

Number 65, 15 November 2004

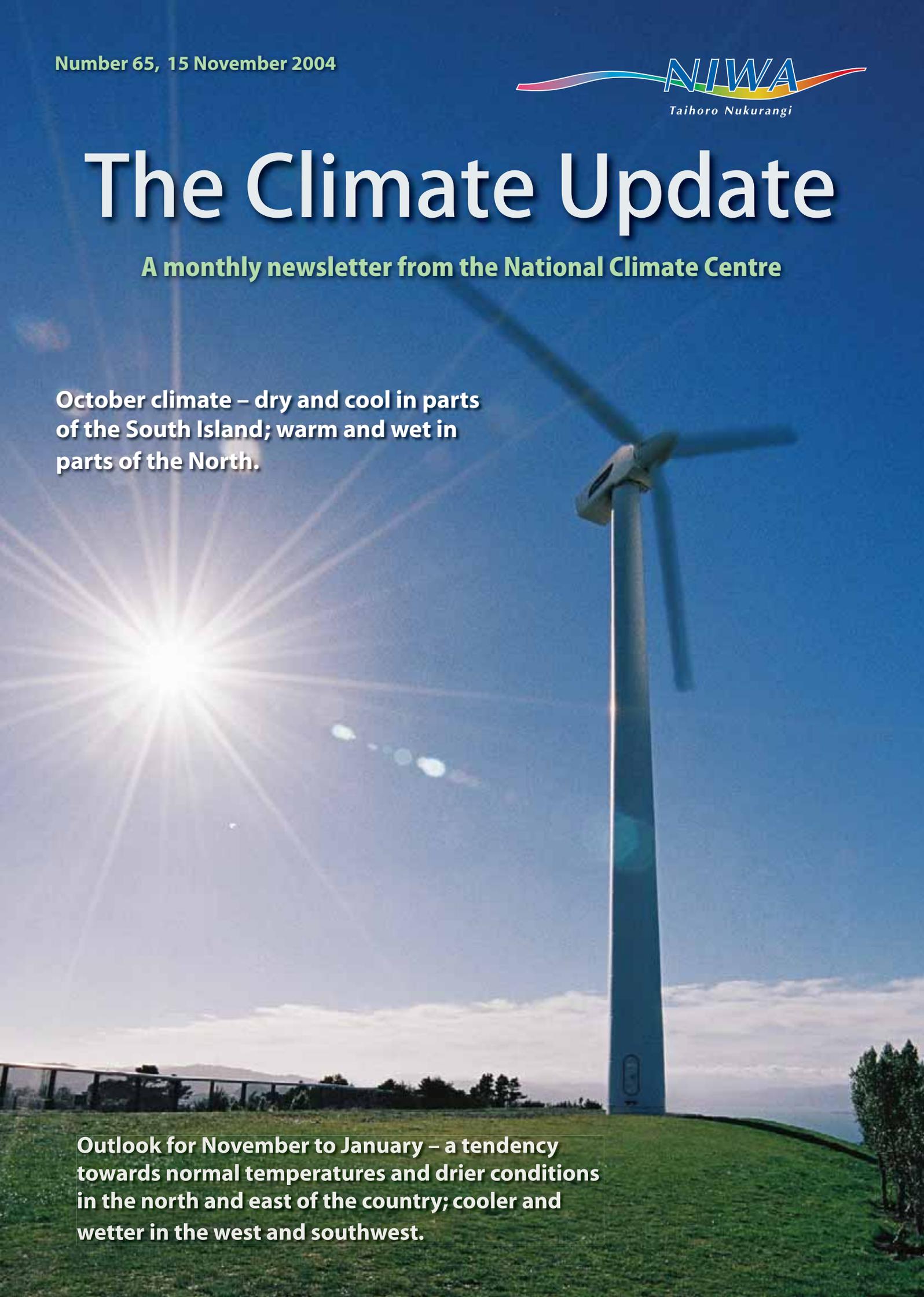


# The Climate Update

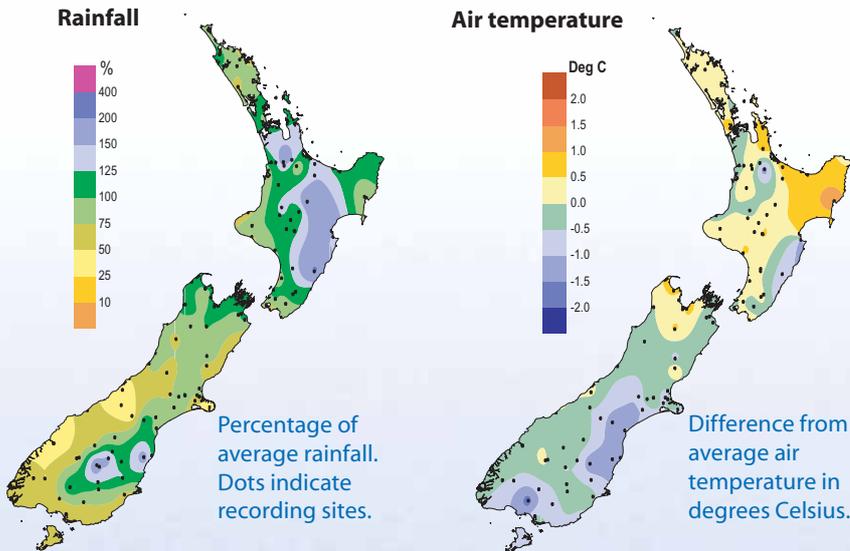
**A monthly newsletter from the National Climate Centre**

**October climate – dry and cool in parts of the South Island; warm and wet in parts of the North.**

**Outlook for November to January – a tendency towards normal temperatures and drier conditions in the north and east of the country; cooler and wetter in the west and southwest.