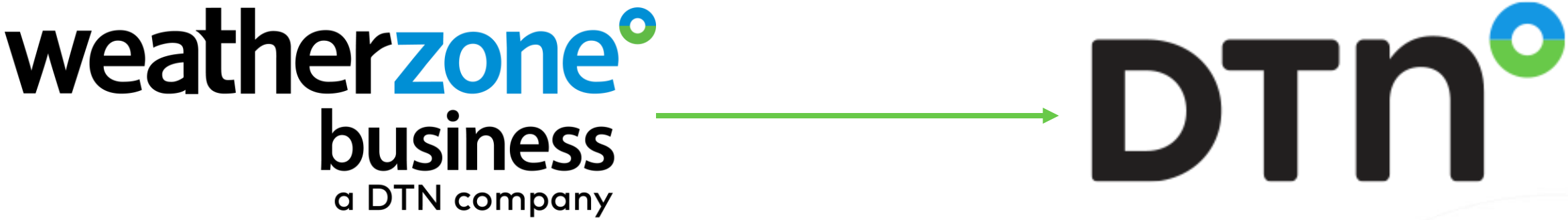
Spring/Summer Outlook

AEMO

Ashleigh Madden | November 2024

Head Communications Meteorologist

Brand Transition

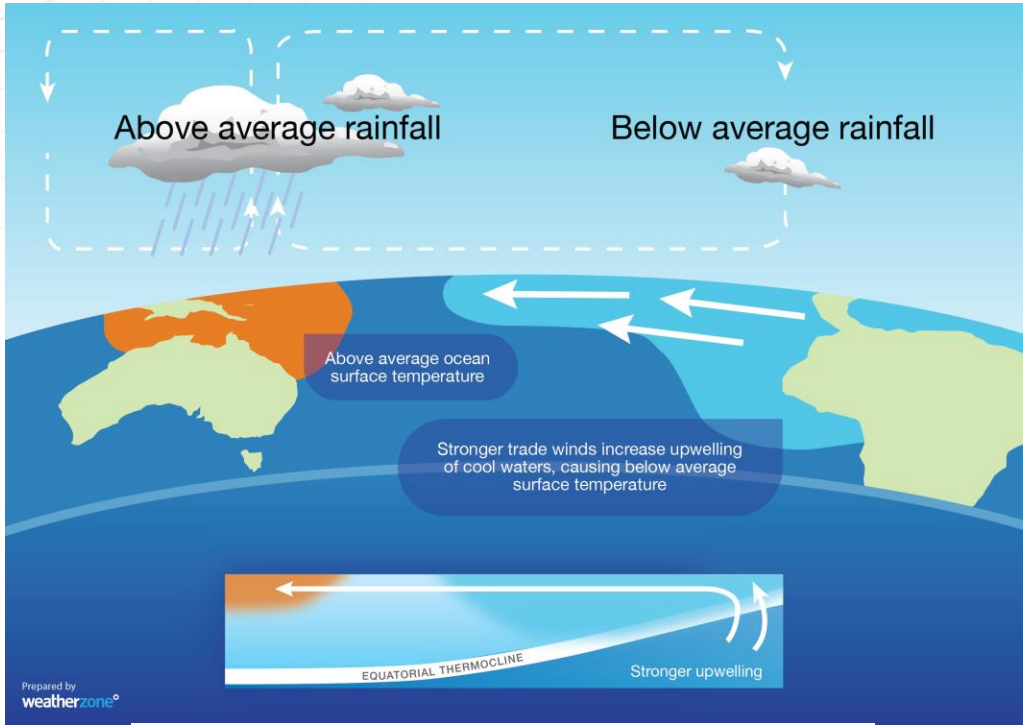


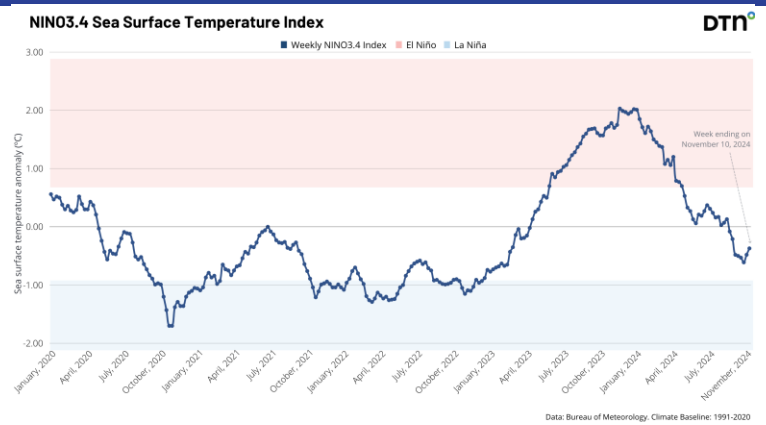
Agenda

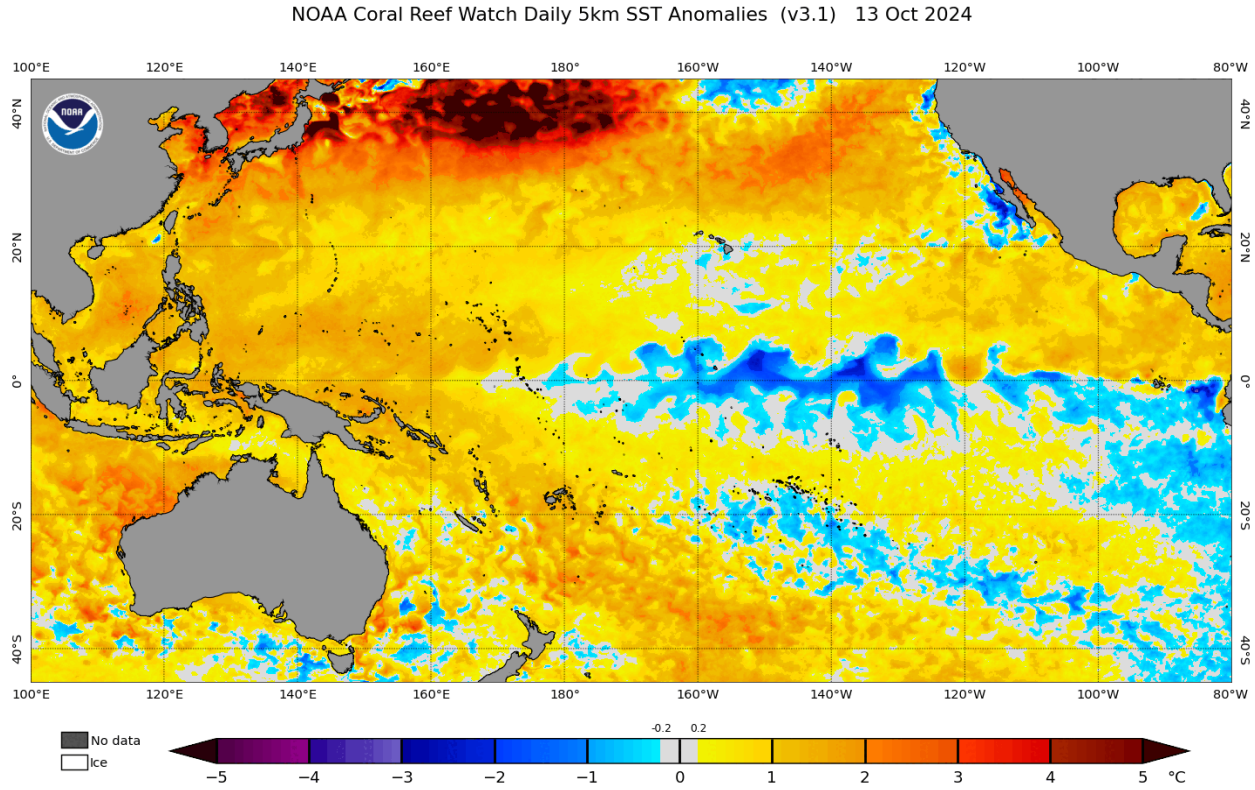
- State of the climate
  - Pacific Ocean
  - Indian Ocean
  - Southern Ocean
  - Sea Surface Temperatures

- Outlook
  - Temperature (national and capital cities)
  - Rainfall
  - Weather Impacts

ENSO – La Niña Watch



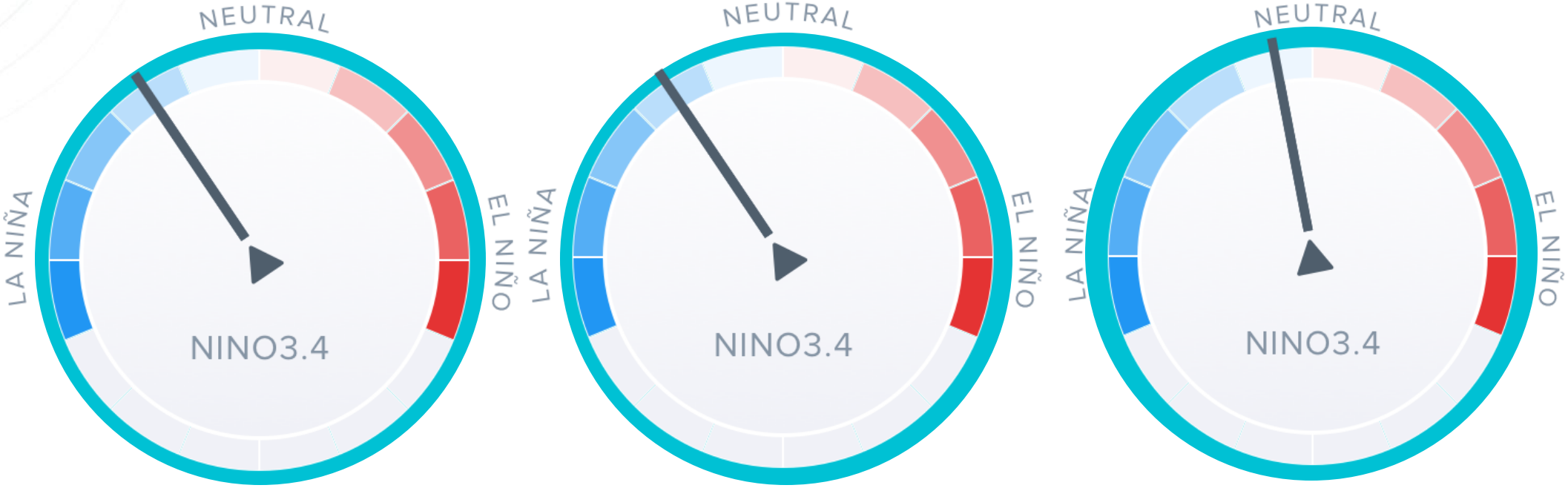




The eastern equatorial Pacific has continued cooling since December 2023, a sign La Niña is developing

El Niño Southern Oscillation (ENSO) can be in phases grading from El Niño to Neutral to La Niña

ENSO Outlook - NINO3.4 Index Consensus



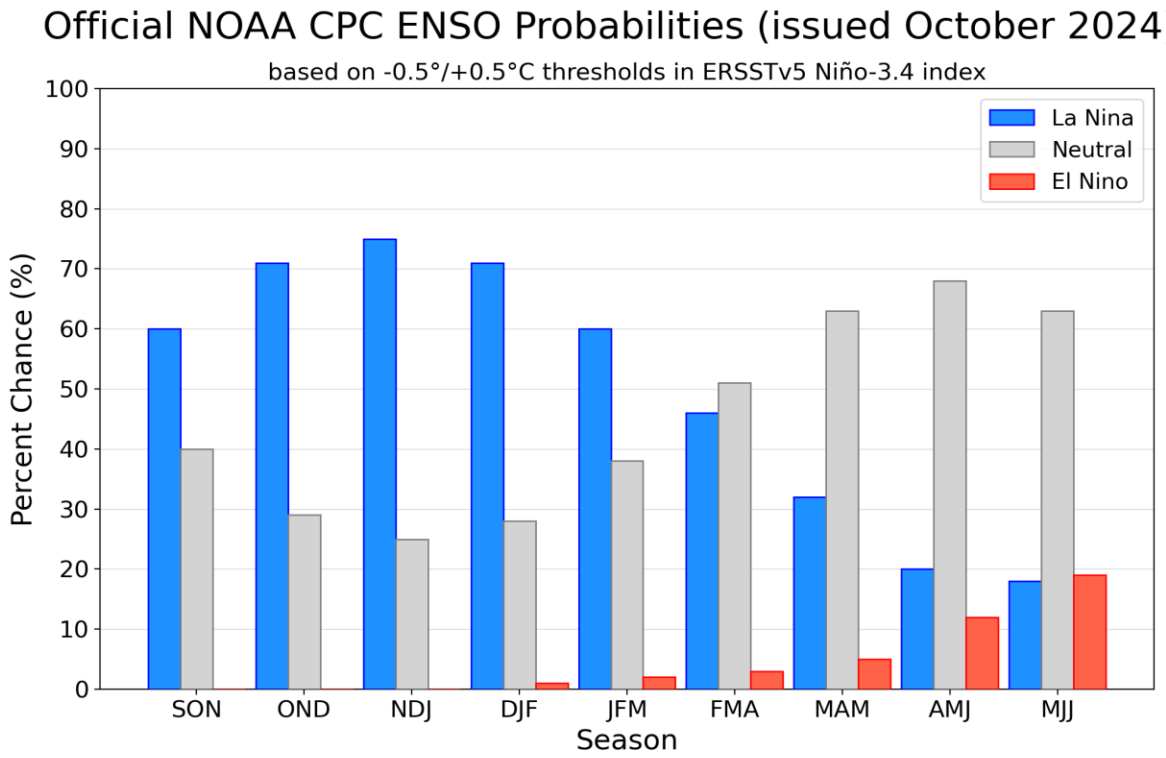
Current	February	April
-0.37°C	-0.5°C	0.0°C

Current international consensus is that the Nino 3.4 index will remain neutral.

The relative Nino Index is about 0.55°C lower than actual

Probability of ENSO phases- CPC/IRI

Note: This data reflects the lower US threshold of ±0.5°C



El Niño
- 1% chance

Neutral
- 63% in Autumn

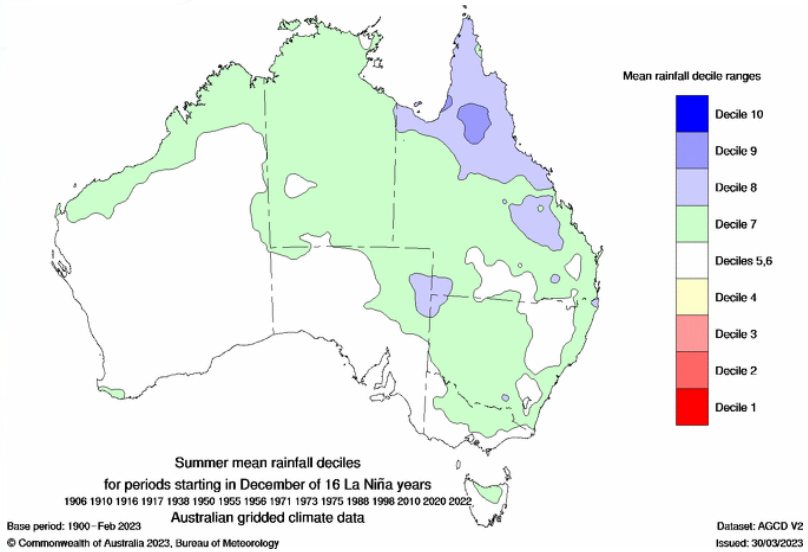
La Niña
- 75% chance in late spring spring/early summer

75% chance it meets the US definition

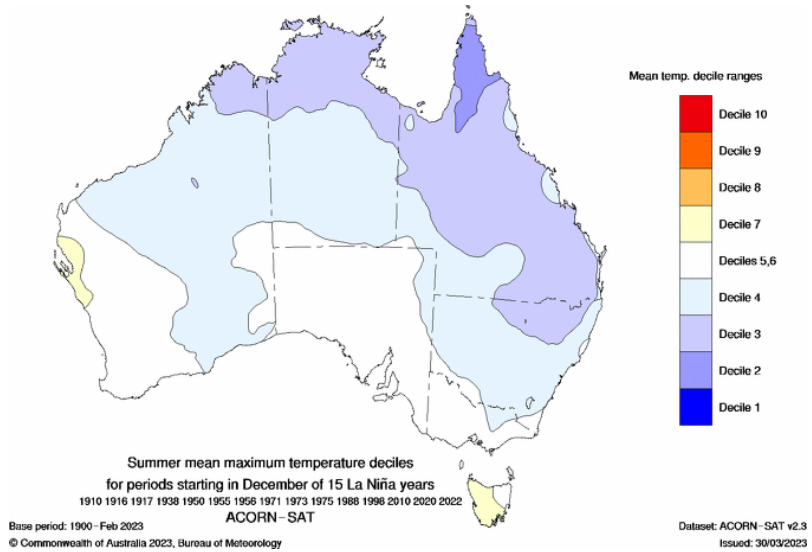
Less than 50% chance it meets the BoM definition

