Number 117, 3 March 2009

NIWA
Taihoro Nukurangi

New Zealand Climate Update

Current climate – February 2009

Rainfall was above normal over most of New Zealand and exceeded 200% of normal in parts of Northland, Coromandel, western Waikato, Bay of Plenty, Hawke's Bay, Manawatu, Wellington, Marlborough, Canterbury, and Otago. Most of the rain fell during three storms on 10, 20, and 27–28 February. Rainfall was below normal in Fiordland and parts of Southland.

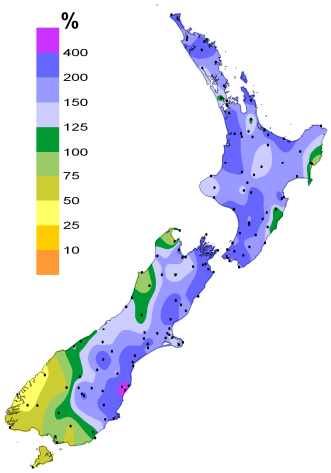
Soil moisture levels for most of the country returned to near normal by the end of February, a dramatic change from the predominantly dry conditions early in the month.

Air temperatures during February were high for the first 12 days and then lower than average for the remainder of the month. Mean temperatures for the month were mostly above historical averages in the North Island and below in the South Island. A heat-wave over the country from 7–12 February lifted temperatures to above 34 °C in some places. The national average temperature of 17.5 °C was 0.3 °C below the historical average.

Warm northwesterlies predominated early in February, followed by a change to more southerly air flows later in the month.

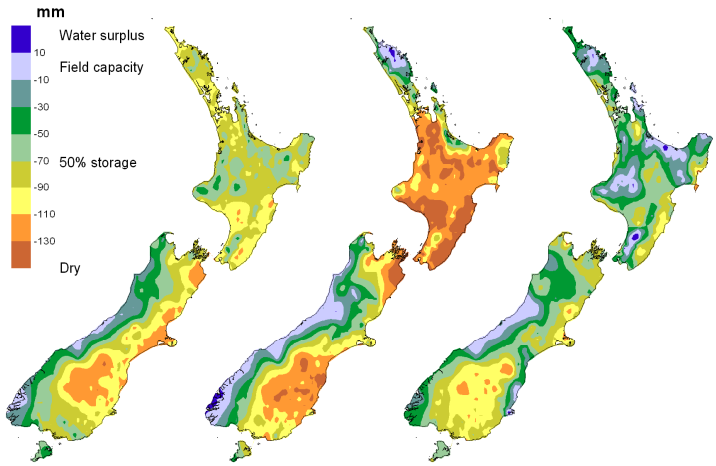
For more information:
www.niwa.co.nz/ncc/cs/monthly/mclimsum_09_02
To subscribe to this free Climate Update, email updates@niwa.co.nz with 'subscribe' in the subject line.

Rainfall



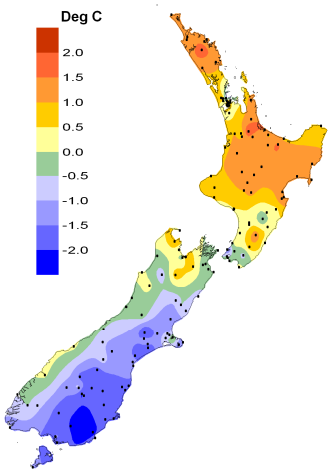
Percentage of average rainfall for February 2009.

Soil moisture



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

Air temperature



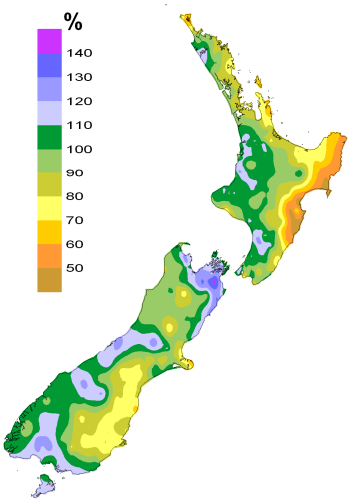
Departure from average air temperature for February 2009.

