



March-May 2022

Issued: 1 March 2022

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NIWA Outlook: March – May 2022

Outlook Summary

- March is expected to feature spells of higher than normal pressure in Aotearoa New Zealand, especially during the first half of the month, with drier than normal conditions favoured in the North Island in particular. Late March and early April may feature a period of unsettled weather.
- La Niña is expected to transition to ENSO neutral conditions over the next three months, which will come with more climate variability. For more information, see the [Background](#).
- At the end of February, marine heatwave (MHW) conditions were occurring in the northern and western North Island and western and eastern South Island. Around the country, sea surface temperatures (SSTs) ranged from 1.0°C to 1.6°C above average during February. The MHW, while easing over autumn, will likely delay the seasonal transition to cooler temperatures and increase the odds for stormy weather in the New Zealand region.
- Air pressure is forecast to be lower than normal to the west and northwest and higher than normal to the east of New Zealand. This is expected to be associated with northeasterly quarter wind flow anomalies (northerly to easterly) for the season as a whole, although more variability in air flows is possible during April and May.
- Temperatures are very likely to be above average in all regions except for the east and north of the South Island where above average or near average temperatures are about equally

likely. Periods of warm, summer-like temperatures are likely during March, although an unseasonable cold spell may occur during the first half of April.

- Rainfall is about equally likely to be near normal or below normal in the north and west of the North Island, near or above normal in the west of the South Island, and most likely to be near normal in all other regions.
- Seasonal rainfall may be influenced by tropical cyclone activity in the SW Pacific. Any activity during early March is not expected to impact New Zealand, although there will be another chance in late March or early April. As the country has experienced several times in recent months, these systems can cause extreme rainfall and flooding.
- Soil moisture levels and river flows are most likely to be below normal in the north of the North Island and near normal in all other regions.

Regional predictions for March – May 2022

Northland, Auckland, Waikato, Bay of Plenty

The table below shows the probabilities (or percent chances) for each of three categories: above average, near average, and below average. In the absence of any forecast guidance there would be an equal likelihood (33% chance) of the outcome being in any one of the three categories. Forecast information from local and global guidance models is used to indicate the deviation from equal chance expected for the coming three-month period, with the following outcomes the most likely (but not certain) for this region:

- Temperatures are very likely to be above average (70% chance). Marine heatwave conditions will likely contribute to elevated humidity and warm temperatures during March and delay the seasonal transition to cooler temperatures during April-May.
- Rainfall totals are equally likely to be normal (40% chance) or below normal (35% chance).
- Extended dry spells are likely, especially during March. An elevated chance for atmospheric rivers and ex-tropical cyclone activity may increase the risk for heavy rainfall events later in March or early in April.
- In late February, very dry conditions were occurring in parts of Northland, Auckland, Waikato according to NIWA's [New Zealand Drought Index](#).
- Soil moisture levels and river flows are most likely to be below normal (50% chance).

The full probability breakdown is:

	Temperature	Rainfall	Soil moisture	River flows
Above average	70	25	15	15
Near average	25	40	35	35
Below average	05	35	50	50

Central North Island, Taranaki, Whanganui, Manawatu, Wellington

Probabilities are assigned in three categories: above average, near average, and below average.

- Temperatures are very likely to be above average (70% chance). Marine heatwave conditions will likely contribute to elevated humidity and warm temperatures during March and delay the seasonal transition to cooler temperatures during April-May.
- Rainfall totals are equally likely to be normal (40% chance) or below normal (35% chance).
- Extended dry spells are likely, especially during March. An elevated chance for atmospheric rivers and ex-tropical cyclone activity may increase the risk for heavy rainfall events later in March or early in April.
- Soil moisture levels and river flows are most likely to be near normal (50% chance).

The full probability breakdown is:

	Temperature	Rainfall	Soil moisture	River flows
Above average	70	35	15	15
Near average	25	40	50	50
Below average	05	25	35	35

Gisborne, Hawke’s Bay, Wairarapa

Probabilities are assigned in three categories: above average, near average, and below average.

- Temperatures are most likely to be above average (55% chance). Warmer than average coastal SSTs will likely contribute to elevated humidity and warm temperatures during March and delay the seasonal transition to cooler temperatures during April-May.
- Rainfall totals are most likely to be near normal (40% chance). Frequent onshore wind flows may contribute to more days with light rain, drizzle, and cloud.
- An elevated chance for atmospheric rivers and ex-tropical cyclone activity may increase the risk for heavy rainfall events later in March or early in April.
- Soil moisture levels and river flows are most likely to be near normal (50% chance).

