3 May 2024

This algal report is based on routine algae monitoring at sites in the Murray and Sunraysia Algae Reporting Area. Satellite imagery may be used to supplement the monitoring data.

Summary

General comments: The Hume Dam profiler data and recent satellite images (May 1st) indicate the occurrence of algal development throughout the water column, with concentrations appearing to increase at the surface (please see the plot 1 on page 4).

The updated results for the lower Darling River (April 16th to 18th) indicate a significant presence of algae biovolume, mainly associated with non-toxic cyanobacteria (Synechococcus *cf sp.*), which is common across all sites of the lower Darling River. It is worth noting that this species was responsible for a red alert at the Darling R. Menindee bhwb pump and Darling R u/s Weir 32 on April 9th, just one week before sampling in the lower Darling. Additionally, it was also detected in the lower Darling during the previous sampling on April 2nd. Moreover, a potential toxic species, *Anabaenopsis sp*, has been detected at the Darling River at Burtundy (4.324 mm^3/L) and Ellerslie (8.53 mm^3/L) sites.

Considering the ongoing observation of algae spread through satellite imagery (April 27th and May 2nd), and the recent sampling results, the red alert remains in place due to the potential risk to the community.

There are expected flows entering the system in the coming weeks, which may provide additional water downstream to the river, hopefully facilitating the flushing of the algae, however, it depends on how much water is coming to the system.

The Wentworth Shire Council has confirmed that "the drinking (filtered) water for Pooncarie, Wentworth, Dareton, Buronga and Gol Gol townships are all suitable for consumption. The Pooncarie township drinking water is currently being sourced from groundwater and not the Darling River." Link to Wentworth Shire Council

Please note that there is a dual reticulated water system, where garden taps have untreated water drawn from the river, for Menindee and Lower Darling River at Pooncarie. Therefore livestock, pets and children should not be exposed to this water and that caution should be practiced if using the water for watering food crops and lawns.

Alert status:

Murray River

Manus Lake at the pontoon is currently on Amber alert for blue-green algae. For more information visit the Snowy valleys Council website at the following link: **Link to Snowy Valleys Council**

In Hume Dam, Frist Bay Creek is on Red alert for blue-green algae.

The Murray River at Moama, Merbein, Curlwaa, Fort Courage and Lock 8 are on Amber alert.

Lake Benanee Rec Area as well as Lake Victoria Outlet Regulator are on Amber alert.

BILLBONG CREEK, EDWARD & WAKOOL RIVERS

The Gulpa Creek at Mathoura as well as the Edward River at Old Morago and the Wakool River at Wakool-Barham Road are on Amber alert for blue-green algae.

Darling River, Menindee Lakes, and Darling Anabranch

The Menindee Lakes at Lake Menindee Site 19 is currently on Red alert. This alert has been applied by satellite imagery.

The Menindee Lakes at Lake Wetherell, Lake Tandure, Lake Pamamaroo at center, Copi Hollow, Lake Wetherell adjacent to Lake Pamamaroo Inlet, are currently on Red alert for blue-green algae.

The Great Darling Anabranch at the Silver City Highway crossing is on Red alert for blue-green algae.
the Lower Darling River from Lake Wetherell to the Darling River confluence with the Murray at Wentworth NSW is on Red alert for blue-green algae.

Amber alerts for blue-green algae are current for the Menindee Lakes at Pamamaroo inlet, outlet, Lake Cawndilla outlet. Please refer to Table 1 on pages 3 for the combined results.

Satellite Imagery: The satellite imagery of Hume Dam (Figure 1) shows algal development throughout the sampling sites. Due to cloudy weather, the satellite imagery for Menindee system in May 2nd could not provide high-resolution images. However, the satellite imagery from 27/04/2024 indicates that medium algal activity continues across the system. Furthermore, the satellite image in Figure 3 and 4 suggests continued high algae activity in the Darling River u/s Weir 32, in Lower Darling River at Ellerslie to Pomona, but low algae activity in the Murray River (figure 5). Figure 6 indicates low phytoplankton activity in the Murray River at Yarrawonga Weir, except for increased algal growth around Kyffins reservoir and the Leeward site. The most recent images are displayed on pages 6-9 of this report.

