

NSW Southern Basin dissolved oxygen update No. 4

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 26 October.

Key information

- Widespread rainfall and isolated thunderstorms in the upper catchments saw increased flows in rivers and creeks in the Southern Basin. Some of the highest falls were in the Tumbarumba, Batlow and Khancoban areas resulting in minor flood flows into Lake Hume from the upper Murray and Tooma Rivers and good flows in the Goobarragandra and Goodradigbee rivers in the Murrumbidgee catchment. Water levels are starting to decline.
- Assessment of the continuous dissolved oxygen monitoring stations shows there is currently a low risk to fish health from declining dissolved oxygen levels in the Southern Basin.
- The short-term outlook for NSW is for a series of lingering troughs to bring showers, possible storms and lower air temperatures this week. Predicted rainfall totals for the next eight days are highest in the southeast of NSW. Continuing rainfall on a wet catchment increases the risk of major flooding triggering a hypoxic blackwater event.
- The long-term climatic outlook is for above average rainfall from November 2020 through to January 2021. Above average rainfall increases the risk of flooding and the potential for hypoxic blackwater events in the southern valleys of NSW.

Stages of criticality for dissolved oxygen

Continuous dissolved oxygen sensors located in the Murray, Murrumbidgee, Lachlan and Lower Darling river catchments show levels at all sites are above critical ecological thresholds and pose minimal risk to aquatic ecosystems. Figures 1 and 2 highlight the Stages of Criticality at monitoring sites in the Southern Basin. All sites are on Criticality Stage 1. Definitions of the Stages of Criticality are below Figure 2. Continuous dissolved oxygen data is available on the WaterNSW real time data web site - realtimedata.watnsw.com.au/water.stm

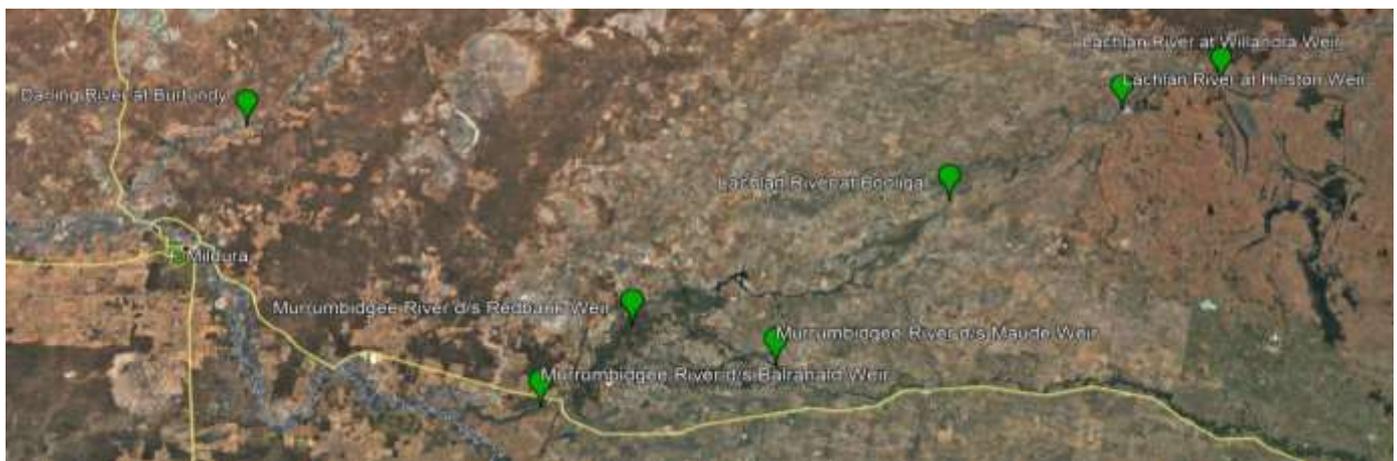


Figure 1: Stages of criticality at continuous dissolved oxygen monitoring sites in the Murrumbidgee and lower Lachlan and Darling rivers.

