

# Weather and climate at your doorstep: from 3 hours to 3 months ahead

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### Preparing for what's to come

Managing weather and climate in any region can be a challenge; the more variable the climate, the greater the challenge. Detailed weather forecasts can provide invaluable information for planning for the week ahead, while climate outlooks and tracking the El Niño-Southern Oscillation (ENSO) can tell you if we're likely to be in wet and humid year or a dry and warm one.

The Bureau of Meteorology has a wealth of information ranging from detailed weather forecast, historical climate data, trends, water and flood forecasts, through to climate outlook information for the season ahead. In this article we'll highlight a number of useful tools to assist with managing and preparing for what's in store:

**MetEye:** forecast mapping tool

**Climate outlooks:** rainfall and temperature for the season ahead

**ENSO tracker:** risk of El Niño or La Niña

### MetEye: weather forecasts at your doorstep

Australians anywhere can view maps of seven-day weather forecasts, following completion of the nationwide rollout of the Bureau's Next Generation Forecast and Warning System.

The MetEye mapping tool allows people to view the data behind the general weather forecasts in greater detail. The forecast maps are created by the Bureau's meteorologists who use sophisticated tools and techniques to refine forecasts for local conditions.

As well as simple overviews of the day's forecast, you can 'pick and choose' from a host of detailed meteorological data – from three-hourly temperature and rainfall parameters, to wind, humidity, significant weather events, and nautical features such as wave heights and sea surface temperatures.

With the same intuitive logic as the best online mapping tools, MetEye lets you pan and zoom to specific locations, save your favourite locations and play animations of unfolding weather events. The forecasts

are grid-based which allows anyone to view detailed weather forecast information for each individual grid (size 3 to 6 km). Simply point and click at your location.

MetEye also includes a number of practical features for risk management including probabilities of rainfall (10, 25 and 50%) as well as the chance of any rain. It includes 3-hourly forecasts out to 7 days for rainfall, temperature, wind and humidity to name a few of the variables. You can also view current observations, overlay river conditions and radar. This is only the beginning for MetEye with more features to come!

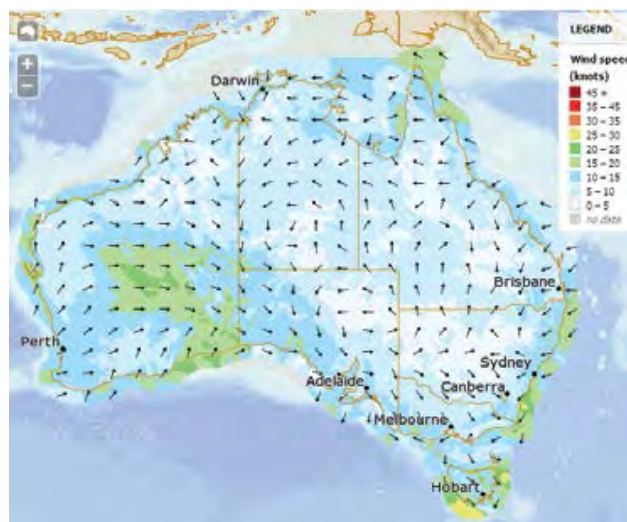


Figure 1. MetEye 3-hourly wind forecast for Australia (Bureau of Meteorology).

### Climate outlooks: rain and temperature for the season ahead

We all find the seven-day forecast useful when planning our week's activities, work events, holidays and travel. But for anyone managing land and crops, knowledge of whether this year is going to be a wet and humid or dry and warm can spell the difference between a good year and a bad one.

Fortunately, the Bureau of Meteorology is providing an increasingly detailed array of climate outlooks, which apply some of the world's most sophisticated atmospheric and ocean modelling to assess how Australia's rainfall and temperatures may evolve over the next three months.

A new outlook service was launched back in 2013 providing a probabilistic outlook for rainfall, maximum and minimum temperature for the three months ahead, as well as the first two individual months. The outlook service is an interactive tool and allows for all the familiar online mapping tool options (panning, zooming etc.). You can point-and-click at your location of interest to see what your odds of having a wetter or drier season may be, and the odds of receiving a certain amount of rainfall for the period. Seasonal climate outlooks are not weather forecasts. Rather than say it **will** be warm and dry, seasonal outlooks say it is **likely** to be warm and dry. This can provide valuable information for the season ahead, particularly when heading into an El Niño or La Niña which often results in drier or wetter conditions across large parts of Australia.

