

The Climate Update

A monthly newsletter from the National Climate Centre

October – record rainfalls in some areas, with average to below average temperatures in most places. High river and stream flows in the southern North Island.

Outlook for November to January – stronger than average south-westerly airflow is expected over the country. Average or below average temperatures are likely in all regions. Rainfall is expected to be normal or below normal in all regions except the west of the South Island, where above normal rain is expected.

New Zealand climate in October

Rainfall was well above normal in Auckland, Wairarapa, Manawatu, and near Christchurch and below normal in Central and East Otago. Record October rainfalls were recorded in Mangere, East Taratahi and Palmerston North. The month was much windier than average over the South Island and the southern North Island.

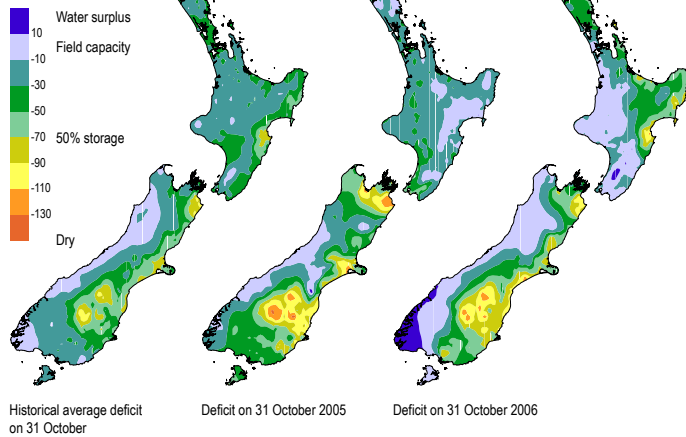
Mean air temperatures were near or below historical averages in all regions. The national average temperature of 11.9 °C was 0.3 °C below normal.

For more information on the climate in October 2006, visit the climate summaries page at www.niwa.co.nz/ncc/cs/mclimsum_06_10

Dry eastern pockets

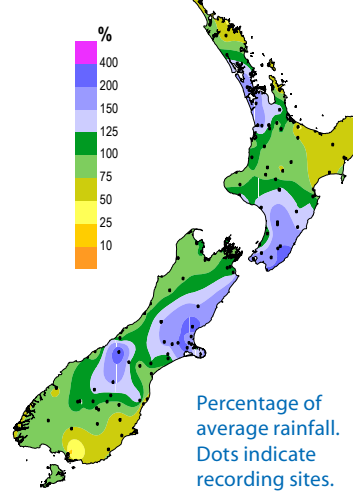
By the end of October, soil moisture levels were below normal in parts of Gisborne, Hawke's Bay, Marlborough, coastal Canterbury, and Otago, although Marlborough and Otago soils were not as dry as at the same time last year.

Soil moisture deficit

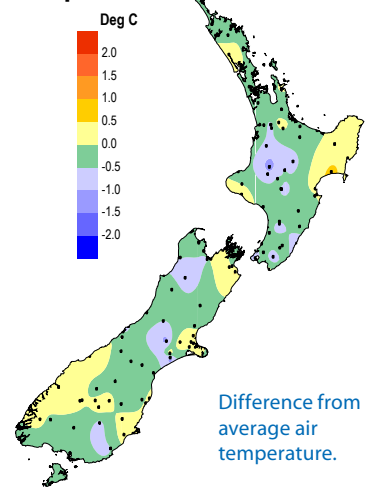


Water balance in the pasture root zone for an average soil type, where the available water capacity is taken to be 150 mm.

Rainfall



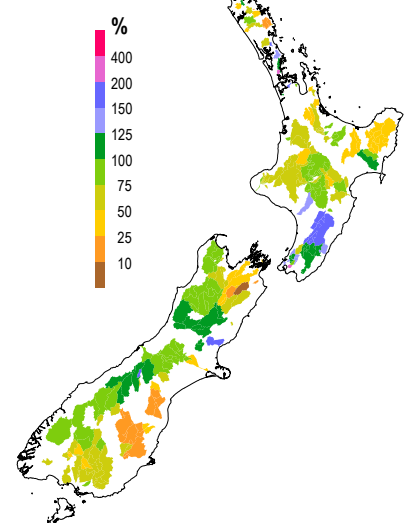
Air temperature



High flows in the southern North Island

October streamflows were normal over the west of the South Island, wetter than normal in the southern North Island and drier than normal elsewhere.

