

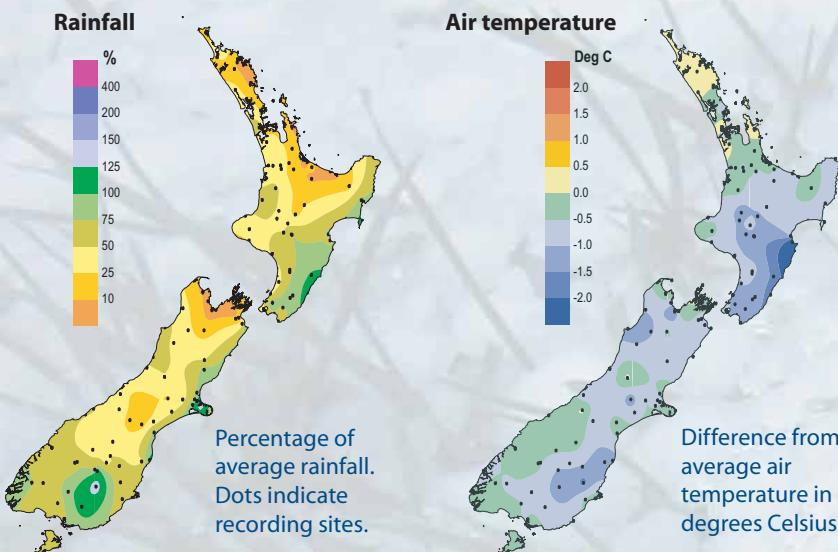
# The Climate Update

A monthly newsletter from the National Climate Centre

**April exceptionally dry and sunny.** Frequent clear nights and a late southerly outbreak brought below average temperatures. Stream flows were low, especially in the north of the North Island.

**Outlook for April to June –** above average air temperatures in all districts. Normal or above normal rain in the west; eastern North Island rainfalls may be below normal. Below normal soil moisture and stream flows are likely in the north and east of the North Island.

# New Zealand climate in April 2005



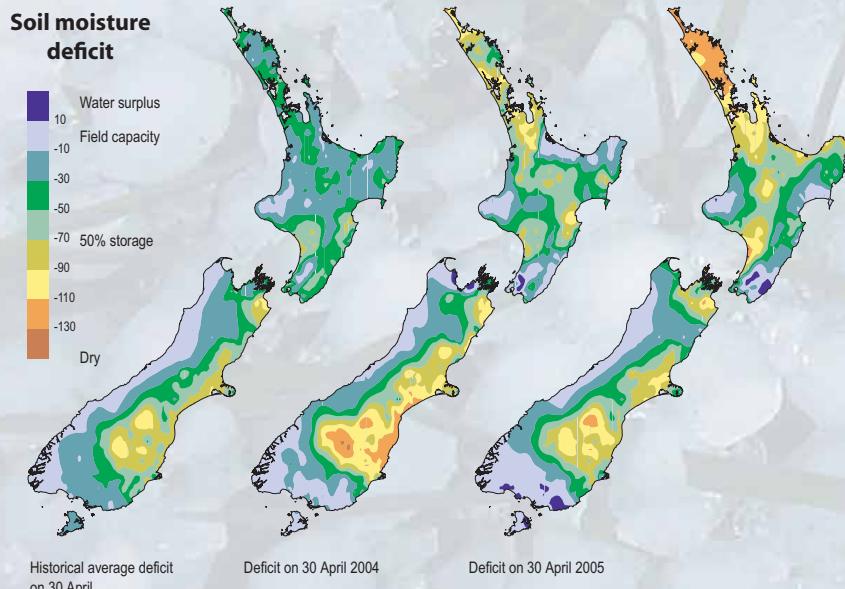
April was exceptionally dry and sunny, with near record or record low rainfall in parts of Northland, Auckland, Coromandel, Bay of Plenty, Nelson, and central Marlborough. Many locations in these regions recorded less than 10 mm of rain.

It was warmer than normal in parts of Northland, but mean temperatures were mostly below average elsewhere. The cooler conditions were due to frequent clear nights, along with cold southerly outbreaks towards the end of the month.

