the Kakanui River reached 15 to 17 cumecs at Clifton Falls. A steady decline in flow from January 15 onwards resulted in the first level of restrictions on consumptive water use being introduced by the end of the month. The Shag River at Craig Road remained well below normal for most of January, and by the end of the month was approaching 0.15 cumecs, the level where primary permits to take water cease operation.

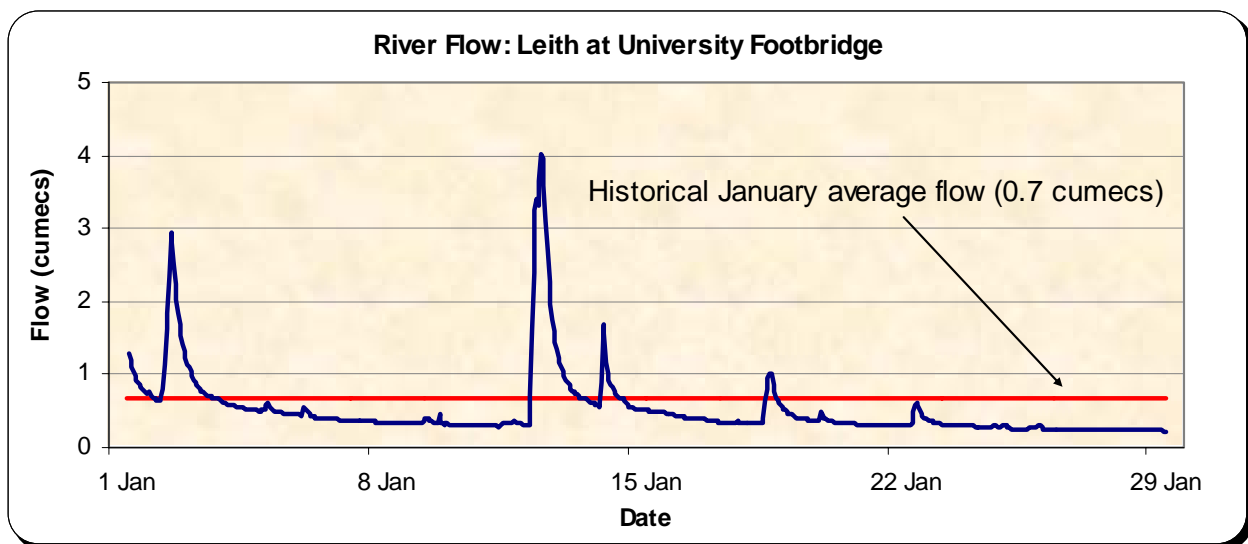
Dunedin

Rainfall totals in the North Dunedin area were **normal** to **below normal** this month. Pine Hill recorded **85mm**, which is **31% below** the average January rainfall of 124mm. Sullivan's Dam recorded **90mm** (**18% below** normal) while across town, Musselburgh received **74mm** (**normal**).



Dunedin rainfall at Pine Hill was drier than normal for January.

There was a number of small flow peaks in the Water of Leith in January, although the river had still dropped well below the historical January average by month's end.

