












# High Risk Weather Season Outlook

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# 2023–24 National Severe Weather Outlook Summary

Hazard	Likelihood compared to recent decades
	↑ Much of the NT, south & central Queensland, northern & central NSW. Increasing risk during spring in parts of SA and VIC
	↑ Increased risk for much of Australia
	↑ Watchpoints: South-west WA, southern QLD, eastern NSW and VIC
	↑ Dry outlook suggests increased frost risk for susceptible parts of inland southern Australia
	↑ Increased risk
	● Average
	● Average
	● Average
	↓ Early signs suggest below average numbers. Official outlook issued 9 Oct



# Climate drivers

## El Niño-Southern Oscillation (ENSO)

- **El Niño has been declared**
- Models indicate El Niño will persist until at least autumn 2024
- El Niño typically lower winter–spring rainfall in eastern Australia

## Indian Ocean Dipole (IOD)

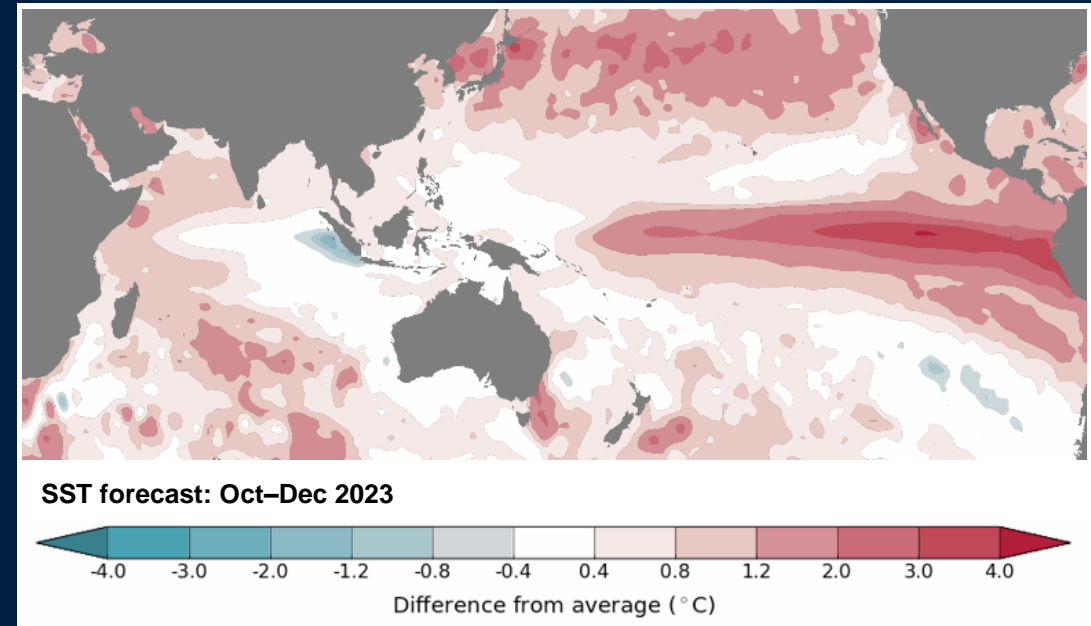
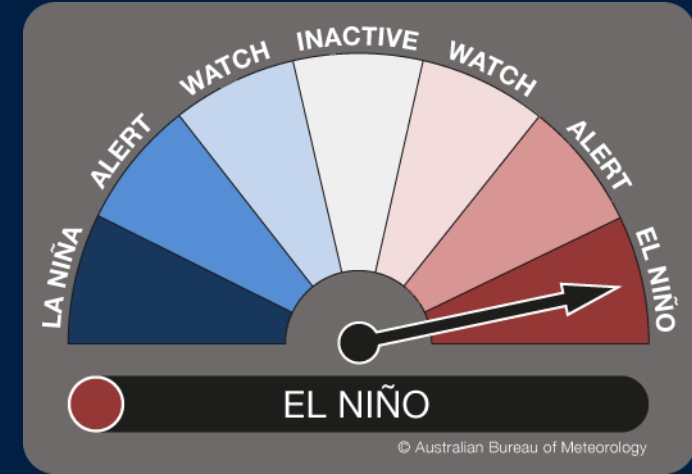
- **A positive IOD has been declared**
- Models indicate it will persist until early summer
- Positive IOD typically lower winter–spring rainfall

## Sea surface temperatures

- **Record warm SSTs** have been recorded from April to August
- Cooler SSTs in Australian longitudes can support drier conditions

## Southern Annual Mode (SAM)

- **SAM** is currently negative and predicted to return to neutral in coming weeks
- Typically, during El Niño, SAM tends to be positive, with a drying influence on southeast NSW and VIC in spring





