# Climate Outlook

## Northern Australia Seasonal Fire Outlook Workshop

Kununurra, Western Australia
20 and 21 June 2017

*David Jones & Greg Browning*
*Climate Services*
*Bureau of Meteorology*

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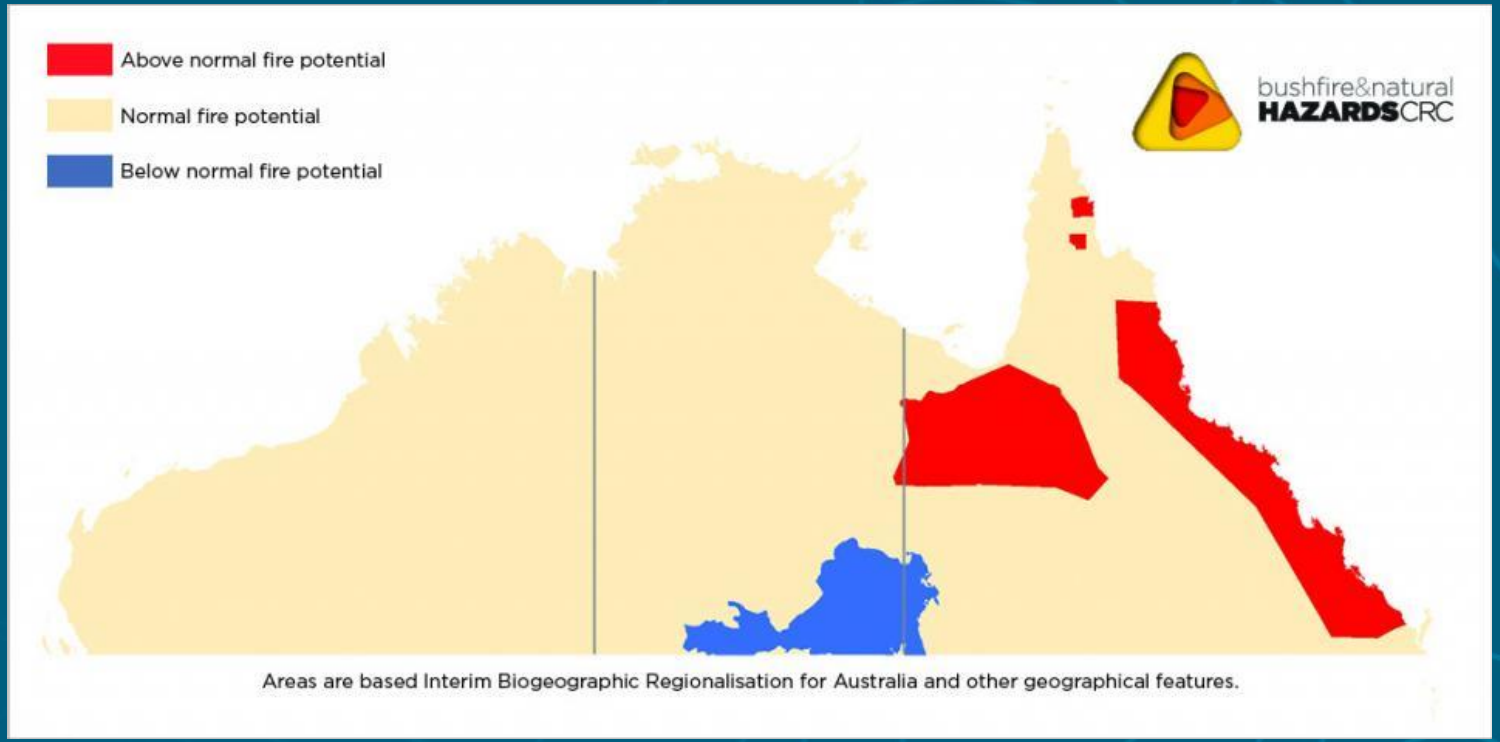
# Overview

1. **Review of the 2016 season**
2. Background climate change signal
3. Outlook for 2017

   Antecedent conditions

   Seasonal Climate Outlook

# 2016 fire season outlook

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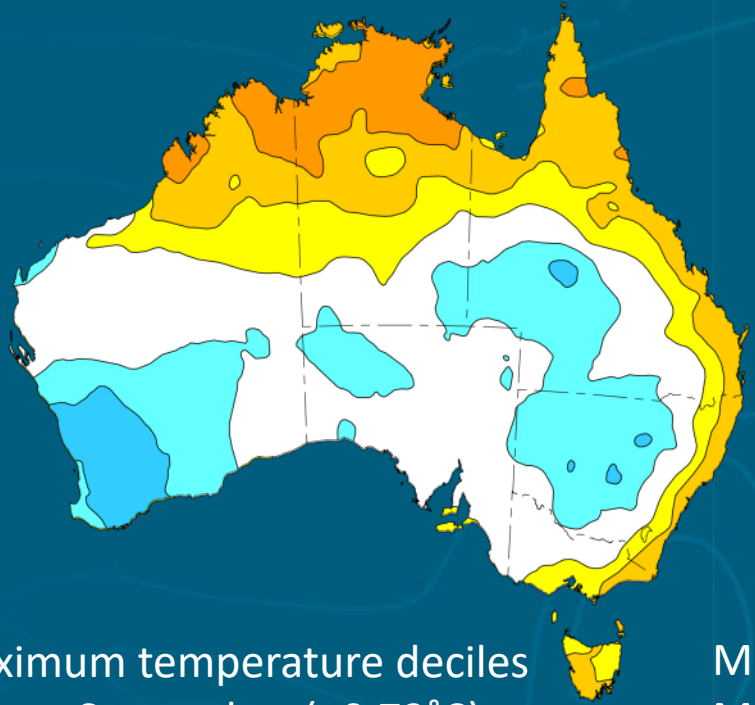
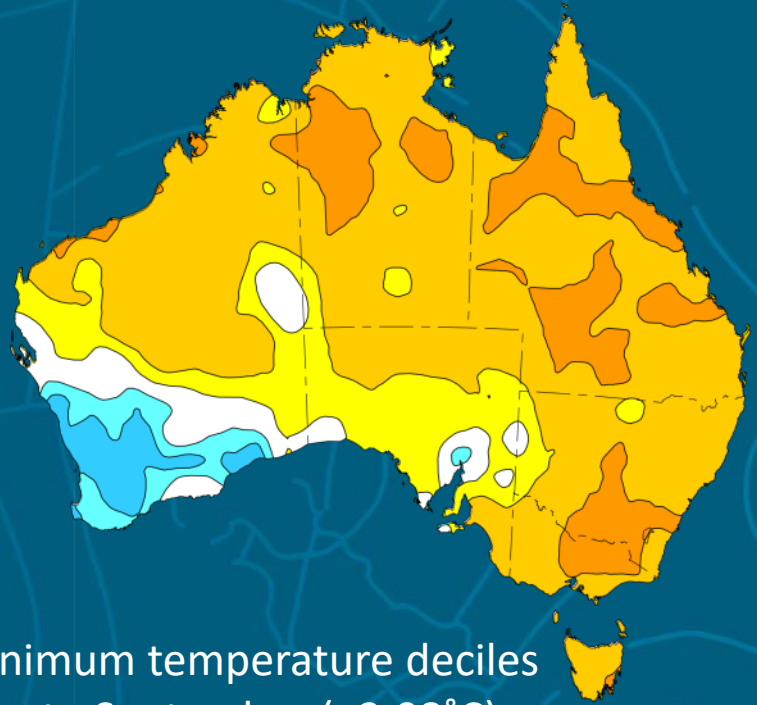
# 2016 season: warm days and record warm nights



