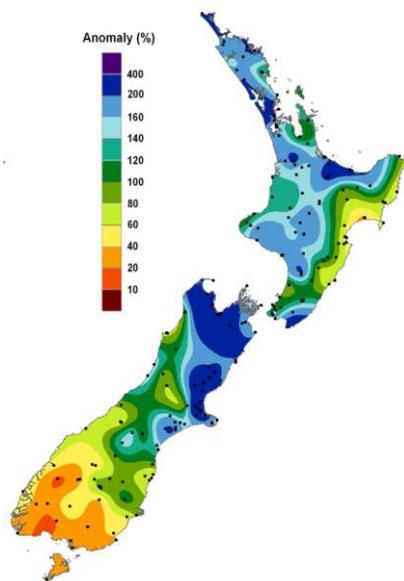


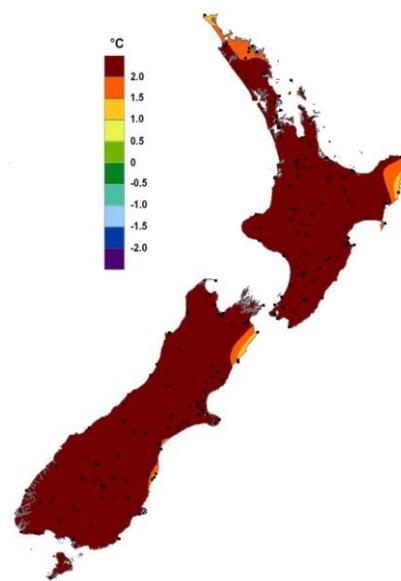
New Zealand Climate Update No 224, February 2018

Current climate – January 2018

January 2018 was characterised by higher than normal sea level pressure to the east of New Zealand, and lower than normal sea level pressure to the west of the country. This pressure setup delivered more northerly-quarter winds than normal. Sea surface temperatures in New Zealand coastal waters and the Tasman Sea remained considerably higher than normal throughout the month.



Percentage of normal rainfall for January 2018



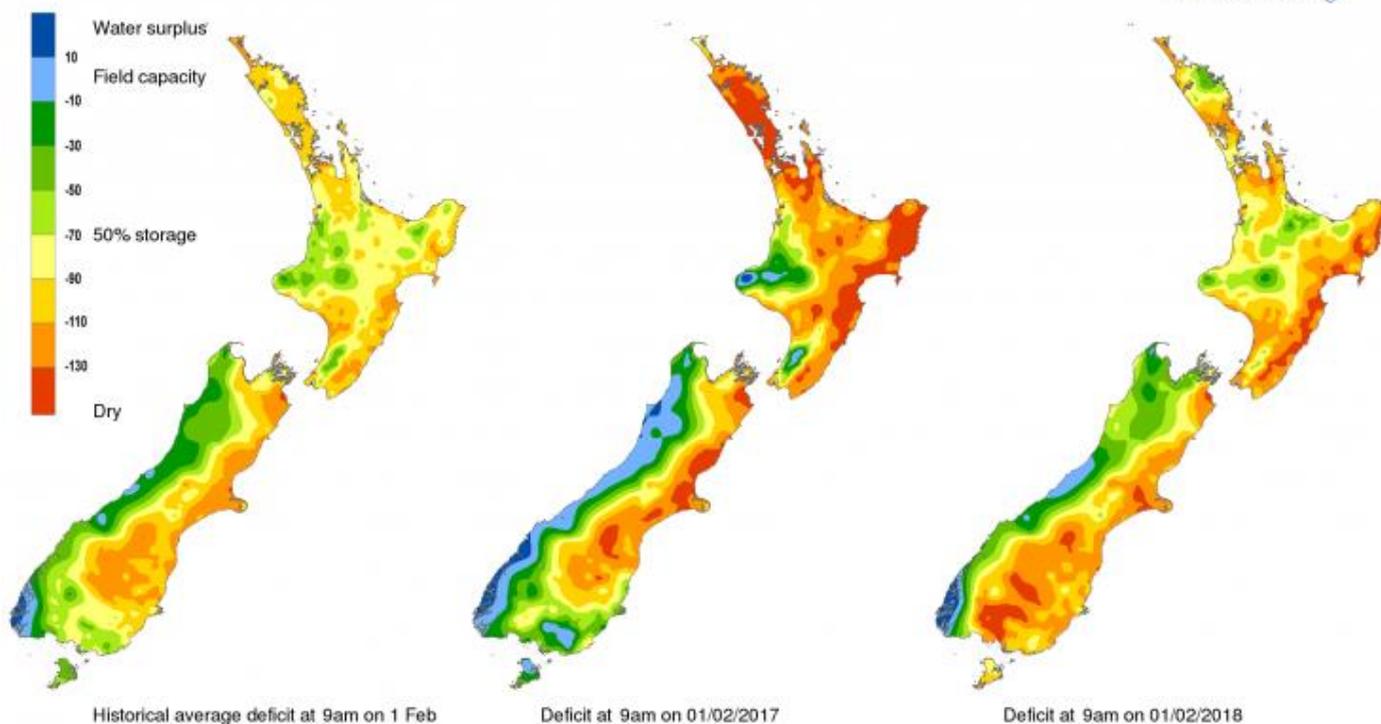
Departure from average air temperature for January 2018

