NIWA
Taihoro Nukurangi

The Climate Update

A monthly newsletter from the National Climate Centre

Wet in the south of the North Island, and in Bay of Plenty, Taupo, Wanganui, and around Christchurch; dry over much of the South Island. Near average temperatures in many regions. Cool spots in Otago and western Northland.

Outlook for September to November – normal or below normal rainfall; warmer than normal conditions likely in the east of the North Island. River and stream flows – a tale of two islands: high flows in the north and low flows in the south.

New Zealand climate in August

August rainfall was well above normal in southern parts of the North Island, including Wanganui, Kapiti, Wellington, Wairarapa, and also around Christchurch. In contrast, most of the rest of the South Island was drier than normal.

Air temperatures were near average in most regions, with both warm and cool spots in Otago, and cool conditions in the west of Northland. The national average temperature of 8.8 °C was 0.2 °C above the 1971–2000 normal.

For more information on the climate in August 2006, visit the climate summaries page at www.niwascience.co.nz/ncc/cs/mclimsum_06_08

Rainfall

Percentage of average rainfall. Dots indicate recording sites.

Air temperature

Difference from average air temperature.

Soils remain wet

Soils are at normal soil moisture levels in most places, although some parts of Otago were slightly drier than normal at the end of the month.

Soil moisture deficit
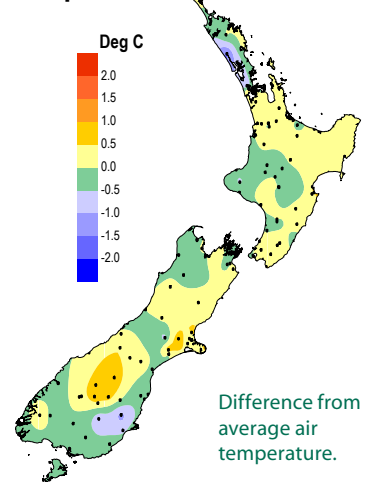
Historical average deficit on 31 August

Deficit on 31 August 2005

Deficit on 31 August 2006
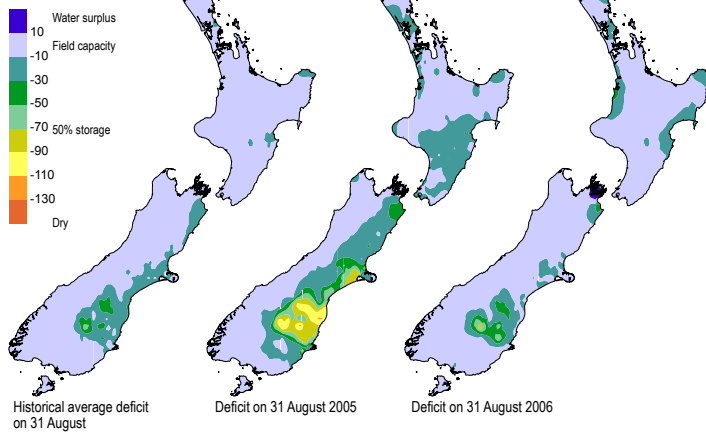
Water balance in the pasture root zone for an average soil type, where the available water capacity is taken to be 150 mm.
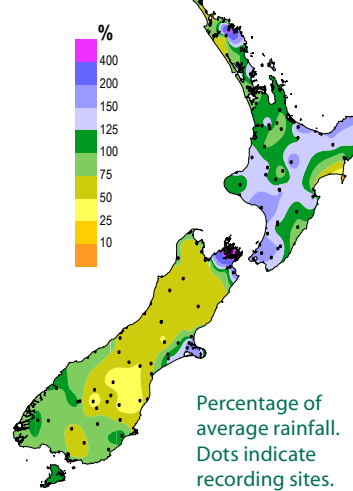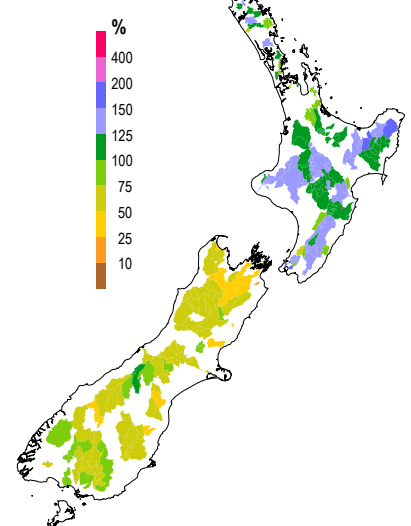
High river flows in the north

High August streamflows in the North Island contrasted with South Island streamflows, which were generally below normal.

