

# The Climate Update

A monthly newsletter from the National Climate Centre

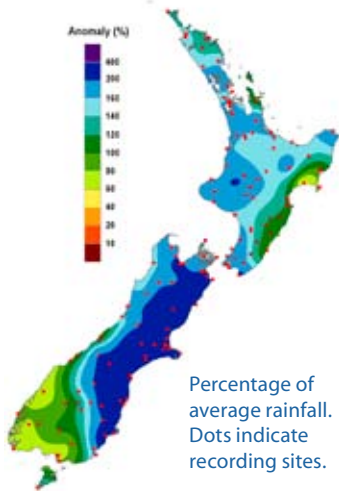
July climate – very wet and stormy for much of New Zealand. High river and stream flows were recorded over the northern two thirds of the country. Air temperatures were a little above average.

Outlook for August to October – average or above average air temperatures. Rainfall near normal in most regions, but normal or below normal in the southwest of both Islands.

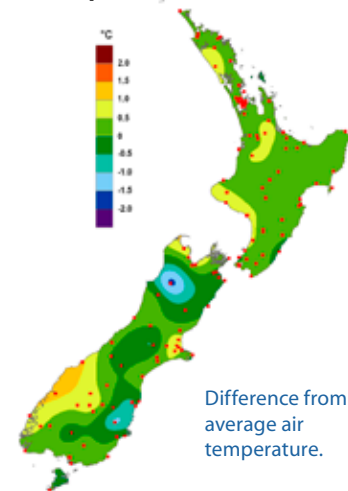


# New Zealand climate in July

## Rainfall



## Air temperature



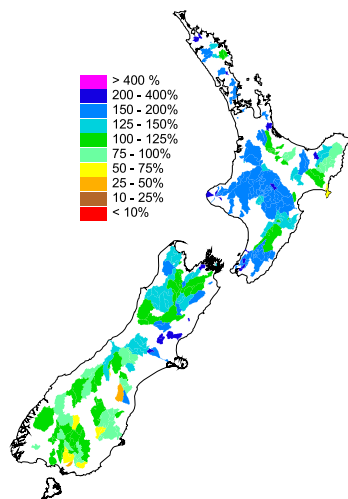
July rainfall exceeded 200% of normal in Marlborough, Canterbury, and eastern Otago, and 150% of normal in Westland, Tasman, and most of the North Island.

Temperature was near or slightly above average for most of the country. The national average temperature of 8.3 °C was 0.6 °C above average, and only slightly cooler than the temperature for June.

For more information see [www.niwascience.co.nz/ncc/cs/mclimsum\\_08\\_07](http://www.niwascience.co.nz/ncc/cs/mclimsum_08_07)

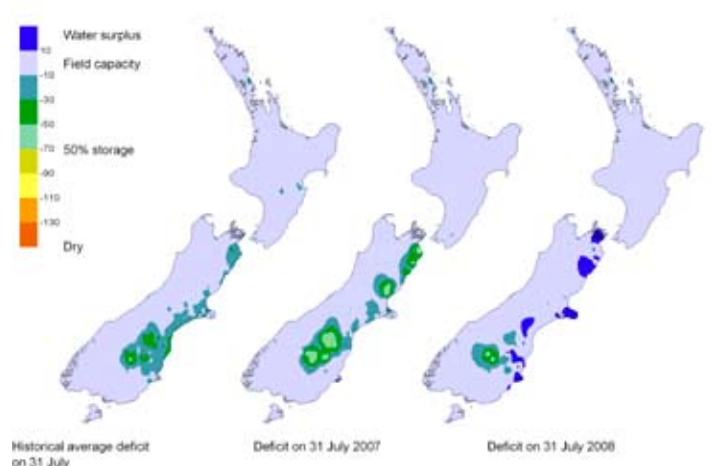
## River flows

River and stream flows were near average in the east of the North Island and south of the South Island. Elsewhere flows were mostly above average.



Percentage of average July river and stream flows at monitored catchments. NIWA field teams, regional and district councils, and hydro-power companies, are thanked for providing data.

