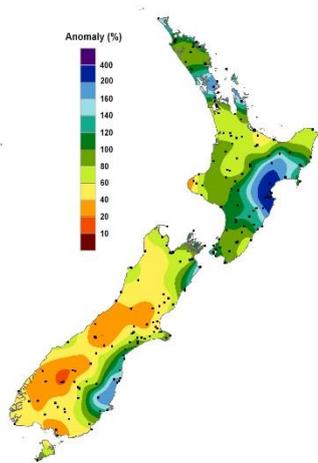


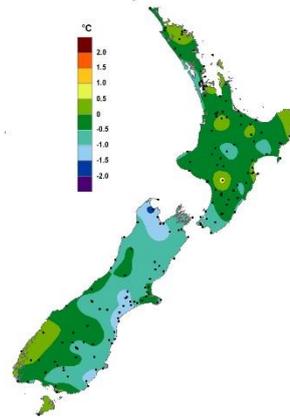
New Zealand Climate Update No 207, September 2016

Current climate – August 2016

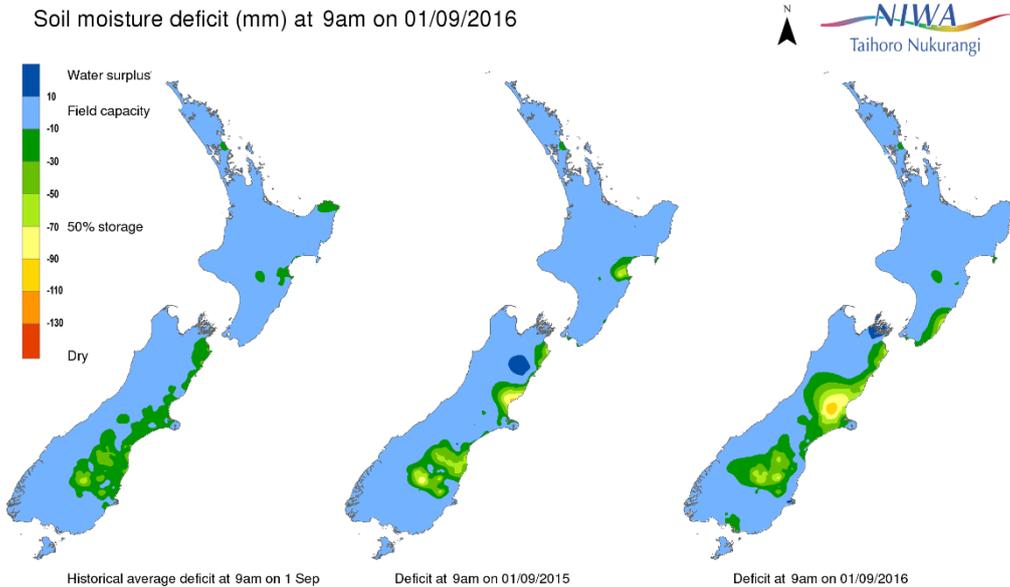
During August 2016, mean sea-level pressures were lower than normal to the northeast of New Zealand and above normal to the southeast of New Zealand. This pressure pattern resulted in a prevalence of winds from an easterly or south-easterly direction.



Percentage of normal rainfall for August 2016



Departure from average air temperature for August 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 below normal (50-79% of normal) or well below normal (<50% of normal) across Westland, Southland, and parts of the Queenstown-Lakes region. Rainfall was below normal across middle and northern Canterbury, the Tasman, Nelson, and Marlborough regions as well as in parts of Taranaki, Wairarapa, and much of the Bay of Plenty and Waikato. Conversely, rainfall was above normal (120-149% of normal) or well above normal (>149% of normal) for coastal southern Canterbury and coastal Otago and much of Hawke's Bay as well as north Auckland.

Air temperature: August temperatures were below average (-1.20°C to -0.51°C) in the north and east of the South Island. It was an especially chilly month across the northwestern Tasman region where mean temperatures were well below average (<-1.20°C). Elsewhere in New Zealand, temperatures were near average (-0.50 to 0.49°C).