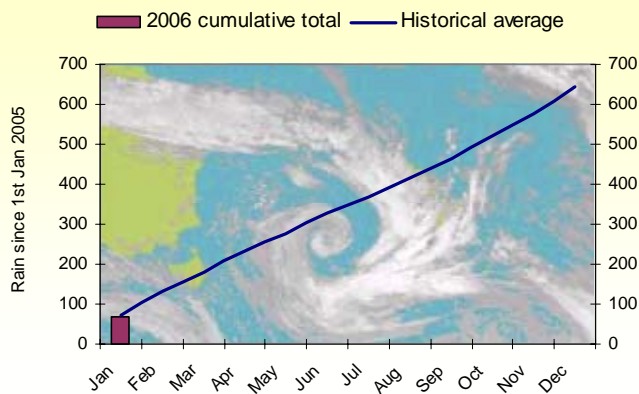


Lower and Strath Taieri

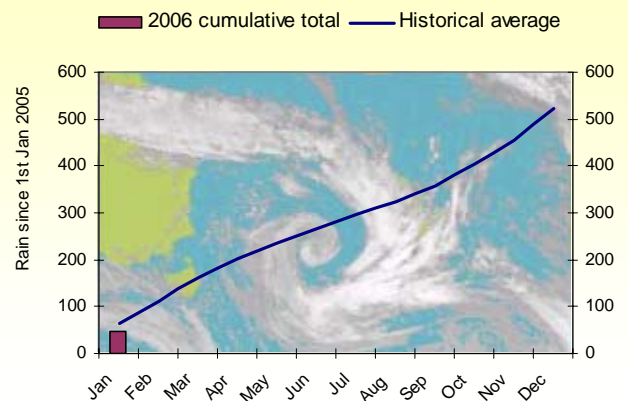
On the Lower Taieri, rainfall was approximately **normal** at the Riccarton Road site with **70mm** recorded. The Dunedin Airport gauge collected **55mm**, **25% below** the normal January total of 74mm.

In the Strath Taieri, rainfall totals were below normal. **55mm** was the total for Nenthorn at Mt Stoker, **22% below** normal. Middelmarsh received **49mm**, **22% below** normal, and Deep Stream at SH87 received **36mm**, **50% of** normal.

Accumulated rainfall totals for Taieri Plains



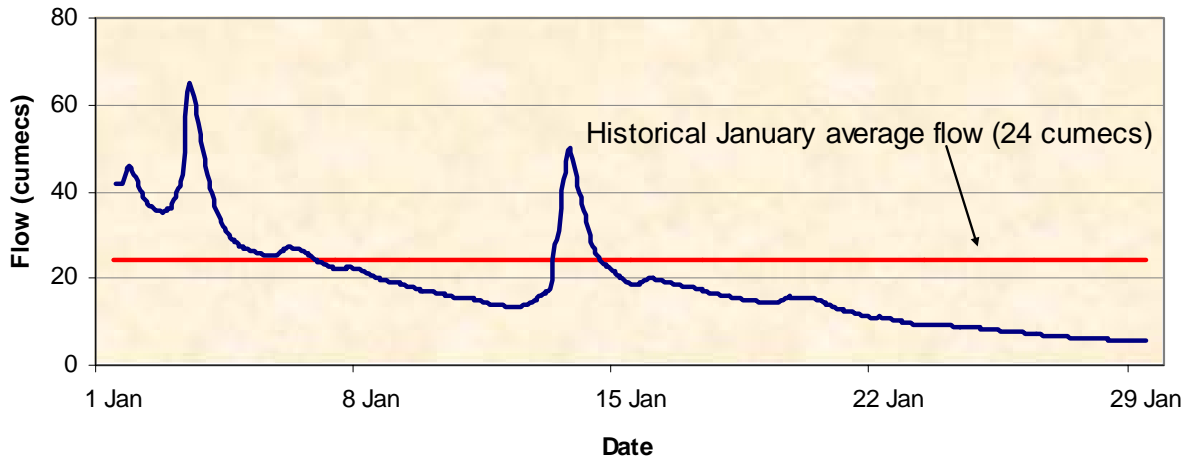
Accumulated rainfall totals for Middelmarsh



Total rainfall for January at the Taieri Plains at Riccarton Road was approximately normal (**70mm**), while at Middelmarsh, the month was drier than normal with **49mm** recorded.