River flows



August to October – the climate we predicted and what happened

Rainfall

Rainfall was lower than expected in the eastern South Island and in parts of central and northern regions of the North Island.

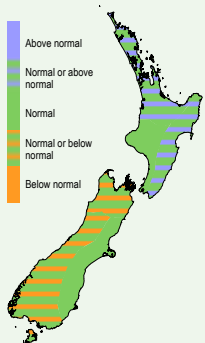
Air temperature

The temperature outlook was correct in many places, although conditions were cooler than expected in the western North Island and south-western South Island.

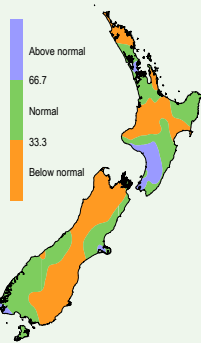
River flows

Streamflows in the southern North Island and northern South Island were higher and lower than normal respectively as predicted. Flows in the north of the North Island and east of the South Island were mostly lower than predicted.

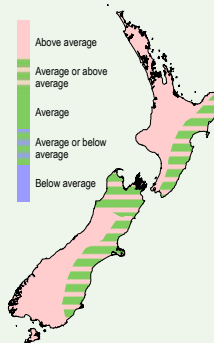
Outlook



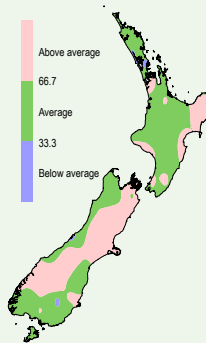
Outcome



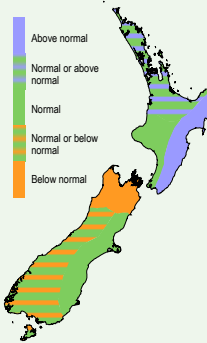
Outlook



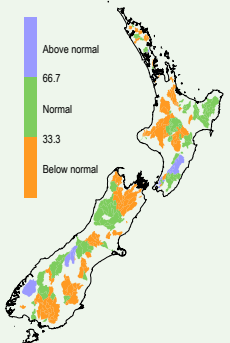
Outcome



Outlook



Outcome



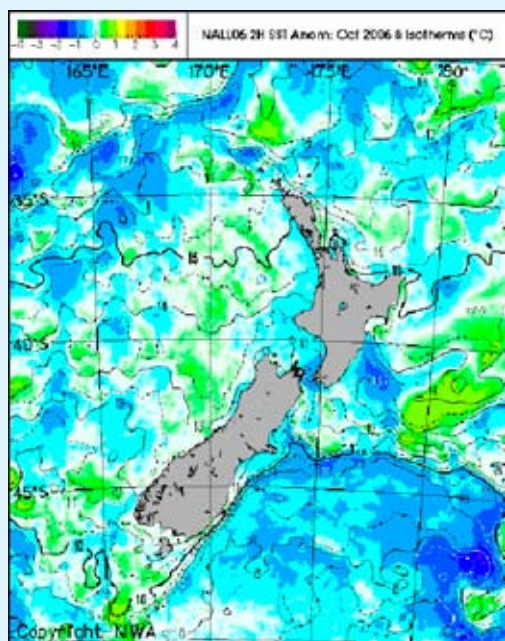
The three outcome maps give the tercile rankings of the rainfall totals, mean air temperatures, and mean river flows that eventuated from August to October, in comparison with the forecast conditions.

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

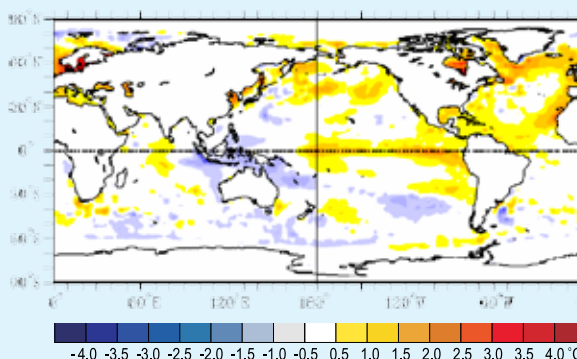
Sea surface temperature anomalies in the New Zealand region were near zero in October, as they have been, on average, for August to October. SST anomalies have been decreasing for over a year, after a marked warming in early 2005. The sea surface for much of the region around New Zealand is now cooler than normal, but an area of positive anomalies still lies to the east, north of the Chatham rise.



