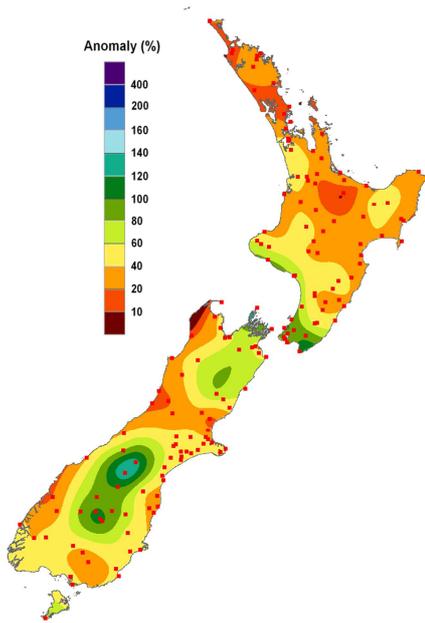


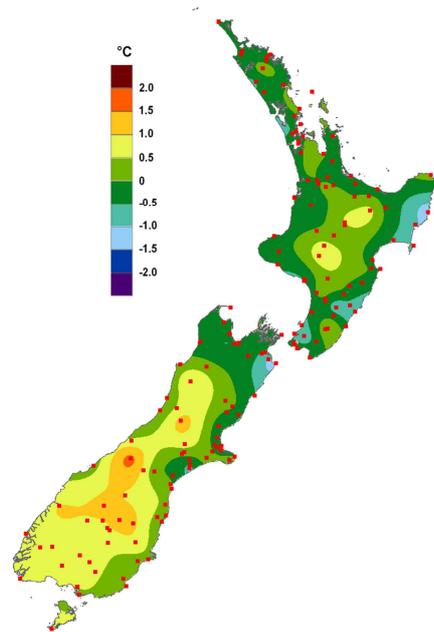
New Zealand Climate Update No 165, March 2013

Current climate – January 2013

February 2013 was characterised by anticyclones ('highs') which were slow moving over New Zealand. These highs, or anticyclones, kept rain-bearing weather systems such as lows and fronts away, resulting in an extremely dry and sunny February for many regions of the country.

