



Australian Government



## MURRAY RIVER SYSTEM

# Drought Update

ISSUE 18: APRIL 2009

### In Brief

***The outlook for the 2009-10 water year is not good, with record low inflows for the past 3 months, low storage levels and a rainfall outlook that indicates drier than average conditions for the next 3 months over the southern Murray-Darling Basin.***

**Rainfall:** During the first three months of 2009, rainfall was very much below average across much of the southern Basin. This follows a longer term trend of severe rainfall deficits over the past 5 to 10 years, particularly across the high yielding catchments of the Victorian Alps and Snowy Mountains.

**Murray system inflows:** In response to the below average rainfall, Murray system inflows have reduced to historically low levels. The three month total of 140 GL for January to March 2009 was slightly lower than the previous historic minimum of 150 GL in January to March 2007. Inflow for the 2008-09 water year is currently tracking as the 6<sup>th</sup> driest in 117 years of records. The persistence and severity of this drought, particularly over the past three years, is unprecedented.

**Darling system inflows:** Despite good rainfall in the north during February, the Menindee Lakes received only about 190 GL of inflows from the Darling River, increasing the storage level from about 7 to 15 % of capacity.

**Storage:** Total MDBA active storage is currently 940 GL or 11 % of capacity, which is higher than the historic minimum (post Dartmouth) for the end of March, of 670 GL in 2007, but well below the March long term average of 4,400 GL. Total storage across the whole of the Murray-Darling Basin also remains low, at about 18 % capacity.

**Water quality:** The combination of low storage levels, low river flows and high water temperatures, has resulted in recent outbreaks of blue-green algae in the Murray River, from Hume Dam to Swan Hill. The algal growth is likely to persist at least until water temperatures decrease with the onset of cooler weather.

**Outlook:** Autumn is a critical time for wetting of the catchment prior to winter rainfall, and there needs to be a sustained period of above average rainfall during the remainder of autumn, and throughout winter, for inflows

Murray-Darling Basin Authority

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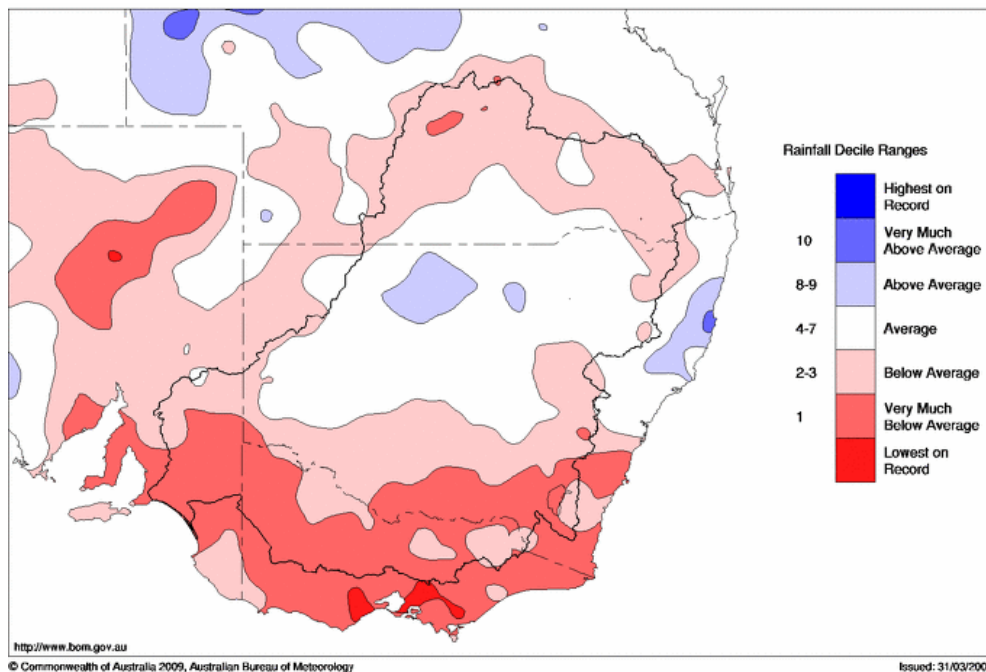
to recover towards the long-term average. However, the latest rainfall outlook issued by the Bureau of Meteorology shows a moderate to strong shift towards drier than normal conditions across the southern half of the Murray-Darling Basin for the next 3 months.