**



# New Zealand climate in October 2004



## Low rainfall in the south

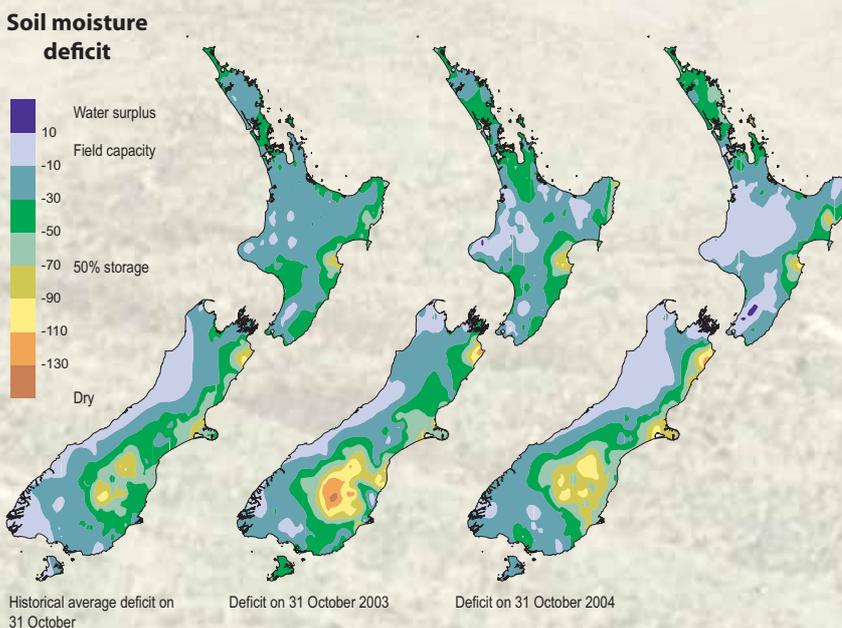
October rainfall was well below average in South Westland, Fiordland, and the Kaikoura coast. North Island rainfalls were higher, with above average rain in parts of Waikato, Hawke's Bay, Bay of Plenty, and Wairarapa.

North Island air temperatures were mostly near or above average, while it was cool in Canterbury and Southland.

