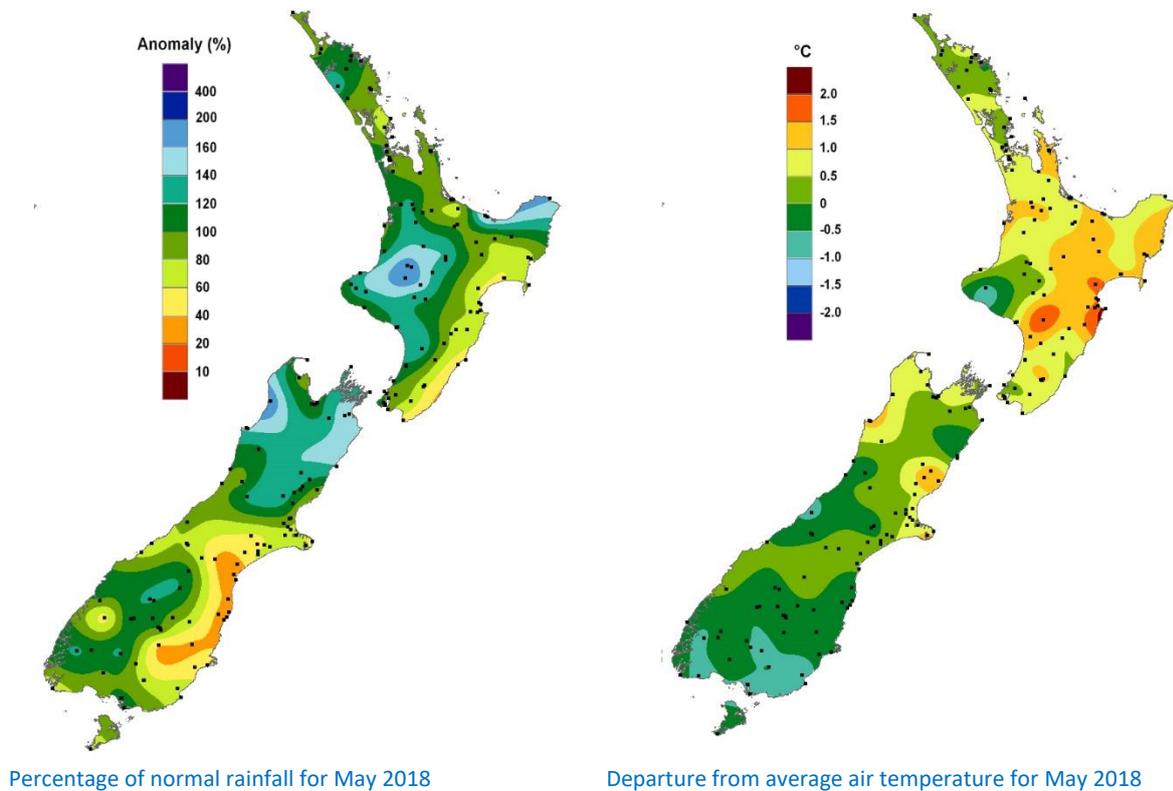


New Zealand Climate Update No 228, June 2018

Current climate – May 2018

Overall, mean sea level air pressures were much lower than normal over and to the south of New Zealand during May. The first half of the month was relatively warm and dry throughout the country. However, during the second half of May, a blocking anticyclone became established over the southeast of Australia. This delivered a prolonged period of disturbed west and southwesterly winds over the country.



Temperature

May temperatures were well above average ($> +1.20^{\circ}\text{C}$) in parts of Hawke’s Bay. Temperatures were above average ($+0.51^{\circ}\text{C}$ to $+1.20^{\circ}\text{C}$) for most remaining parts of the North Island, except Northland, Taranaki and Wellington where temperatures were near average (-0.50°C to $+0.50^{\circ}\text{C}$). May temperatures were above average in Nelson and coastal Canterbury north of Ashburton, and below average (-0.51°C to -1.20°C) in parts of Southland.