Focus point: A soaking for parched top soils: rainfall from August 2008 to early February 2009

The past six months have seen some marked highs and lows in rainfall totals across the country. Parts of the east and north of the North Island were exceptionally dry, and parts of Canterbury and Otago also experienced below normal rainfall. In contrast, Marlborough was very wet, with up to 50% more rainfall than normal. Meanwhile, western regions received near normal rainfall.

In Hawke's Bay, data received so far indicate that total rainfall for the period was the lowest since the El Niño drought of 1982–83; at that time, the drought extended well into autumn, with less than 10 mm of rainfall recorded in March 1983.

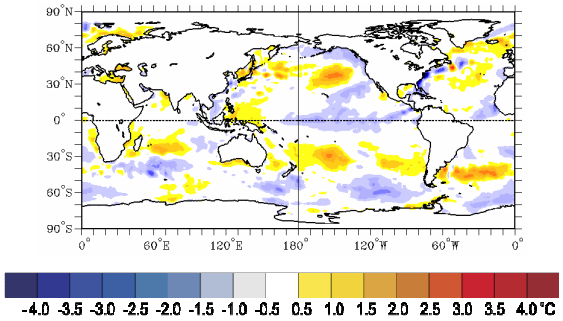
The good news for farmers is that the recent rain, which began around 10 February, has restored soil moisture levels to normal or above normal over much of the East Coast and Hawke's Bay, providing a timely boost to the prospects for good autumn pasture growth.



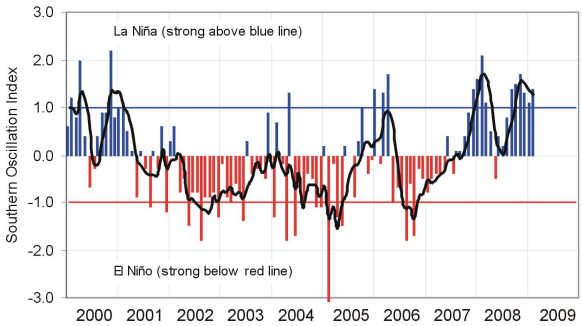
RIGHT: Departure from average rainfall for the period August 2008 to early February 2009, prior to the widespread rain beginning 10 February. *Note preliminary data were used to derive this map and the comments above.*

Global setting and climate outlook – March to May 2009

A moderate La Niña in the tropical Pacific is expected to continue during autumn before returning to ENSO-neutral conditions during winter. The Southern Oscillation Index remains firmly positive. Enhanced easterly trade winds west of the Date Line have weakened during February, but are still stronger than normal.



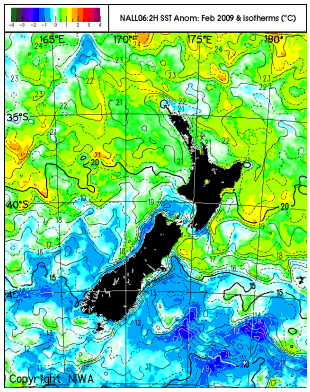
Differences from average global sea surface temperatures for 25 January to 21 February 2009. Map courtesy of NOAA Climate Diagnostics Centre.



Monthly values of the Southern Oscillation Index (SOI), a measure of changes in atmospheric pressures across the Pacific, and the 3-month mean (black line). SOI mean values: February +1.4; December to February average +1.3.

Sea surface temperatures

New Zealand sea surface temperature anomalies were about +0.7 °C in February, with a December to February average of +0.6 °C. Surface temperatures are expected to remain above normal over the next three months.



RIGHT: Differences from normal February surface temperatures in the seas around New Zealand.