It is very likely that storage levels in the Murray system (including water in the Murrumbidgee and Goulburn systems available to the Murray due to trades from those valleys) will be very low by the end of autumn, and similar to last year. All three States have set aside sufficient water to meet critical human water needs in 2009-10, but the prospects for irrigation will be highly dependent on future rainfall and system inflows. Overall, the outlook for the beginning of the 2009-10 water year is not good, and is likely to be similar to the previous two years.

## Rainfall and System Inflows

The southern half of the Basin experienced very hot and dry conditions in late January and early February 2009. Although late February and March were cooler, rainfall remained below average. Figure 1 shows that the total rainfall for the first 3 months of 2009 was very much below average across much of the southern Basin. This follows a longer term trend of severe rainfall deficits over the past 5 to 10 years, particularly across the high yielding catchments of the Victorian Alps and Snowy Mountains.

Despite good rainfall in February across parts of the northern Basin, the three monthly total was generally average or below average.



**Figure 1. Murray-Darling Basin rainfall deciles for January to March 2009.**

**(source: Bureau of Meteorology)**

Murray system inflows have been affected by a combination of the below average rainfall for the last three months, as well as the longer term rainfall deficits across the southern Basin. During the very hot and dry conditions in January, system inflows fell to 60 GL which was only slightly above the January historic minimum of 50 GL in 1983 and 2007. During February, inflows dropped further, to about 40 GL, which was slightly lower than the previous February minimum of 50 GL in 2007. In March the inflows were again about 40 GL, which was slightly lower than the previous March minimum of 50 GL in 2007.

Also, the three month total of 140 GL, was lower than the previous historic minimum for January to March, of 150 GL in 2007. System inflows are only likely to recover towards the long term average if above average rainfall occurs for a sustained period of time.

For the water year to date (June 2008 to end of March 2009) system inflows have been 1,720 GL, and the year is currently tracking as the 6th driest year in 117 years of historical records. This follows the 2007-08 year which was the 7th driest, and 2006-07 which was the driest on record. Murray system inflows for the three years ending in March were 5,160 GL, or 46 % of the previous three year minimum of 11,300 GL in 1943 to 1946. The persistence and severity of this drought, particularly over the past three years, is unprecedented.