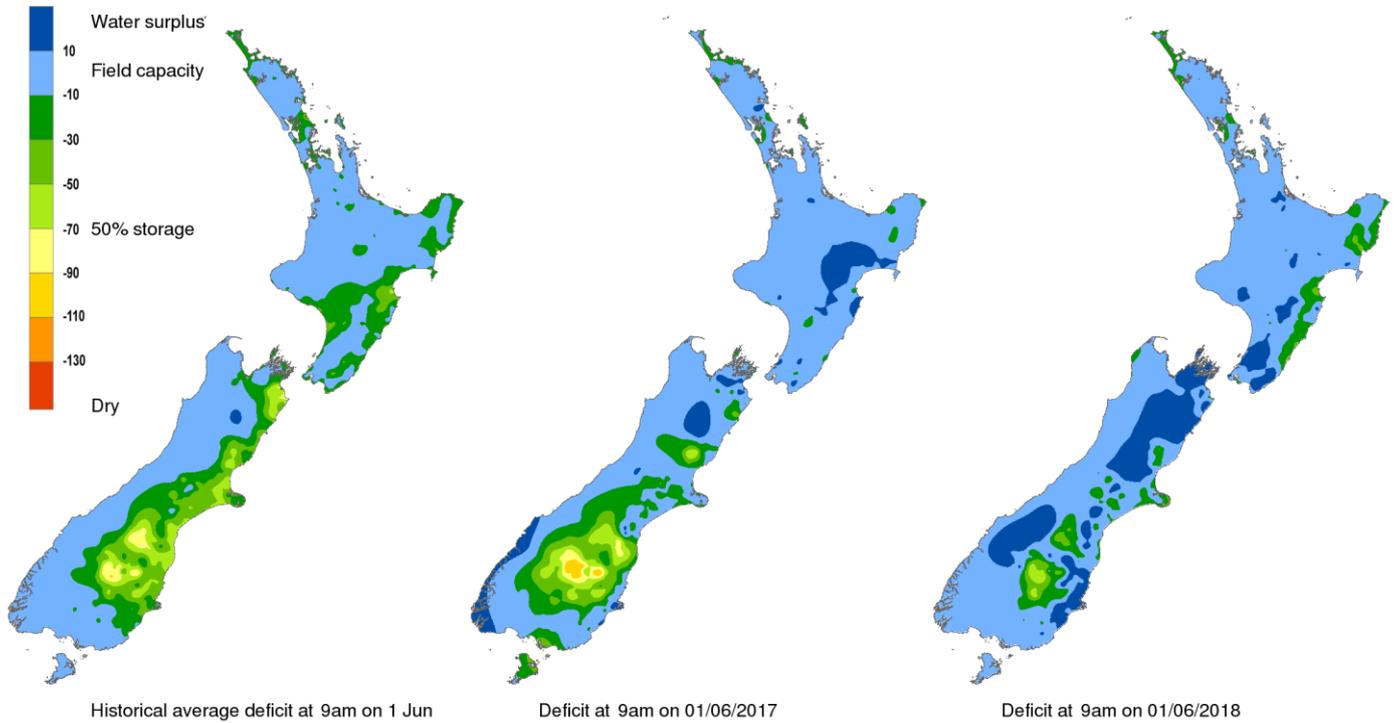
Rainfall

Rainfall was well below normal ($< 50\%$) for coastal south Canterbury and north Otago. Below normal rainfall (50-79%) was recorded in the western Bay of Plenty, Hawke’s Bay, Wairarapa and eastern Otago. Rainfall was well above normal ($>149\%$) for parts of the eastern Bay of Plenty, Taranaki, Manawatu, Marlborough, and Kaikoura. Above normal rainfall (120-149%) was observed in parts of Waikato, Whanganui, and north Canterbury.

Soil Moisture

As at 1 June 2018, soil moisture levels were above normal for the time of year for eastern and inland parts of the South Island north of Southland, and southwestern parts of the North Island. Soil moisture levels were generally near normal for the time of year across the remainder of the country.

