

## NSW Southern Basin dissolved oxygen update No. 1

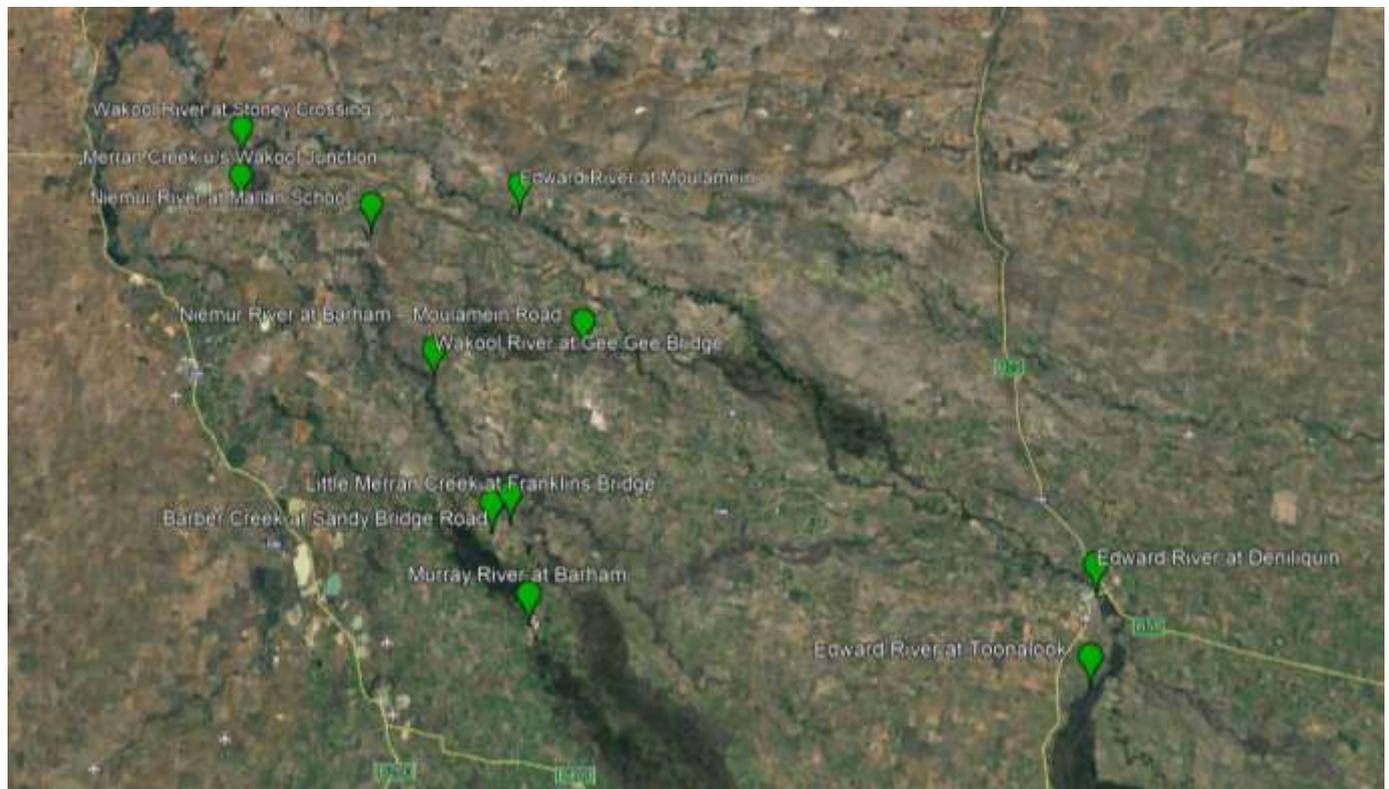
*Multiple agencies are undertaking water quality monitoring to assess dissolved oxygen conditions across NSW and identify potential risks to ecological communities. This update provides an assessment of dissolved oxygen data from the southern valleys collected up to 21 September.*

### Stages of criticality for dissolved oxygen

Continuous dissolved oxygen sensors located in the Murray, Murrumbidgee and lower Darling river catchments show levels at all sites are above critical ecological thresholds and pose minimal risk to aquatic ecosystems.

However, while dissolved oxygen along most of the Lachlan Valley remains above 5 mg/L, results at Booligal have been steadily declining and dropped below the 2 mg/L critical threshold for fish health on 19 September. Continuous dissolved oxygen data is available on the [WaterNSW real time data](#) website.