The full probability breakdown is:

	Temperature	Rainfall	Soil moisture	River flows
Above average	55	30	20	20
Near average	40	40	50	50
Below average	05	30	30	30

Tasman, Nelson, Marlborough, Buller

Probabilities are assigned in three categories: above average, near average, and below average.

- Temperatures are about equally likely to be above average (50% chance) or near average (45% chance). Warmer than average coastal SSTs will likely delay the seasonal transition to cooler temperatures, although a cold snap is possible during the first half of April.
- Rainfall totals are most likely to be near normal (45% chance).

- An elevated chance for atmospheric rivers and ex-tropical cyclone activity may increase the risk for heavy rainfall events later in March or early in April.
- Soil moisture levels and river flows are most likely to be near normal (50% chance).

The full probability breakdown is:

	Temperature	Rainfall	Soil moisture	River flows
Above average	50	30	25	25
Near average	45	45	50	50
Below average	05	25	25	25

West Coast, Alps and foothills, inland Otago, Southland

Probabilities are assigned in three categories: above average, near average, and below average.

- Temperatures are very likely to be above average (65% chance). Marine heatwave conditions will likely contribute to elevated humidity and warm temperatures during March, although a cold snap is possible during the first half of April.
- Rainfall totals are about equally likely to be near normal (40% chance) or above normal (35% chance).
- An elevated chance for atmospheric rivers and ex-tropical cyclone activity may increase the risk for heavy rainfall events later in March or early in April.
- In late February, extremely dry conditions were occurring in Southland and Stewart Island according to NIWA's [New Zealand Drought Index](#).
- Soil moisture levels and river flows are most likely to be near normal (45% chance).

The full probability breakdown is:

	Temperature	Rainfall	Soil moisture	River flows
Above average	65	35	30	35
Near average	30	40	45	45
Below average	05	25	25	20

Coastal Canterbury, east Otago

Probabilities are assigned in three categories: above average, near average, and below average.

- Temperatures are about equally likely to be above average (50% chance) or near average (45% chance). Warmer than average coastal SSTs will likely delay the seasonal transition to cooler temperatures, although a cold snap is possible during the first half of April.
- Rainfall totals are most likely to be near normal (45% chance). Frequent onshore wind flows may contribute to more days with light rain, drizzle, and cloud.
- An elevated chance for atmospheric rivers and ex-tropical cyclone activity may increase the risk for heavy rainfall events later in March or early in April.
- Soil moisture levels and river flows are most likely to be near normal (50% chance).

The full probability breakdown is:

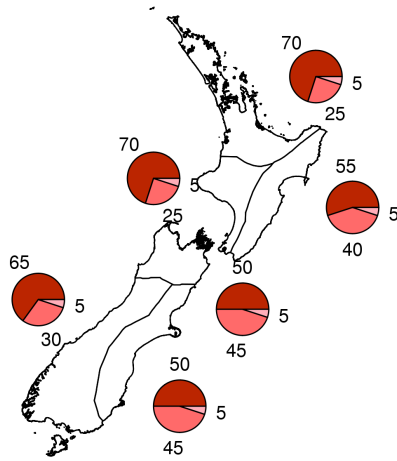
	Temperature	Rainfall	Soil moisture	River flows
Above average	50	30	25	25
Near average	45	45	50	50
Below average	05	25	25	25

