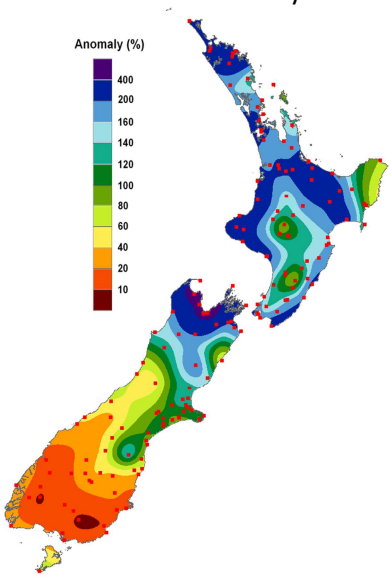
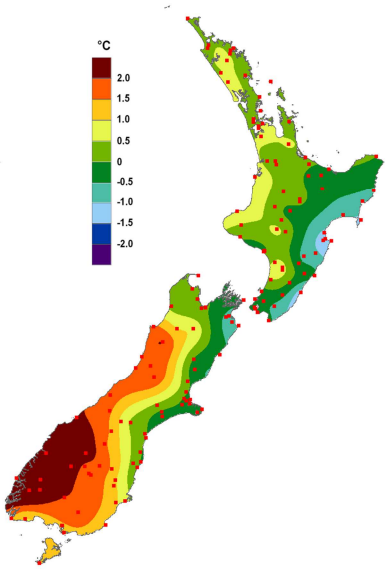
New Zealand Climate Update No 151, January 2012

Current climate – December 2011

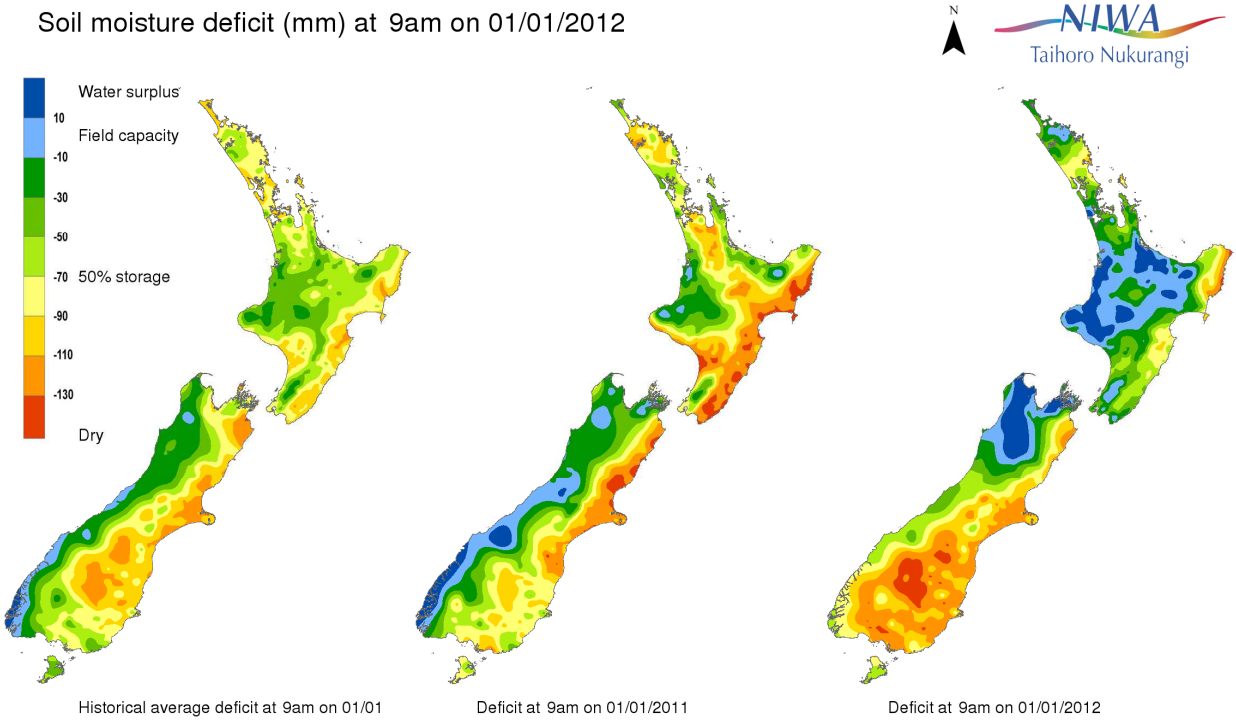
More northeast winds than normal affected New Zealand during December 2011, producing warm, dry and sunny conditions in the southwest of the country and cool, wet and dull conditions in the north.



Percentage of normal rainfall, December 2011



Departure from average air temperature, December 2011.



