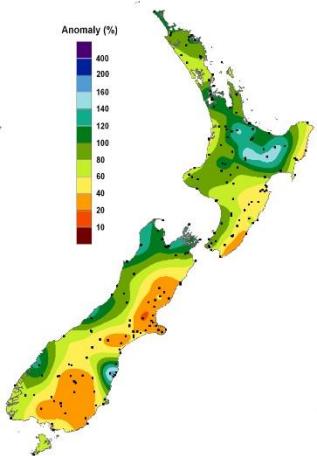


# Climate Update

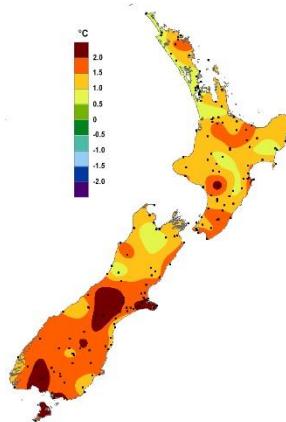
## New Zealand Climate Update No 205, July 2016

### Current climate – June 2016

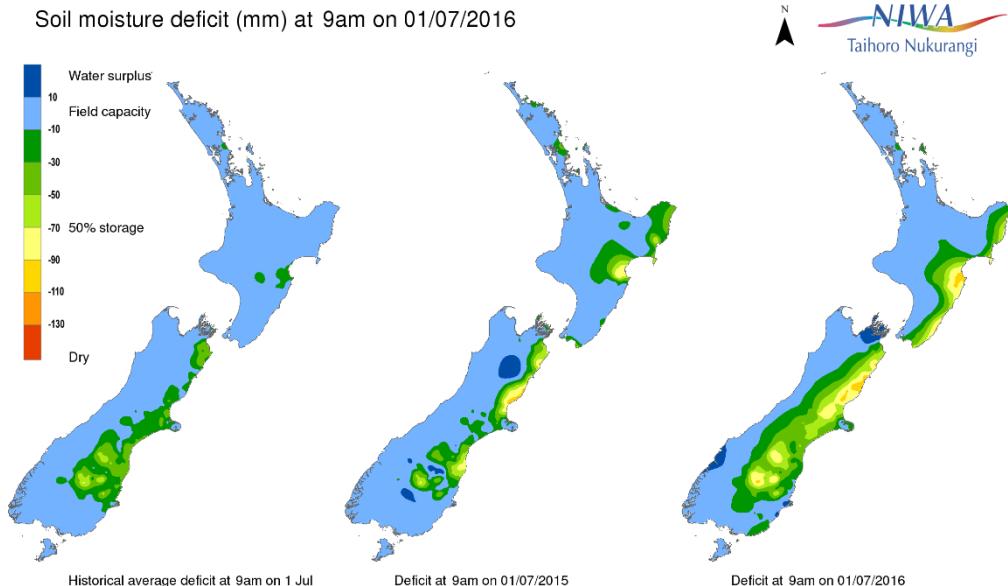
During the month of June 2016, air pressure was higher than normal over and to the east of New Zealand while lower than normal pressures existed to the south-west of the country. This pressure set up led to a prevalence of winds from a northerly direction.



Percentage of normal rainfall for June 2016



Departure from average air temperature for June 2016



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.

**Rainfall:** Rainfall was well below normal (<50%) for much of Gisborne, southern Hawke's Bay, and Wairarapa. Rainfall was also well below normal in central and northern Canterbury and much of Otago and eastern Southland. Pockets of above normal rainfall (120-149%) were observed in parts of the Bay of Plenty, eastern Waikato and the north of Otago. Rainfall was near normal (80-119%) elsewhere.

**Air temperature:** June temperatures were well above average ( $>1.20^{\circ}\text{C}$ ) for much of the South Island except in parts of Tasman and Marlborough where temperatures were above average (+0.51 $^{\circ}\text{C}$  to +1.20 $^{\circ}\text{C}$ ). As a whole, the country observed well above average, above average, or near average temperatures (-0.50 $^{\circ}\text{C}$  to 0.49 $^{\circ}\text{C}$ ). No location observed below average temperatures (-1.20 $^{\circ}\text{C}$  to -0.51 $^{\circ}\text{C}$ ) on either Island.