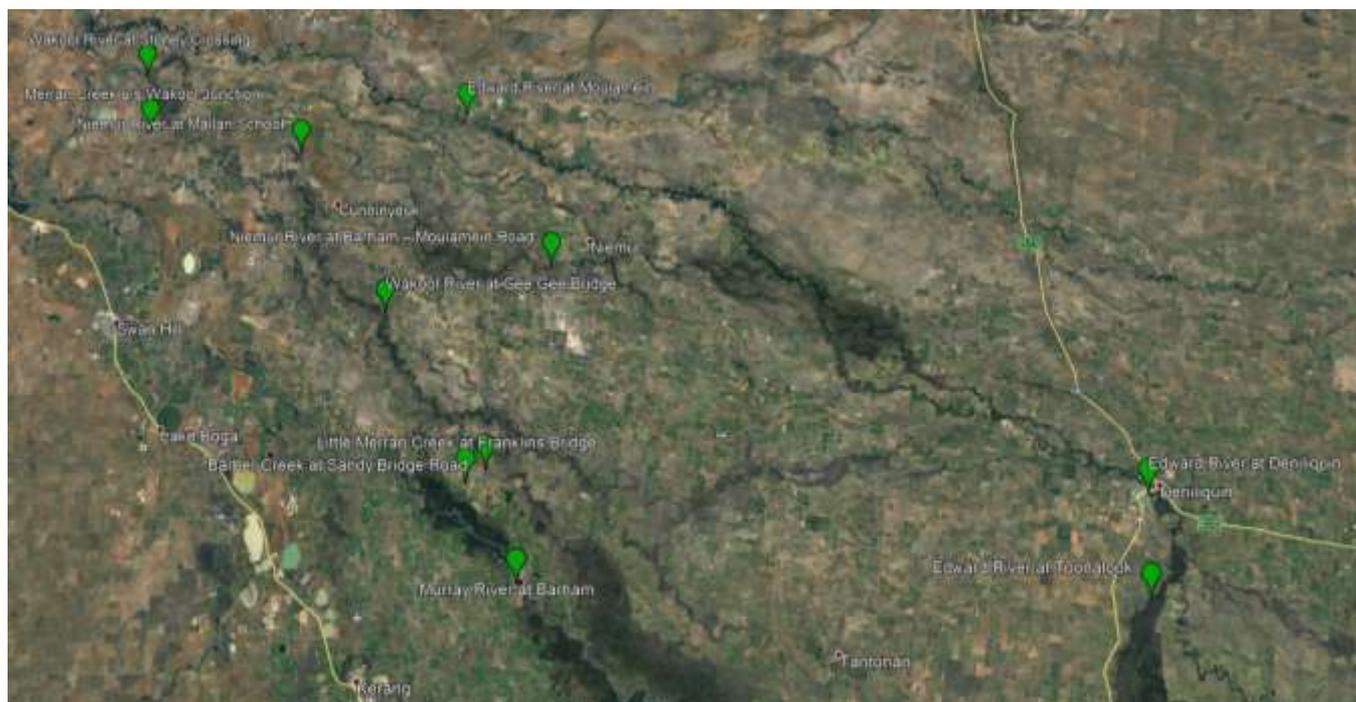


Figure 2: Stages of criticality at continuous dissolved oxygen monitoring sites in the Murray catchment.

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	Daily 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

Continuous dissolved oxygen monitoring

Dissolved oxygen levels at the three monitoring sites in the Murrumbidgee River are above 7.5 mg/L (Figure 3). In the Lachlan catchment, Willandra Weir dropped below 4 mg/L on 20 October, but has since improved to above 5 mg/L. All sites in the Lachlan Valley are remaining above the 2 mg/L critical threshold for fish health.

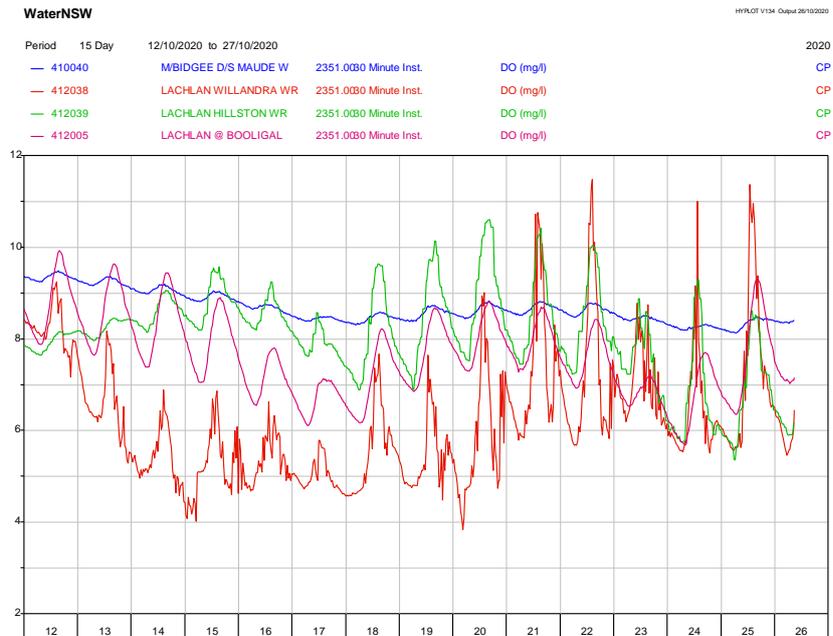


Figure 3: Continuous dissolved oxygen (mg/L) for the Murrumbidgee and Lachlan rivers.

