Number 112, 15 October 2008

NIWA
Taihoro Nukurangi

# The Climate Update

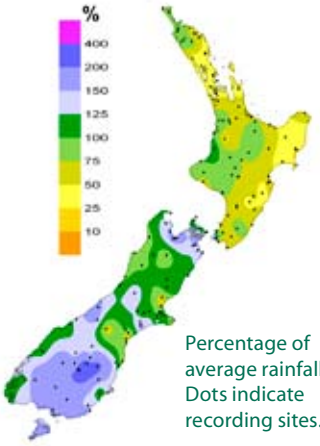
## A monthly newsletter from the National Climate Centre

September climate – below normal rain in the north and east, but wet in the north and south of the South Island. Temperatures mostly above normal.

Outlook for October to December – Average or above average temperatures; lower than normal rainfall in the southwest of the North Island, and north of the South Island. Rainfall, soil moisture and stream flows normal or below normal elsewhere.

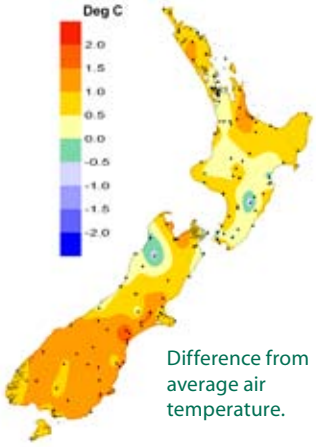
# New Zealand climate in September

**Rainfall**




Percentage of average rainfall. Dots indicate recording sites.

**Air temperature**




Difference from average air temperature.

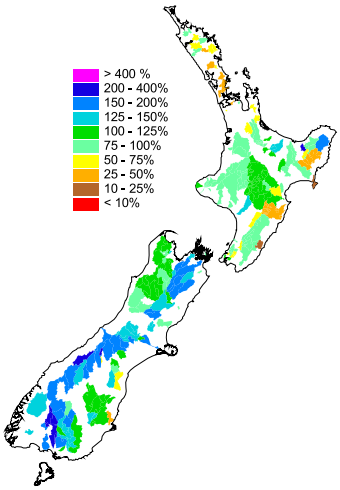
Rainfall in September was below normal for many areas, particularly in parts of Northland, Auckland, Waikato, Coromandel, and the east coast of the North Island, but 150% or more above normal in parts of the South Island.

September temperatures were more than 1.5 °C above their normal values in South Canterbury and Central Otago, and above normal in many other places. The national average temperature of 11.1 °C was 0.7 °C above average for the month.

For more information see www.niwascience.co.nz/ncc/cs/mclimsum_08_09

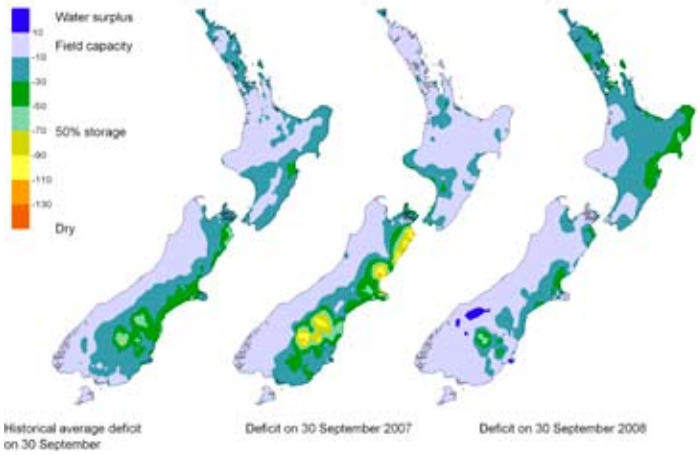
**River flows**

River flows in the high country areas of the South Island were higher than normal; flows were below normal in the east of the North Island, and normal elsewhere.




Percentage of average September 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.

Coastal soil moisture levels were lower than normal in parts of Northland, Bay of Plenty, and the North Island's east coast, but elsewhere soil moisture conditions were mostly near normal.