# High risk weather season: September 2023 – January 2024

**Fire danger**

- Peak bushfire period for northern Australia
- Increased fire risk extends to subtropical regions of WA, eastern QLD & eastern NSW during spring

**Spring heatwave**

- Very high chance of unusually warm spring temperatures

**Drought**

- Low rainfall recent months
- Dry outlook until at least end of spring
- Watchpoints: south-east QLD, north-east NSW, south-west WA

**Frost**

- Dry outlook suggests increased frost risk in susceptible areas of south-east Australia

**Tropical cyclones**

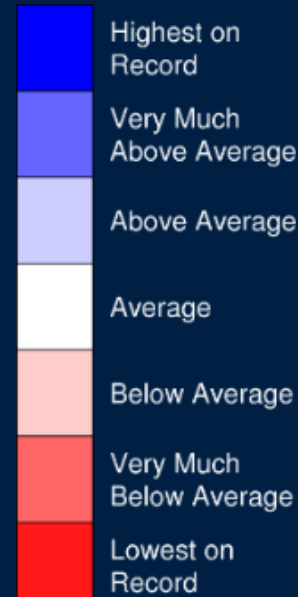
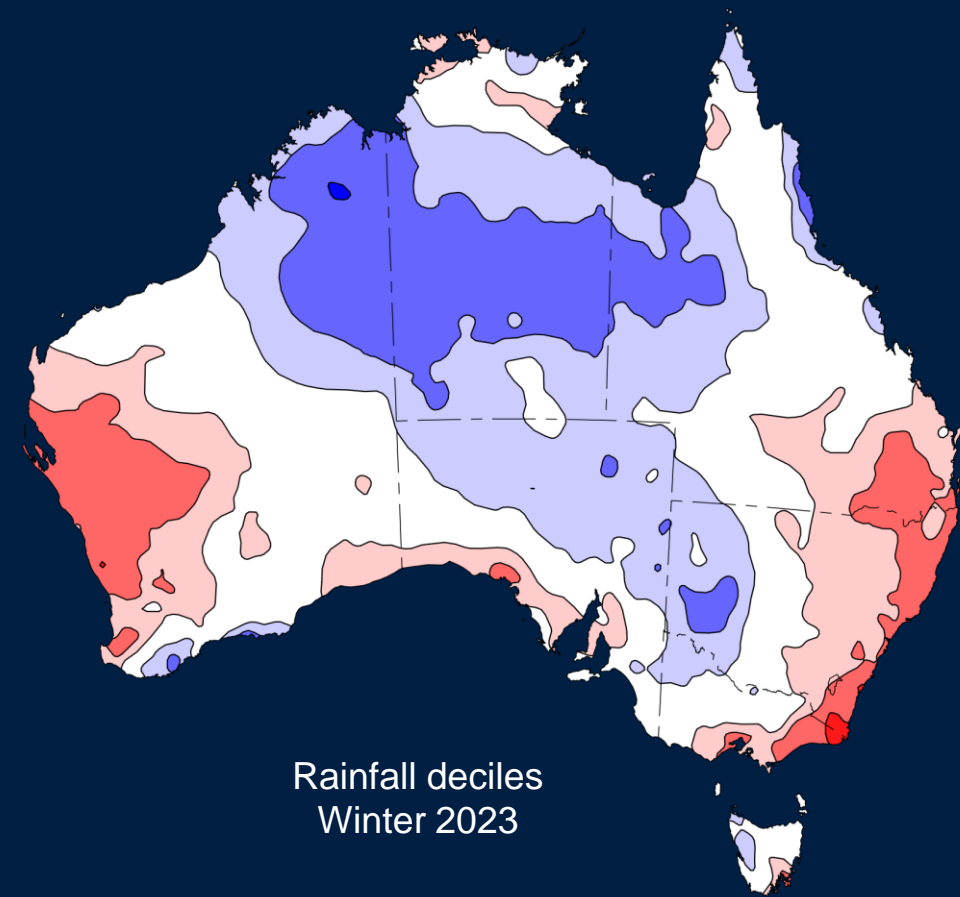
- Season begins in November
- Typically, reduced numbers in Australian region during El Niño events
- Outlook available 9 October