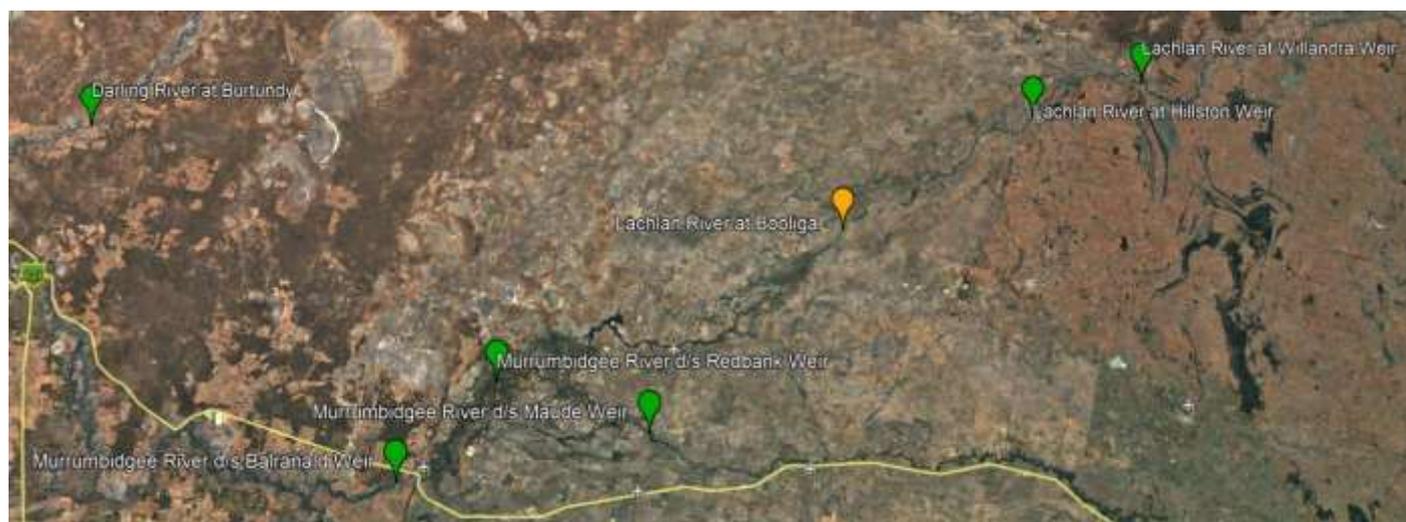
Figures 1 and 2 highlight the stages of criticality at monitoring sites in the Southern Basin.



**Figure 1: Stages of criticality at continuous dissolved oxygen monitoring sites in the Murray catchment.**

## Key to dissolved oxygen stages of criticality

| Stage   | Definition   |
|---------|--|
| Stage 1 | Dissolved oxygen level above 4 mg/L at all times. Low risk to aquatic ecosystems.  |
| Stage 2 | Diurnal dissolved oxygen level dropping below 4 mg/L at night/early morning, then increasing to above 4 mg/L during the day. Will impact on fish health, but may not result in deaths. |
| Stage 3 | Dissolved oxygen level dropping below 2 mg/L at night/early morning. High risk to aquatic ecosystems. Fish deaths may occur.   |
| Stage 4 | Dissolved oxygen level remaining below 2 mg/L. Very high risk to aquatic ecosystems. Fish deaths will, or have already occurred.   |



**Figure 2: Stages of criticality at continuous dissolved oxygen monitoring sites in the Murrumbidgee, lower Lachlan and Darling rivers.**