Maximum temperature deciles
May to September (+0.73˚C)




Minimum temperature deciles
May to September (+2.08˚C)

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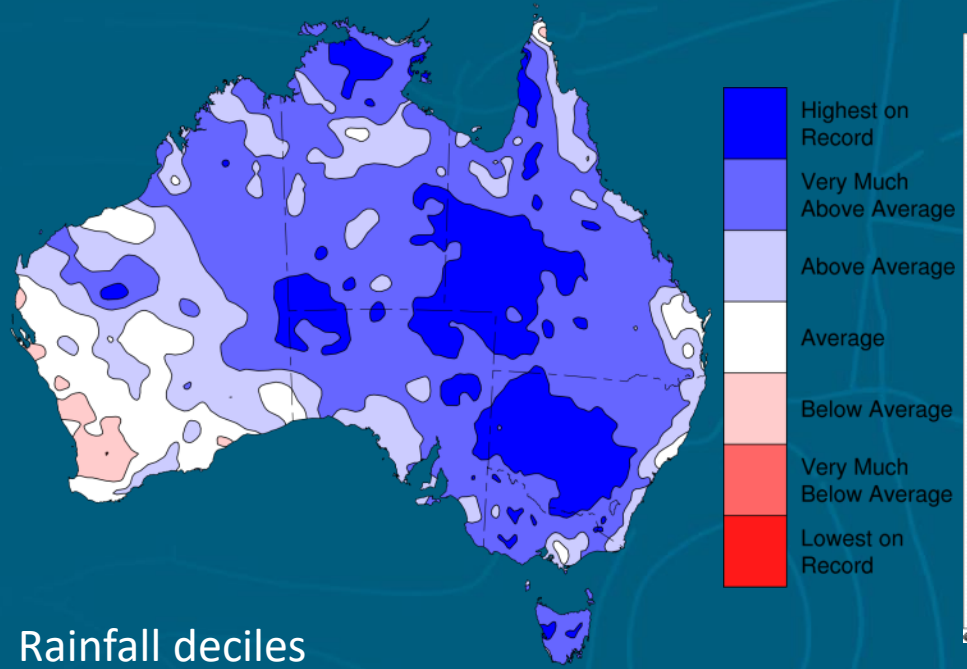
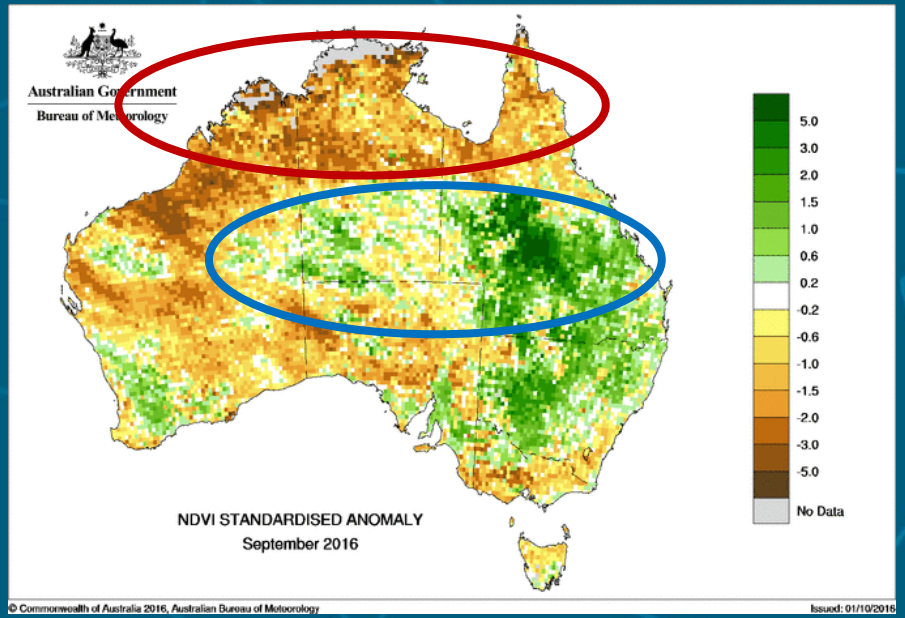
# Seasonal rainfall deciles: Fire season




Rainfall deciles
May - September 2016




September 2016 NDVI anomaly

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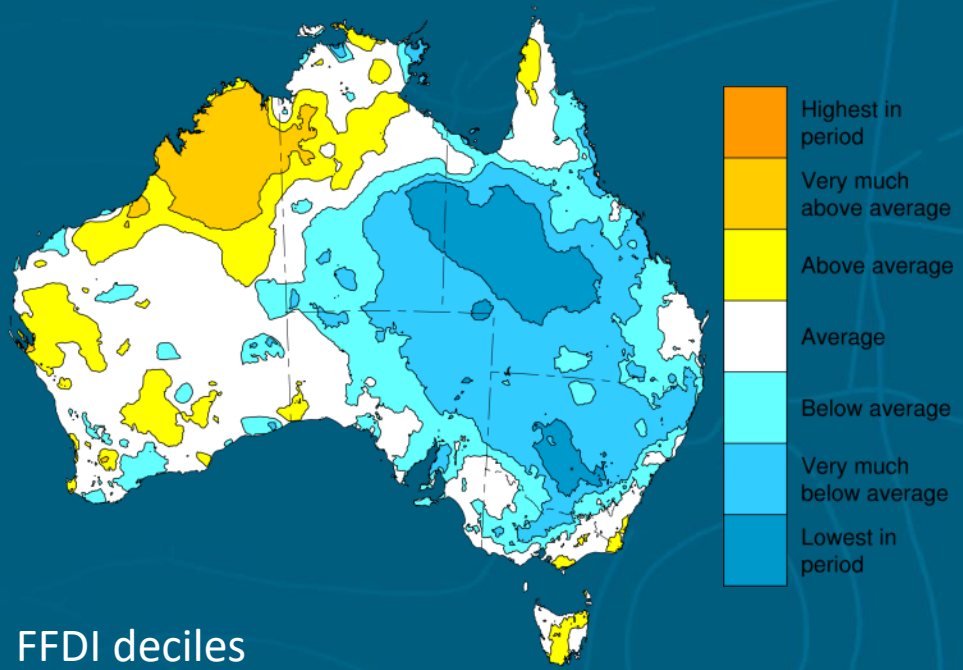
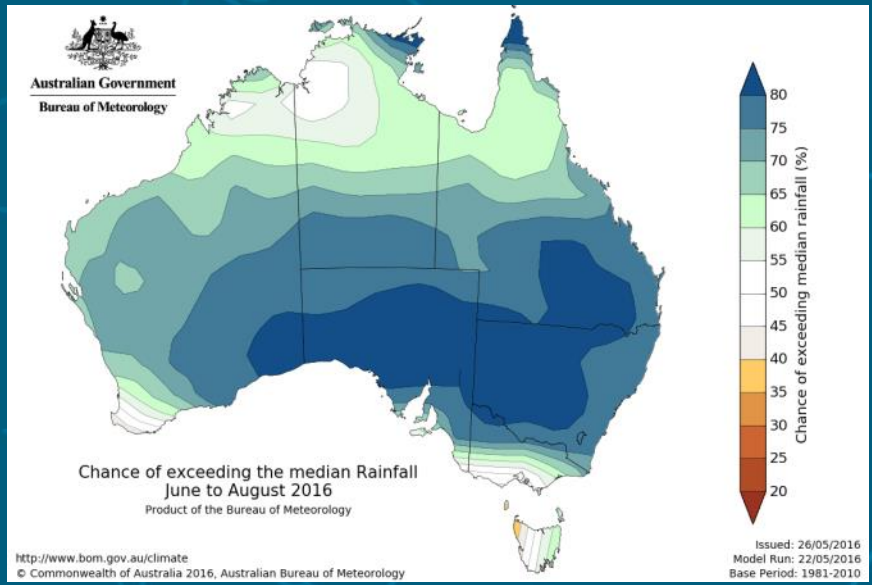
# Cumulative FFDI (no GFDI yet): Fire season