**Severe storms**

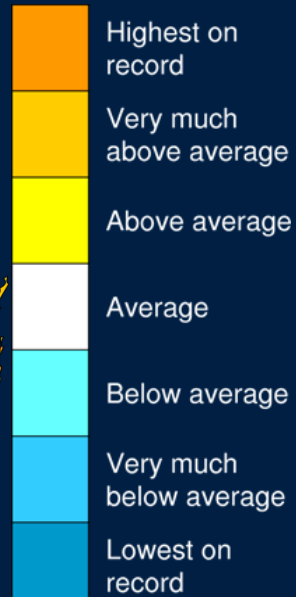
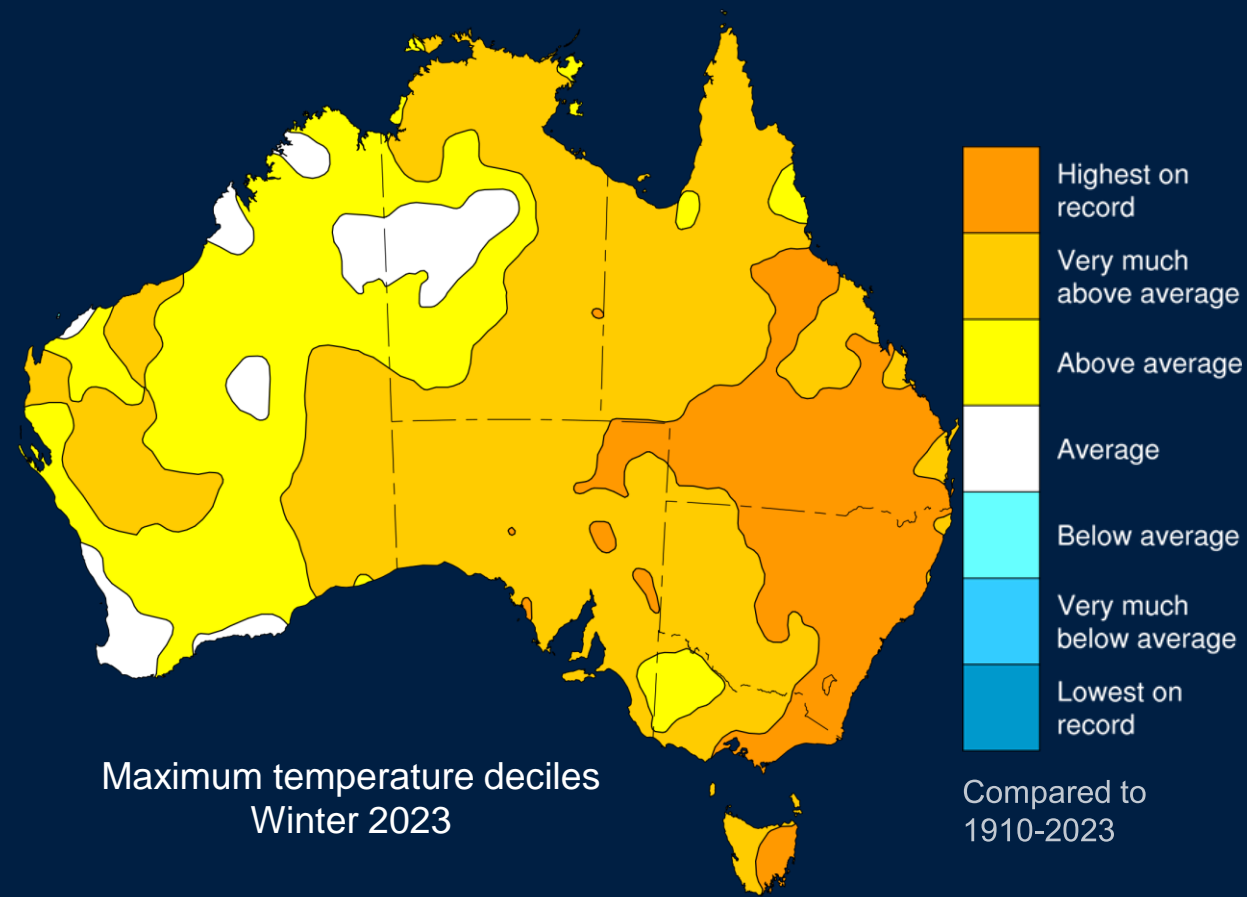
- Spring (esp. Oct–Nov) is the peak period for severe thunderstorms along east coast (hail, wind, flash flooding, tornado)
- Thunderstorm asthma in south-east mainland