Summer La Niña impacts

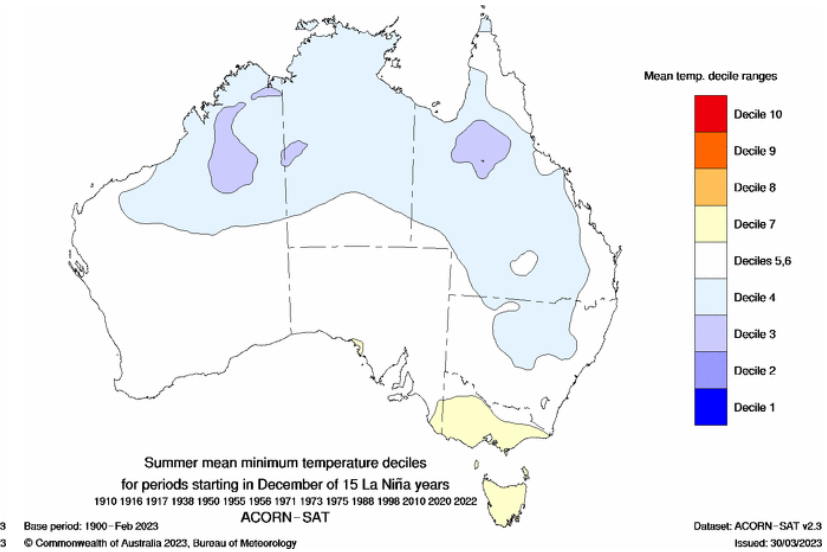
Rainfall



Maximums

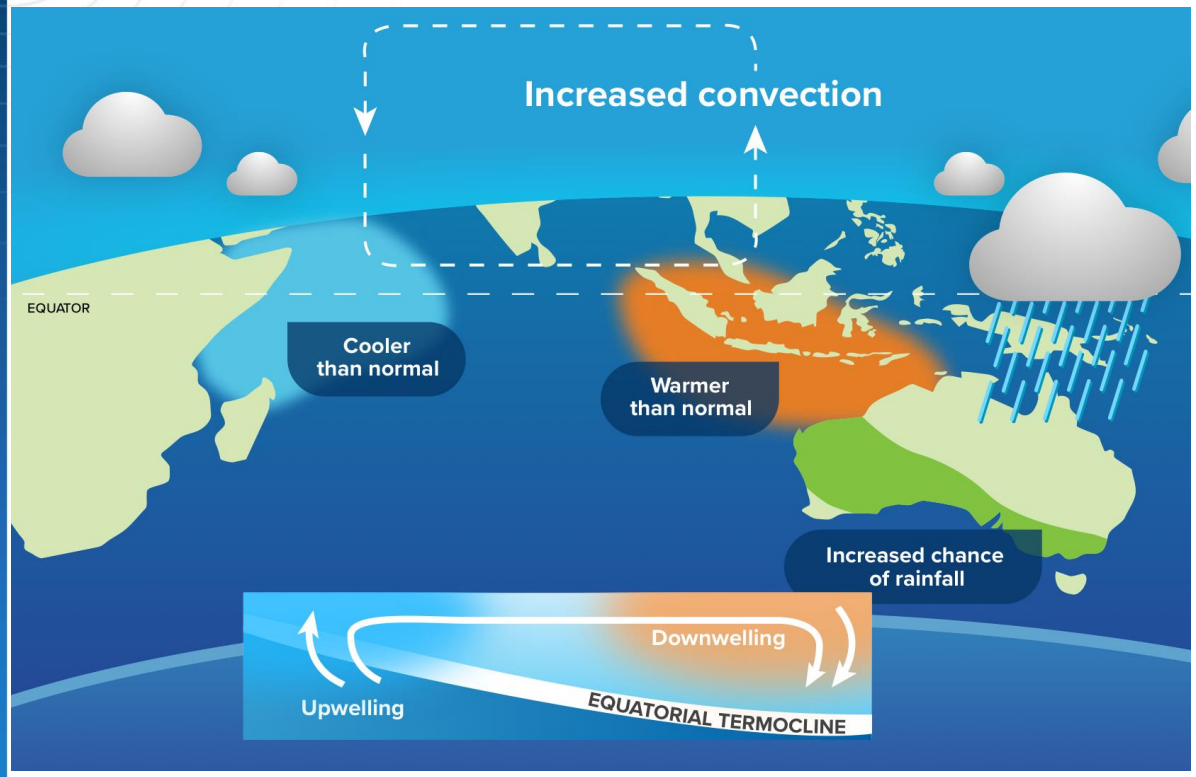


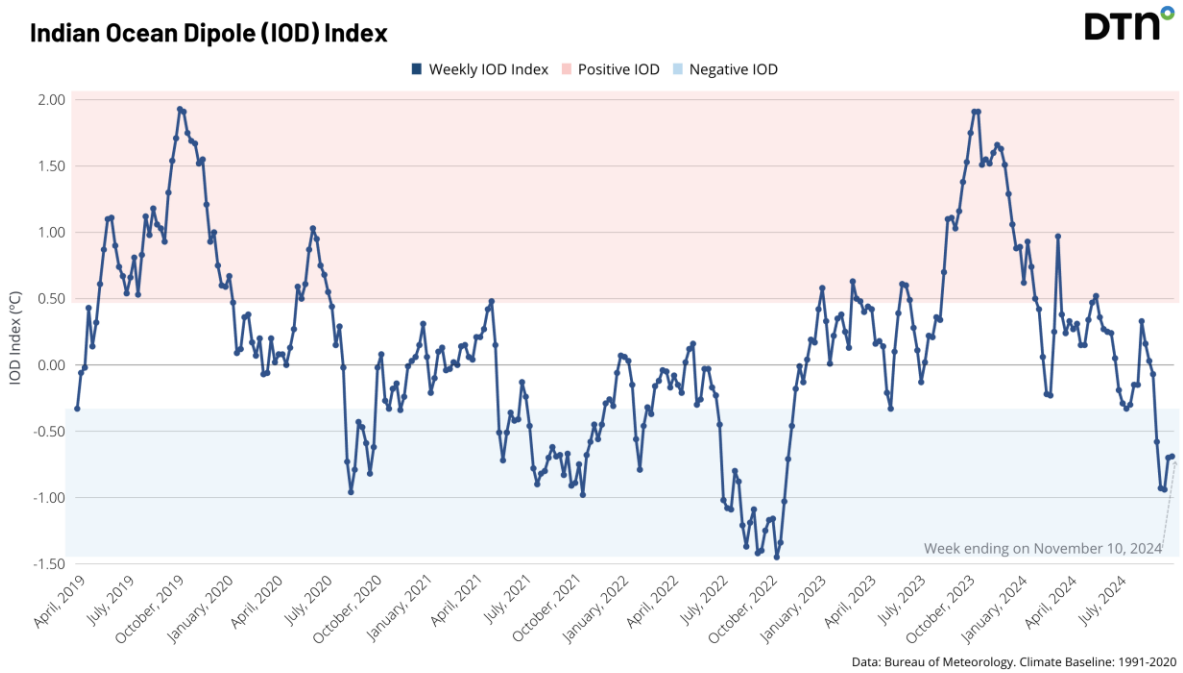
Minimums

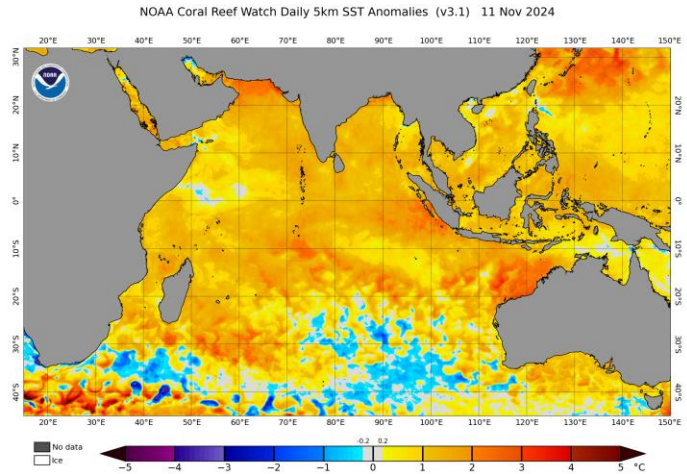


La Niña also increases the frequency of heatwaves for southern Australia, but lowers the max intensity of heat

Indian Ocean Dipole (IOD) – Neutral







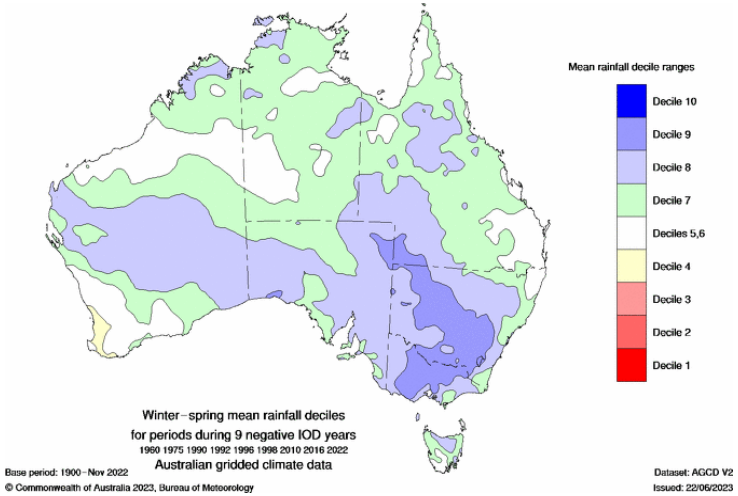
Negative IOD:

- Warm SST gradient across the Indian Ocean
- More moisture in the NW
- Increased NW cloud bands
- More rainfall across northern/eastern Aus

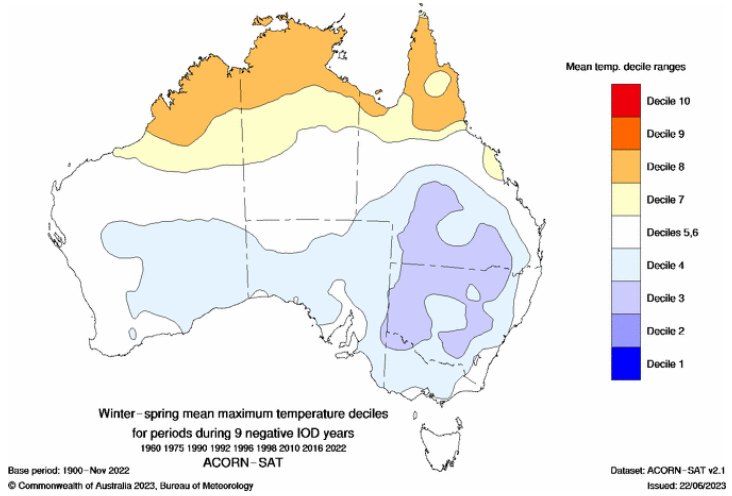
DTN

Winter–spring negative IOD impacts

Rainfall



Maximums



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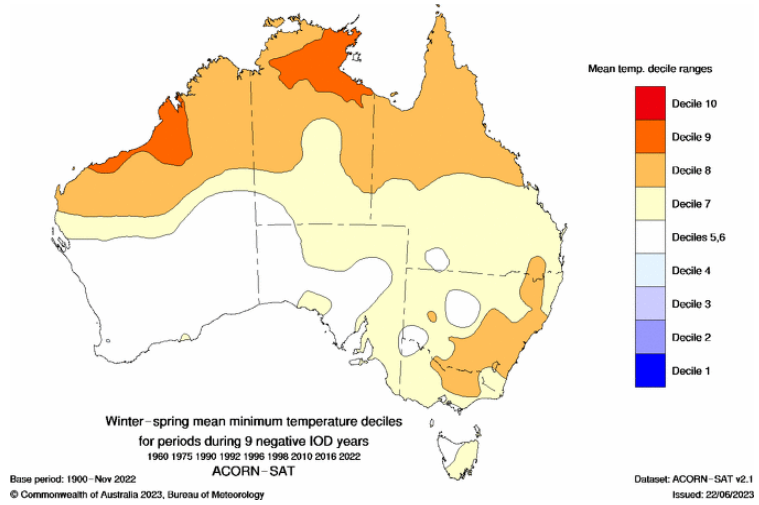
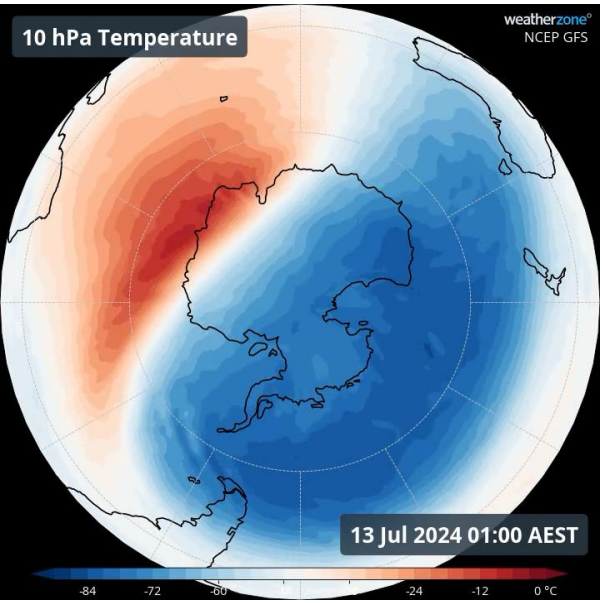
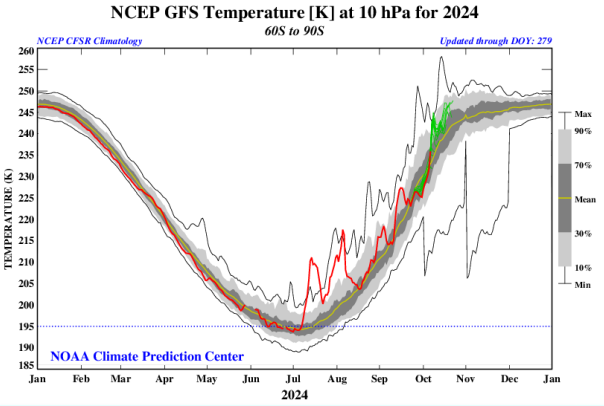


Polar Vortex – Competing forces

Sudden Stratospheric Warming (SSW)

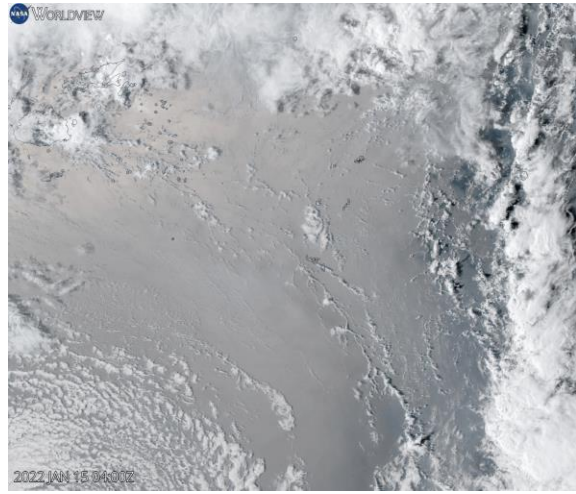


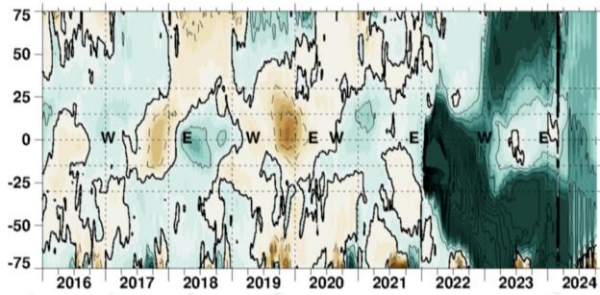
- Rapid warming event in July, followed by two more in August and September
- One of only three strong events on record (2002 and 2019)
- Promotes Negative SAM in spring and early summer



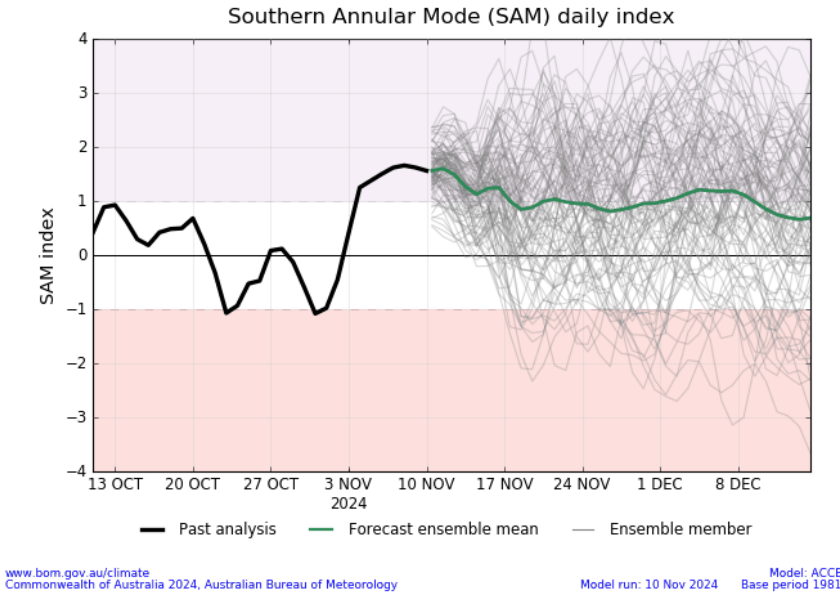
Stratospheric Moisture from 2022 Tongan Volcano

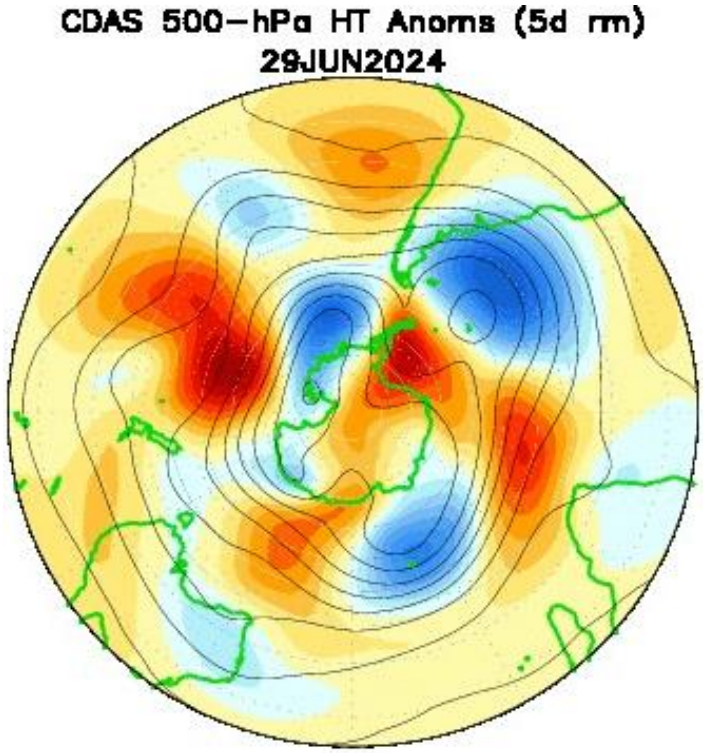
- Eruption sent enormous amounts of water into the stratosphere that is still present
- SSW reduced some moisture, but still several times higher than normal
- Promotes Positive SAM in summer and autumn





Southern Annular Mode (SAM)





Negative SAM – more fronts & westerlies for Aus,

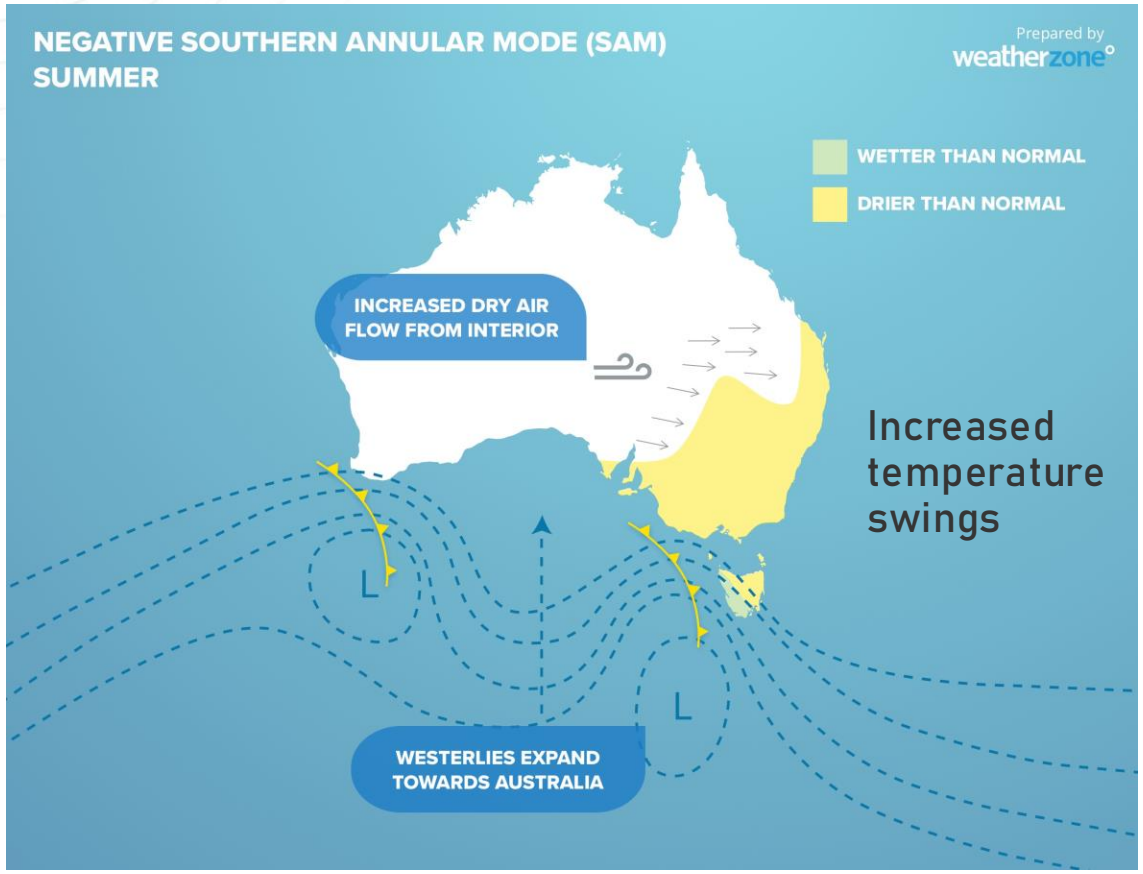
Positive SAM - less fronts, more easterly winds

The SAM was strongly negative during mid-July and August.