For more information on the climate in October, visit the climate summaries page at [www.niwa.co.nz/ncc/cs/mclimsum\\_04\\_10](http://www.niwa.co.nz/ncc/cs/mclimsum_04_10)

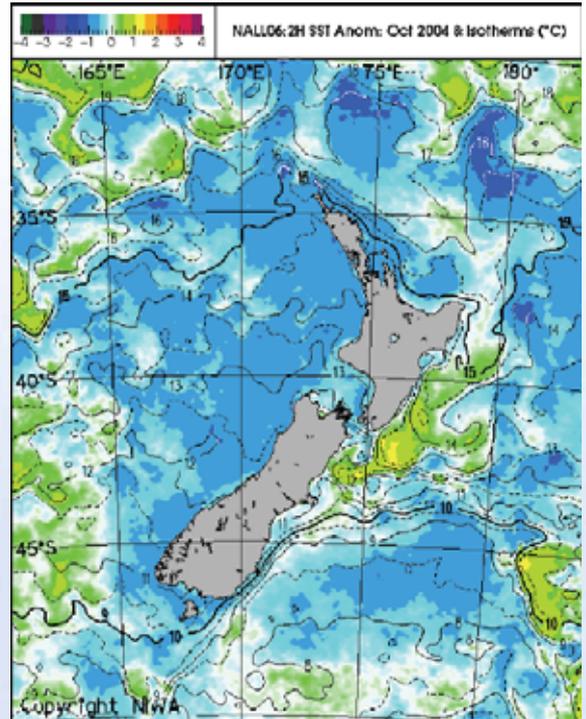
## Soil moisture levels near normal

In most parts of New Zealand soil moisture levels at the end of October were near historical mean levels. In a few areas, particularly parts of Northland, Kaikoura, and east Otago, moisture levels were lower than average.



Soil moisture deficit in the pasture root zone at the end of October (right) compared with the deficit at the same time last year (centre) and the long-term end of October average (left). The water balance is for an average soil type where the available water capacity is taken to be 150 mm.

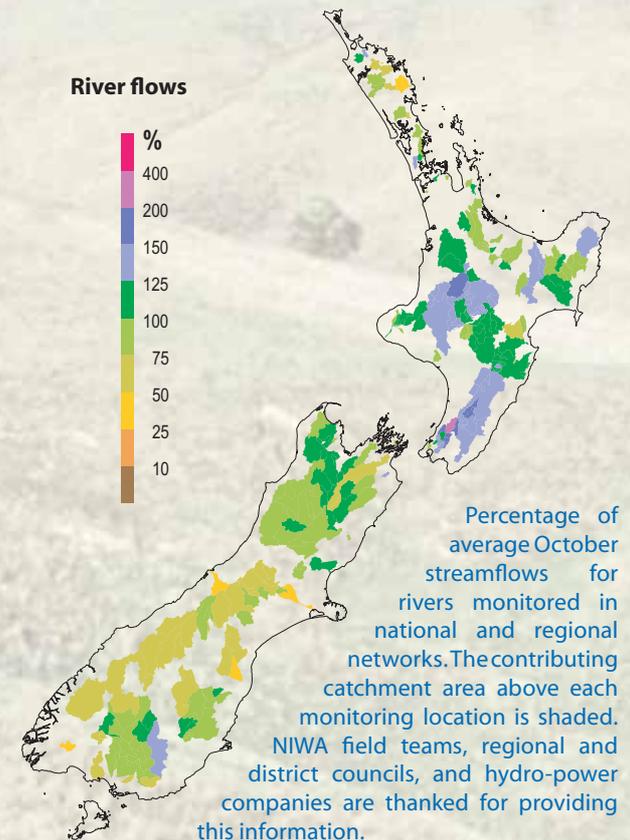
## Sea surface temperatures



Difference from normal surface water temperatures in the seas around New Zealand. Temperatures of seas adjacent to New Zealand have been trending slowly downwards over recent months.

## Central and southern North Island flows high

Streamflows were above normal in the central and southern North Island. In the South Island, streamflows were below normal in alpine catchments south of the Grey and Hurunui Rivers. Elsewhere, streamflows were near normal.



# Checkpoint

## August to October

Rainfall was near normal, as predicted, over much of the country, but drier than forecast in the north of the North Island and in parts of the west of the South Island. The south of the North Island, and parts of eastern and southern South Island, were wetter than predicted.

Air temperatures were lower than predicted in all regions.

River flows were lower than predicted in the north of New Zealand and in southern alpine regions. Rivers in the southern North Island, Buller, and parts of Southland had higher than predicted flows.

# Outlook

## November to January

Atmospheric pressure at mean sea level is expected to be lower than normal to the south and east of New Zealand, with stronger than normal west to southwest wind flows over the country. Sea surface temperatures around New Zealand are expected to be slightly below average (by as much as 0.5 °C) over the next three months.