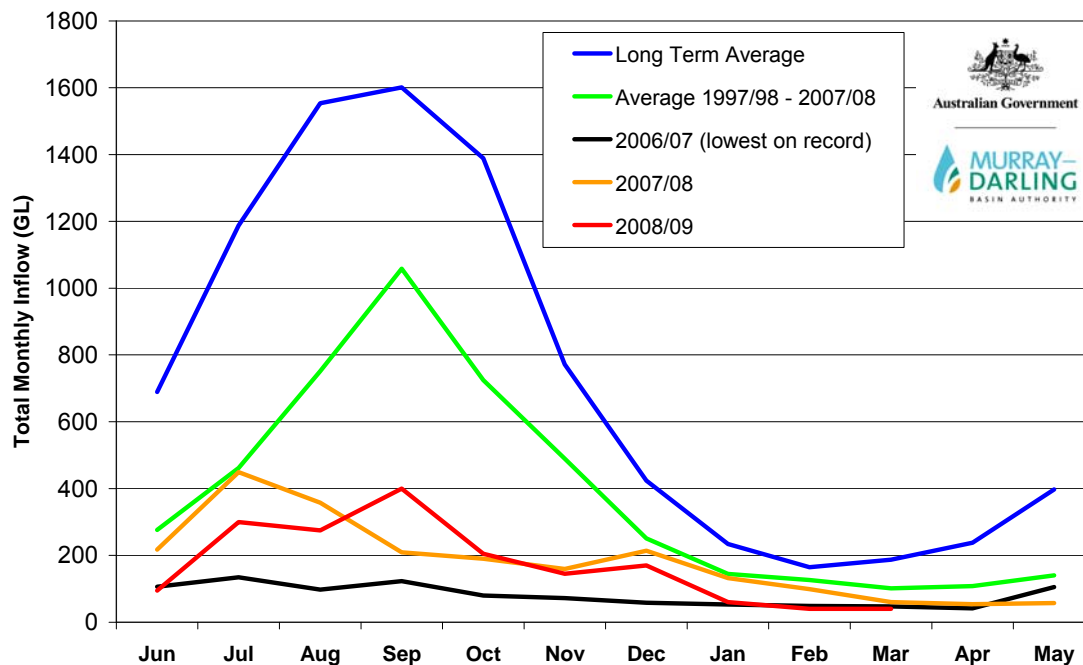


Figure 2. Murray system inflows (excluding Snowy and Darling inflows).

<b>January</b>	2009	60
	Historic minimum (1983 & 2007)	50
	Long term average	230
<b>February</b>	2009	40
	Previous historic minimum (2007)	50
	Long term average	170
<b>March</b>	2009	40
	Previous historic minimum (2007)	50
	Long term average	190
<b>Jan. to Mar. total</b>	2009	140
	Previous historic minimum (2007)	150
	Long term average	590
<b>Year to date</b>	June 2008 to March 2009	1,720
	June 2007 to March 2008	2,090
	Historic minimum (June 2006 to Mar 2007)	820
	Long term average (June to March)	8,220

Table 1. Murray system inflows (excluding Snowy and Darling inflows)

*Note 1:* The data in Table 1 has been reported to the nearest 10 GL.

*Note2:* Initial reporting of system inflows uses operational data which has not been hydrographically verified. When hydrographic data becomes available, small adjustments can occur. For instance the January 2009 inflow was initially reported as 70 GL, but has now been revised to 60 GL.

Despite the good rainfall in parts of the northern Basin during February, particularly near Bourke and Walgett, much of it fell on flat and dry countryside, and did not reach the river system. During the past two months, the Menindee Lakes received only about 190 GL of inflows which increased the storage level from 7 to 15 % of capacity. (This was the first significant inflow to the Menindee Lakes since March 2008). Despite the small volume of inflows, it was sufficient to fill Lake Wetherell and secure Broken Hill's water supply for the next 20 months. A small release (about 12 GL) has also been made to the lower Darling and Murray Rivers.

## Murray System Storage

Total MDBA active storage is currently 940 GL or 11 % of capacity (Figure 3), which is higher than the historic minimum (post Dartmouth) for the end of March (670 GL in 2007) but well below the March long term average of 4,400 GL. There is also about 250 GL in Menindee Lakes, which remains under NSW control.

Elsewhere in the Basin, storage levels remain low. The total volume of water in all Basin storages managed by the MDBA or by State governments, is about 4,100 GL, or 18 % of capacity. Total storage in the Snowy Mountains reservoirs (which are managed by Snowy Hydro) also remains low, with Lake Eucumbene at 20 % capacity.

