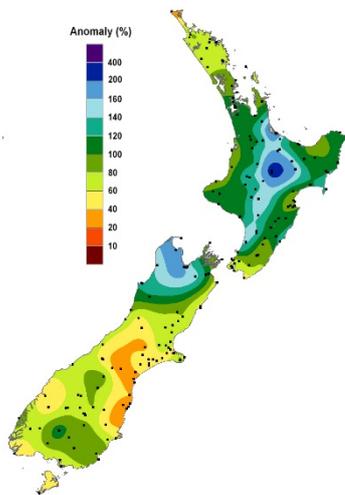


# Climate Update

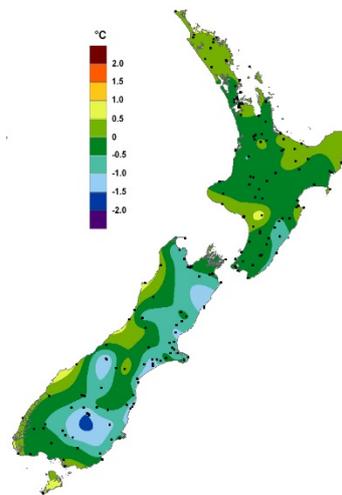
## New Zealand Climate Update No 216, May 2017

### Current climate – May 2017

May 2017 was characterised by mean sea level air pressures that were higher than normal over and to the southwest of New Zealand during May. This resulted in more easterly winds than normal over the North Island, and these winds delivered more rainfall than normal to many eastern and inland parts of the North Island. In the South Island, the air pressure anomaly for the month resulted in more southerly winds than normal.

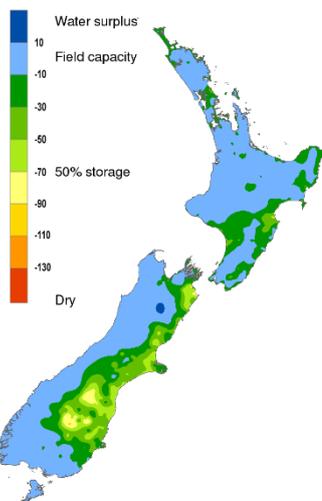


Percentage of normal rainfall for May 2017

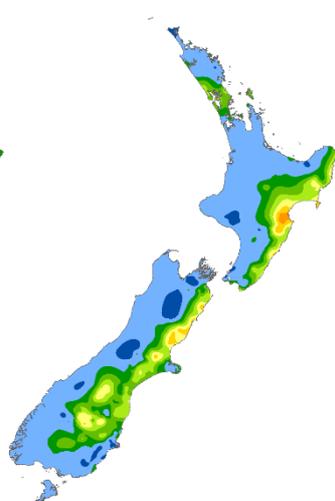


Departure from average air temperature for May 2017

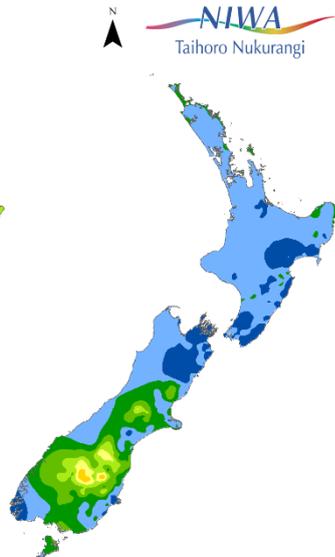
Soil moisture deficit (mm) at 9am on 01/06/2017



Historical average deficit at 9am on 1 Jun



Deficit at 9am on 01/06/2016



Deficit at 9am on 01/06/2017

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:** Well below normal (< 50%) for many eastern and inland parts of Canterbury, as well as Milford Sound. Below normal rainfall (50-79%) was recorded in Otago, southwestern parts of Southland and the Far North. In contrast, rainfall was well above normal (>149%) for the central North Island and Tasman, and above normal (120-149%) for parts of Nelson, Marlborough, Manawatu, Gisborne and Bay of Plenty.

**Temperature:** Below average (-0.51 to -1.20°C) for eastern and inland parts of the South Island, southern Hawke's Bay and Wairarapa. Pockets of well below average temperatures (< -1.20 °C) were observed in Tasman, south Canterbury, Mt Cook and southern Central Otago. May temperatures were typically near average (-0.50°C to +0.50°C) for the remainder of the country.