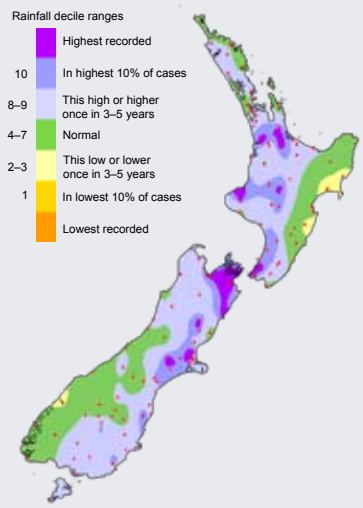
## July to September – the climate we predicted and what actually happened

### Rainfall

**Predicted:** Near normal everywhere.

**Outcome:** Above normal in the west and south of the North Island, and the north, east, and south of the South Island. Below normal in parts of the North Island east coast, and normal elsewhere over the country.

**July to September rainfall**

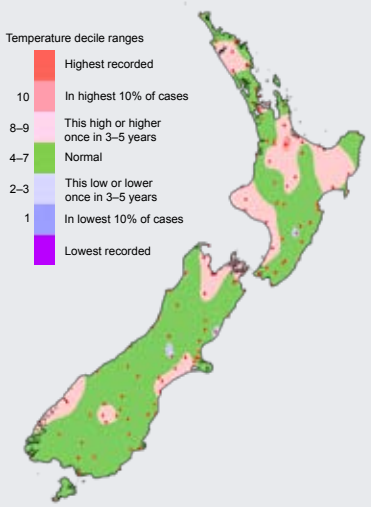



### Air temperature

**Predicted:** Above normal in the North Island, and normal or above normal in the South Island.

**Outcome:** Above normal in many places, and normal elsewhere.

**July to September temperature**

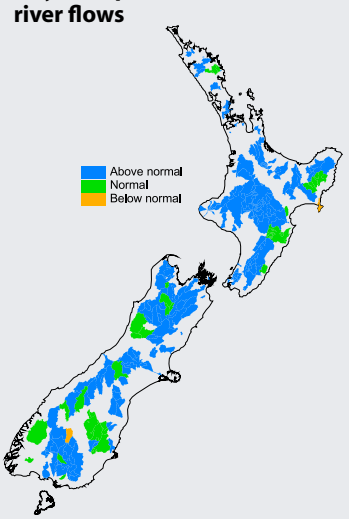



### River flows

**Predicted:** Normal or below normal flows in the north and east of both the North and South Island.

**Outcome:** River flows were higher than normal in most catchments.

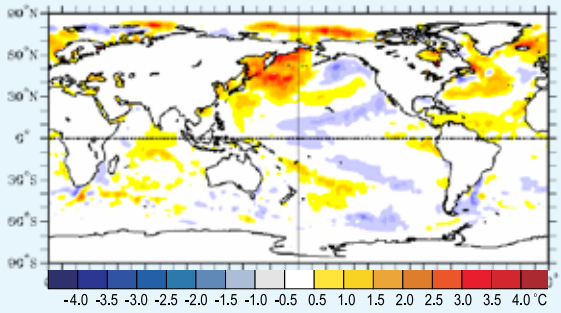
**July to September river flows**



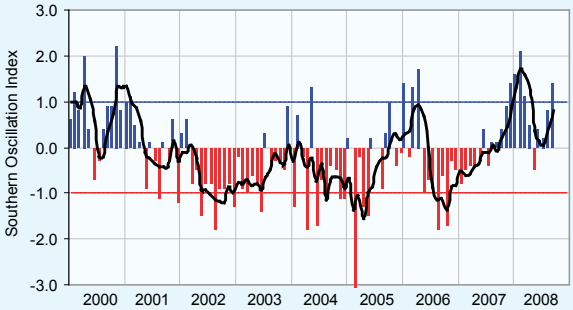
# Global setting and climate outlook

## El Niño-Southern Oscillation remains neutral despite positive SOI

Neutral ENSO conditions in the tropical equatorial Pacific are now well established, although lingering effects of La Niña persist. The Southern Oscillation Index remains positive, having strengthened somewhat during September to +1.4 with the three-month mean at +0.8. The positive sea surface temperature anomalies in the eastern Pacific reduced during the month. At present, all seasonal climate models suggest that ENSO-neutral conditions will continue until the end of the year.