**For more information on the climate in April, visit the climate summaries page at [www.niwa.co.nz/ncc/cs/mclimsum\\_05\\_04](http://www.niwa.co.nz/ncc/cs/mclimsum_05_04)**

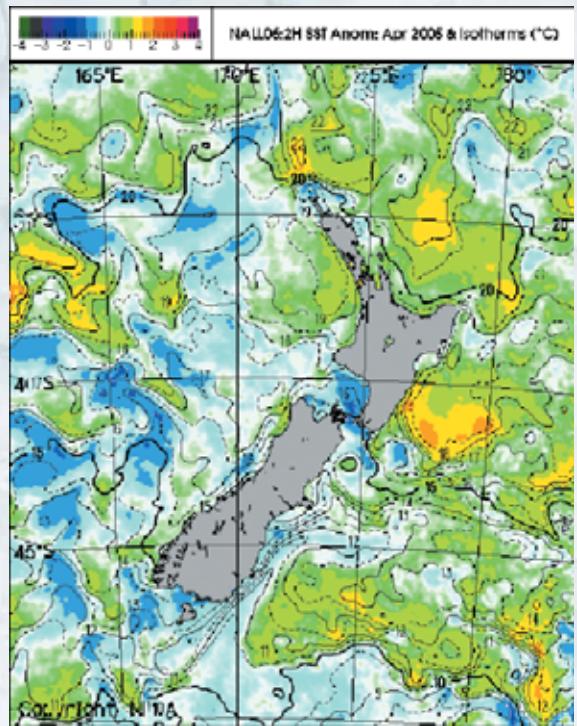
## Low soil moisture in Northland

Soil moisture deficits increased in much of Northland during April. At the end of the month, moisture levels were lower than normal also in parts of western Bay of Plenty, Manawatu, Nelson, central Marlborough, and the Mackenzie District. Moisture levels were higher than normal in Hawke's Bay, Wairarapa, and Southland.



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

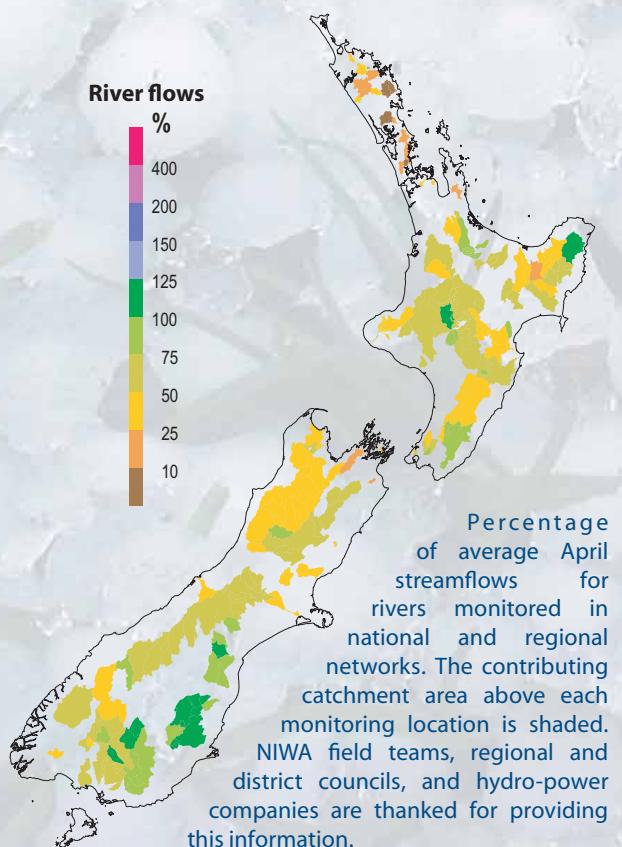
## Sea surface temperatures



Difference from normal surface water temperatures (SSTs) in the seas around New Zealand. The New Zealand average SST was about +0.8 °C higher than normal in April, up slightly from March.

## Low river and stream flows

Streamflows were below normal everywhere, but were particularly low in the northern North Island. Flows tended toward normal in the east of both islands.



