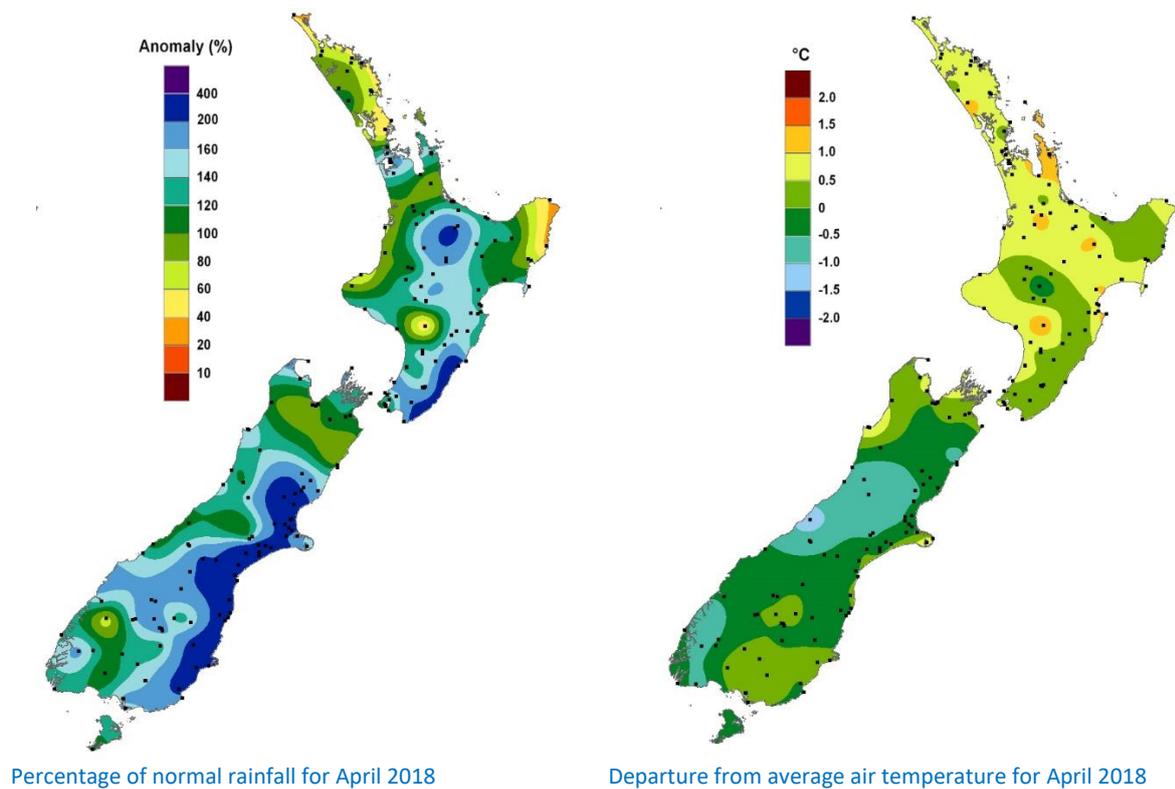


New Zealand Climate Update No 227, May 2018

Current climate – April 2018

Overall, April 2018 was characterised by lower pressure than normal over and to the southeast of New Zealand. Unlike the first three months of the year where La Niña conditions promoted more winds from a northeasterly direction, April’s pressure pattern resulted in more southwesterly winds than normal for much of the country. Several low pressure systems and cold fronts passed over New Zealand during April, bringing adverse weather to many locations.



Temperature

Mean temperatures were above average (0.51 to 1.20°C of average) or well above average. Near average temperatures (-0.50 to +0.50°C of average) in the southeast of the North Island as well as parts of the central North Island (north Taranaki through to Napier) and East Cape. Above average (+0.51 to +1.20°C of average) temperatures elsewhere in the North Island. In contrast, large parts of central Canterbury, Fiordland, and the West Coast experienced below average (-0.50°C to -1.20°C of average) temperatures while the rest of the South Island observed mostly near average temperatures.

