

The Climate Update

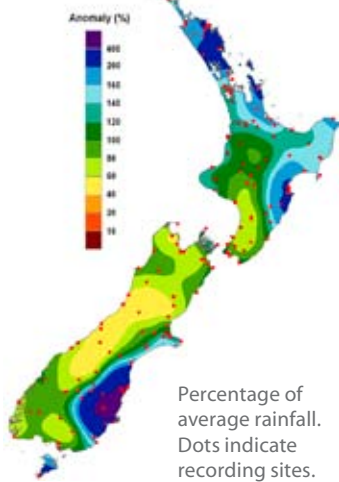
A monthly newsletter from the National Climate Centre

July – an unusual number of depressions brought floods and high winds to some places; calm and cold conditions in southern New Zealand for much of the month.

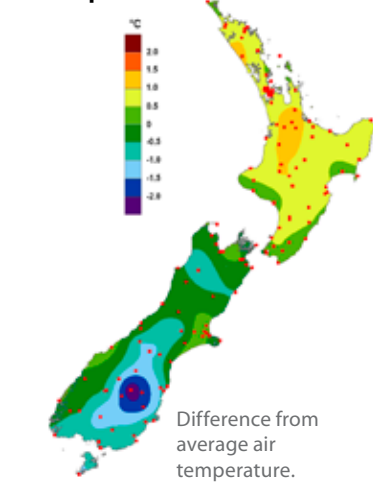
Outlook for August to October – air temperatures are likely to be average or above average in most regions, but with typical early spring cold outbreaks at times. Normal or below normal rainfall is expected in most regions, apart from the north and northeast of the North Island, where wet conditions are more likely.

New Zealand climate in July

Rainfall



Air temperature



July rainfall was above normal in the north and east of the North Island, and in coastal South Canterbury and Otago; the north and west of the South Island were drier than normal.

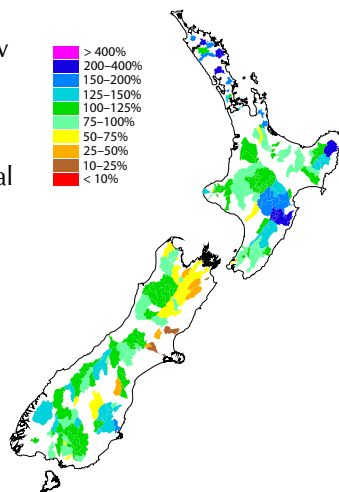
Air temperatures were below normal in the lower South Island and above average throughout much of the North Island. The national average temperature of 8.1 °C was 0.2 °C above normal.

[For more details see www.niwascience.co.nz/ncc/cs/mclimsum_07_07]

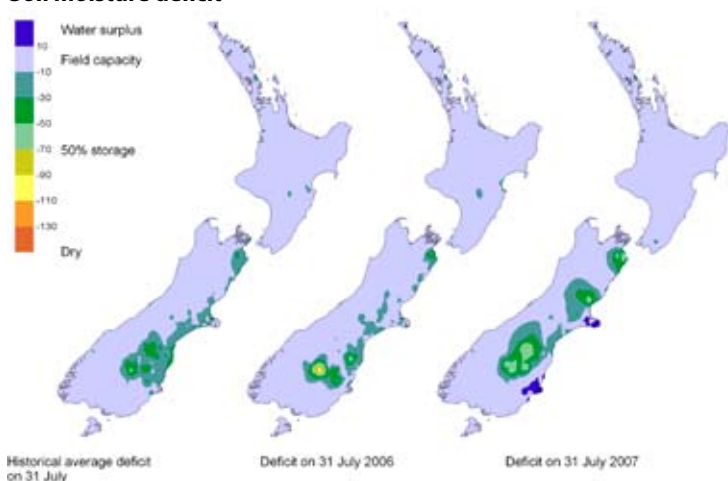
River flows

River and stream flows were below normal in the north and northeast of the South Island, above normal in the north and east of the North Island, and normal to above normal elsewhere.

Percentage of average July river and stream flows in monitored catchments. NIWA field teams, regional and district councils, and hydropower companies are thanked for providing data.



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.

Soils were saturated in areas affected by the high July rainfalls, particularly in Northland, Coromandel, Hawke's Bay, and coastal Canterbury and Otago.

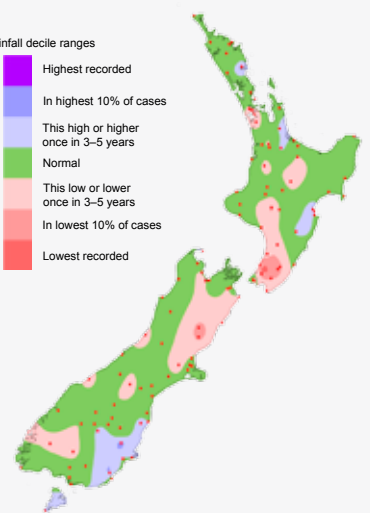
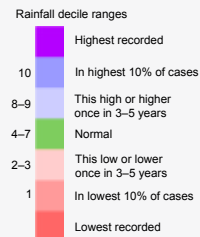
May to July – the climate we predicted and what happened

Rainfall

Predicted: Normal or below normal in the east of the both islands; near normal elsewhere.