Air temperatures are expected to be near average in the North Island and eastern South Island, and average or below average elsewhere.

Rainfall is expected to be normal or below normal in the north and east of the North Island and the eastern South Island, and normal or above normal in western regions of both islands.

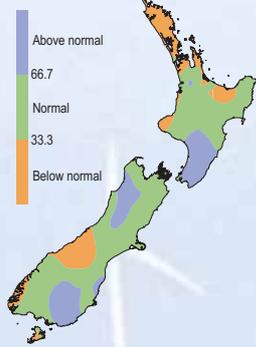
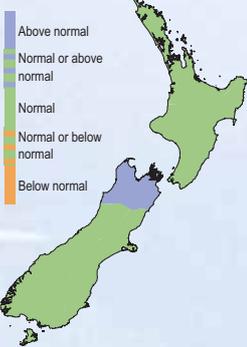
Soil moisture levels and river flows are expected to be normal or above normal in the west of both islands and the south of the South Island, with normal or below normal soil moisture and streamflows in the north and east of the North Island and east of the South Island. Normal soil moisture and river flows are expected elsewhere.

The tropical Pacific is currently in a weak El Niño state, which is likely to continue into early 2005.

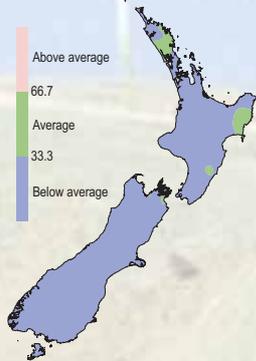
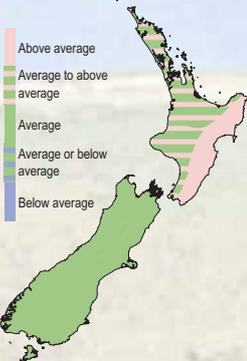
### Outlook What we said

### Outcome What actually happened

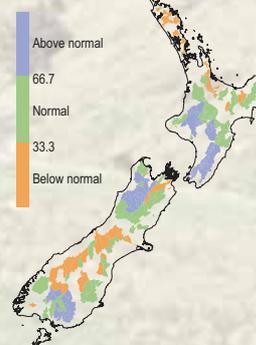
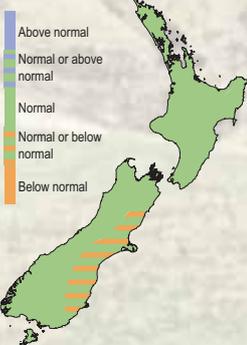
#### Rainfall