# Rainfall and Maximum Temperatures



Compared to  
1900-2023

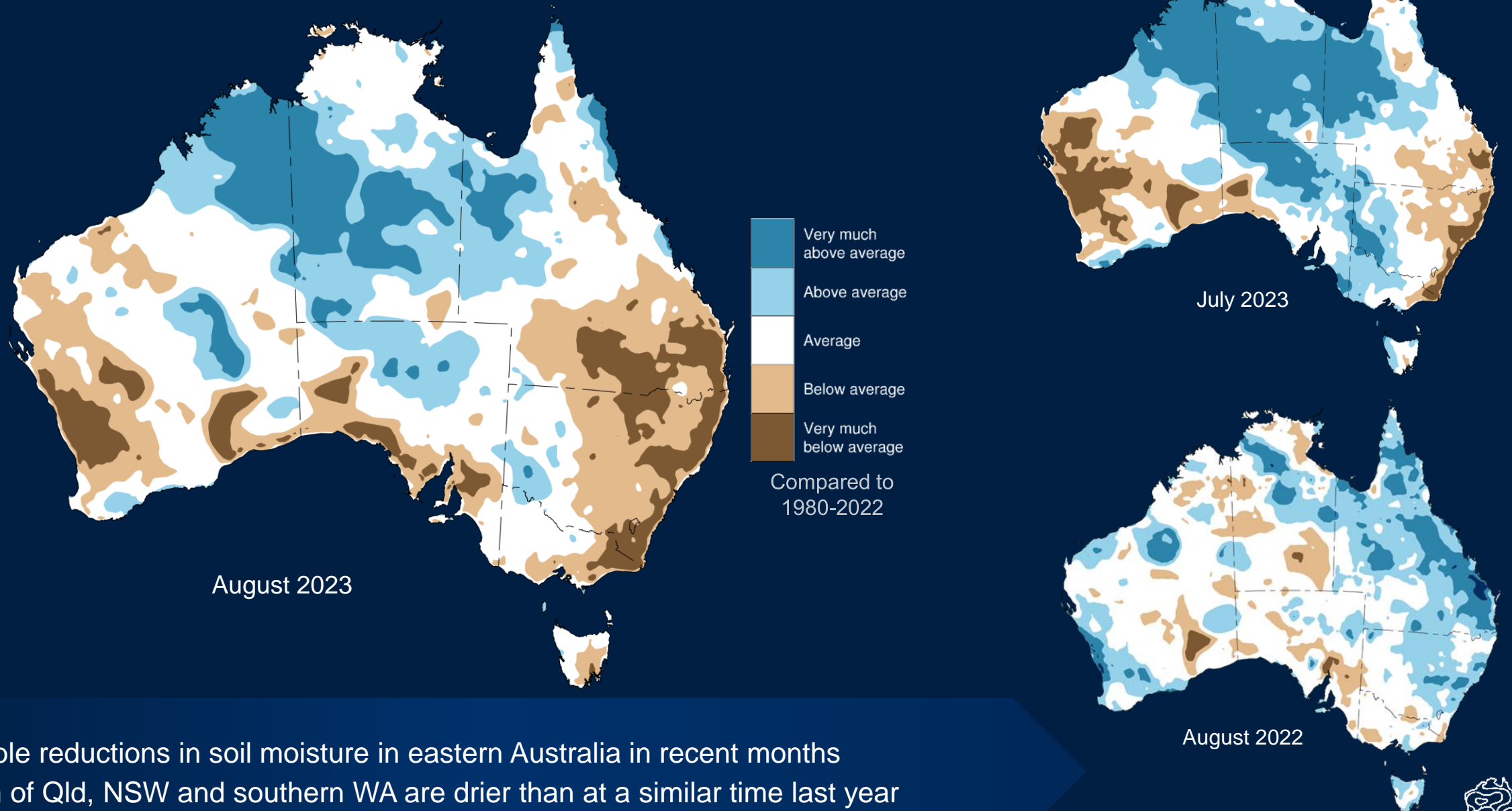


Compared to  
1910-2023

- Nationally, within 5% of mean rainfall
- Maximum temps – all States and Territories in top 10, with Queensland, NSW and SA highest on record
- Mean temps – all States and Territories in top 10, with Australia warmest winter on record (previously 1996)