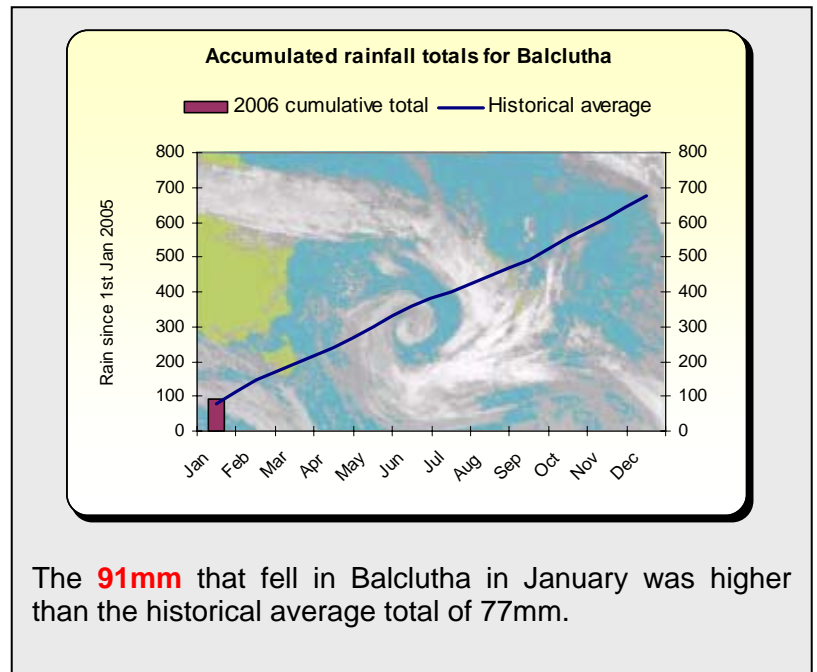
The wet conditions at the end of December meant the Taieri River began the month well above normal. The river declined rapidly during January, however, despite a number of reasonable sized rainfall events. At Outram, the Taieri was flowing at just 4.5 cumecs by the end of the month, and was continuing to drop by approximately 0.4 cumecs per day. The Silverstream peaked at 6.5 cumecs in the middle of the month, but had declined to 0.3 cumecs by month's end, well below the historical January average of 1.1 cumecs.

River Flow: Taieri at Outram

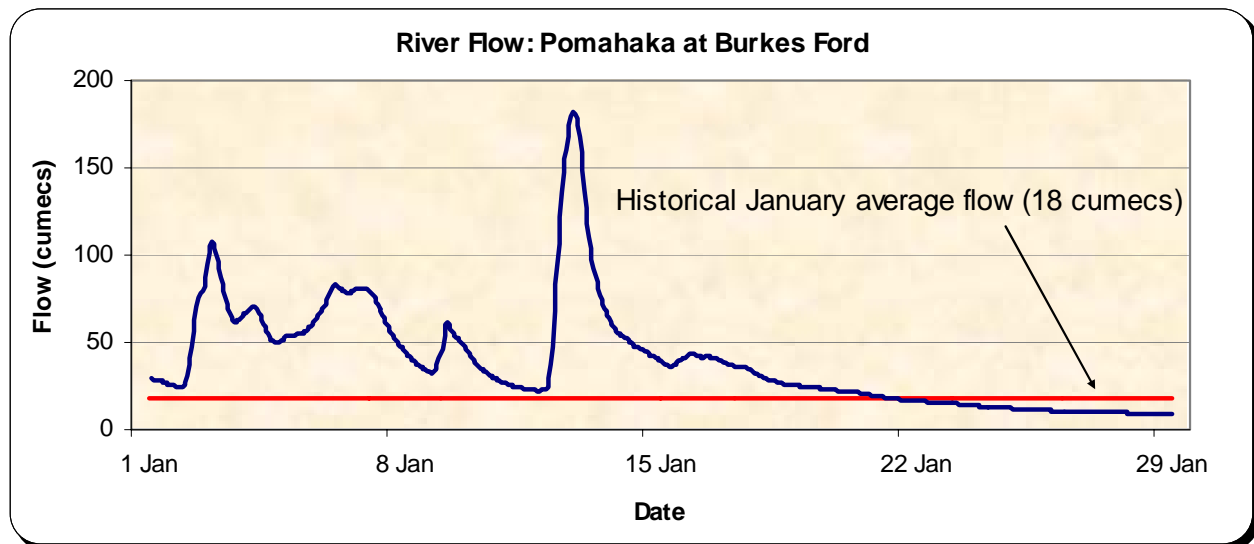


Southwest Otago

Rainfall totals in southwest Otago ranged from **normal** to **above normal** this month. The Waipahi at Cairn was the wettest site in the district with **182mm**, **64% above** the historical January average of 111mm. Balclutha was slightly wetter than usual, with **91mm** this month. In the Pomahaka catchment, Moa Flat recorded **87mm**, **normal** for January. Waitahuna at Clarks Flat also received **normal** rainfall, with **91mm**.