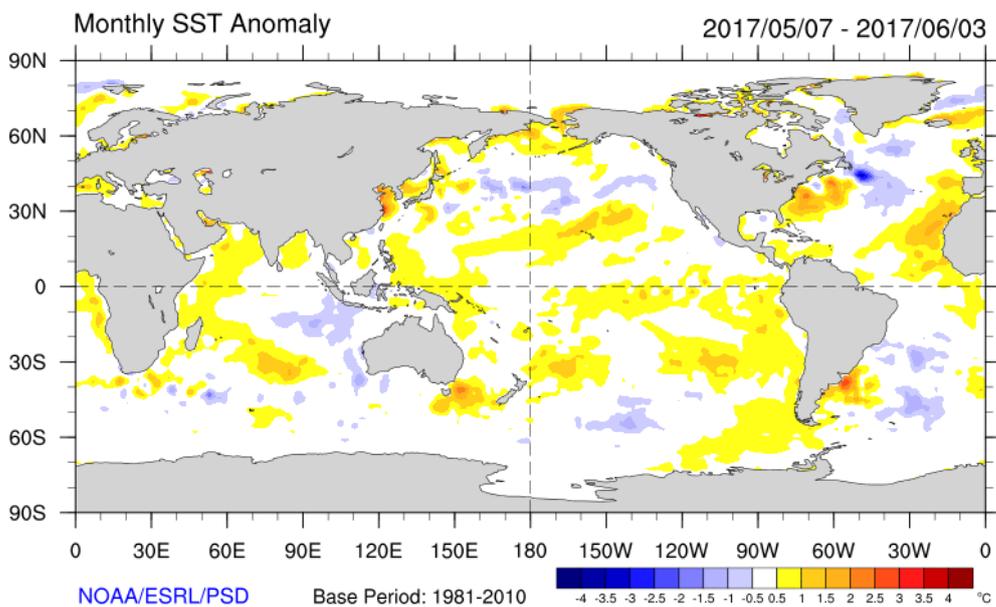
**Sunshine:** Well above normal (> 125%) in southeastern parts of Otago, the Southern Lakes, and Taumarunui. Above normal sunshine (110-125%) was recorded in parts of Northland, Auckland, southern Hawke's Bay, coastal Wairarapa, Marlborough and the Mackenzie Country. Sunshine was typically near normal (90-109%) for the remainder of the country.

**Soil Moisture:** As at 1 June 2017, soil moisture levels were below normal for the time of year for large parts of Southland and inland Otago. Soil moisture levels were above normal for eastern parts of New Zealand, especially in Marlborough.

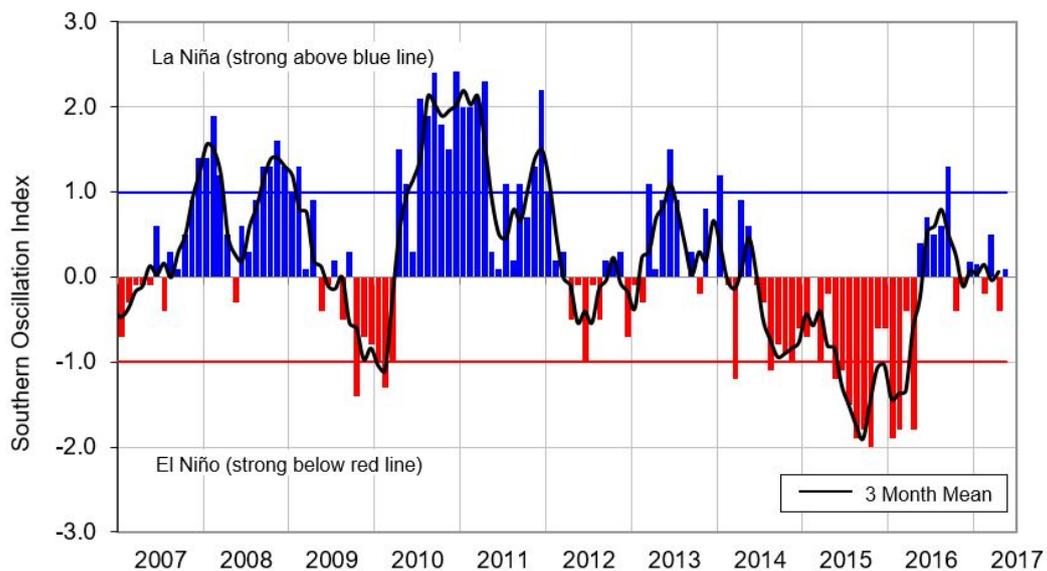
## Global setting: May 2017

The tropical Pacific continued to exhibit an ENSO (El Niño – Southern Oscillation) neutral state (neither El Niño nor La Niña) during May 2017, although is now close to the threshold of a weak El Niño. Across the entire equatorial Pacific, sea surface temperatures (SSTs) are near or marginally above normal. Ocean subsurface temperatures in the eastern equatorial Pacific rose markedly between the end of April and end of May, but there is no immediate indication that these warmer waters will be realised at the ocean's surface. The Southern Oscillation Index (SOI) is currently negative with an estimated value of -0.1 for May 2017; i.e. suggestive of ENSO neutral conditions.

International guidance still suggests that a transition toward El Niño conditions over the next three month period (June – August 2017) is more likely than not, with a 57% chance, versus 42% chance for persistence of the current ENSO neutral state. Compared to last month, the forecast is less aggressive on El Niño development, now reaching a peak (60% chance) during the August-October 2017 period versus 69% last month.