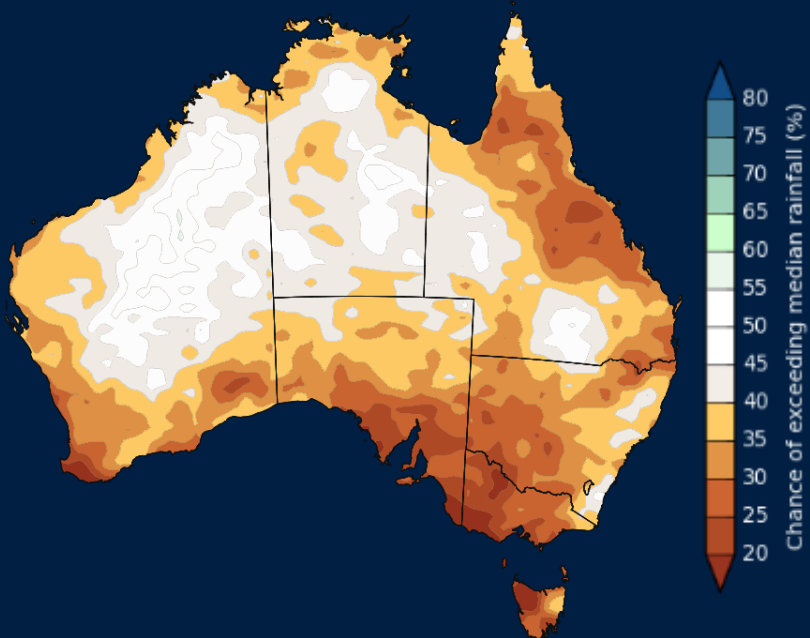
# Root zone soil moisture



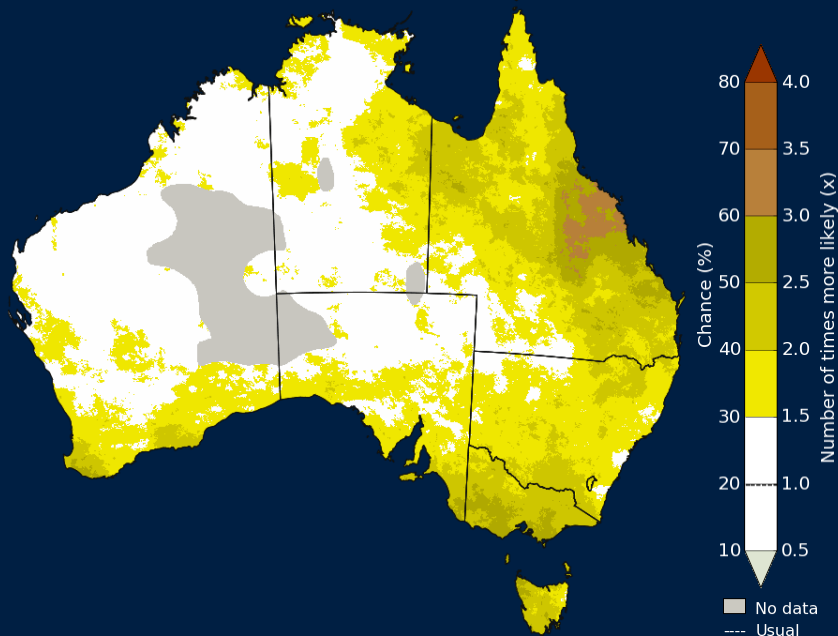
- Notable reductions in soil moisture in eastern Australia in recent months
- Much of Qld, NSW and southern WA are drier than at a similar time last year