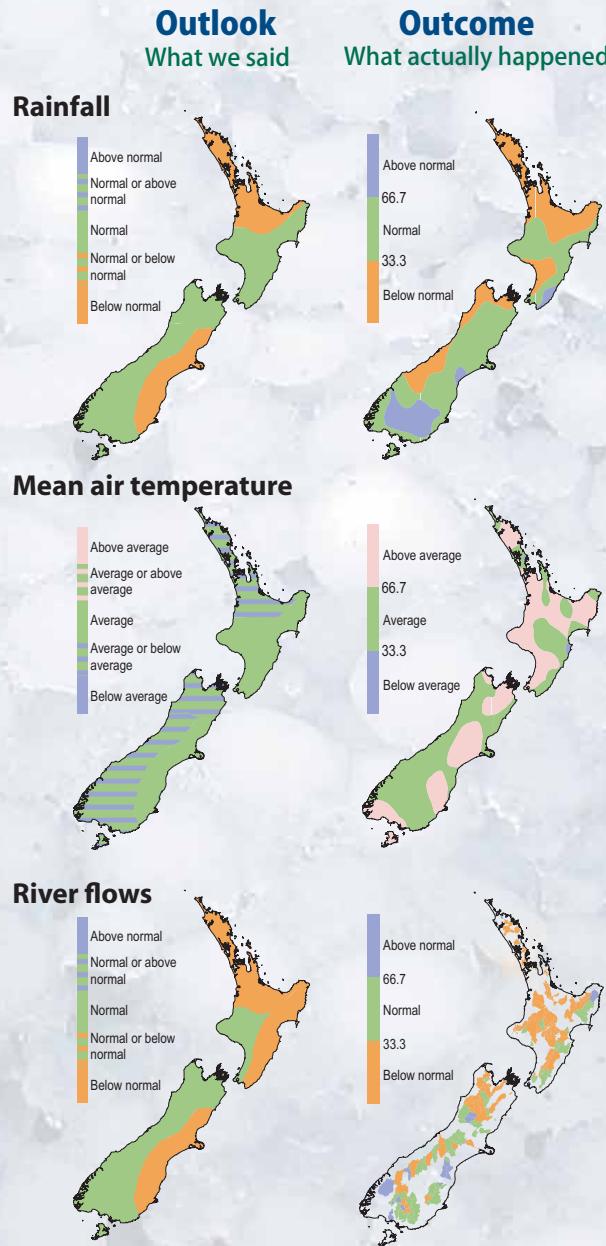
# Checkpoint

**February to April 2005**

Rainfall was below average in the north of the country, as forecast. The west of the South Island was drier than expected, and it was wetter than predicted in the southeast of the South Island.

Average to below average temperatures were expected. While average temperatures were widespread, conditions over much of the country were warmer than usual.

Streamflows were expected to be below normal in the north and east. The outcome was below normal flows in the north and southwest of the North Island, and below normal to normal flows in other locations, except for the southwest of the South Island where they tended to above normal.



The three outcome maps (right column) give the tercile rankings of the rainfall totals, mean air temperatures, and river flows that eventuated from February to April, 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.