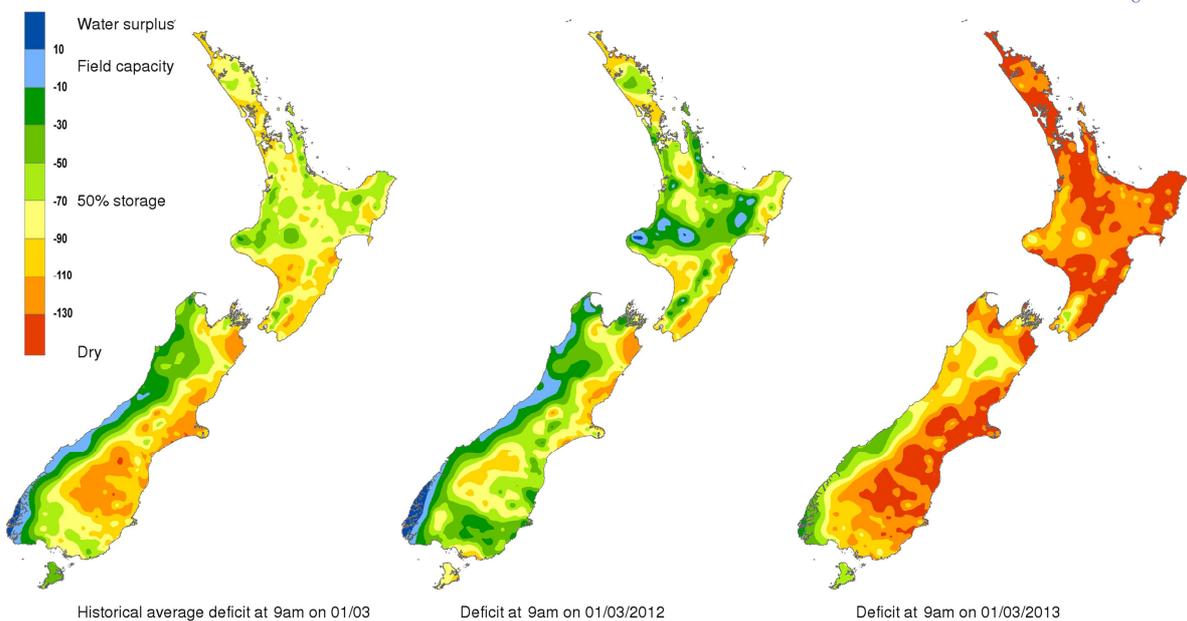


Percentage of normal rainfall, February 2013



Departure from average air temperature for February 2013

Soil moisture deficit (mm) at 9am on 01/03/2013



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

Rainfall

February rainfall totalled less than 15 mm (and also less than 15 percent of February normal) in parts of Northland, Auckland, and the Bay of Plenty. It was the driest February on record for Leigh (north Auckland), and Milford Sound. In the case of Leigh, it was also the driest month (of any month) in records which began in 1966.

The dryness was widespread. Rainfall was less than 25 percent, or a quarter, of February normal around Taupo, in parts of Gisborne and Hawkes Bay, and along the West Coast of the South Island. Less than half (50 percent) of normal February rainfall was generally observed across the remainder of the country. The exceptions were between Wanganui and Wellington, in Central Otago and the Lakes District (with near normal rainfall); and Marlborough and the Kaikoura coast (with rainfall between 50 and 80 percent of February normal).

As at 1 March 2013, extreme soil moisture deficit (more than 130 mm of deficit) was evident in Northland, Auckland, Waikato, the Bay of Plenty region (including Taupo), Gisborne, Hawkes Bay, Wairarapa, between Wanganui and Palmerston North, parts of Marlborough, Canterbury, and Central Otago. Significant soil moisture deficit (more than 110 mm of deficit) was generally observed elsewhere in the North Island, as well as in the Waimea Plains, and across eastern Otago. An adverse event due to drought was declared in Northland on 27 February.

Air temperature

Mean temperatures in February were above average (between 0.5°C and 1.2°C above the February average) across the west and south of the South Island, as well as in inland regions of the North Island. In contrast, below average February temperatures (between 0.5°C and 1.2°C below the February average) were observed around the Kaikoura Coast, as well as the east coast of the North Island. Elsewhere, mean temperatures were near average (within 0.5°C of the February average). The nation-wide average temperature in February 2013 was 17.1°C (0.2°C below the 1971-2000 February average), using NIWA's seven-station temperature series which begins in 1909.