## Soil moisture



Water balance in the pasture root zone for an average soil type, where the available water capacity is taken to be 150 mm.

High rainfalls in the eastern South Island late in July lifted soil moisture levels to above field capacity; elsewhere in the country soils were near field capacity.

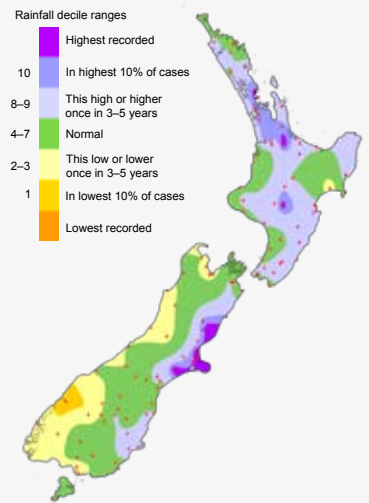
## May to July – the climate we predicted and what actually happened

### Rainfall

**Predicted:** Above normal in northern New Zealand, normal or above normal in the eastern North Island, normal or below normal in the west and south of the South Island, normal elsewhere.

**Outcome:** Normal or above normal in much of the North Island; above normal in Canterbury; normal or below normal elsewhere.

### May to July rainfall

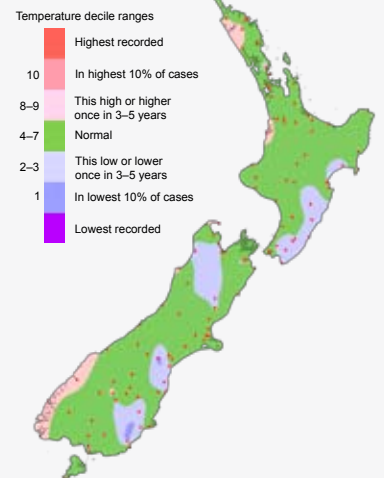


### Air temperature

**Predicted:** Above average in many regions.

**Outcome:** Above average in some western districts; average or below average elsewhere.

### May to July temperature

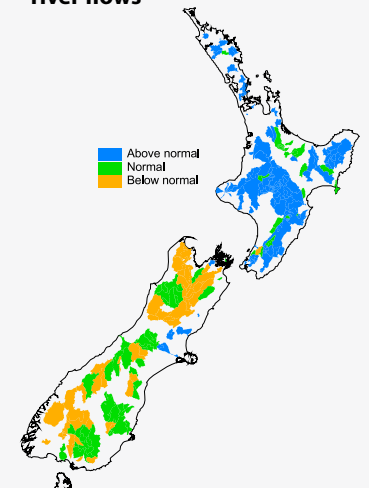


### River flows

**Predicted:** Above normal in northern New Zealand, below normal in the west and south of the South Island, normal or below normal elsewhere.

**Outcome:** Stream flows were above normal in the North Island and parts of Canterbury, and normal to below normal elsewhere.