Sunshine: August sunshine was above normal (110-125% of normal) across much of the South Island and west of the North Island. It was especially sunny in southwestern Waikato and in coastal Otago. Sunshine was near normal (90-109% of normal) in most other areas.

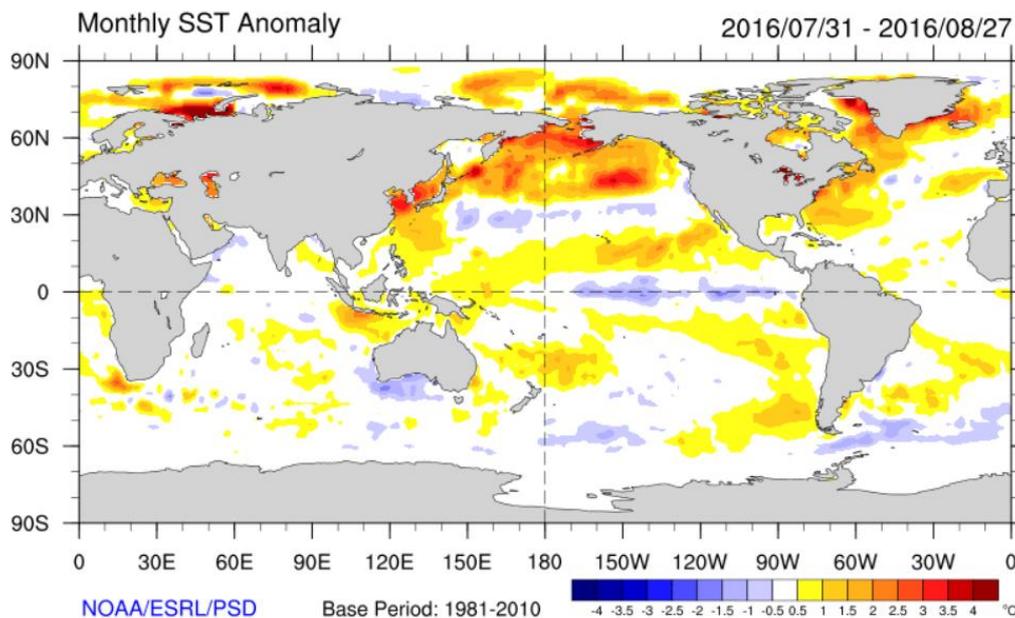
Soil Moisture: At the end of August 2016, soil moisture levels were below normal for the time of year across middle and northern Canterbury as well as coastal Wairarapa. Soil moisture levels for the remainder of the country were near normal for this time of year.

Global setting: August 2016

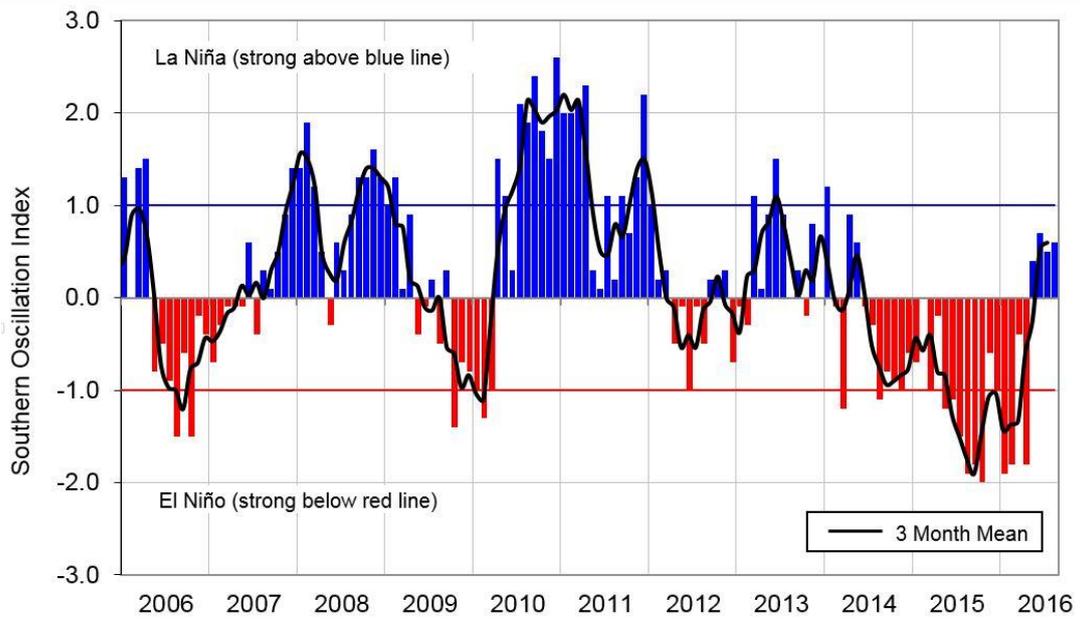
ENSO (El Niño – Southern Oscillation) neutral conditions continued in the tropical Pacific Ocean during August: sea surface temperatures along the eastern equatorial Pacific are near or slightly below normal, and the atmospheric conditions over the tropical Pacific are generally consistent with an ENSO-neutral state. As a whole the tropical ocean-atmosphere system still shows a leaning towards La Niña, but with a slight weakening of the signals that were observed last month (July 2016).