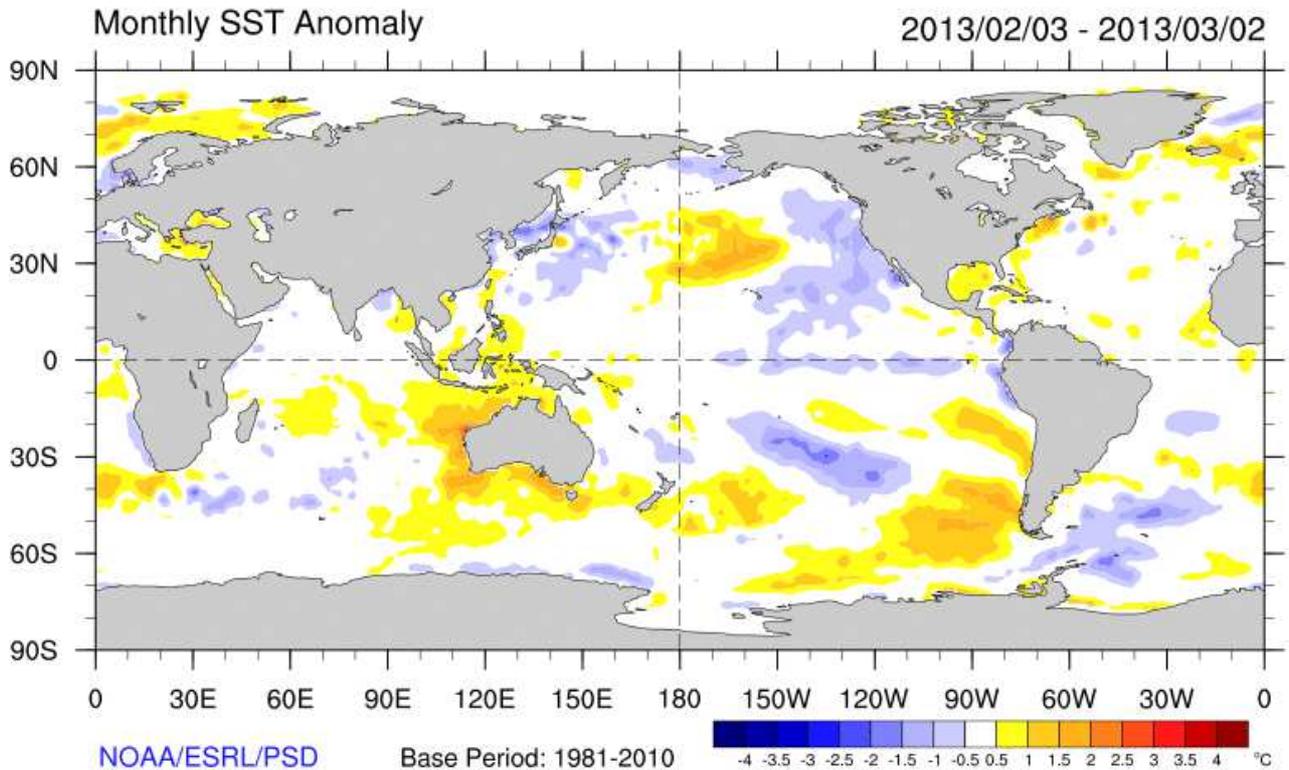
Notably, however, in most regions, afternoon temperatures were typically well above February average, and morning temperatures below February average, due to the clear skies and relatively light winds associated with the prevailing high pressures.