Weather Outlook (7 days): In the upper reaches of the catchment near Albury, most days are expected to be partly cloudy. However, Monday and Tuesday are forecasted to be sunny with mild air temperatures. Downstream in the catchment, near Menindee Lakes, there is a chance of more showers, along with mild air temperatures and sunny conditions expected on Monday and Tuesday. You can find a detailed seven-day weather forecast on page 9.
Algal Outlook: Partly cloudy days, along with possible showers and moderate maximum air temperatures and cool minimum temperatures, are expected for this region next week. These conditions are expected to be moderately favorable for blue-green algal growth in both the upper reaches of the catchment and the Menindee system.

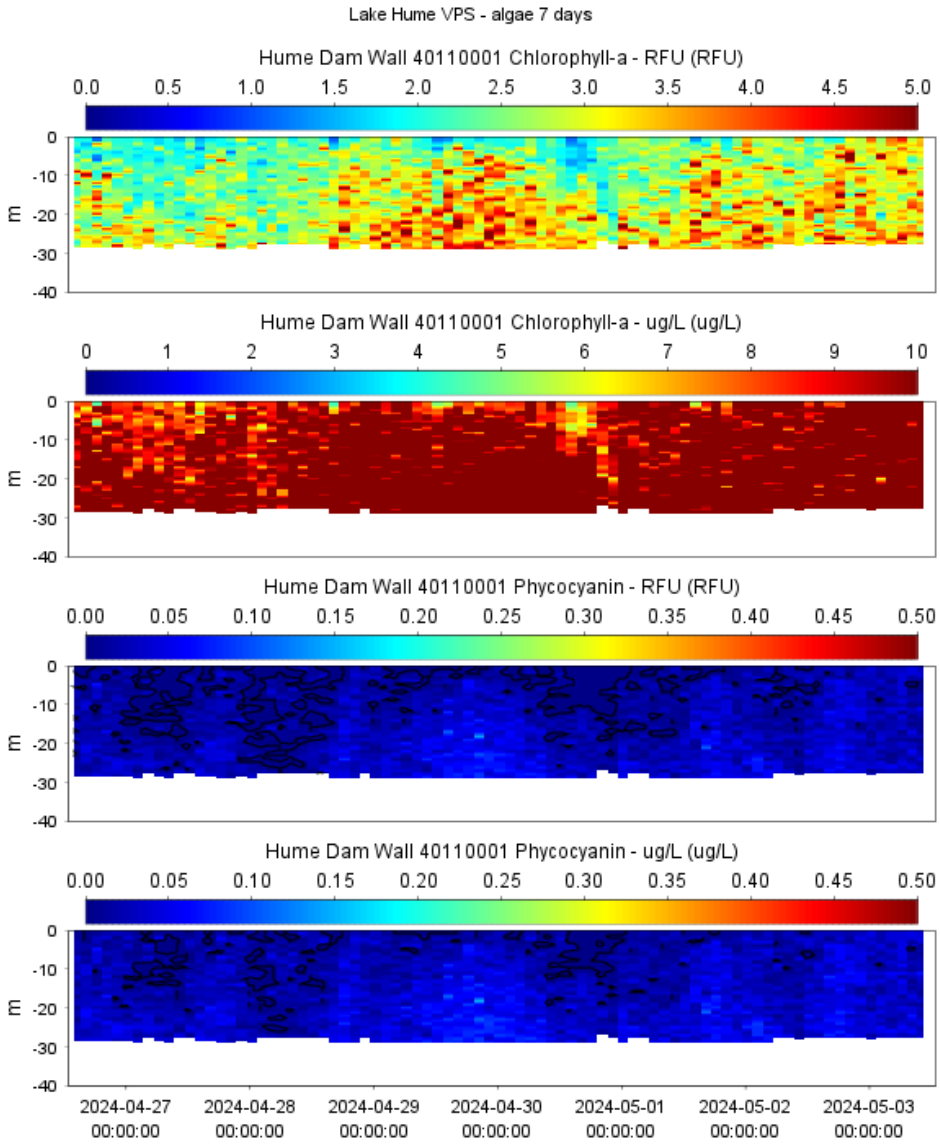
Results Table

These alert levels apply to **non-consumptive or recreational contact**. Drinking water safety thresholds are much more stringent.

indicates that a red alert has been issued based on satellite imagery, which indicate a high risk of algae.