# October – December 2023 long-range forecast

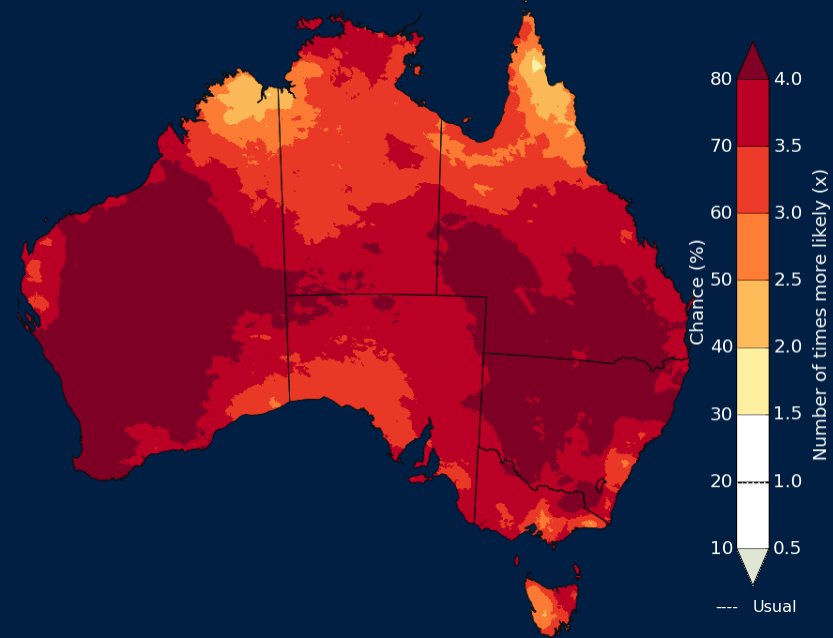
## Rainfall



## Chance of unusually dry (bottom 20% of historical range)



## Chance of unusually warm (top 20% of historical range)



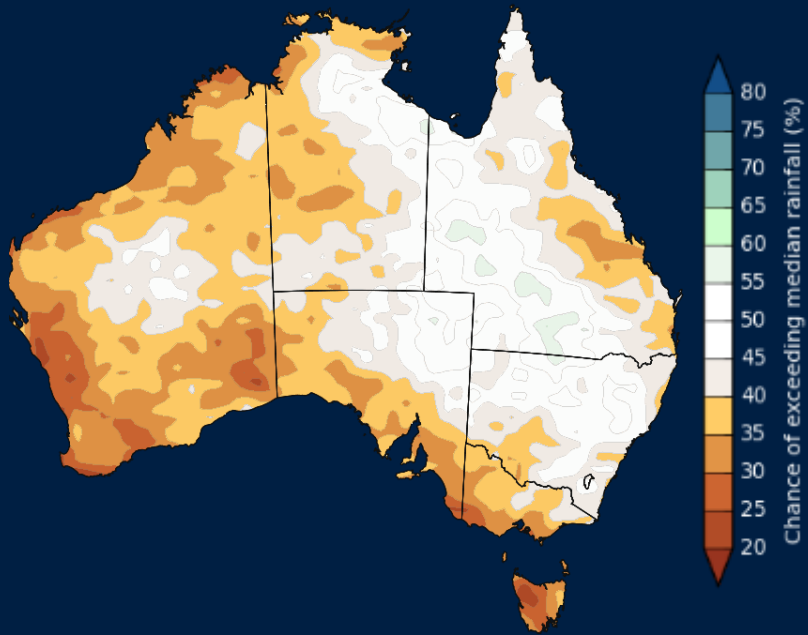
- Warmer and drier conditions expected for rest of 2023.
- Significantly increased chance of unusually warm daytime temperatures (3-4 times the usual likelihood)
- Dry and warm conditions can lead to vegetation moisture stress, enhancing bushfire (and heatwave) risk

Reference period  
1981-2018

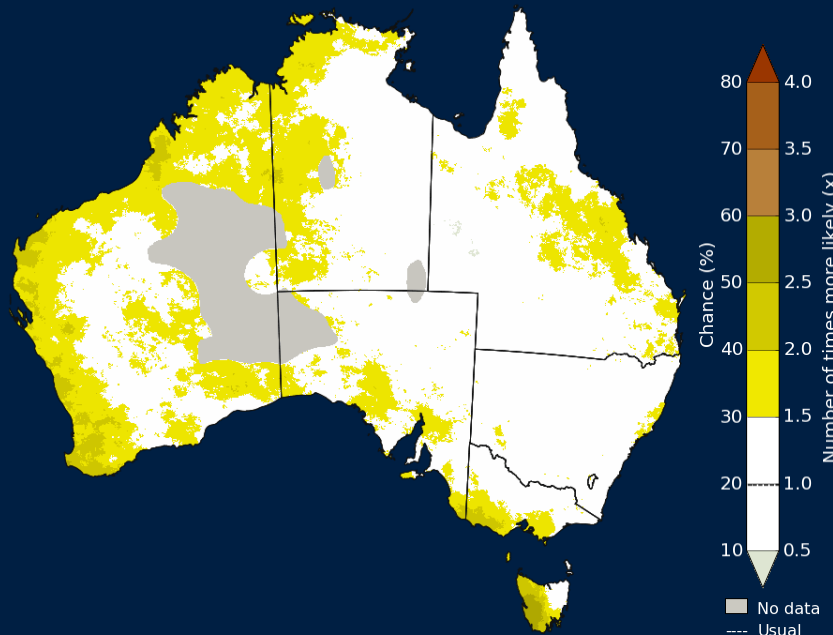


# November 2023 – January 2024 long-range forecast

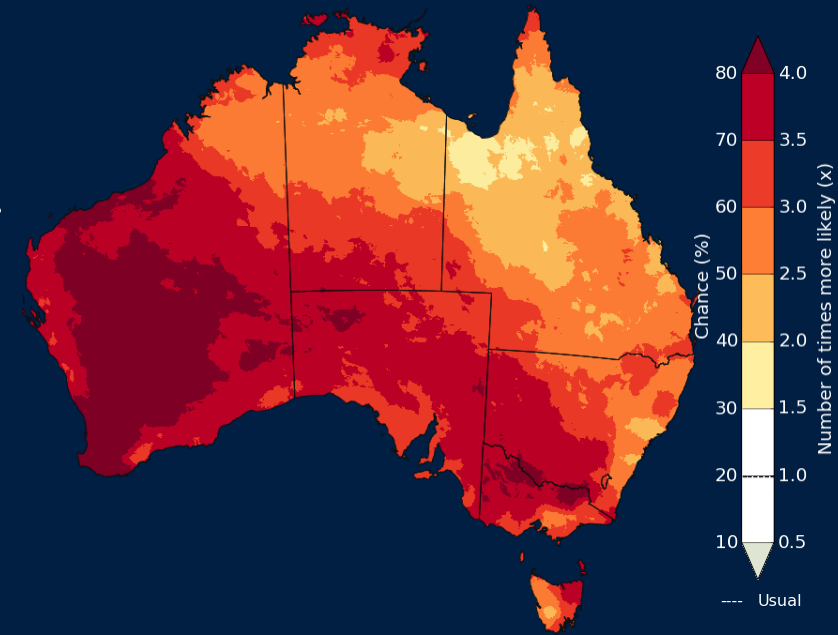
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Chance of unusually dry  
(bottom 20% of historical range)