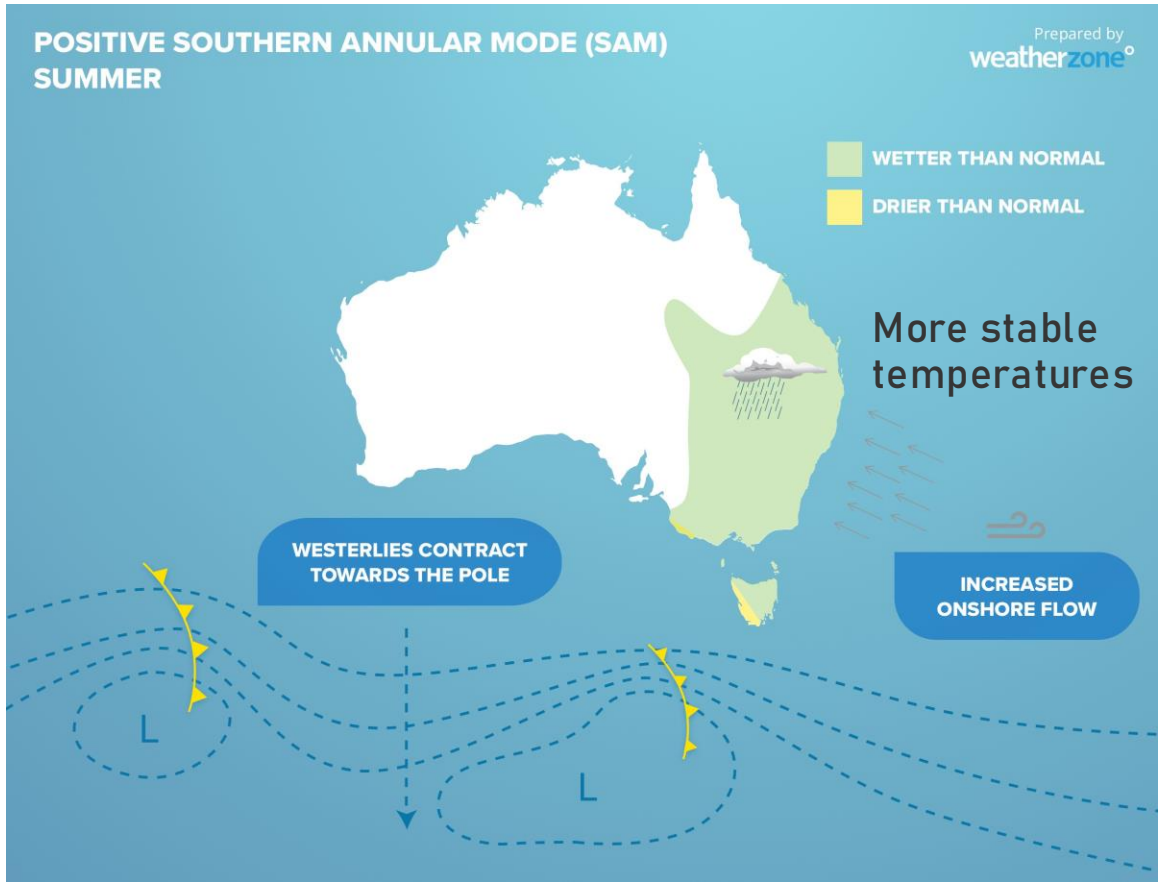
The SAM is positive

Summer SAM impacts

Negative Phase

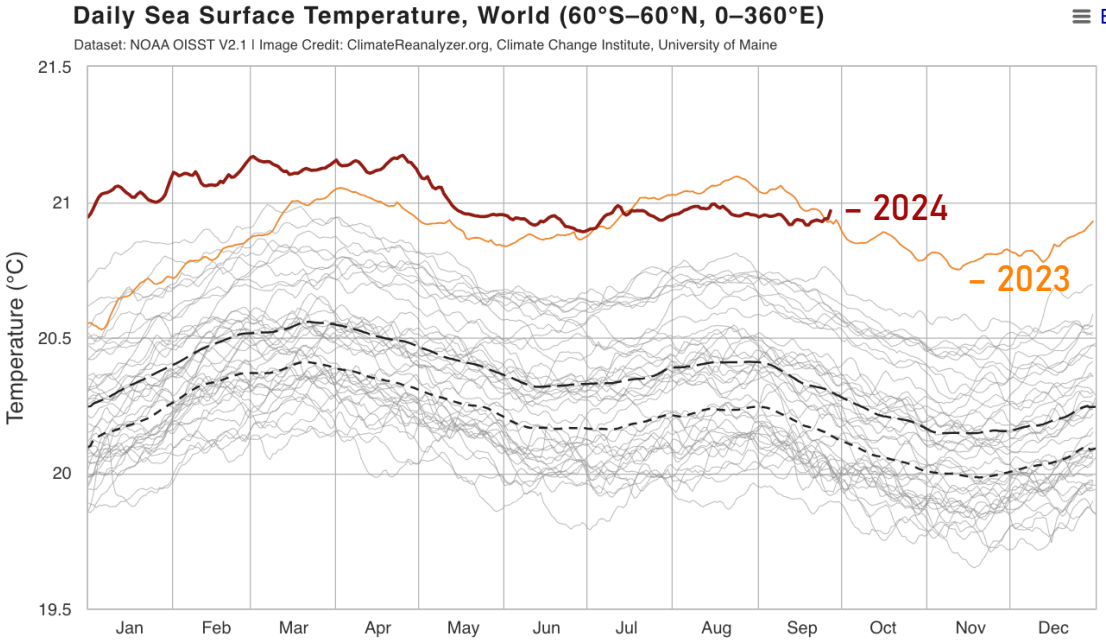


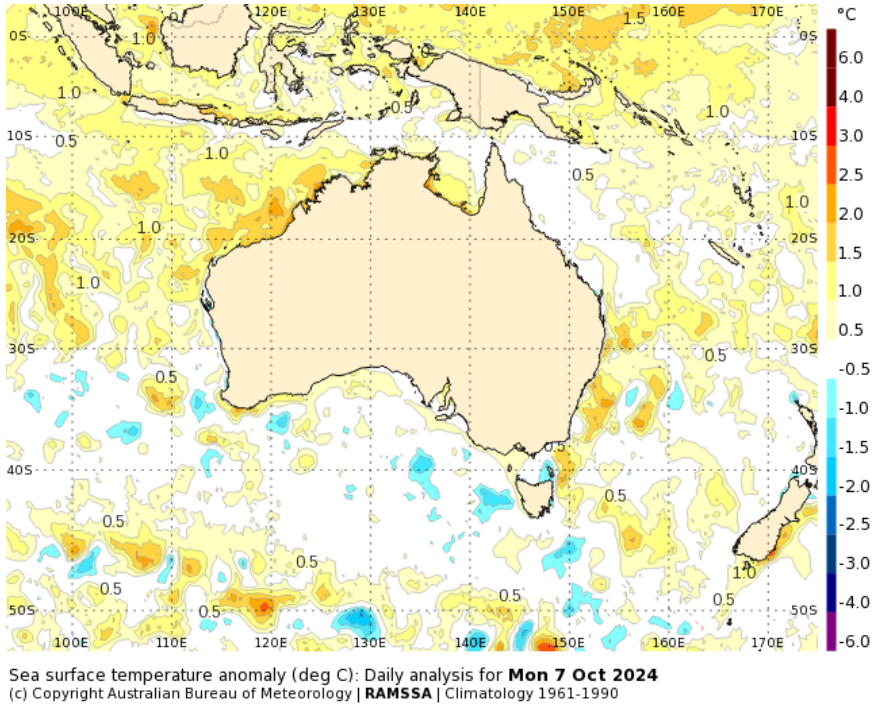
Positive Phase



Sea Surface Temperatures

- Global Oceans are at record hot levels for the second year
- Waters are very warm off the NW and East Coasts
- Warm waters add extra moisture to the atmosphere which can fuel rain and storms.





Sea surface temperature anomaly (deg C): Daily analysis for **Mon 7 Oct 2024**
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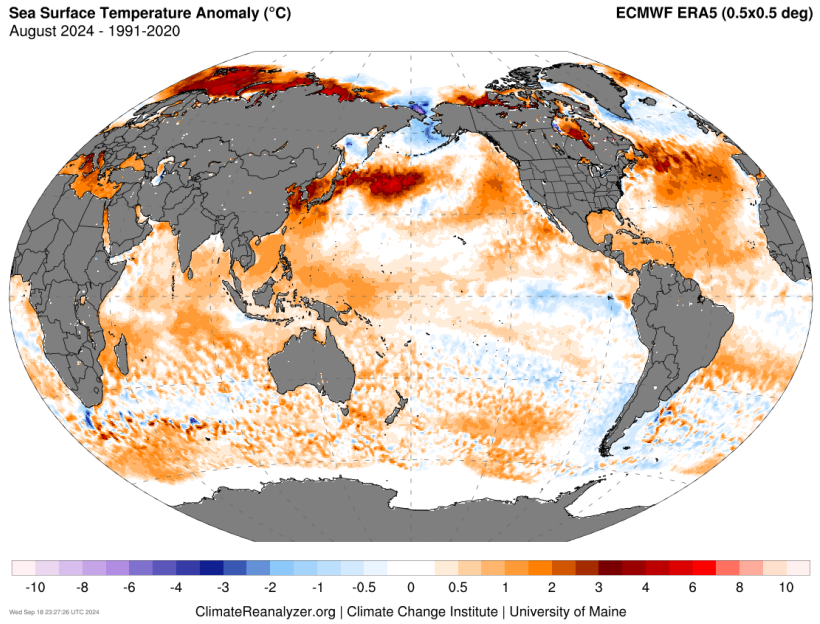


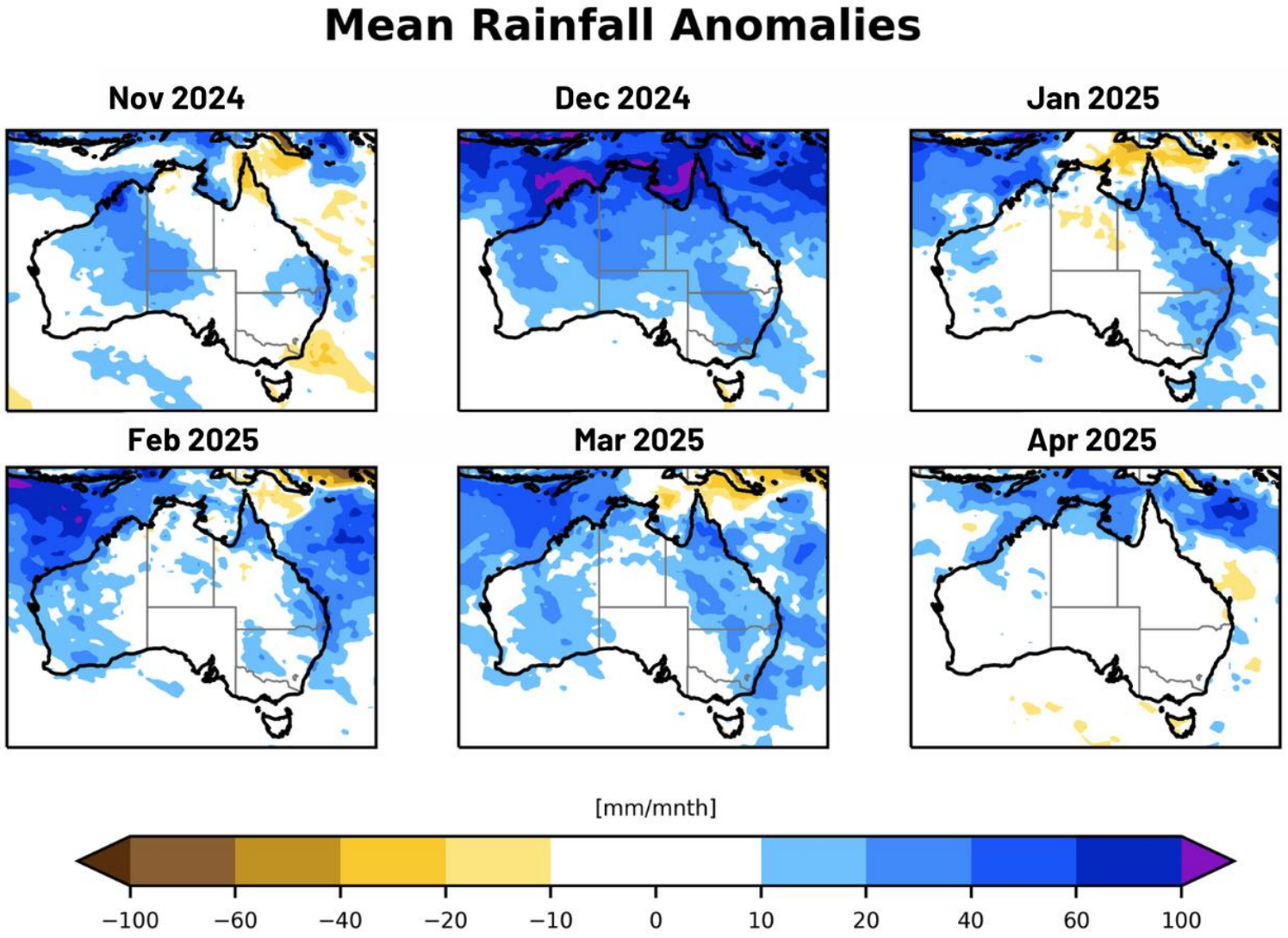
Climate Summary

- ENSO: Neutral, could see a La Niña-like pattern develop late spring into summer.
- IOD: Neutral, negative-like pattern for the remainder of spring.
- SAM: Positive
- SSTs: Higher than average across most of Australia.

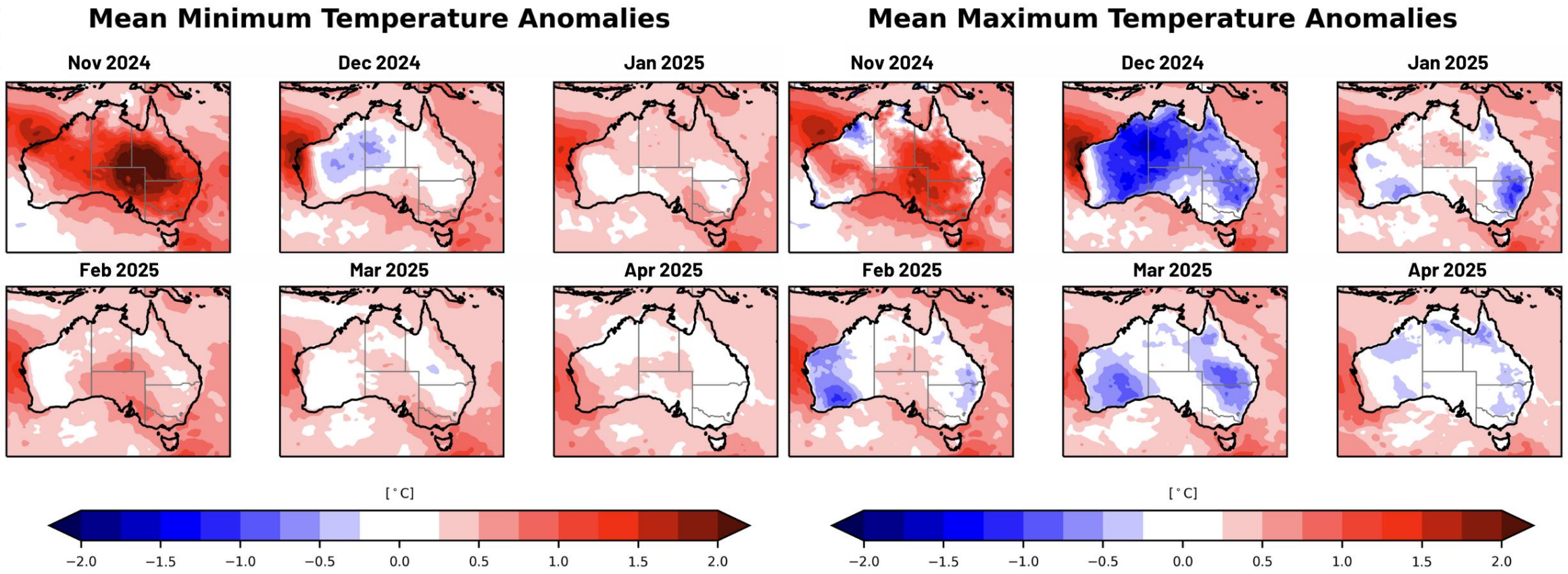
Outlook

Spring/summer 2024/25

Forecast rainfall anomalies



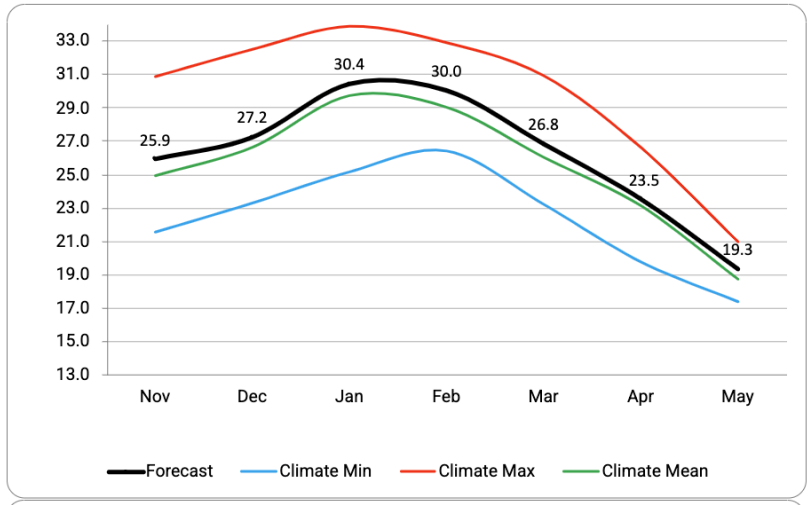
Forecast temperature anomalies

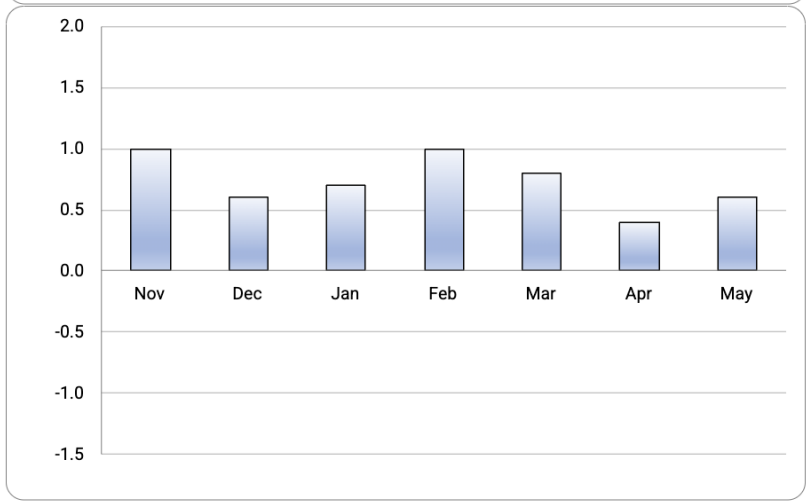


Minima forecast to be above average, partly due SSTs. More pronounced early summer. Maxima have cool spell midsummer, but note mainly inland.

