# NSW Climate Summary - March 2017

## Summary

| Seasonal Outlook | Current outlook |
|---|---|
| Rainfall (quarter) | Drier (most of NSW)<br><br>Near neutral (areas of the south to mid-north coast) |
| Max Temperature (quarter) | Warmer |
| Min Temperature (quarter) | Warmer |
| **ENSO** | **Current outlook** |
| ENSO (overall) | Neutral |
| ENSO Outlook Status | El Niño watch |
| SOI | Neutral (slowly falling) |
| Pacific Ocean (NINO3.4) | Neutral (slowly warming) |
| Indian Ocean (IOD) | Neutral |
| Southern Annular Mode (SAM/AAO) | Near-neutral (tending to remain near-neutral to weakly positive) |

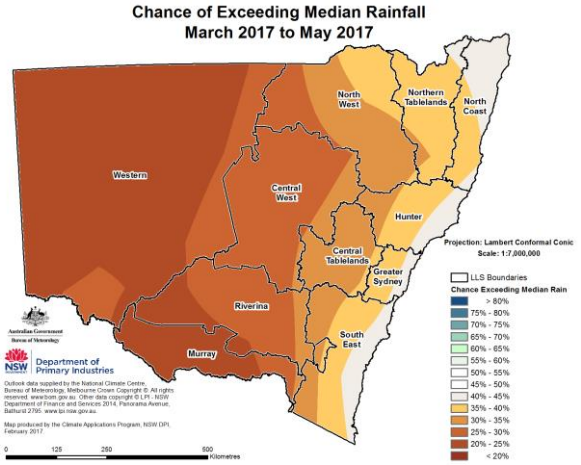
Source: Derived from information provided by the Australian Bureau of Meteorology and the US National Oceanic & Atmospheric Administration.

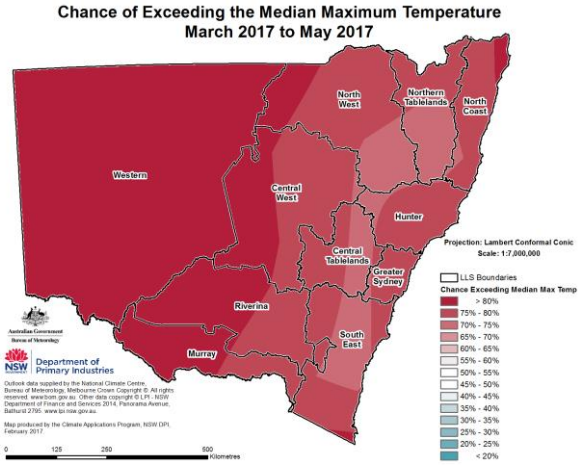
## Seasonal outlook

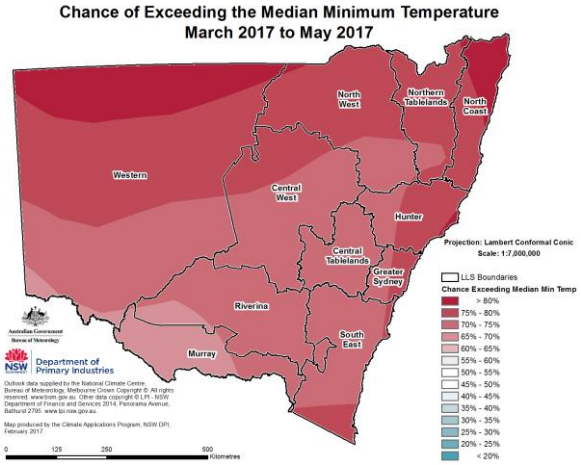
(Source: Bureau of Meteorology)

Between March and May drier than normal conditions are likely across most of NSW. There is a near-equal chance of drier or wetter than normal conditions across areas of the coast.

Daytime and overnight temperatures are likely to be warmer than normal across NSW.