Sunshine

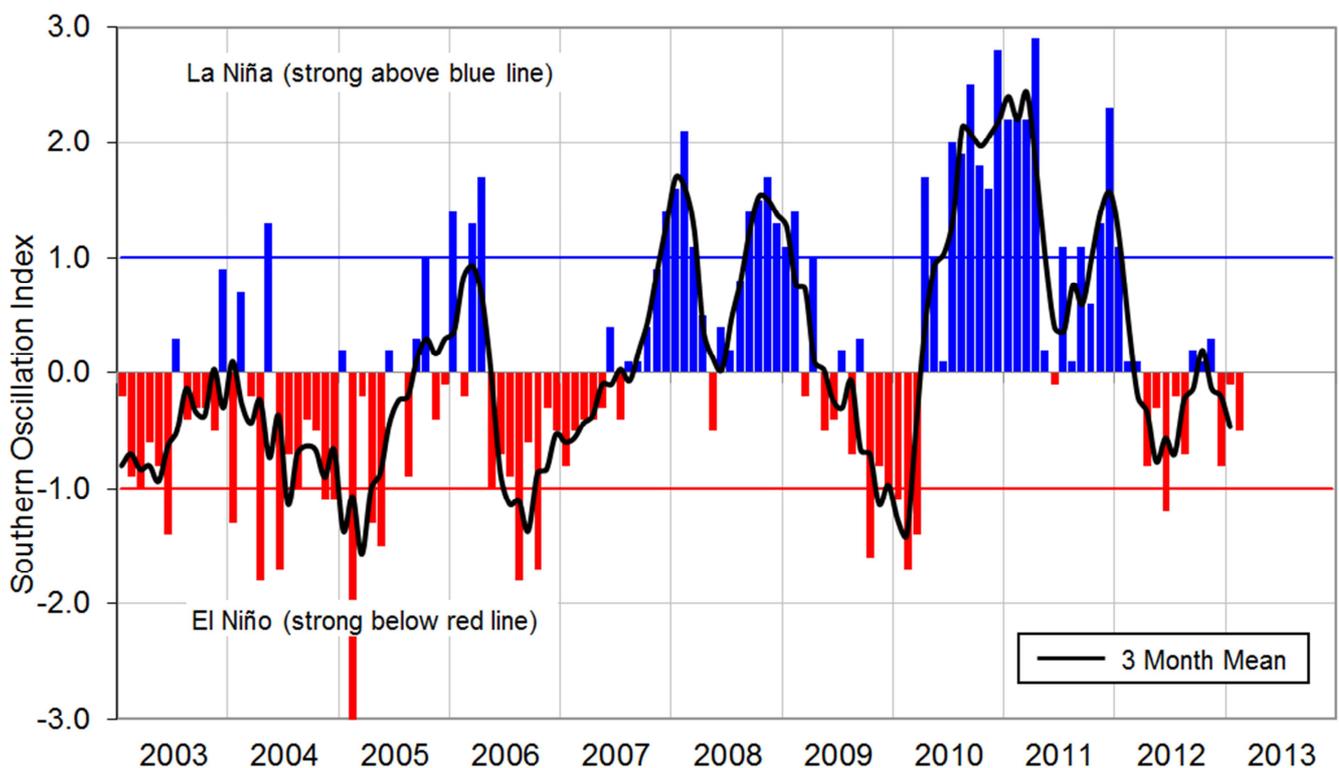
The dominance of high pressures during February resulted in an extremely sunny month across New Zealand. Sunshine totals were well above normal (exceeding 125 percent of February normal) across most of the North Island (south of Auckland), on the West Coast South Island, along the Southern Alps, as well as north Canterbury and the Kaikoura coast. Elsewhere, sunshine totals were also above normal (between 110 and 124 percent of February normal). It was the sunniest February on record for numerous locations across both Islands. Notably, Wellington and Hamilton recorded their sunniest February on record, Tauranga experienced its second sunniest February, Christchurch observed its third sunniest February, and Dunedin recorded its 5th sunniest February.

Global setting

The equatorial Pacific Ocean remains in a neutral state (neither El Niño nor La Niña). International guidance indicates that neutral conditions are very likely to continue over the next three months (March-May). Lower pressures than usual are likely over the north Tasman Sea during autumn, with slightly higher pressures than usual over and to the south of New Zealand.



Differences from average global sea surface temperatures for 3rd of February to 2nd of March 2013. Map courtesy of NOAA Climate Diagnostics Centre (<http://www.cdc.noaa.gov/map/images/sst/sst.anom.month.gif>).



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 SOI -0.5; December to February average -0.5.

Outlook – March to May 2013

Atmospheric indicators of ENSO, such as the Southern Oscillation Index (SOI), trade winds, and tropical cloud patterns continue at neutral levels. International guidance indicates that the tropical Pacific Ocean is very likely to remain neutral over the next three months (March-May). Lower pressures than usual are likely over northern Australia, with high pressures south of New Zealand. Autumn temperatures are likely to be above average across the South Island, and average to above average in the North Island. Rainfall for the March – May period as a whole is likely to be in the near normal range. For this tropical cyclone season (November – April), the risk of an ex-Tropical Cyclone approaching New Zealand is expected to be near normal. On average, one ex-Tropical Cyclone nears New Zealand during the season.