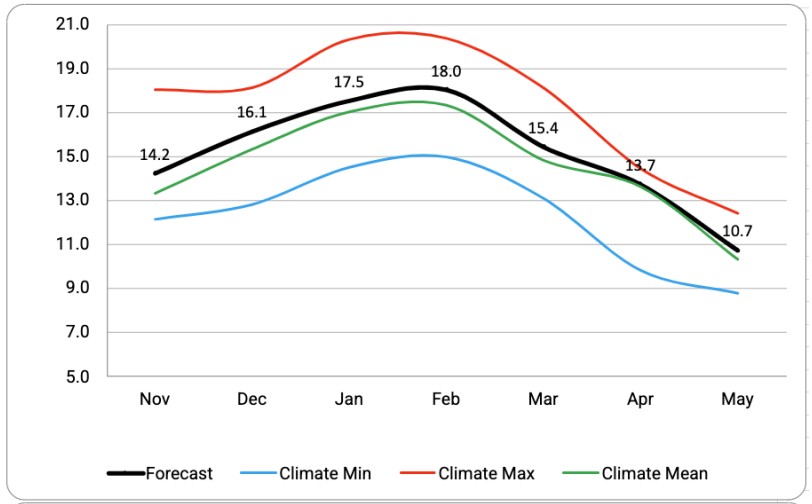
Adelaide

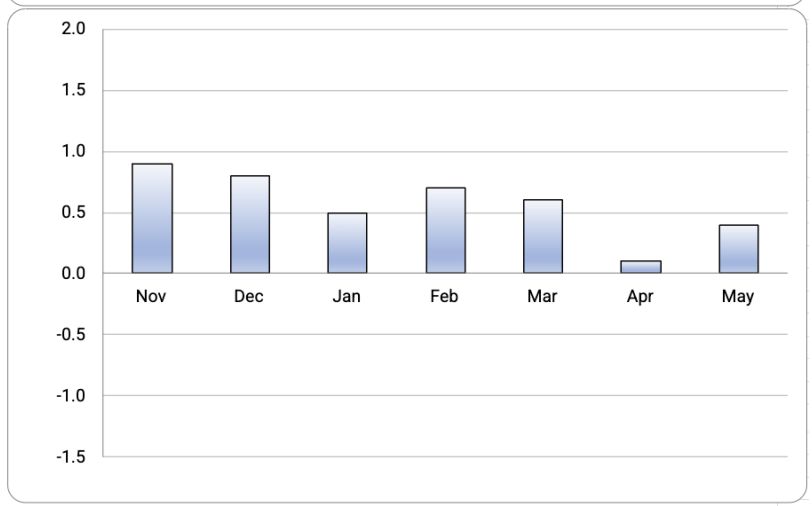
Maximums





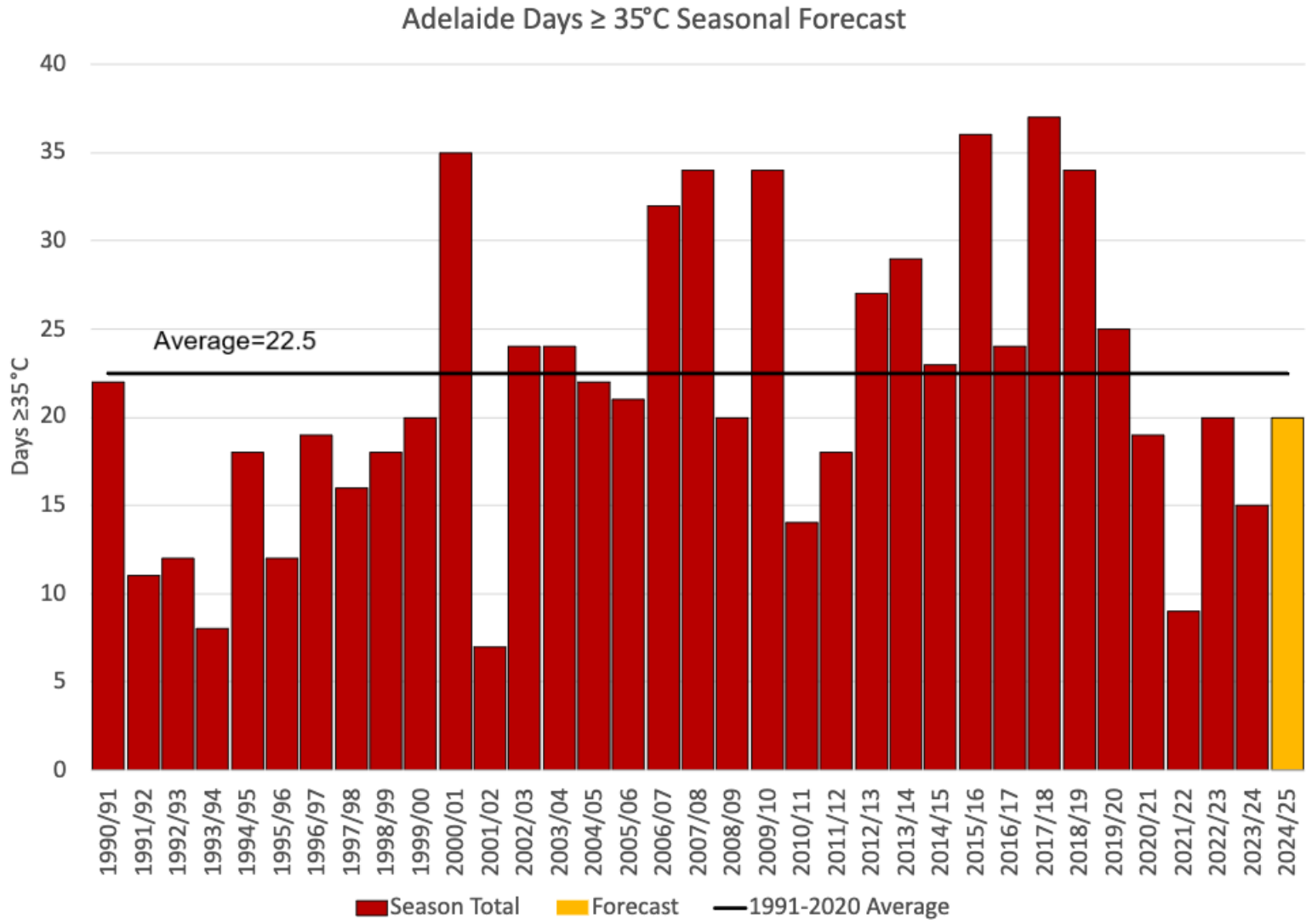
Minimums





Forecast Anomaly
(1991-2020 mean)

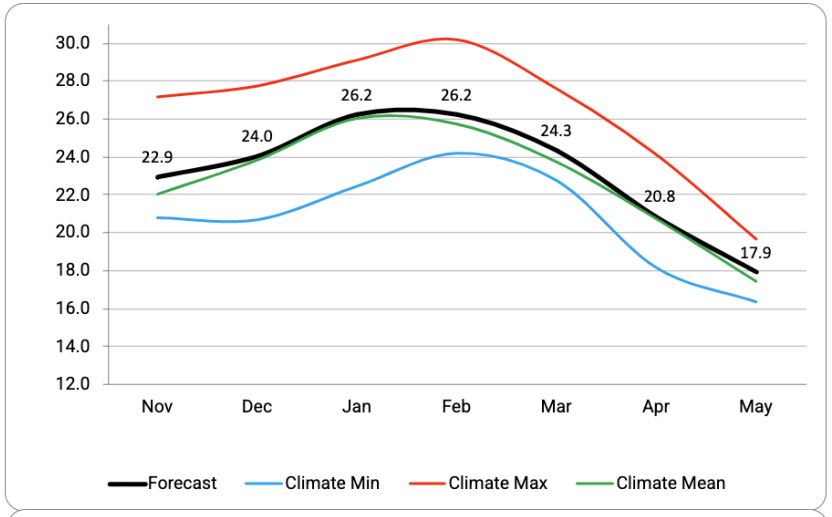
Adelaide Extreme Hot Days Forecast

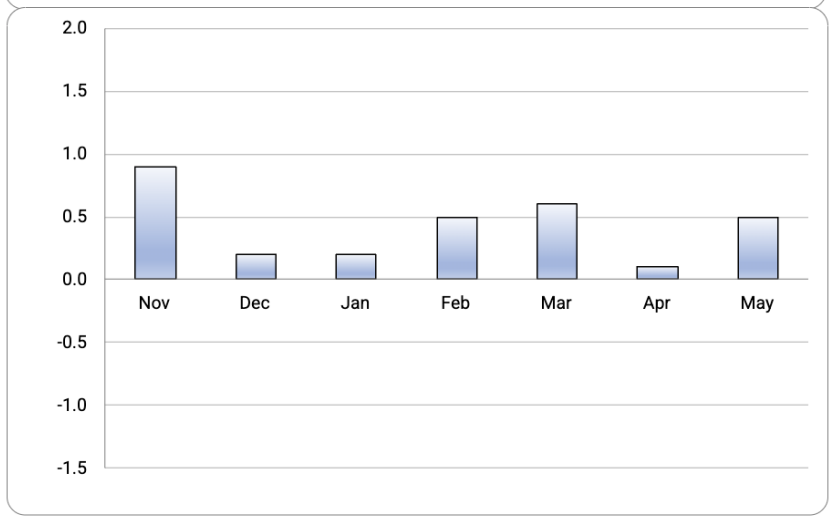


October to April forecast = 19

Melbourne

Maximums





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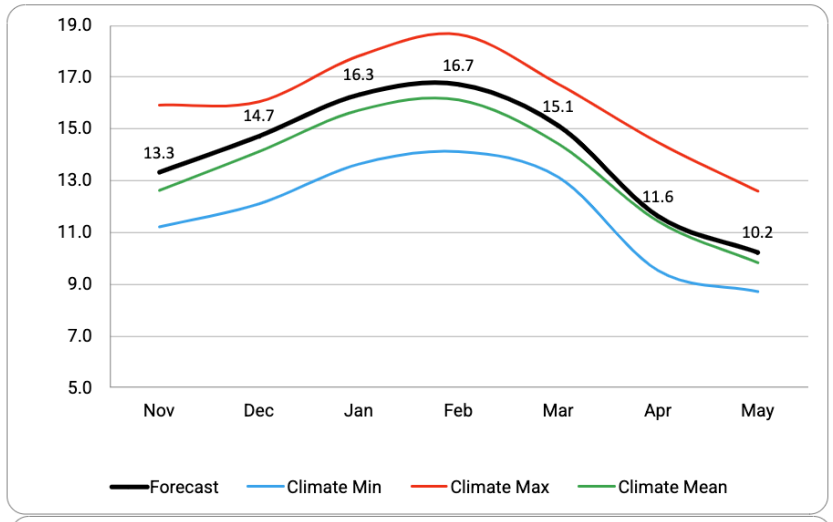
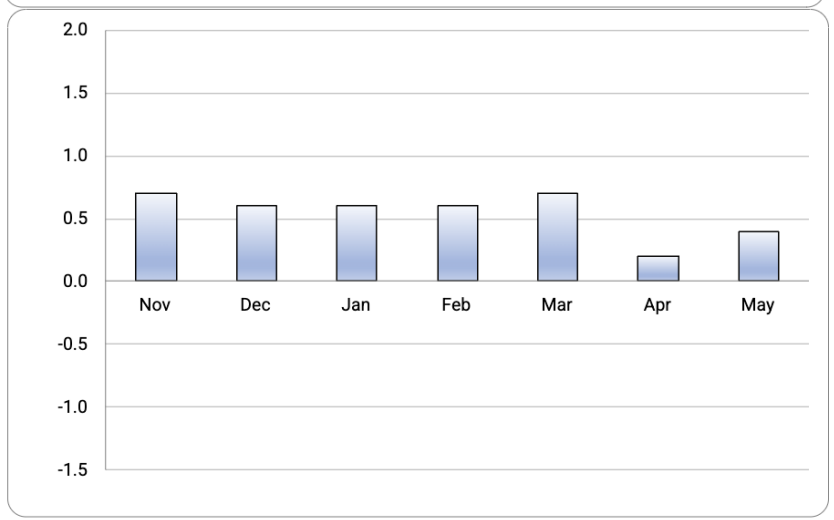
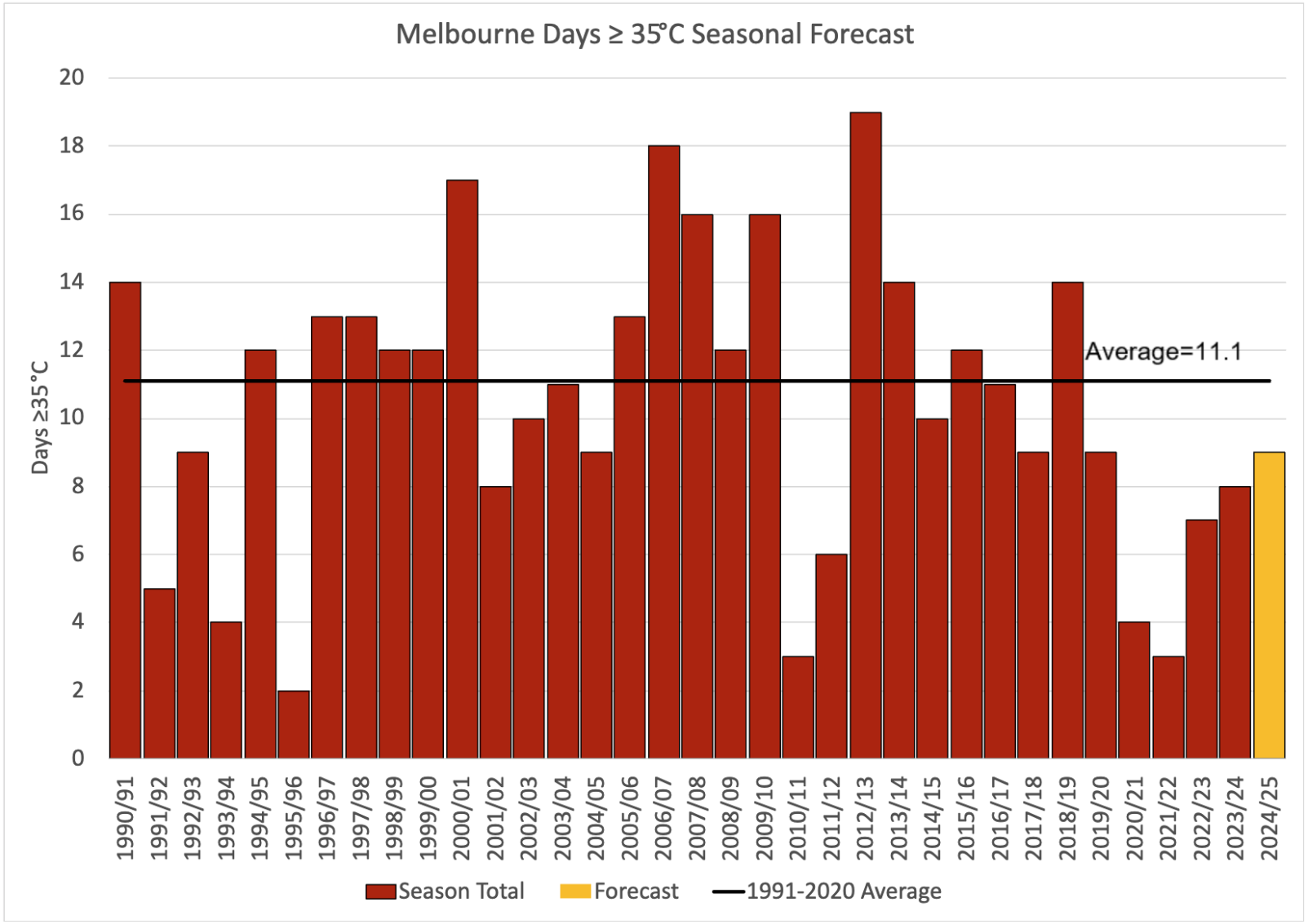




Forecast Anomaly
(1991-2020 mean)

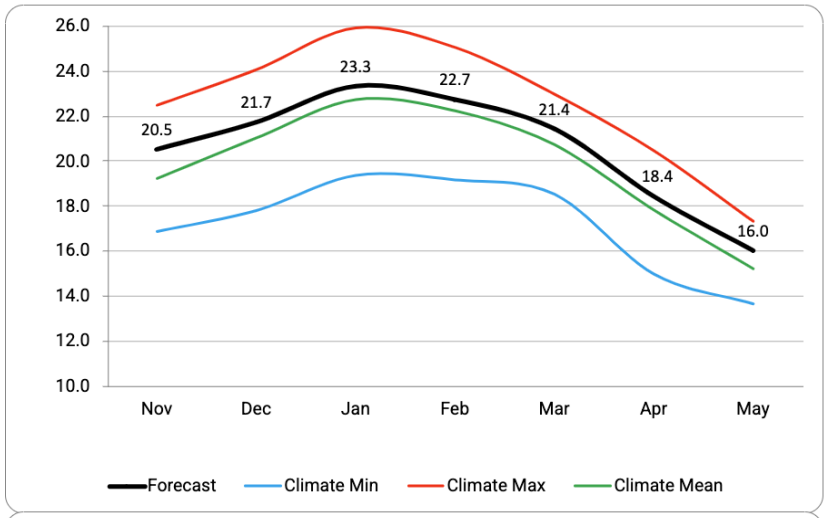
Melbourne Extreme Hot Days Forecast

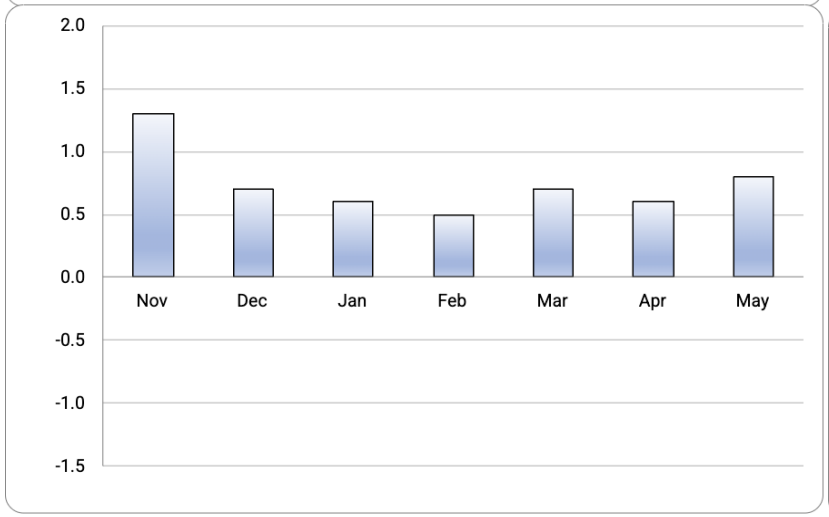


October to April forecast = 9

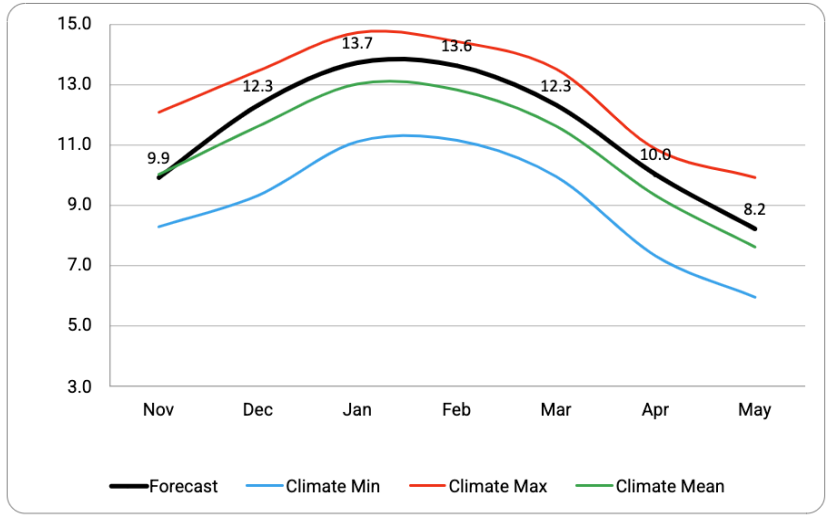
Hobart

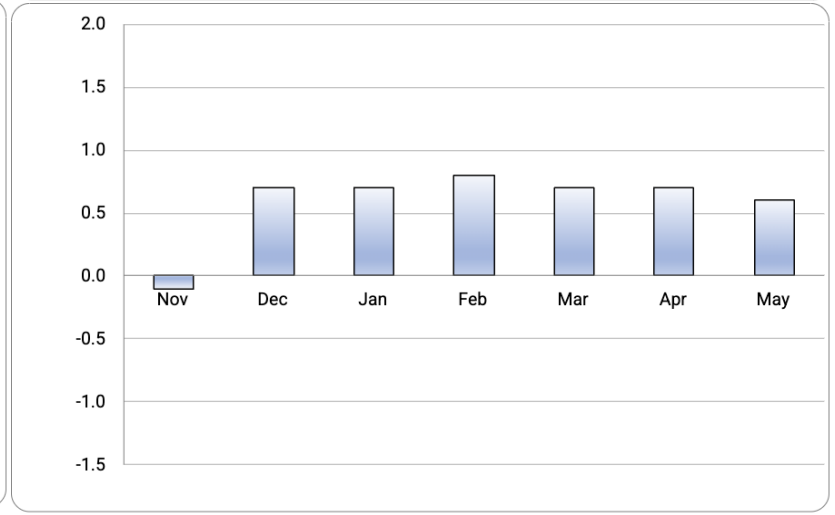
Maximums





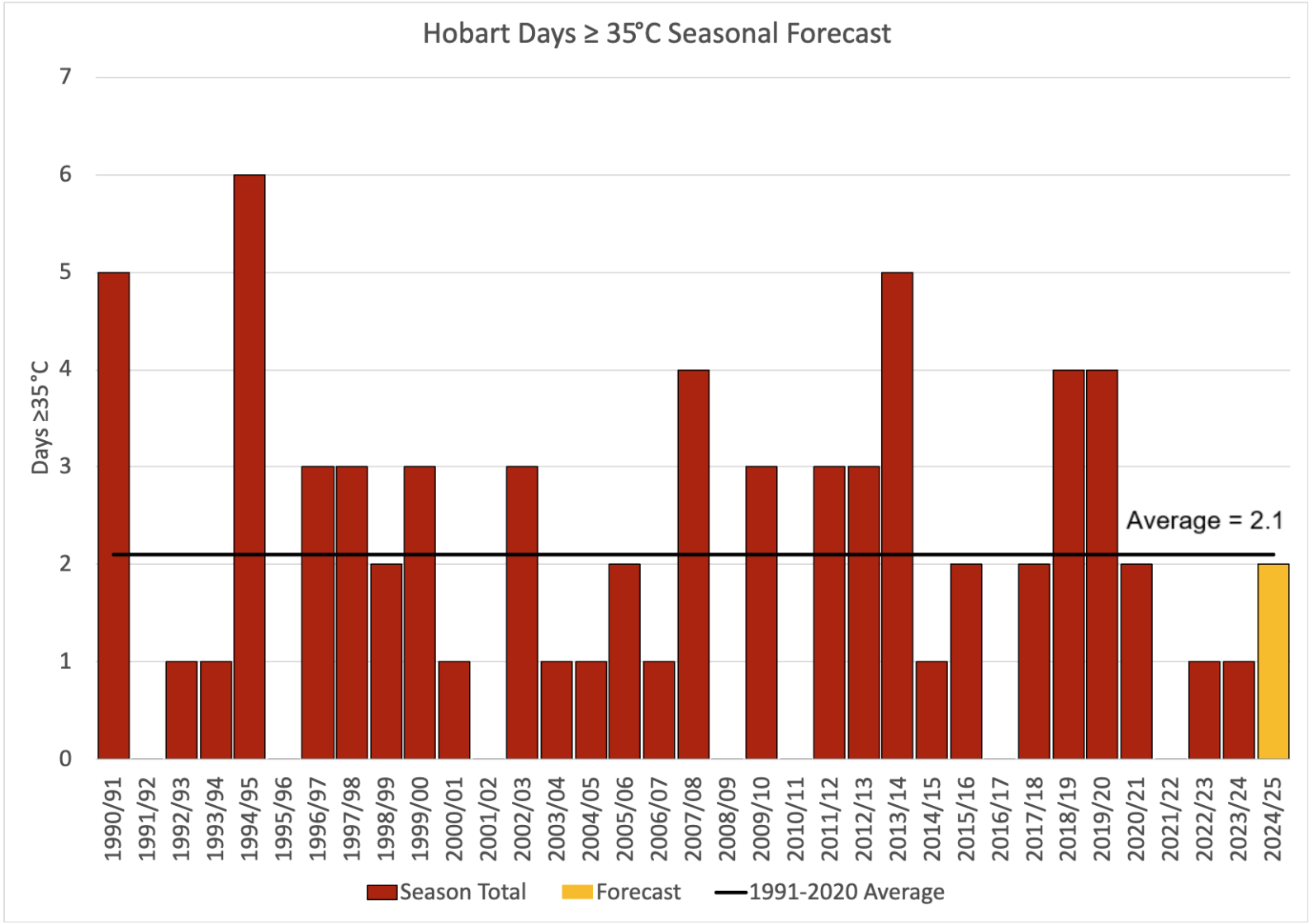
Minimums





Forecast Anomaly
(1991-2020 mean)

