

# Climate Outlook

Northern Seasonal Fire Outlook Workshop

30 June and 1 July 2015

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*Dr David Jones, Manager Climate Monitoring and Prediction, Australia*



Australian Government  
Bureau of Meteorology



# Overview

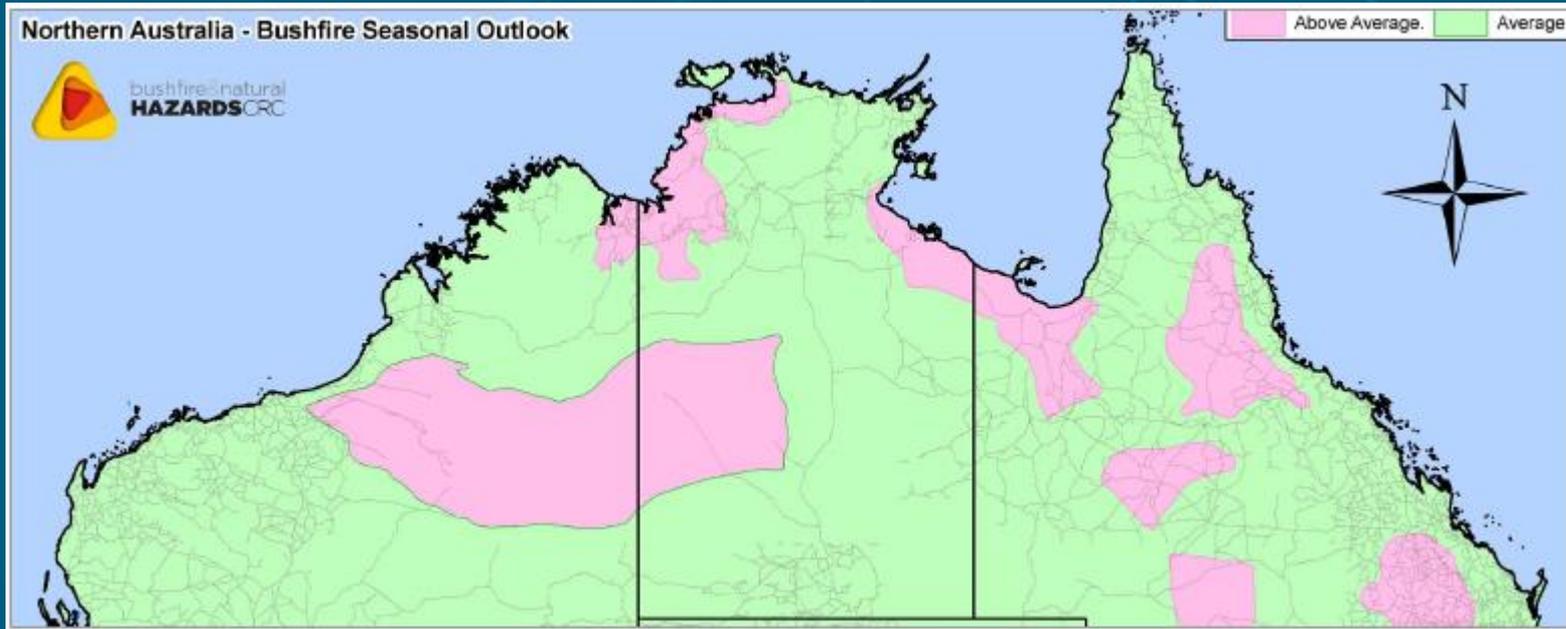
1. 2014: quick review
2. Background climate change signal
3. Outlook for 2015

Antecedent conditions

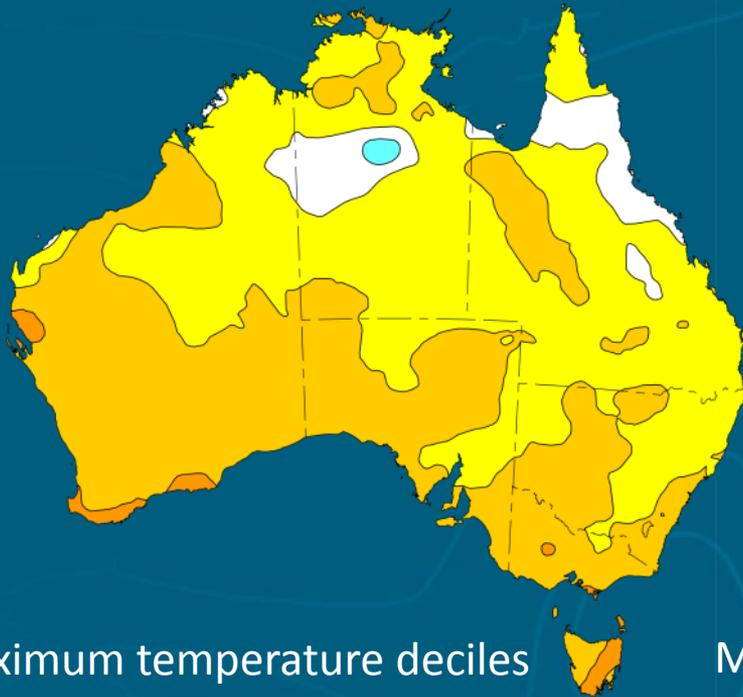
Seasonal Climate Outlook



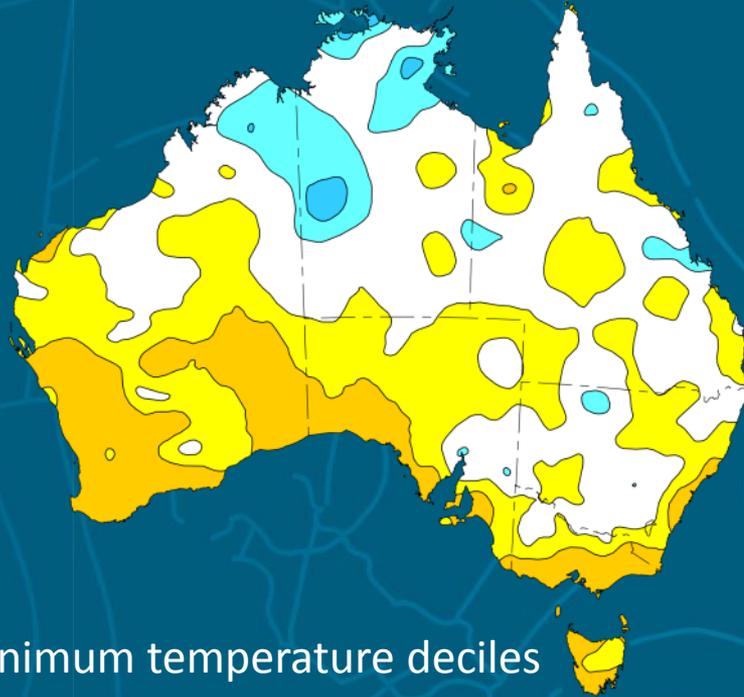
# 2014 fire season outlook



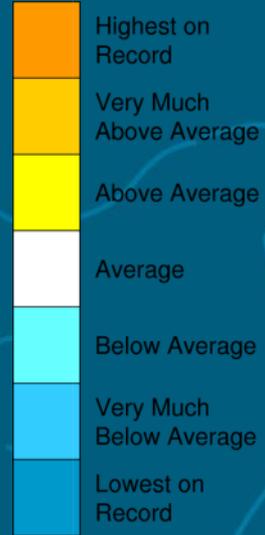
# 2014 season: warmer days, near normal nights