FFDI deciles
May - September 2016




Jun - Aug seasonal outlook 2016

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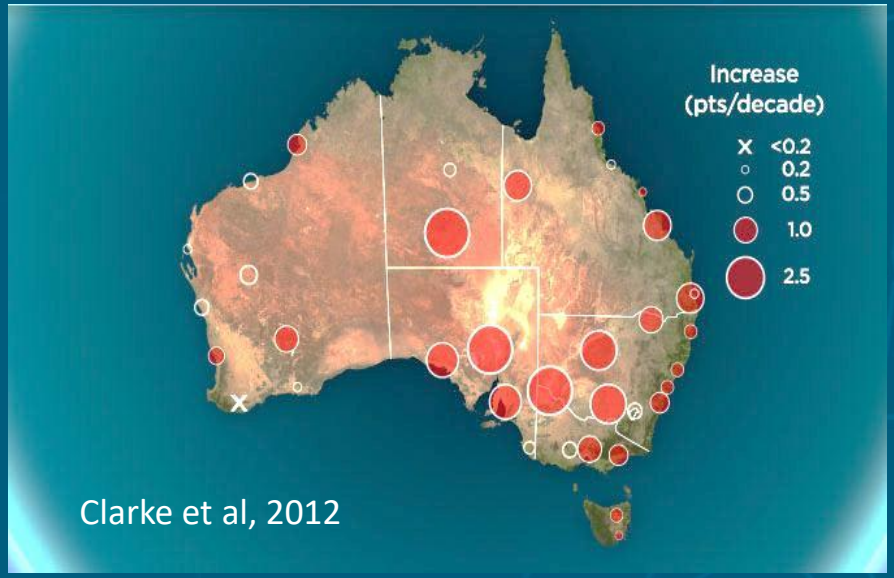
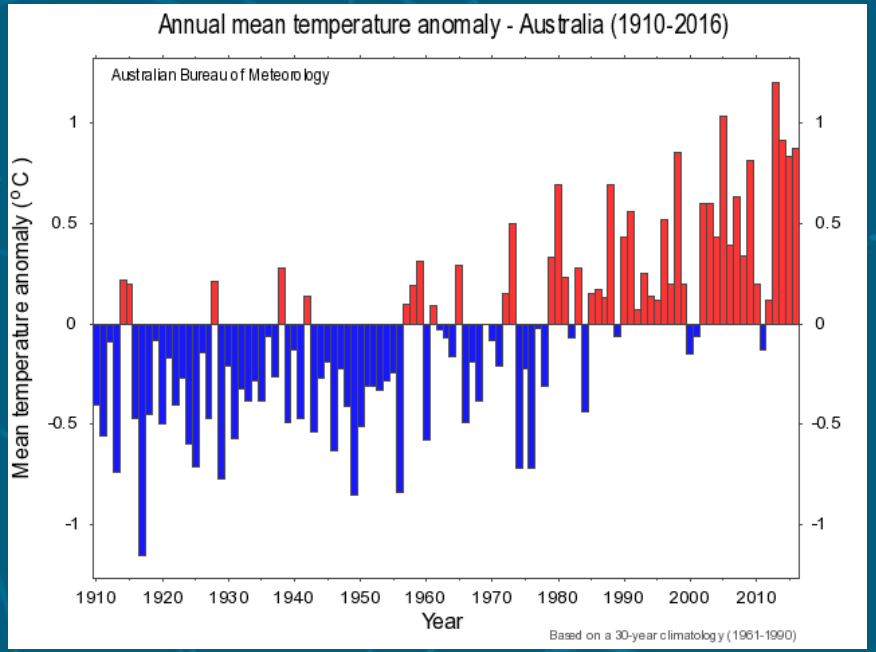
# Bushfire weather and a warming planet




Trends in Forest Fire Danger Index (1973-2010)




Australian temperature trends (1910 – 2016)

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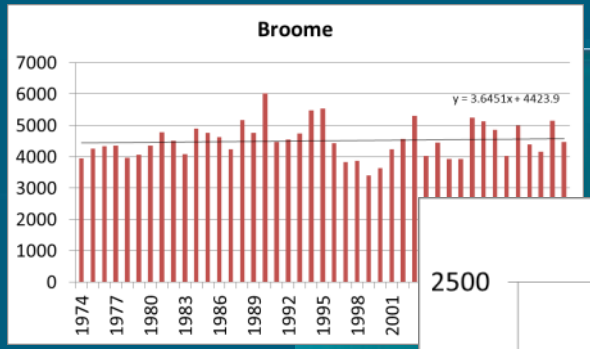
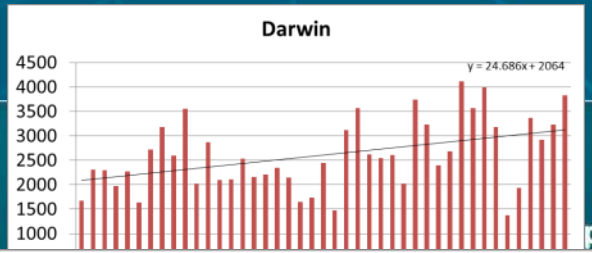
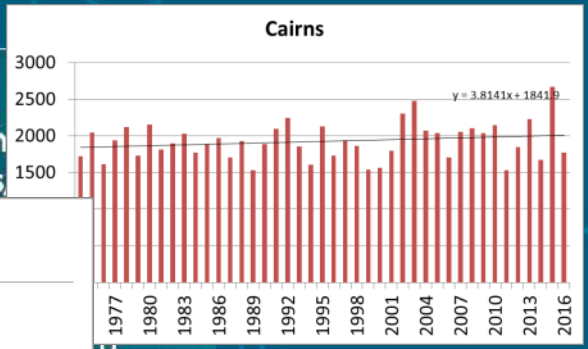
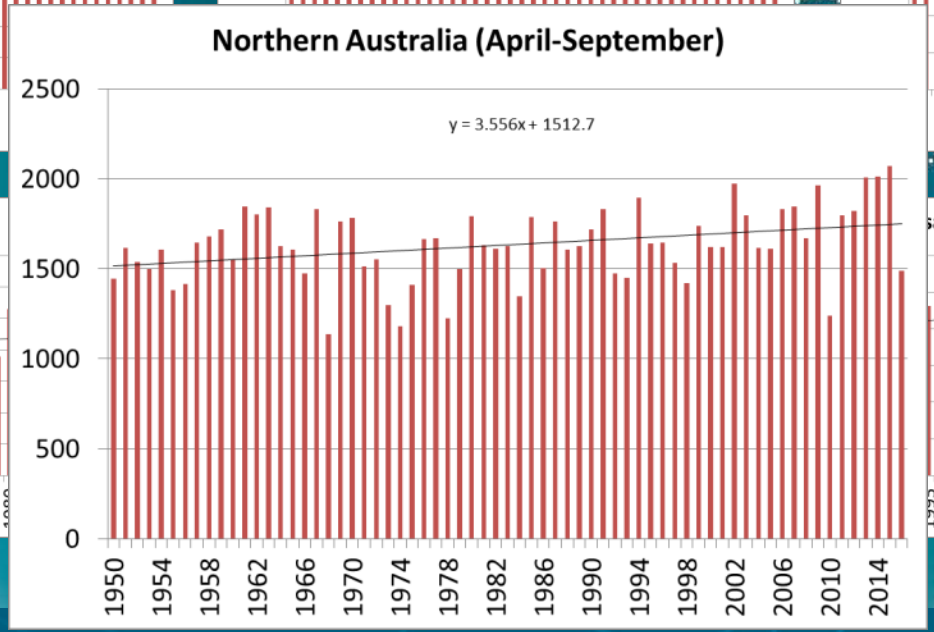
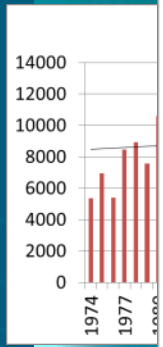
# Representative FFDI graphs