Soil moisture deficit (mm) at 9am on 01/06/2018



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: May 2018

ENSO-neutral conditions persisted in the tropical Pacific during May 2018. The Southern Oscillation Index (SOI) was positive at about +0.3 during the past 30 days. Sea surface temperatures (SSTs) in the central and eastern equatorial Pacific Ocean warmed for the second consecutive month and are now near or slightly above average for the time of year.

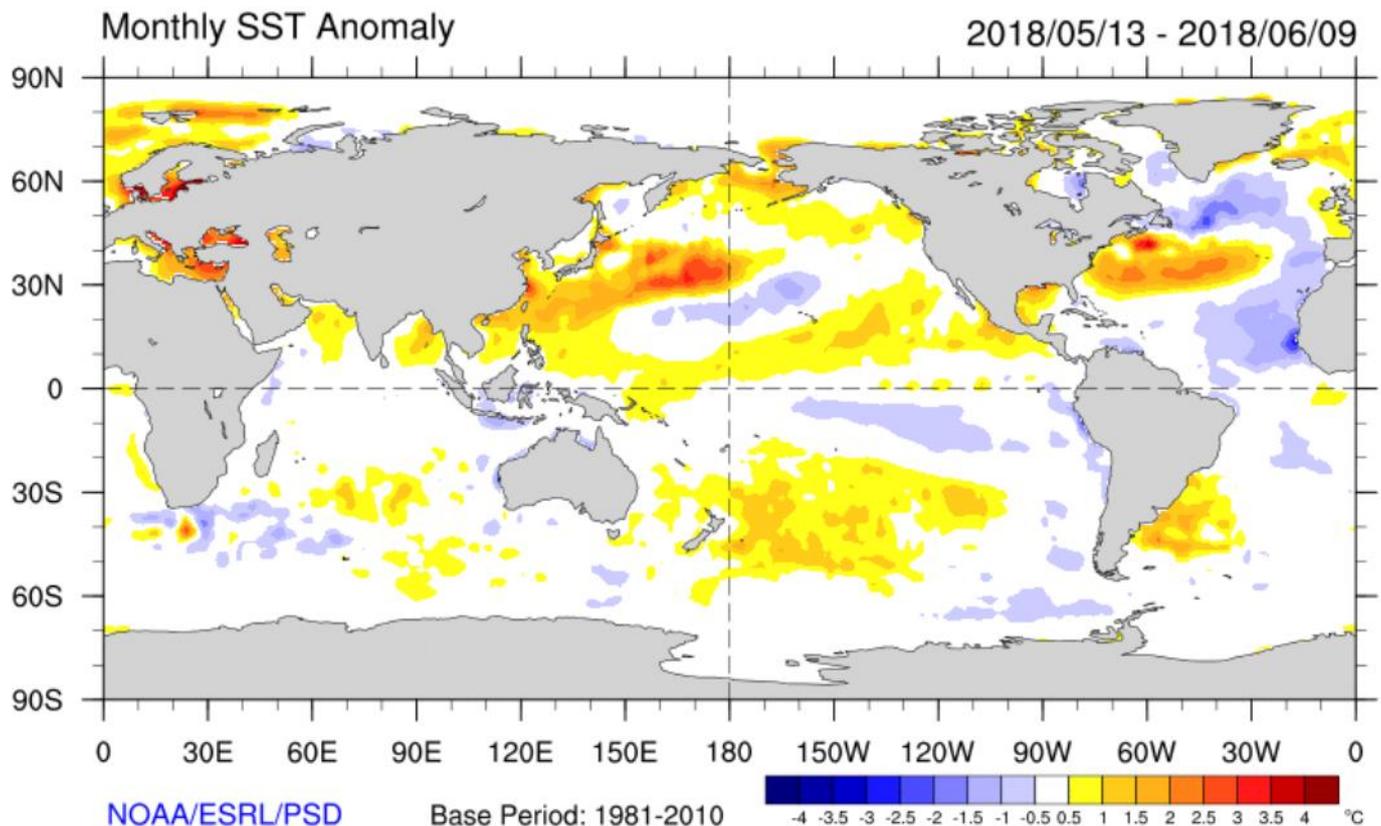
The consensus from international forecast models is for the tropical Pacific to persist in an ENSO-neutral state over the next 3 month period (67% chance over June – August 2018). However, during late winter and early spring (August – October 2018), El Niño conditions are slightly favoured (45% chance) over ENSO-neutral (44% chance).