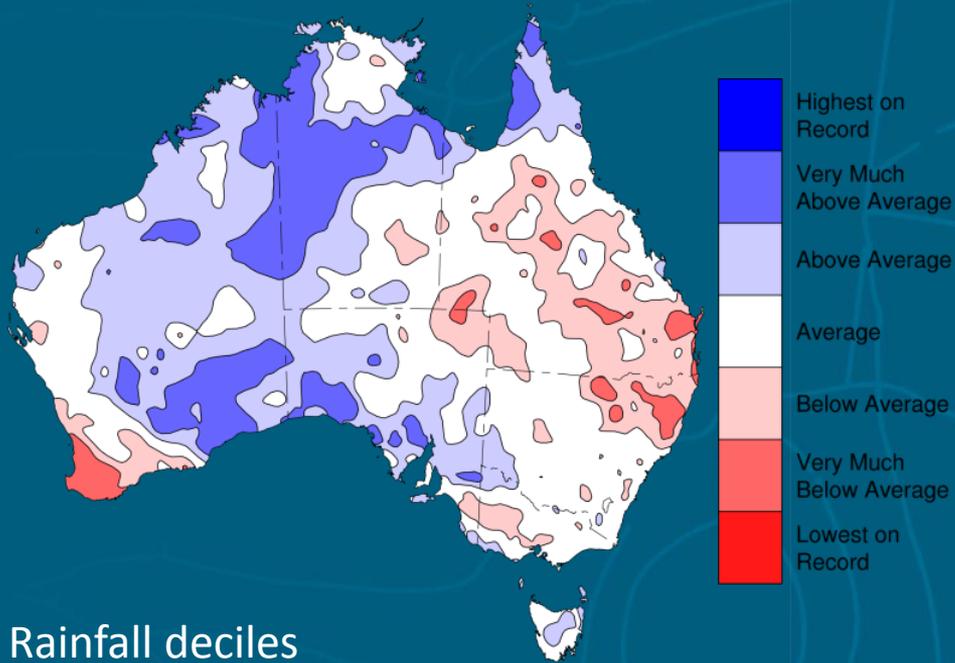
Maximum temperature deciles  
May to September



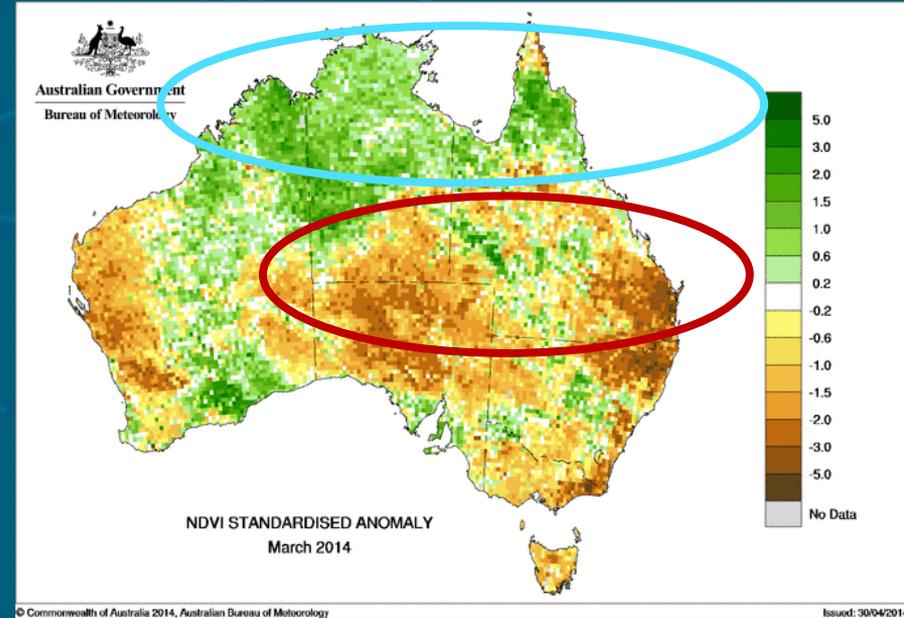
Minimum temperature deciles  
May to September



