



**May – July 2014**

Issued: 2 May 2014

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## NIWA Outlook: May-July 2014

### Overview

For the coming three months as a whole, mean sea level pressures are expected to be slightly lower than normal over New Zealand with higher than normal pressures to the south-east and lower than normal pressures to the north of the country. These pressure patterns are expected to produce mixed wind flows over New Zealand with perturbed conditions from time to time.

Sea surface temperatures are expected to be near average for the coming three months around New Zealand.

ENSO-neutral conditions (neither El Niño nor La Niña) continued in the equatorial Pacific Ocean in April 2014. Above normal sea surface temperatures along the equator now cover a significant part of the central and far eastern Pacific; and these warm anomalies are consistent with developing El Niño conditions. International guidance indicates that ENSO-neutral conditions are the most likely outcome for May-July 2014. However, following this period El Niño appears increasingly likely with 11 of the 14 models monitored by NIWA predicting El Niño conditions over August-Oct 2014.

## Outlook Summary

May–July temperatures are most likely (50% chance) to be average for the west of the South Island, above average (50% chance) for the east of the North Island, and average or above average (40-45%) for all remaining regions of New Zealand. Cold snaps and frosts can still be expected in some parts of the country as autumn advances into winter.

May–July rainfall totals are equally likely (40% chance) to be normal or above normal in the east of the South Island, and most likely (40-50%) to be in the near-normal range for all remaining regions.

May–July soil moisture levels are most likely (40-45%) to be normal or below in the north of the North Island and west of the South Island, likely (35-40% chance) to be normal or above normal in the north of the South Island, and most likely (45-50%) to be normal for all remaining regions.

May–July river flows are equally likely (40% chance) to be normal or below normal in the north of the North Island and west of the South Island, likely (35-40% chance) to be normal or above normal in the east of the North Island and the north of the South Island, and most likely (50% chance) to be above normal in the east of the South Island. Finally, river flows are most likely (45% chance) to be normal in the west of the North Island.

## Regional predictions for the April to June 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 likely (40-45% chance) to be in the average or above average range.
- Rainfall totals are likely (45% chance) to be in the near normal range.
- Soil moisture levels and river flows are equally likely (40% chance) to be in the normal or below normal range.

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

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

### Central North Island, Taranaki, Wanganui, Manawatu, Wellington

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

- Temperatures are equally likely (45% chance) to be in the average or above average range.

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

The full probability breakdown is:

	Temperature	Rainfall	Soil moisture	River flows
Above average	45	20	25	25
Near average	45	50	45	45
Below average	10	30	30	30

### **Gisborne, Hawke's Bay, Wairarapa**

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

- Temperatures are most likely (50% 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 most likely (45%) to be in the near normal range.
- River flows are equally likely (40%) to be in the near normal or above normal range.

The full probability breakdown is:

	Temperature	Rainfall	Soil moisture	River flows
Above average	50	35	35	40
Near average	40	45	45	40
Below average	10	20	20	20

### **Nelson, Marlborough, Buller**

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

- Temperatures are equally likely (45% chance) to be in the near average or above average range.
- Rainfall totals are likely (40% chance) to be in the near normal range.
- Soil moisture levels and river flows are 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	45	40	40	40
Below average	10	30	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 most likely (50% chance) to be in the near average range.
- Rainfall totals are most likely (50% chance) to be in the normal range.
- Soil moisture levels and river flows are most likely (40-45% chance) to be in the normal or below normal range.

The full probability breakdown is:

	Temperature	Rainfall	Soil moisture	River flows
Above average	30	15	15	20
Near average	50	50	45	40
Below average	20	35	40	40

### **Coastal Canterbury, east Otago**

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

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

The full probability breakdown is:

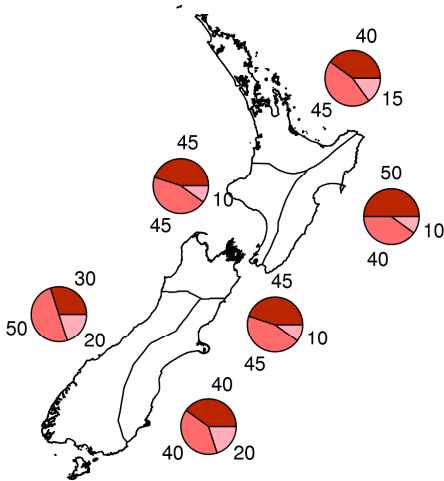
	Temperature	Rainfall	Soil moisture	River flows
Above average	40	40	40	50
Near average	40	40	50	40
Below average	20	20	10	10