Outcome: Below normal in central regions of New Zealand; above normal in parts of Hawke's Bay, eastern Northland, and Otago.

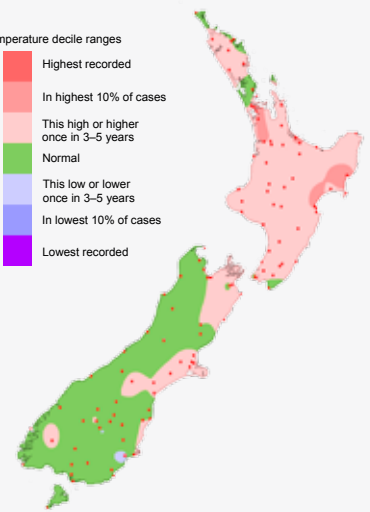
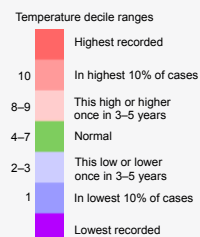
May to July rainfall



Air temperature

Predicted: Above average in most regions and near or above average in the north of the North Island.

Outcome: Above average in the North Island and the north and east of the South Island. Near average elsewhere.

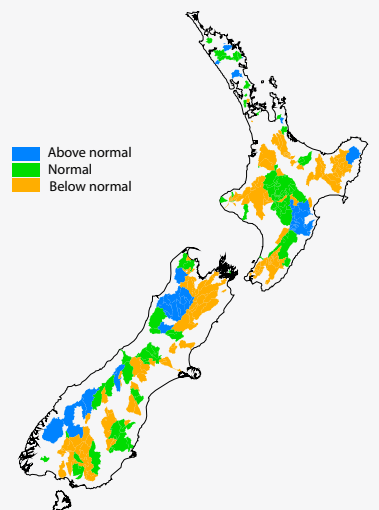


River flows

Predicted: Streamflows were expected to be normal in the north and west of the North Island, and normal or below normal elsewhere.

Outcome: Streamflows were normal or above normal in the east of the North Island and the west of the South Island, and normal to below normal elsewhere.

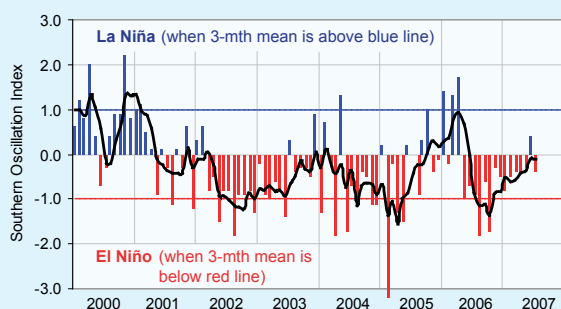
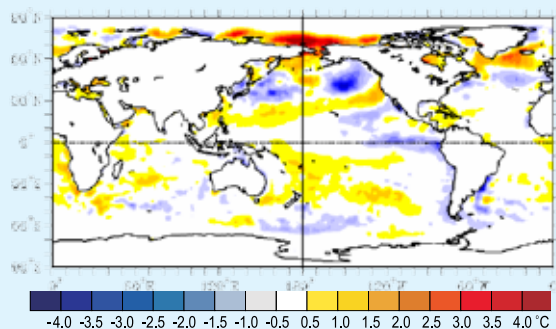
May to July river flows



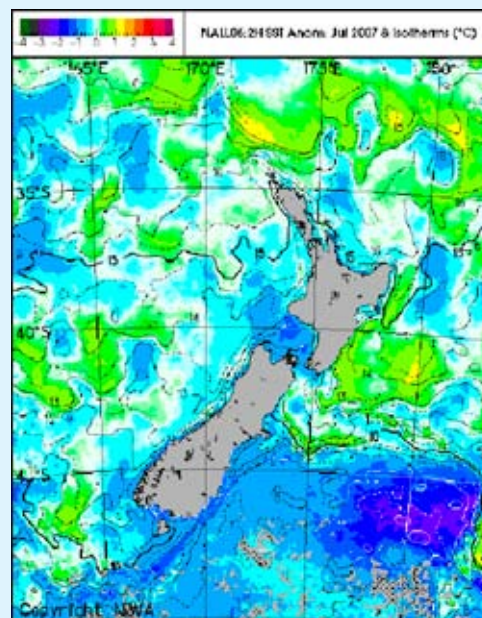
Global setting and climate outlook

La Niña falters but still possible

Conditions in the Equatorial Pacific are currently neutral, but there is a near 50% chance of a transition to La Niña conditions during the next 2–3 months, with less than a 10% chance of El Niño conditions developing. The characteristic La Niña ‘cold tongue’ in ocean surface temperatures remains evident near the South American coast (see map below). However the SOI fell again during July to -0.4 , a factor which adds uncertainty to expectations on the development of La Niña.