International guidance still favours development of La Niña conditions (55% chance) over the next three month period (September – November 2016), however the probability of neutral conditions over the next 3 months is almost equally as high (45% chance). The likelihood of La Niña conditions becoming established in the Pacific remains at a 55% chance for December – February 2016/2017. In summary, both the current state and recent evolution of the ocean-atmosphere system in the Pacific, as well as the models' forecasts, suggest that if a La Niña event develops, it will be characterized by a relatively short duration and weak amplitude.

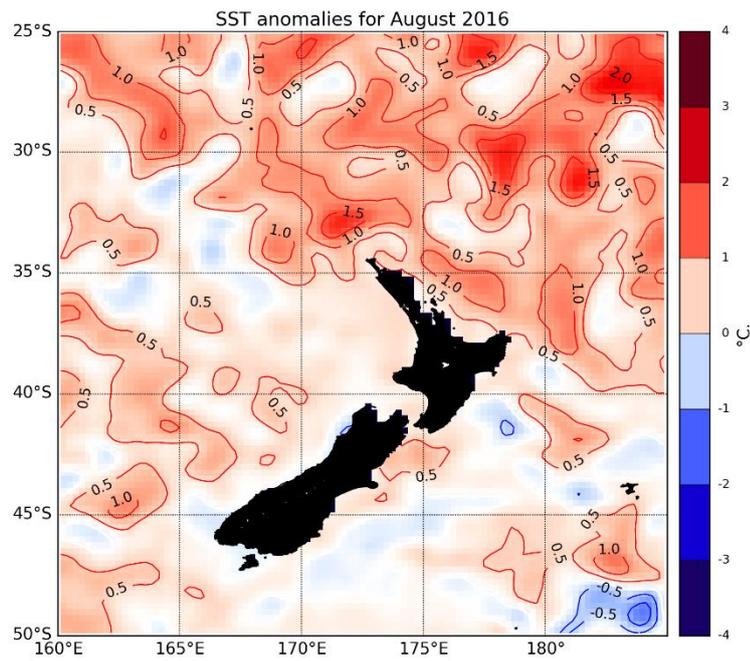
For September - November 2016, lower than normal pressure is forecast to the north-east of New Zealand while higher than normal pressure is expected to the south of the country. This airflow set-up is expected to produce more north-easterly winds than normal. The continuation of warmer than normal sea surface temperatures around the country suggests that warmer and more humid air masses are likely to affect New Zealand, especially the North Island.



Differences from average global sea surface temperatures for 31 July – 27 August 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: August SOI 0.6; June to August average 0.6.