Rainfall: Rainfall was above normal (120-149% of normal) or well above normal (>149% of normal) throughout much of the top half of the South Island, as well as many areas of the North Island. Rainfall was below normal (50-79% of normal) or well below normal (<50% of normal) for much of Southland, Otago and Hawke'e Bay.

Temperature: January 2018 (New Zealand mean temperature 20.3°C; 3.1°C higher than the 1981-2010 January average) was New Zealand's hottest month on record, which of course means it was additionally the country's hottest January on record. Temperatures were well above average (>1.20°C of average) for the entire country, and locations in every region recorded either their record or near-record January temperature on record.

Soil Moisture: As of 31 January, soils were drier than normal for the time of year across large parts of Southland, Otago, the West Coast and Taranaki, as well as southern and eastern parts of the North Island. Soil moisture was above normal for eastern parts of Northland, Auckland, Bay of Plenty and Nelson.

Soil moisture deficit (mm) at 9am on 01/02/2018



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: January 2018

Weak La Niña conditions continued in the tropical Pacific during January 2018. Below average sea surface temperatures (SSTs) remained present in the central and eastern equatorial Pacific Ocean but warmed slightly compared to December 2017.

The consensus from international models is that weak La Niña conditions (50% chance) are as likely as ENSO neutral conditions (50% chance) over the next 3 months (February – April 2018). The chance for ENSO neutral conditions then increases during the May – July 2018 period (65% chance). Overall, this suggests that a continued decay of La Niña conditions is expected over the next three months.

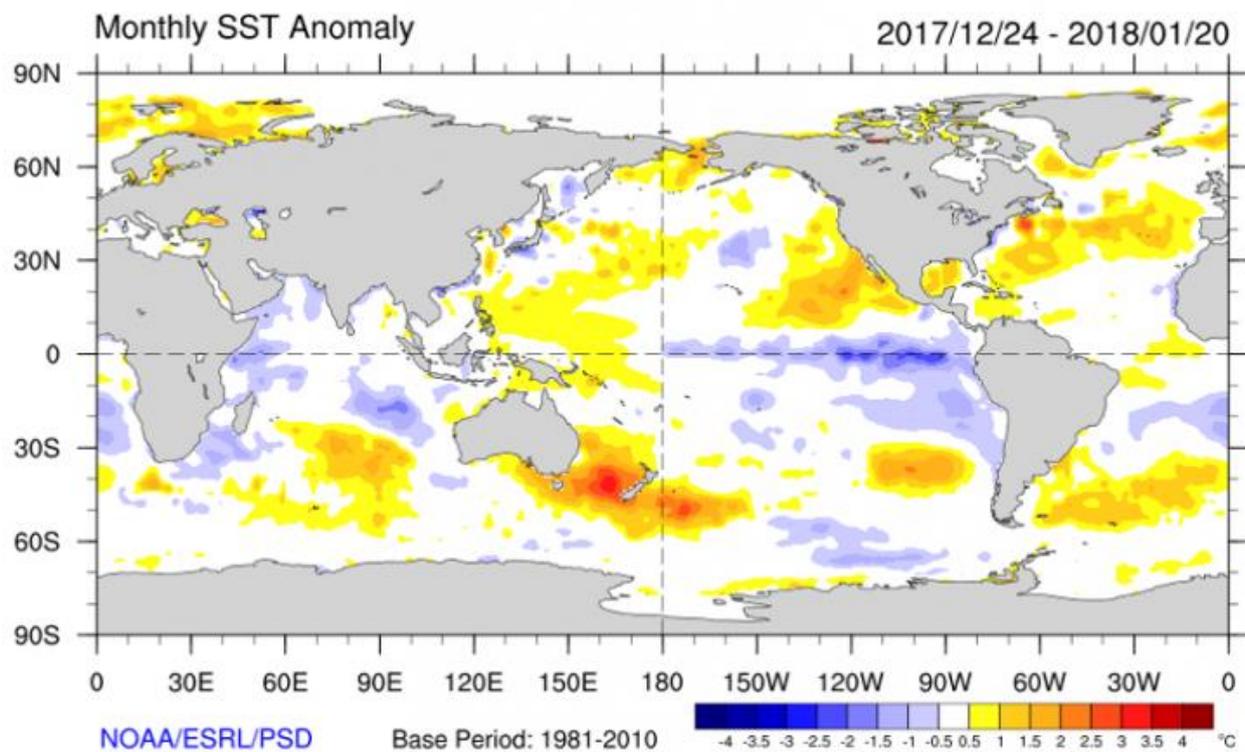
Apart from waning La Niña conditions, New Zealand’s regional climate over the next three month period is expected to be dominated by the very warm ocean waters (so called “marine heatwave”) present around the country, in the Tasman Sea, and in the Southwest Pacific Ocean.