# Seasonal rainfall deciles: Pre-season

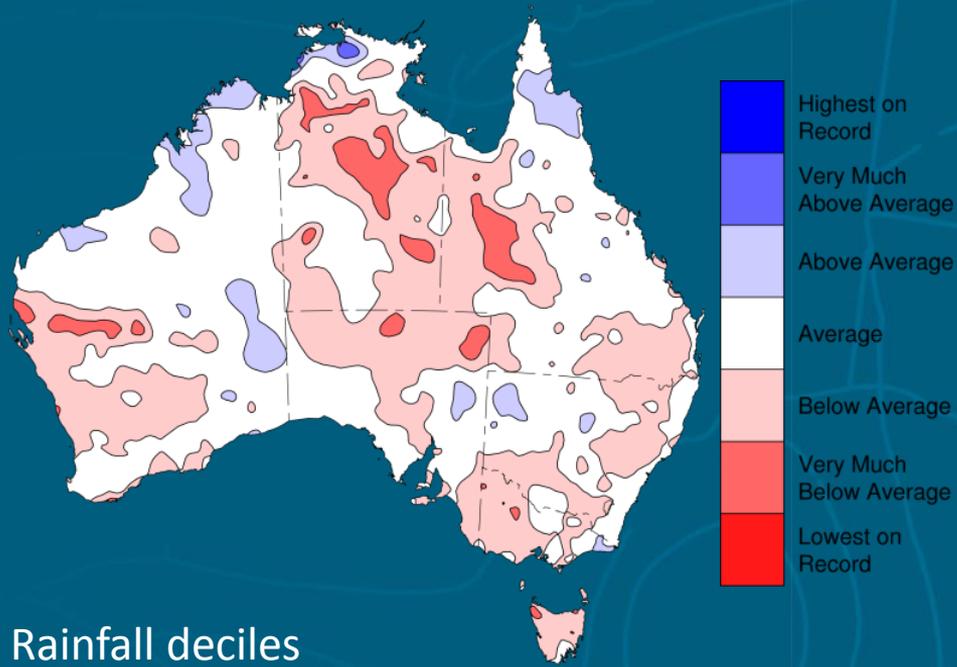


Rainfall deciles  
October 2013-April 2014

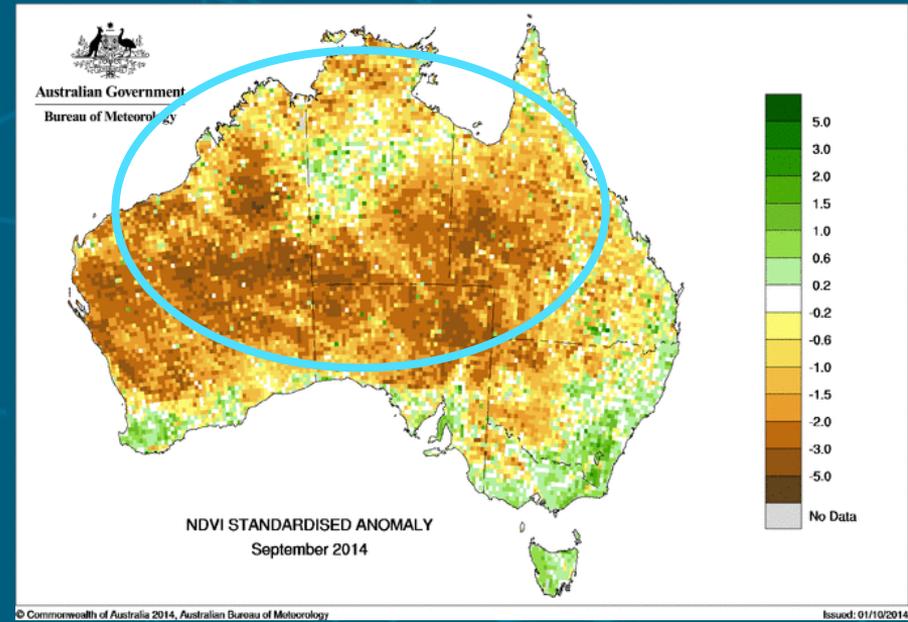


March 2014 NDVI anomaly

# Seasonal rainfall deciles: Fire season



Rainfall deciles  
May 2014-September 2014



September 2014 NDVI anomaly

# Overview

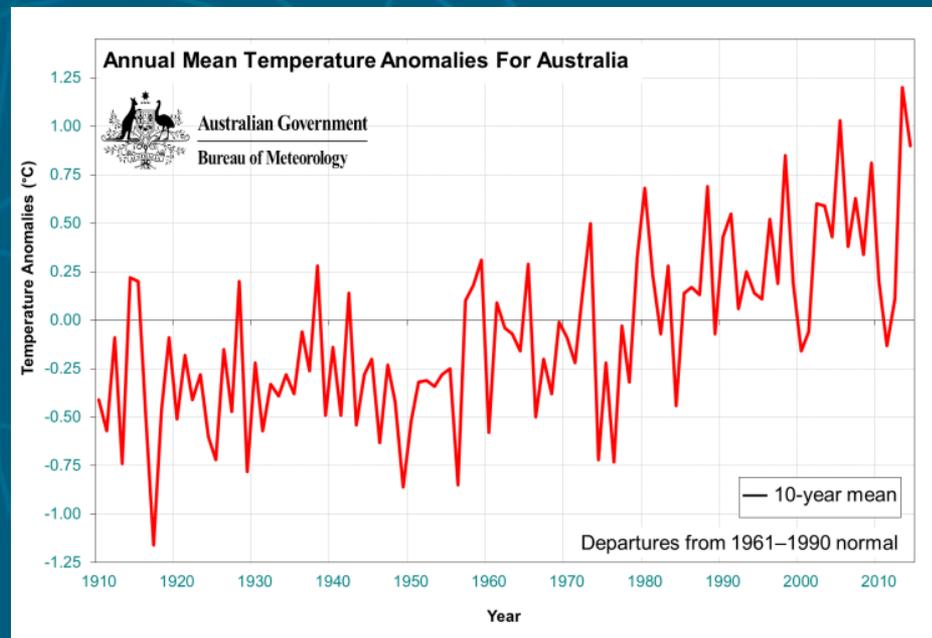
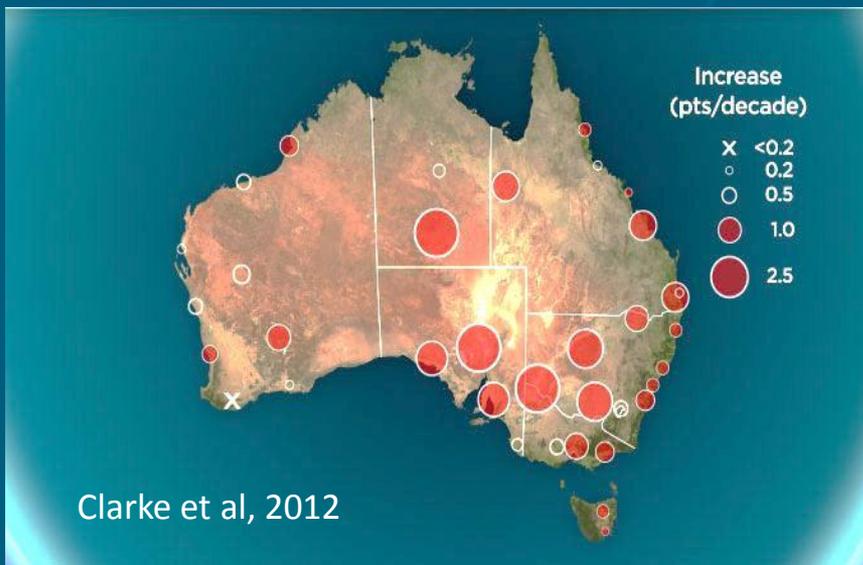
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Antecedent conditions

Seasonal Climate Outlook



# Bushfire weather and a warming planet



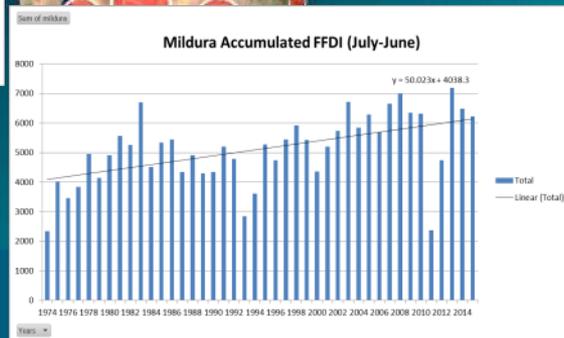
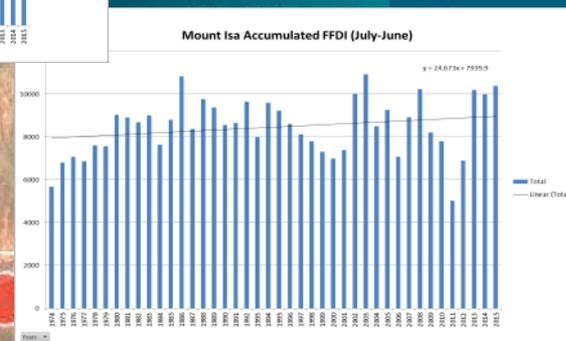
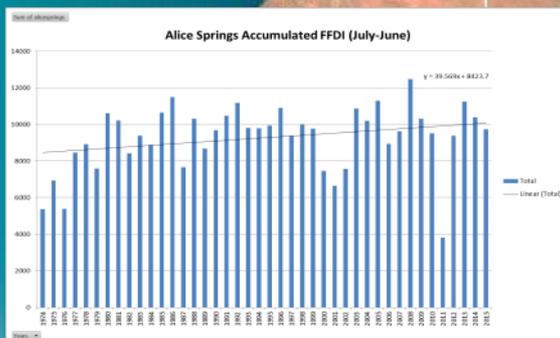
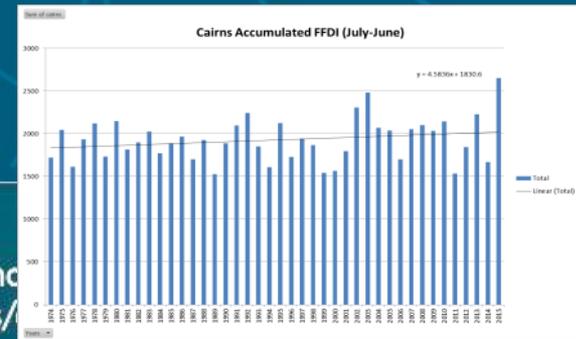
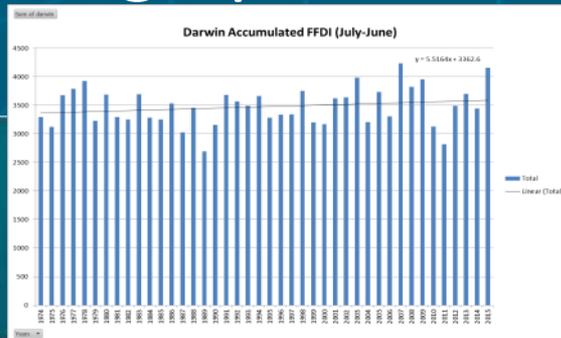
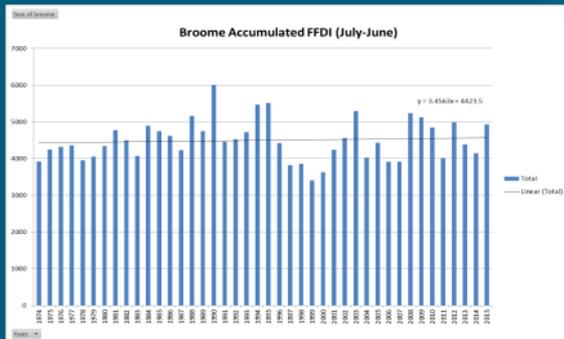
Trends in Forest Fire Danger Index  
(1973-2010)

Australian temperature trends  
(1910 – 2014)



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# Representative FFDI graphs

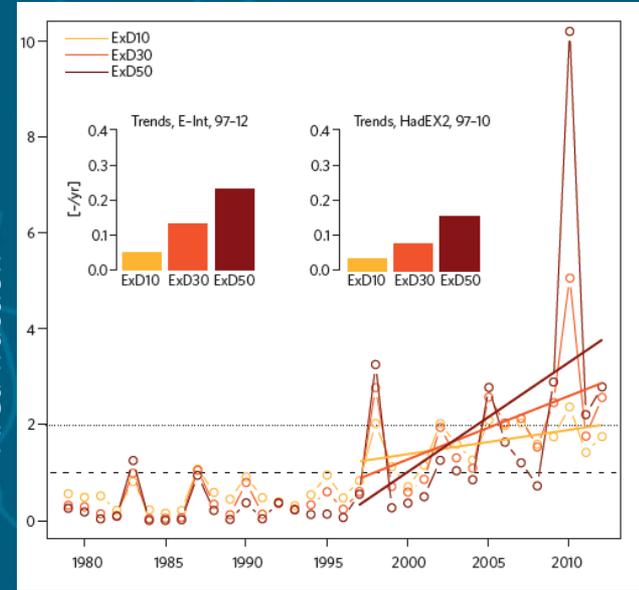
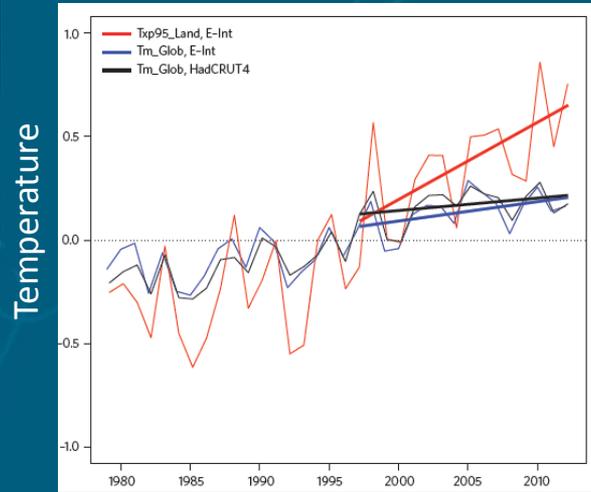