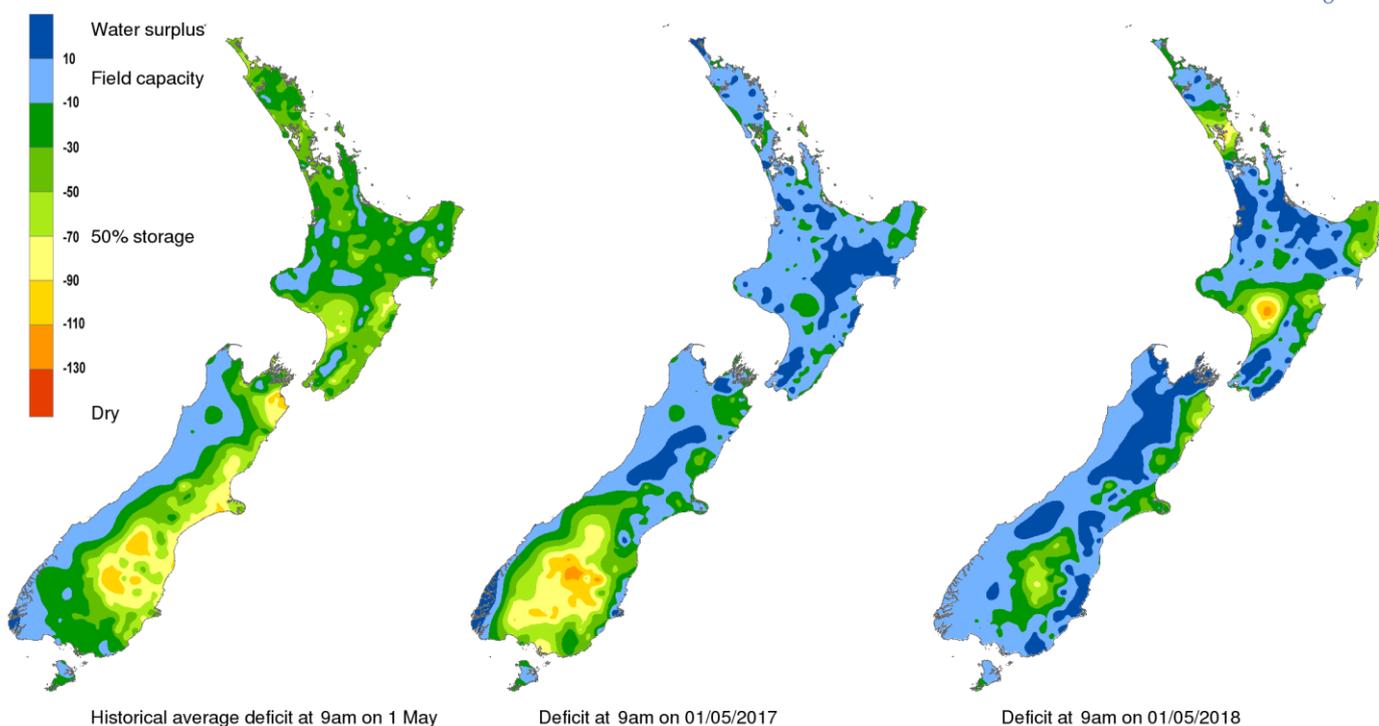
Rainfall

Above normal (120% to 149% of normal) or well above normal (>149% of normal) rainfall over Auckland City, Coromandel Peninsula, most of the Wellington region, a large portion of the central North Island, and most of the South Island, particularly in the east. Near normal rainfall (80% to 119% of normal) in patches of the South Island, including Tasman, Marlborough, central West Coast, and parts of Southland. Near normal rainfall also occurred over western Northland and the western part of the central North Island. Below normal (50% to 79% of normal) or well below normal (<50% of normal) rainfall for East Cape, eastern Northland, and localised patches in the Taranaki and Manawatu-Whanganui regions.

Soil Moisture

By the end of April, soil moisture levels were above normal for much of the South Island except along the West Coast and in Southland where levels were near normal. In the North Island, soils were drier than normal for East Cape, as well as parts of Manawatu-Whanganui, and southern parts of Northland. Remaining locations in the North Island were wetter than normal.