**Sunshine:** Sunshine was above normal (110-124%) in Southland, the West Coast, Otago, and Canterbury with sections of well above normal sunshine (>125%). The majority of the North Island also observed above or well above normal sunshine. Sunshine was near normal (90-109%) or below normal (75-89%) in Tasman, Nelson, Marlborough, parts of Taranaki, Manawatu-Whanganui, and northern Northland.

**Soil Moisture:** As of 1 July 2016, soil moisture levels were below normal for this time of year for large parts of Gisborne, Hawke's Bay, the Wairarapa as well as central and northern parts of Canterbury. Soil moisture levels for the remainder of the country were near normal for this time of year.

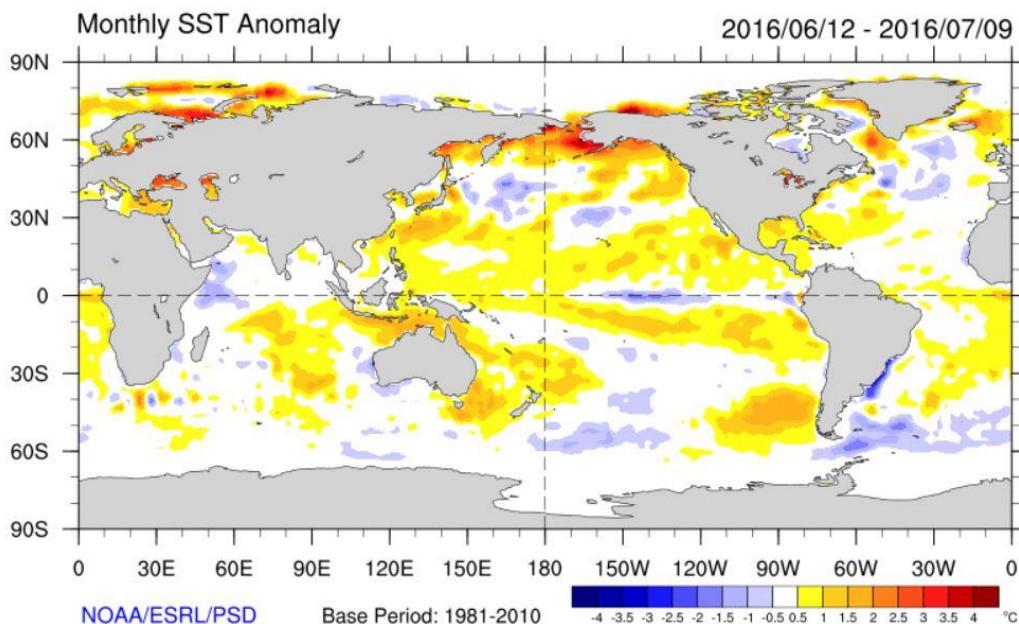
## Global setting

The latest remnants of the strong El Niño which peaked late in 2015 have now vanished in the tropical Pacific Ocean, and the Pacific is ENSO-neutral. Ocean temperatures along the equatorial Pacific are now near or slightly below normal, and recent developments in the ocean – atmosphere system are pointing to a possible transition to La Niña over the coming three months.