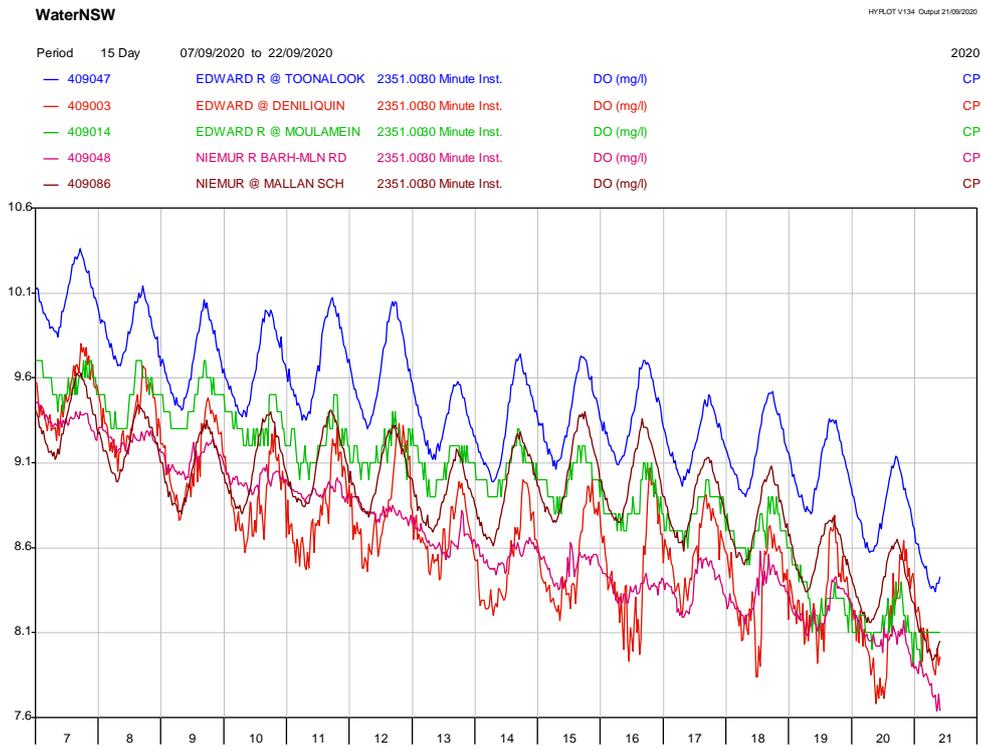
## Continuous dissolved oxygen monitoring

Figures 3 and 4 illustrate the levels at continuous dissolved oxygen monitoring locations in the Murray catchment for the past two weeks. Levels at most sites are showing a stable daily fluctuation and all are above ecological thresholds (Criticality Stage 1). Sites in the Edward and Neimur rivers are showing a steady decline in dissolved oxygen as water temperatures increase, yet minimums remain above 7.6 mg/L.

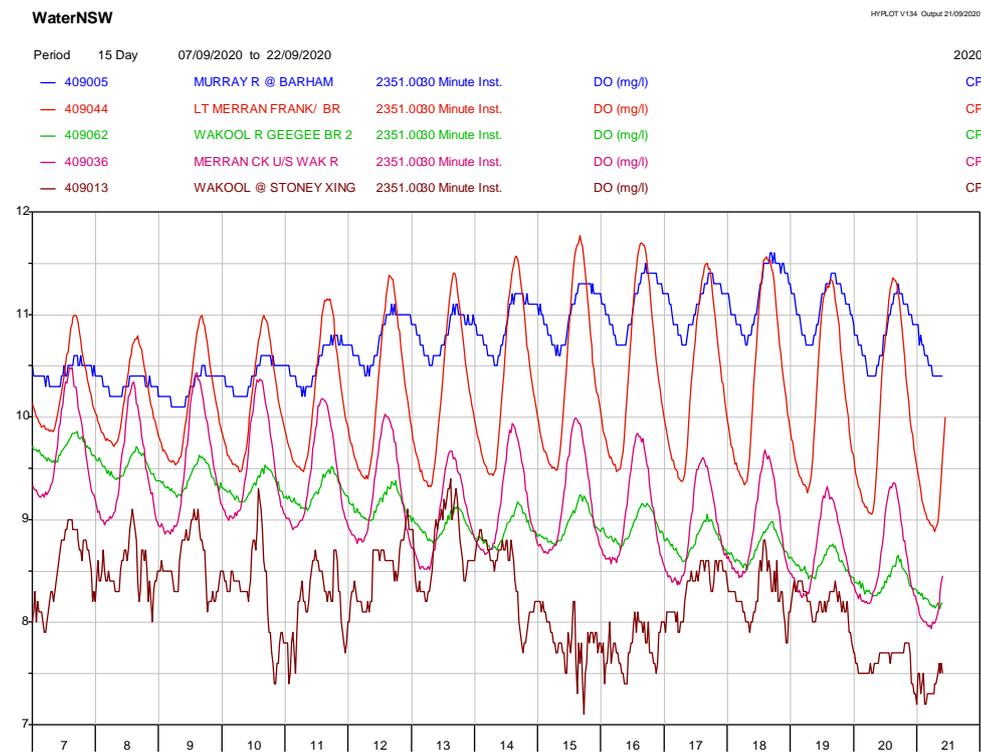
Dissolved oxygen in the Lachlan Valley remains above 5 mg/L, except for in the Lachlan River at Booligal (Figure 5), where results have been steadily declining dropped below the 2 mg/L critical threshold for fish health on 19 September. The drop in dissolved oxygen coincides with a steady increase in flow and water temperature at Booligal, where the current flow rate is almost 2,100 megalitres (ML)/day.