Table 1 Combined Murray and Sunraysia Cyanobacteria Alert Level Update 3 May 2024

Description	Latest Sample Date	Cyanobacteria Total Count (cells/mL)	Cyanobacteria Biovolume (mm3/L)	Potentially Toxic Cyanobacterial Count	Potentially Toxic Cyanobacterial Biovolume	Current Status (based on Latest Sample)	Previous Status	Cyanobacteria dominant potentially toxic taxa	Cyanobacteria Comments
\Y RIVER SYSTEM									
Corryong Supply - Raw Water Inlet to Corryong TP (NE Water)	29/04/2024	1,011,521	5.304	0	0.000	AMBER	AMBER		
Mannus Lake (SVC) Lake pontoon	22/04/2024	0	0.000	0	0.000	AMBER	AMBER		
Lake Hume, Ebden	8/04/2024	3946.000	0.010	408	0.010	No Alert	No Alert	*Microcystis sp.*	Potentially toxic, taste & odour
Lake Hume, Heywoods Bay nr Bethanga	8/04/2024	10860.000	0.327	6,369	0.325	GREEN	No Alert	*Microcystis species 2*	Potentially toxic, taste & odour
Lake Hume, Hume Dam Resort	8/04/2024	3028.000	0.029	1,123	0.028	No Alert	No Alert	*Microcystis sp.*	Potentially toxic, taste & odour
Lake Hume, Dam Wall	8/04/2024	4627.000	0.000	0	0.000	No Alert	No Alert		
Lake Hume, Bowna	8/04/2024	3878.000	0.041	1,565	0.040	GREEN	GREEN	*Microcystis sp.*	Potentially toxic, taste & odour
Hume Dam at Frist Bay Creek	25/03/2024	637493.000	1.188	10,580	0.270	RED	RED	*Microcystis sp.*	Potentially toxic, taste & odour
Tallangatta Supply - Mitta Mitta River at P/S (NE Water)	19/02/2024	2,253	0.082	235	0.016	GREEN	No Alert	*Aphanizomenonaceae family - straight*	Potentially toxic
Murray R. Union Bridge Albury	2/04/2024	20046.000	0.022	204	0.004	No Alert	No Alert	*Microcystis sp.*	Potentially toxic, taste & odour
Murray R. Corowa	2/04/2024	29397.000	0.039	0	0.000	No Alert	No Alert		
Yarrawonga Weir (outlet) GMW	8/04/2024	19,666	0.103	62	0.017	GREEN	GREEN	*Dolichospermum - coiled (≥6µm)*	Potentially toxic
Mulwala Canal Offtake	2/04/2024	18726.000	0.023	0	0.000	No Alert	AMBER		
Murray R. @ below Yarrawonga	2/04/2024	29804.000	0.031	0	0.000	No Alert	GREEN		
Murray R. Cobram (Barooga)	2/04/2024	31878.000	0.030	0	0.000	No Alert	GREEN		
Cobram WTP, raw water (GVW)	24/04/2024	20,774	0.126	186	0.019	GREEN	GREEN		
Murray R. Tocumwal	2/04/2024	17583.000	0.016	0	0.000	No Alert	AMBER		
Murray R. Picnic Point	8/04/2024	57511.000	0.075	340	0.007	GREEN	AMBER	*Microcystis sp.*	Potentially toxic, taste & odour
Barmah WTP raw water (GVW)	24/04/2024	41,504	0.371	68	0.010	GREEN	AMBER	*Microcystis*	Potentially toxic, taste & odour
Murray R. Moama (Echuca)	8/04/2024	71626.000	0.159	0	0.000	GREEN	AMBER		
Torrumbarry Weir GMW	8/04/2024	37,461	0.475	55.000	0.003	AMBER	GREEN	*Raphidiopsis raciborskii*	Potentially toxic