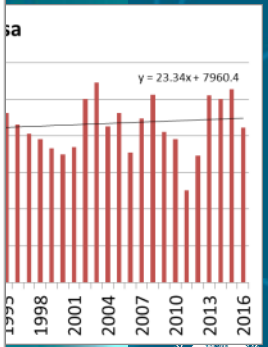
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FFDI: Forest Fire Danger Index

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# Southern and Northern fire seasons overlapped

Lancefield, 6 October 2015
FFDI 78 (highest so early in spring by nearly a month)

Esperance Fire, 17 November

Pinery Fire, 25 November

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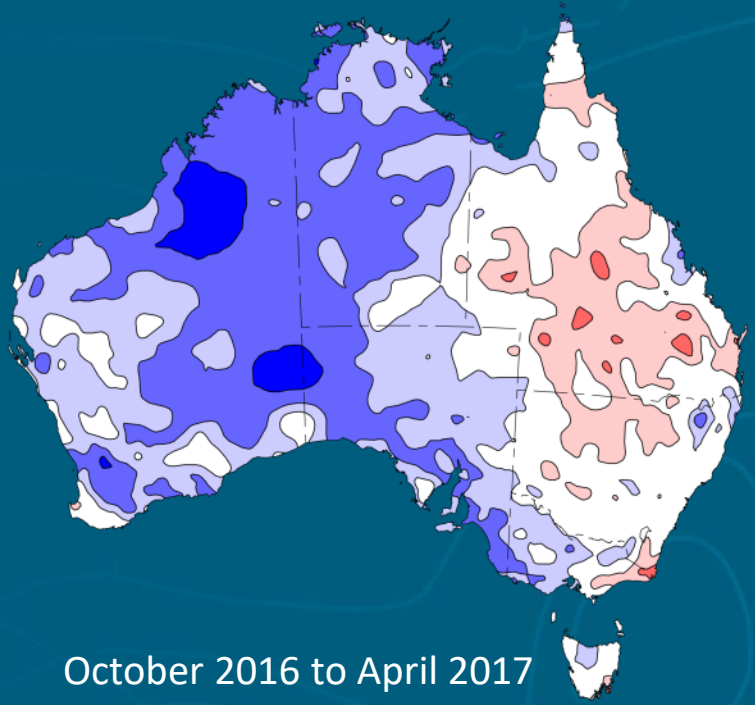
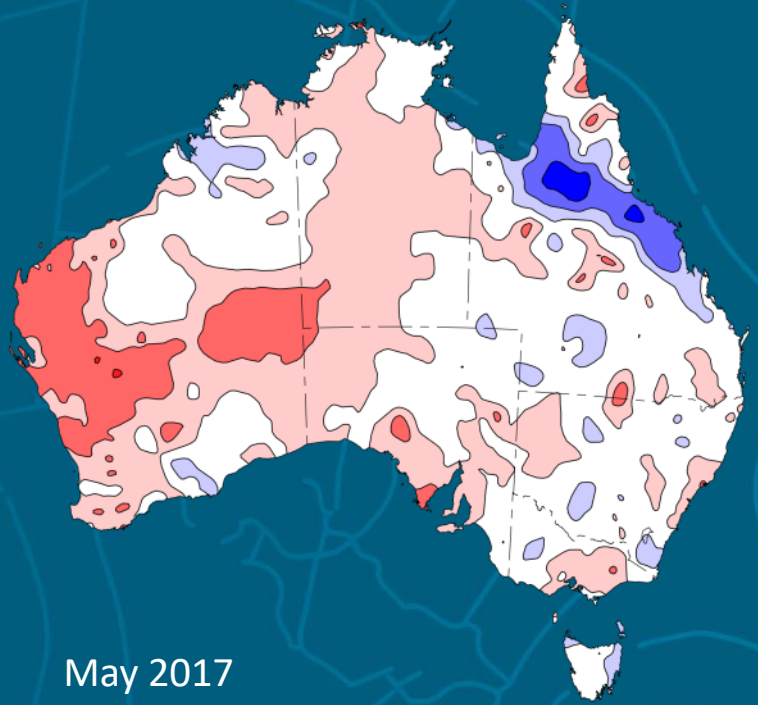
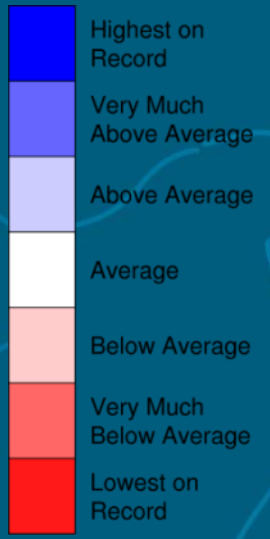
# Rainfall: Monsoon season and the dry (so far)