For February – April 2018, the atmospheric circulation around New Zealand is forecast to be characterized by higher pressures than normal east and south of the country, while lower pressure than normal is forecast over the Tasman Sea, extending over the North Island. This pressure pattern, in concert with the marine heatwave, is expected to be associated with warmer than average air temperatures, occasional significant rainfall events, and flow anomalies from the northeasterly quarter.

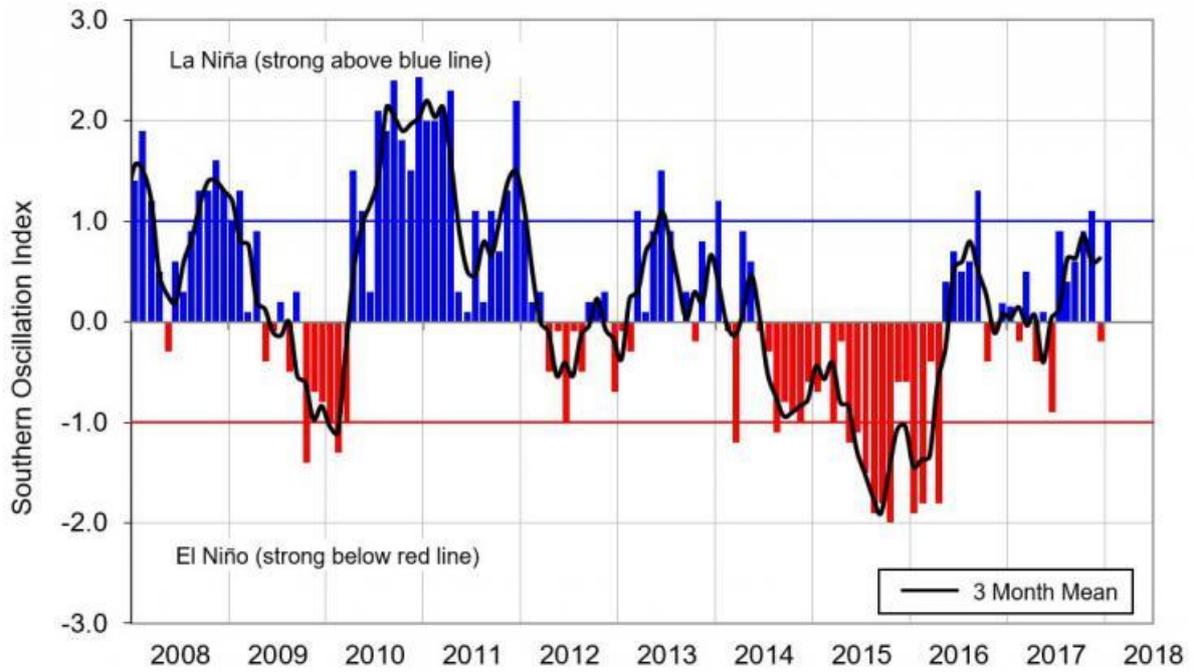
Sea Surface Temperatures

Coastal waters remain much warmer than average all around New Zealand, in the Tasman Sea, and in the Southwest Pacific with anomalies currently exceeding +2.0°C for all coastal areas around the country. Toward the end of January 2018, the so called “marine heatwave” reached a secondary anomalous peak (the first peak occurred in early December).

