



May – July 2015

Issued: 1 May 2015

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NIWA Outlook: May-July 2015

Overview

Warming of the sea surface across the equatorial Pacific Ocean continued in April 2015, building upon the warmer than normal waters observed in previous months. These patterns, in combination with weaker trade winds and increasing cloudiness near, and to the east of, the International Date Line are consistent with weak El Niño conditions. However, further coupling between the ocean and atmosphere is needed for El Niño to become established.

The international guidance monitored by NIWA indicates the probability of El Niño formally commencing over the next three months (May – July 2015) is close to 80% (up from 60% last month). Nonetheless, it is important to recognize that the skill of ENSO forecasts issued at this time of year during the northern hemisphere spring tends to be lower than at other times of the year (the so-called “spring predictability barrier”). NIWA’s National Climate Centre will maintain a close watch on the developing conditions.

During May - July 2015, higher than normal mean sea level pressures are expected over the New Zealand region, extending across the Tasman Sea. Lower than normal mean sea level pressures are expected well south of the country. This circulation pattern is likely to produce more south-westerly quarter wind flows than normal.

Outlook Summary

May - July 2015 temperatures are most likely (35-50% chance) to be average or above average for all regions of New Zealand, although cold snaps and frosts can be expected in some parts of the country as autumn advances into winter. Coastal waters are forecast to be in the near average to above average temperature range.

May - July 2015 rainfall is equally likely (40% chance) to be normal or below normal for the east of the South Island, and most likely (40-50% chance) to be near normal for all remaining regions of the country.

May - July 2015 soil moisture levels and river flows are about equally likely (35-40% chance) to be in the near normal or above normal range in the west of the North Island and the west of the South Island. Soil moisture levels and river flows are most likely (45-50% chance) to be in the near normal range in the east of the North Island and the north of the South Island. In the north of the North Island, soil moisture levels and river flows are about equally likely (35-40% chance) to be in the near normal or below normal range. Finally, in the east of the South Island, soil moisture levels are about equally likely (40-45% chance) to be in the below normal or near normal range, and river flows are most likely (50% chance) to be in the below normal range.

Regional predictions for the May to July season

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 about equally likely (40-45% chance) to be in the above average or near average range.
- Rainfall totals are about most likely (45% chance) to be in the near normal range.
- Soil moisture levels and river flows are about equally likely (35-40% chance) to be in the near normal or below normal range.

Other outcomes cannot be excluded. The full probability breakdown is:

	Temperature	Rainfall	Soil moisture	River flows
Above average	45	25	25	20
Near average	40	45	40	40
Below average	15	30	35	40

Central North Island, Taranaki, Wanganui, Manawatu, Wellington

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

- Temperatures are most likely (45% chance) to be in the above average range.
- Rainfall totals are most likely (45% chance) to be in the near normal range.
- Soil moisture levels and river flows are about equally likely (35-40% chance) to be in the near normal or above normal range.

The full probability breakdown is:

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

Gisborne, Hawke's Bay, Wairarapa

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

- Temperatures are most likely (45% chance) to be in the above average range.
- Rainfall totals are most likely (50% chance) to be in the near normal range.
- Soil moisture levels and river flows are most likely (45-50% chance) to be in the near normal range.

The full probability breakdown is:

	Temperature	Rainfall	Soil moisture	River flows
Above average	45	20	20	20
Near average	35	50	50	45
Below average	20	30	30	35

Nelson, Marlborough, Buller

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

- Temperatures are about equally likely (35-40% chance) to be in the near average or above average range.
- Rainfall totals are most likely (45% chance) to be in the near normal range.
- Soil moisture levels and river flows are most likely (45% chance) to be in the near-normal range.

The full probability breakdown is:

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

West Coast, Alps and foothills, inland Otago, Southland

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

- Temperatures are about equally likely (35-40% chance) to be in the above average or near average range.
- Rainfall totals are most likely (45% chance) to be in the near normal range.
- Soil moisture levels and river flows are about equally likely (35-40% chance) to be in the near normal or above normal range.

The full probability breakdown is:

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

Coastal Canterbury, east Otago

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

- Temperatures are about equally likely (40-45% chance) to be in the above average or near average range.
- Rainfall totals are equally likely (40% chance) to be in the near normal or below normal range.
- Soil moisture levels are about equally likely (40-45% chance) to be in the below normal or normal range.
- River flows are most likely (50%) to be in the below normal range.

The full probability breakdown is:

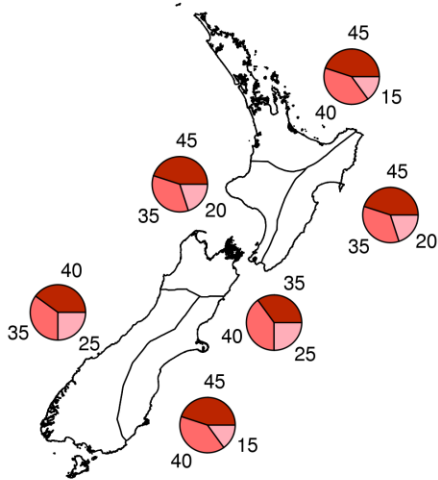
	Temperature	Rainfall	Soil moisture	River flows
Above average	45	20	15	15
Near average	40	40	40	35
Below average	15	40	45	50