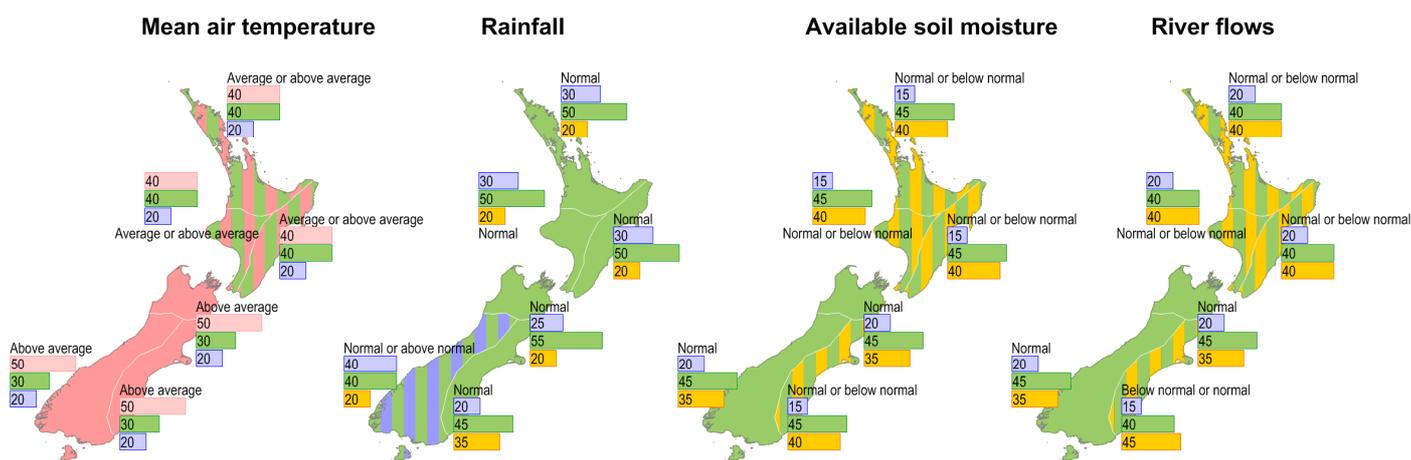
Temperatures are likely to be above average across the South Island, and average to above average in the North Island.

Seasonal rainfall for the March – May period as a whole is likely to be in the near normal range for most regions, except for the West Coast of the South Island, where normal to above normal rainfall is likely. Because of the existing soil moisture deficits across the North Island and in the eastern South Island, soil moisture levels and river flows are expected to take some time to recover in these areas.

Soil moisture levels and river flows are projected to be normal to below normal for the autumn season as a whole for the North Island, as well as the eastern South Island, and near normal elsewhere.

For this **tropical cyclone season** (November – April), the risk of an ex-Tropical Cyclone approaching New Zealand remains near normal. On average, one ex-Tropical Cyclone nears New Zealand during the season.

Outlook for March-May 2013



Key to maps (example interpretation)

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 the climate models suggest that below average conditions are likely (50% chance of occurrence), but, given the variable nature of the climate, the chance of normal or above normal conditions is also shown (30% and 20% respectively).

The climate we predicted (November to January) and what happened

Predicted rainfall: Rainfall is likely to be near normal or below normal in the north and east of the North Island, and near normal elsewhere.

Outcome: Summer rainfall was below normal north of Taupo and across the eastern North Island. Near normal rainfall was observed along a narrow coastal strip from Wanganui to Wellington, as well as across most of central Otago, Southland, Fiordland, Buller, Nelson, Marlborough and North Canterbury. It was drier than forecast for much of the Manawatu-Wanganui region, as well as south Canterbury, coastal Otago, and Westland (with below normal summer rainfall generally recorded). In contrast, it was wetter than projected for alpine areas around Mt. Cook and Stewart Island.

Predicted air temperature: Summer temperatures are likely to be near average or below average in western areas of both Islands, as well as the east of the South Island, and near average elsewhere.

Outcome: It was typically warmer than forecast. Near average summer temperatures were generally observed along the western coastline of both Islands, whilst near average to above average summer temperatures were recorded elsewhere.

For more information about NIWA's climate work, visit:

www.niwa.co.nz/our-science/climate