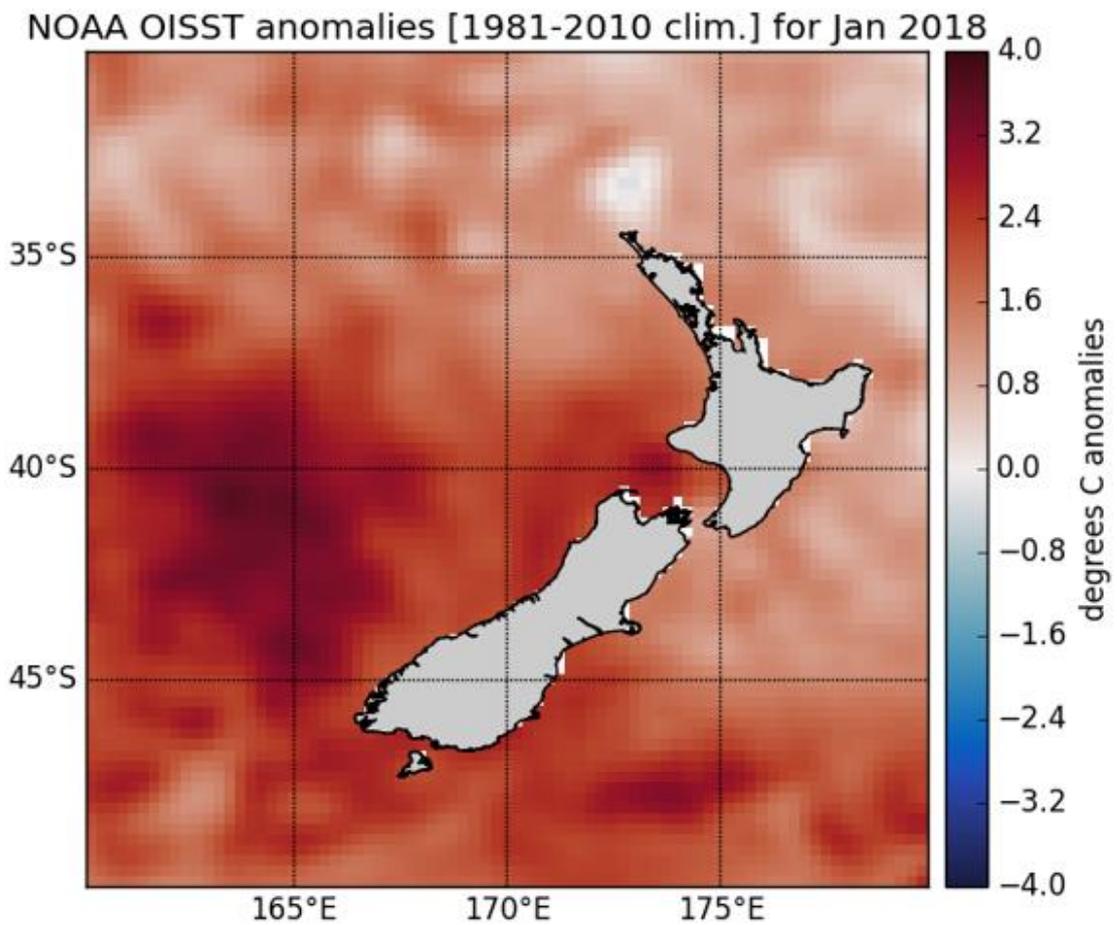
According to the dynamical models’ forecasts, significantly warmer than average SSTs are likely to persist for at least part of the next 3 months (February – April 2018), although the anomalies are expected to ease off slightly over the same period.



Differences from average global sea surface temperatures for 24 December – 20 January 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: January SOI 1.0; November - January average 0.6