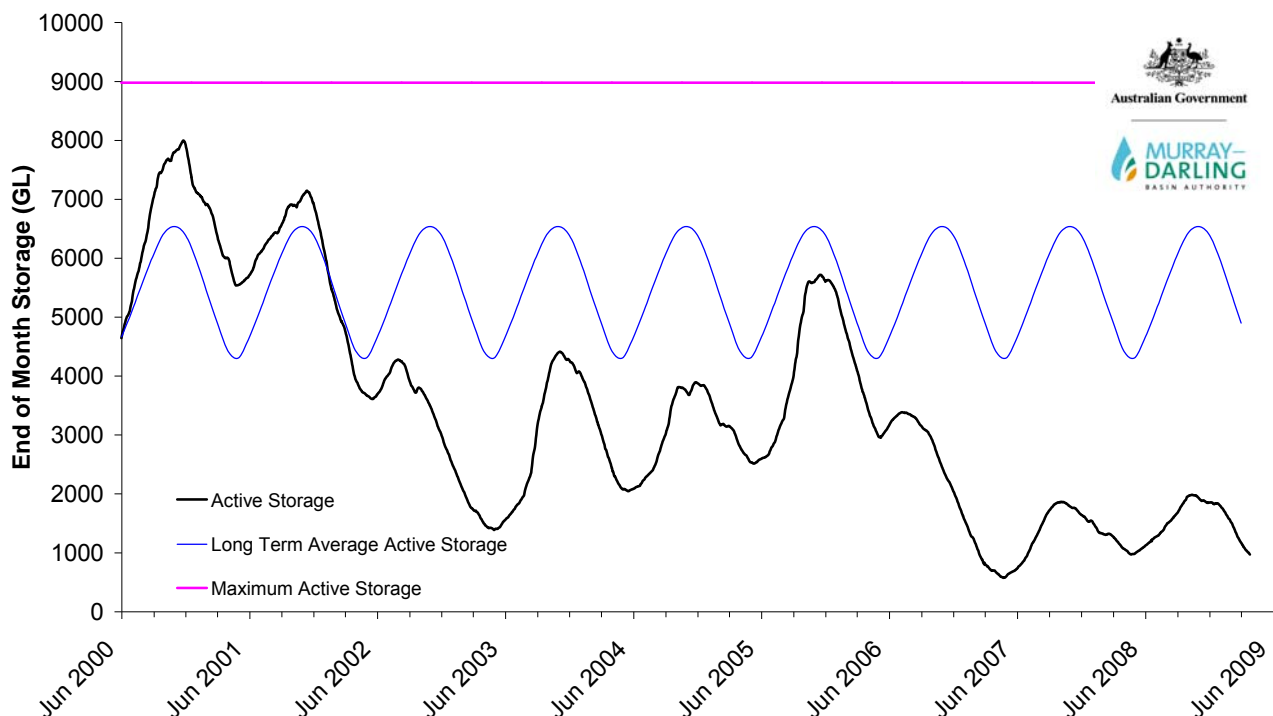


Figure 3. MDBA active storage, June 2000 to March 2009.

## Murray Operations Update

During the past few months, the overall goal of operations has been to preferentially draw upon downstream storages and conserve water in upstream reservoirs, particularly in Dartmouth Reservoir, for as long as possible. This operation maximises water availability by minimising evaporative losses and increasing the potential to capture inflows during the winter months. As part of this operation, Hume Reservoir has been steadily drawn down, and is currently at 120 GL (or 4 % capacity). Releases from Dartmouth Reservoir have generally been kept to a minimum, and Dartmouth storage volume has remained fairly steady since October 2008 at about 850 GL (or 22 % capacity). The water stored in Dartmouth Reservoir will provide a reserve for the 2009-10 water year.

During winter, the operating strategy will be similar to the last two years, and reduced minimum flow targets will be adopted along much of the river. Other operational plans include a full drawdown of Lake Mulwala, and possible variations in other weir pool levels.

### Reduced minimum flows

Similar to the last two years, reduced minimum flows will be adopted whenever possible during the winter months. Under a dry scenario, the release from Hume Dam will be reduced to 400 ML/day (compared to the normal winter minimum of 600 ML/day). The normal minimum of 1,200 ML/day at Doctors Point (near Albury) will also not apply and flows might go as low as 800 ML/day (depending on Kiewa River inflows). Further downstream, there might be occasions when the flow drops below the normal winter minimum at Yarrawonga Weir (1,800 ML/day) and also at Swan Hill (0.6 m local gauge height).

### Plans for weir pool operation

Similar to previous years, some weir pool levels might be varied during the winter months for operational or maintenance purposes. At Yarrawonga Weir (Lake Mulwala) a full drawdown is planned for late autumn and winter to control the spread of *Egeria densa*, an invasive aquatic weed. Excessive growth of the weed is affecting recreational and tourism activities, and is also interrupting normal operation of the power station and fishway at the Weir. The lake level is planned to be lowered to about 119.5 m AHD (or 5.4 m below Full Supply Level) by early June and held down until mid-July when refilling will commence. The lowering of the lake level is the only method that provides viable weed control over the whole of the lake, and should provide recreational and tourism benefits for a number of years into the future.