Graphical representation of the regional probabilities

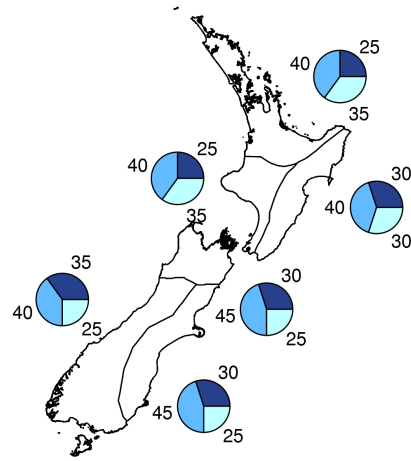
Outlook for March - May 2022



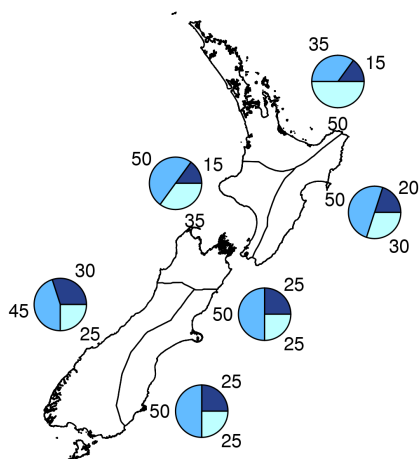
Air Temperature



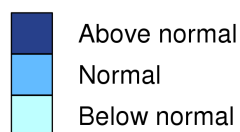
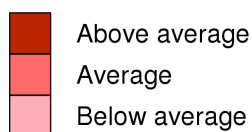
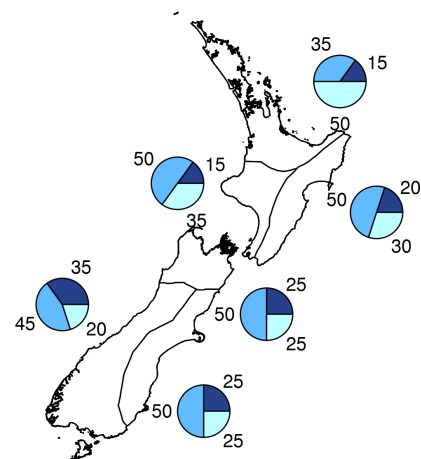
Rainfall



Available Soil Moisture



River Flows



Background

The NINO3.4 Index anomaly (in the central Pacific) over the last month (through 27 February) was -0.60°C , near the La Niña threshold. The February monthly Southern Oscillation Index (SOI) was $+0.7$ and the December-February three-month average SOI was $+0.8$, the latter near the La Niña threshold. Overall, this indicates that the ongoing La Niña event is past its peak.

In the subsurface equatorial Pacific, a warm pool of water continued to eastward and progressed closer to the surface during February. For the first time since last winter, conditions in the upper 300 m of the equatorial Pacific were generally warmer than average.

This will likely be associated with a transition from La Niña to ENSO neutral between March-May. Between June-August, there is a 60% chance for ENSO neutral conditions. During September-November, ENSO neutral is favoured at a 43% chance. The so-called Northern Hemisphere “spring predictability barrier” could impact the long-range accuracy of ENSO forecasts over the next month or two.

During February, convective forcing focused over the eastern Indian Ocean, Maritime Continent, and western Pacific. As of the end of February, forcing was firmly entrenched over the Maritime Continent, although pulses of Madden-Julian Oscillation (MJO) and Kelvin Wave activity are expected to move across the Pacific from late March into early April. This is aligned with MJO phases 4-5-6 during late March to phases 7-8-1 during April. This may increase the odds for regional tropical cyclone activity and may also invigorate the sub-tropical jet stream. Weather-sensitive groups should remain aware of the potential for extreme events in New Zealand.

For New Zealand, phase 5 has historically featured above or well above normal rainfall during March. Phases 4 and 6 were wetter in the North Island but drier in the South Island. During April, phases 7-8-1 tended to be associated with more southerly winds – a deviation from La Niña’s typical patterns. Historically, temperatures were above or well average during phases 5+6 in March. A notable cold and active spell of weather could occur during the first half of April if the MJO reaches phases 7-8-1.

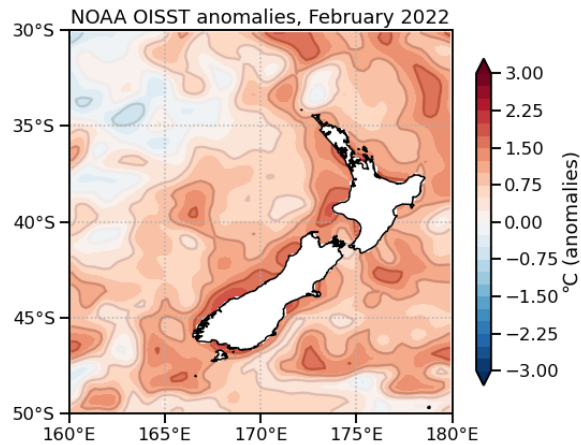
This event may also destructively interfere with and weaken the La Niña.

The Southern Annular Mode (SAM) was predominantly positive once again during February, aside from the period when Cyclone Dovi made landfall. In the coming weeks, the SAM is forecast to spend more time in its positive phase (than negative), likely continuing to limit the number of southerly fronts.