River flows

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

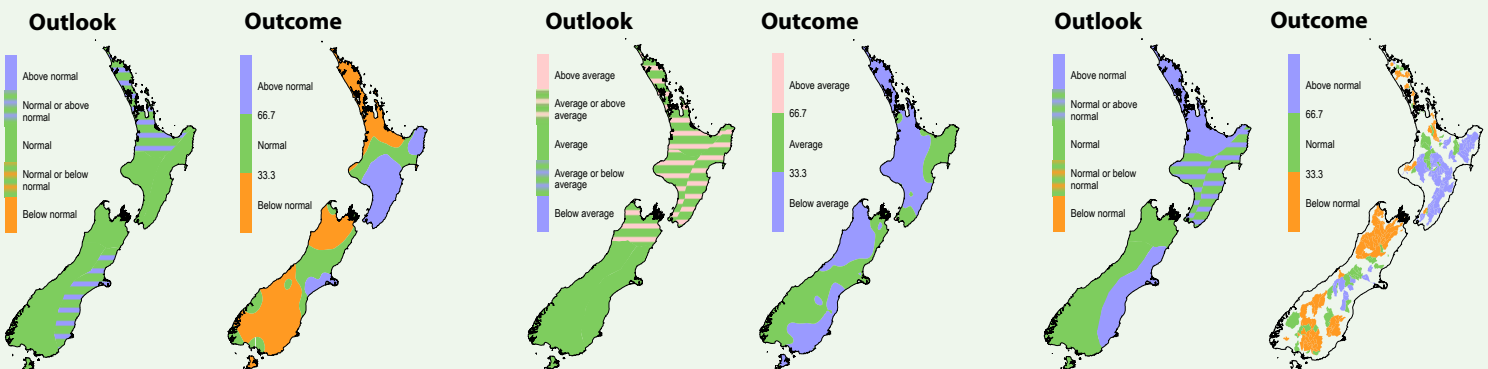## June to August – the climate we predicted and what happened

Rainfall
The North Island was drier in the north and wetter in the south and east than was predicted. Mid to north Canterbury received normal to above normal rain as predicted, but elsewhere in the South Island it was drier than expected.

Air temperature
Air temperatures were mostly lower than expected, apart from near normal temperatures, as predicted, in parts of the east and south of the North Island, and the east and southwest of the South Island.

River flows
North Island stream flows were normal or below normal in the north and above normal elsewhere. South Island stream flows were normal to above normal, as predicted, in Canterbury and below normal elsewhere.

Outlook

Above normal
Normal or above normal
Normal
Normal or below normal
Below normal

Outcome

Above normal
66.7
Normal
33.3
Below normal

Outlook

Above average
Average or above average
Average
Average or below average
Below average