Australian Government

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FFDI: Forest Fire Danger Index

# Bushfire weather and a warming planet



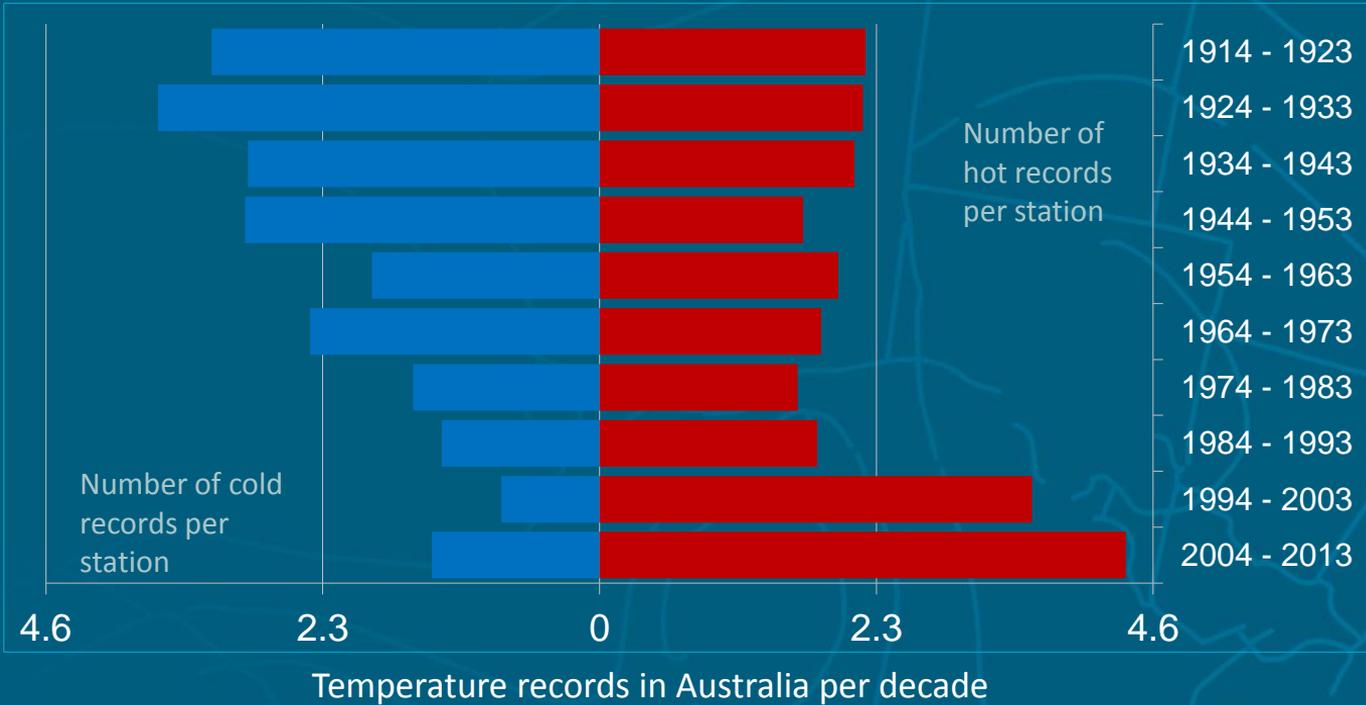
Rapid global increase in the hottest days over land

- Rapid global increase in the area affected by heat extremes



# Bushfire weather and a warming planet

More heat extremes: more hot records and less cold records



# Overview

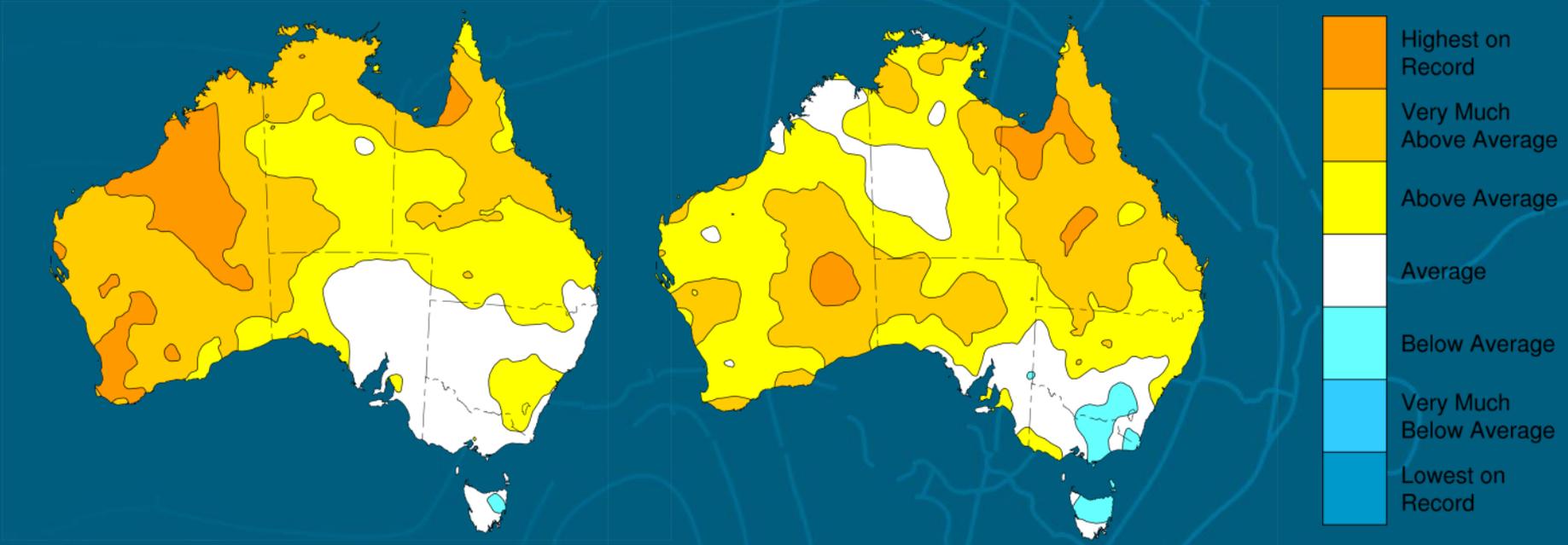
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**Antecedent conditions**