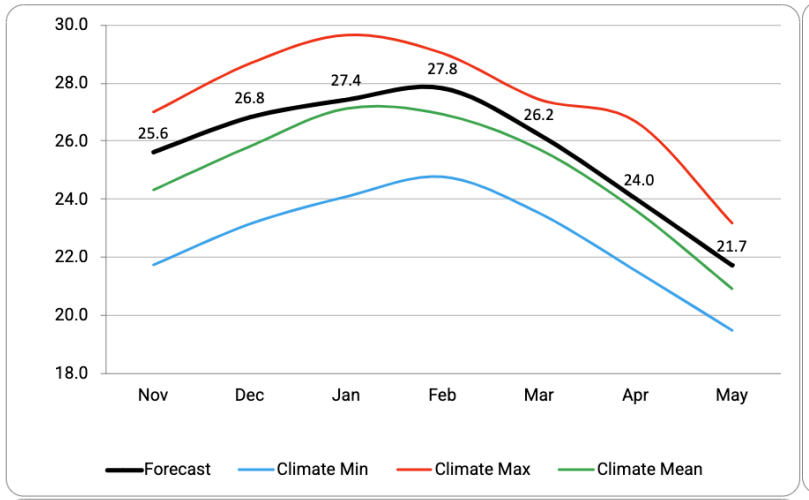
Hobart Extreme Hot Days Forecast

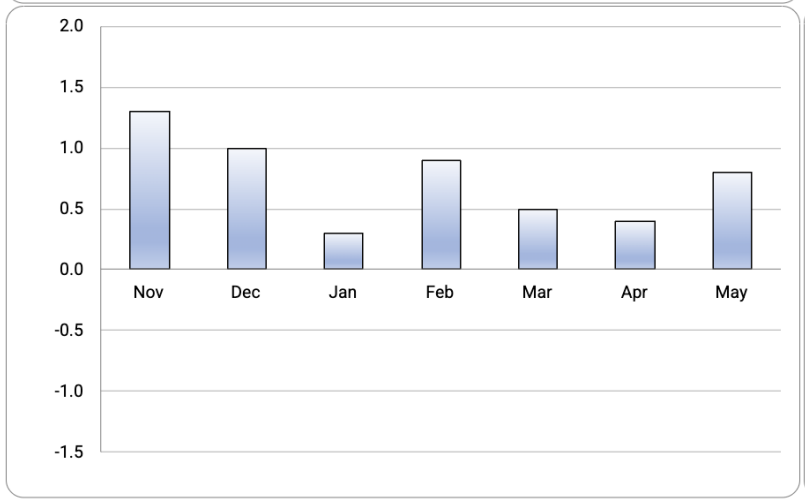


October to April forecast = 2

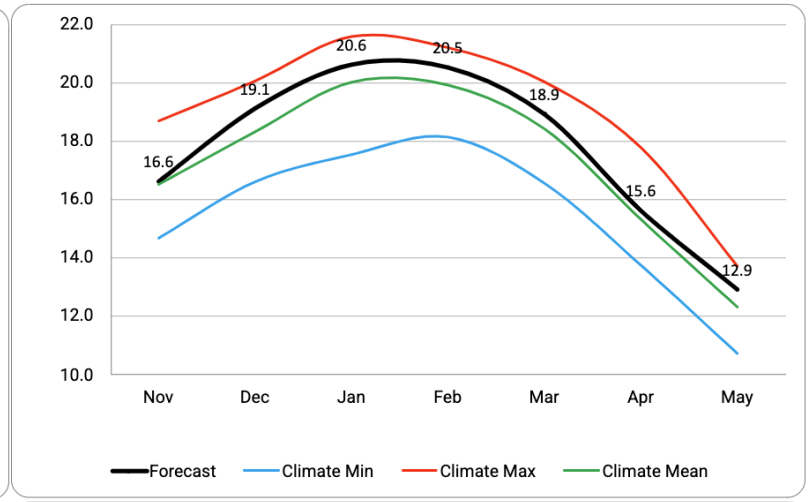
Sydney

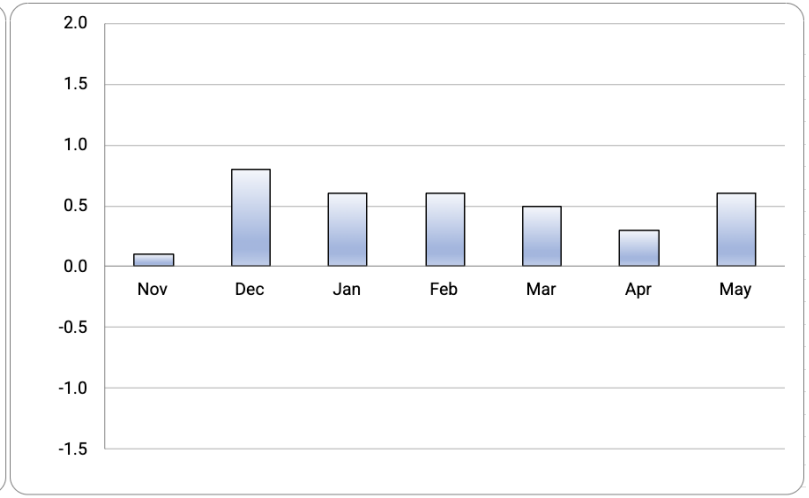
Maximums





Minimums

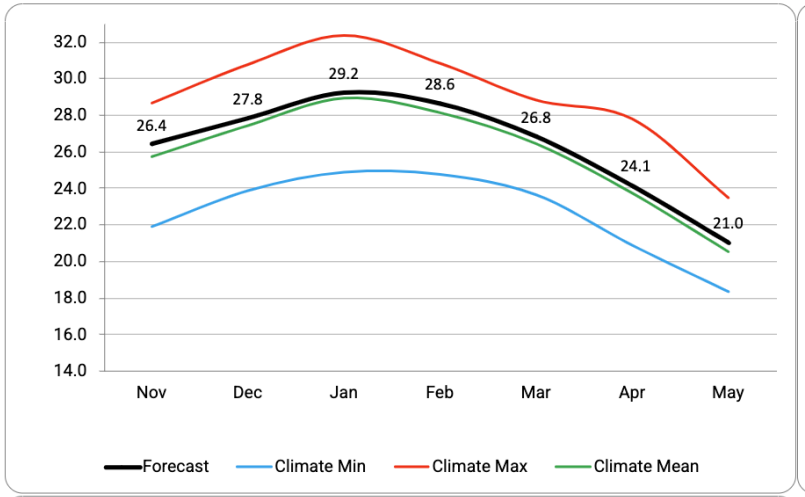


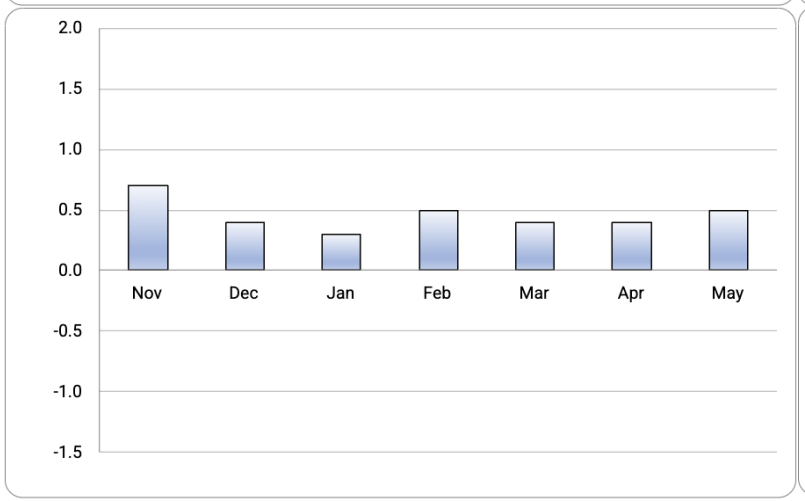


Forecast Anomaly
(1991-2020 mean)

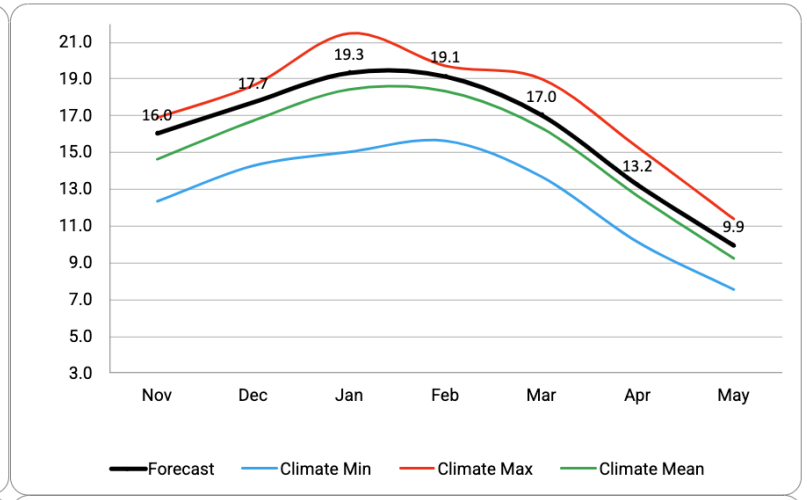
Bankstown

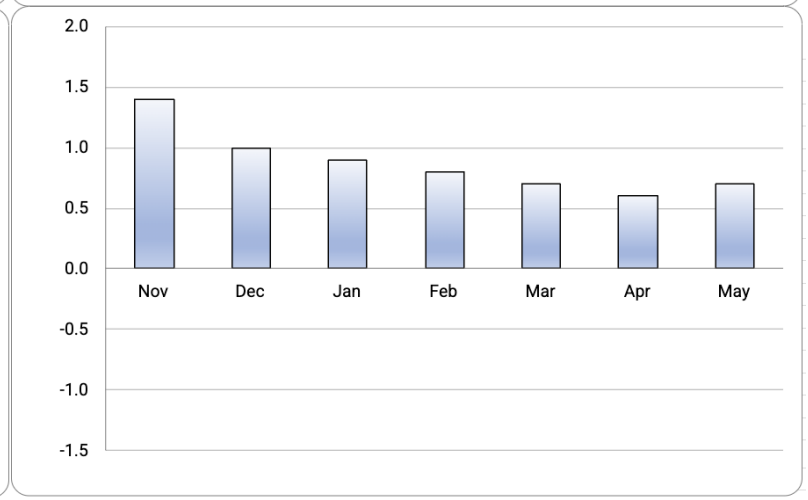
Maximums





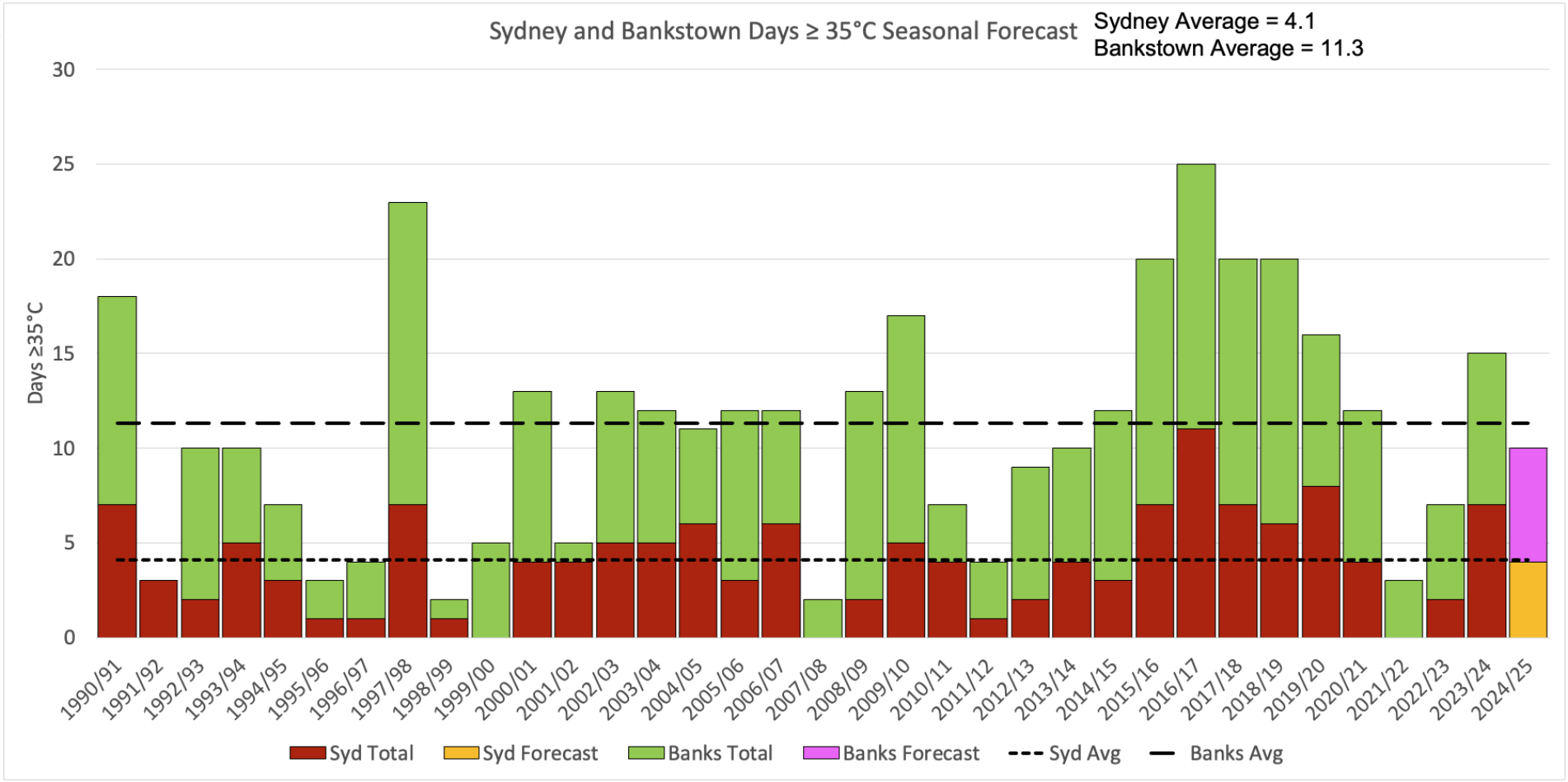
Minimums





Forecast Anomaly
(1991-2020 mean)

