

September–November 2013

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Hold mouse over links and press **ctrl + left click** to jump to the information you require:

[Overview](#)**Regional predictions for the next three months:**[Northland, Auckland, Waikato, Bay of Plenty](#)[Central North Island, Taranaki, Wanganui, Manawatu, Wellington](#)[Gisborne, Hawke's Bay, Wairarapa](#)[Nelson, Marlborough, Buller](#)[West Coast, Alps and foothills, inland Otago and Southland](#)[Coastal Canterbury, east Otago](#)[Background](#)[Contacts](#)[Notes to reporters and editors](#)

NIWA Outlook: September–October–November 2013

Overview

The equatorial Pacific Ocean as a whole remains in a neutral state (neither El Niño nor La Niña), although colder than normal (La Niña-like) sea temperatures persist in a shallow surface layer in the eastern equatorial Pacific. International guidance indicates that ENSO-neutral is the most likely outcome for the next three months (September–November).

In the New Zealand region, higher pressures than normal are forecast south of the country, while lower pressures than normal are expected from Queensland eastwards. This circulation pattern is expected to produce more northerlies or north-westerlies affecting the North Island, and a weaker than normal westerly flow over the South Island.

After a very warm winter, the coming spring is likely to have near or above average temperatures across the country. However, frosts and snow conditions may occur in some areas from time to time in early spring. Sea surface temperatures are forecast to be above the climatological average for the coming three months around New Zealand.

Outlook Summary

September to November temperatures are most likely (50% chance) to be above average in the east of the North Island and the north of the South Island, compared with near average (30% chance) or

below average (20% chance). In all other regions, spring temperatures are equally likely (40% chance) to be above average or near average.

Rainfall totals over the September – November period as a whole are equally likely (40% chance) to be in the near normal or above normal range for the north and west of the North Island and for Nelson-Marlborough, compared with below normal (20% chance). In the east of the North Island, and west of the South Island, spring rainfall totals are more likely (35-40%) to be in the near normal or below normal ranges than in the above normal range (25%). In the east of the South Island, near normal rainfall is slightly more likely (40% chance) than other categories.

Soil moisture levels are most likely to be normal or below normal (35-40% chance in each category) in the east of the North Island, near normal (40% chance) in the north and west of the South Island, and normal or above normal (35-40% chance) in other regions.

River flows are most likely to be normal or below normal (35-40% chance in each category) in the east of the North Island, slightly more likely to be normal or above normal (35%) in the north of the North Island, and most likely near normal (40-45%) in all other regions.

Regional predictions for the September to November 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 equally likely (40% chance) to be in the near average or above average range.
- Rainfall totals are equally likely (40%) to be in the near normal or above normal range.
- Soil moisture levels are more likely (35-40%) to be in the near normal or above normal range than below normal (25%).
- River flows are equally likely (35%) to be in the near normal or above normal range.

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

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

Central North Island, Taranaki, Wanganui, Manawatu, Wellington

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%) to be in the near normal or above normal range.
- Soil moisture levels are more likely (35-40%) to be in the near normal or above normal range than below normal (25%).
- River flows are slightly more likely (40%) to be in the near normal range than either of the other two categories.

The full probability breakdown is:

	Temperature	Rainfall	Soil moisture	River flows
Above average	40	40	35	30
Near average	40	40	40	40
Below average	20	20	25	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, soil moisture levels, and river flows are all more likely (35-40%) to be in the near normal or below normal range than above normal (25%).

The full probability breakdown is:

	Temperature	Rainfall	Soil moisture	River flows
Above average	50	25	25	25
Near average	30	40	40	40
Below average	20	35	35	35

Nelson, Marlborough, Buller

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 equally likely (40%) to be in the near normal or above normal range.
- Soil moisture levels and river flows are both most likely (45% chance) to be in the near normal range.

The full probability breakdown is:

	Temperature	Rainfall	Soil moisture	River flows
Above average	50	40	30	30

Near average	30	40	45	45
Below average	20	20	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 equally likely (40% chance) to be in the near average or above average range.
- Rainfall totals are more likely (35-40%) to be in the near normal or below normal range than above normal (25%).
- Soil moisture levels are most likely (45%) to be in the near normal range.
- River flows are slightly more likely (40%) to be in the near normal range than either of the other two categories.

