

# Queensland Climate Change Centre of Excellence Monthly Climate Statement—March 2012

## Key messages

- La Niña conditions persisted in February
- Probability of above median rainfall higher than normal while La Niña conditions persist
- La Niña conditions may now be breaking down
- ENSO-neutral conditions anticipated during autumn
- Outlook for rainfall uncertain for autumn
- Risk of tropical cyclone activity remains

## Findings for March 2012

The Queensland Climate Change Centre of Excellence (the Centre) considers that, at this time of year, the Southern Oscillation Index (SOI) or other measures of the El Niño-Southern Oscillation (ENSO) are less reliable as indicators of rainfall for the upcoming autumn season. Although there are signs that the current La Niña pattern may be breaking down, **there currently remains an increased probability of above-median rainfall for Queensland.**

The Centre's understanding is based on the current and projected state of the ENSO phenomenon and on factors which alter the impact of ENSO on Queensland rainfall (e.g. the Pacific Decadal Oscillation (PDO)). As discussed in last month's Climate Statement, this time of year is known as the 'autumn predictability gap' when the ENSO signal tends to be less persistent and El Niño or La Niña events tend to break down. It is therefore not surprising to see, during February and early March, indications that the current La Niña pattern may be breaking down.

As at 1 March 2012, the Centre notes that:

- The [SOI](#), a key atmospheric measure of ENSO, was near-neutral in February (+0.8). However, when averaged over the last two months or three months the index value has been quite positive (January to February: +5.2; December to February: +10.9).
- Observed [sea surface temperatures](#) in the key Niño 3.4 and Niño 4 regions remain quite cool, despite rapid warming during February.

So whilst current values of both the SOI and sea-surface temperatures have trended toward ENSO-neutral

conditions, a La Niña pattern still lingers in the Pacific. The effects of this pattern were clearly felt in eastern Australia during February with widespread rainfall in New South Wales, South Australia and parts of Queensland and Victoria. The Bureau of Meteorology, in its latest '[ENSO Wrap-Up](#)', state that the current La Niña event is nearing its end, and that ENSO-neutral conditions are likely through autumn. The Centre also advised last month that El Niño and La Niña events tend to break down at this time of year.

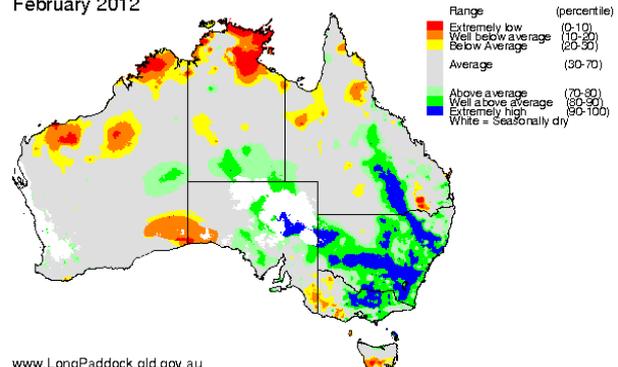
The Centre will continue to closely monitor the SOI and sea-surface temperatures for signs of the current trend toward ENSO neutral conditions continuing, but re-affirms advice that this period is known as the 'autumn predictability gap' where seasonal forecasts for coming months are least reliable.

### The autumn predictability gap

El Niño and La Niña events tend to form in winter or spring, persist through summer and break down in autumn. Seasonal outlooks are based on the persistence of these events and their associated rainfall and climate patterns. Seasonal outlooks are therefore least reliable leading into autumn when El Niño or La Niña events tend to break down. This period is known as the 'autumn predictability gap'.

La Niña conditions coupled with a cool PDO, as experienced this summer, tend to be associated with above average summer rainfall and enhanced tropical cyclone activity in the Coral Sea. Most of Australia, including parts of western and southern Queensland, has experienced a wetter than average summer to date. So far this summer no tropical cyclones have made landfall in Queensland although this remains a possibility during the remaining two months (March and April) of the cyclone season.

Rainfall Relative to Historical Records  
February 2012



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## Rainfall outlook

There are various approaches used to provide rainfall outlooks. These approaches tend to differ in terms of the components of the climate system that are considered and, for this reason, each approach may convey a different outlook, particularly for specific locations.