**Seasonal Climate Outlook**



# June to date temperature (25/6/15)

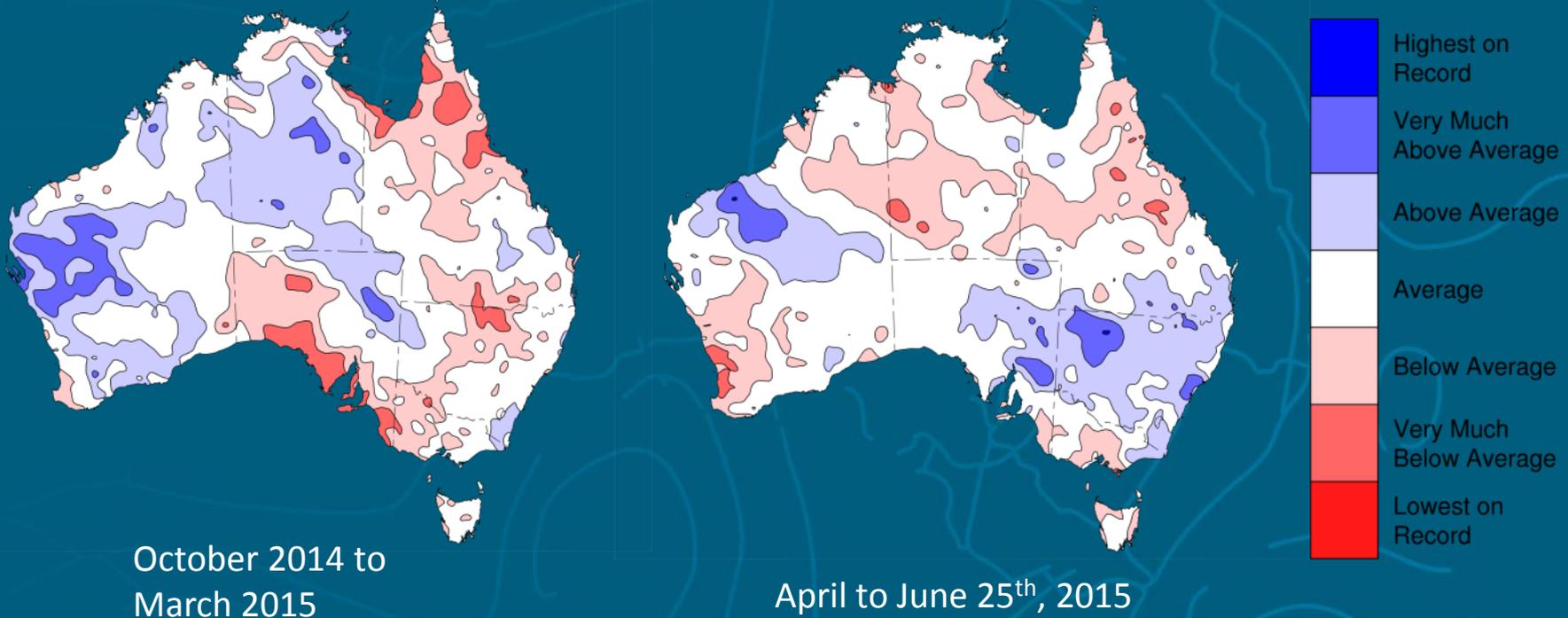


Maximum temperature deciles  
June to date 2015

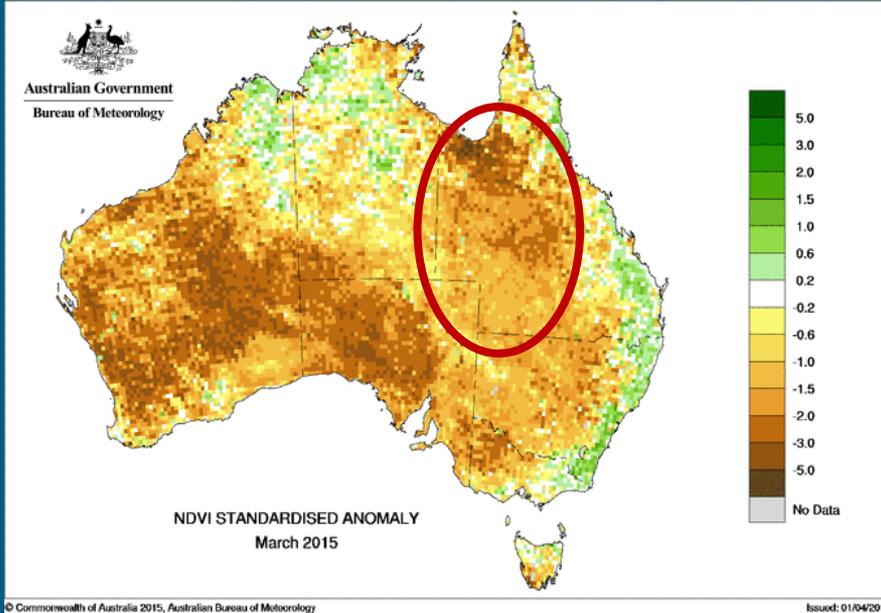
Minimum temperature deciles  
June to date 2015



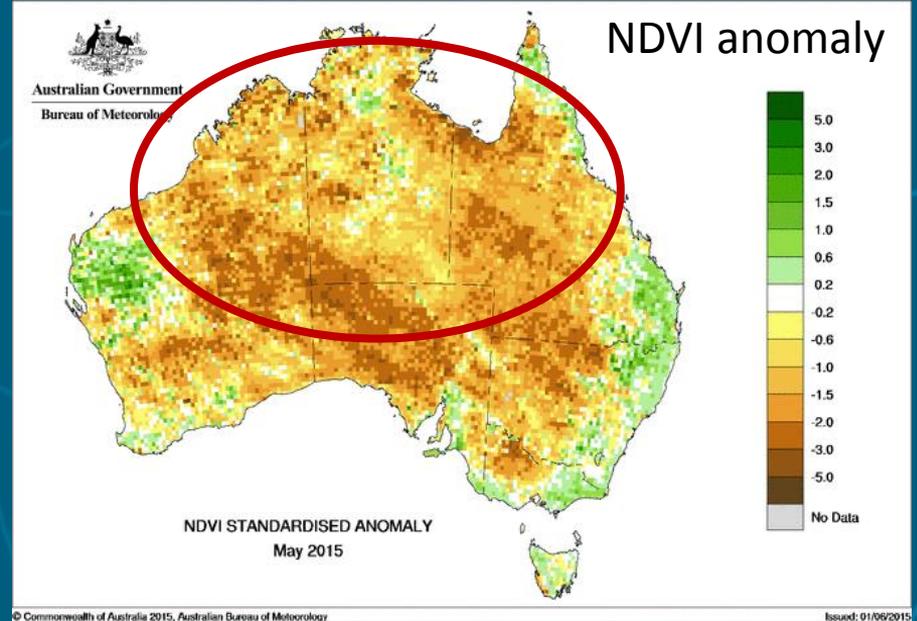
# Rainfall: Monsoon season and the dry (so far)



# Recent NDVI: May 2015



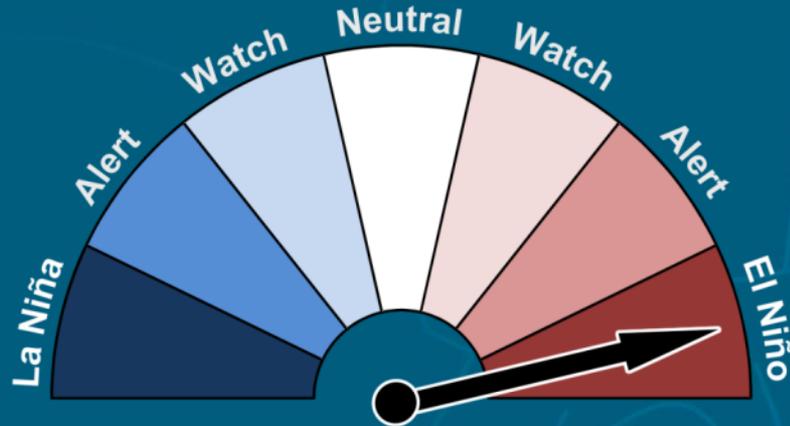
March 2015 NDVI anom



May 2015 NDVI anom



# El Niño has been called this year – what does this mean?



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2014												
2015												

**ENSO status legend**

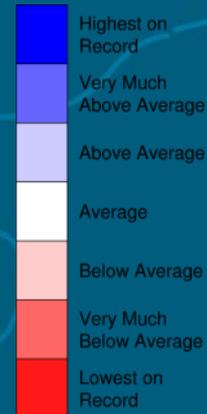
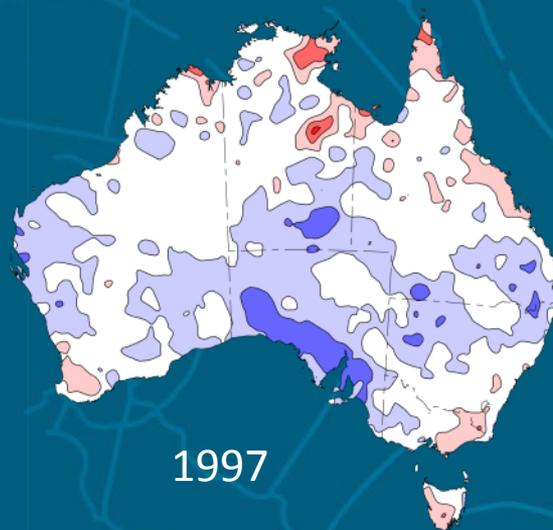
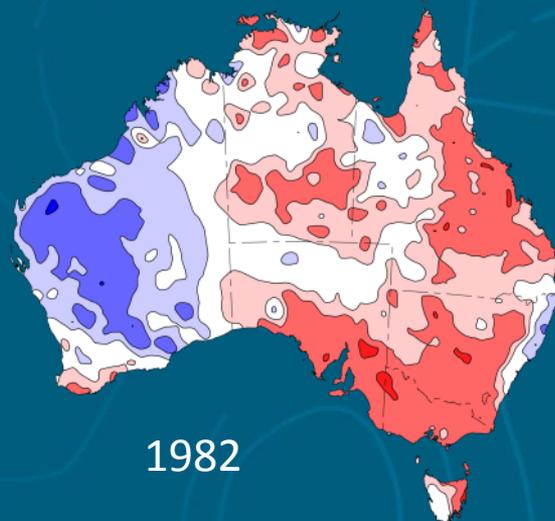
- El Niño WATCH
- El Niño ALERT
- EL NIÑO
- La Niña WATCH
- La Niña ALERT
- LA NIÑA
- NEUTRAL