October 2016 to April 2017



May 2017

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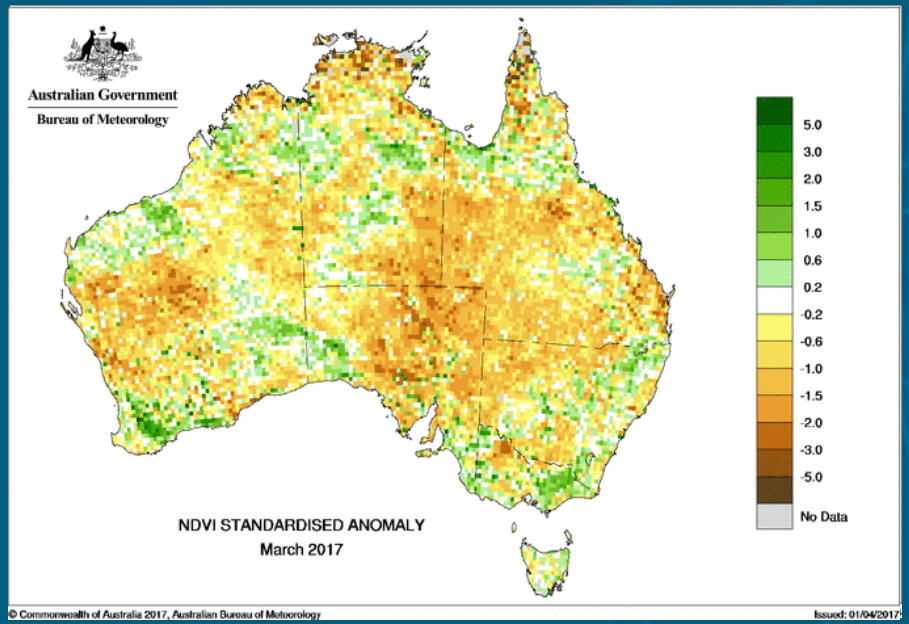
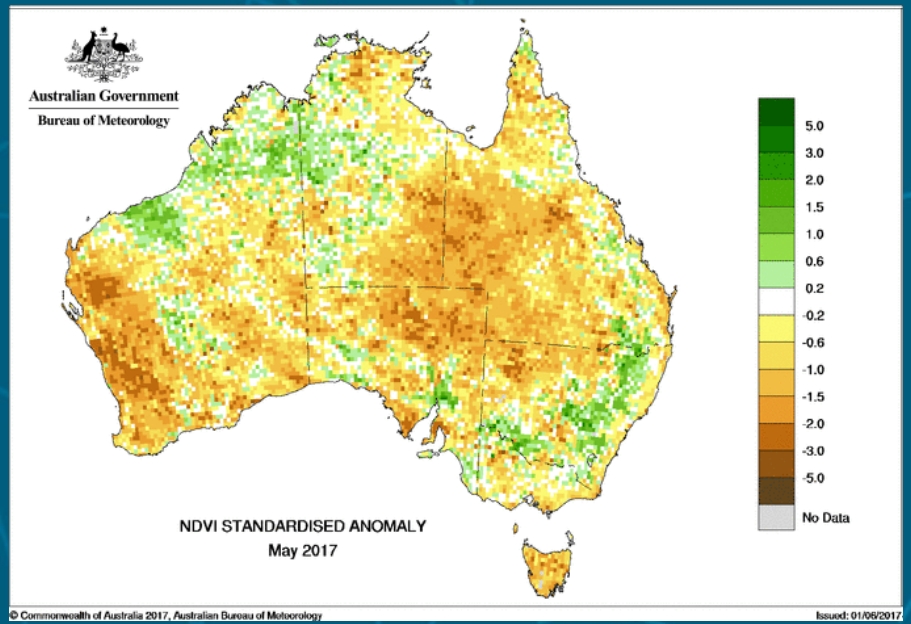
# Recent NDVI: March & May 2017

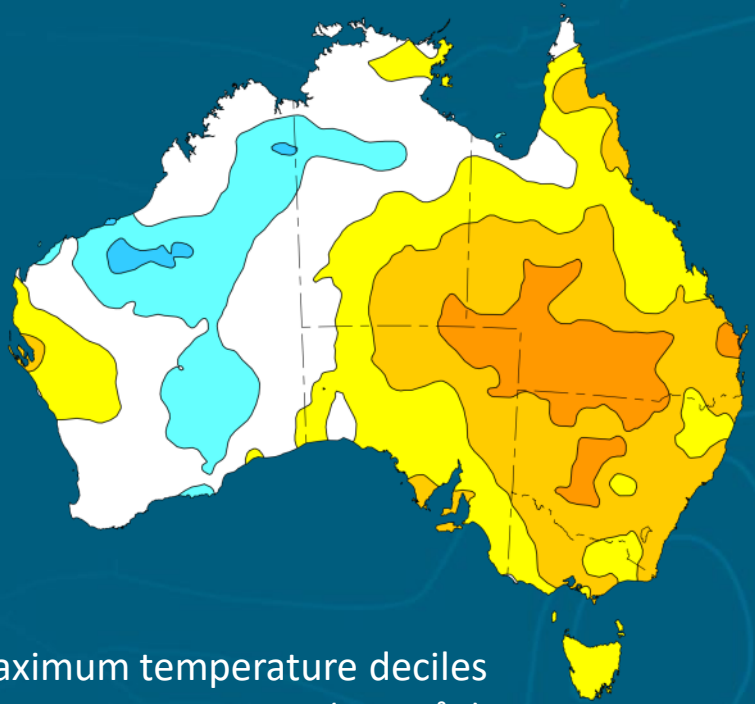



March 2017 NDVI anom

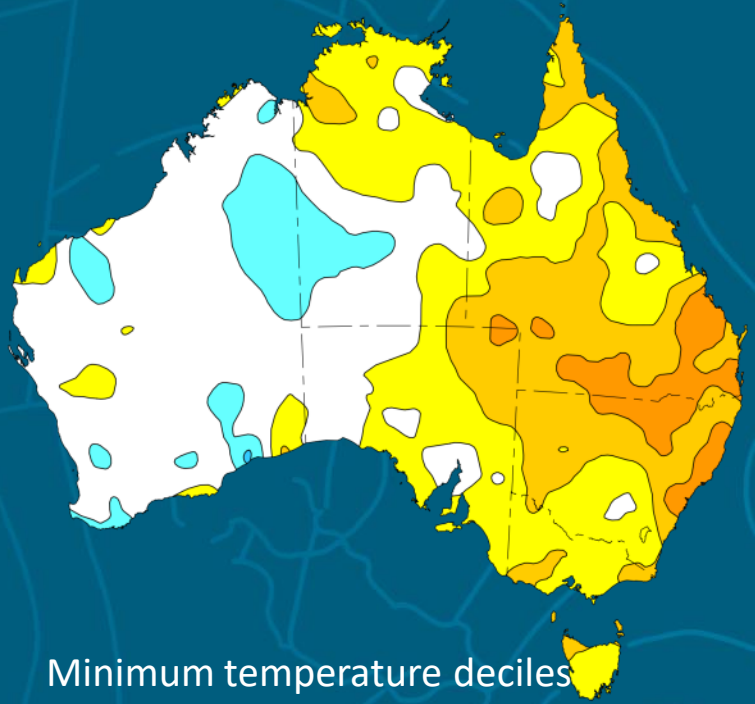



May 2017 NDVI anom

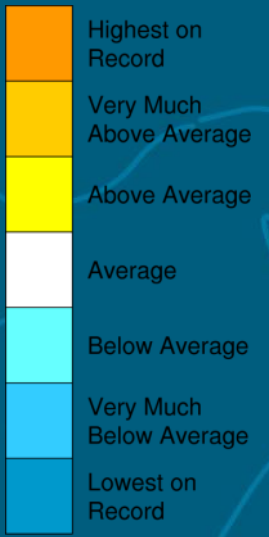
# Temperatures: Warm east, cooler west



Maximum temperature deciles
January to May 2017 (+0.58˚C)