## **Outlook**

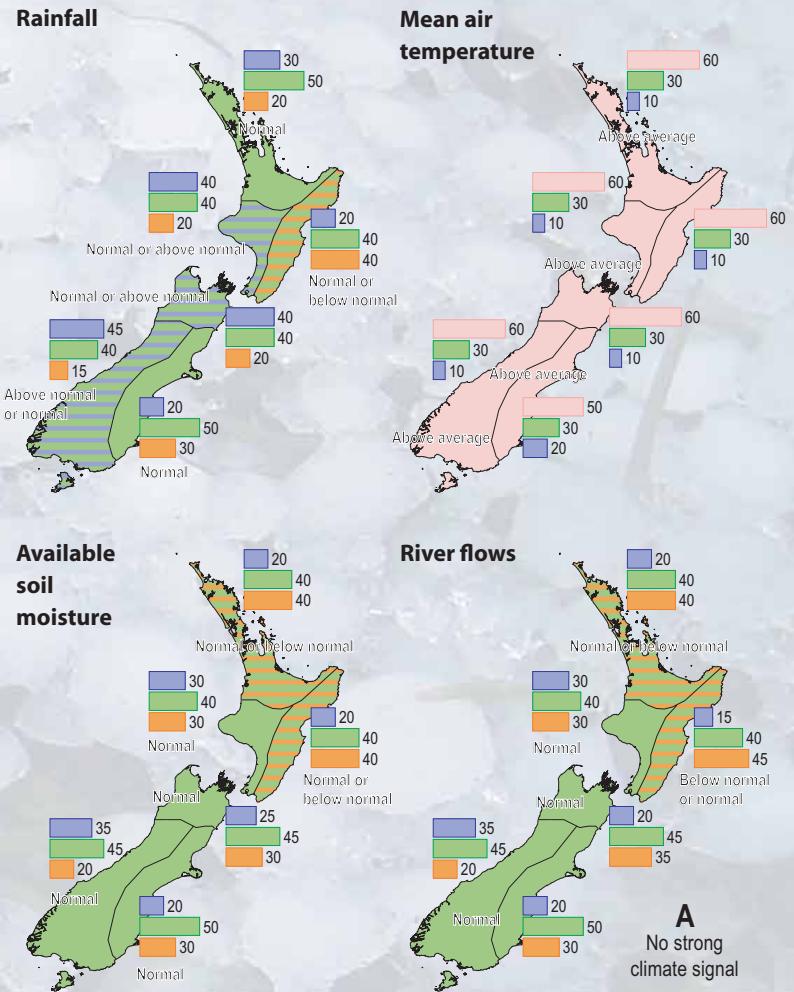
**May to July 2005**

Below average sea-level pressures are expected to the south of New Zealand, with enhanced westerly or northwesterly air flows over the country. Sea surface temperatures around New Zealand are likely to be near or above average to the end of July.

Air temperatures are expected to be above average in all districts. Associated with this, a decreased risk of frosts is likely in many places for early winter.

Rainfalls are likely to be normal or above normal in western districts, but tending towards below normal in the eastern North Island, with near normal falls expected in the northern North Island and eastern South Island. Normal or below normal soil moisture levels and streamflows are expected in the north and east of the North Island, while normal conditions are expected in the southwest of the North Island and for all the South Island.

The tropical Pacific is in a neutral but borderline El Niño state. Although conditions may stay in the neutral range, there is a significant chance of an El Niño developing by spring.



## 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).

# Backgrounder

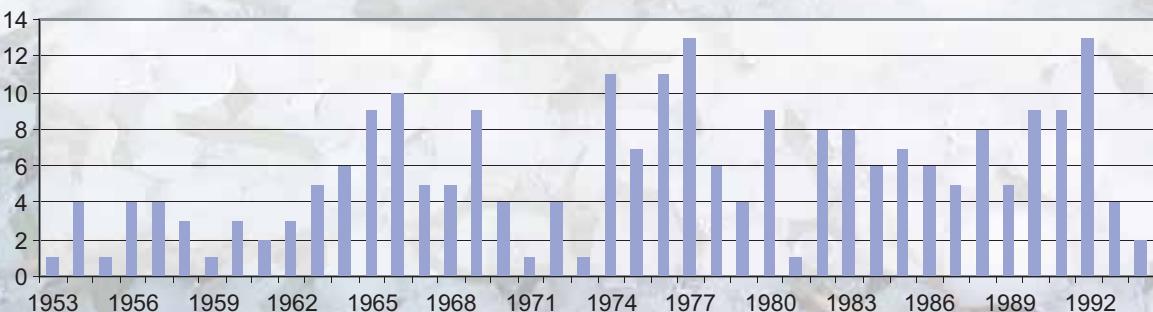
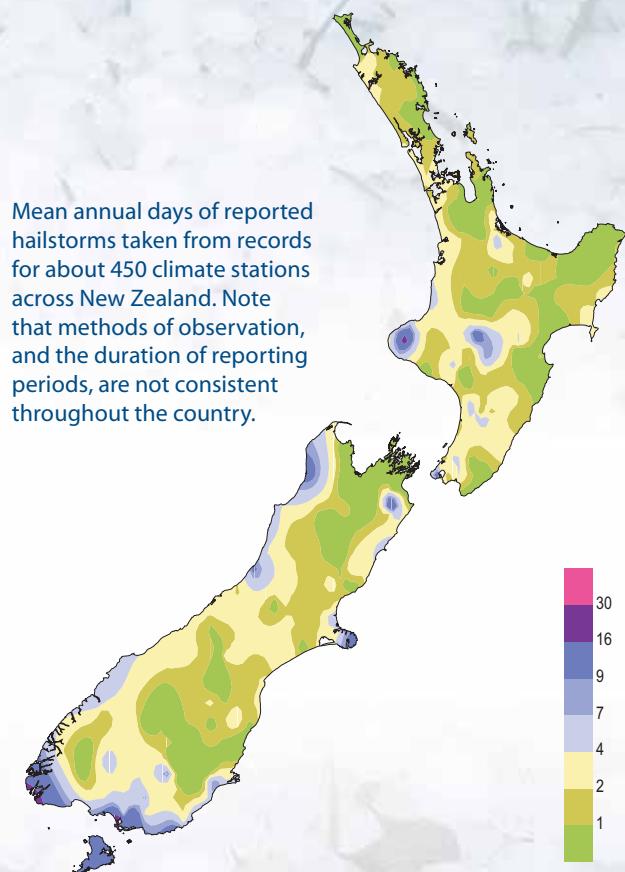
## Hail occurrence in New Zealand

