NSW Climate Summary - September 2016

Summary

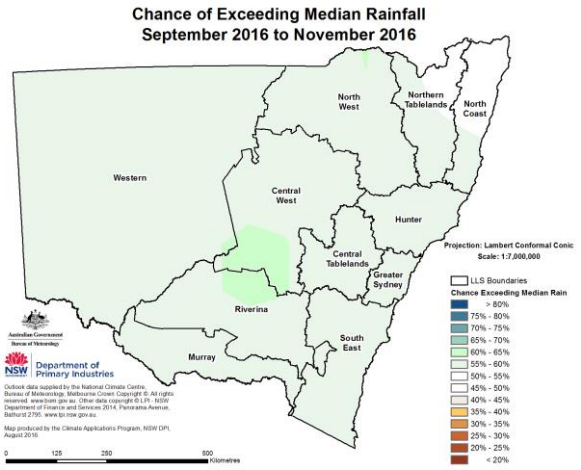
Seasonal Outlook	Current outlook
Rainfall (quarter)	Near neutral – slightly wetter (most of NSW) Wetter (areas of the northern Riverina & the south of the central west)
Max Temperature (quarter)	Near neutral (most of NSW) Warmer (areas of far west, far south east & Illawarra to mid-north coast)
Min Temperature (quarter)	Warmer (most of NSW) Near neutral (areas of north west, northern tablelands & north coast)
ENSO	**Current outlook**
ENSO (overall)	Neutral Short lived borderline La Niña possible in spring, but likelihood decreasing
ENSO Outlook Status	La Niña watch
SOI	Borderline positive
Pacific Ocean (NINO3.4)	Neutral
Indian Ocean (IOD)	IOD strongly negative
Southern Annular Mode (SAM/AAO)	Strongly positive (trending weakly-moderately positive)

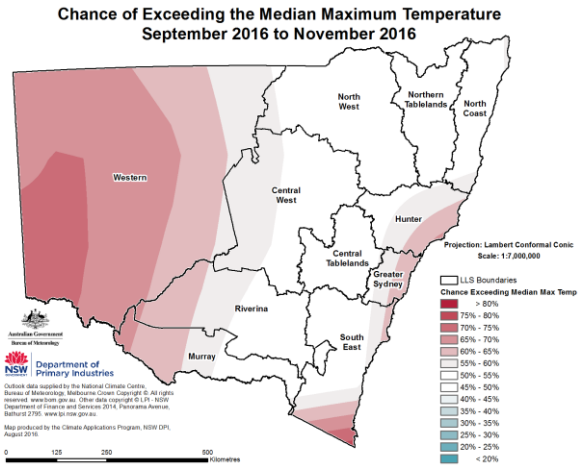
Source: Derived from information provided by the Australian Bureau of Meteorology and the US National Oceanic & Atmospheric Administration.

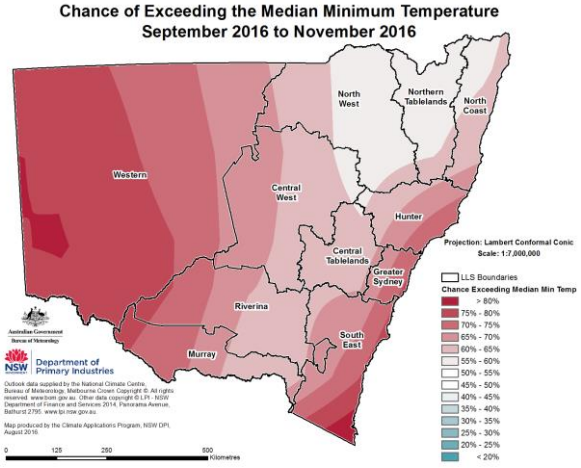
Seasonal outlook

(Source: Bureau of Meteorology)

Between September and November, there is a near-equal chance of wetter or drier than normal conditions across most of NSW, with a slightly increased chance of wetter than normal conditions. Wetter than normal conditions are likely in southern areas of the central west and areas of the northern Riverina. There is a near-equal chance of cooler or warmer than normal daytime temperatures across most of NSW, with warmer than normal conditions likely across the far west, areas of the western Riverina, the far south east and the Illawarra to mid-north coast. Overnight temperatures are likely to be warmer than normal, with a near-equal chance of cooler or warmer than normal conditions across areas of the north west, northern tablelands and north coast.