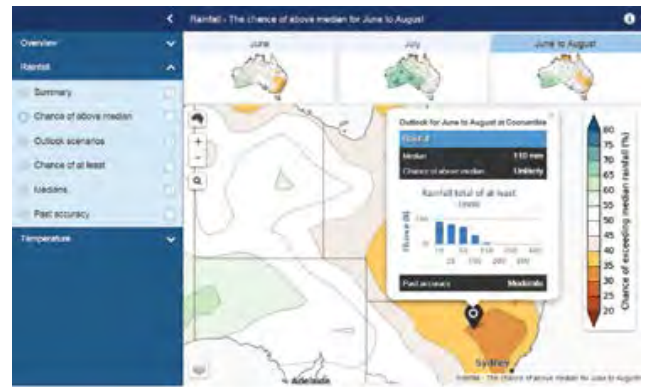
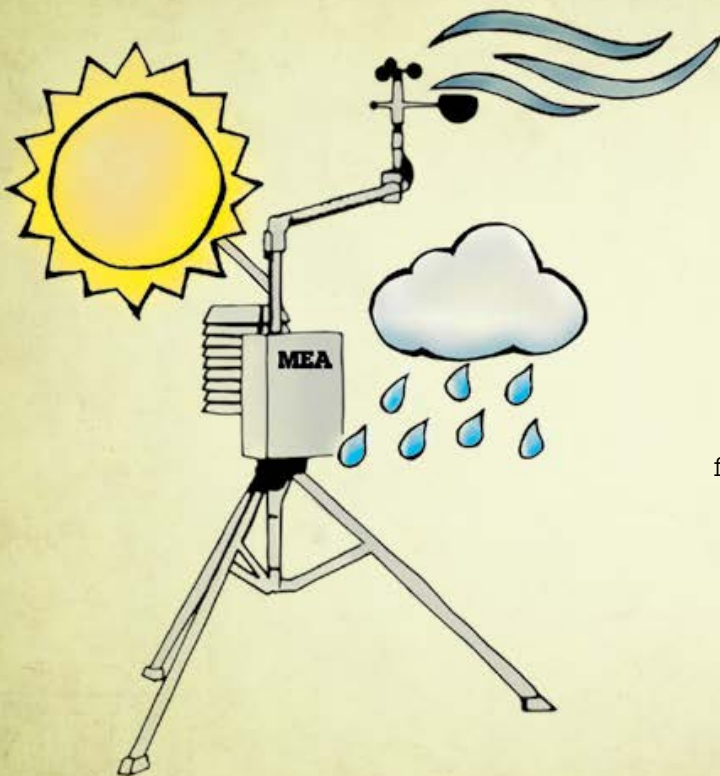


Figure 2. Rainfall outlook for June – August (Bureau of Meteorology).



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### ENSO tracker: status and risk of El Niño or La Niña

El Niño and its opposite phase, La Niña, are the result of periodic changes in the temperature of the tropical Pacific Ocean and the atmosphere above it, as part of a natural cycle known as the El Niño – Southern Oscillation. In the case of El Niño, these changes are associated with a warming of the central and eastern tropical Pacific Ocean, whereas La Niña events are a result of cooling of these same areas.

La Niña events can also have significant outcomes, with the most recent **double-dip La Niña** in 2010–12 causing widespread flooding over much of eastern Australia.

An early indication that an El Niño or La Niña could be developing can give those most susceptible to our variable climate time to prepare – potentially preventing or mitigating financial losses and other adverse consequences.

An El Niño (or La Niña) and its impacts don't happen overnight; it's not like flicking a switch. The transition from normal or 'neutral' conditions to El Niño should be considered more as a continuum. Changes happen gradually, usually over a period of several months, and can fluctuate back and forth over shorter time scales.

The ENSO tracker is based upon a comprehensive analysis by Bureau climatologists, including the **survey** of eight international climate models as well as current conditions for key atmospheric and ocean indicators of El Niño. It provides a simple and convenient snapshot of the current status of ENSO, and the likelihood of an ENSO event developing later in the year.

