

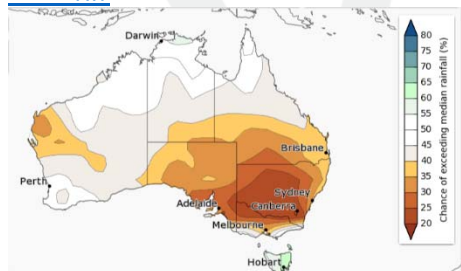


Climate and Weather Forecasting

Connecting people in the business of sheep

Developments in Weather Forecasting

Over the past 10 years, the Bureau of Meteorology (BOM) has greatly improved both its short-term and long-term weather forecasts. This has been made possible by the development of improved climate models and collaboration between the different weather forecasting agencies around the world. BOM now has a large range of weather information on its website to help farm business managers make decisions that are more informed.

WEBSITE	CONTENT/USES
Short term (weather)	
<p><i>MetEye</i> – http://www.bom.gov.au/australia/meteye/</p> <p>Or use free Bureau of Meteorology mobile app on Google Play/Apple iStore</p>	<p>Interactive weather forecast information Current weather conditions</p> <ul style="list-style-type: none"> • 3 hourly forecast for following 7 days for: <ul style="list-style-type: none"> ○ Rainfall, Wind speed and direction, Temperature, storm, fog, and frost ○ Click on map to get specific local information
Current weather situation	
<p><i>Climate and past weather</i> http://www.bom.gov.au/climate/</p>	<p>Maps of recent and past weather conditions</p> <ul style="list-style-type: none"> • ENSO wrap-up • Weekly rainfall update • “Monthly drought statement” and “Special climate statement”
<p><i>Climate Data Online</i> http://www.bom.gov.au/climate/data/</p>	<p>Search to view daily and monthly statistics, historical weather observations, rainfall, temperature and solar tables, graphs and data at weather stations</p>
<p><i>Australian Landscape Water Balance</i> http://www.bom.gov.au/water/landscape/</p>	<p>Soil moisture levels across districts/regions</p>
<p><i>Climate outlooks – monthly and seasonal</i> http://www.bom.gov.au/climate/outlooks/#/</p> 	<ul style="list-style-type: none"> • Provides climate outlook overview for rainfall and temperature • The historical accuracy of these forecasts can be checked as it can vary significantly from month to month http://www.bom.gov.au/climate/outlooks/#/rainfall/skill/seasonal/0

CONTACT


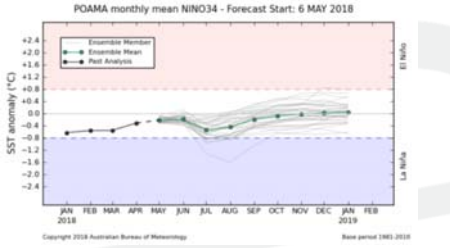
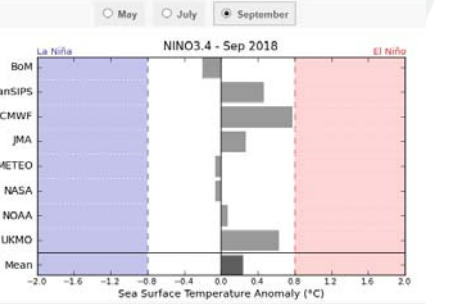
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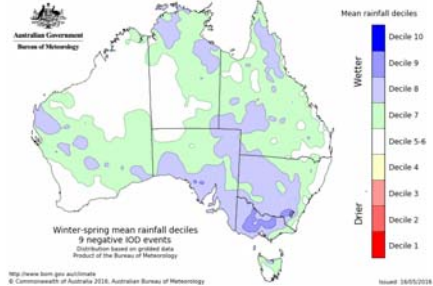
Australian Wool
Innovation Limited



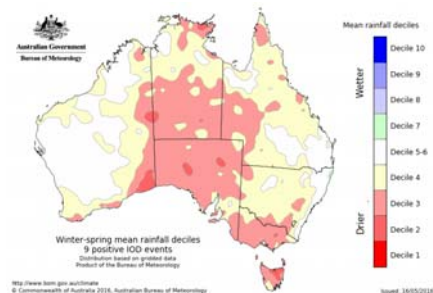
WEBSITE	CONTENTS/USES
<p>Australian Climate Influences</p> <p><i>ENSO (El Niño Southern Oscillation)</i> http://www.bom.gov.au/climate/about/?bookmark=enso</p>  <p>Australian climate influences</p>	<p>El Niño – cool sea surface temperatures off north eastern Australia; Walker Circulation breaks down</p> <ul style="list-style-type: none"> • Can predict 3 to 6 months ahead • Events can last for 9 to 12 months. • Although impact of El Niño will vary depending on their strength, SA generally has Decile 3 or 4 rainfall but Decile 8 temperature when El Niño events occur. • Tends to affect eastern half of SA worse than western half of SA <p>La Niña – sea surface temperatures warmer around north eastern Australia and cooler in the tropical Pacific Ocean Usually develop in autumn or winter and finish the following autumn.</p> <ul style="list-style-type: none"> • These events can last for 6 to 9 months providing wetter and cooler conditions. • SA generally has Decile 7 rainfall and Decile 4 temperature when La Niña events occur • Impacts all of SA but stronger in the north east of the State.
<p><i>ENSO Wrap-Up</i> http://www.bom.gov.au/climate/enso/#tabs=Outlooks</p>  <p>ENSO forecast from POAMA</p>	<p>Eight international models are used by POAMA to forecast sea surface temperature (SST) anomaly, which gives an indication of the development of either an El Niño (+0.8°C) or La Niña (-0.8°C) from normal</p>
<p><i>Climate Model Summary</i> http://www.bom.gov.au/climate/model-summary/#tabs=Overview</p>  <p>NIÑO3.4 values from a range of international models for September 2018</p>	<p>Provides an Overview, Outlooks for Pacific Ocean, Indian Ocean, and POAMA.</p> <p>Updated weekly with 3 and 5 month outlooks</p> <p>#NB: Model outlooks produced in autumn have a lower accuracy than other times of the year.</p>

