



Seasonal Climate Outlook

Date: February 2025

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 West Land Division

The rainfall outlook for the South West Land Division (SWLD) for February to April 2025 indicates a higher likelihood of above-median rainfall. Meanwhile, the temperature outlook suggests than warmer-than- normal temperatures will persist.

Recent conditions

Temperatures

Since the start of summer, higher than normal temperatures have been the most significant weather factor affecting the SWLD. These elevated temperatures have led to multiple severe to extreme heatwave events, as well as a marine heatwave that has persisted since September 2024. The primary contributors to these extreme conditions include:

• Prolonged heatwave conditions: Maximum temperatures have frequently reached the low to mid high forties, with overnight minimum temperatures in the low twenties. On 20 January, Geraldton equalled its record for the hottestever day (previously set on 18 February 2024) with a temperature of 49.3°C. The extended heatwave was partially influenced by Tropical Cyclone Sean.

• Tropical Cyclone Sean: The presence of Severe Tropical Cyclone Sean off the northwest coast has significantly impacted regional weather patterns. While the cyclone itself brought heavy rainfall to some areas, its interaction with a high-pressure system contributed to the advection of hot, dry air masses over southwestern parts of the state, exacerbating heatwave conditions.

• Marine Heatwave: Since September 2024, sea surface temperatures off Broome have been up to 3°C above average. By late December, the area of anomalously warm water expanded southward along the Pilbara coast

and intensified, with surface temperatures reaching 4–5°C above normal.

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January maximum and minimum temperatures were above normal, up to 4°C higher in central Western Australia.



Figure 1 Maximum and Minimum temperature anomaly maps from Bureau of Meteorology for January 2025. Indicating temperatures were above normal.

Rainfall

Rainfall since November has been above average for some locations, but decile 2-3 for southern region of the SWLD. Highest totals were in Dardanup with 124 mm, Bullfinch 113 mm and Perenjori 104 mm.



Figure 2 Rainfall (mm) totals for November 2024 to January 2025 in the South West Land Division. Dardanup in the south west forecast district had the highest rainfall with 124 mm



Figure 3 Rainfall decile ranking map for November 2024 to January 2025 for the South West Land Division. Indicating decile 2-3 for the southern region.

Soil moisture

The current root zone soil moisture ranking from the Bureau of Meteorology's Australian Water Outlook is average to below average for most of the SWLD, with very much below average levels for the south coastal and south east coastal forecast districts.



Figure 4 Relative root zone soil moisture ranking for 2 February 2025 from the Bureau of Meteorology's Australian Water Outlook. Indicating soil moisture is average to below average in the South West Land Division and very much below average in the south coastal and south east coastal forecast districts.

Summary table

Rainfall Outlook	11 out of 19 models indicate above median rainfall for February to April 2025
Temperature Outlook	The Bureau of Meteorology's Australian Community Climate Earth-System Simulator-Seasonal (ACCESS-S) forecasts a 60-80% chance of exceeding the median maximum for temperatures for February to April 2025, with the higher probabilities along the coast and central west forecast district. The forecast skill ranges from 65- 75%. For minimum temperatures, there is an 80% chance of exceeding the median, with a forecast skill of 55-75%.
Dominant feature	The subtropical ridge (high pressure system) is the dominant feature over summer.
El Nino Southern Oscillation (ENSO)	Currently neutral
Indian Ocean Dipole (IOD)	Currently neutral. No influence expected until the end of the monsoon season, usually in May.
Southern Annular Mode (SAM)	No influence on summer rainfall in the South West Land Division

Key feature this month

Subtropical ridge

During the southern hemisphere summer, the subtropical ridge is typically positioned south of the Australian continent, including the South West Land Division (SWLD) of Western Australia. This high-pressure system leads to clear skies, low rainfall, and hot temperatures in the region.

The subtropical ridge is a semi-permanent high-pressure area that shifts northward in winter and southward in summer. In summer, it generally resides over southern Australia, including the Great Australian Bight, influencing the climate by blocking cold fronts and maintaining dry conditions.

In January, mean sea level pressure over Australia was lower than normal, indicating that SWLD experienced some rainfall. However, due to Tropical Cyclone Sean in northern Western Australia, temperatures were extreme. Despite TC Sean removing some heat from the ocean, sea surface temperatures around Australia remain higher than normal. The prolonged and intense marine heatwave in the northwest, particularly around Karratha, has resulted in the death of tens of thousands of fish.



Figure 5 Mean sea level pressure anomaly global map 1 – 30 January 2025. Indicating lower than normal pressure over South West Land Division.

Rainfall outlook for the South West Land Division

A summary of 19 national and international models shows that 11 out of 19 models indicate above median rainfall for the SWLD for February to April 2025. Further ahead, the majority of models is indicating above median rainfall for autumn March to May, and then no consensus for April to June, and neutral chances for May to July rainfall.

However, it is important to note that model forecasts become less reliable the further ahead they extend. Additionally, due to the 'autumn predictability barrier', climate models forecasting beyond autumn (March to May), have the lowest skill and should be interpreted with caution.



Figure 6 Model summary of rainfall outlook for the South West Land Division up to May to July 2025, with neutral chance of exceeding median rainfall.

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