Soil moisture deficit (mm) at 9am on 01/05/2018



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

Global setting: April 2018

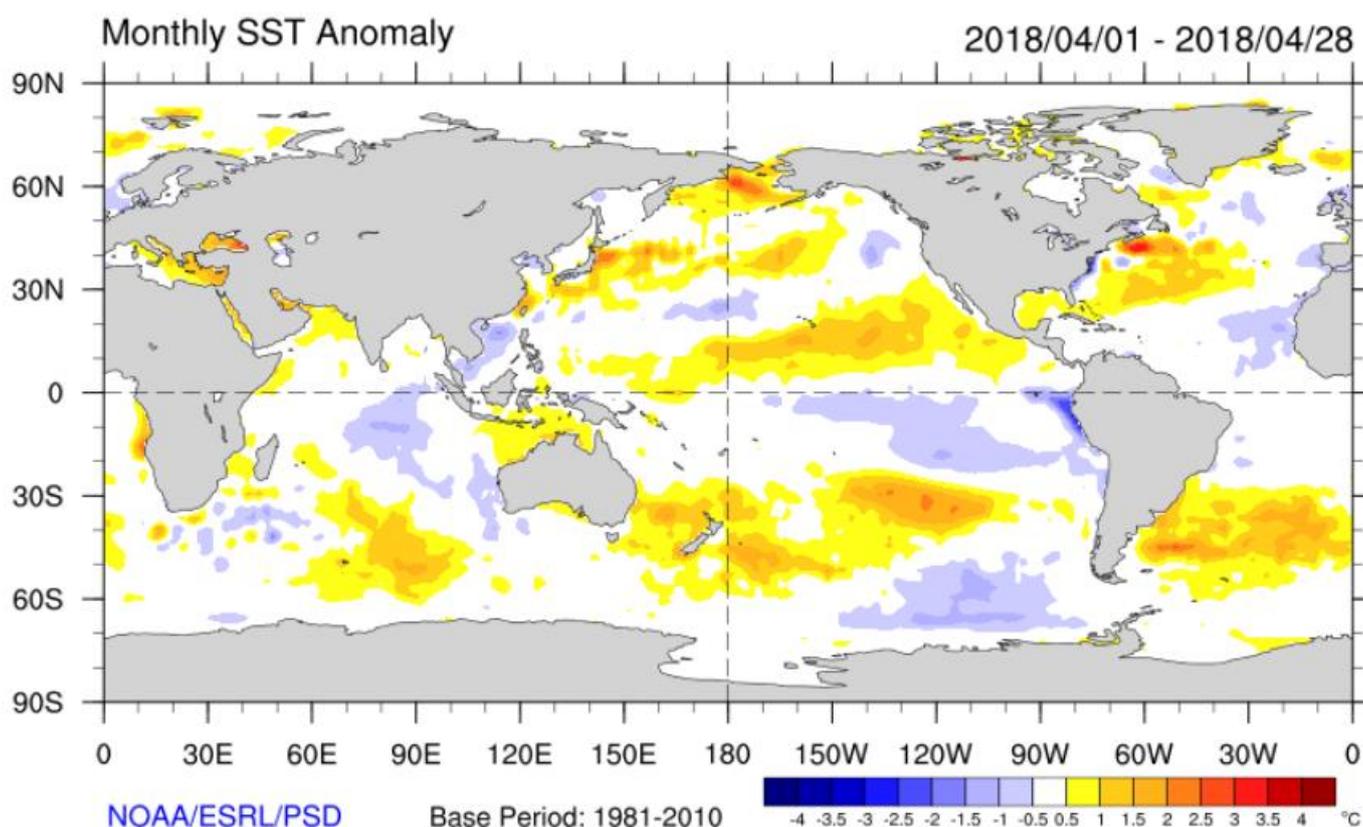
Weak La Niña conditions segued to ENSO-neutral in the tropical Pacific during April 2018. The Southern Oscillation Index (SOI) over the last 30 days is positive at about +0.5. Sea surface temperatures (SSTs) warmed over the past month, although they remain slightly colder than average in the eastern equatorial Pacific Ocean.

The consensus from international models is for the tropical Pacific to persist in an ENSO-neutral state over the next three month period (79% chance over May – July 2018) and ENSO-neutral remains the most likely outcome over the late-winter and early spring seasons (July – September 2018). However, the forecast models favour El Niño conditions emerging in the tropical Pacific over the austral spring (September – November 2018).