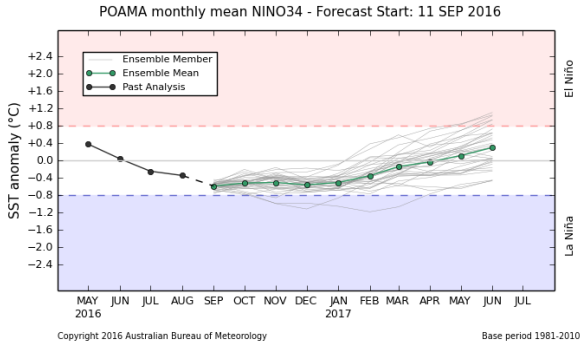


The seasonal outlooks presented in this report are obtained from the Australian Bureau of Meteorology & other sources. These outlooks are general statements about the likelihood (chance) of (for example) exceeding the median rainfall or minimum or maximum temperatures. Such probability outlooks should 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 September 2016.

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 for spring. Sea surface temperatures are near-average to slightly below average in the eastern and central equatorial Pacific while there are La Niña-like above average temperatures in the west. The current negative Indian Ocean Dipole (IOD) event has strengthened and is likely to continue but weaken into spring. A short-lived borderline La Niña event remains possible, but unlikely. Sub-surface temperatures have weakened and sea surface temperatures remain above the La Niña threshold. Trade winds are near-average, but cloud conditions and the SOI are showing La Niña tendencies. The ENSO outlook status from the Bureau of Meteorology remains at 'La Niña watch', but the CPC/IRI's status is now 'inactive' (neutral).



The Bureau of Meteorology's POAMA outlook (as at 11 September) suggests that the sea surface temperatures in the NINO3.4 region will remain low but neutral throughout spring.

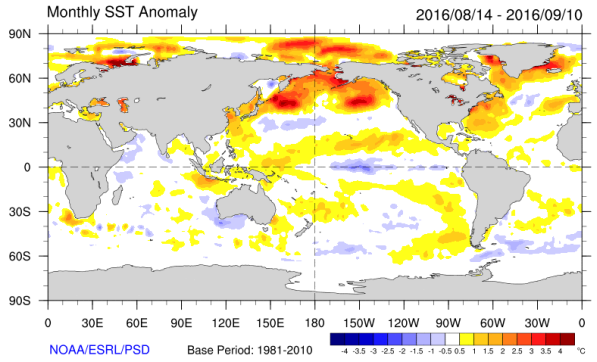
The current CPC/IRI ENSO forecast suggests ENSO neutral conditions are slightly favoured during the spring and summer. Note that CPC/IRI uses different thresholds for El Niño and La Niña events than does the Bureau of Meteorology.

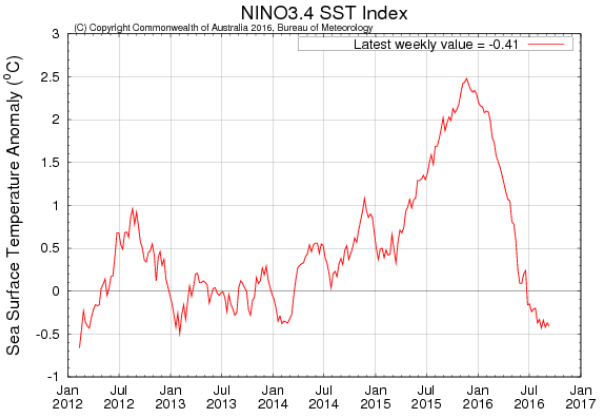
Of the eight climate models surveyed by the Bureau (as at 16 August), two indicate NINO3.4 sea surface temperatures are likely to reach weak or borderline La Niña levels during September. Two models indicate NINO3.4 sea surface temperatures at La Niña levels during November and three during January.

Sea Surface Temperatures

(Source: NOAA & Bureau of Meteorology)

Sea surface temperatures were slightly below average in the eastern and central equatorial Pacific during August and above average in the west. A line of cooler than normal water continues to snake across the equator from Ecuador towards the International Date Line. The most recent weekly temperature anomaly value in the key NINO3.4 region was -0.41°C in the week to 11 September. The cool anomaly in the north western Indian Ocean has strengthened, while the warm anomaly to the south west of Sumatra remains strong.

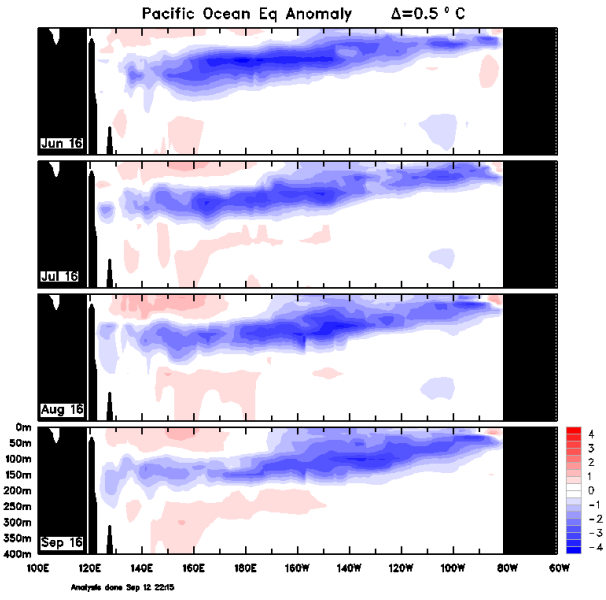




Monthly Sub-surface Temperatures

(Source: Bureau of Meteorology)