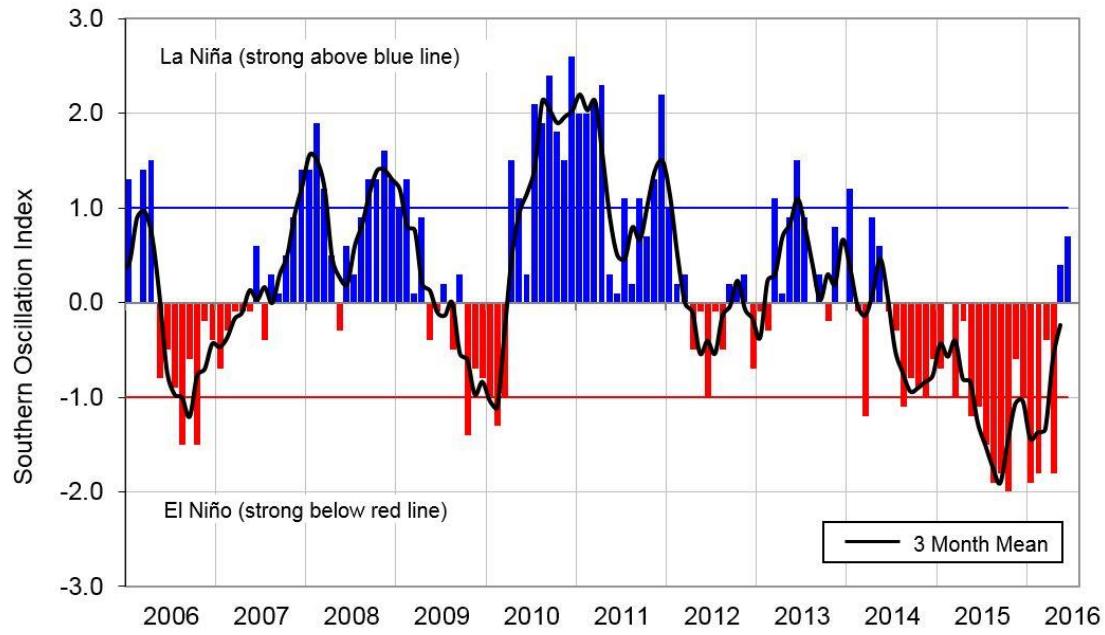
Atmospheric circulation along the equatorial Pacific has returned to near-normal, and the Southern Oscillation Index (SOI) is slightly positive. Cooler than normal sub-surface ocean waters are present in the central equatorial Pacific.

International guidance indicates that La Niña conditions are likely (57% chance) to appear over the next three month period (July – September 2016). The likelihood of La Niña conditions becoming established in the Pacific increases slightly later in the year, and reaches 65% in the first three months of 2017. However, models forecasts indicate that if La Niña indeed develops, it is likely to remain in the weak or moderate category.

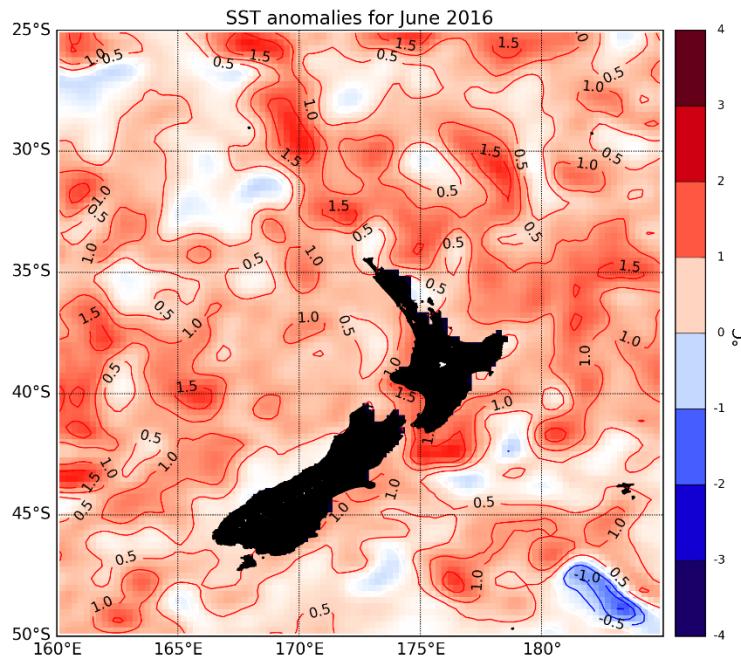
For July – September 2016, weak anomalously high pressure is forecast to the north of New Zealand and expected to bring weak northerly quarter flow anomalies.



Differences from average global sea surface temperatures for 12 June – 9 July 2016. 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: June SOI 0.7; April to June average -0.2.



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

## Outlook – July 2016 to September 2016

**Temperatures** are very likely (60-70% chance) to be above average in all regions of the country. Nevertheless, frosts and cold snaps will occur from time to time.