Hailstorms are an inherent risk to primary production and other vulnerable activities throughout New Zealand. Hail records are available in New Zealand from climatological records, hourly weather reports at a few locations, and from the news media. Hail storms that occur in intensively farmed or populated areas are more likely to be recorded; in remote areas, hail may often be unreported, especially if it falls at night.

As was the case with the hail storm of 23–24 April, illustrated on our cover, hail is typically associated with a cold front and strong uplifting of moist air. During the day time this is often visibly characterised by the towering ‘anvil-shaped’ cumulus clouds.

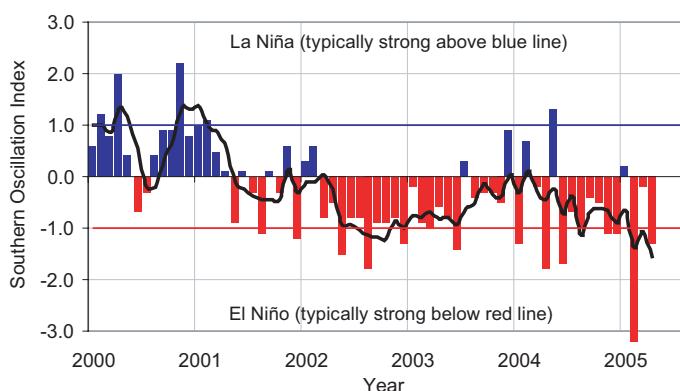
Hail occurrence data held by NIWA in the National Climate Database show a general increase in hail from the north to the south of New Zealand, and from east to west. This is partly borne out in the adjacent map. In the North Island, high country areas, such as the Central Plateau and Mount Taranaki, have more hail events than elsewhere. In the South Island, coastal Southland, Banks Peninsula, and the west coast from Hokitika north are particularly vulnerable.

Areas sheltered from both onshore southerlies and westerlies, for example Northland’s east coast, Bay of Plenty, Nelson, and Blenheim, have low hail frequencies.



Annual days of hail at Christchurch Airport, 1953–1994. Hail has been reported at least once each year, with a maximum of 13 events occurring twice, and an annual average of between 5 and 6.

## Global setting



Monthly values of the Southern Oscillation Index (SOI), a measure of the changes in atmospheric pressures across the Pacific, and the three month running mean (black line). The El Niño-Southern Oscillation is considered to be in a ‘borderline El Niño’ state.



Hail lying in Christchurch the morning after the overnight storm of 23–24 April. The hail stones ranged in size from 13 to 15 mm.

Cover photo: Stuart Burgess

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