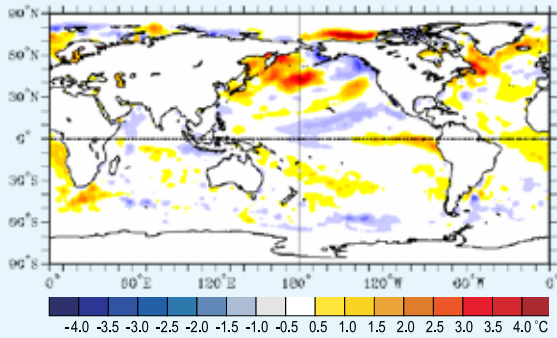
### May to July river flows



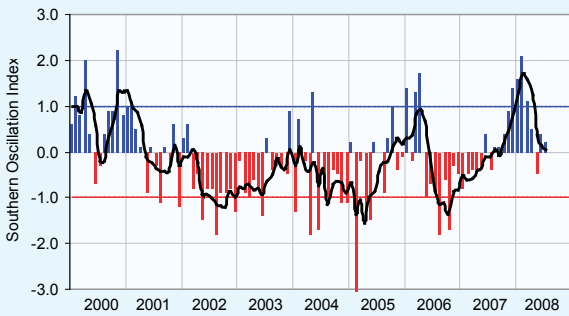
# Global setting and climate outlook

## El Niño-Southern Oscillation now neutral

The La Niña has ended, and the tropical Pacific is in a neutral state. The sea surface temperature anomaly in the NINO3 region (90–150°W) rose sharply in July to about +0.9 °C, while closer to the Date Line the surface temperature anomaly remained slightly negative. Equatorial trade winds were slightly enhanced about and west of the Date Line but were near normal elsewhere. Almost all international seasonal climate models predict ENSO-neutral conditions for the next three months.



Difference from average global sea surface temperatures for July 2008. Map courtesy of NOAA Climate Diagnostics Centre.

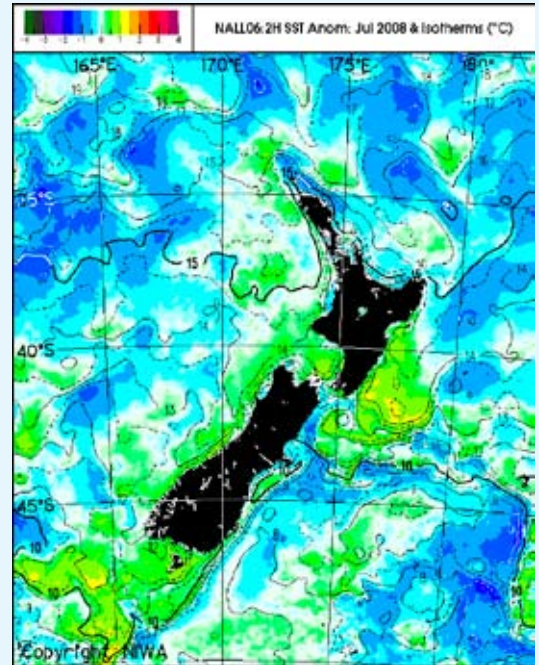


Monthly values of the Southern Oscillation Index (SOI), a measure of the changes in atmospheric pressures across the Pacific, and the three-month mean (black line).

SOI mean values:  
July: +0.2  
May to July 0.0

## Sea surface temperatures around New Zealand

Sea surface temperature (SST) anomalies in the New Zealand region have eased but remained slightly positive for July at +0.2 °C (3-month mean +0.3 °C). Surface temperatures around New Zealand are likely to be near normal for the forecast period. SSTs across much of the Southern Hemisphere were close to normal in July.



Differences from normal July surface temperatures in the seas around New Zealand.

## August to October 2008

In the New Zealand region, mean sea level pressures are likely to be higher than normal to the southwest of the South Island. Westerly winds are likely to be weaker than normal over the country, but episodes of strong northerly or southerly winds are likely, as storms pass across New Zealand.

Air temperatures are likely to be average or above average in most regions, but average or below average in the eastern South