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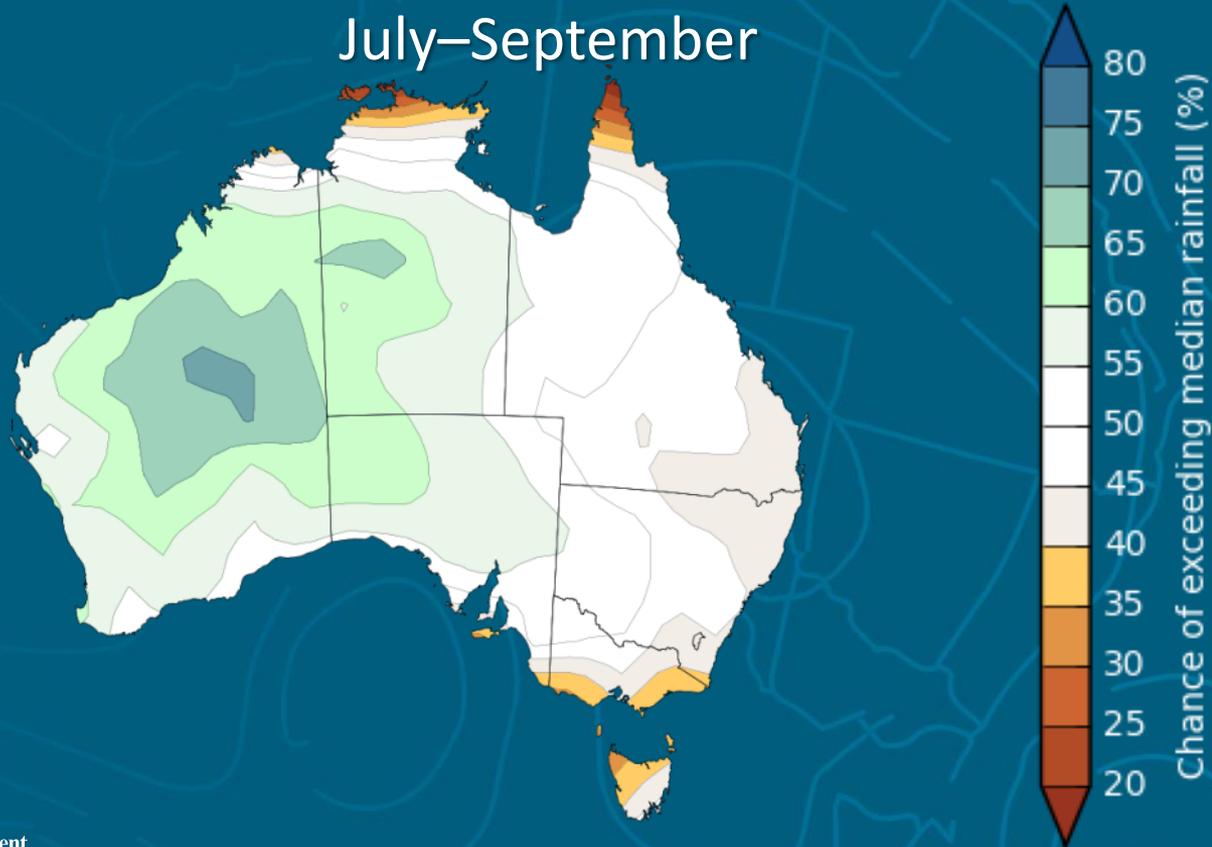
# Every El Niño is different

Spring rainfall



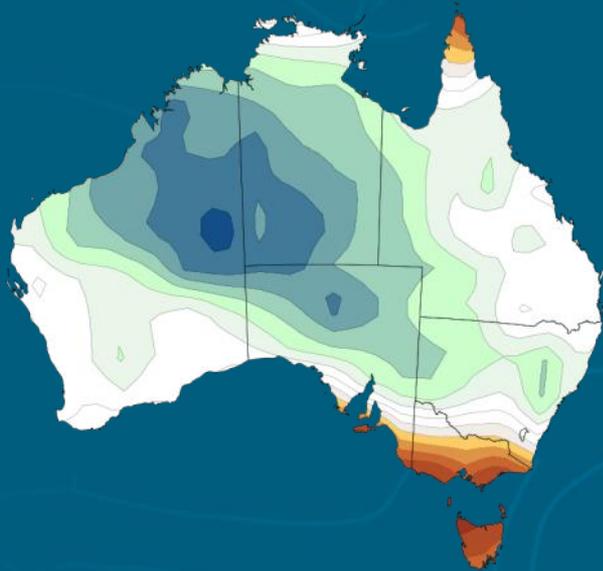
# Chance of exceeding median rainfall

July–September

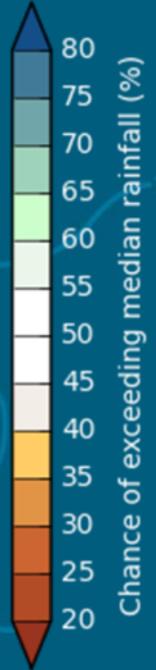
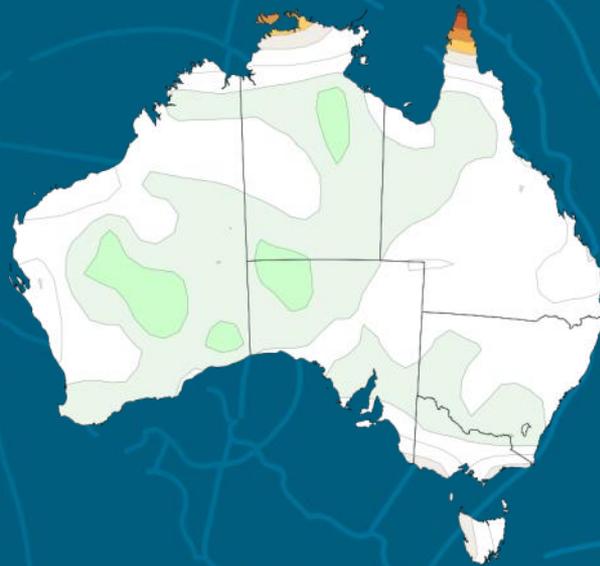


# Chance of exceeding median rainfall

July



August



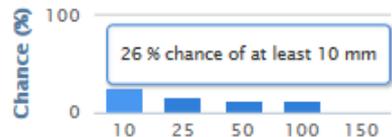
### Outlook for July to September at Broome

#### Rainfall

Median **1 mm**

Chance of above median **Likely**

Rainfall total of at least (mm)



Past accuracy **High**

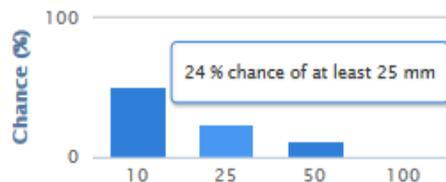
### Outlook for July to September at Tennant Creek

#### Rainfall

Median **4 mm**

Chance of above median **Likely**

Rainfall total of at least (mm)



Past accuracy **Moderate**

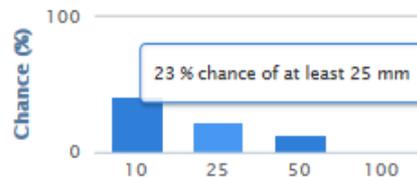
### Outlook for July to September at Mount Isa

#### Rainfall

Median **6 mm**

Chance of above median **Equal likelihood**

Rainfall total of at least (mm)



Past accuracy **Moderate**

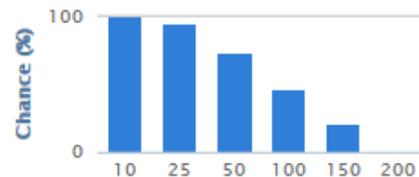
### Outlook for July to September at Cairns

#### Rainfall

Median **98 mm**

Chance of above median **Equal likelihood**

Rainfall total of at least (mm)