Chance of unusually warm  
(top 20% of historical range)



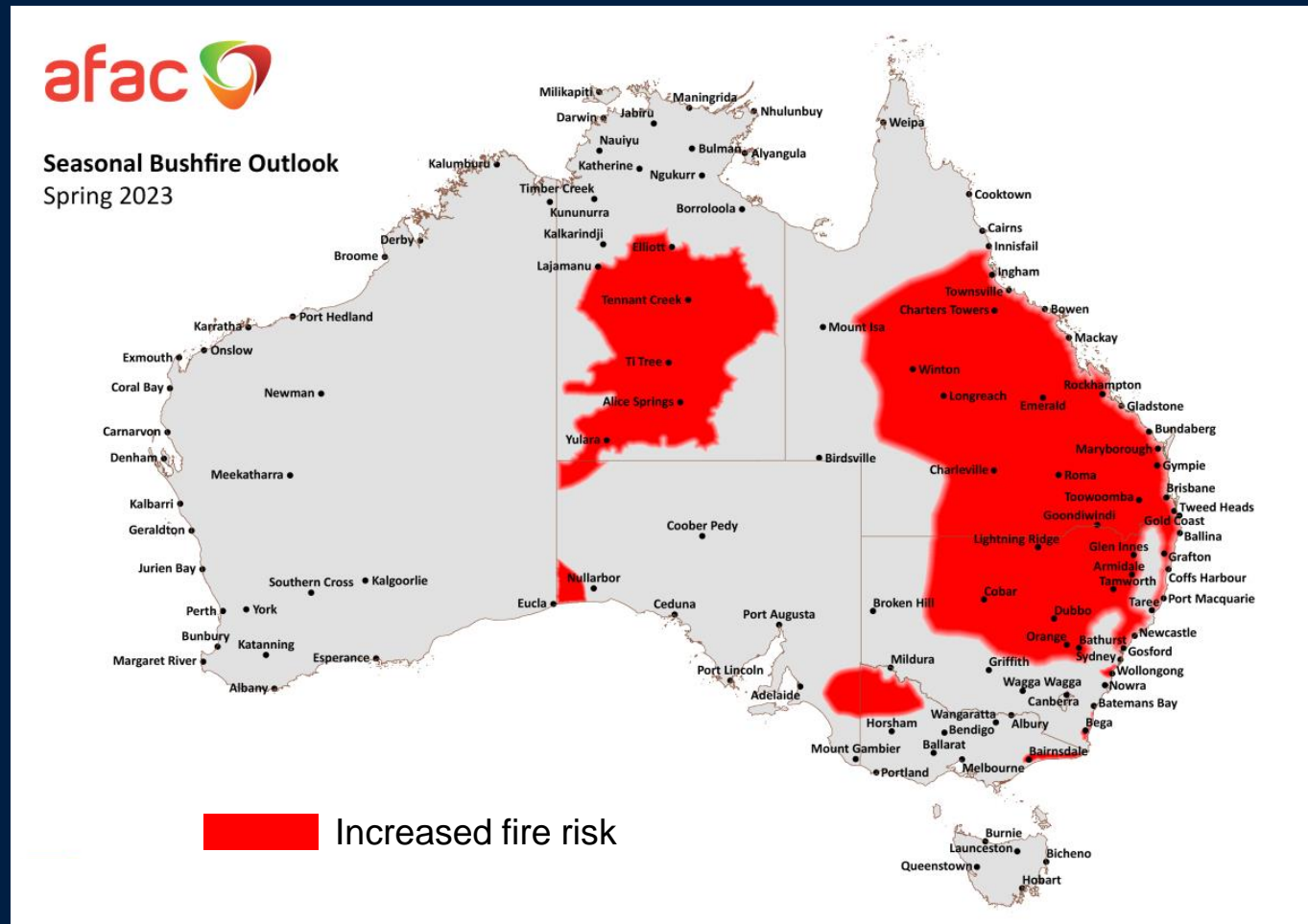
- Warmer days and nights very likely for November 2023 – January 2024
- Unusually dry conditions possible for southern, western and parts of NE Australia.