The atmospheric circulation around New Zealand is forecast to be characterized by mixed flow patterns during June-August 2018. Periodic easterly-quarter (NE to SE) air flows are signalled during June which may give way to more westerly or southwesterly air flows during July and/or August.

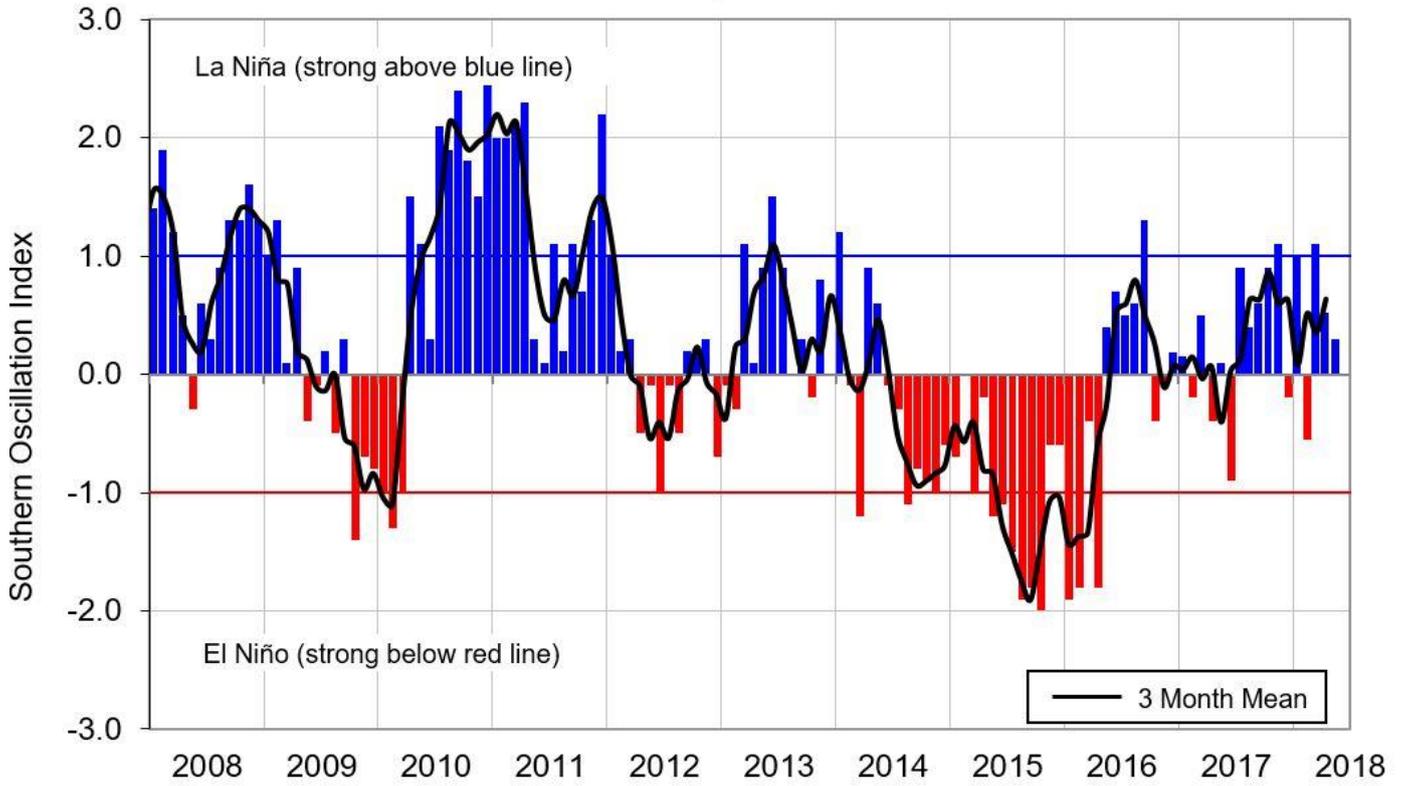
Sea Surface Temperatures

Sea surface temperatures (SSTs) within New Zealand's immediate coastal waters continued to decrease during May and are now near or slightly above average. According to the dynamical models' forecasts, near average SSTs are expected in New Zealand coastal waters during the next 3 months (June-August 2018).