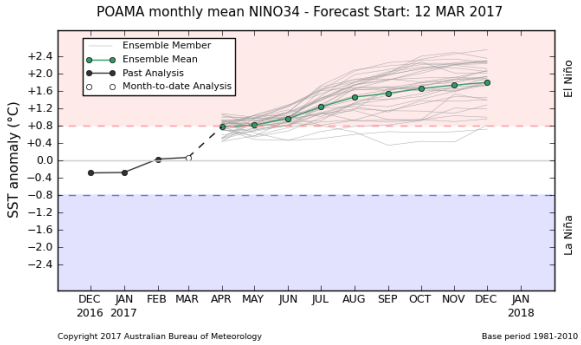




*The seasonal outlooks presented in this report are obtained from the Australian Bureau of Meteorology & other sources. These outlooks are general statements about the likelihood (chance) of (for example) exceeding the median rainfall or minimum or maximum temperatures. Such probability outlooks should not be used as categorical or definitive forecasts, but should be regarded as tools to assist in risk management & decision making. Changes in seasonal outlooks may have occurred since this report was released. Outlook information was up to date as at 13 March 2017.*

## ENSO

(Source: Bureau of Meteorology & International Research Institute for Climate and Society)

The Pacific Ocean remains in an ENSO-neutral state. Most models suggest a neutral outlook throughout autumn. A number of models suggest warming to El Niño levels by winter, although model skill is currently low. The Bureau of Meteorology's ENSO outlook status has shifted to 'El Niño watch', suggesting an increased chance of El Niño conditions occurring during the year. During February, sea surface temperatures were near-average to slightly below average across the central and eastern-central equatorial Pacific. Temperatures were above average across the eastern equatorial Pacific, and the warmer temperatures have expanded to the west since early January. Temperatures were also above average in the western equatorial Pacific. A cool sub-surface anomaly remains in the central and eastern Pacific. Weak warm anomalies are present in areas of the west. Trade winds were near-average. Cloud conditions in the central Pacific remained at La Niña-like levels. The SOI has been neutral, but has a downward trend, which can be an indicator of a developing El Niño.

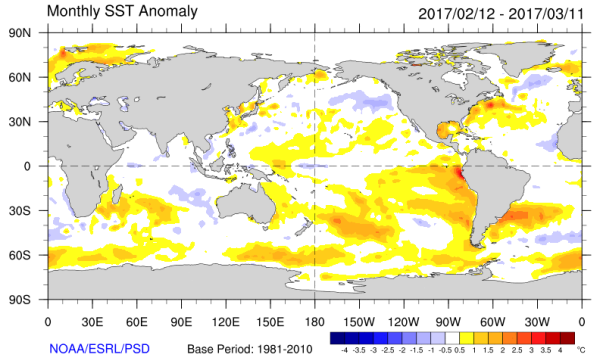


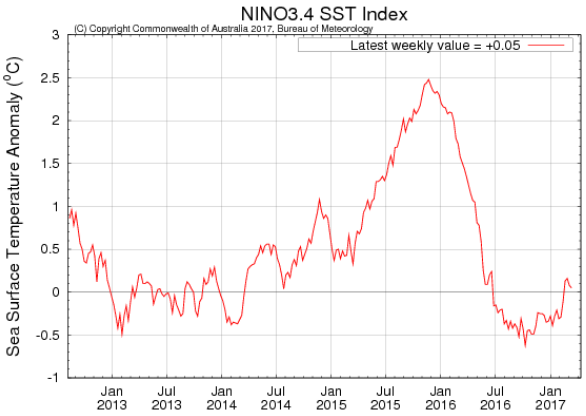

The Bureau of Meteorology's POAMA outlook (as at 12 March) suggests that the sea surface temperatures in the NINO3.4 region will remain at neutral to borderline El Niño levels during autumn, but indicates the possibility of El Niño conditions occurring during winter. The CPC/IRI ENSO forecast indicates ENSO neutral conditions are present and likely to continue throughout autumn. However, they suggest there is an increasing chance for El Niño development into spring. Note that CPC/IRI uses different thresholds for El Niño and La Niña events than does the Bureau of Meteorology. The eight climate models surveyed by the Bureau (as at 16 February), indicate NINO3.4 sea surface temperatures are likely to remain neutral into March. One model indicated possible El Niño temperatures during May, with two other models borderline. Six indicated El Niño temperatures are possible during July.