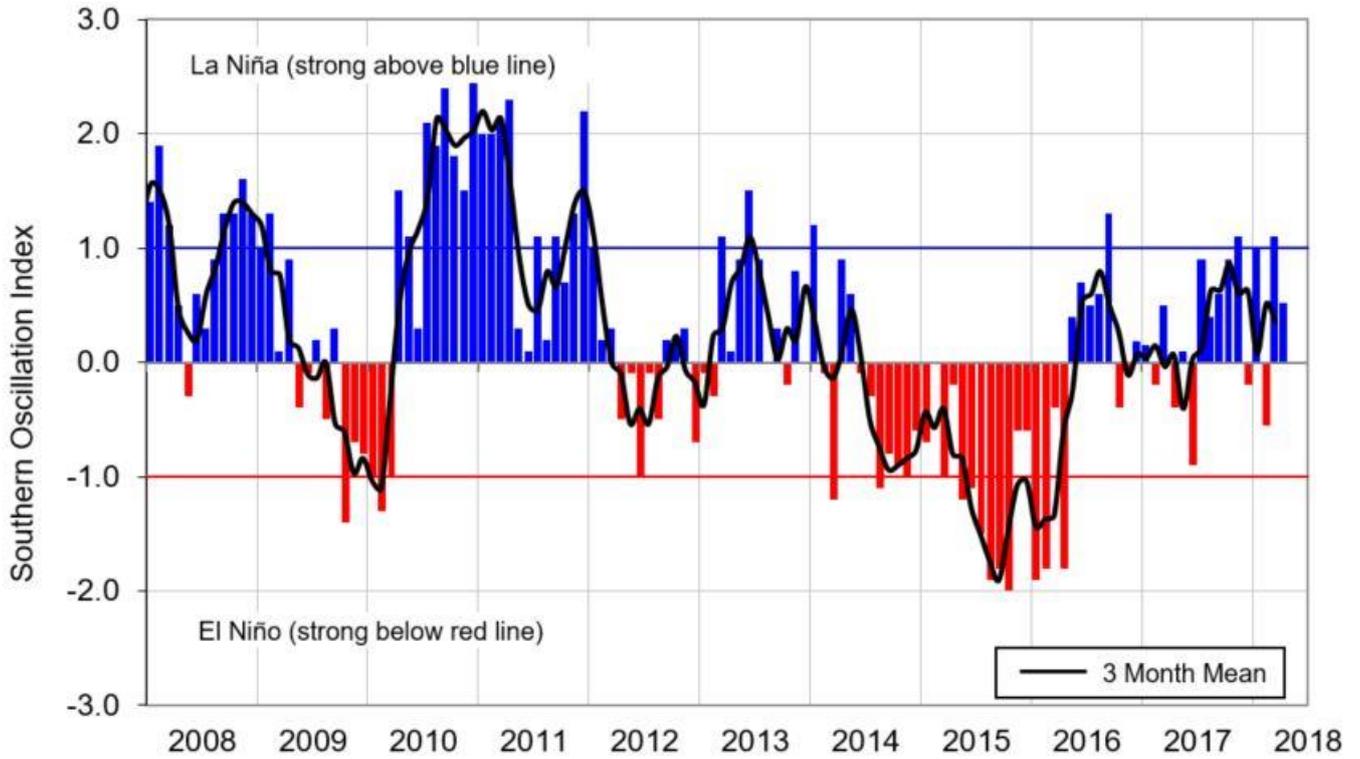
The atmospheric circulation around New Zealand is forecast to be characterised by lower than normal atmospheric pressure through to July. This will result in mixed and changeable air flows across the country. Warmer than average ocean waters that are present around the country are also expected to persist through the next three months, though forecasts suggest they will gradually weaken to the west of New Zealand.