Flow in the Pomahaka River remained above normal for the first three weeks of the month, due to a number of rain-bearing southerly fronts moving over the district. Drier conditions over the second half of the month, however, resulted in the flow at Burkes Ford declining to 7.5 cumecs, well below normal for January.



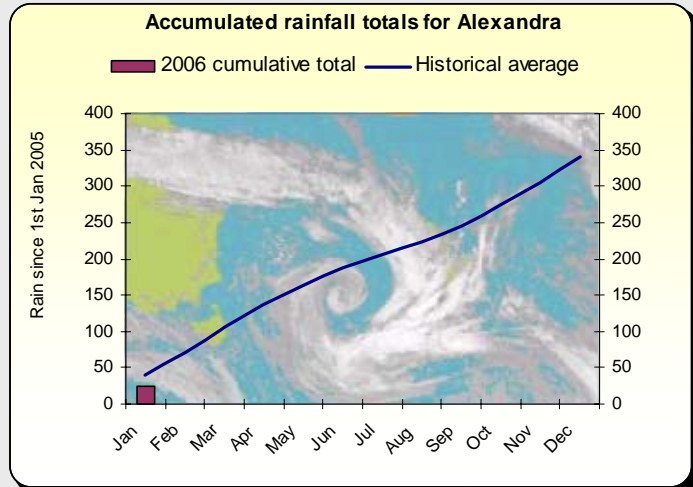
Central Otago

Rain gauges in the Maniototo and Idaburn received between 44 and 58mm this month, with Blackstone Hill the wettest site, recording **58mm**. Ranfurly and Pat-Paerau recorded **44mm** and **49mm** respectively, **normal** for January.

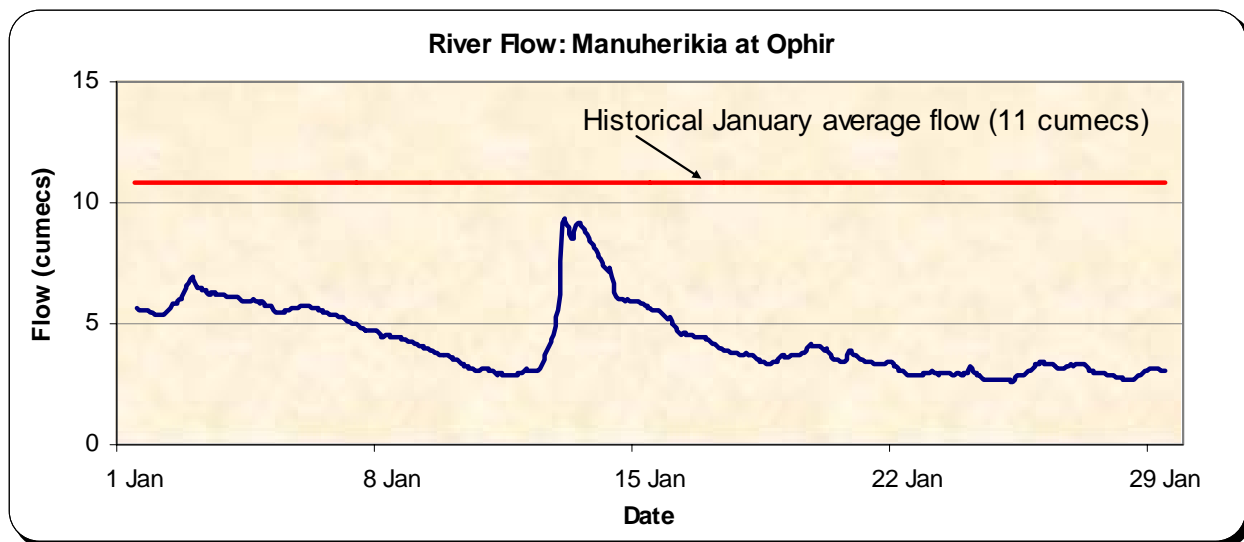
In the Manuherikia, Lauder recorded **39mm**, **37% below** normal.

The Alexandra - Clyde area received approximately **25mm**, **40% below** normal.

Ettrick collected **48mm**, and Tima (Millers Flat) recorded **66mm**, **32%** and **13% below** normal respectively.