## Sea Surface Temperatures

(Source: NOAA & Bureau of Meteorology)

Sea surface temperatures were near-average to slightly below average across the central and eastern-central equatorial Pacific. Temperatures were above average across the eastern equatorial Pacific, and the warmer temperatures have expanded to the west since early January. The most recent weekly temperature anomaly value in the key NINO3.4 region was +0.05°C in the week to 12 March.

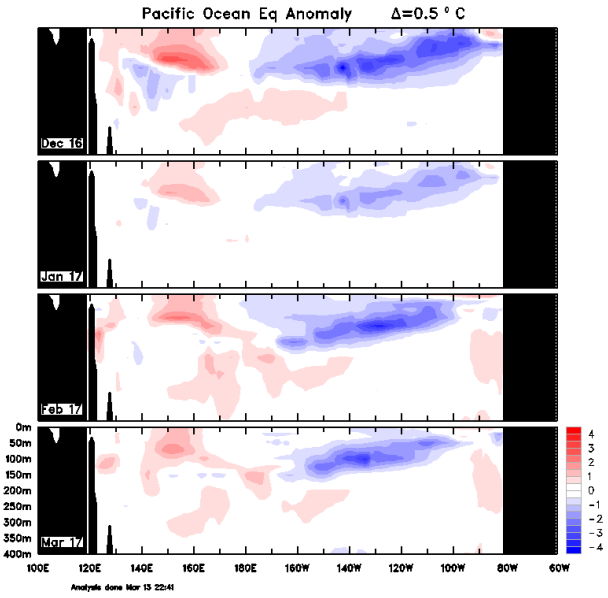



## Monthly Sub-surface Temperatures

(Source: Bureau of Meteorology)

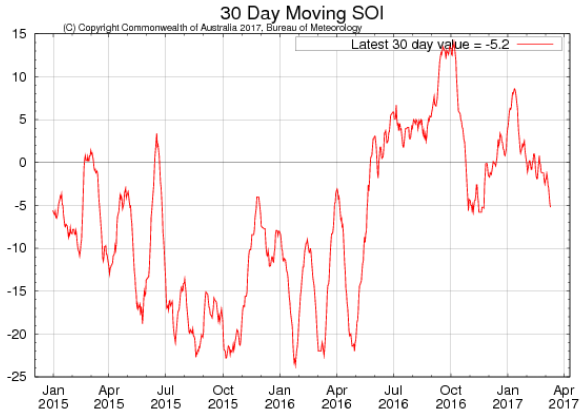
The sub-surface sea temperatures show the cool subsurface temperature anomaly extending across the central and eastern equatorial Pacific has weakened since last year, but strengthened slightly in early February and weakened in early March. Weak warm anomalies are present in areas of the west and below 200m in the central Pacific.



## Southern Oscillation Index (SOI)

(Source: Bureau of Meteorology & Queensland DSITI)

The Southern Oscillation Index (SOI) is currently neutral, although it has had a downward trend since January. On 12 March, the 30-day SOI value was -5.1 (Bureau of Meteorology) and the 90-day SOI was -0.23 (QDSITI). The neutral SOI is due to atmospheric pressure being slightly above average at Darwin and slightly below average at Tahiti.




Values between -7 and +7 indicate neutral conditions, sustained values above +7 may indicate a La Niña event, and sustained values below -7 may indicate an El Niño event.

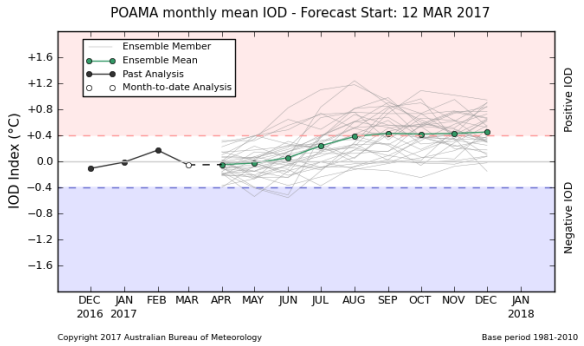
## Indian Ocean Dipole (IOD)

(Source: Bureau of Meteorology)

The Indian Ocean Dipole (IOD) is neutral, which is normal for this time of year. IOD events typically do not form between December and April due to the effects of the monsoon. The Dipole Mode Index (DMI) value was at -0.14 for the week to 12 March.