Sea Surface Temperatures

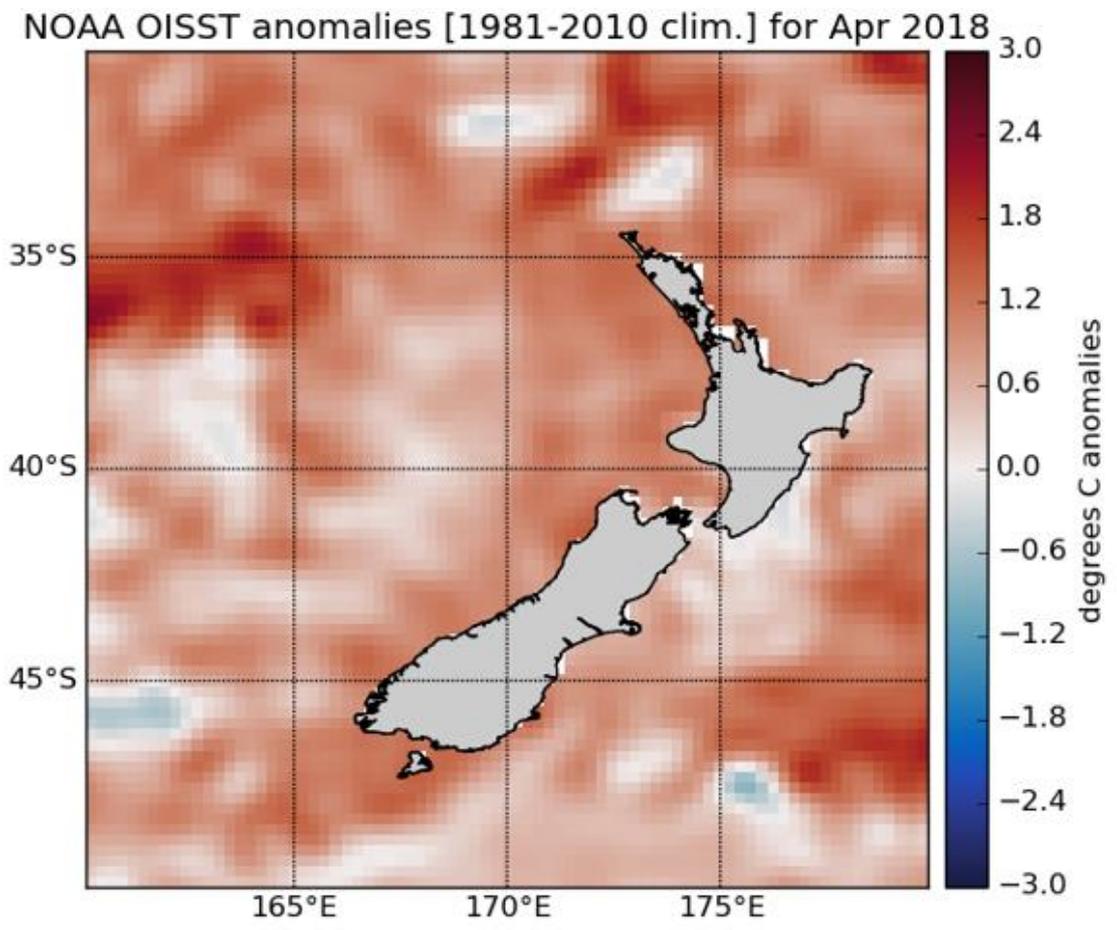
The warmest coastal anomalies (for the past three months) are around the west of the South Island, where they remain at least +2.0°C above normal. According to the dynamical models' forecasts, warmer than average SSTs are likely to persist for at least part of the next 3 months (May – July 2018).



Differences from average global sea surface temperatures for 1st – 28th April 2018. 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: April SOI 0.5; February – April average 0.3



Differences from average April surface temperatures in the seas around New Zealand.