Just **24mm** of rain fell in Alexandra in January, well below the historical average total of 39mm.



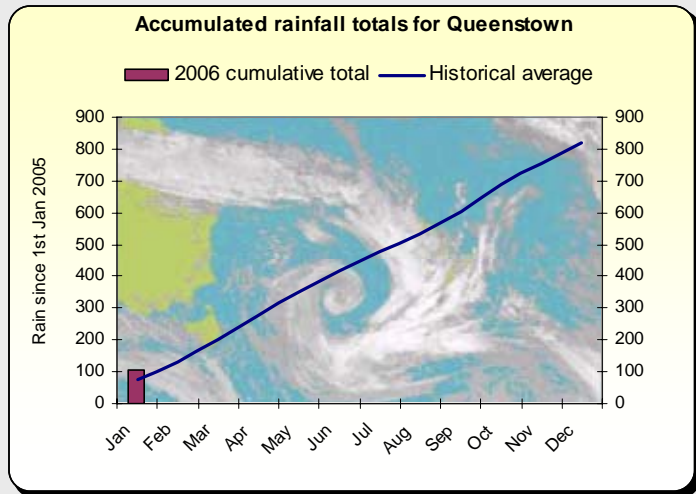
Flows remained well below normal for most of January in the Manuherikia River. The 30mm of rain that fell in the upper catchment mid-month resulted in a small peak of 9 cumecs at Ophir. By month's end however, the river had declined to 3 cumecs at this site. Average monthly flow at Ophir was **4.2 cumecs**, **62% below normal**.

Further upstream, the Dunstan Creek at Beatties Road recorder measured an average flow of **0.7 cumecs** this month.

Queenstown Lakes

In the Queenstown Lakes district, rainfall was well **above** normal at Peat's Hut in the Shotover (**95mm**), Glenorchy at the Hillocks (**183mm**), and in Queenstown (**105mm**).

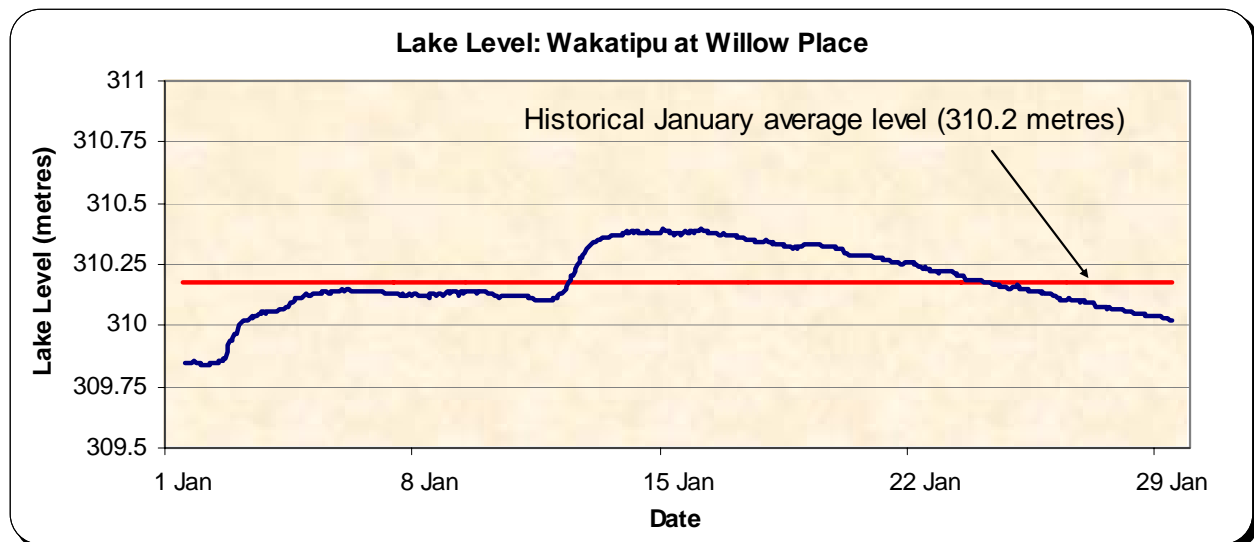
Makarora recorded **165mm**, **normal** for January. Wanaka airport received just **40mm**, **34% below average**, while closer to town, Wanaka at the D.O.C. headquarters recorded **56mm**, approximately **normal**.