Outcome

Above average
66.7
Average
33.3
Below average

Outlook

Above normal
Normal or above normal
Normal
Normal or below normal
Below normal

Outcome
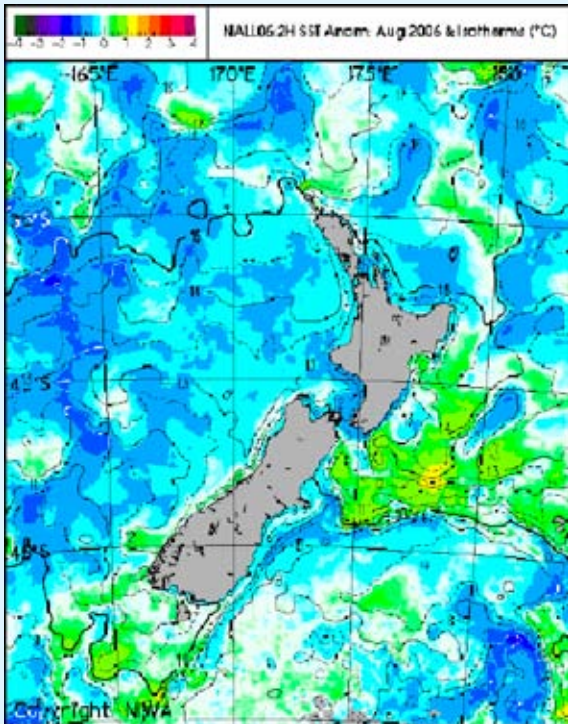
Above normal
66.7
Normal
33.3
Below normal

The three outcome maps give the tercile rankings of the rainfall totals, mean air temperatures, and mean river flows that eventuated from June to August, in comparison with the forecast conditions.

As an approximate guide, middle tercile rainfalls typically range from 80% to 115% of the historical normal, and middle tercile temperatures range about the average by plus or minus 0.5 °C.

Global setting and climate outlook

## Sea surface temperatures around New Zealand

SST anomalies in the New Zealand region were near 0.0 °C in August (+0.3 °C in July), with a June to August average of +0.2 °C. Positive anomalies existed east of New Zealand, while temperatures were below normal in the mid and eastern Tasman Sea. SSTs in the New Zealand region are expected to remain below average in the Tasman, but above average east of the country.


Difference from normal August surface temperatures in the seas around New Zealand.

Weak El Niño may develop by year-end

Sea surface temperatures are above average across the equatorial Pacific, up to +1 °C in places, and, if this situation persists, a weak El Niño will be established in the coming three months.
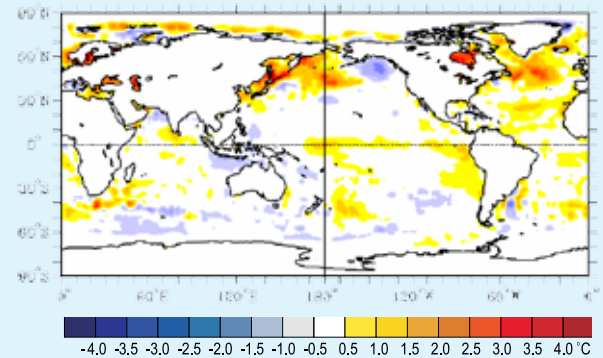
Difference from average global sea surface temperatures for August 2006. Map courtesy of NOAA Climate Diagnostics Center.
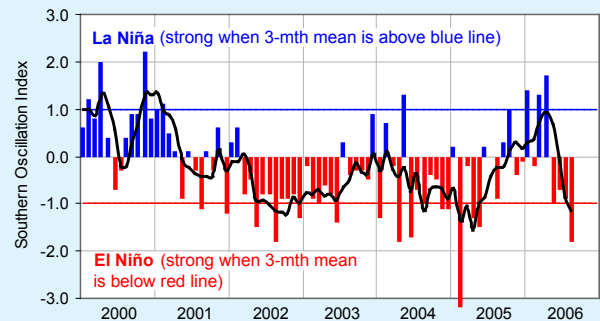
Monthly values of the Southern Oscillation Index (SOI), a measure of the changes in atmospheric pressures across the Pacific, and the three-month mean (black line). The SOI has remained consistently negative the past 3 months, with a value of -1.8 for August, and -1.1 for the June to August mean.

Outlook for September to November 2006

Circulation patterns for spring 2006 are for above average sea-level pressures in the Tasman Sea and over the North Island, with more southwesterly winds than usual over the South Island.

Air temperatures are likely to be average in all regions, but average or below average in the west of the South Island and above average in the east of the North Island. There is a slightly higher chance than normal of frosts in early spring.