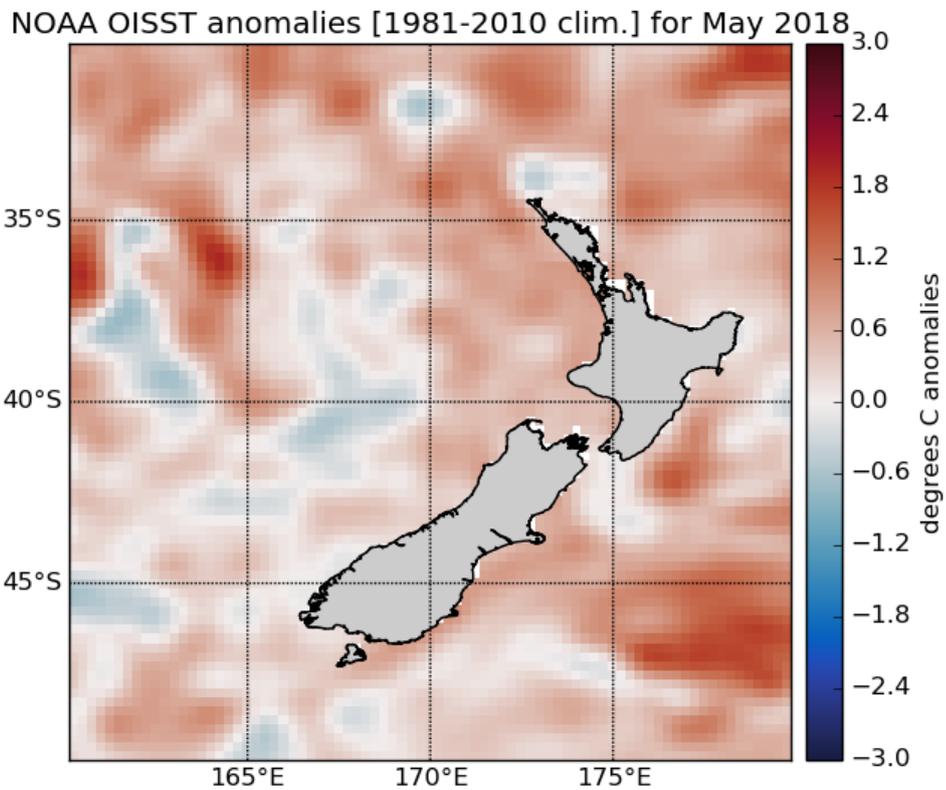
In the absence of large-scale climate drivers and near-average regional SSTs, forecast predictability outside of the tropics, including New Zealand, may be lower than normal over the coming three-month period.



Differences from average global sea surface temperatures for 13th May – 9th June 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: May SOI 0.3; March – May average 0.6