Queenstown rainfall was higher than normal this month, with **105mm** recorded, compared to the historical average of 75mm.

Average monthly river flows in the Queenstown Lakes district were close to normal this month. The Shotover River at Peat's Hut was flowing at an average of **22 cumecs**, (**20% below** normal) while the Dart River at the Hillocks averaged **126 cumecs** (**16% above** normal). In the Kawarau at Chards Road, average flow for the month was **248 cumecs** (**10% below** normal).

Lake Wakatipu began the month **0.4 metres** below the historical January average level. Heavy rain during the middle of the month pushed lake level to 310.4 metres, but there has been a steady decline since then. Lake Wanaka began and ended the month **0.5 metres below normal**, although the rain in the headwaters during the middle of the month temporarily increased lake level to 277.5 metres (normal for January).



Further information

See the Otago Regional Council website for regular rainfall and river flow updates:
<http://www.orc.govt.nz/waterinfo>

For more information phone Chris Arbuckle, Manager Resource Science, on 03 474 0827 or e-mail:
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Mailing list

This report is available by email.

To update your contact details on our mailing lists, please contact: environmentalinfo@orc.govt.nz; tel:
0800 474 082.

Acknowledgement

The information produced in this report was derived from rainfall, flow, lake level and lake outflow data collected from stations throughout the region operated by private individuals and corporate bodies, the National Institute of Water & Atmospheric Research Limited, Dunedin City Council and Contact Energy who are gratefully acknowledged.

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RAINFALL TABLE (*January 2006*)

Station	Area	Total Rainfall for this Month (mm)		
		Recorded	Historic	% Change
Oamaru AWS	North Otago	77.200	46.0	67.83
Glenrowan	North Otago	57.800	74.0	-21.89
Waikoura	North Otago	66.500	52.0	27.88
Clifton Falls	North Otago	51.500	54.0	-4.63
The Dasher	North Otago	63.000	83.0	-24.10
Stoneburn telemetry	North Otago	55.000	64.0	-14.06
Leith at Sullivan's Dam	L/S Taieri, Dun	90.000	110.0	-18.18
Leith at Pine Hill	L/S Taieri, Dun	85.000	124.0	-31.45
Musselburgh	L/S Taieri, Dun	73.600	71.0	3.66
Taieri Depot	L/S Taieri, Dun	69.500	73.0	-4.79
Dunedin Airport	L/S Taieri, Dun	55.200	74.0	-25.41
Mt Stoker	L/S Taieri, Dun	50.500	65.0	-22.31
Glengarry	L/S Taieri, Dun	35.500	69.0	-48.55
Middlemarch-Garthmyl	L/S Taieri, Dun	48.800	63.0	-22.54
Balclutha	Southwest Otago	90.500	71.0	27.46
Clarks Flat	Southwest Otago	90.500	82.0	10.37
Cairn	Southwest Otago	181.500	111.0	63.51
Waikoikoi at Rosebank	Southwest Otago	123.200	93.0	32.47
Moa Flat	Southwest Otago	87.000	90.0	-3.33
Ranfurly	Central Otago	44.200	53.0	-16.60
Pat-Paerau	Central Otago	49.000	48.0	2.08
Tima	Central Otago	66.000	76.0	-13.16
Ettrick No2	Central Otago	48.000	71.0	-32.39
Blackstone Hill	Central Otago	58.100	68.0	-14.56
Hills Creek	Central Otago	51.500	72.0	-28.47
Lauder EWS	Central Otago	39.000	62.0	-37.10
Alexandra	Central Otago	24.100	42.0	-42.62
Clyde EWS	Central Otago	28.800	51.0	-43.53
Hunter Valley 2	Lakes district	101.400	94.0	7.87
Makarora telemetry	Lakes district	165.000	168.0	-1.79
West Wanaka	Lakes district	68.500	77.0	-11.04
Wanaka Aero AWS	Lakes district	40.400	61.0	-33.77
Wanaka DOC HQ	Lakes district	55.9	59.0	-5.25
Peat's Hut	Lakes district	94.500	54.0	75.00
Glenorchy telemetry, Hillocks	Lakes district	182.500	115.0	58.70
Queenstown	Lakes district	104.500	74.0	41.22
Queenstown AWS	Lakes district	73.400	68.0	7.94