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

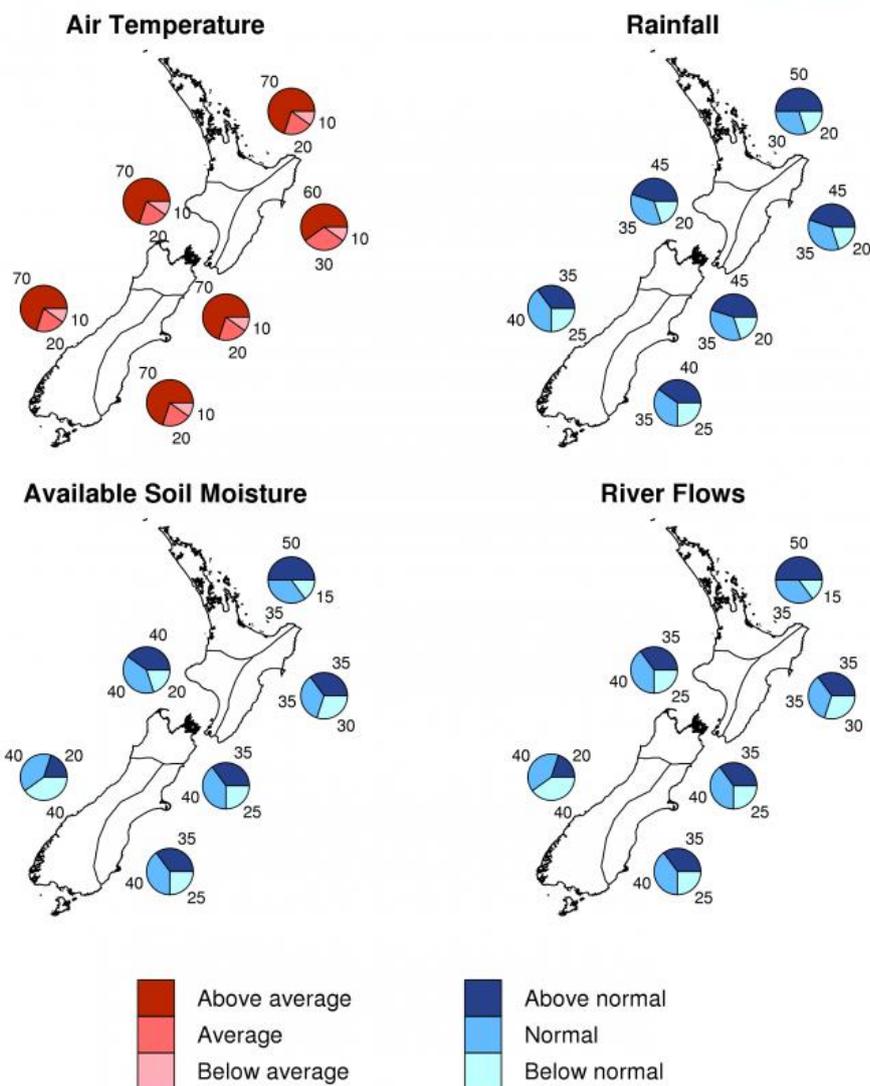
Outlook: February – April 2018

Temperatures are forecast to be above average for all regions of New Zealand with high confidence (60 to 70% chance).

Rainfall totals are forecast to be above normal in the North Island and in the north of the South Island (45 to 50% chance) and about equally likely to be near normal (35 to 40% chance) or above normal (35 to 40% chance) in the west and east of the South Island.

Soil moisture levels and river flows are forecast to be above normal (50% chance) in the north of the North Island, equally likely to be normal (40% chance) or below normal (40% chance) in the west of the South Island, and about equally likely to be normal (35 to 40% chance) or above normal (35 to 40% chance) for all remaining regions of New Zealand

Outlook for February - April 2018



Graphical representation of the regional probabilities, Seasonal Climate Outlook, February - April.

The climate we predicted (November 2017 – January 2018) and what happened

For November 2017 – January 2018 as a whole, the atmospheric circulation around New Zealand was forecast to be characterized by higher pressure than normal to the south-east of the country, and lower pressure than normal to the north. This pressure pattern was expected to be associated with north-easterly to easterly flow anomalies, a pattern consistent with regional conditions typically observed during La Niña events. Actual pressures were higher than normal over New Zealand and in particular to the south-east of the country. This pressure set up led to more easterly quarter winds than normal as forecast.

Predicted air temperature: November 2017 – January 2018 temperatures were forecast to be above average for all regions of New Zealand.

Outcome: Actual temperatures were well above average for much of the country with the exception of Gisborne and the Mahia peninsula where above average temperatures were observed

Predicted rainfall: November 2017 – January 2018 rainfall totals were about equally likely to be normal or above normal for the north and east of the North Island, and most likely to be near normal in the west of the North Island and the north and east of the South Island. Below normal or near normal rainfall was forecast in the west of the South Island.

Outcome: Actual rainfall was near normal for parts of Northland, Waikato, Bay of Plenty, Manawatu-Whanganui, Tasman and Marlborough. Small pockets of above normal rainfall were observed in Nelson and Tasman. Below normal rainfall was recorded for the rest of the country

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

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