Sydney/Bankstown Extreme Hot Days Forecast



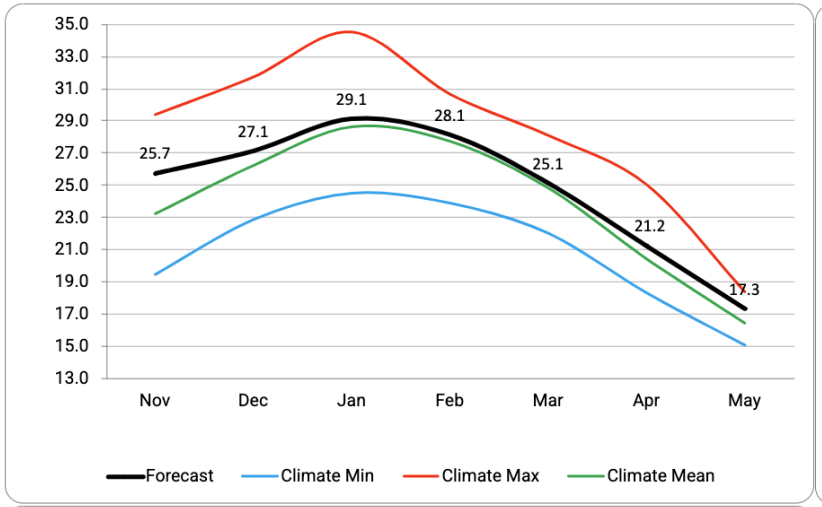
October to April forecast

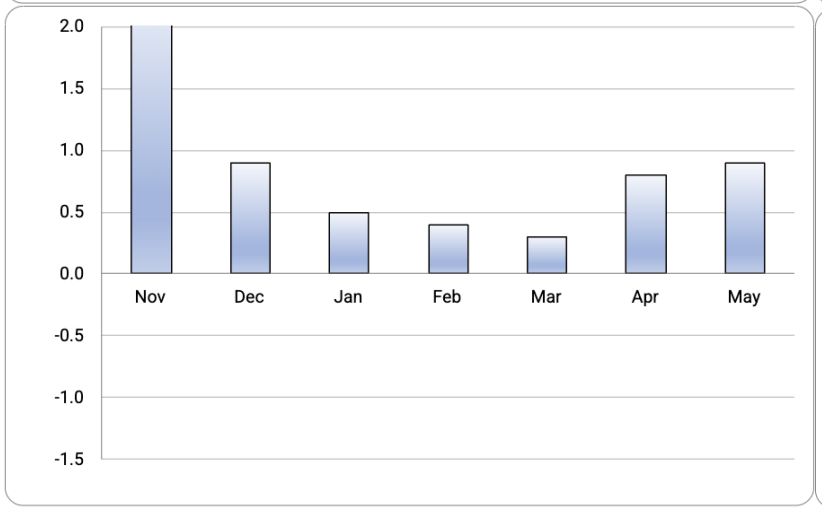
Bankstown = 10

Sydney = 4

Canberra

Maximums





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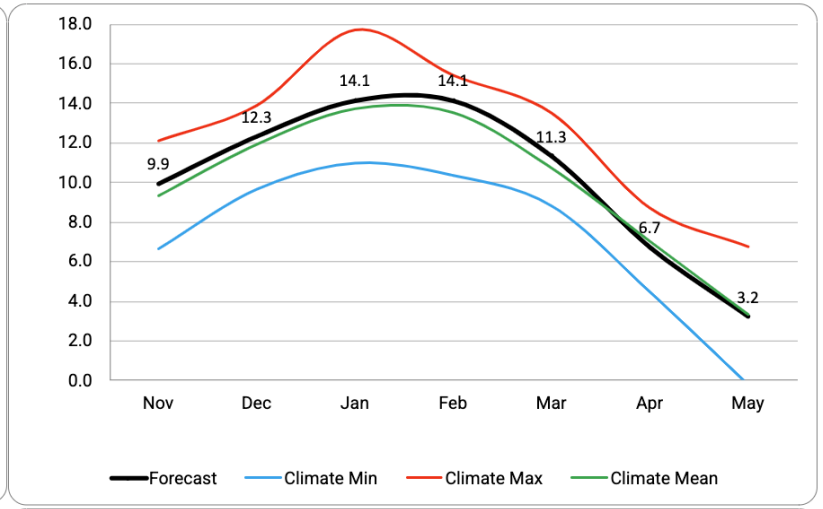
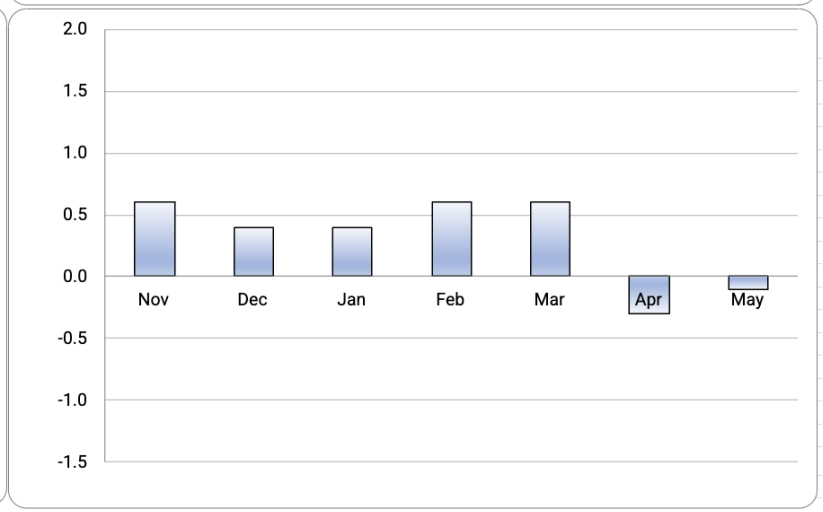
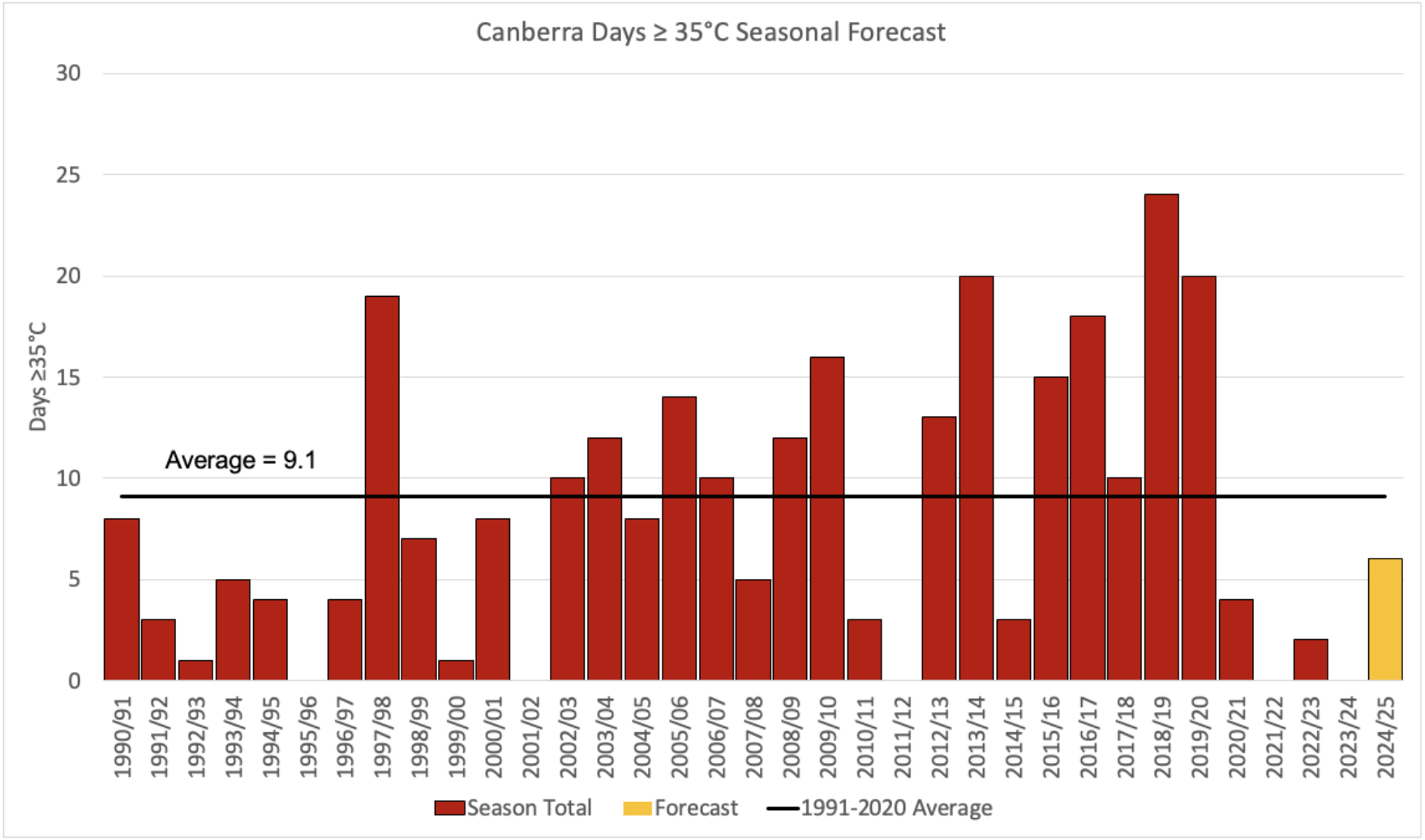




Forecast Anomaly
(1991-2020 mean)

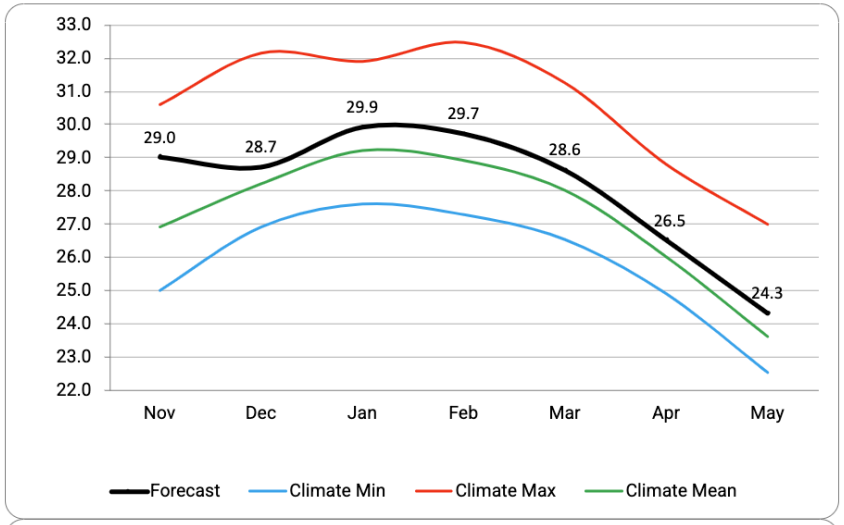
Canberra Extreme Hot Days Forecast



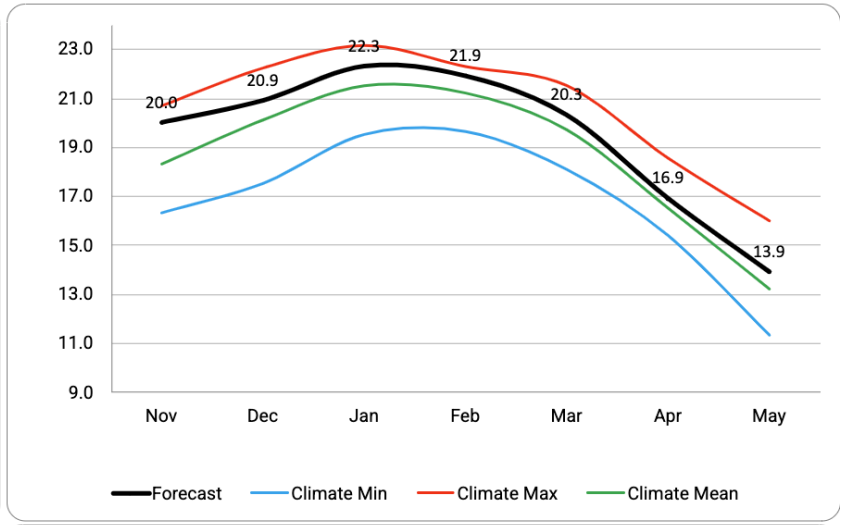
October to April forecast = 6

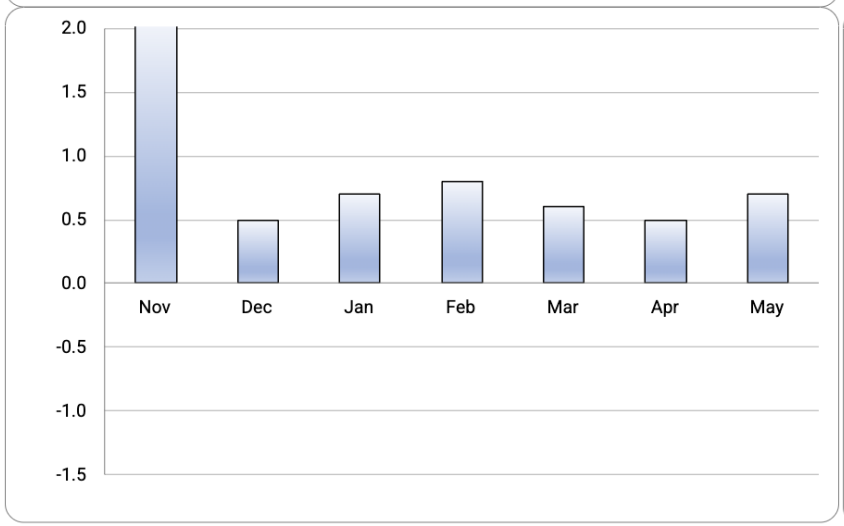
Brisbane

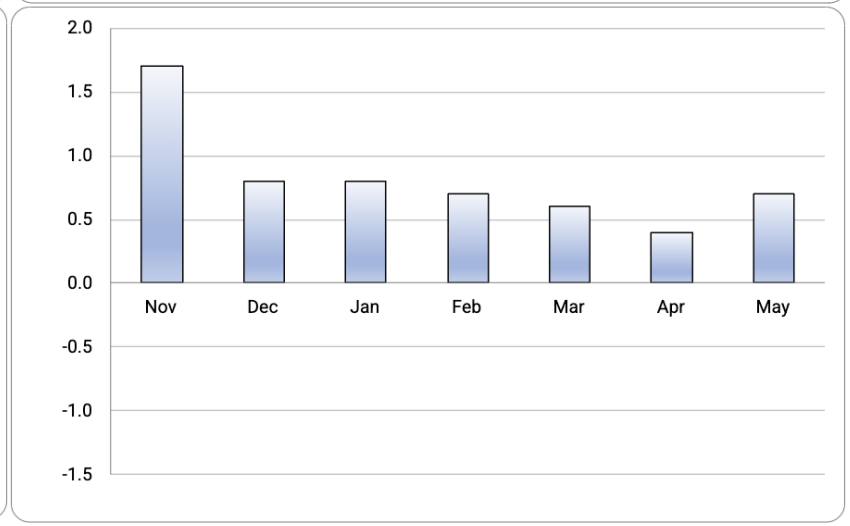
Maximums



Minimums



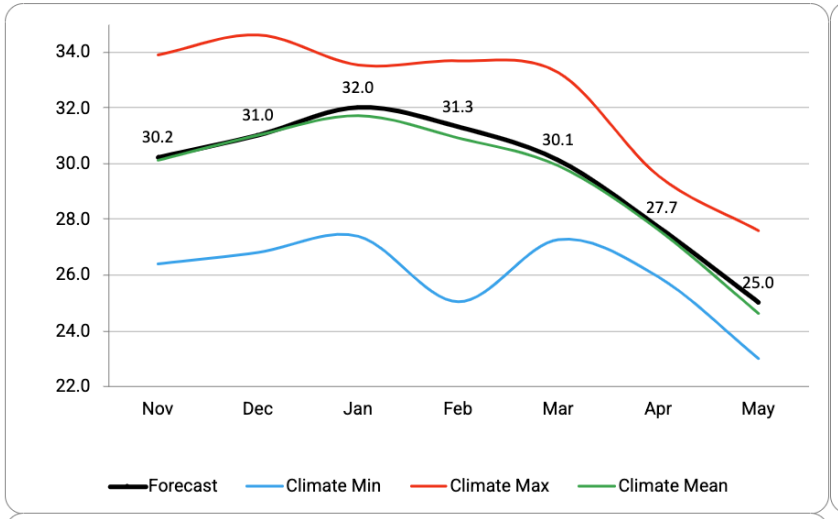


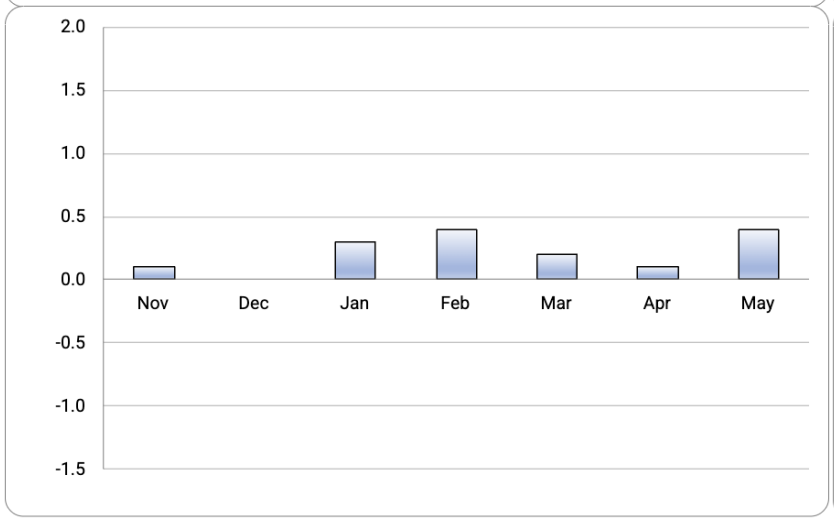


Forecast Anomaly
(1991-2020 mean)

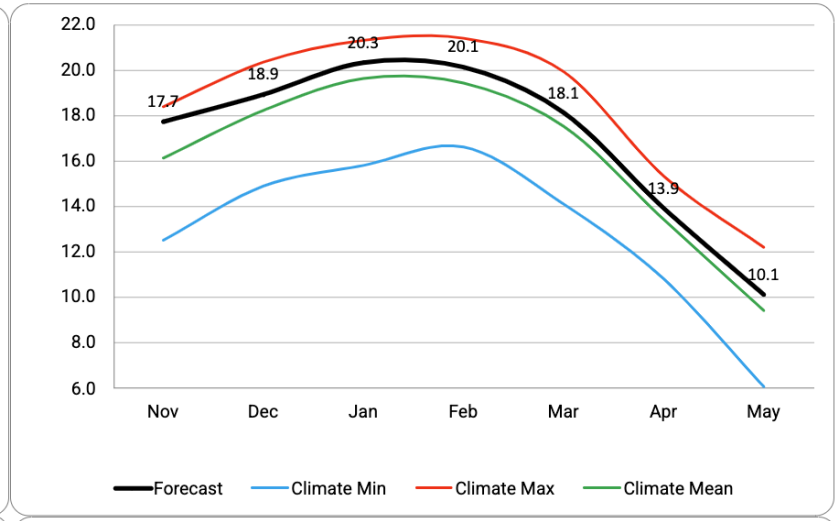
Ipswich

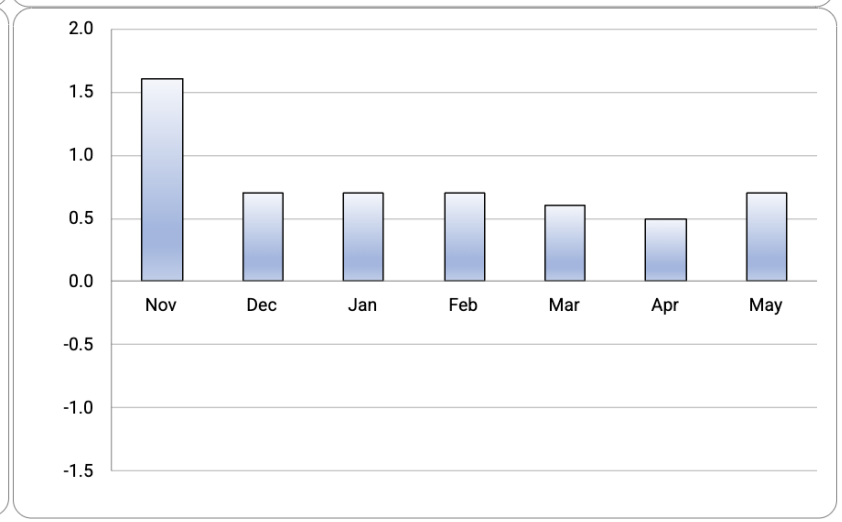
Maximums





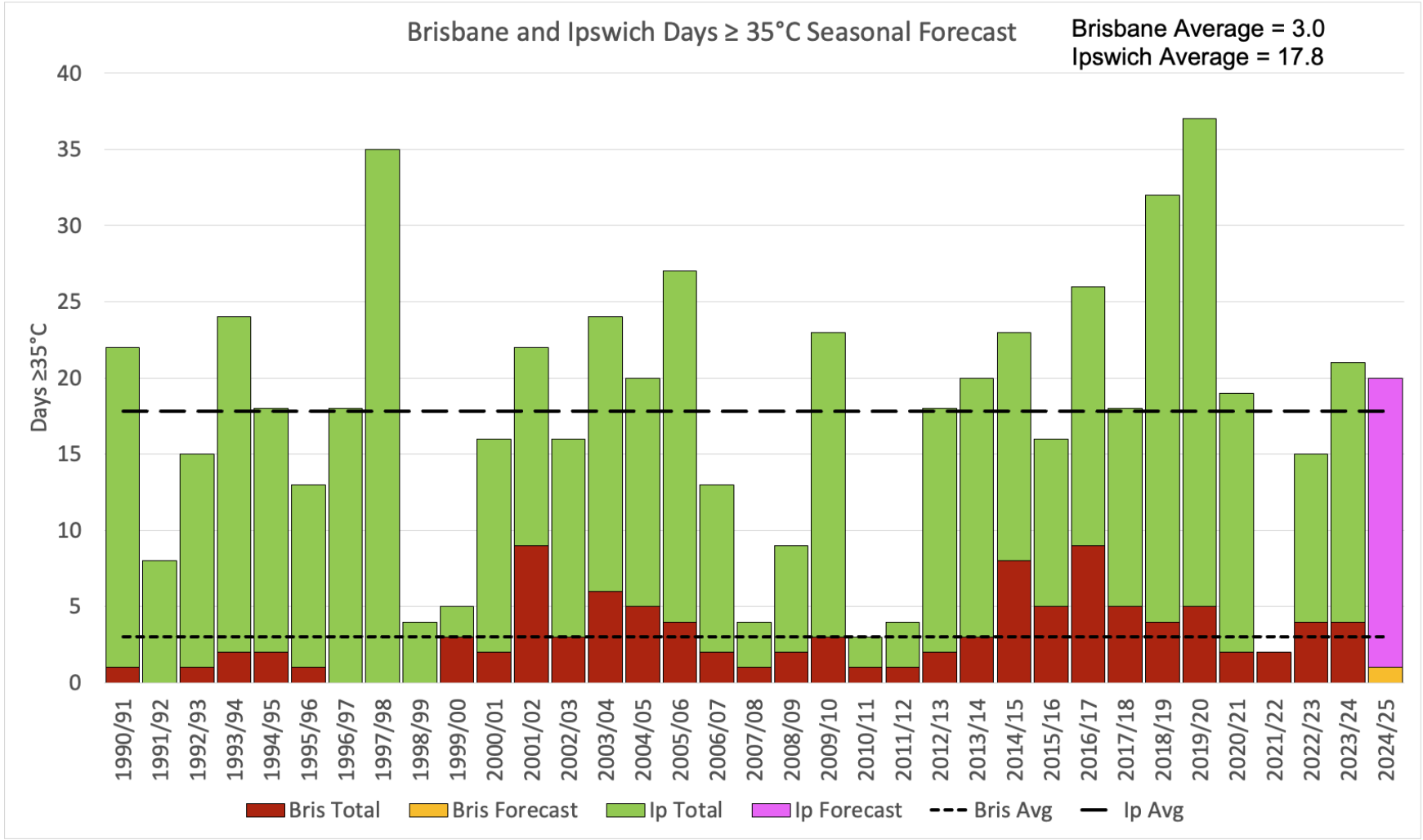
Minimums





Forecast Anomaly
(1991-2020 mean)