Differences from average global sea surface temperatures for 7 May – 3 June 2017. 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 0.1; March-May average 0.1.

## Outlook: June – August 2017

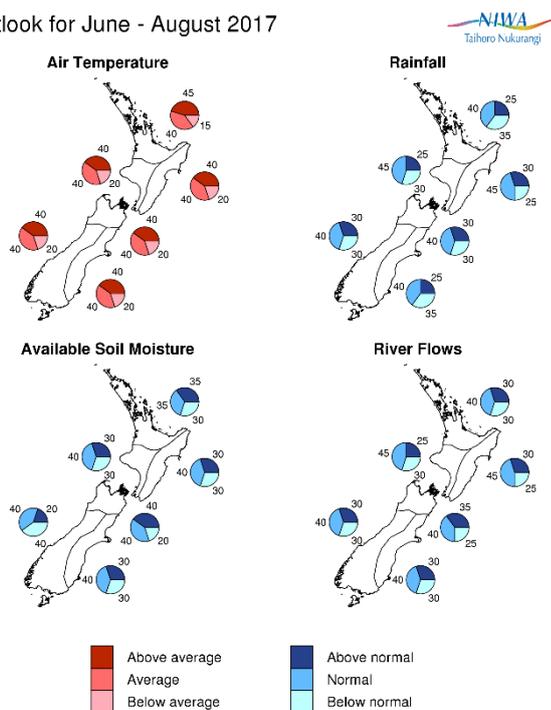
**Temperatures** are about equally likely to be above average (40% or 45% chance) or near average (40% chance) for all regions of New Zealand. Above average sea surface temperatures around New Zealand and the tendency for high pressure systems to persist near the country during June and into July 2017 are likely to contribute to average or above average temperatures to start the three month period. Nevertheless, frosts and cold snaps will occur during the winter season.

**Rainfall** totals are about equally likely to be near normal (40% chance) or below normal (35% chance) in the north of the North Island and east of the South Island. For all remaining regions of New Zealand, winter rainfall totals are most likely to be near normal (40 or 45% chance). From June into July 2017, frequent high pressure systems may contribute to extended periods of dry and settled weather across much of the country, however warm Tasman Sea surface temperatures may help to energise storms as they head toward the country from time to time.

**Soil moisture levels and River Flows:** Soil moisture levels are equally likely to be near normal (35% chance) or above normal (35% chance) in the north of the North Island while river flows are most likely to be near normal (40% chance). In the west and east of the North Island and east of the South Island, soil moisture levels and river flows are most likely to be in the near normal range (40-45% chance). The north of the South Island is about equally likely to have near normal or above normal soil moisture levels and river flows (35-40% chance). In the west of the South Island, soil moisture levels are equally likely to be near normal (40% chance) or below normal (40% chance) and river flows are most likely to be in the near normal range (40% chance).

**Sea surface temperatures** surrounding New Zealand remain warmer than average all around the country, with anomalies exceeding +1.0°C along the west coast of the South Island and east of the North Island and close to +1.0°C along the north of the North Island. SSTs remain much warmer than average in the southern part of the Tasman Sea and off the coast of southeast Australia. Warmer than average SSTs may help to “lessen the sting” of any colder southerly outbreak, especially early in the June – August 2017 period. The dynamical models’ forecasts indicate that warmer than average SSTs around New Zealand are likely to persist through June and either remain above average or near average through the winter season as a whole. Thus, for June – August 2017, coastal waters around New Zealand are forecast to be average or above average.

Outlook for June - August 2017



Graphical representation of the regional probabilities, Seasonal Climate Outlook, June – August 2017.

## The climate we predicted (March 2017 – May 2017) and what happened

**Predicted rainfall:** March – May 2017 rainfall totals were about equally likely to be near normal or below normal in all regions of the country except the west of the South Island where near normal rainfall was most likely.

**Outcome:** Actual rainfall was above normal for the entire North Island and the north and east of the South Island. This pattern was driven by a handful of extreme rainfall events in March and April. In the west of the South Island, rainfall was below normal.

**Predicted air temperature:** March – May 2017 temperatures were about equally likely to be average or above average in the north and east of both the North and South Island. In the west of both Islands, temperatures were most likely to be near average.

**Outcome:** Actual temperatures were above average for much of the North Island, the exceptions were the Greater Wellington Region and the Tararua district where near average temperatures were recorded. In the South Island, temperatures were mostly near average apart from the West Coast where above average temperatures were observed.

**Predicted air pressure:** During March-May, the likely persistence of ENSO-neutral conditions and intermittently active periods in the Madden-Julian Oscillation, changeability in New Zealand's weather patterns was expected to occur. The atmospheric circulation around New Zealand was expected to favour more westerly wind flows than normal.

**Outcome:** Actual pressures were higher than normal over and to the southwest of the country, this pressure set up resulted in more easterly to north-easterly winds 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)