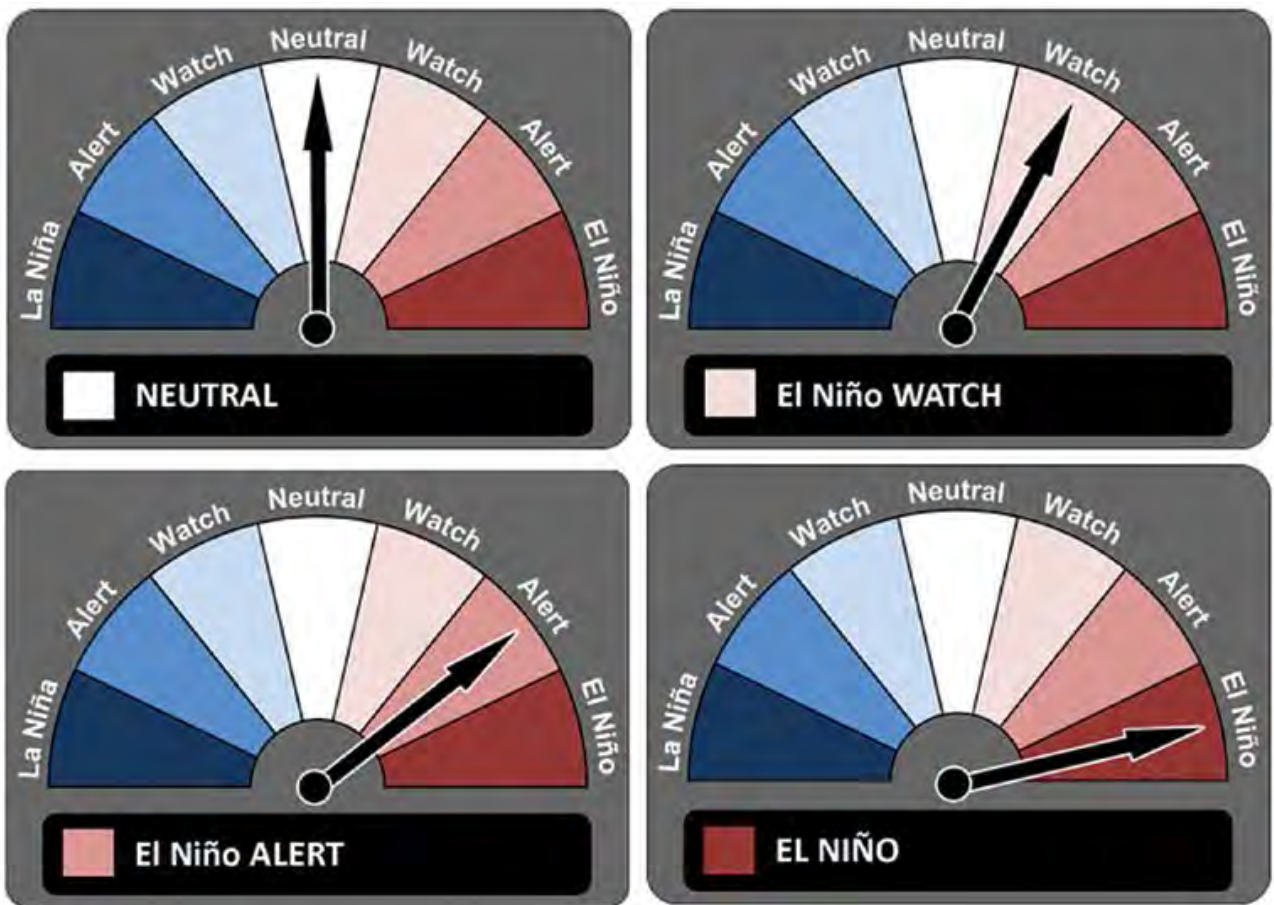


Figure 3. ENSO tracker showing four key states: NEUTRAL, El Niño WATCH – double the normal likelihood of El Niño (or La Niña), El Niño ALERT – at least a 70% chance of El Niño and the final phase 'El Niño' when the event fully develops (Bureau of Meteorology).