Brisbane/Ipswich Extreme Hot Days Forecast



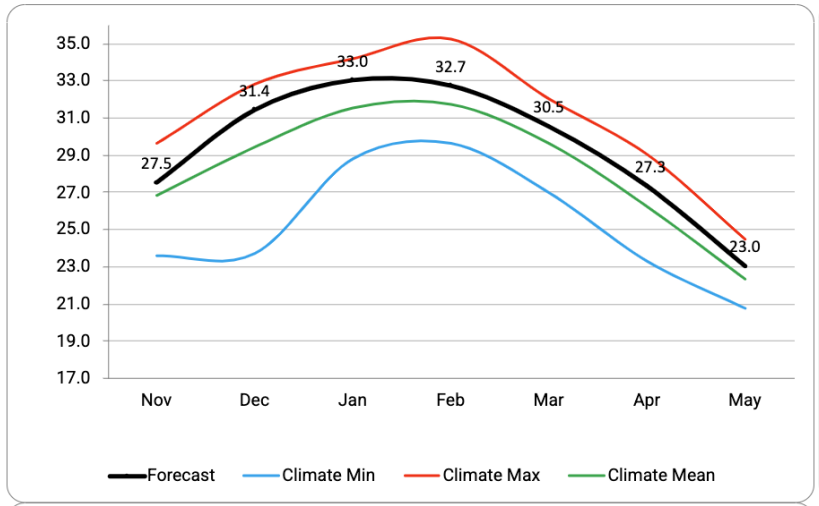
October to April forecast

Ipswich = 20

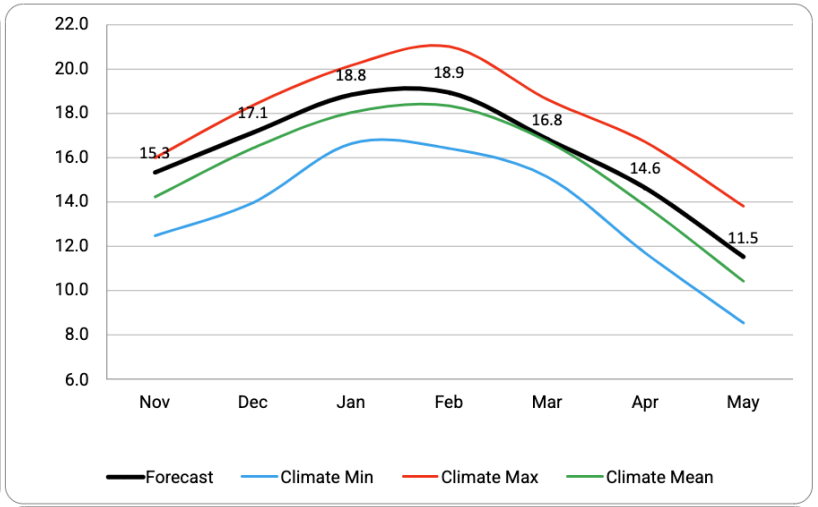
Brisbane = 1

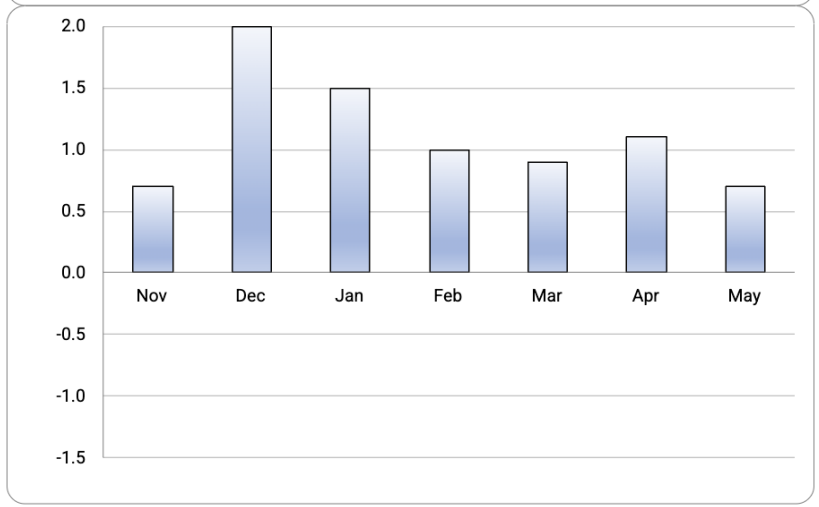
Perth

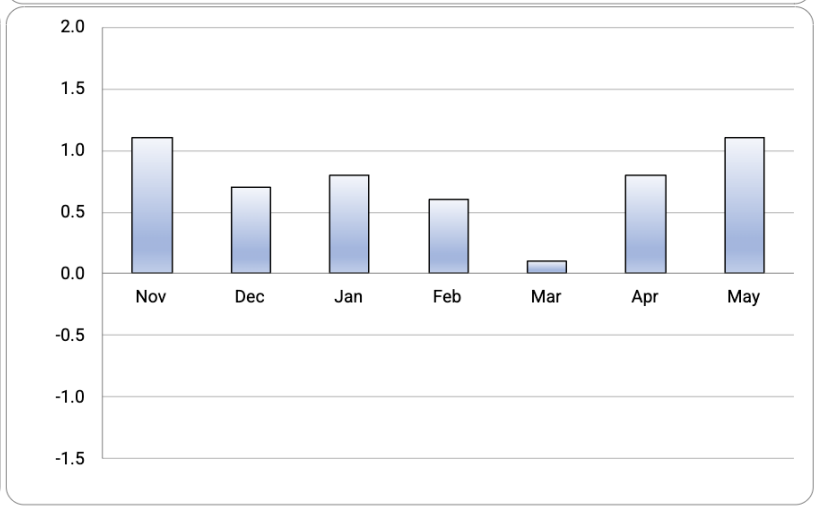
Maximums



Minimums

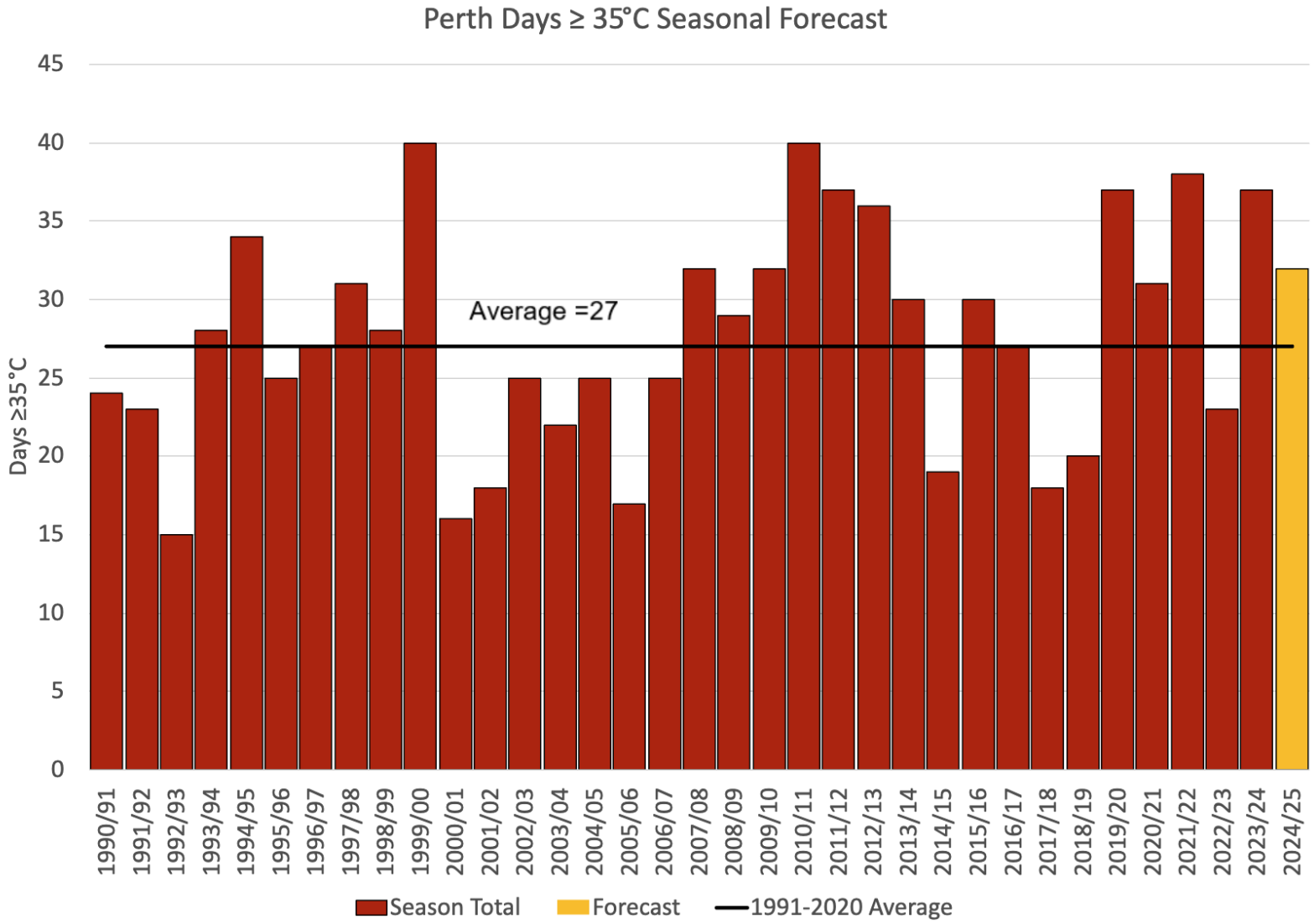






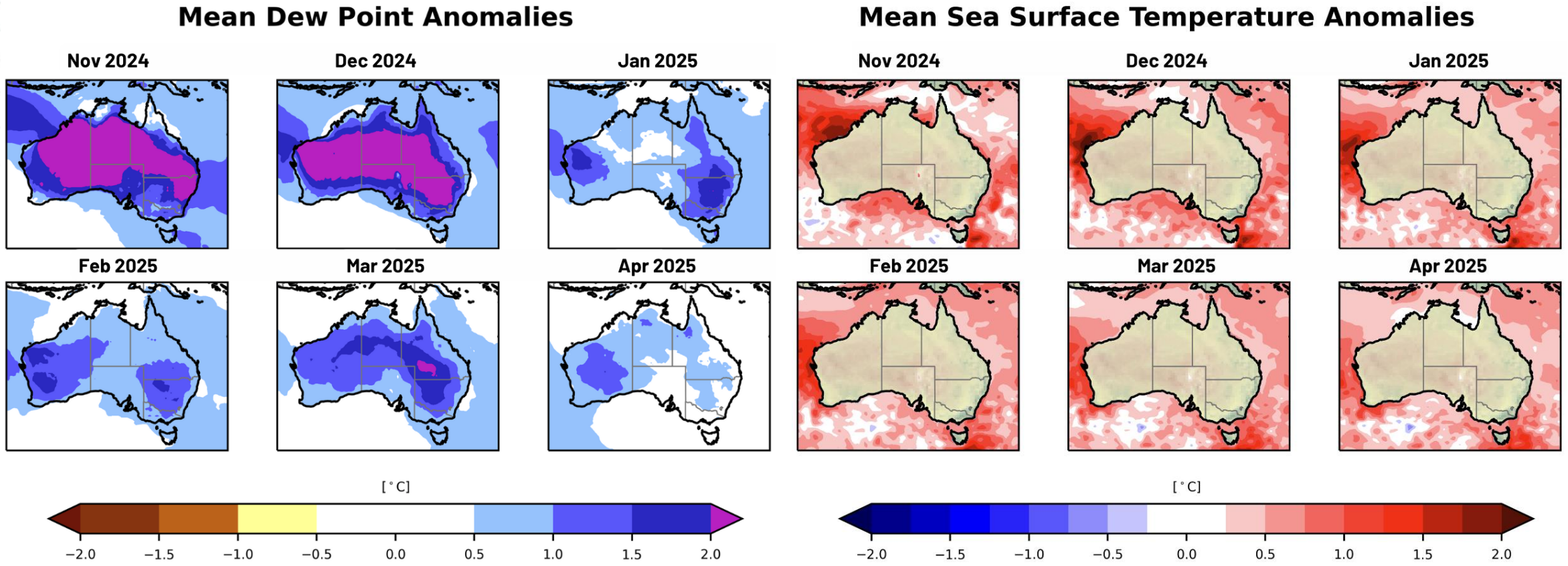
Forecast Anomaly
(1991-2020 mean)

Perth Extreme Hot Days Forecast



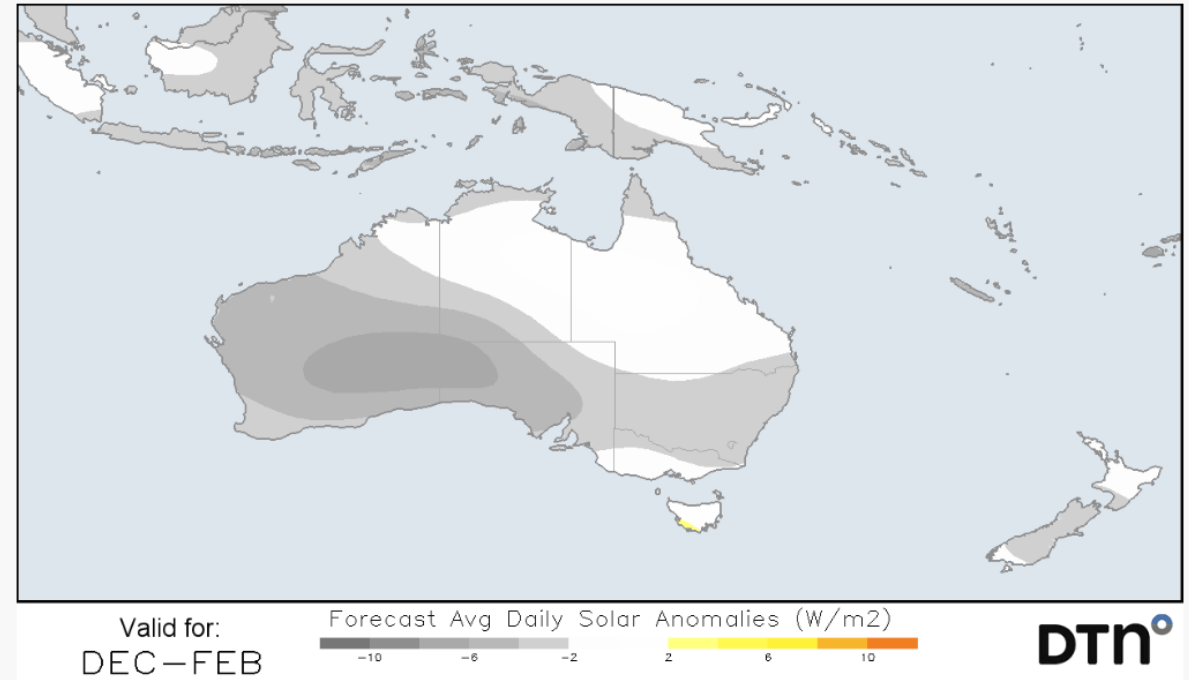
October to April forecast = 33

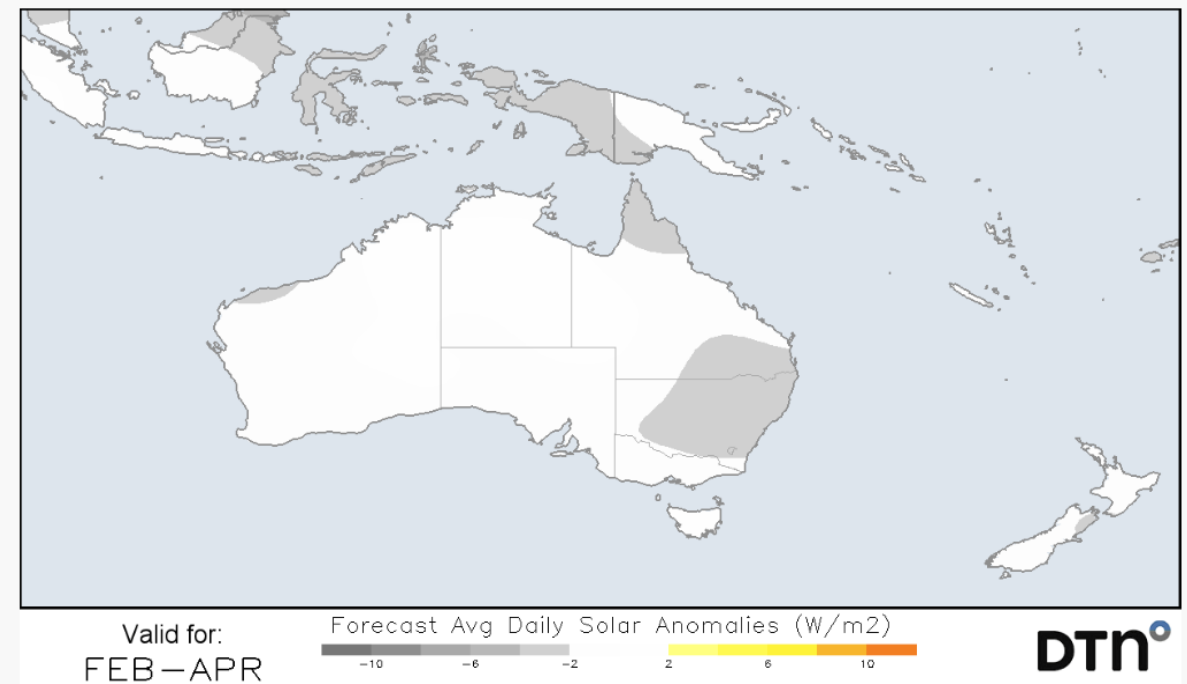
Forecast humidity anomalies



Summer is forecast to be exceptionally humid with warm SSTs lingering

Forecast sunshine anomalies



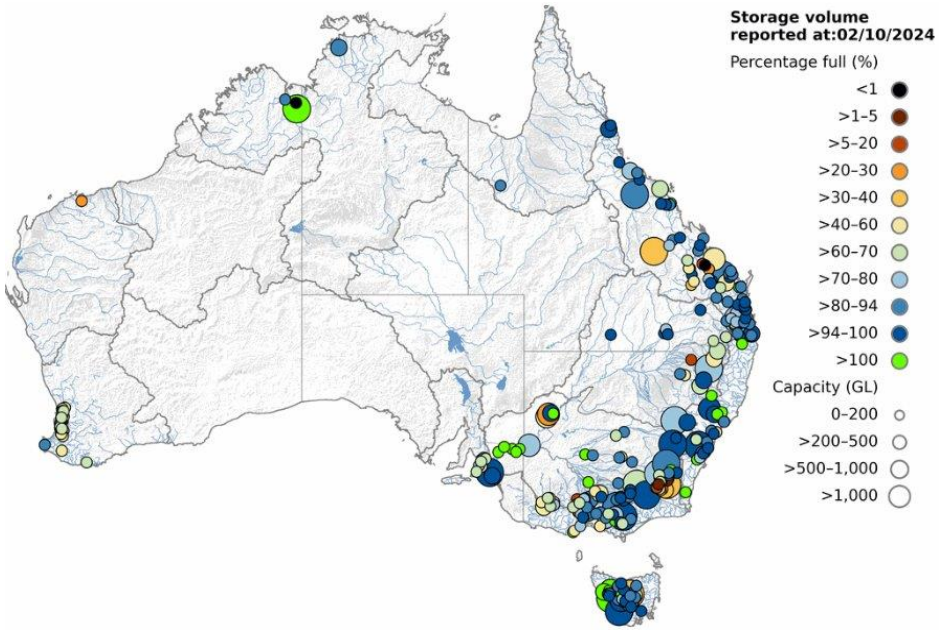


Overall solar production should be lower than normal due to increased cloud, particularly along the north and east.

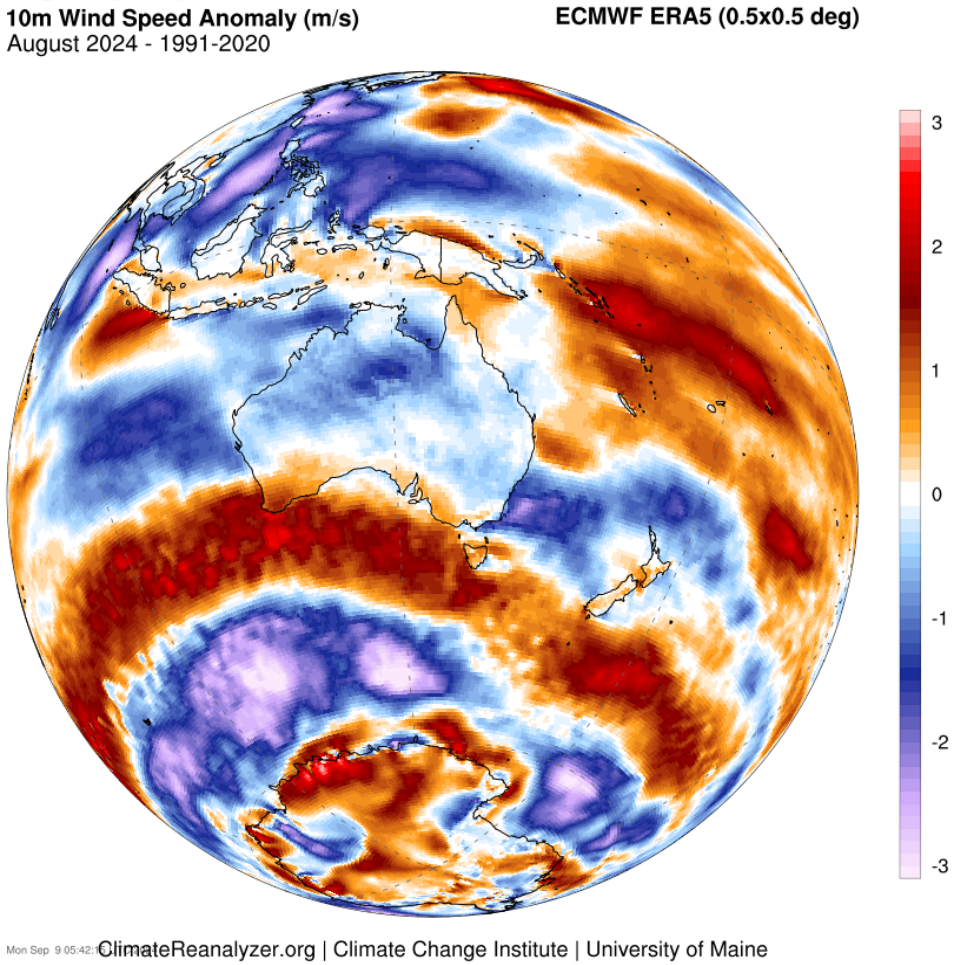
DTN

Heavy Rainfall and Flooding

- Warm SSTs are injecting moisture around Australia
- La Niña-like pattern could increase the risk of heavy rain and flooding across the east and north.
- Areas that entered spring with a wet landscape after above average rain are at an increased risk.