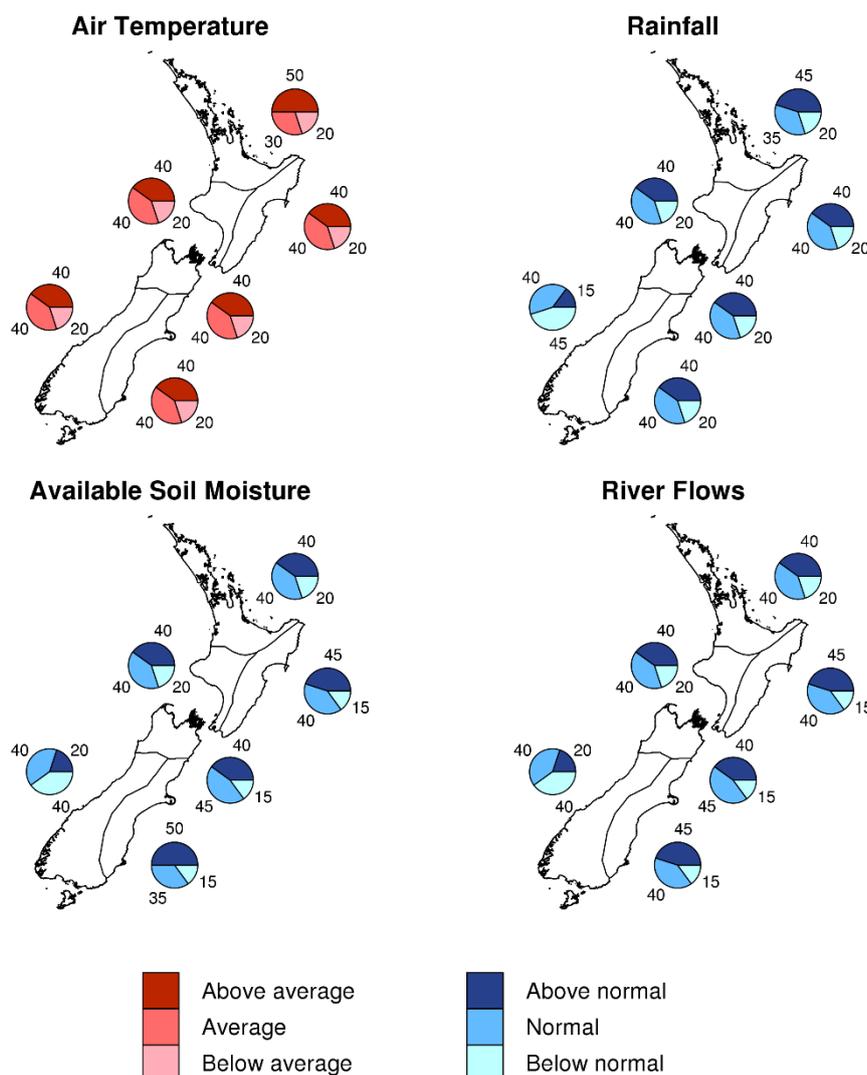
Outlook: May - July 2018

Temperatures are forecast to be above average (50% chance) in the north of the North Island and average (40% chance) or above average (40% chance) for all remaining regions of New Zealand. Despite the prospect for average or warmer than average temperatures, frosts and cold snaps will become more common, with some cold snaps possibly quite sharp.

Rainfall totals are forecast to be above normal (45% chance) in the north of the North Island, near normal (40% chance) or above normal (40% chance) for the rest of the North Island as well as the east and north of the South Island. Normal (40% chance) or below normal (45% chance) rainfall is expected for the west of the South Island. The combination of lower than normal sea level pressure over the New Zealand region and warmer than average Tasman Sea temperatures over the coming months will result in an elevated chance for significant rainfall events.

Soil moisture levels and river flows are expected to be near normal or above normal (40 – 45% chance) for all North Island regions and for the north of the South Island. For the east of the South Island, river flows are also expected to be near normal or above normal (40 – 45% chance), but with soil moisture levels forecast to be above normal (50% chance). For the west of the South Island, soil moisture levels and river flows are forecast to be normal (40% chance) or below normal (40% chance).

Outlook for May - July 2018



The climate we predicted (February – April 2018) and what happened

For February – April 2018, the atmospheric circulation around New Zealand was forecast to be characterized by higher pressures than normal east and south of the country, while lower pressure than normal was forecast over the Tasman Sea, extending over the North Island. This pressure pattern, in concert with the marine heatwave, was expected to be associated with warmer than average air temperatures, occasional significant rainfall events, and flow anomalies from the northeasterly quarter. Actual pressures were lower than normal across the country with a north-westerly flow anomaly across the North Island and no significant flow anomaly for the South Island.

Predicted air temperature: February – April 2018 temperatures were forecast to be above average for all regions of New Zealand with high confidence.

Outcome: Actual temperatures were above average for the North Island and the coastal fringes of the South Island and near normal elsewhere.

Predicted rainfall: February – April 2018, rainfall totals were forecast to be above normal in the North Island and in the north of the South Island and about equally likely to be near normal or above normal in the west and east of the South Island.

Outcome: Actual rainfall was above normal for much of the country. Rainfall was near normal for small parts of Gisborne, the West Coast and Southland.

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

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