The dissolved oxygen levels upstream of Booligal at Willandra Weir and Hillston is above critical ecological thresholds. This suggests the inundation of carbon loads (sticks, leaves, bark and grass) on the higher banks and return flows from the floodplain downstream of Hillston could be causing the decreased dissolved oxygen at Booligal. As flows are already high and the dissolved oxygen levels upstream are above critical levels, releasing additional water to dilute the poorer quality water at Booligal would not be beneficial and is not being considered at this stage.

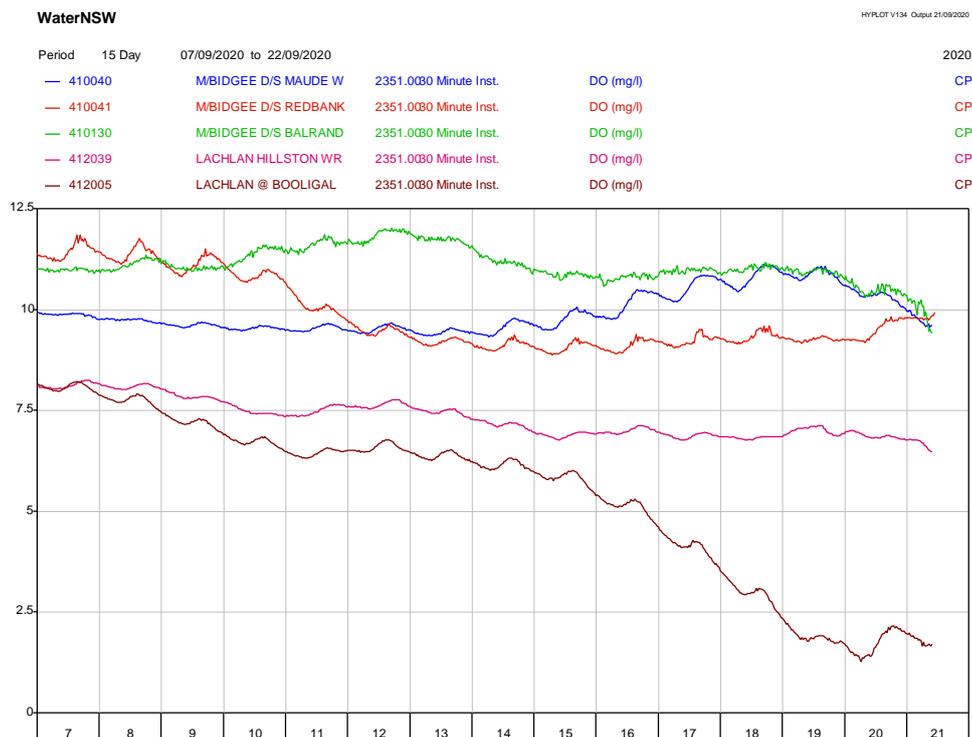
With the high flows there are opportunities for fish to migrate to safer areas. It is expected that the arrival of the cool change on this week will decrease water temperatures and slow down biological activity, helping to improve oxygen levels.



**Figure 3: Continuous dissolved oxygen (mg/L) for Edward and Niemur rivers.**



**Figure 4: Continuous dissolved oxygen (mg/L) for Murray and Wakool rivers and Merran and Little Merran creeks.**



**Figure 5: Continuous dissolved oxygen (mg/L) for Murrumbidgee and lower Lachlan rivers.**

## Weather forecast

The Bureau of Meteorology (BoM) eight-day total rainfall forecast (Figure 6) indicates rainfall across most of NSW over the coming week, with the highest totals predicted for the southern ranges and showers extending onto the western slopes and plains. BoM rainfall maps are available at - [www.bom.gov.au/jsp/watl/rainfall/pme.jsp](http://www.bom.gov.au/jsp/watl/rainfall/pme.jsp)