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

Rainfall

Well above normal rainfall for December was experienced in most of the North Island and northern South Island. Many areas received significant rainfalls in the last two days of the year. Nelson received more than six times and Takaka received more than eight times their normal December rainfall (the highest December totals there since records began in 1941 and 1976, respectively). 392 mm fell on the 14th of the month in Takaka, the highest ever (all months) 1-day rainfall there, beating the previous record of 259 mm which was recorded in November 1990. Highest December rainfall totals were also recorded in Kerikeri, Te Puke, Rotorua, Hamilton, Stratford, Hawera, Wanganui and Motueka. Conversely, in the south and west of the country, rainfall was well below normal. Lowest December rainfall totals were recorded in Milford Sound, Puysegur Point, Dunedin, Manapouri, Queenstown, Lumsden, Gore, Invercargill, Balclutha and Tiwai Point.

Temperature

Mean temperatures in December were well above average (more than 1.2°C above December average) in much of Southland, Otago and the West Coast. Above average temperatures (between 0.5°C and 1.2°C above December average) were recorded in many other western areas of the country. It was cooler than average (between 0.5°C and 1.2°C below average) for December in parts of Gisborne, Hawkes Bay, Wairarapa and Marlborough. The nation-wide average temperature in December was 15.8°C (0.2°C above the 1971–2000 December average), using NIWA's seven-station temperature series which begins in 1909.

Sunshine

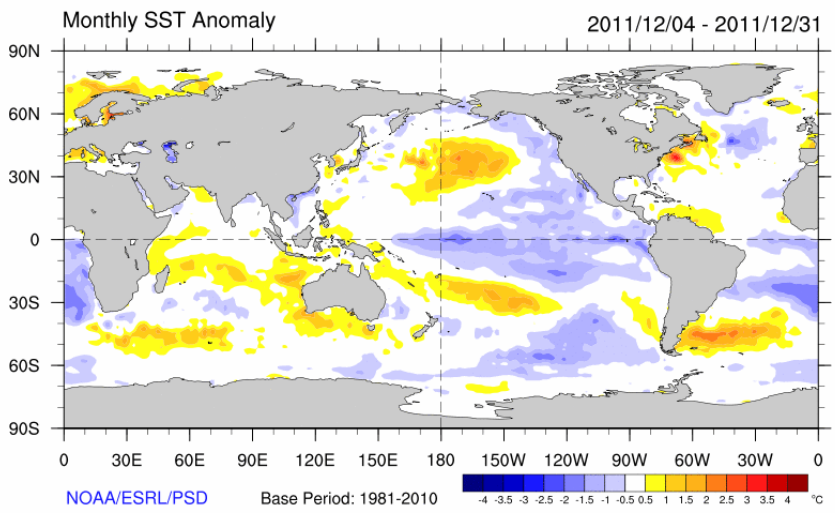
December 2011 was a sunny month in the south and west of the South Island as well as in Taranaki. In contrast, below normal sunshine totals were observed in the north of the South Island and from Bay of Plenty northwards. Elsewhere, sunshine totals were near normal.

Soil moisture

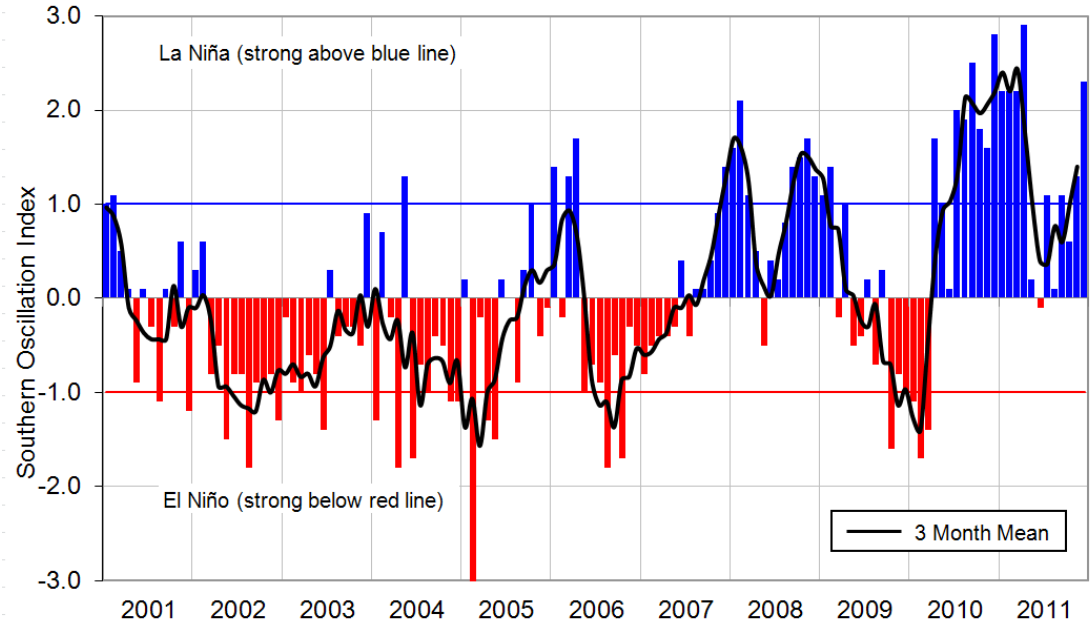
Significant soil moisture deficit (more than 110 mm of deficit) was observed in parts of Otago and Southland, at the end of December.