Dissolved oxygen monitoring in the Murray Valley is showing the levels at most sites are above 6.5 mg/L. Figure 4 illustrates the dissolved oxygen levels at selected monitoring locations in the Murray River catchment for the past two weeks. There was a drop in dissolved oxygen with the arrival of rainfall, but levels are improving again. Barber Creek at Sandy Bridge Road dropped to 4.9 mg/L over the weekend, which was the lowest dissolved oxygen result in the Murray catchment. Wakool River at Stoney Crossing decreased to below 6 mg/L for one morning last week but has recovered back up to higher levels again. All sites in the Murray valley are above ecological thresholds (Criticality Stage 1).

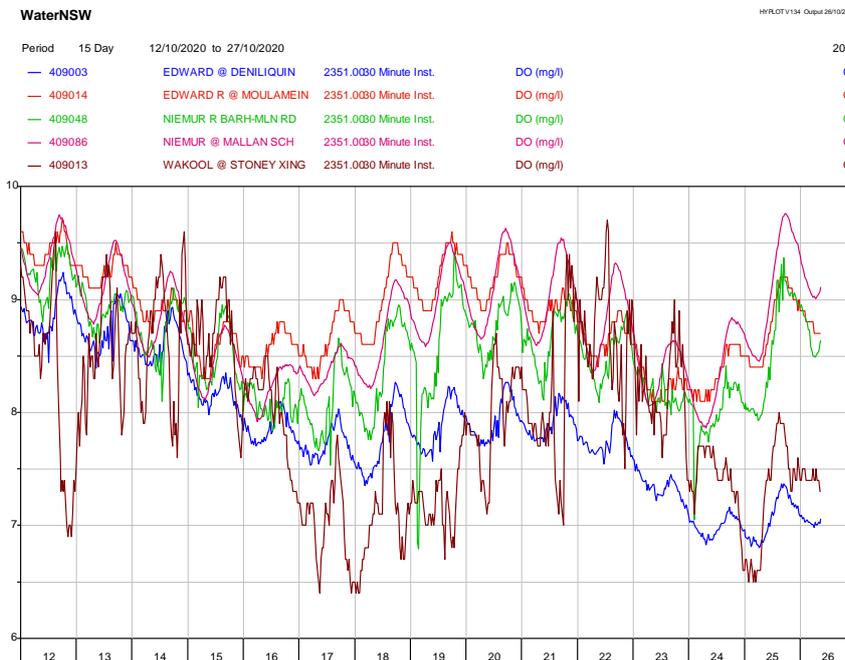


Figure 4: Continuous dissolved oxygen (mg/L) for selected sites in the Murray River Valley.

Weather forecast

The Bureau of Meteorology total rainfall forecast (Figure 5) indicates light rainfall across most of NSW in the next eight days, with the highest falls in the south-eastern corner of the state. The rainfall outlook for November indicates a high chance of wetter than average conditions for all of NSW (Figure 6). A La Niña alert remains active. Above average rainfall increases the risk of flooding and the potential for hypoxic, or low oxygen, blackwater events in the southern valleys. Bureau of Meteorology rainfall maps are available at - www.bom.gov.au/jsp/watl/rainfall/pme.jsp

The four-day synoptic forecast (Figure 6) shows a series of troughs lingering over NSW bringing showers, storms and cooler temperatures this week. An approaching cold front and low pressure system will reach NSW on Friday, extending to the rest of the state over the weekend. At this stage, the predicted rainfall totals for most of NSW are low. However continuing rainfall on an already wet catchment, particularly on the Southern Tablelands, Snowy Mountains and South Western Slopes, increases the risk of major flooding triggering a hypoxic blackwater event. Synoptic charts are available from the Bureau of Meteorology web site - www.bom.gov.au/watl/pressure/index.shtml

There are no heatwave conditions predicted for NSW for the next five days. Updates from the Heatwave Service and additional information is available at - www.bom.gov.au/australia/heatwave/