Minimum temperature deciles
January to May 2017 (+0.42˚C)

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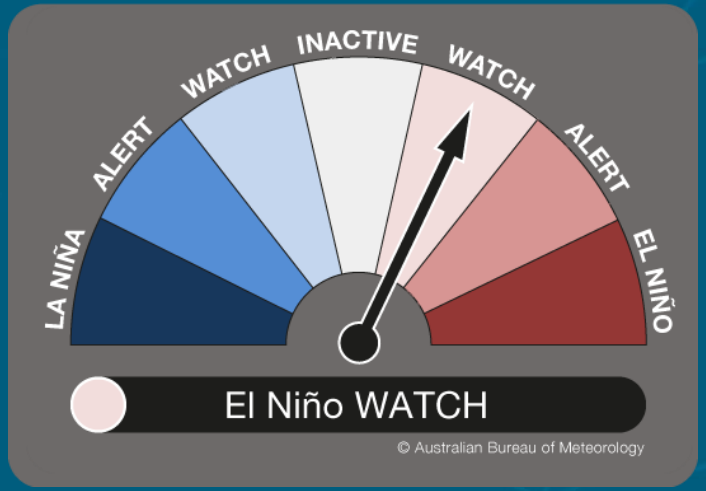
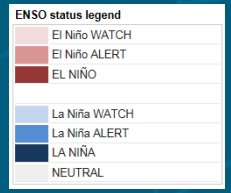
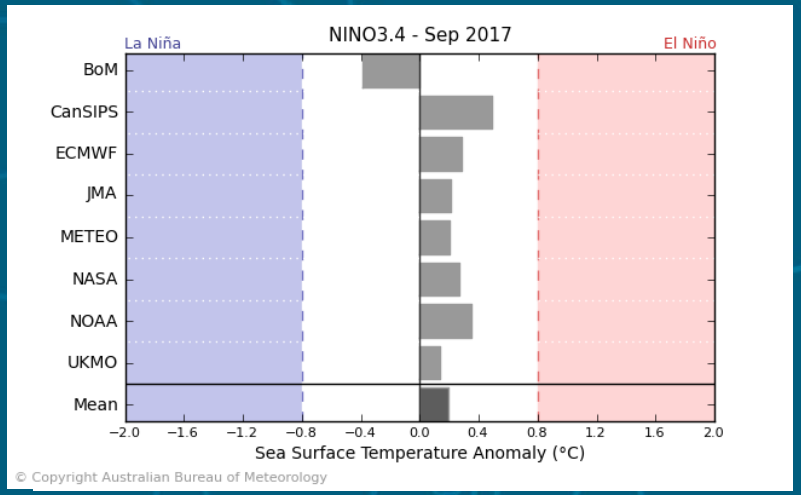
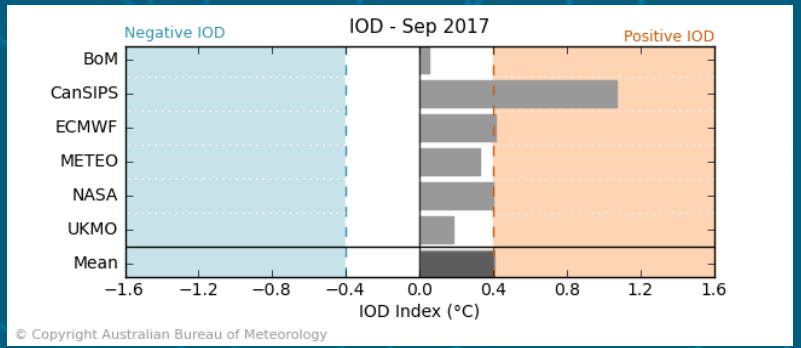
# ~~El Niño watch~~ → 25% probability of an event




Model forecasts of IOD and El Niño for September




Model forecasts show neutral to El Niño conditions and possible positive IOD

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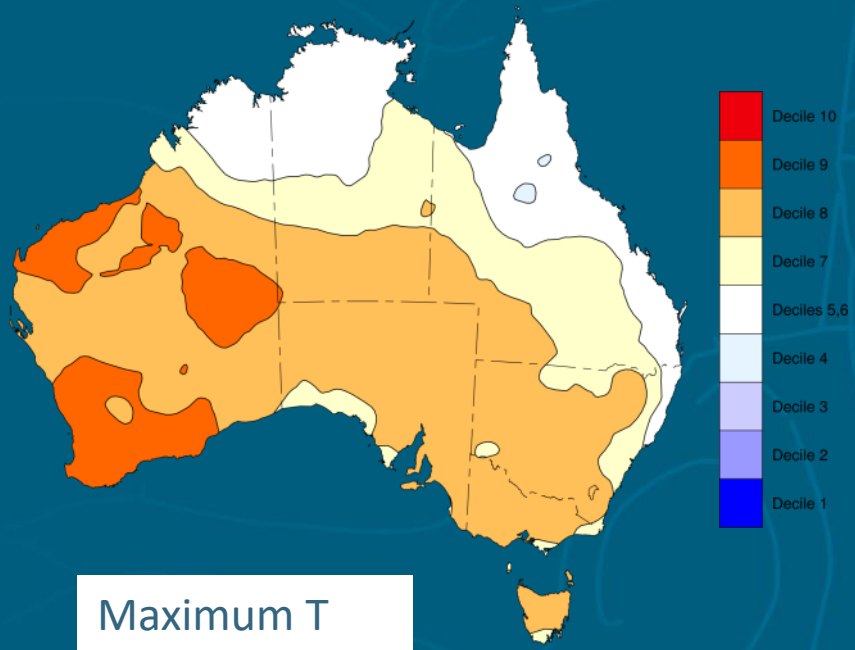
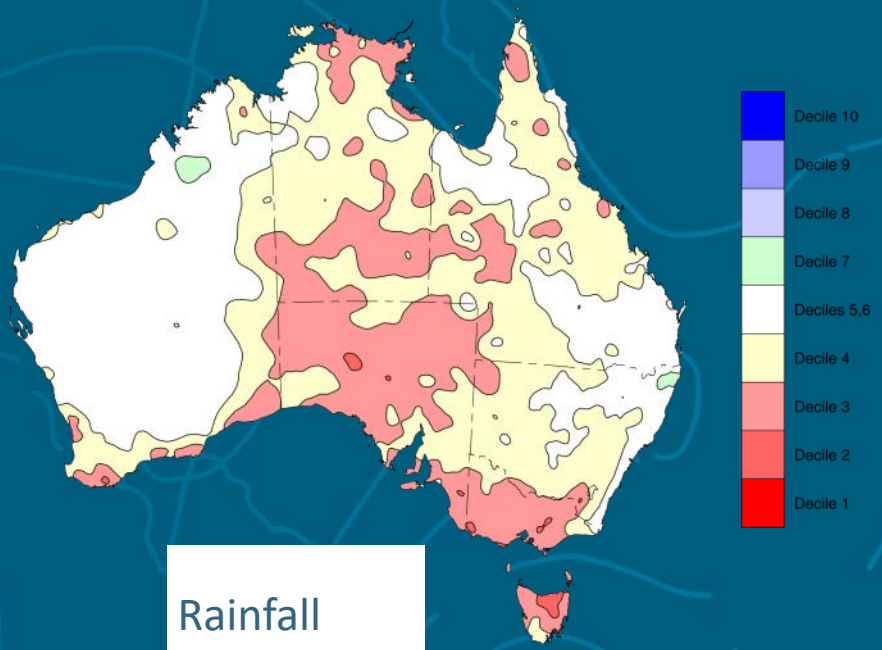
# Positive IOD impacts