The five climate models surveyed by the Bureau of Meteorology on 16 February suggest the likelihood of IOD neutral conditions during May and July, although one model suggests a borderline positive IOD by July.

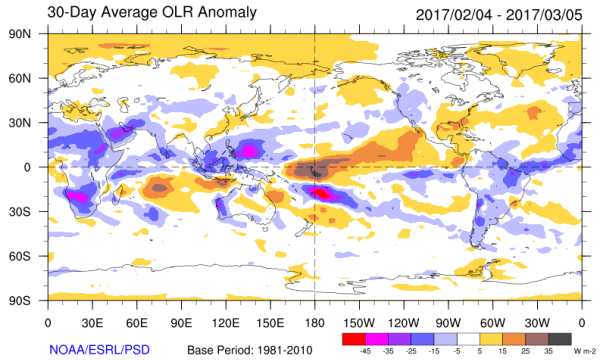
A positive IOD increases the chances of below normal rainfall and may exacerbate the effect of an El Niño event over south eastern Australia. A negative IOD increases the chances of above normal winter and spring rainfall across southern and much of western and central NSW.




## Cloudiness and trade winds

(Source: Bureau of Meteorology & NOAA)

Levels of cloud at the junction of the International Date Line (IDL) were below normal during February. Cloud levels were high over Indonesia and the Philippines, but low to normal across eastern Australia.

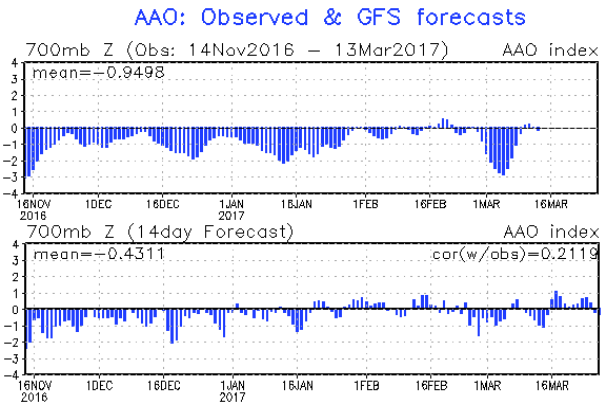



Trade winds were near-normal across the central equatorial Pacific during February, with a reversal in the eastern Pacific and some strengthening in the west.

## Southern Annular Mode (SAM)

(Source: NOAA)

The experimental Southern Annular Mode or Antarctic Oscillation (AAO) index was negative throughout most of late spring and summer, increasing the likelihood of drier conditions during the period. The SAM is currently near-neutral, with the outlook for it to remain near-neutral to weakly positive into late March.




A negative SAM indicates expansion of the belt of strong westerly winds towards the equator, resulting in more or stronger low pressure systems across southern Australia and potentially increased rainfall during autumn and winter. During spring and summer, a negative SAM can result in reduced rainfall across south eastern Australia.

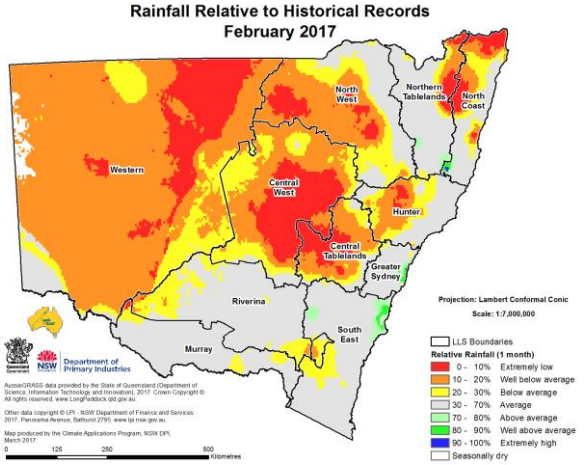
A positive SAM indicates the contraction of the westerly winds towards Antarctica and higher pressures over southern Australia, and can result in stable, drier conditions. A strongly positive SAM in spring-summer can mean southern Australia is influenced by the northern half of high pressure systems, leading to a slightly higher likelihood of increased rainfall over south eastern and central NSW.