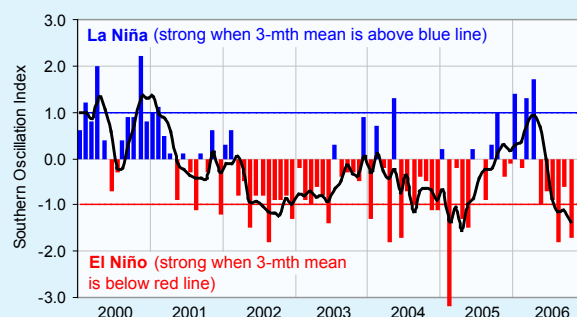
Difference from normal October surface temperatures in the seas around New Zealand.

El Niño now established

The tropical Pacific ocean and atmosphere have developed into a clear El Niño state. Sea surface temperature anomalies have risen in the eastern Equatorial Pacific while negative anomalies have strengthened in the western Pacific and have begun to develop a characteristic extratropical "horse shoe" pattern in the subtropics.



Difference from average global sea surface temperatures for October 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).

After a weak period in September, the SOI strengthened steadily in October, averaging -1.7 for the month, and lowering the three month August to October average to -1.4.

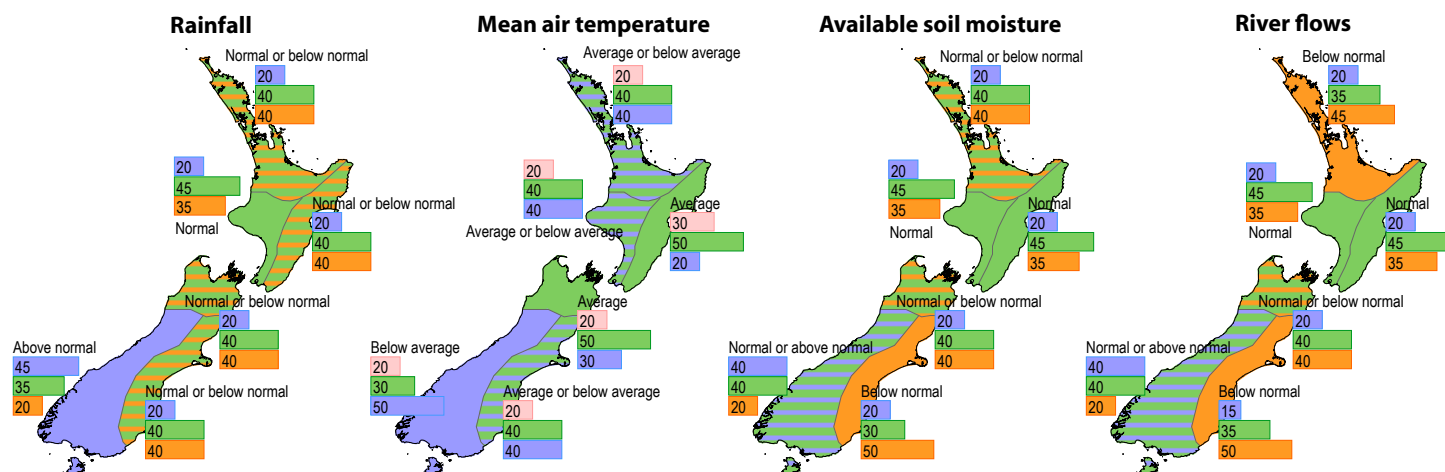
Outlook for November to January 2007

A moderate El Niño event is under way in the tropical Pacific, and will have an influence on New Zealand climate through to the end of summer 2006-07. Stronger than average south-westerly airflow is expected over the country; below average pressures are likely to the southeast of New Zealand.

Temperatures are expected to be average or below average in all regions. Rainfall is expected to be normal or below normal in all regions except the west of the South Island, where above normal

rain is expected. Streamflows and soil moisture levels are likely to be normal or above normal in the south and west of the South Island, and normal or below normal in other regions.

Normal tropical cyclone risk is expected in the New Zealand region during the 'cyclone season'. This means there is an 80% chance, between November and May, of an ex-tropical cyclone passing within 500km of the country.



How to interpret these maps

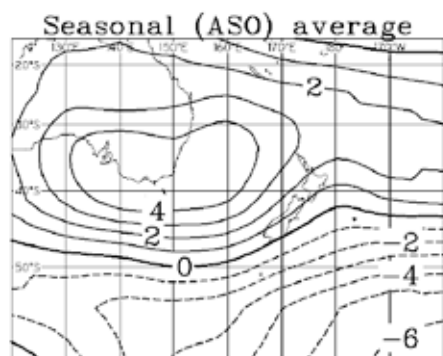
In the example here the climate models suggest that below average conditions are likely (50% chance), but, given the variable nature of the climate, the chance of normal or above normal conditions is also shown (30% and 20% respectively).