The full probability breakdown is:

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

Coastal Canterbury, east Otago

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

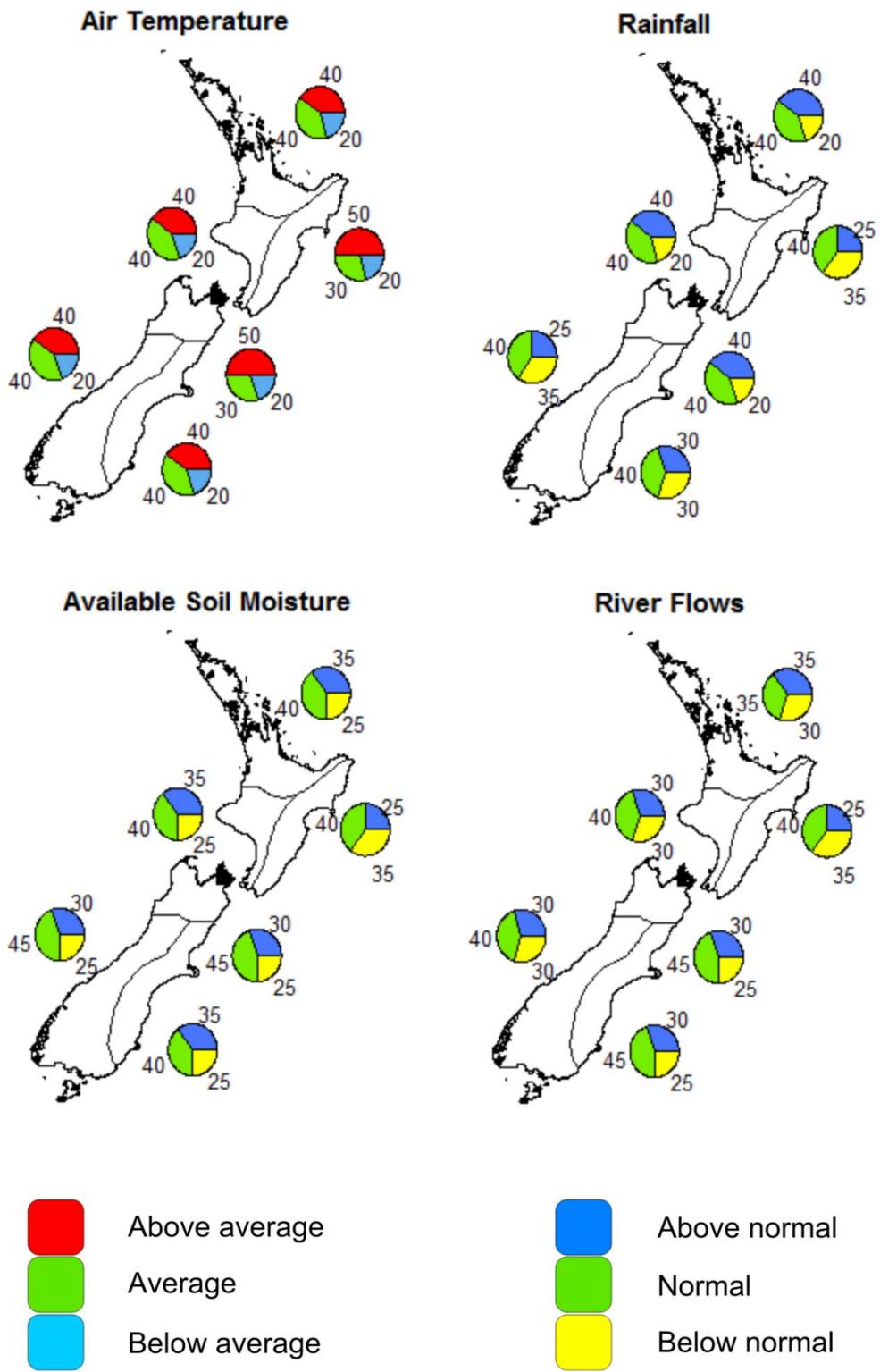
- Temperatures are equally likely (40% chance) to be in the near average or above average range.
- Rainfall totals are slightly more likely (40%) to be in the near normal range than either of the other two categories.
- Soil moisture levels are more likely (35-40%) to be in the near normal or above normal range than below normal (25%).
- River flows are most likely (45%) to be in the near normal range.

The full probability breakdown is:

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

Graphical representation of the regional probabilities

Outlook for September-November 2013



The Southern Oscillation Index for August is approximately 0.0, with a 3-month June-August estimate of +0.7. Sea surface temperatures remain cooler than normal in the eastern equatorial Pacific, but warmer than normal to the west. However, apart from this very shallow surface layer, equatorial ocean temperatures are up to +1°C warmer than normal down to a depth of about 150m in the Pacific. Taking into account the overall pattern and magnitude of sea temperatures, tropical convection and equatorial winds, the assessment is that ENSO-neutral conditions (neither El Niño nor La Niña) currently prevail. Climate models indicate this neutral state is very likely (about 80% chance) to continue through spring 2013. Over summer 2013-14, international model guidance favours a continuation of neutral ENSO conditions (about 70% chance), with less likely possibilities of La Niña (about 20%) or El Niño (about 10%).

Sea surface temperatures around New Zealand have been warmer than normal for the past eight months. There has been colder water in the north Tasman over this period, but there has been a warming tendency for several months as a region of very warm water to the northeast of New Zealand propagates into the Tasman Sea.

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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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