Graphical representation of the regional probabilities

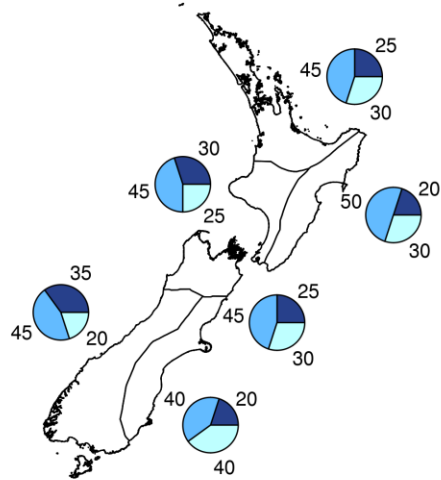
Outlook for May - July 2015



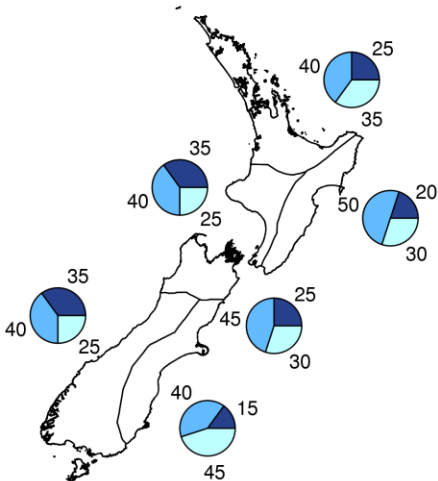
Air Temperature



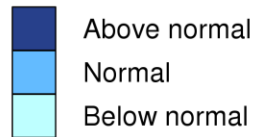
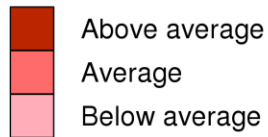
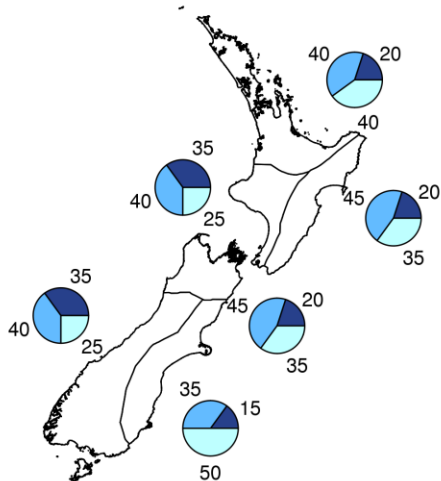
Rainfall



Available Soil Moisture



River Flows



Background

Sea surface temperature anomalies across the tropical Pacific increased during April 2015, with warm anomalies in excess of +1 °C extending from about 150°E to the South American coast. Much warmer than normal SSTs were also observed across much of the north-eastern Pacific Basin. Sub-surface ocean temperature anomalies in the eastern Pacific (around 140°W) at about 150m depth have also increased from last month and range up to 5°C above normal. These warm anomalies have propagated eastwards over the past 3 to 4 months.

The warmer than normal sea surface temperatures in the equatorial Pacific, in combination with weaker trade winds and increasing cloudiness (also linked to more showers and thunderstorm activity than normal) near, and to the east of, the International Date Line are consistent with weak El Niño conditions. However, further coupling between the ocean and atmosphere will need to occur for El Niño to become established.

International guidance indicates the chances for conventional El Niño thresholds to be crossed during May – July 2015 are about 80% (up from 60% last month). Nonetheless, it is important to recognize that the skill of ENSO forecasts issued at this time of year during the northern hemisphere spring tends to be lower than at other times of the year (the so-called “spring predictability barrier”). NIWA’s National Climate Centre will maintain a close watch on the developing conditions.

For New Zealand, El Niño events are typically (but not always) associated with stronger and/or more frequent south-westerly quarter winds. Such a climate pattern typically leads to drier conditions in eastern and northern areas and more rain in western areas of the country.

The monthly sea surface temperature anomaly for New Zealand was +0.5°C in April. While the large region of warmer-than-normal water around New Zealand that was observed during March has contracted, local Argo float data still indicate that patches of warmer-than-normal waters extend to a depth (~1000m) north of New Zealand and south of Tasmania. Ocean models generally suggest that coastal waters will remain in the near normal to above normal range around the country for the May – July 2015 period.

To find out more about normal conditions for this outlook period, refer to [NIWA’s website](#).

For comment, please contact

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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'. It is not possible to forecast precise weather conditions three months ahead of time.
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 a useful indicator 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. For example, for winter (June–July–August) 2007, for all the North Island, we assigned the following probabilities for temperature:
 - Above average: 60 per cent
 - Near average: 30 per cent
 - Below average: 10 per centWe therefore concluded that above average temperatures were 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. An analogy with coin tossing (a two-way probability) is not correct.
5. A 50 per cent 'hit rate' is substantially better than guesswork, and comparable with the skill level of the best overseas climate outlooks. See, for example, analysis of global outlooks issued by the International Research Institute for Climate and Society based in the US published in the Bulletin of the American Meteorological Society (Goddard, L., A. G. Barnston, and S. J. Mason, 2003: Evaluation of the IRI's "net assessment" seasonal climate forecasts 1997–2001. *Bull. Amer. Meteor. Soc.*, 84, 1761–1781).
6. Each month, NIWA publishes an analysis of how well its outlooks perform. This is available online and is sent to about 3500 recipients of NIWA's newsletters, including many farmers. See www.niwa.co.nz/our-science/climate/publications/all/cu
7. 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 approximately 80 per cent and 115 per cent of the long-term mean.
8. The seasonal climate outlooks are an output of a scientific research programme, supplemented by NIWA's Capability Funding. NIWA does not have a government contract to produce these outlooks.

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