July – November rainfall and maximum temperatures

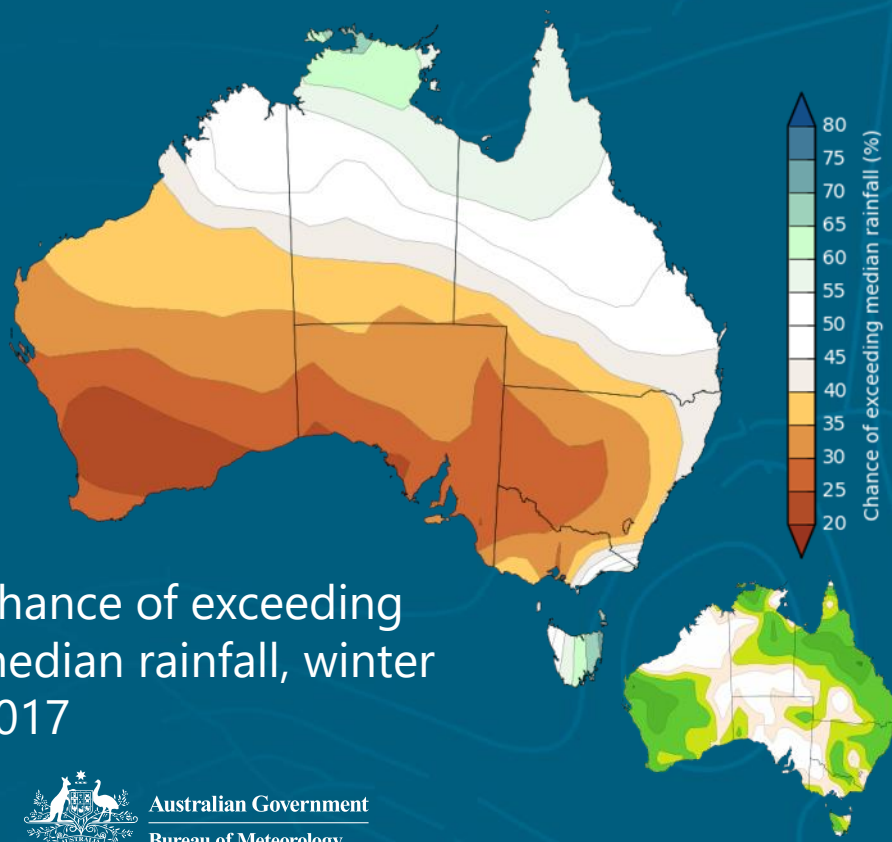



Maximum T

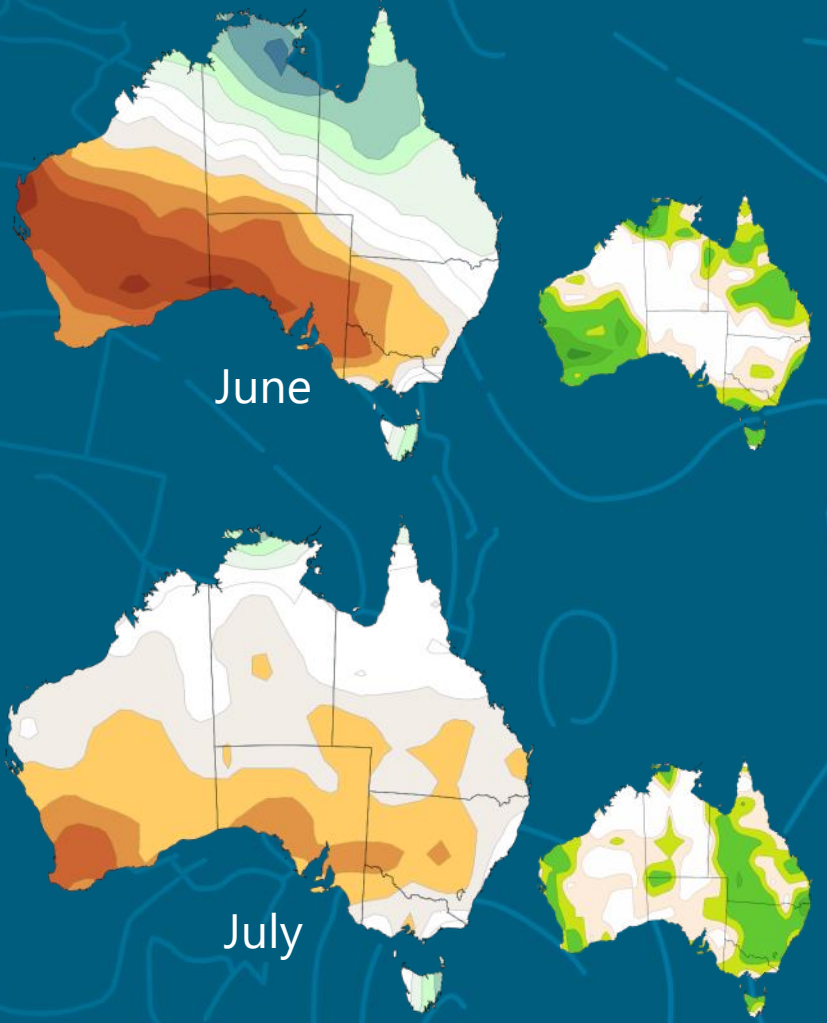



Rainfall

# Jun-Aug rainfall outlook




Chance of exceeding median rainfall, winter 2017

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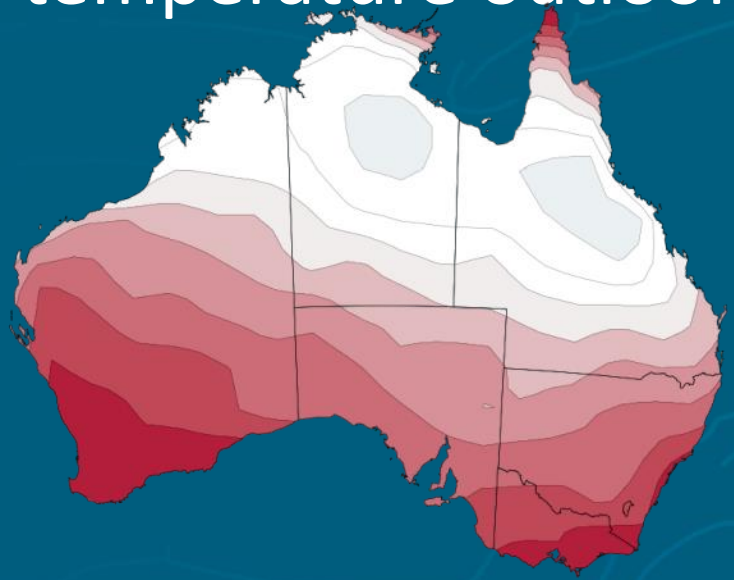
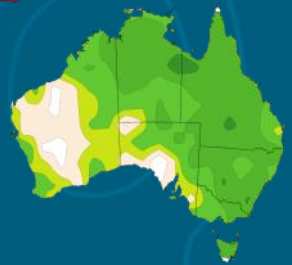
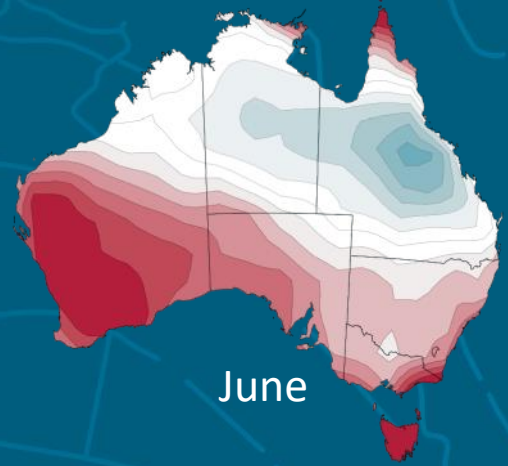
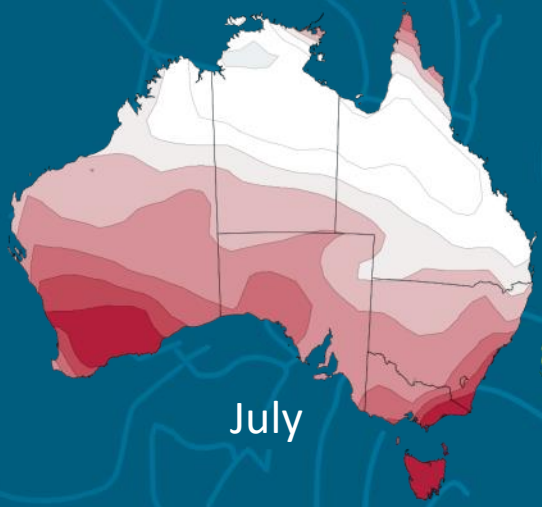
# Jun-Aug maximum temperature outlook

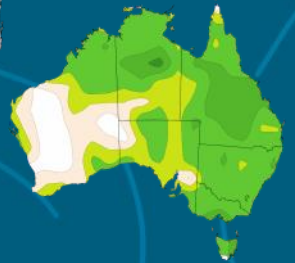




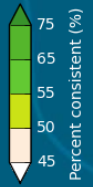


June





July


Chance of exceeding median maximum temperature, winter 2017

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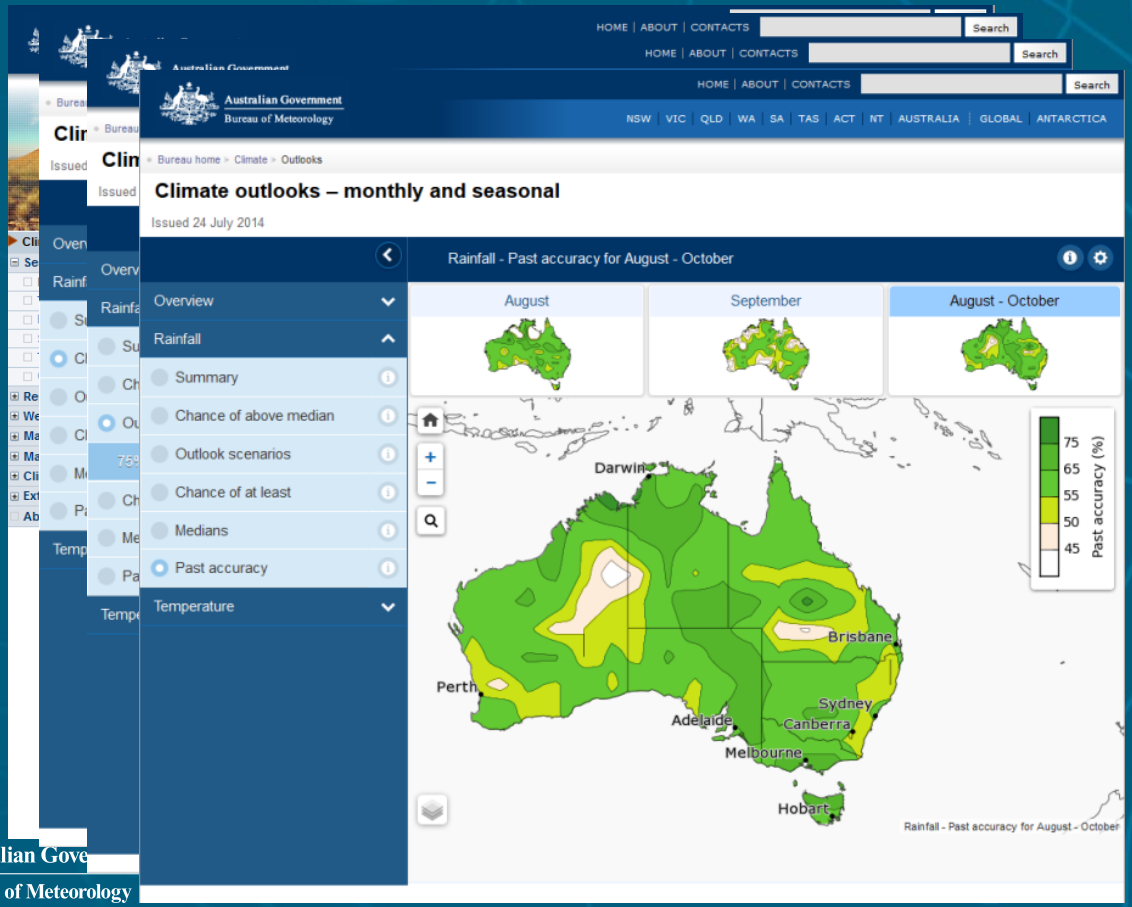
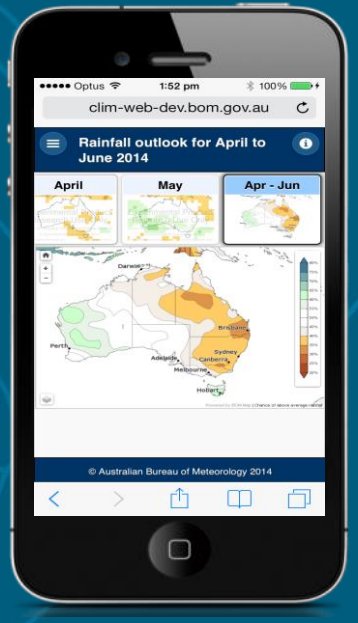
# Keeping updated

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# Planned improvements to BoM climate forecasts

## Higher resolution

- *From 250 km to 60 km*
- *Downscaling data to 5 km*

## More accurate forecasts

- *On par with the best performing global models*

## New fortnightly forecasts

- *Filling the gap between 7-day weather forecasts and monthly and seasonal outlooks*

## More frequent issue of outlooks

- *Weekly instead of monthly*


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# Summary

- Heavy monsoon rainfall in northwest, lighter in northeast
- Temperatures somewhat above average
- Pacific currently neutral, with a positive IOD probable
- June – August outlook:
  - Near average rainfall for region of interest – likely wetter in north and drier in south
  - Temperatures near average
  - New Climate Outlooks available 29 June, which will include *monthly and seasonal* rainfall and temperature outlooks

# Thank you

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