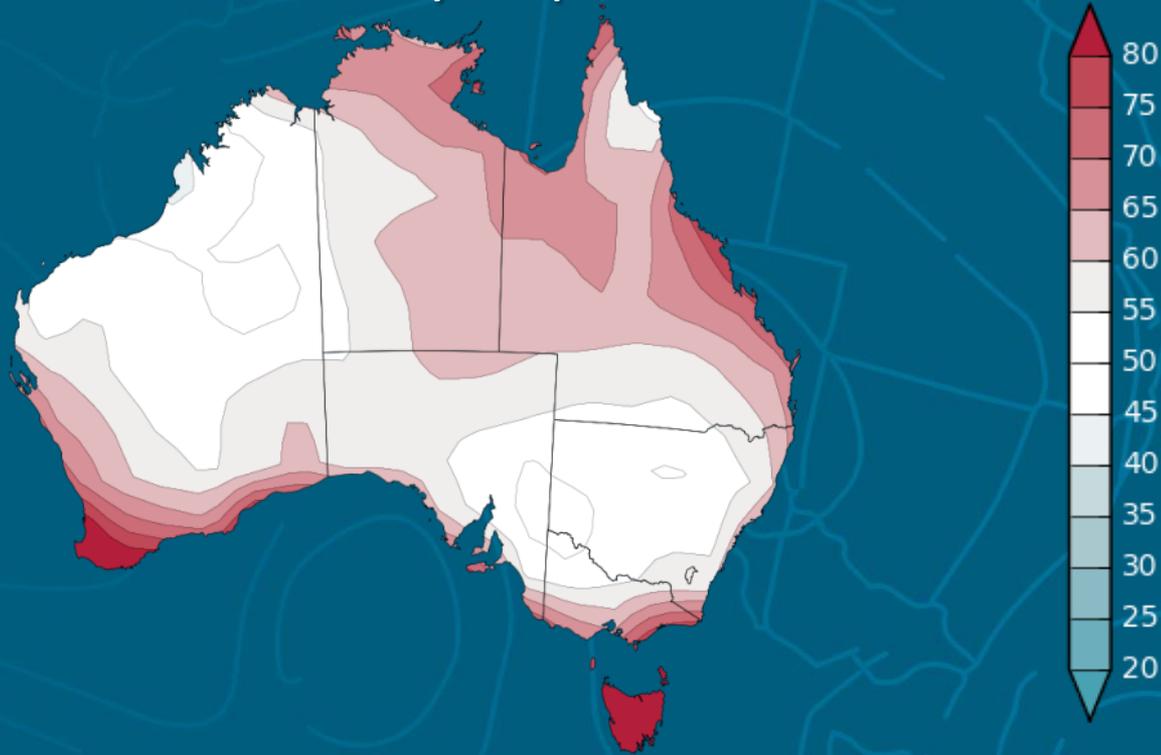


Past accuracy **Low**

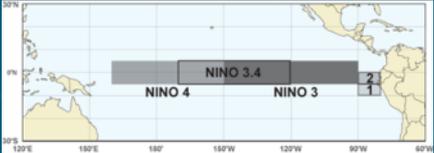
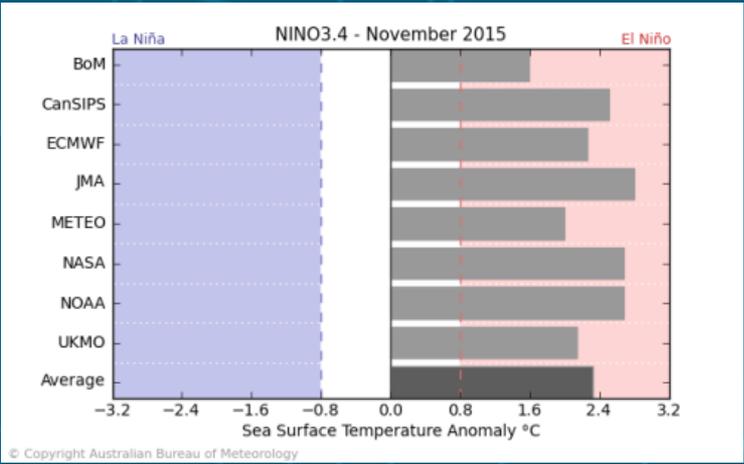
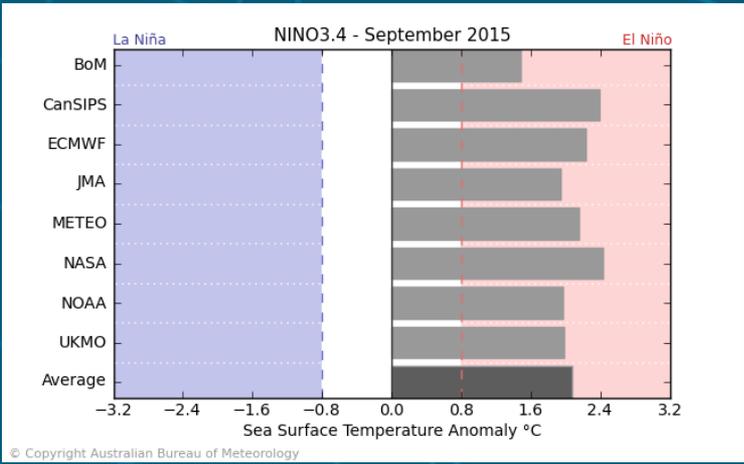
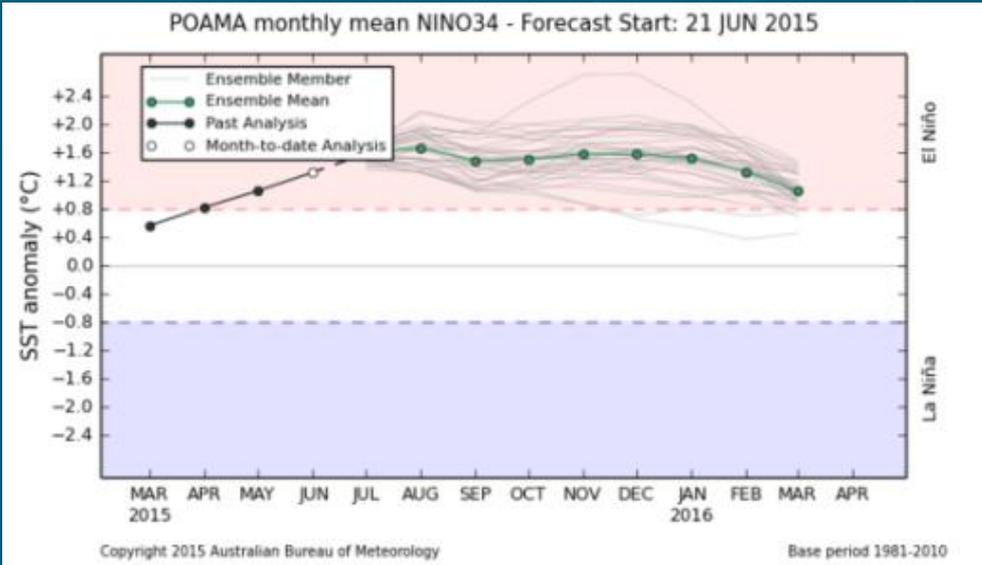


# Chance of exceeding median maximum temperature

July–September



# Tropical Pacific: Continued El Niño



# Northern rainfall onset (new this month)

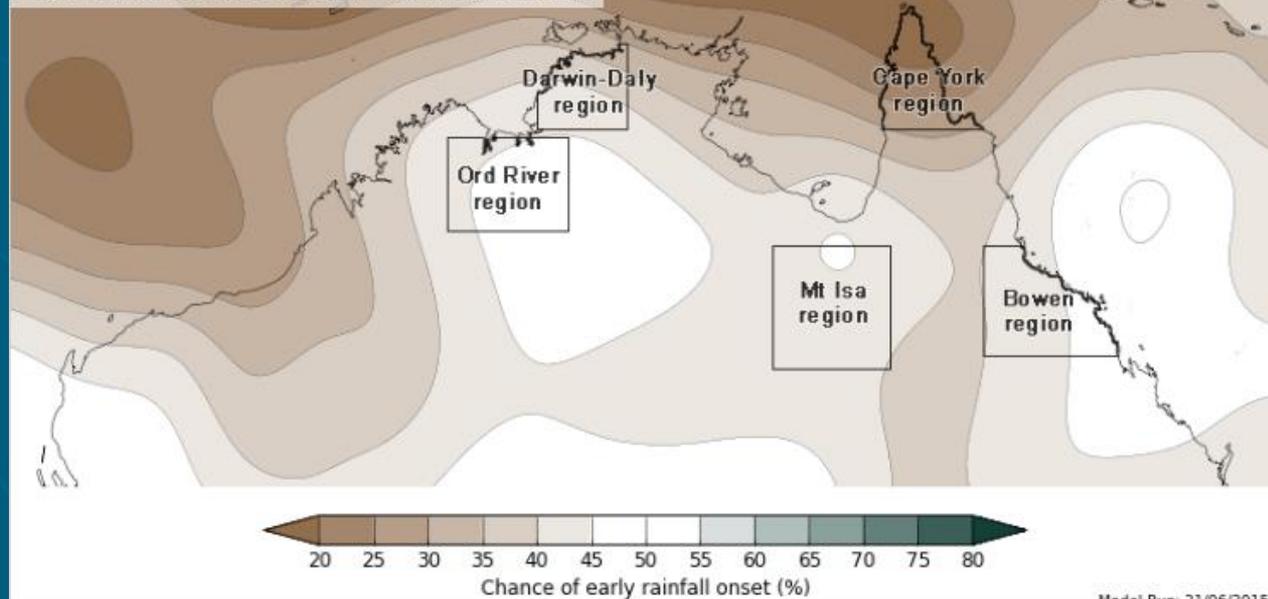
- Predicting the timing of the rainy season onset
- May signal the end of the fire season (?)
- Defined by the occurrence of 50mm after September 1