WEBSITE

Indian Ocean Dipole (IOD)



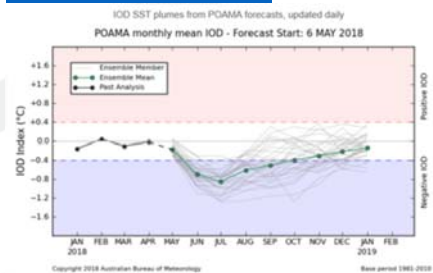
Negative IOD brings wetter than average conditions to SA



Positive IOD brings drier than average winter spring in SA

IOD Outlook

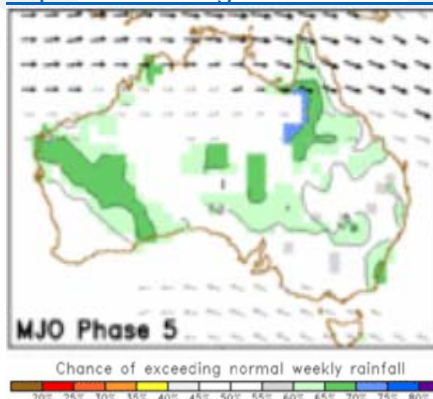
<http://www.bom.gov.au/climate/enso/#tabs=Indian-Ocean>



Indian Ocean Dipole forecast from POAMA

Madden Julian Oscillation

<http://www.bom.gov.au/climate/mjo/>



April to June average weekly rainfall probabilities of exceeding median in that MJO phase

CONTENTS/USES

This can influence South Australian weather from June to October.

Negative Phase – warm sea surface temperatures northwest of Australia. Generally wetter and cooler in SA; Decile 8 rainfall and Decile 3 to 4 temperatures

Positive Phase – cool ocean temperatures northwest of Australia.

Tends to lead to drier and warmer conditions in SA; Decile 3 to 4 rainfall and Decile 8 temperatures.

The Indian Ocean sea surface temperature plumes from seasonal outlook systems are updated daily, giving a 9 month forecast of IOD conditions

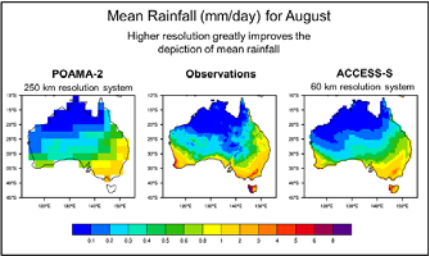
#NB: Outlook skill during autumn is lower than at other times of the year.

Relatively new discovery of its influence on Australian weather.

The Madden-Julian Oscillation (MJO) is the major fluctuation in tropical weather on weekly to monthly timescales. The MJO can be characterised as an eastward moving 'pulse' of cloud and rainfall near the equator that typically recurs every 30 to 60 days. Influences rainfall events through November to May.

There are 8 phases:

- Phase 1 to 3 – centred over Africa/Indian Ocean
- Phase 4 to 5 – centred over Northern Australia bring increased moisture/rainfall in northern and central Australia
- Phase 6 to 8 – centred over the Pacific Ocean

WEBSITE	CONTENTS/USES
<p>ACCESS-S Seasonal Prediction Model</p>  <p>Higher resolution with the ACCESS-S system compared to the current POAMA-2</p>	<p>ACCESS-S (the seasonal prediction version from the Bureau of Meteorology model range) is a new seasonal forecasting system, to be phased in from mid-2018. Runs at 60 km resolution, compared to the 250 km resolution of the current POAMA-2 outlook system, providing forecasts with more regional detail. The new system will extend forecasts out to at least 9 months. Increased resolution also improves the representation of important large-scale climate drivers like ENSO, leading to better multi-week and seasonal forecast accuracy over Australia.</p>

How can Weather Forecasts assist in Decision Making?

It is one thing to get a forecast or outlook but it is another to be able to act on that information and make timely business decisions. Some producers seem to be very good at collecting relevant information and then using this to help them make informed management decisions. How can we learn from them?

With the increasing accuracy of ENSO and IOD forecasts, there are significant opportunities to use these forecasts to help with management decisions such as agisting stock, buying or selling stock, buying feed etc. If these decisions can be made early it can result in either higher stock prices or lower costs.

In South Australia, IOD is a strong indicator of seasonal conditions and when this is combined with ENSO the signal is even stronger. With a positive IOD and negative ENSO (El Niño) there is a strong chance of well below average rainfall and warmer temperatures across most of South Australia. Similarly, with a negative IOD and positive ENSO (La Niña) the probability of above average rainfall and cooler conditions is much greater.

The BOM has an online education tool about the main drivers affecting Australia's climate, and how they can affect the outlook maps as well as confidence in the outlook information.

Case examples (for Wagga Wagga in eastern Australia and Merredin in western Australia) provide a context for interpreting the different types of outlooks using past accuracy maps, climate driver information, and conditions to arrive at a decision based on the projections and overall confidence.

https://www.meted.ucar.edu/training_module.php?id=1247&tab=01#.WvJDn9IUmq4

This Information Sheet was developed from a webinar by Darren Ray, Senior Climatologist, South Australian Office, Bureau of Meteorology by Michael Wurst (PIRSA), 2018.

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Government of South Australia