Sea surface temperatures (SST) around New Zealand July SST around New Zealand were on average 0.6°C above normal. Surface conditions were warmer than normal around the North Island coast and across to the central Pacific, but cooler than normal about Cook Strait, south of Chatham Rise, and southeast of the South Island. SST are expected to remain in their current state over the next 1–3 months.

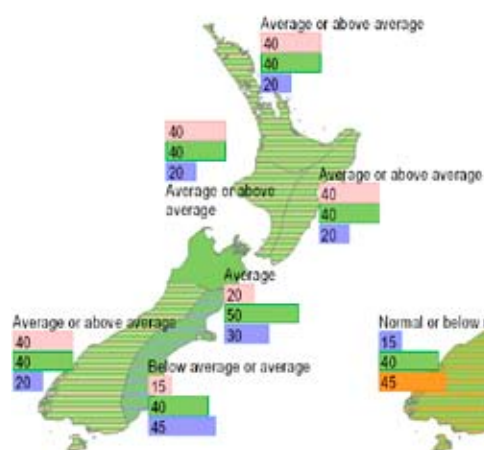


Outlook for August to October 2007

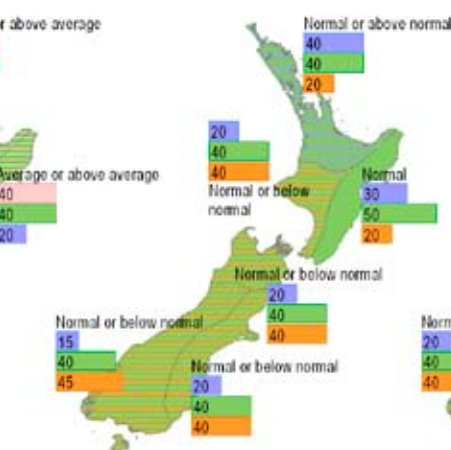
During August–October, mean sea level pressures are expected to be higher to the south or southeast of New Zealand, with weaker than normal westerly winds across the country. Air temperatures are likely to be average or above average in most regions, but tending below average in the eastern South Island. Despite the overall temperature expectation, cold outbreaks typical of early spring will occur from time to time.

Normal or below normal rainfall is expected in most regions, except the north and northeast of the North Island, where normal or above normal rainfalls are likely. Normal or above normal soil moisture and river flow levels are expected in the north of the North Island; they are likely to be near normal in the east of the North Island, and normal or below normal elsewhere.

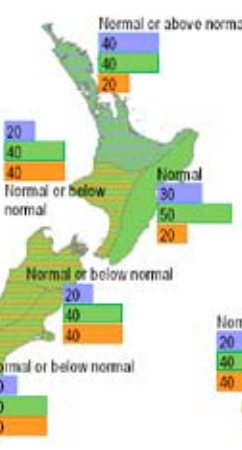
Mean air temperature



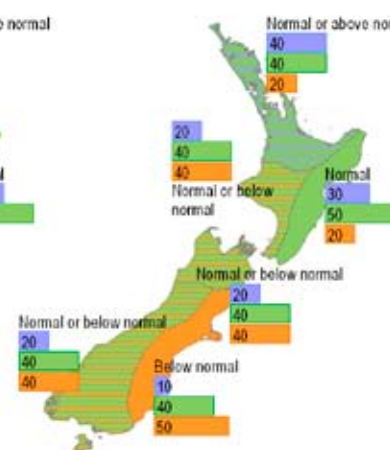
Rainfall



Available soil moisture

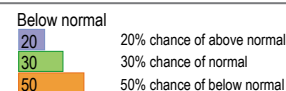


River flows



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).



Ensuring buildings stand up to heavy snow

Following the 12 June 2006 Canterbury snowstorms, the Department of Building and Housing engaged NIWA to undertake a study to examine snow loading in New Zealand. This was prompted by the collapse of several buildings from the heavy snowfall, and the concurrent review of the proposed new building standard AS/NZ 1170.

The NIWA report showed that there were insufficient snow loading data for a robust review of the proposed building standards, and recommended a systematic data collection campaign following future severe low-elevation snowstorms. This data collection campaign would permit accurate snow loading calculations for the AS/NZ building standard.



NIWA has now developed two methods for the collection of ground snow load data. One method addresses exceptional low-elevation snowfall events (e.g., the Canterbury snowstorms), and the other method is for general snow loading at higher elevations. The data collected using these methods will set the benchmarks for snow loading requirements for buildings at low altitudes (<900 m) in the eastern and southern regions of the South Island, where most low-altitude snow risk occurs, and will ensure that standards for buildings at higher elevations are based on systematic observations.

The overall purpose of this work is to produce a simple, repeatable methodology which is efficient and accurate for ground snow load surveying, and to establish uniform sampling procedures. Increasing our database of ground snow loading will ensure that the building standards are in line with observations, and improve our understanding of the probability of observed snow depths in various locations.

For more information, contact Dr Jordy Hendrikx:
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Frost-adorned old hut at Fruitlands Country Lodge, Central Otago.
 Cover photo:
 Steve LeGal

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