## Conditions during February

### Rainfall

(Source: Queensland DSITI)

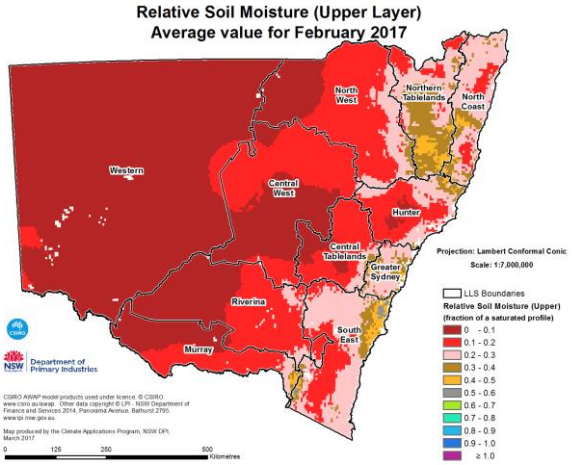
Rainfall across NSW ranged from 0-457 mm during February, with most of the state receiving less than 25 mm. Relative to historical records, most of the far west, north west, central west, central tablelands, upper Hunter valley and areas of the north east received below average rainfall. Most of the coast, Riverina, northern tablelands and the far south received slightly below average to near-average rainfall for the month.




### Soil moisture

(Source: CSIRO)

Topsoil moisture levels declined across NSW during February. Relative to historical records, levels were below average across northern and central NSW, the Hunter valley and the mid-north to north coast. Levels were generally near-average elsewhere. By the end of February, below-average topsoil moisture extended across most of western and central NSW and the western Riverina, as well as areas of the Hunter valley, northern tablelands and north coast. Subsoil moisture also declined. Relative to historical records, it remained above average across most of inland NSW but below average across areas of the coast.

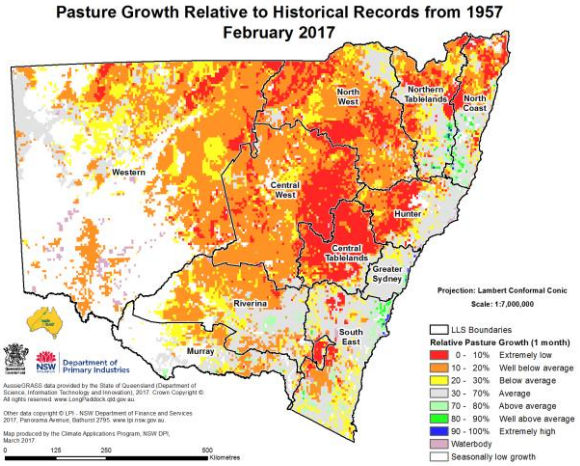



### Pasture growth

(Source: Queensland DSITI)

During February, relative pasture growth was well below average across much of inland and far north eastern NSW. Apart from the far north coast, most coastal areas had slightly below average to near-average growth.

Other pasture growth models indicated extremely low relative growth across most of NSW.




### More information

For more information, contact the NSW Department of Primary Industries on 02 6391 3100 or Local Land Services on 1300 795 299. Additional and more detailed information on seasonal conditions can be found in the NSW Seasonal Conditions Summary and Report, available at http://www.dpi.nsw.gov.au/agriculture/emergency/seasonal-conditions/regional-seasonal-conditions-reports, and the LLS On-ground Seasonal Conditions Reports available at http://www.lls.nsw.gov.au/agriculture/seasonal-conditions.

### Acknowledgements

Information used in this report was sourced from the Australian Bureau of Meteorology, CSIRO, Queensland Department of Science, Information Technology and Innovation, the US National Oceanic and Atmospheric Administration, the International Research Institute for Climate and Society (Columbia University) and NSW Department of Primary Industries.

### Warning

Recognising that some of the information in this document is provided by third parties, the State of New South Wales, the author and the publisher take no responsibility for the accuracy, currency, reliability and correctness of any information included in the document provided by third parties.



Published by the Department of Primary Industries. ISSN 2203-5060 (Online) PUB17/71 Volume 4/Number 3