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

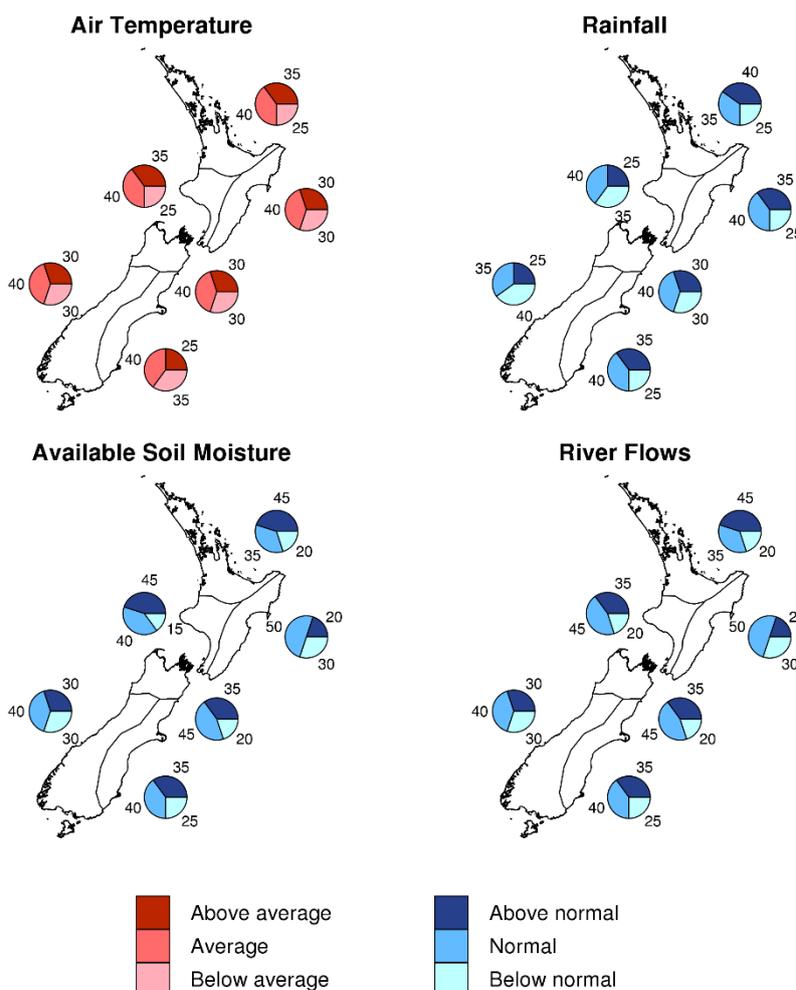
Outlook: June - August 2018

Temperatures are forecast to be near average (40% chance) or above average (35% chance) in the north and west of the North Island, near average (40% chance) or below average (35% chance) in the east of the South Island, near average (40% chance) for all other regions of the country. Periodic northeasterly air flows during the first half of winter in particular may bring mild periods to northern areas. Westerly-quarter (NW to SW) winds during the second half of the winter season may lead to cooler conditions in southern and western areas.

Rainfall totals are forecast to be near normal (35 to 40% chance) or above normal (35 to 40% chance) in the north and east of the North Island and east of the South Island. Normal (35 to 40% chance) or below normal (35 to 40% chance) rainfall is forecast in the west of both islands with near normal rainfall expected in the north of the South Island. Lower than normal air pressure to the west and north of New Zealand during June may bring a few heavier rain events to the north and east of the North Island and perhaps east of the South Island.

Soil moisture levels and river flows are expected to be above normal (45% chance) in the north of the North Island. For the east of the North Island and north and west of the South Island, soil moisture levels and river flows are forecast to be near normal (40-50% chance). For the west of the North Island, soil moisture levels and river flows are expected to be above normal or near normal (40-45% chance). For the east of the South Island, soil moisture levels and river flows are expected to be near normal or above normal (35-40% chance).

Outlook for June - August 2018



Graphical representation of the regional probabilities, Seasonal Climate Outlook, June - August.

The climate we predicted (March – May 2018) and what happened

For March – May 2018, the atmospheric circulation around New Zealand was forecast to be characterised by lower than normal atmospheric pressure northwest of the country, extending over parts of New Zealand, unsettled conditions especially for the North Island, and weak northeasterly quarter flow anomalies. Actual pressures were lower over and to the south of the country. This pressure set up led to an enhanced westerly flow across the country.

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

Outcome: Actual temperatures were above average across the North Island and coastal parts of the South Island. The remainder of the South Island saw near average temperatures.

Predicted rainfall: For March – May 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 the west and east of the South Island.

Outcome: Actual rainfall was above normal for large parts of the country. The exceptions were the north of the North Island, Gisborne as well as parts of the West Coast and Southland where rainfall was near normal.

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

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