The Centre produces two statistical climate risk assessment schemes. They are:

- the experimental [SPOTA-1 scheme](#), which integrates sea-surface temperature information, including indices of ENSO and the PDO, and
- the [SOI phase scheme](#), which relies solely on the SOI, an atmospheric measure of ENSO.

The Centre's experimental [SPOTA-1 scheme](#) provides long-lead probabilities of summer (November to March) rainfall for Queensland from mid-April through to mid-November each year. The sea-surface temperature gradient (west to east) across the South Pacific Convergence Zone (i.e. between eastern Australia and the central Pacific) remained positive in October. According to the Centre's experimental SPOTA-1 scheme, a positive sea-surface temperature gradient across this region in October is favourable for summer rainfall in Queensland. The final SPOTA-1 scheme, issued in November, indicated a higher-than-normal (60 to 80 per cent) probability of above-median summer rainfall throughout Queensland. The initial experimental SPOTA-1 long-lead outlook for the summer of 2012/13 will be produced next month.

The Centre's SOI phase scheme provides probabilities of rainfall for the coming three-month season based on SOI values over the previous two months. The SOI phase scheme currently indicates that the [probability of exceeding median rainfall](#) across most of Queensland is 50 to 70 per cent, which is slightly higher than normal (50 per cent) for the next three-month period (March to May). This analysis is based on the SOI having remained consistently positive from January to February as discussed further in the Centre's [commentary on rainfall based on phases of the SOI](#).

The SPOTA-1 and SOI-Phase schemes indicate probabilities based on historical relationships. It is important that the probabilistic nature of seasonal outlooks is understood and long-term risk management is undertaken. For example, if an outlook indicates a 70 per cent probability of above-median rainfall, this also means there is a 30 per cent probability of below-median rainfall.

Additionally, an increased risk of above- or below-median rainfall in Queensland due to ENSO will not necessarily result in above- or below-median rainfall occurring throughout all of the state (see [Australia's Variable](#)

[Rainfall poster](#), or the Centre's [archive of historical rainfall maps](#)).

The Centre understands that each of the above schemes may have their own particular following. Although such schemes cannot provide outlooks with absolute certainty, users of the information who follow a skilful scheme should benefit from doing so in the long-term. Users should consider the historical track record of any scheme, and such historical information is becoming increasingly available.

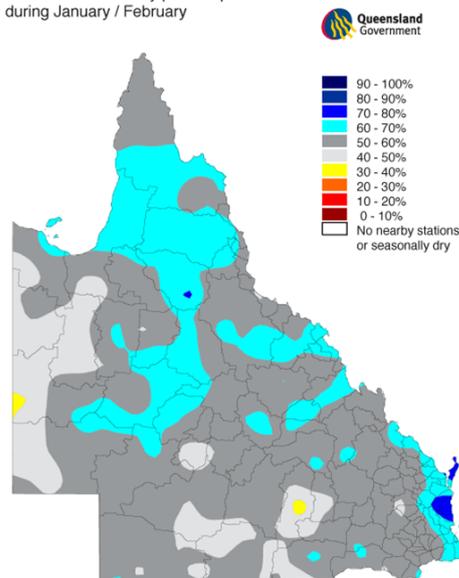
The Centre's Long Paddock website provides the historical archive of [SPOTA-1 reports](#) and [past commentaries](#) on the SOI phase scheme. Users should also consider the wide range of information available each month describing the current state of the ocean/climate system, for example the '[ENSO Wrap-Up](#)'.

ENSO influences other climate variables apart from rainfall (e.g. temperature, pan evaporation and vapour pressure). This means that the impact of ENSO on crop or pasture growth can be stronger than on rainfall alone. The impact of ENSO on pasture growth is also dependent upon current pasture condition and soil water status. The Centre's AussieGRASS model takes these factors into account in producing [seasonal pasture growth probabilities](#).

### Probability of exceeding Median Rainfall

for March / May  
based on consistently positive phase  
during January / February

### SOI Phase scheme



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