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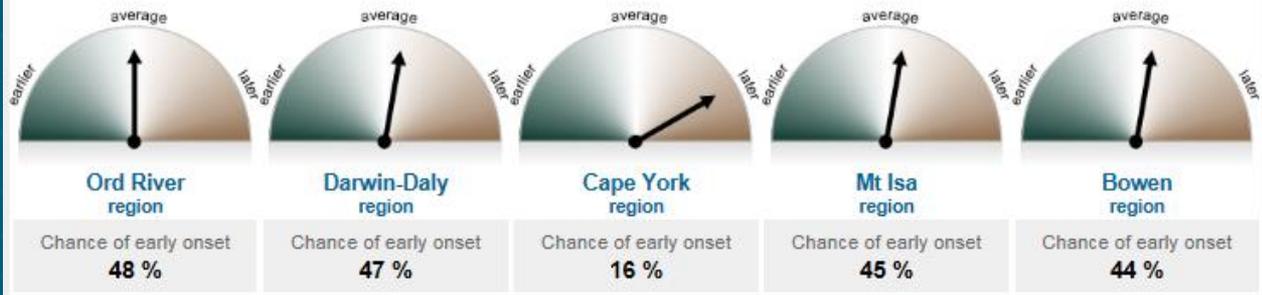
Map showing the chance of early northern rainfall onset



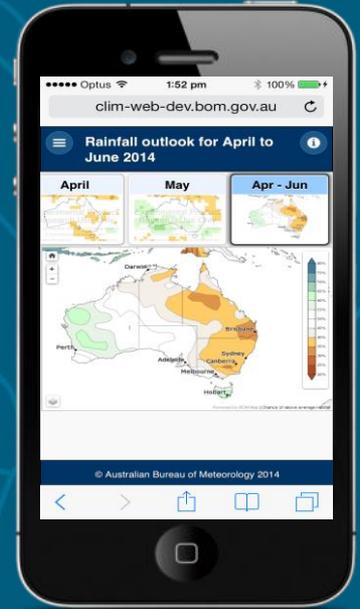
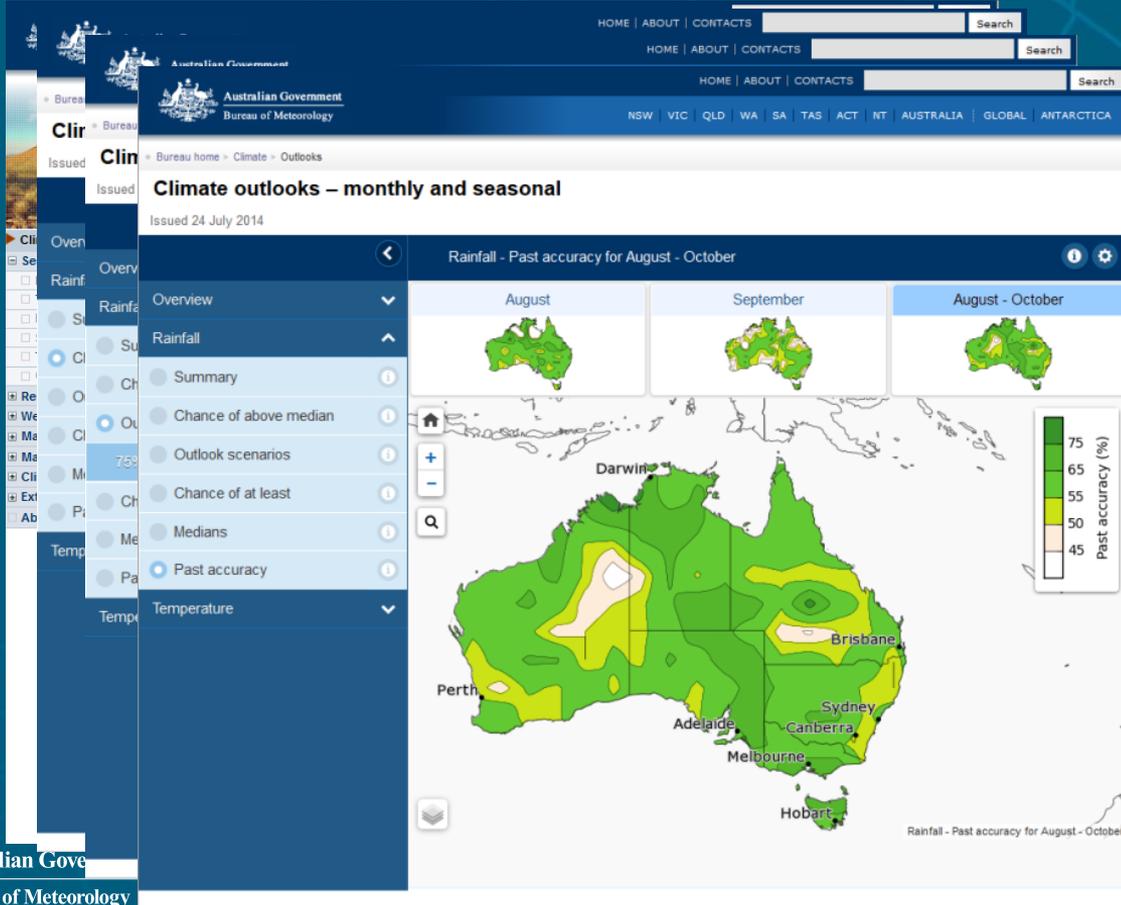
Model Run: 21/06/2015

### Regional outlooks

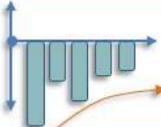
[Hide map](#)



# Keeping updated



# BETTER SEASONAL OUTLOOKS

<p>Finer model detail</p>	<p>Moving from 250 km to 60 km resolution</p>  <p>Australia: 120 to 2000 grid points</p>  <p>meaning more localised information by accounting for local conditions</p>
<p>More outlook periods</p>	<p>Seamless: filling the gap between 7-day and monthly outlooks</p>  <p>Outlooks updated weekly</p>
<p>Higher outlook skill</p>	 <p>Significant improvement in outlook accuracy</p>  <p>meaning the best outlooks for Australia of all international models</p>
<p>World class service</p>	 <p>meaning information is clear, concise and available when and where you need it</p> <p>More intelligence possible:</p> <ul style="list-style-type: none"> <li>• Evaporation</li> <li>• Humidity</li> <li>• Wind</li> <li>• Drought</li> <li>• Extremes</li> <li>• Tropical Cyclones</li> </ul> <p>Not only rainfall and temperature</p>
<p>Bigger user returns</p>	 <p><b>Reduce losses</b> by mitigating climate impacts - agricultural production loss from the 2010-11 La Niña was <b>more than \$2 billion</b> <small>ABARES</small></p>  <p>Potential value of improved seasonal forecasts: <b>More than \$1 billion per year</b> <small>Centre for International Economics 2014</small></p>

# Summary

- Recent conditions in Northern Australia: warmer days, near normal nights, generally an average wet-season, but large parts of QLD missing out (3 consecutive poor wet-seasons)
- El Niño declared in May 2015
- July - September Outlook:
  - There is an increased chance of a wetter three months over central and northern WA, as well as adjacent areas over the WA border. Most of eastern Australia has a roughly equal chance of being wetter or drier
  - Days are likely to be warmer than average across large parts of northern Australia. Overnight temperatures are likely to be warmer than normal for most of Northern Australia
  - New Climate Outlooks available 30 July, which includes *monthly and seasonal* rainfall and temperature outlooks, as well as new Northern rainfall onset.



# Thank you

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