There is a low chance of maximum air temperatures in NSW exceeding the October median (Figure 7). There is a high chance that the median minimum air temperatures for October will be exceeded. Further temperature information is available at - [www.bom.gov.au/climate/outlooks/#/temperature/maximum/median/weekly/0](http://www.bom.gov.au/climate/outlooks/#/temperature/maximum/median/weekly/0)

The four-day synoptic forecast (Figure 8) shows a broad trough bringing widespread showers across eastern Australia. A following high pressure system will bring stable, dry conditions as it crosses NSW. A following trough and cold front should generate showers and possible storms in southern NSW later this week and into the weekend. Synoptic charts are available at - [www.bom.gov.au/watl/pressure/index.shtml](http://www.bom.gov.au/watl/pressure/index.shtml)

The BoM outlook indicates wetter than average conditions for most of Australia. A La Nina alert is active. La Nina development and warmer eastern Indian Ocean temperatures increases the likelihood of above average rainfall during spring for eastern Australia.

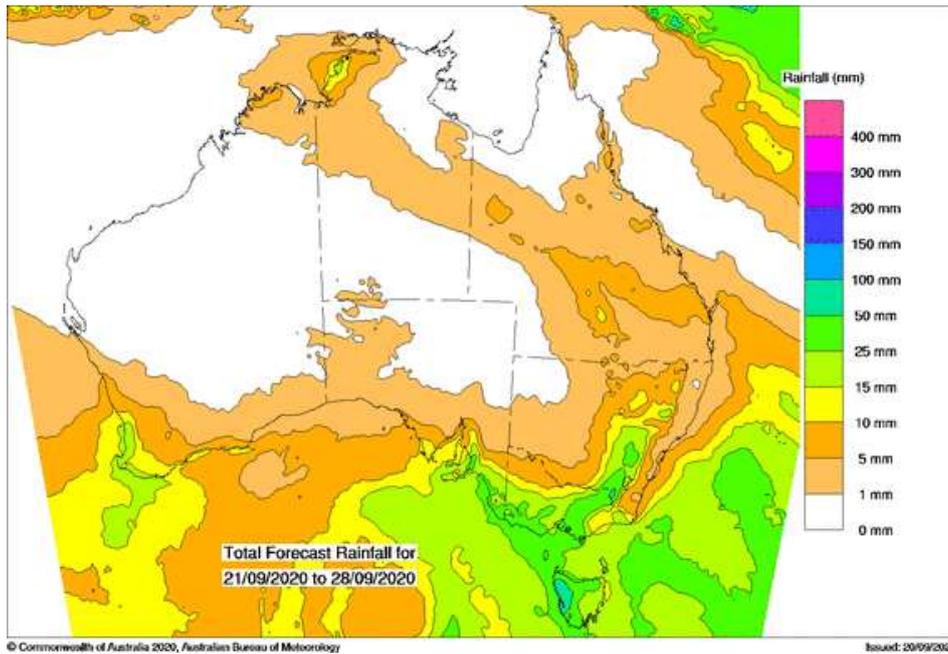


Figure 6: Eight-day rain forecast.