Global setting

A moderate La Niña is in place in the tropical Pacific and should persist into early autumn 2012. Mean sea level pressures for late summer are likely to be above normal across the South Island and southern North Island, but below average to the north of New Zealand. Temperatures are likely to be average or above for the east South Island, and above average in all other regions. Late summer rainfall is likely to be above normal for North Island regions, normal or above in Nelson-Marlborough, and below normal for the remainder of the South Island.



Differences from average global sea surface temperatures for 4th to 31st December 2011. 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). Estimated SOI mean values: December SOI +2.3; October to December average +1.4

Outlook January to March

A moderate La Niña is in place in the tropical Pacific and should persist into early autumn 2012. For the January to March season, mean sea level pressures are likely to be above normal across the South Island, but below average to the north of New Zealand, with more north-easterly air flow than normal over the North Island.

Temperatures are likely to be average or above average for the eastern South Island, and above average in all other regions.

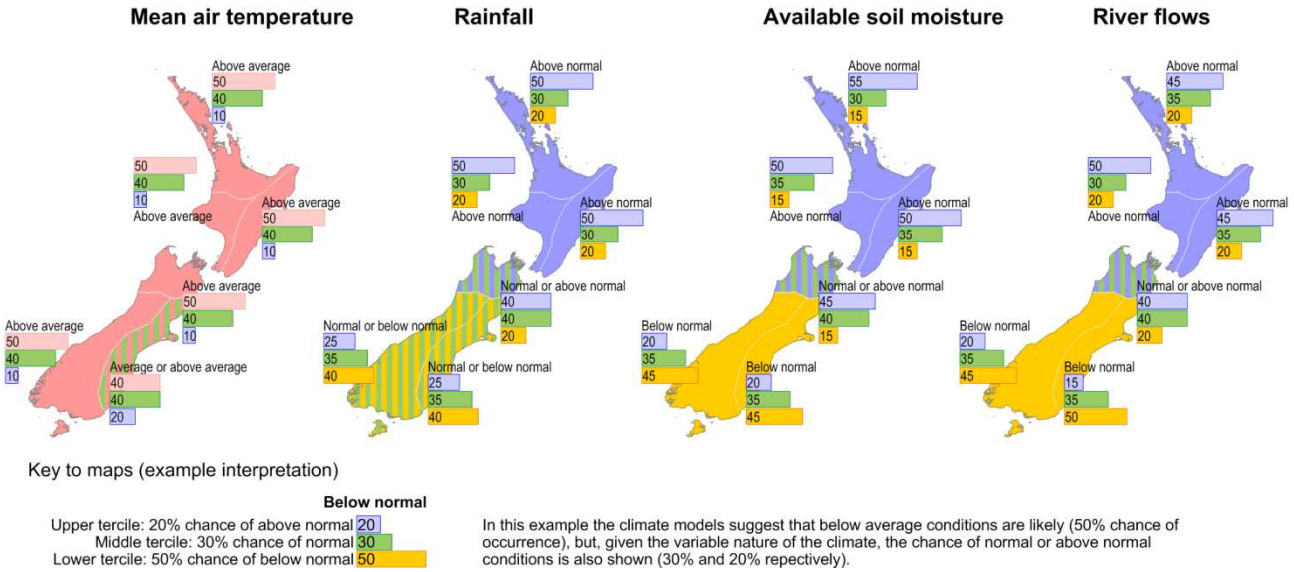
Seasonal rainfall is likely to be above normal for all North Island regions, normal or above normal in Nelson-Marlborough, and below normal or normal for the remainder of the South Island.

Sea surface temperatures in the New Zealand region are likely to be near average or above average.

Soil moisture levels and river flows are both predicted to follow a very similar regional pattern to rainfall: they are likely to be above normal for all North Island regions, normal or above normal in Nelson-Marlborough, and below normal for the remainder of the South Island.

For the **tropical cyclone season** through to May 2012, fewer than the normal number of cyclones is expected overall. January to March is typically the most active part of the cyclone season. However, the chance of an ex-tropical cyclone passing close to New Zealand is expected to be below the long-term average. On average, at least one ex-tropical cyclone passes within 500km of New Zealand in 9 out of 10 cyclone seasons.

Outlook for January-March 2012



The climate we predicted (October to December) and what happened

La Niña conditions were (correctly) predicted to redevelop in the tropical Pacific Ocean during October to December 2011. Mean sea level pressures were (correctly) projected to be above normal across much of New Zealand, with weaker westerly winds than normal prevailing for the period.

Predicted rainfall: Rainfall is likely to be normal or below normal in all regions.

Outcome: Rainfall was normal or below normal in eastern North Island, and the west and south of the South Island. Elsewhere, rainfall for the October–December period was above normal.

Predicted air temperature: Temperatures for October–December are likely to be average or above average in the North Island and northern South Island, and near average in the rest of the South Island.

Outcome: Temperatures we near or above average for the majority of the country. Localized eastern areas experienced below average temperatures for the 3-month period.

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

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