Murray R. Barham (Koondrook)	9/04/2024	14241.000	0.132	0	0.000	GREEN	GREEN		
Murray R. Murray Downs (Swan Hill)	9/04/2024	22243.000	0.079	850	0.035	GREEN	GREEN	*Microcystis sp.*	Potentially toxic, taste & odour
Murray River U/S Woorinen pumps GMW	15/04/2024	290	0.126	0	0.000	GREEN	GREEN		
Murray R. Tooleybuc (Piangil)	9/04/2024	46333.000	0.305	374	0.044	GREEN	AMBER	*Aphanizomenonaceae sp.*	Potentially toxic, taste & odour
Lake Benanee Rec Area	3/04/2024	29940.000	0.043	0	0.000	AMBER	AMBER		
Murray R. Euston (Robinvale)	3/04/2024	58397.000	0.074	0	0.000	GREEN	GREEN		
Murray R. Mount Dispersion	3/04/2024	119475.000	0.210	0	0.000	GREEN	AMBER		
Murray R. Buronga	2/04/2024	117171.000	0.383	306	0.007	GREEN	AMBER	*Phormidium sp.*	Potentially toxic, taste & odour
Merbein (LMW)	24/04/2023	0	0.397	0	0.013	GREEN	AMBER	*Microcystis sp*	Potentially toxic
414206 - Murray River at Merbein	2/04/2024	135340.000	1.347	1,310	0.154	AMBER	AMBER	*Aphanizomenonaceae sp.*	Potentially toxic, taste & odour
Murray R. Curlwaa	2/04/2024	382456.000	1.368	476	0.036	AMBER	AMBER	*Aphanizomenonaceae sp.*	Potentially toxic, taste & odour
Murray R. Fort Courage	3/04/2024	389633.000	1.519	5,882	0.152	AMBER	AMBER	*Microcystis sp.*	Potentially toxic, taste & odour
Lock 9 (LMW)	15/05/2023	60,991	1.789	6115	0.416	AMBER	AMBER	*Microcystis sp*	Potentially toxic
Murray R. Lock 8	4/04/2024	447735.000	1.687	9,307	0.333	AMBER	AMBER	*Microcystis sp.*	Potentially toxic, taste & odour
Lake Victoria Outlet Regulator	4/04/2024	184832.000	0.269	0	0.000	AMBER	AMBER		
NG CREEK, EDWARD & WAKOOL RIVERS									
Billabong Ck. Walbundrie	2/04/2024	11106.000	0.052	817	0.018	GREEN	GREEN	*Microcystis sp.*	Potentially toxic, taste & odour
Billabong Ck. Jerilderie	8/04/2024	59199.000	0.118	272	0.039	GREEN	GREEN	*Anabaenopsis sp.*	Potentially toxic
Gulpa Ck. Mathoura	8/04/2024	68366.000	0.088	68	0.001	GREEN	AMBER	*Microcystis sp.*	Potentially toxic, taste & odour
Edward R Deniliquin	8/04/2024	55036.000	0.389	0	0.000	GREEN	AMBER		
Edward R. Old Morago	9/04/2024	63466.000	0.603	1,019	0.120	AMBER	GREEN	*Aphanizomenonaceae sp.*	Potentially toxic, taste & odour
Edward R. Moulamein	9/04/2024	47796.000	0.631	646	0.018	AMBER	GREEN	*Radiocystis sp.*	Potentially toxic
Wakool R. Wakool-Barham Road	9/04/2024	89562.000	0.435	653	0.014	AMBER	GREEN	*Microcystis sp.*	Potentially toxic, taste & odour
Wakool R. @ Stoney Crossing	9/04/2024	117236.000	0.196	2,382	0.053	GREEN	GREEN	*Microcystis sp.*	Potentially toxic, taste & odour
Wakool R. Kyalite	9/04/2024	84212.000	0.165	0	0.000	GREEN	GREEN		