RIVER FLOW TABLE (January 2006)

Station	Area	Minimum flow recorded (m ³ /s)	Maximum flow recorded (m ³ /s)	Mean flow for the month (m ³ /s)	Historic mean for the month (m ³ /s)	% Change of Historic Mean
Kakanui River at Mill Dam	North Otago	0.854	36.798	4.162	7.326	-43.18
Kakanui River at Clifton Falls	North Otago	0.860	17.304	2.530	3.096	-18.27
Shag River at The Grange	North Otago	0.187	2.954	0.587	1.335	-56.05
Leith at University Foot Br	L/S Taieri, Dun	0.214	4.188	0.493	0.683	-27.88
Silverstream at Taieri Depot	L/S Taieri, Dun	0.293	6.498	0.886	1.138	-22.20
Taieri River at Outram	L/S Taieri, Dun	4.442	65.081	17.710	24.389	-27.38
Taieri River at Sutton	L/S Taieri, Dun	2.906	31.110	12.669	12.166	4.14
Taieri River at Tiroiti	L/S Taieri, Dun	1.988	20.786	8.269	10.102	-18.15
Taieri River at Waipiata	Central Otago	1.235	21.048	7.038	8.830	-20.29
Nenthorn Stream at Mt Stoker Rd	L/S Taieri, Dun	0.134	6.526	0.665	0.666	-0.16
Deep Stream at SH 87	L/S Taieri, Dun	0.584	23.478	2.178	3.328	-34.55
Waipori River at Berwick	Southwest Otago	0.720	29.581	15.195	4.044	275.75
Clutha River at Balclutha	Southwest Otago	215.036	858.202	518.169	633.029	-18.14
Waitahuna River at Tweeds Br	Southwest Otago	0.707	14.728	1.806	2.390	-24.44
Pomahaka River at Burkes Ford	Southwest Otago	7.651	182.246	36.714	17.888	105.24
Pomahaka River at Glenken	Southwest Otago	2.043	75.204	8.296	11.557	-28.22
Waipahi River at Waipahi	Southwest Otago	2.041	46.534	12.355	2.304	436.32
Manuherikia River at Ophir	Central Otago	2.616	9.364	4.234	10.812	-60.84
Clutha at Clyde	Central Otago	190.884	809.152	453.953	568.969	-20.21
Clutha River at Cardrona Confluence	Lakes District	154.365	265.786	213.102	354.829	-39.94
Kawarau River at Chards Rd	Lakes District	167.532	374.587	248.439	277.316	-10.41
Shotover River at Bowens Peak	Lakes District	19.664	105.300	29.185	43.968	-33.62
Shotover River at Peat's Hut	Lakes District	10.591	131.746	22.454	27.124	-17.22
Dart River at The Hillocks	Lakes District	65.558	835.830	126.868	108.661	16.76

LAKE LEVEL AND OUTFLOW TABLE

Lake	Lake level for the month (m above mean sea level)					Historic mean lake level (m above mean sea level)
	First Day	Last Day	Min.	Max.	Mean	
Lake Hawea	342.419	343.234	342.409	343.247	342.930	343.702
Lake Wakatipu	309.849	309.975	309.819	310.436	310.164	310.176
Lake Wanaka	276.961	277.025	276.954	277.576	277.297	277.553

Lake	Lake outflow for the month (m ³ /s)					Historic mean outflow (m ³ /s)
	First Day	Last Day	Min.	Max.	Mean	
Lake Hawea	11.6	12.0	11.6	12.1	11.9	46.53
Lake Wakatipu	150.2	182.5	143.2	308.0	234.0	246.06
Lake Wanaka	143.0	153.0	142.0	249.6	198.5	246.15

Notes:

L/S Taieri, Dun = Lower Taieri, Strath Taieri and Dunedin.

* = Controlled Outflows.