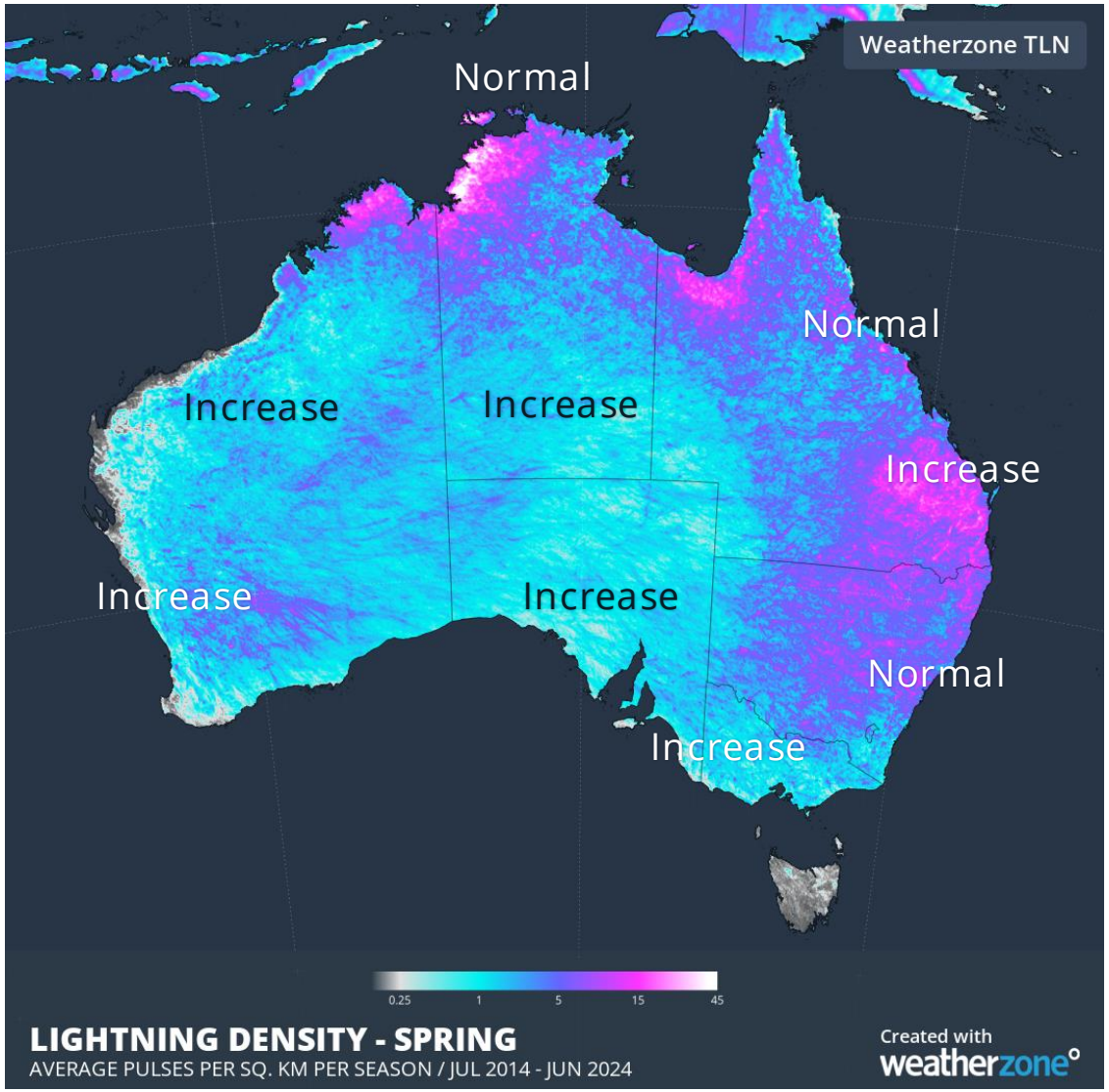
Strong wind events (cold fronts)



- Positive pattern currently
- Positive SAM forecast during summer.
- Strong wind events reduce in frequency with positive SAM

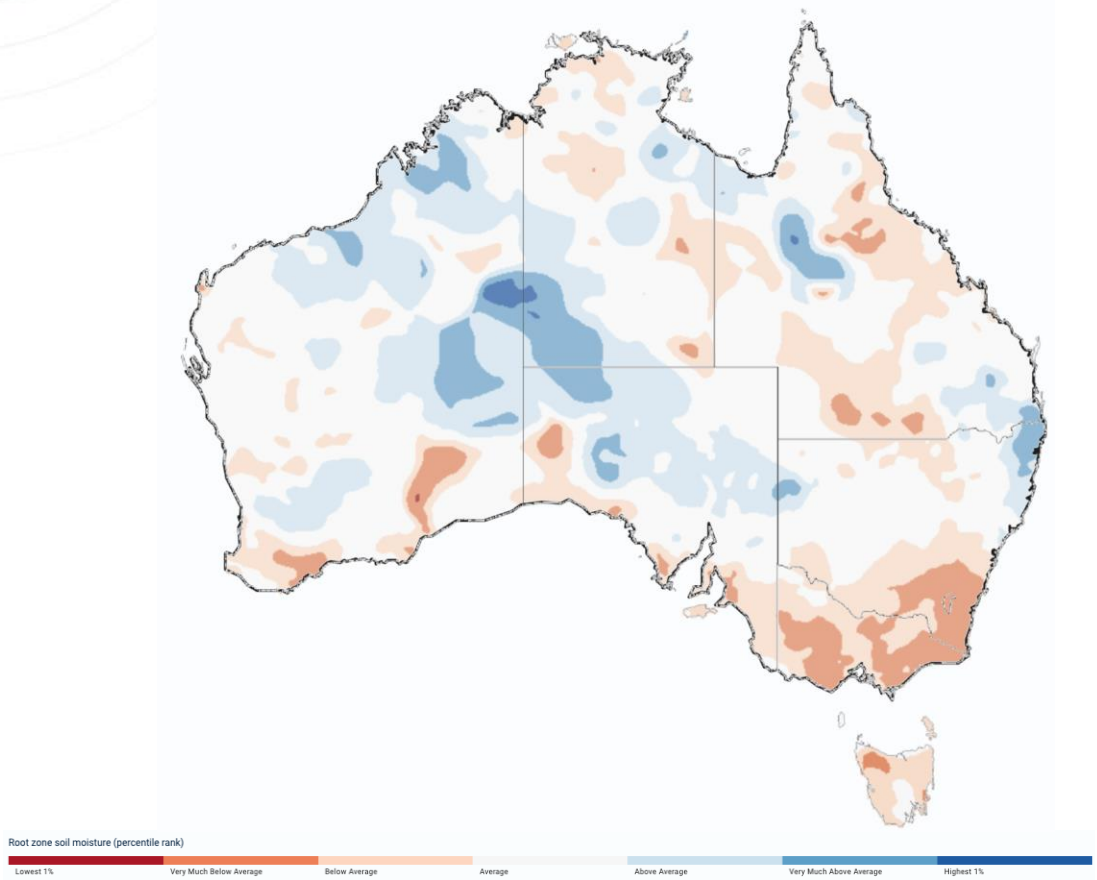
Thunderstorms

- Increased risk across southern Australia.
- Average risk for NSW and Qld.
- Damaging winds- Normal risk
- Hail – Normal risk
- Heavy rainfall – Increased risk (potential La Niña-like pattern)

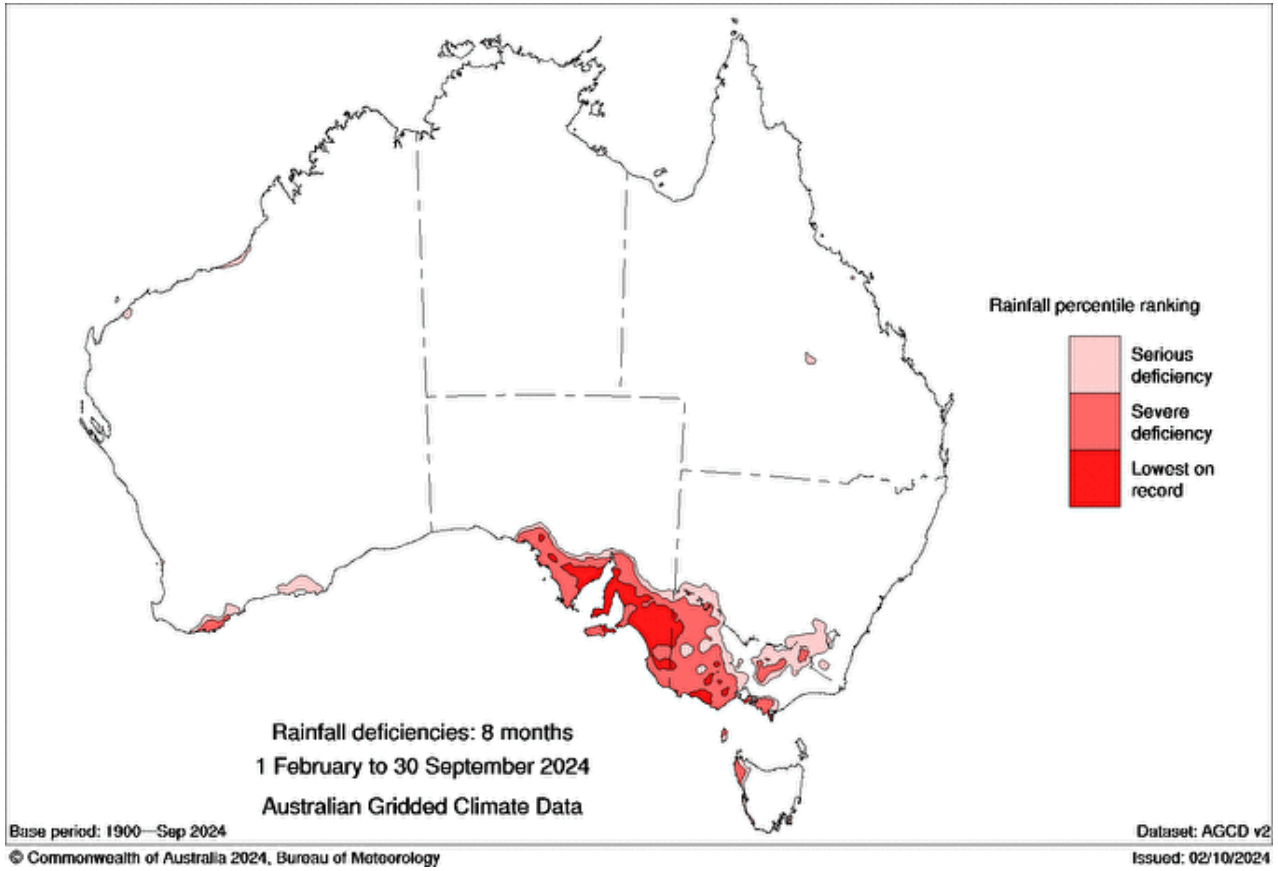


Landscape and drought risk

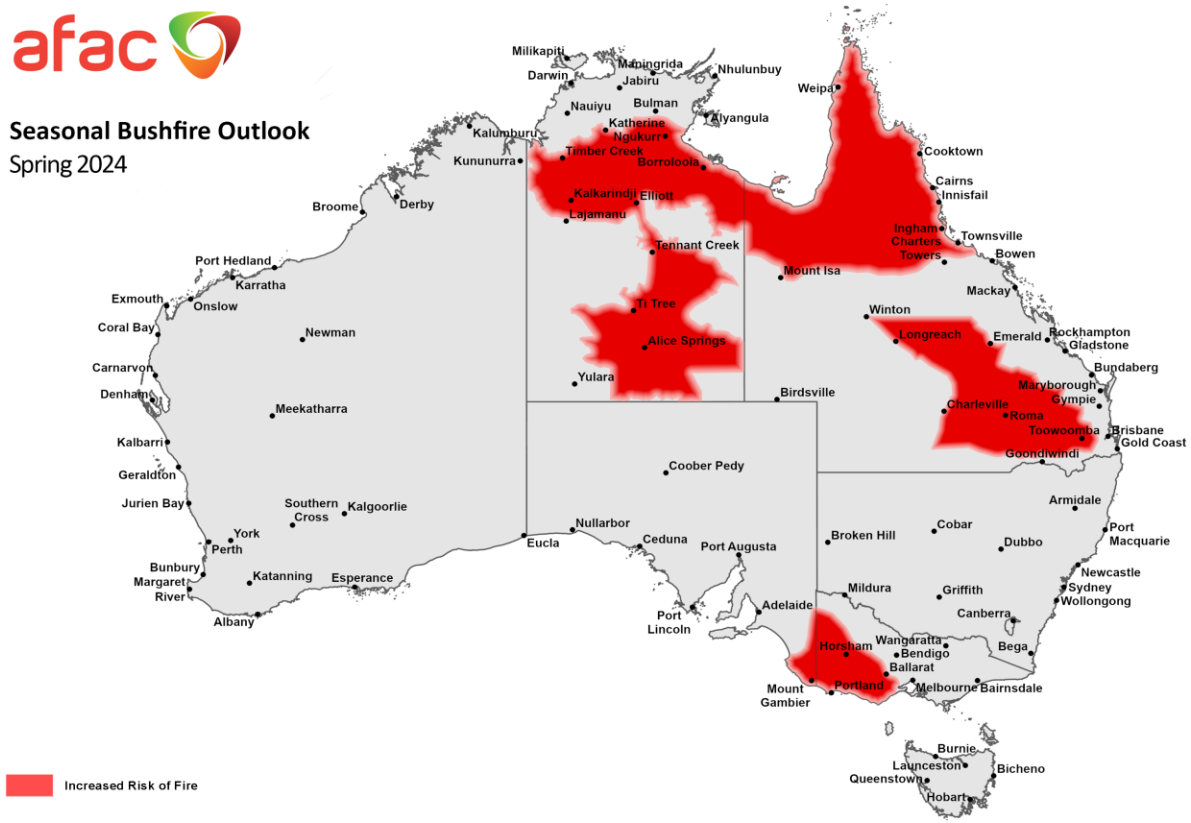
Soil moisture



Rainfall deficiencies: 8 months



Bushfire risk



- Severe-to-extreme drought continuing in western Vic and southeast SA
- Above average through Qld and the NT with high heat after a strong wet season
- Normal fire risk predicted for NSW and east Vic.
- Increased chance of fires in southwest WA in summer with high heat and wind

Upcoming Names

Robyn

Sean

Taliah

Vince

Zelia

Anthony

Bianca

Courtney

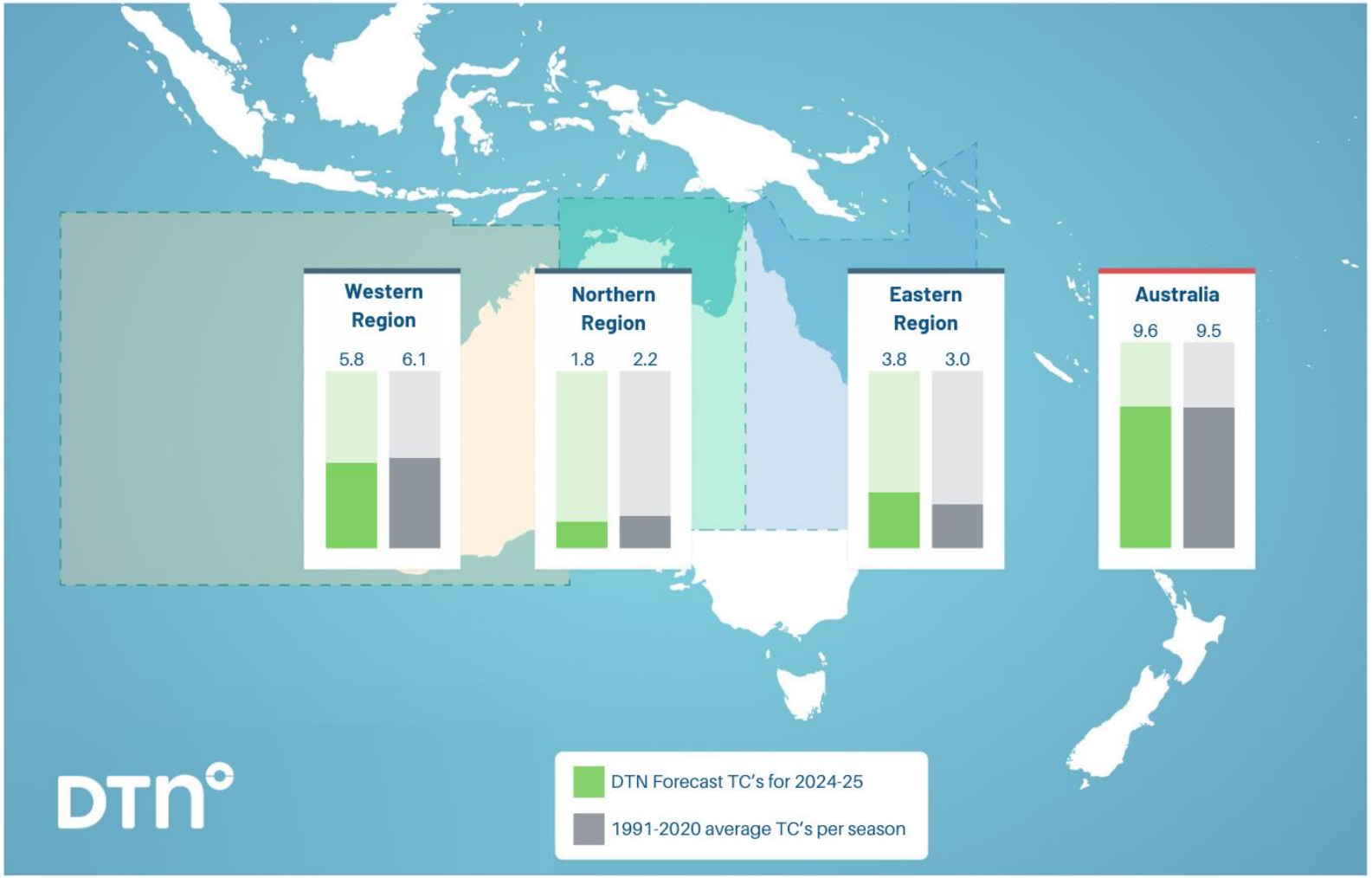
Dianne

Errol

Fina

Grant

DTN Tropical Cyclone Forecast 2024-25



Severe TCs more likely, mainly due to very warm ocean temperatures

Weather Summary

- Temperatures: Mins above average, maxs closer to average. SA and west coast WA look warmer. Feels like temperatures will be much warmer than average due to humidity.
- Heatwaves: SA and WA hot and risk of heatwaves. Vic normal. Bankstown and Ipswich slightly below normal. Eastern Australia could see prolonged periods of warm nights and humid days.
- Rainfall: Above average rain in north and east from late spring into summer. Could see drier conditions across parts of southern Australia.
- Heavy rainfall and flooding: Above average risk in the north and east.
- Wind events: Below normal risk.
- Storms: Above average risk.
- Bushfire: Above average across large parts of Qld, the NT and southeastern SA and western Vic in spring. Southwest WA, western Vic and southeast SA could see increased risk in summer.

Questions?

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