Spring rainfalls are likely to be normal or below normal in all regions, but normal in the west of the South Island. Soil moisture levels are expected to be below normal in the north of the South Island, normal or below normal in the east of the South Island, and normal elsewhere. Normal or below normal stream flows are expected in all regions, except in the west of the South Island, where normal stream flows are likely.
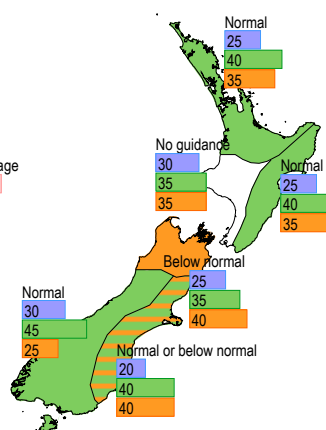
Rainfall
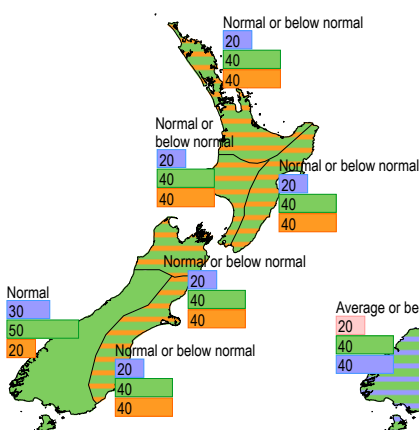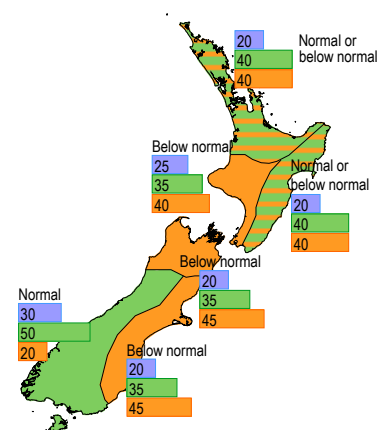
Mean air temperature
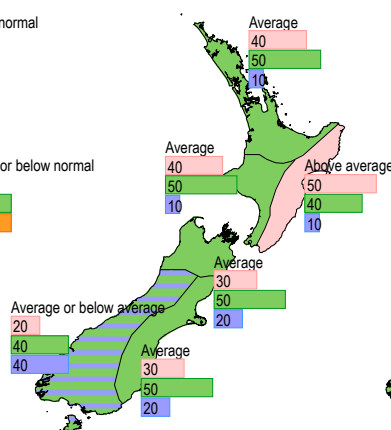
Available soil moisture

River flows

How to interpret these maps

In the example here the climate models suggest that below average 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
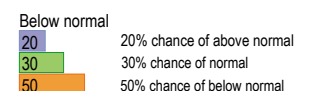
Web access to the National Climate Database
http://cliflo.niwa.co.nz/

NIWA's National Climate Database provides an archive for thousands of weather and other environmental measurements made around New Zealand every day. The database contains daily, hourly, 10 minute, and monthly observations and summaries of data, including rainfall, wind, temperature, soil moisture, solar radiation, and humidity.

The web interface, 'CliFlo', is designed to help public users of the climate data to navigate the complex array of data tables, types, and sources in the database to extract the data of their choice. The hub of the system is the Database Query form, with a sequence of steps that customises and runs data queries, and saves them for use again later if required.

Part of the computer suite which manages the National Climate Database.

Once a user has logged into the website, there are four essential steps in building the data query:

1. Select the data type – for example, hourly or daily rainfall data, or monthly evapotranspiration. A number of data types can be selected at the same time.

2. Choose one or more observing stations for which the above data types are available. Searches can be done using a range of station properties, such as the name of the location, geographic location, and whether all or just some of the data are obtainable. A number of stations can be used in the subsequent query.

3. Nominate the date range for which data are required.

4. Design the output format – the data can be transferred with different time and file formats.

Once these four steps are complete, the query can be saved and submitted.

For most new users it takes some practice to become familiar with the functionality of the web page. To help with this, CliFlo has online context sensitive help, and a free facility to experiment with data from Reefton.

New users are welcome to browse registration and subscription information online or contact cliflo@niwa.co.nz for further information.

Shades of spring. High soil moisture levels and rising temperatures will soon kick-start much needed pasture growth.

Cover photo: *Alan Blacklock*