DEE LAKE SYSTEM & LOWER DARLING RIVER									
Darling River at Wilcannia	18/04/2024	2721.000	0.003	0	0.000	No Alert	AMBER		
Lake Wetherell Site 1	22/04/2024	3811.000	0.001	0	0.000	No Alert	No Alert		
Lake Wetherell Site 2	22/04/2024	0.000	0.000	0	0.000	RED	No Alert		
Lake Wetherell Site 3	22/04/2024	178348.000	1.068	408	0.051	RED	AMBER	*Anabaenopsis sp.*	Potentially toxic
Lake Wetherell Site 4	22/04/2024	655546.000	4.058	5,566	0.341	RED	AMBER	*Raphidiopsis raciborskii*	Potentially toxic, taste & odour
Lake Tandure Site 8	22/04/2024	1534388.000	10.411	14,219	0.715	RED	RED	*Raphidiopsis raciborskii*	Potentially toxic, taste & odour
Lake Pamamaroo Inlet (Site 9)	22/04/2024	1032789.000	6.445	9,758	0.623	AMBER	AMBER	*Raphidiopsis raciborskii*	Potentially toxic, taste & odour
42510013 Centre Pamamaroo (Site 13)	9/04/2024	1818755.000	33.373	8,325	0.752	RED	AMBER	*Anabaenopsis sp.*	Potentially toxic
Lake Pamamaroo Outlet (Site 10)	9/04/2024	1193734.000	8.073	6,116	0.685	AMBER	RED	*Anabaenopsis sp.*	Potentially toxic
Menindee Lakes, Copi Hollow	9/04/2024	1157222.000	7.001	4,248	0.539	RED	RED	*Anabaenopsis sp.*	Potentially toxic
Lake Menindee Site 19	26/03/2024	1068090.000	4.657	1,118	0.141	RED	AMBER	*Anabaenopsis sp.*	Potentially toxic
Lake Cawndilla Site 34 Outlet	9/04/2024	970430.000	1.512	0	0.000	AMBER	AMBER		
Darling R. Menindee bhwb pump	9/04/2024	2576416.000	22.259	9,177	0.541	RED	RED	*Raphidiopsis raciborskii*	Potentially toxic, taste & odour
Darling R u/s Weir 32	9/04/2024	1226017.000	30.142	5,220	0.674	RED	RED	*Anabaenopsis sp.*	Potentially toxic
Darling R. Tolarno	18/04/2024	1515435.000	23.842	15,656	1.149	RED	RED	*Raphidiopsis raciborskii*	Potentially toxic, taste & odour
Darling R. Pooncarie	18/04/2024	616501.000	11.825	26,180	3.038	RED	RED	*Anabaenopsis sp.*	Potentially toxic
Darling R. Burtundy	17/04/2024	1336270.000	30.863	38,503	4.670	RED	RED	*Anabaenopsis sp.*	Potentially toxic
Darling R. Ellerslie	17/04/2024	856352.000	20.073	73,733	9.123	RED	RED	*Anabaenopsis sp.*	Potentially toxic
Darling R. Tapio	17/04/2024	1430479.000	38.525	29,966	2.640	RED	RED	*Raphidiopsis raciborskii*	Potentially toxic, taste & odour
utine monitoring Wentworth Weir Pool									
US Pomona (13KM)	16/04/2024	2585315.000	67.519	14,354	1.921	RED	AMBER	*Anabaenopsis sp.*	Potentially toxic
Pomona (@ Boat Ramp)	16/04/2024	1380097.000	8.319	613	0.070	RED	AMBER	*Anabaenopsis sp.*	Potentially toxic
DARLING ANABRANCH									
Silver City Hwy	16/04/2024	8364421.000	11.928	204	0.071	RED	RED	*Planktothrix sp.*	Potentially toxic