Small variations might also occur at other weirs, particularly Torrumbarry Weir, Euston Weir, and Weirs 8 & 9 near the South Australian border, to help supplement downstream water requirements or to re-regulate river flows. In South Australia, the pool levels in Weirs 1 to 6 are expected to remain close to full supply level to limit salinity impacts.

### Flow to South Australia

The flow to South Australia has been below normal entitlement rates for the last 2 ½ years. This will continue until there is a significant improvement in water resource availability. Monthly flow patterns are provided by South Australia and are continually adjusted to account for any changes in diversions or losses within South Australia, and also to manage river salinity. At Morgan, upstream of Lock 1, the salinity remains fairly low, at about 470 EC, which is similar to this time last year (410 EC) and the 10 year average (460 EC).

The Murray-Darling Basin Authority will continue to review its operational plans over the coming months and more details will be provided via media releases and weekly reports which can be found at [www.mdba.gov.au](http://www.mdba.gov.au)

## Environment and Water Quality

The prolonged and severe dry period across the southern half of the Basin continues to severely impact on wetland and floodplain ecosystems across the entire Murray River system. The situation is not expected to improve until there is a very significant and sustained improvement in rainfall, system inflows and water storage levels.

### High algal levels

In early March, high algal levels were first reported in Hume Reservoir and a couple of weeks later in Lake Mulwala. By early April the algal blooms had spread further downstream, and a red alert for blue-green algae was issued by NSW for the Murray River from Hume Dam to west of Swan Hill. In this reach of the Murray all town water supplies are treated and are safe for human consumption. However, affected waters are unsuitable for recreational use or primary contact by domestic users and may also pose a threat to livestock. Historically, algal growth is most prevalent in the summer and autumn months when water temperatures are higher, and both storage levels and river flows are relatively low. Similar outbreaks along the Murray have occurred in the past. The algal growth is likely to persist until water temperatures decrease with the onset of

cooler weather. Further information can be obtained from the Regional Algal Coordinating Committee's freecall hotline on 1800 999 457.

### **Wakool system replenishment flow**

In September 2008, the NSW Government commenced a replenishment flow of up to 30 GL for the Wakool River system, with the aim of supplying much needed stock and domestic water and also benefit the environment. In January 2009, a second replenishment flow was commenced, but unfortunately it coincided with the extreme heat wave experienced across south-eastern Australia. As a result of high water temperatures and very low oxygen levels, fish kills were reported in Merran and Colligen Creeks, and the replenishment flows were postponed. In March, when conditions had improved, the replenishment flow was recommenced. The decision was made by the NSW Government, in agreement with local landholders and NSW Fisheries, and water quality has been closely monitored.

### **Toorale Station delivers extra water to the Darling River.**

The purchase of Toorale Station by the NSW and Commonwealth Governments last September, resulted in an extra 11 GL of water flowing down the Darling River after heavy local rainfall in February 2009. Toorale's water entitlements and floodplain harvesting rights are being transferred to the Commonwealth Environmental Water Holder and will be used to protect or restore environmental assets.

### **First Commonwealth Environmental Water to benefit SA wetlands**

The Commonwealth and South Australian Governments have announced that the first release of Commonwealth water for the environment is commencing at wetlands in South Australia, to be followed by further releases at other sites around the Basin over coming months. South Australia will commence delivering a total of 1 GL of water to four sites; Chowilla floodplain, Paiwalla Wetland between Mannum and Murray Bridge, Carpark Lagoons near Berri, and Rocky Gully near Murray Bridge. More information about the sites receiving water, and the Commonwealth Environmental Water Holder, is available at: [www.environment.gov.au/water/environmental/cewh/index.html](http://www.environment.gov.au/water/environmental/cewh/index.html).