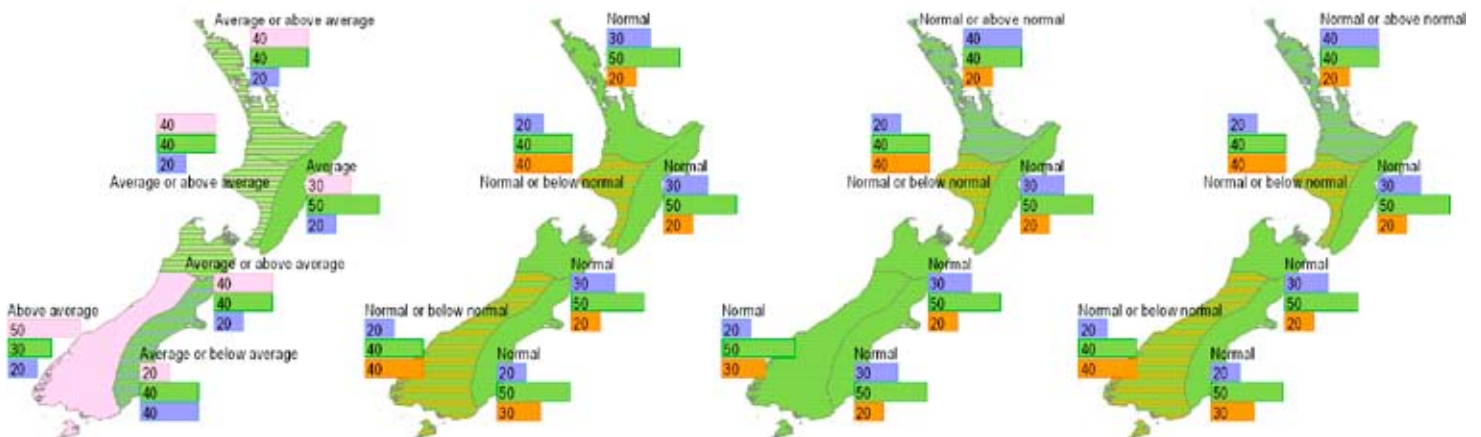
Island. Rainfall is likely to be near normal in most regions, normal or below normal in the southwest of both islands. Soil moisture levels and stream flows are likely to be normal or above normal in the northern North Island and normal or below normal in the southwest North Island. In most other regions, near normal soil moisture levels and stream flows are likely, apart from normal or below normal stream flows in the southwest South Island.