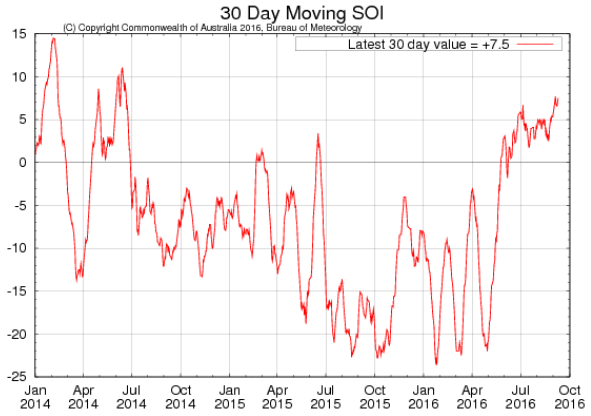
The sub-surface sea temperatures show the warming at and near the sea surface in the western equatorial Pacific. The cool anomaly extends from 100-200 m in depth in the west to the surface in the central and eastern Pacific, but has continued to weaken, reducing the likelihood of a La Niña event.



Southern Oscillation Index (SOI)

(Source: Bureau of Meteorology & Queensland DSITI)

The Southern Oscillation Index (SOI) is currently borderline positive. On 10 September, the 30-day SOI value was +7.5 (Bureau of Meteorology) and the 90-day SOI was +5.05 (QDSITI). The recent increase has been due to decreased atmospheric pressure at Darwin and increased pressure at Tahiti.

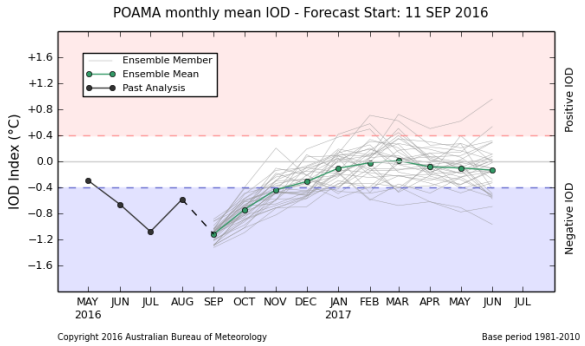


Values between -7 and +7 indicate neutral conditions, sustained values above +7 may indicate a La Niña event, and sustained values below -7 may indicate an El Niño event.

Indian Ocean Dipole (IOD)

(Source: Bureau of Meteorology)

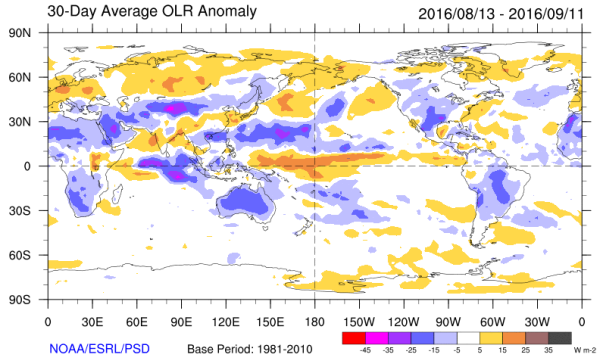
The Indian Ocean Dipole (IOD) is in a strong negative event, which weakened during July but strengthened again in August. The DMI value was at -1.19 for the week to 11 September. The warm sea surface temperatures near Sumatra and to the north of Australia are likely to continue provide sources of moisture for eastern Australia. The Bureau of Meteorology's outlook suggests the event is likely to weaken into spring. All four climate models surveyed by the Bureau of Meteorology on 18 August indicated the likelihood of a negative IOD event continuing through September and three of the four indicating it continuing into November. 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 August, which occurs during a La Niña event. Cloud levels were high to the south east of the IDL and also high over Indonesia and Australia. Cloud levels were particularly high to the south west of Sumatra, consistent with the negative IOD event.

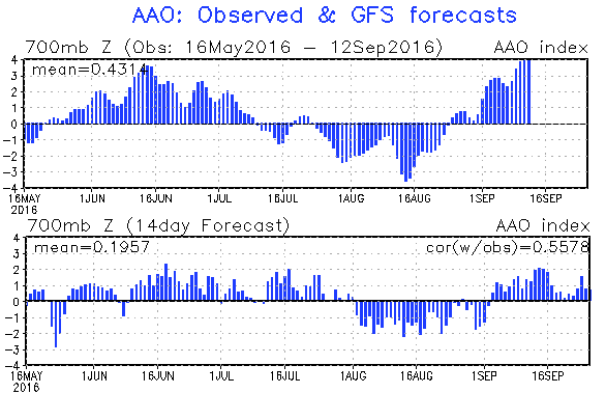


Trade winds were near-normal across the equatorial Pacific during August.