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

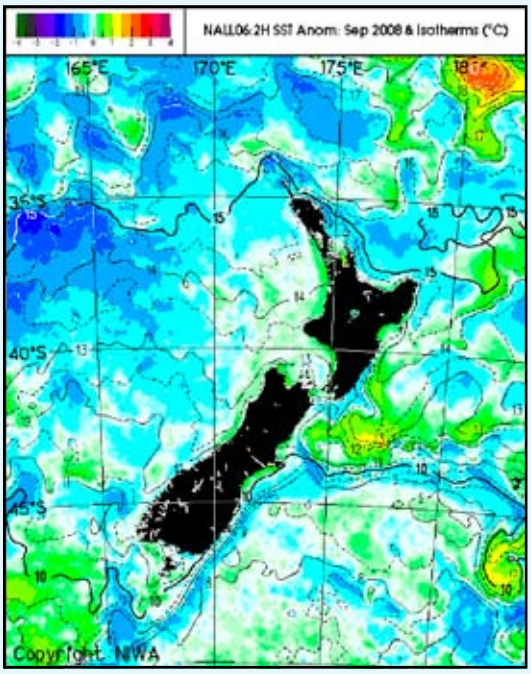



Monthly values of the Southern Oscillation Index (SOI), a measure of the changes in atmospheric pressures across the Pacific, and the three-month mean (black line).

SOI mean values:
September: +1.4
July to September 0.8

## Sea surface temperatures around New Zealand

Sea surface temperature (SST) anomalies in the New Zealand region overall are close to but slightly cooler than average. The September SST anomaly was –0.2 °C, with a negligible average anomaly for the three months July to September. Sea surface temperatures around New Zealand are expected to remain near normal until the end of the year.



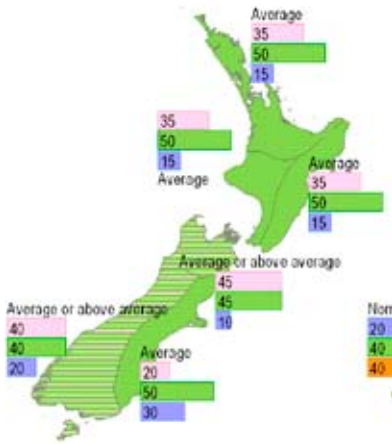

Differences from normal September surface temperatures in the seas around New Zealand.

## Outlook for October to December 2008

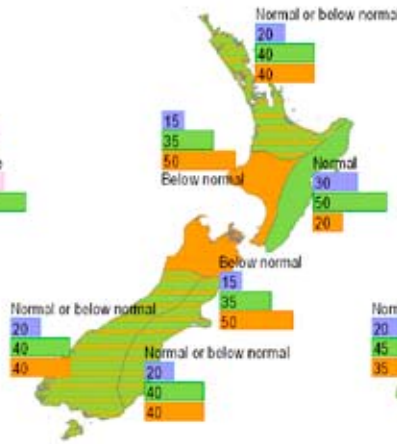
In the New Zealand region, mean sea level pressures are likely to be higher than normal, especially over the South Island, resulting in lighter winds than usual over the country and periods of easterlies affecting the North Island. Air temperatures are likely to be average or above average over the north and west of the South Island and average elsewhere. Rainfall is likely to be normal or below normal over much of the country, with near normal rainfall in the east of the North Island. Normal or below normal soil moisture levels and stream flows are likely everywhere in the country.

Under the prevailing neutral conditions of the El Niño–Southern Oscillation, there is a 4 out of 5 chance of an ex-tropical cyclone passing within 500 km of the country between November and May, with the highest risk in the Northland and Gisborne districts.