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

Outlook – September 2016 to November 2016

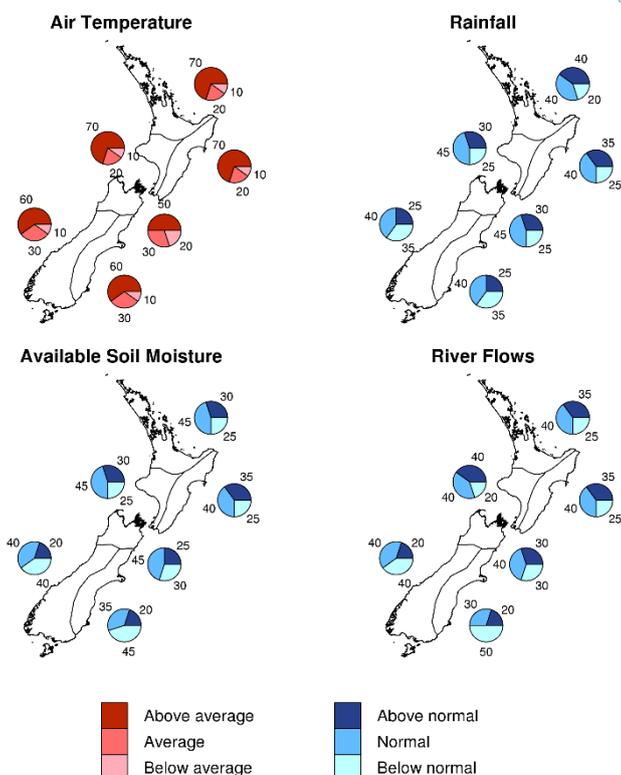
Temperatures are likely (50% chance) to be above average in the north of the South Island and very likely (60-70% chance) to be above average in the remaining regions of the country. Nevertheless, as we transition into spring, frosts and cold snaps will occur from time to time, particularly in the first half of the season.

Rainfall totals are about equally likely to be in the near normal range (40% chance) or above normal range (35-40% chance) in the north and east of the North Island. Seasonal rainfall is most likely (45% chance) to be in the near normal range in the west of the North Island and the north of the South Island. In the east and west of the South Island, rainfall for the September-November 2016 period is about equally likely to be near normal (40% chance) or below normal (35% chance).

Soil moisture levels and River Flows are most likely to be in the near normal (40% chance) or above normal (35% chance) range for the east of the North Island, while below normal (45-50% chance) soil moisture levels and river flows are most likely for the east of the South Island. For the north of the South Island, near normal (40-45% chance) soil moisture levels and river flows are most likely while near normal (40% chance) or below normal (40% chance) soil moisture levels and river flows are equally likely in the west of the South Island. In the north and west of the North Island near normal (45% chance) soil moisture levels are most likely while river flows are expected to be in the normal (40% chance) or above normal (35-40%) range.

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

Outlook for September - November 2016



Graphical representation of the regional probabilities, Seasonal Climate Outlook, September - November 2016.

The climate we predicted (June 2016 – August 2016) and what happened

Predicted rainfall: June – August 2016 rainfall was likely to be above normal in the north and west of the North Island and the west of the South Island. Seasonal rainfall totals were equally likely to be near normal or above normal in the east of the North Island and the north and east of the South Island.

Outcome: Actual rainfall was below normal in central and northern Canterbury, eastern Marlborough and the Wairarapa. Rainfall was above normal in parts of the Bay of Plenty and Hawkes Bay, and near normal elsewhere.

Predicted air temperature: June – August 2016 temperatures were very likely to be above average in all regions of the country.

Outcome: Actual seasonal temperatures were near normal for Taranaki, western Waikato, Tasman, Nelson, Marlborough and coastal Otago. Temperature was above normal elsewhere.

Predicted air pressure: June – August 2016, higher pressures than normal were forecast to the north and northeast of New Zealand, with lower pressures than normal to the south and the southeast of the country. Westerly to north-westerly wind flow anomalies were expected to affect the country.

Outcome: Actual pressures were near normal over New Zealand and lower than normal to the southwest of the country. This pressure set up lead to more north-westerlies than normal.

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

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