Southern Annular Mode (SAM)

(Source: NOAA)

The experimental Southern Annular Mode or Antarctic Oscillation (AAO) index was strongly positive at 12 September, after being moderately to strongly negative throughout most of August. The outlook is for a weakly to moderately positive SAM during mid-late September.



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.

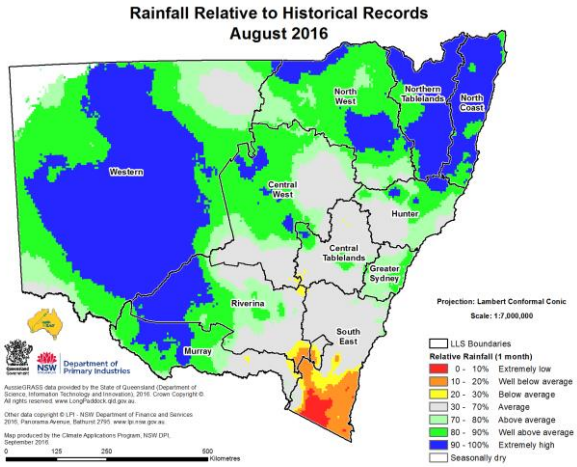
A positive SAM indicates the contraction of the westerly winds towards Antarctica and higher pressures over southern Australia, and can result in stable, drier conditions. A strongly positive SAM in spring-summer can mean southern Australia is influenced by the northern half of high pressure systems,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

Conditions during August

Rainfall

(Source: Queensland DSITI)

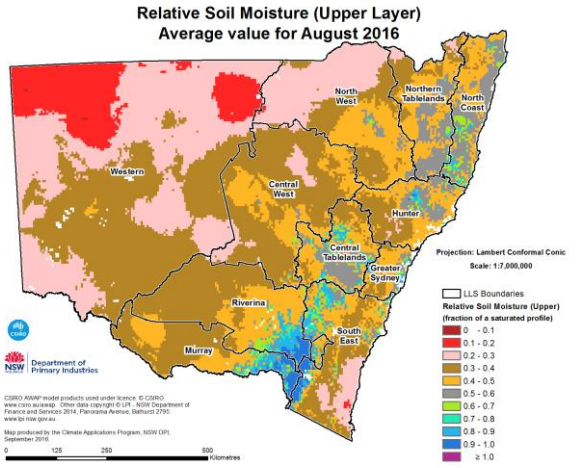
August was the wettest since 2003, with rainfall ranging from 3-332 mm across NSW. An East Coast Low early in August produced heavy rainfall across north-eastern NSW. Most of NSW received 25-100 mm for August. Relative to historical records rainfall was above average across 77 per cent of the state and generally ranked in the highest 20 per cent of years. Areas of the central west, central and southern tablelands and south west slopes had near-average rainfall. Areas of below-average rainfall occurred across the Monaro, far south east and some of the alpine areas.



Soil moisture

(Source: CSIRO)

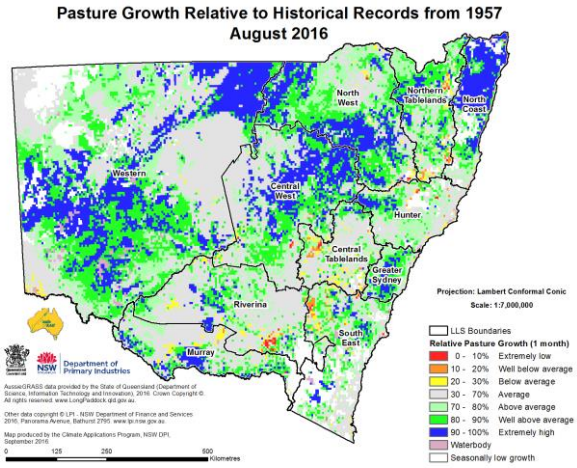
Topsoil moisture remained high during August, particularly across areas of central, southern and north-eastern NSW and some areas of the far west. Relative to historical records, levels were well above average to extremely high across much of western, central, northern and north-eastern NSW. Relative topsoil moisture was near-average over most of the remainder of NSW, but low in the far south east. Subsoil moisture levels improved across areas of central, southern and coastal NSW. Relative to historical records, it was above average to extremely high across areas of far western, central, southern and south eastern NSW.



Pasture growth

(Source: Queensland DSITI)

During August relative pasture growth was generally average to above average across NSW. The best growth occurred across areas of the north west, far west, central west and the north-east. Other pasture growth models indicated well above average to extremely high pasture growth across most of NSW, with the exception of the tablelands, south west slopes and the south east.



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.

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