### Mean air temperature

### Rainfall

### Available soil moisture

### River flows



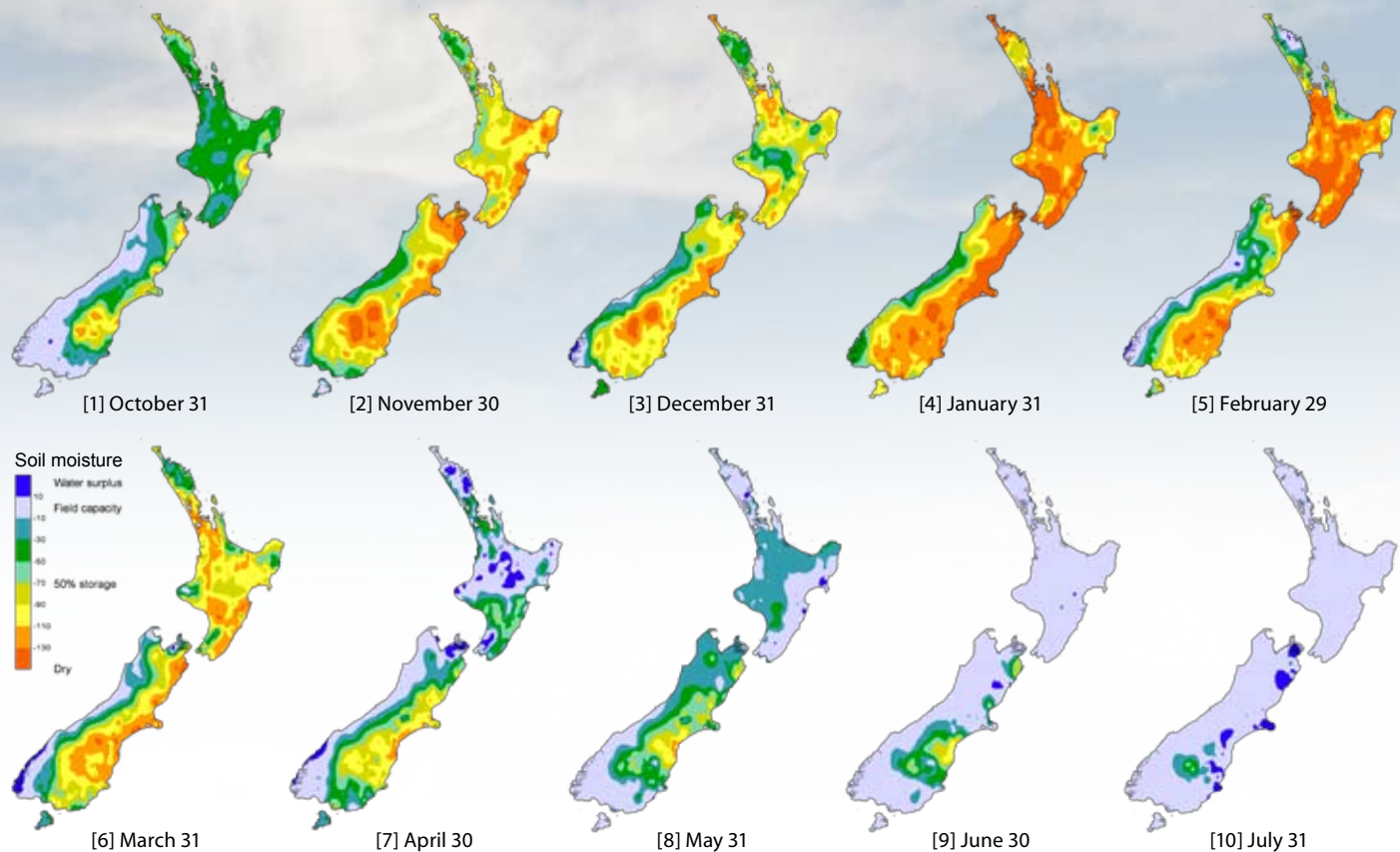
#### How to interpret these maps

In the example here the climate models suggest that below normal conditions are likely (50% chance), but, given the variable nature of the climate, the chance of normal or above normal conditions is also shown (30% and 20% respectively).

Below normal	
20	20% chance of above normal
30	30% chance of normal
50	50% chance of below normal

## Drought finally ends

Lower than normal rainfall during the 2007–08 agricultural growing season brought drought-like conditions to much of New Zealand. Recent winter rainfall has now overcome the soil moisture deficits in most places. Below is a brief summary of the stages of the 2007–08 drought, as shown by the soil moisture deficit.



[1] Dry conditions started to bite in October 2007 when it was drier than average in most eastern districts from Gisborne to Otago. The impact in Hawke's Bay was greater because the preceding autumn had been exceptionally dry.

[2] The drought made rapid progress in November when much of the country had less than 50% of normal rainfall. There was less than 10 mm of rain in parts of Nelson, Marlborough, and Central Otago.

[3] December rainfall brought some relief to Gisborne, Hawke's Bay, Nelson, and East Otago but was less than normal in Waikato, Manawatu, and Southland.

[4] January was a warm dry month over much of the country. Waikato received the lowest monthly rainfall for more than a century. South Taranaki became exceptionally dry. Many east coast districts recorded less than 10 mm of rainfall.

[5] Less than 50% of normal rainfall was recorded over much of the North Island in February, aggravating the drought. Downpours relieved the dry conditions in Northland and Canterbury.

[6] Auckland, Waikato, King Country, eastern Wairarapa, and Canterbury received low rainfalls in March as the drought continued. Above average rainfall lifted soil moisture levels in eastern Otago.

[7] The north of the South Island and most of the North Island received high rainfalls in mid April, bringing an end to dry conditions. Canterbury rainfall was below normal in some places.

[8] The west of the North Island and much of the South Island recorded below normal rainfall in May. Waikato received little rainfall for three consecutive weeks. A low soil moisture zone persisted in South Canterbury–North Otago.

[9] A long period without rain in May and June meant a return to dry conditions in parts of Marlborough. Dry conditions also dragged on in South Canterbury and North Otago.

[10] Widespread heavy rainfall in July finally squeezed out what remained of the drought in Marlborough, South Canterbury, and North Otago.



Southern shore of Lake Hawea during northwesterly rain in July. Inflows into the Clutha storage lakes have been near normal overall for the past three months.  
Cover photo: *Steve Le Gal*

*The Climate Update* is a monthly newsletter from NIWA's National Climate Centre, and is published by NIWA, Private Bag 14901, Wellington. It is also available on the web. Comments and ideas are welcome. Please contact Alan Porteous, Editor  
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