Graphical representation of the regional probabilities

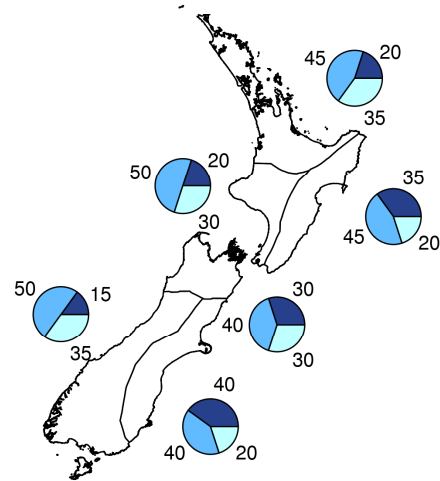
Outlook for May - July 2014



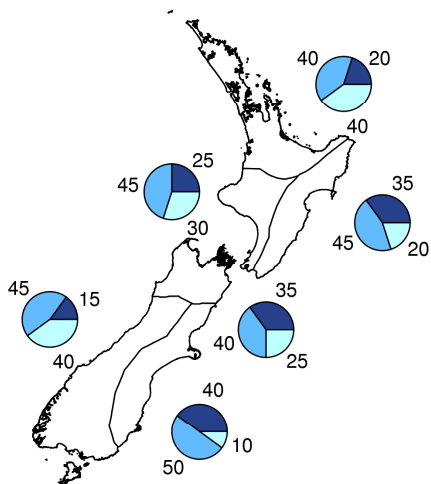
**Air Temperature**



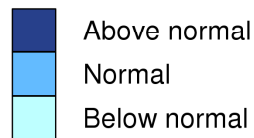
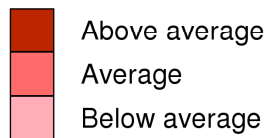
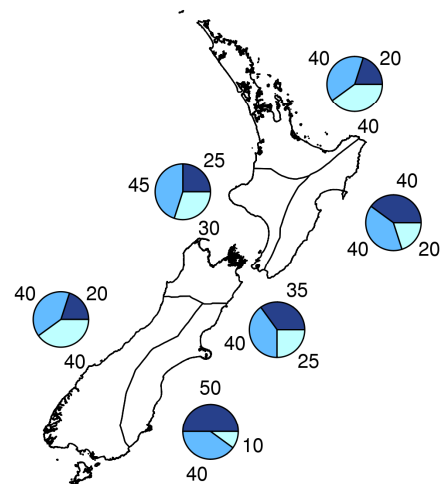
**Rainfall**



**Available Soil Moisture**



**River Flows**



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## Background

The equatorial Pacific Ocean continued in a neutral ENSO-state (neither El Niño nor La Niña) in April 2014. Although above normal sea surface temperatures (SSTs) along the equator now cover a significant part of the central and far eastern Pacific. These warm anomalies have been strengthening over the past two months and are consistent with the development of an El Niño. The NIWA April estimate for the Southern Oscillation Index (SOI) is +0.7 (estimated at 28-April). This brings the 3-month February-March-April value to -0.4. International guidance indicates that ENSO-neutral conditions are the most likely outcome for May-July 2014. Following this period El Niño appears increasingly likely with 11 of the 14 models monitored by NIWA predicting El Niño conditions over August-October 2014.

Waters surrounding New Zealand are generally warmer than average at the end of April, particularly in the south-western Tasman Sea and well east of the country. The monthly SST's anomaly for New Zealand was approximately +0.8°C for April. SSTs have now been warmer than normal on average around New Zealand for 16 consecutive months having reached a peak in December 2013 (+1°C). For the coming three months SST's are expected to be near average around New Zealand.

At the end of April 2014, soil moisture levels have rebounded across much of New Zealand following higher than normal rainfall totals across many parts of the North Island and the upper South Island. An intense low pressure system brought widespread heavy rain and high winds to much of New Zealand on and around 17 April. The storm was the result of the merger of ex Tropical Cyclone Ita and a separate mid-latitude cyclone travelling east across the Tasman Sea. Nonetheless, soil moisture levels in parts of the Northland, Wanganui-Manawatu, Otago and Southland Regions have continued well below normal relative to the time of year.

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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](http://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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