Plot 1: Lake Hume - 7-day Algae Profiler Summary

Alert Definitions for Recreational Waters

Alert Definitions as specified in The National Health and Medical Research Council (NHMRC) *Guidelines for Managing Risks in Recreational Water* 2008. The use of these guidelines is endorsed by the Scientific Subcommittee of the NSW Algal Advisory Group.

RED ALERT

These alert levels represent 'bloom' conditions. Water will appear green or discoloured and clumps or scums could be visible. It can also give off a strong musty or organic odour. Algae may be toxic to humans and animals. Contact with or use of water from red alert areas should be avoided due to the risk of eye and skin irritation. Drinking untreated or boiled water from these supplies can cause stomach upsets. Alternative water supplies should be sought or activated carbon treatment employed to remove toxins. People should not fish when an algal scum is present. Owners should keep dogs away from high alert areas and provide alternative watering points for stock.

AMBER ALERT

Blue-green algae may be multiplying, and the water may have a green tinge and musty or organic taste and odour. The water should be considered as unsuitable for potable use and alternative supplies or prior treatment of raw water for domestic purposes should be considered. The water may also be unsuitable for stock watering. Generally suitable for water sports, however people are advised to exercise caution in these areas, as blue-green algal concentrations can rise to red alert levels quickly under warm, calm weather conditions.

GREEN ALERT

Blue-green algae occur naturally at low numbers. At these concentrations, algae would not normally be visible, however some species may affect taste and odour of water even at
low numbers and does not pose any problems for recreational, stock or household use.

Key to Alerts for Recreational Waters

RED Alert ≥ 50 000 cells/mL toxic *M. aeruginosa* OR biovolume equivalent of ≥4 mm^3/L for the combined total of all cyanobacteria where a known toxin producer is dominant OR The total biovolume of all cyanobacteria exceeds 10 mm^3/L OR Cyanobacterial blooms are consistently present	• High levels of Blue Green Algae detected • Indicates "bloom" conditions • Toxicity should be presumed • Water will appear green or brownish and may have a strong musty taste and odour • Surface scums could occur • **Extreme care should be exercised, and contact with the water should be avoided** **Action** • Issue Media Release • Water supply authorities to increase filtering with activated carbon as appropriate • Local authority and health authorities to warn the public that the water body is unsuitable for primary contact recreation
AMBER Alert ≥5000 to <50 000 cells/mL M. aeruginosa OR biovolume equivalent of ≥ 0.4 to < 4 mm3/L for the combined total of all cyanobacteria OR ≥ 0.4 to < 10mm3/L combined total for all blue-green algae where known toxin producers are not dominant	• Indicates blue-green algae are multiplying • Water may have a green tinge and musty taste and odour **Action** • Water supply authorities to consider filtering with activated carbon • Investigations into the causes of the elevated levels and increased sampling to enable the risks to recreational users to be more accurately assessed.
GREEN Alert > 500 to < 5000 cells/mL *M. aeruginosa* OR biovolume equivalent of > 0.04 to < 0.4 mm^3/L for the combined total of all cyanobacteria	• Low levels of potentially toxic species detected – suggesting base crop of blue green algae may be on the increase **Action** • Continue/increase routine sampling to measure cyanobacterial levels

Livestock Drinking Water Guidelines Based on ARMCANZ (2000), Orr and Schneider (2006) and WQRA (2010)

This guideline should be used when water is used for livestock drinking water purposes.

- If visual scums are present, then a High alert should be declared. This would be applicable for both farm dams and publicly managed water bodies (streams, rivers, etc). Such advice should also be given to farmers who phone the department seeking information on managing blooms in their dams.
- Where blooms dominated by ***Microcystis aeruginosa*** are present, then the ANZECC/ARMCANZ (2000) guideline of 11,500 cells/mL should be used. Excess of this cell count will constitute a High alert.
- Where blooms dominated by ***Dolichospermum circinale*** are present, then the Orr and Schneider (2006) guideline of 25,000 cells/mL should be used. Excess of this cell count will constitute a High alert.
- **Blooms of blue-green algae other** than *M. aeruginosa* and *D. circinale* are also common in NSW. These can be of either known potentially toxic species, or of species not considered to be toxin producers. When these blooms are

present, a total blue-green algal biovolume in excess of 6 mm^3/L will constitute a High alert. (These are based on Very High alert recommendations for raw water sourced for potable human supply published by WQRA (2010), in lieu of there being nothing else available).