New Zealand’s coastal water temperature anomalies decreased in all regions during February except for the west of the South Island. This likely means that the peak of the marine heatwave (MHW) has passed, although climate model guidance remains consistent in its expectation for warmer than average conditions to carry on through autumn. Warmer than average coastal sea temperatures will likely delay the seasonal transition to cooler temperatures around the country. Enhanced baroclinicity in the New Zealand region, as a result of southerly air masses clashing with the remnant MHW, may result in more frequent cyclogenesis (low pressure formation) in the coming months, particularly later in autumn.

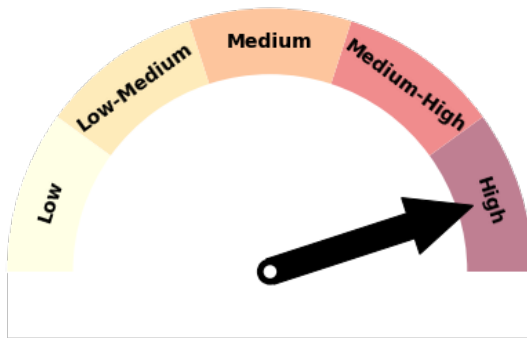
*NZ coastal SST anomalies
(through 27 February)*

North NI	1.29°C
West NI	1.32°C
East NI	1.03°C
North SI	1.13°C
West SI	1.58°C
East SI	1.28°C



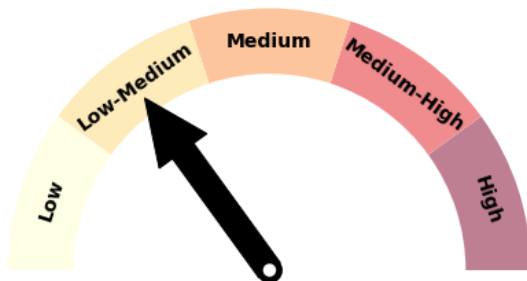
Forecast Confidence

Temperature



Forecast confidence for temperatures is high. The continuation of marine heatwave and La Niña conditions at the start of autumn is expected to have an upward influence on air temperatures and humidity, likely delaying the seasonal transition to cooler temperatures. Most of the climate models that NIWA surveys indicate a warmer than average March-May.

Rainfall



Forecast confidence for rainfall is low to medium. With rainfall patterns still likely being strongly influenced by tropical cyclone activity during the first half of autumn, there is more uncertainty than normal for New Zealand. Overall, the country should remain prepared for extremes – both on the wet and dry side of the meteorological spectrum.

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Notes to reporters and editors

1. NIWA's outlooks indicate the likelihood of climate conditions being at, above, or below average for the season as a whole. They are not 'weather forecasts' as it is not possible to forecast precise weather conditions three months in advance.
2. The outlooks are the result of the expert judgment of NIWA's climate scientists. They take into account observations of atmospheric and ocean conditions and output from global and local climate models. The presence of El Niño or La Niña conditions and the sea surface temperatures around New Zealand can be useful indicators of likely overall climate conditions for a season.
3. The outlooks state the probability for above average conditions, near average conditions, and below average conditions for rainfall, temperature, soil moisture, and river flows. When a particular probability reaches or exceeds 60%, we conclude it is "very likely".
4. This three-way probability means that a random choice would be correct only 33 per cent (or one-third) of the time. It would be like randomly throwing a dart at a board divided into three equal parts, or throwing a dice with three numbers on it.
5. Where probabilities are within 5% of one another, the term "about equally" is used.
6. All outlooks are for the three months as a whole. There will inevitably be wet and dry days, and hot and cold days, within a season. The exact range in temperature and rainfall within each of the three categories varies with location and season. However, as a guide, the "near average" or middle category for the temperature predictions includes deviations up to $\pm 0.5^{\circ}\text{C}$ for the long-term mean, whereas for rainfall the "near normal" category lies between 80 per cent and 120 per cent of the long-term mean.
7. The seasonal climate outlooks are an output of *predicting climate variability and change*, a scientific research programme supported through NIWA's Strategic Science Investment Funds.
8. The forecast confidence meter for temperature and rainfall represents the expert judgement of NIWA's climate scientists. It aims to synthesize various forecast elements, such as global and local climate drivers, in order to clearly communicate forecaster confidence.

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