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

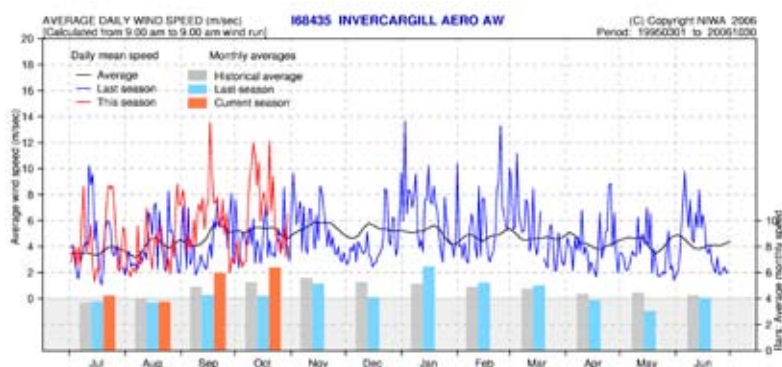
ClimateExplorer

<http://climate-explorer.niwa.co.nz>

As was signalled in the last two issues in the Climate Update, the present El Niño event has been influencing the wind regime across New Zealand. The mean sea level pressure map below, for August to October, shows a high pressure zone over Australia and the Tasman Sea, with a dominant south-westerly flow over New Zealand – a characteristic feature of El Niño.



As well as being more southwesterly than usual on average, winds in some parts of the country have also been stronger than normal this spring. This is highlighted in the figure below for Invercargill Airport. Wind speeds are shown in metres per second (m/s). On average, wind speeds in September and October have been about one m/s faster than normal. Average speeds on the windiest days have exceeded 12 m/s, or 43 km/hr.



Current wind information, as displayed above in the figure for Invercargill, is now available on ClimateExplorer. For more information, and to obtain an annual subscription for all updated products, please contact explorerhelp@niwa.co.nz.

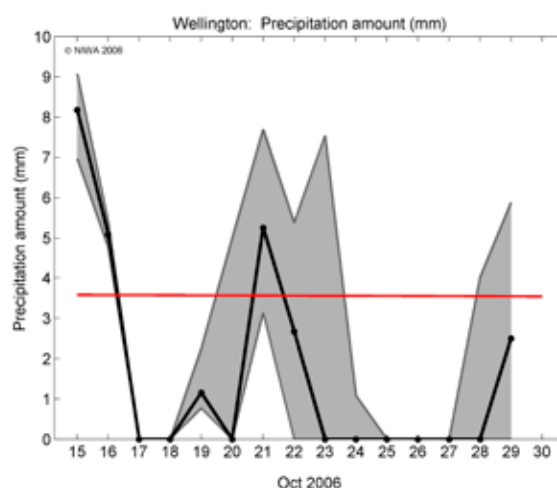
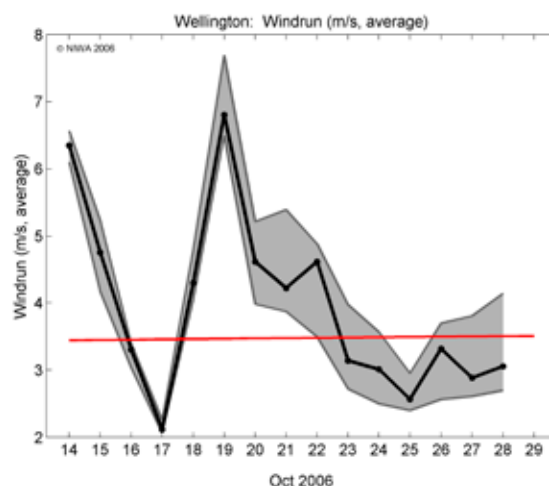
Take advantage of the three month trial subscription by contacting Andrew Tait, a.tait@niwa.co.nz.



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NIWA yachties manoeuvre at the start line on Wellington Harbour. Suitable conditions for sailing were forecast up to 14 days ahead on ClimateExplorer.
Cover photo: Alan Blacklock

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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Examples of wind (upper) and rainfall (lower) forecasts from ClimateExplorer, issued on October 14 and 15 respectively, that indicated good sailing conditions on Wellington Harbour for 26 October