Satellite imagery

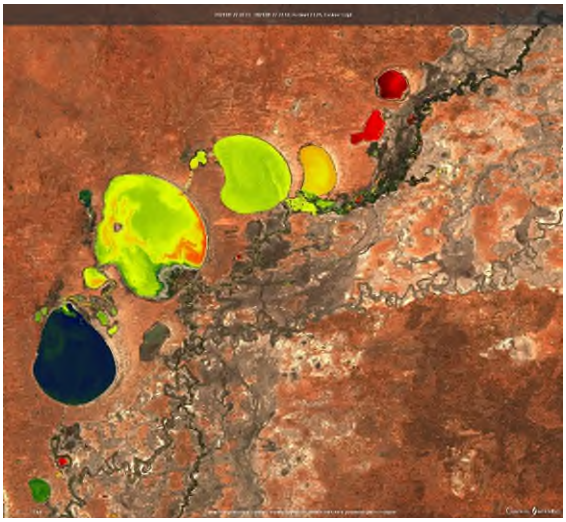
The key to the approximate total algae (blue green and non-blue green) concentrations using the Custom Algae Script can be found Table 1. The actual values can potentially vary by a significant margin due to the geology of the waterbody, species of algae, turbidity, aquatic plants, time of day of the image capture, aerosols in the atmosphere, etc. This variability is a result of the nature of satellite imagery being a large-scale remote sensing format and is not function of the technology or the script itself. For this reason, these colours and descriptors are not the official **"Algae Alert Level"** but rather provides information on the **potential risk on algae formation.**

Table 1: Observed risk levels based on the estimated photosynthetic activity for Custom Algae Script

Map Colour	Risk Level	Starting concentration guide range	RACC recreational alert values approx. equivalence
Blue	Very low	<0.05 mm3/L	No Alert
Green	Low	0.05 to 0.5 mm3/L	Green
Yellow	Medium	0.5 to 5.0 mm3/L	Amber
Red	High	5.0 to 20.0 mm3/L	Red
Dark red	Extreme	> 20 mm3/L	Red

Figure 1: Hume Dam **1/05/2024** SentinelHub [CC BY-NC 4.0] NSW-Custom Algae Script - TF, WaterNSW

a



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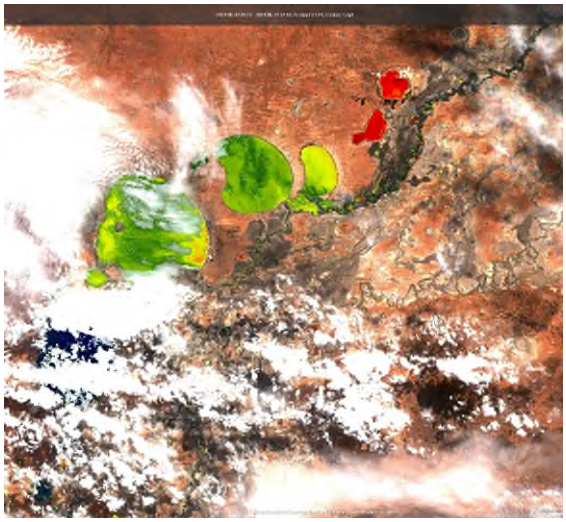
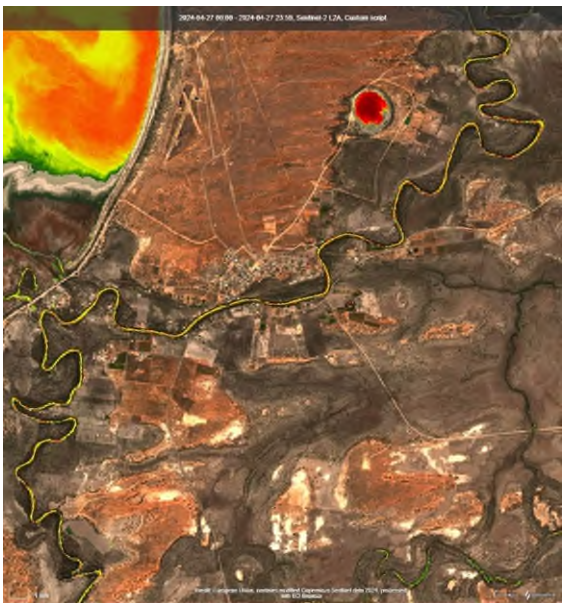