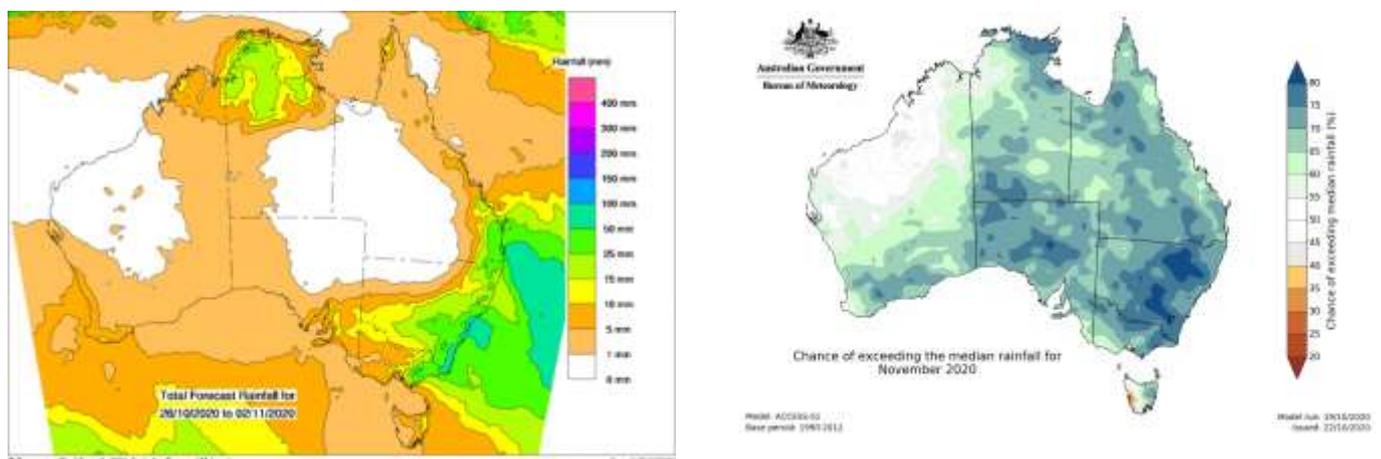


Figure 5: Eight-day rain forecast (left) and chance of exceeding median rainfall for November (right).

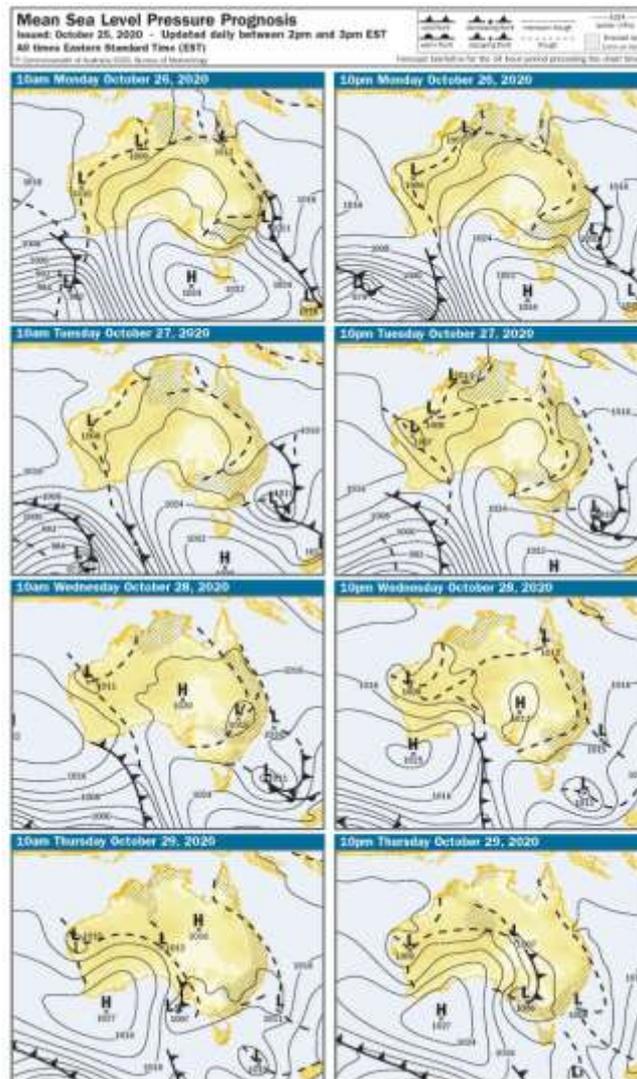


Figure 6: Bureau of Meteorology four-day forecast.

Additional information

NSW and Commonwealth agencies will continue to monitor weather and river conditions over the coming summer. To notify the department of potential blackwater events email - waterqualitydata@industry.nsw.gov.au or to report a fish kill call the NSW Fisheries Hotline on 1800 043 536.

Further information on hypoxic blackwater can be found at -www.industry.nsw.gov.au/water/allocations-availability/droughts-floods/drought-update/managing-drought-recovery

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