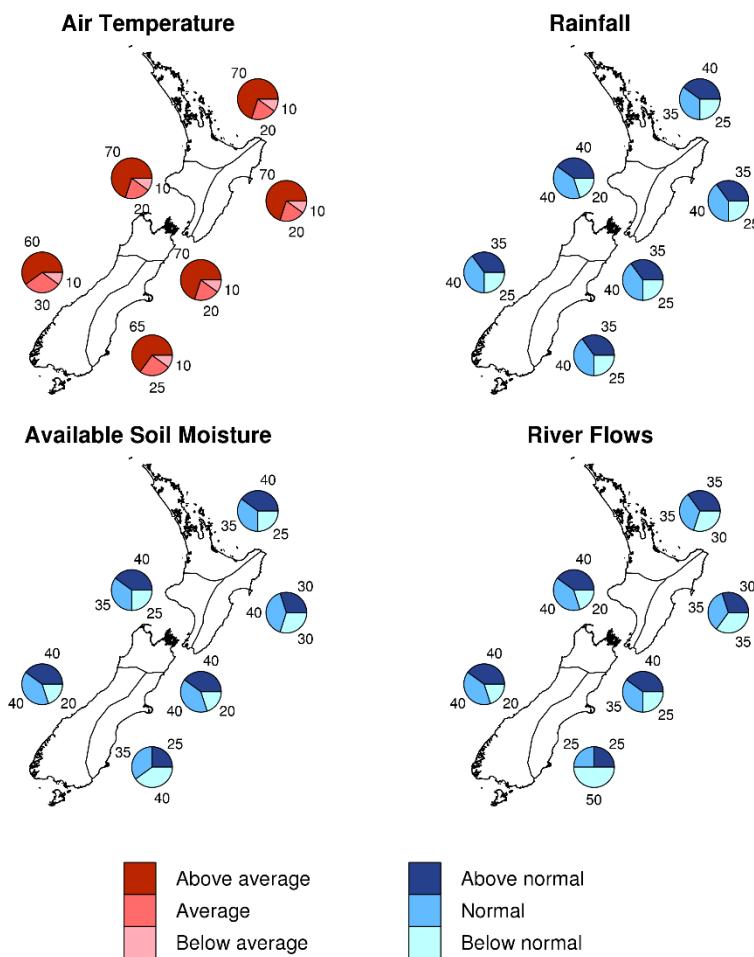
**Rainfall** are about equally likely to be near normal (35-40% chance) or above normal (35-40% chance) for all regions of New Zealand. Warmer sea surface temperatures around the country will remain a major driving force for the New Zealand's climate over the coming season. Consequently, there remains an elevated risk for significant rainfall events and severe storms.

**Soil moisture levels and River Flows** are about equally likely to be in the near normal (35-40% chance) or above normal (35-40% chance) range in the north and west of both Islands. In the east of the North Island, soil moisture levels are most likely to be near normal (40% chance) and river flows are equally likely (35% chance) to be near or below normal. In the east of the South Island, soil moisture levels are about equally likely to be in the below normal (40% chance) or normal range (35% chance), while below normal river flows are most likely (50% chance).

**Sea surface temperatures (SSTs)** are forecast to remain above normal over the next three months, especially to the west of New Zealand.

### Outlook for July - September 2016

**NIWA**  
Taihoro Nukurangi



Graphical representation of the regional probabilities, Seasonal Climate Outlook, July – September 2016.

## **The climate we predicted (April 2016 – June 2016) and what happened**

**Predicted rainfall:** April – June 2016 rainfall was equally likely to be in the below normal or near normal range in all regions of the North Island and the east of the South Island. Near normal rainfall was most likely in the north of the South Island. In the west of the South Island, seasonal rainfall totals were most likely to be above normal.

**Outcome:** Actual rainfall was below normal in the regions of Gisborne, Hawke's Bay, the Wairarapa and northern Canterbury. Rainfall was above normal in Nelson, coastal Tasman, the West Coast as well as parts of Southland, Manawatu-Whanganui. Rainfall was near normal elsewhere.

**Predicted air temperature:** April - June 2016 temperatures were most likely to be above average for all regions of New Zealand.

**Outcome:** Actual seasonal temperatures were indeed higher than normal for the entire country. Several regions including Waikato, Manawatu-Whanganui, Wellington, Canterbury, Otago and Southland recorded seasonal mean temperatures in excess of 1.5°C above normal

**Predicted air pressure:** above normal pressure was forecast to the north of New Zealand. This circulation pattern was likely to be accompanied by weak anomalous westerly wind flow.

**Outcome:** Actual pressures were higher than normal to the north-east of the country while pressure was lower than normal over the South Island and over the Tasman. This pressure set-up produced more north-westerlies than normal.

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

[www.niwa.co.nz/our-science/climate](http://www.niwa.co.nz/our-science/climate)