Reference period  
1981-2018





# Bushfire Outlook September – November 2023



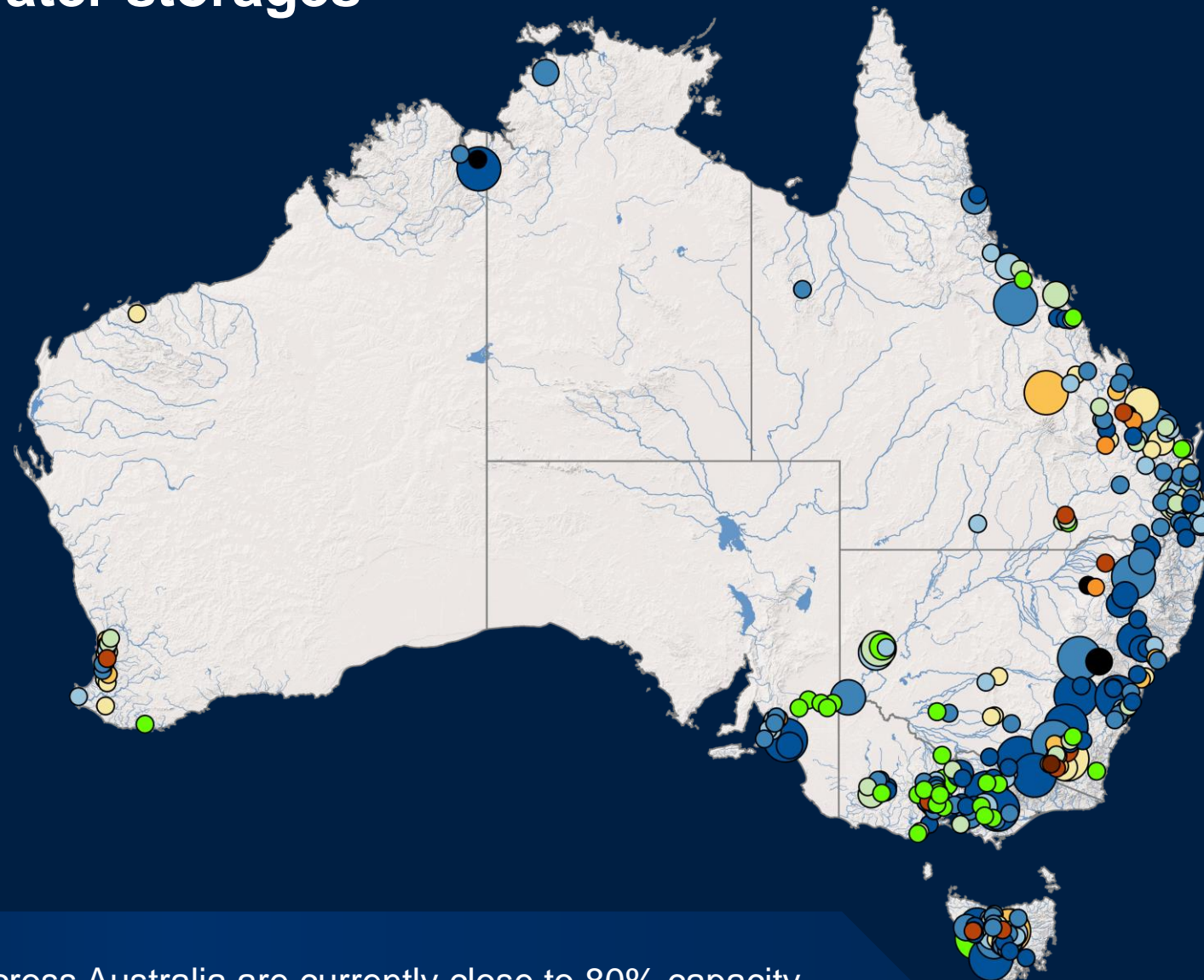
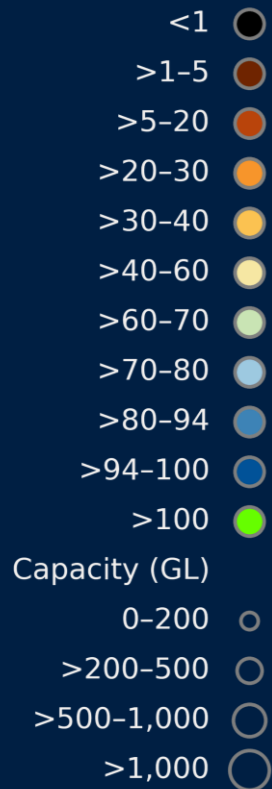
- Increased fire risk for much of Australia due to reduced rainfall, high fuel loads and above average temperatures
- Destructive fires can still occur in areas forecast as having 'average' risk
- Rainfall preceding the Black Summer (2019–20) season was substantially lower



# Water Security – water storages

Storage volume reported at:06/09/2023










Percentage full (%)



- Combined water storage levels across Australia are currently close to 80% capacity
- Water storages in Sydney, Melbourne, Hobart and Canberra are above 90% capacity



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