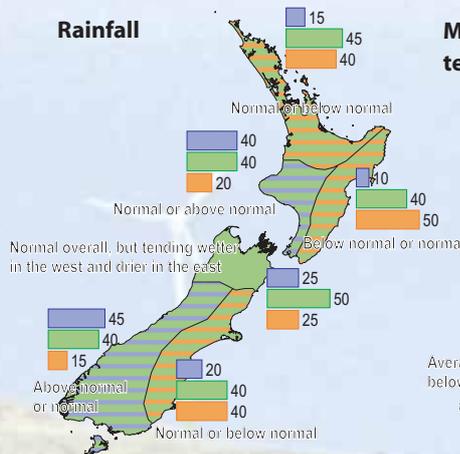
#### Mean air temperature



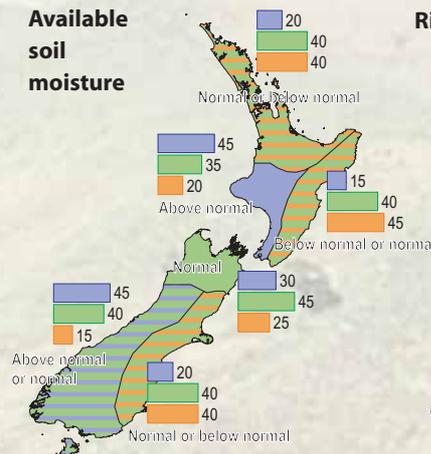
#### River flows



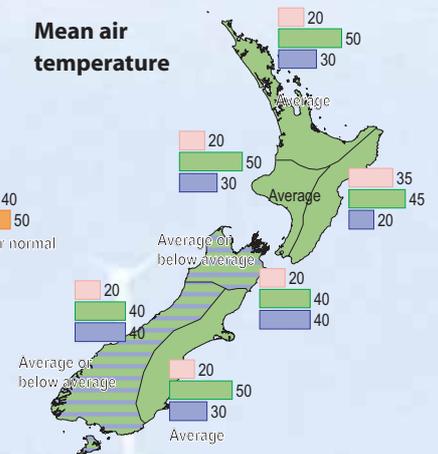
#### Rainfall



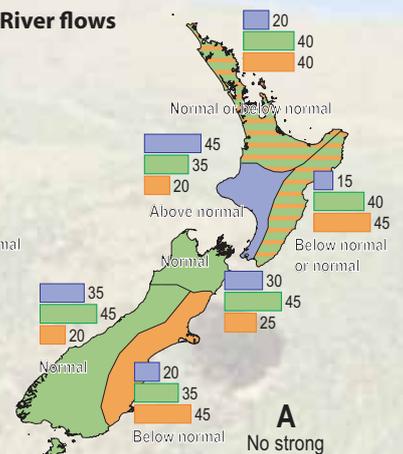
#### Available soil moisture



#### Mean air temperature

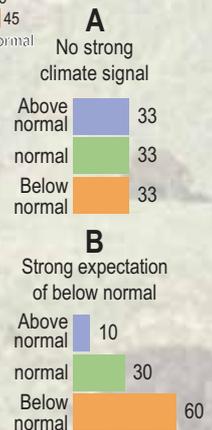


#### River flows



### Key to maps (example interpretation)

In example A, climate models give no strong signals about how the climate will evolve, so we assume that there is an equal chance (33%) of the climate occurring in the range of the upper, middle, or lower third (tercile) of all previously observed conditions. In example B there is a relatively strong indication by the models (60% chance of occurrence) that conditions will be below normal, but, given the variable nature of climate, the chance of normal or above-normal conditions is also shown (30% and 10% respectively).



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

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.

## 'A great wind is blowing, and that gives you either imagination or a headache.'

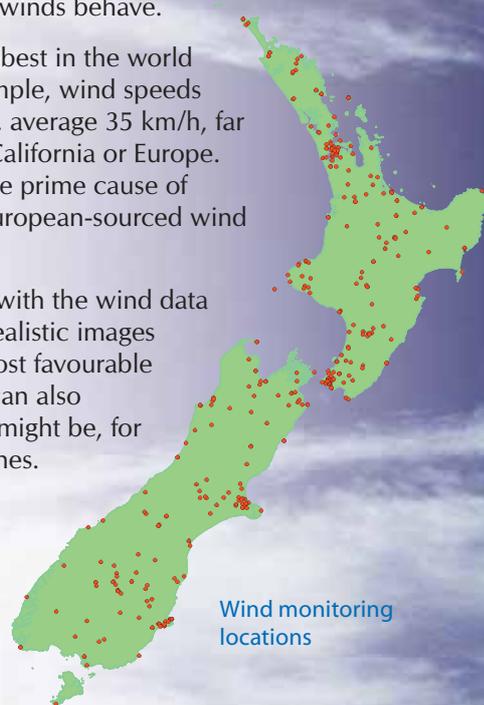
This observation, attributed to Catherine II, monarch, industrialist, scientist, and educator of the 18th Century, could as readily have applied to New Zealand as to her adopted Russia.

New Zealanders live in one of the windiest inhabited areas of the world, where the wind gives plenty of potential for both resource and hazard. The wind climate of the country has been routinely monitored at more than 200 sites, as shown in the adjacent map, enabling intensive, ongoing research on how winds behave.

New Zealand's climate is one of the best in the world for wind power generation. For example, wind speeds at Hau Nui wind farm, in Wairarapa, average 35 km/h, far in excess of the best wind farms in California or Europe. (The high wind speeds have been the prime cause of premature gearbox failures on the European-sourced wind turbines.)

Geographic information, combined with the wind data from observation stations, enables realistic images to be generated of the potentially most favourable sites for wind energy generation. It can also indicate where the greatest hazards might be, for example, for structures like power lines.

The high wind speeds associated with New Zealand's hilly terrain are illustrated in the image below, where the red shading marks the high wind speed zones.



Pole Hill, Wellington  
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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