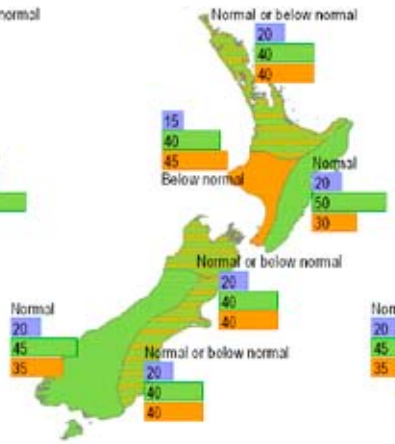
**Mean air temperature**



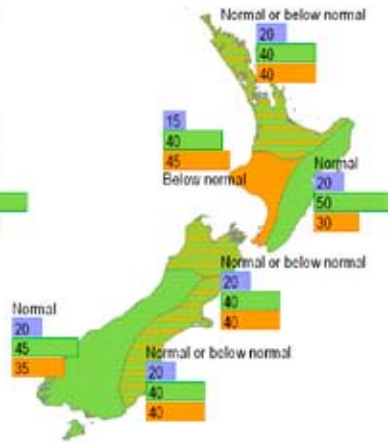

**Rainfall**




**Available soil moisture**

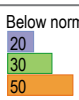



**River flows**




**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).




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

# NIWA Climate Change Maps

NIWA's National Climate Centre has produced a set of five A1-size maps displaying some of our new climate change projections for New Zealand.

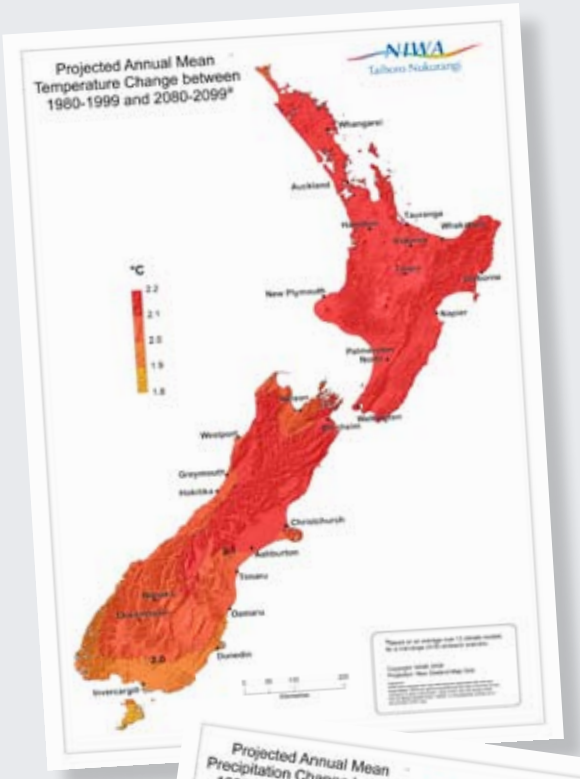
The maps present a 'middle-of-the-road' picture of the future. They show the average projection from 12 global climate models for a mid-range greenhouse gas emission scenario.

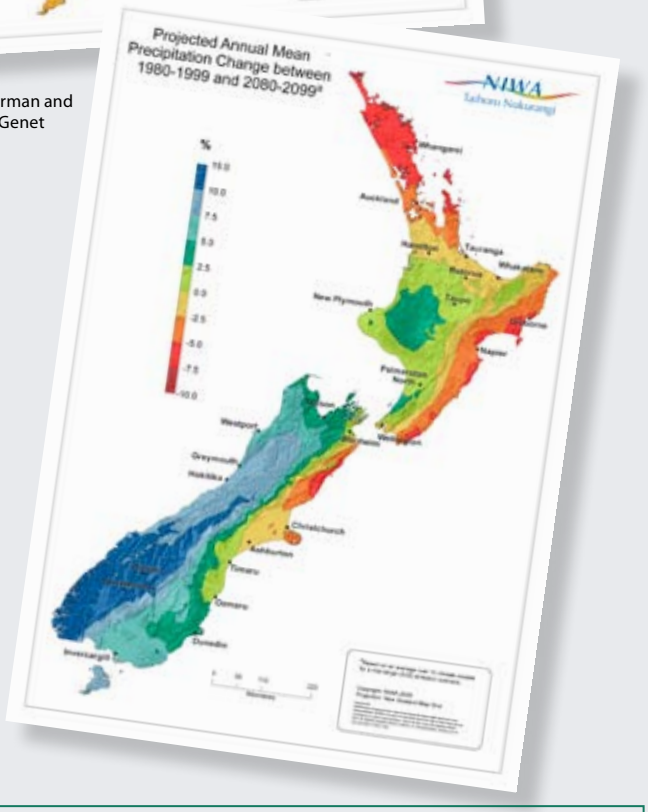
The full set shows:

1. change in mean annual temperature by about the middle of this century
2. change in mean annual temperature by about the end of this century
3. percentage change in mean annual precipitation by about the middle of this century
4. percentage change in mean annual precipitation by about the end of this century
5. percentage change in mean precipitation by season (four panels show winter, spring, summer, autumn) by about the end of this century.

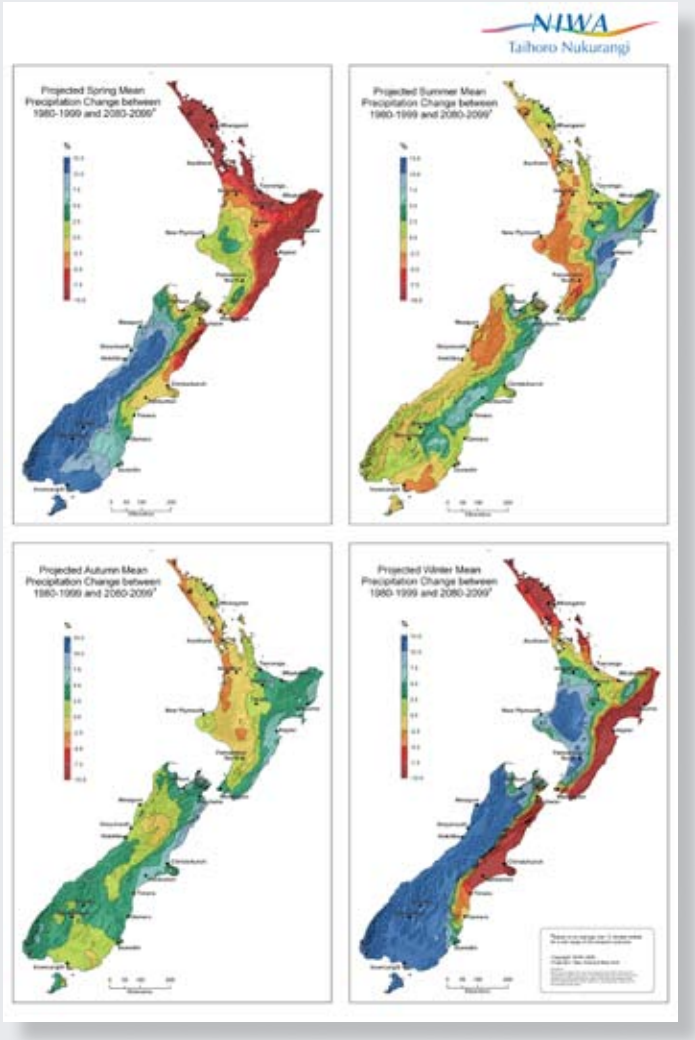
Available from NIWA for $30 (incl P&P within NZ) for the set of five maps.

To order a copy:
www.niwa.co.nz/pubs/series/posters
posters@niwa.co.nz
0800 RING NIWA (0800 746 464)




Maps:
James Sturman and
Margaret Genet




"Love the earrings, darling!"
Cover photo: *Steve LeGal*

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It is also available on the web.
Comments and ideas are welcome.
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