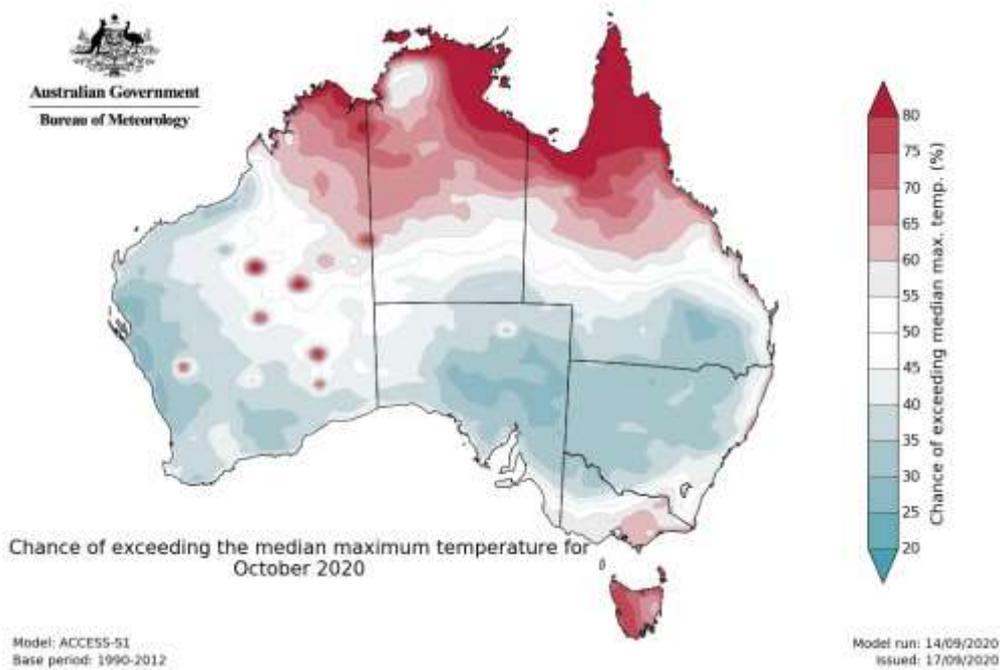


Figure 7: Chance of exceeding median October maximum temperature.

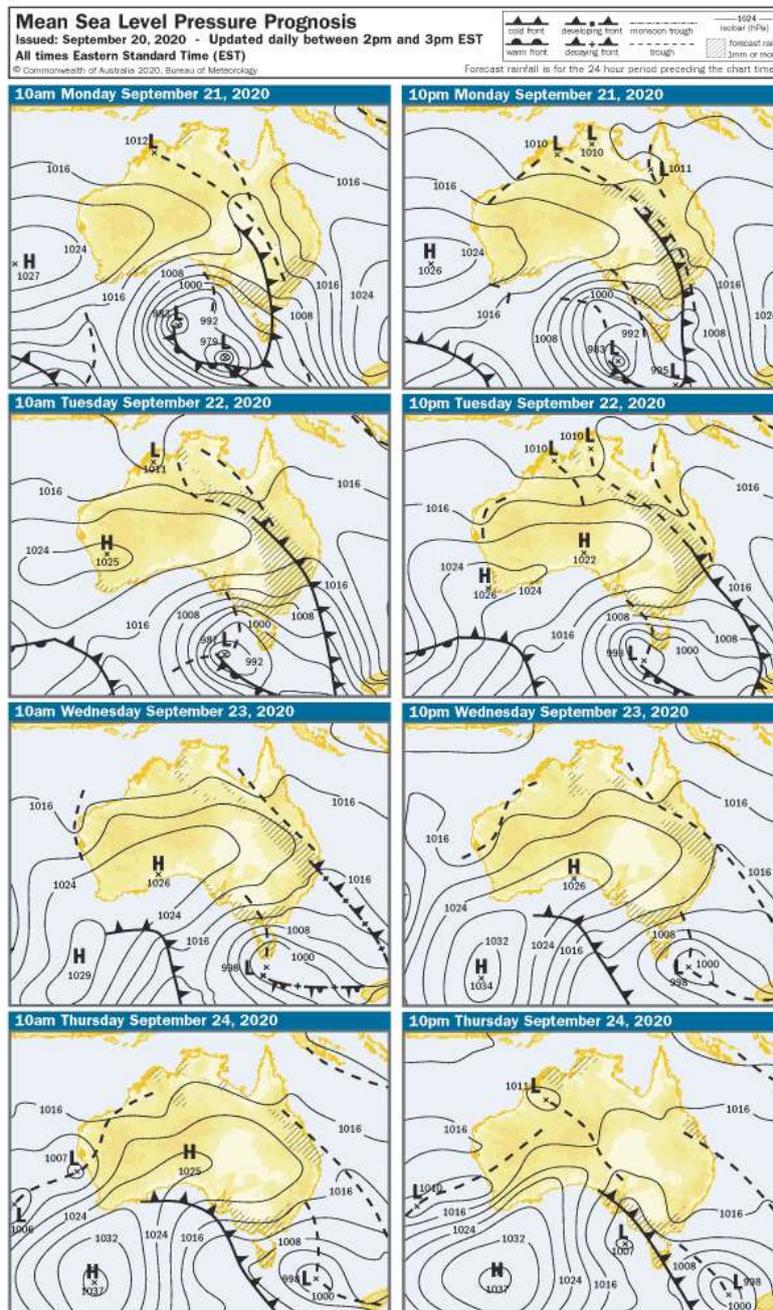


Figure 8: Bureau of Meteorology four-day forecast.

## Acknowledgements

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