Figure 2: Menindee Lakes (a) **27/04/2024** and (b) **2/05/2024** SentinelHub [CC BY-NC 4.0] NSW-Custom Algae Script - TF, WaterNSW

a



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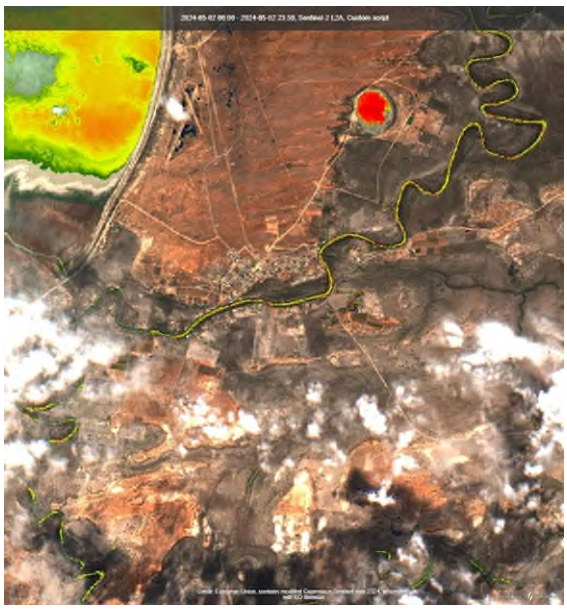

Figure 3: Darling River up stream Weir 32. (a) **27/04/2024** and (b) **2/05/2024** SentinelHub [CC BY-NC 4.0] NSW-Custom Algae Script - TF, WaterNSW

a

b

Figure 4: Darling River at Tapio, US Pomona, and Pomona. (a) **27/04/2024** and (b) **2/05/2024**. SentinelHub [CC BY-NC 4.0] NSW-Custom Algae Script - TF, WaterNSW

Figure 5: Murray and Darling Rivers as well as the great Darling anabranch near Wentworth **2/05/2024** SentinelHub [CC BY-NC 4.0] NSW-Custom Algae Script - TF, WaterNSW

Figure 6: Murray River at Yarrawonga Weir **1/05/2024** SentinelHub [CC BY-NC 4.0] NSW-Custom Algae Script - TF, WaterNSW

Weather forecast

Albury and Menindee lake, BOM 7-day weather forecast

Albury

Forecast updated at 10:49 am EST on Friday 3 May 2024. Detailed Albury Forecast

	Fri. 3 May	Sat. 4 May	Sun. 5 May	Mon. 6 May	Tue. 7 May	Wed. 8 May	Thu. 9 May
	Mostly sunny.	Partly cloudy.	Partly cloudy.	Sunny.	Sunny.	Partly cloudy.	Possible shower.
Max. Temperature	22 °C	21 °C	22 °C	23 °C	22 °C	21 °C	20 °C
Min. Temperature		6 °C	8 °C	7 °C	5 °C	7 °C	7 °C

Menindee

Forecast updated at 10:49 am EST on Friday 3 May 2024. Detailed Menindee Forecast

	Fri. 3 May	Sat. 4 May	Sun. 5 May	Mon. 6 May	Tue. 7 May	Wed. 8 May	Thu. 9 May
	Showers.	Shower or two clearing.	Partly cloudy.	Sunny.	Sunny.	Partly cloudy.	Shower or two.
Max. Temperature	18 °C	20 °C	22 °C	23 °C	23 °C	23 °C	20 °C
Min. Temperature		10 °C	9 °C	8 °C	10 °C	12 °C	10 °C

Further Information and Contacts

Links to websites of VIC and other agencies
Link to Snowy Valleys Council
Link to North East Water
Link to Goulburn-Murray Water blue-green algal alerts
Link to Goulburn Valley Water blue-green algal information
Link to Lower Murray Water blue-green algal alerts
Link to Central Darling Shire Council
Link to Wentworth Shire Council

Go to the Water NSW Algal Website
www.waternsw.com.au/algae **or at WaterInsights:**
Murray regulated river - https://waterinsights.waternsw.com.au/11904-new-south-wales-murray-regulated-river/updates
Lower-Darling regulated river - https://waterinsights.waternsw.com.au/12104-lower-darling-regulated-river/updates

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