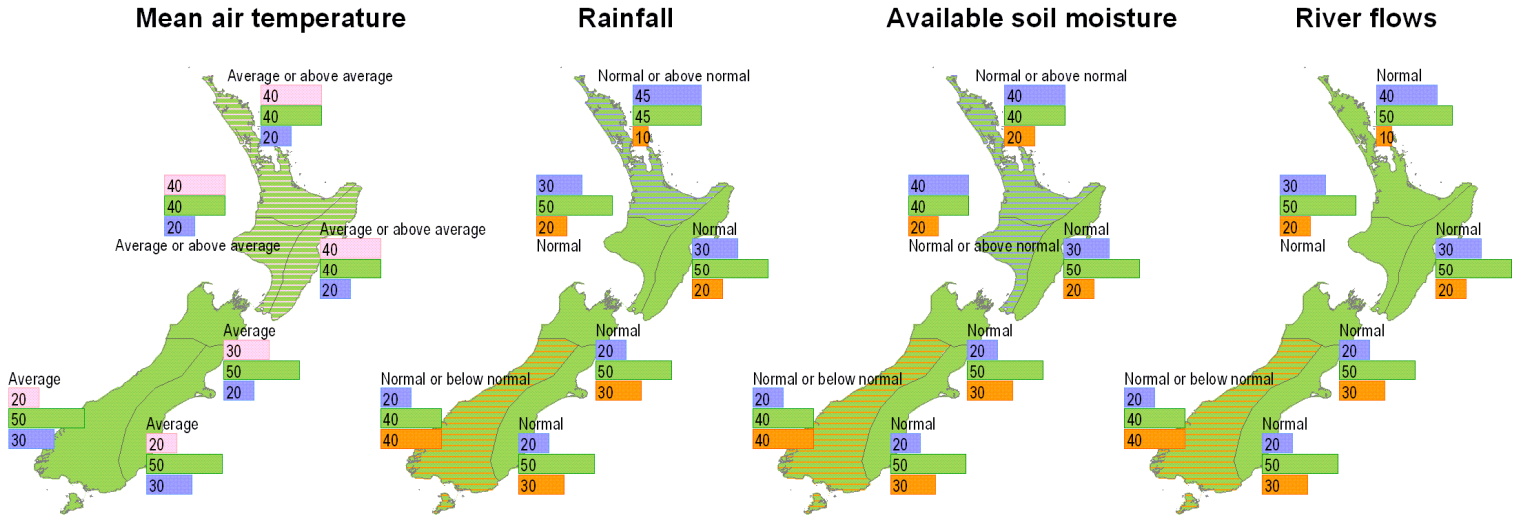
Outlook

In the New Zealand region, mean sea level pressures are likely to be higher than normal over southern New Zealand and to the east, with more easterly wind episodes than normal over the North Island, and lighter winds than normal over the South Island.

Air temperatures are likely to be average or above average in the North Island, and near average in the South Island.

Rainfall is likely to be normal or above normal in the north of the North Island, normal or below normal for the southwest South Island, and normal elsewhere. Normal or above normal **soil moisture levels** are likely in the north and west of the North Island. Normal or below normal soil moisture levels and **stream flows** are likely in the west and south of the South Island. Elsewhere, normal conditions are likely.

Outlook for March to May 2009, expressed as conditions and probabilities



How to interpret these maps:

	Below normal
Upper tercile: 20% chance of above normal	20
Middle tercile: 30% chance of normal	30
Lower tercile: 50% chance of below normal	50

In this example (left), 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).

December to February – the climate we predicted and what actually happened

Rainfall: Predicted: Normal in the North Island; normal or above in the west of the South Island; normal or below in the east of the South Island. **Outcome**: Normal in many places; above normal in the western North Island, Marlborough, mid and south Canterbury, and North Otago. Below normal in coastal southern Hawke's Bay, and Buller.

Air temperature: Predicted: Above average in most regions; average or above in the west of the South Island. **Outcome:** Above average in parts of the north and east of the North Island, and northern South Island. Mostly average elsewhere. Below average in inland Otago and eastern Southland.

The New Zealand Climate Update is a monthly newsletter from NIWA's National Climate Centre, and is published by NIWA, Private Bag 14901, Wellington 6241. Comments and ideas are welcome. Please contact Alan Porteous, Editor, email ncc@niwa.co.nz telephone 0-4-386 0300. Visit our web page: www.niwa.co.nz/ncc

NIWA Taihoro Nukurangi