### **Living Murray watering approved for autumn.**

The Murray-Darling Basin Authority (MDBA) has announced the delivery of 3.445 GL of Living Murray environmental water at important 'icon sites' along the Murray in Victoria and South Australia. The watering will commence in mid-April to maximise the benefits of autumn conditions, and will include Chowilla floodplain where it will supplement water being provided by the South Australian Government and the Commonwealth Environmental Water Holder. Sites in Victoria include Wallpolla Island near Wentworth, and Chalka Creek near Hattah Lakes.

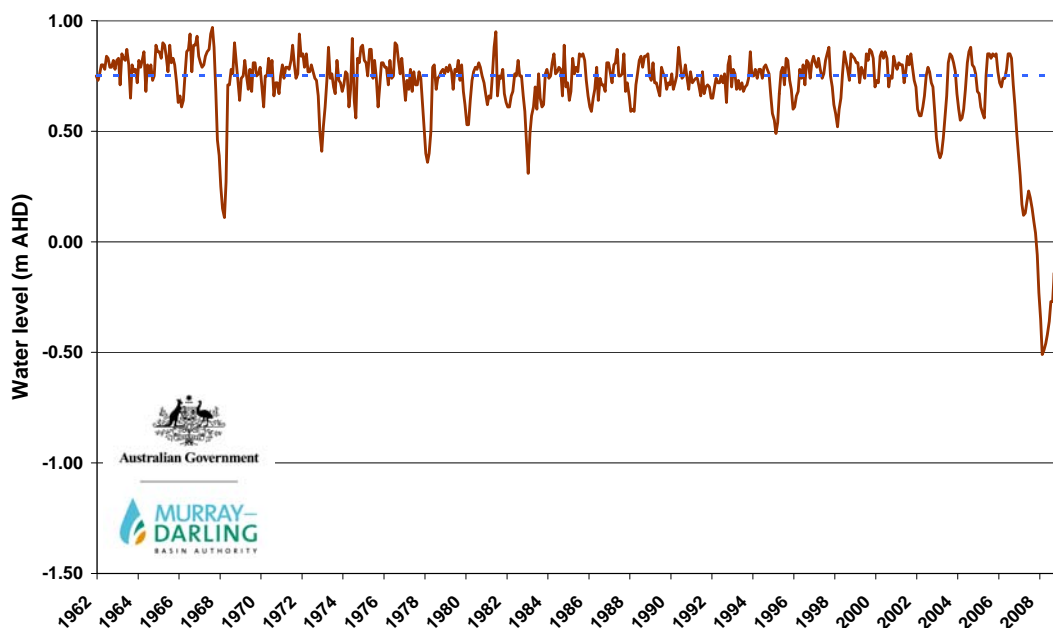
### **Re-wetting of SA wetlands**

The South Australian Government has commenced re-wetting of high priority wetland sites along the Murray using water saved during the past 2½ years from the wetland closures. A staggered approach is being used to re-wet 20 wetlands, beginning with the sites located within the Riverland Ramsar area. All the wetlands receiving water are sites that are at risk of long term ecological damage should they remain disconnected. Further information is available from the South Australian Murray-Darling Basin Natural Resources Management Board.

### **Lower Lakes**

The water level in Lake Alexandrina has continued to decline over the past few months and is now at a new record low of -0.95 m AHD (see Figure 4). During winter, in the absence of significant inflows, reduced evaporative losses should allow the water level to remain fairly steady, and even under a worst case scenario, Lake Alexandrina is unlikely to reach the estimated acidification trigger of -1.5 m AHD prior to February 2010. However, the salinity in Lake Alexandrina continues to rise, and is currently 5,500 EC at Milang and about 30,000 EC upstream of Goolwa Barrage (compared with seawater salinity of about 50,000 EC). The pumping of water from Lake Alexandrina to Lake Albert has continued to maintain the water level in Lake Albert at

about -0.5 m AHD. However, the salinity in Lake Albert continues to rise and is currently 11,000 EC compared with a long term average of 1,800 EC.



**Figure 4. Water Level of Lake Alexandrina, 1962 to 2009 (Full Supply Level = +0.75 m AHD).**

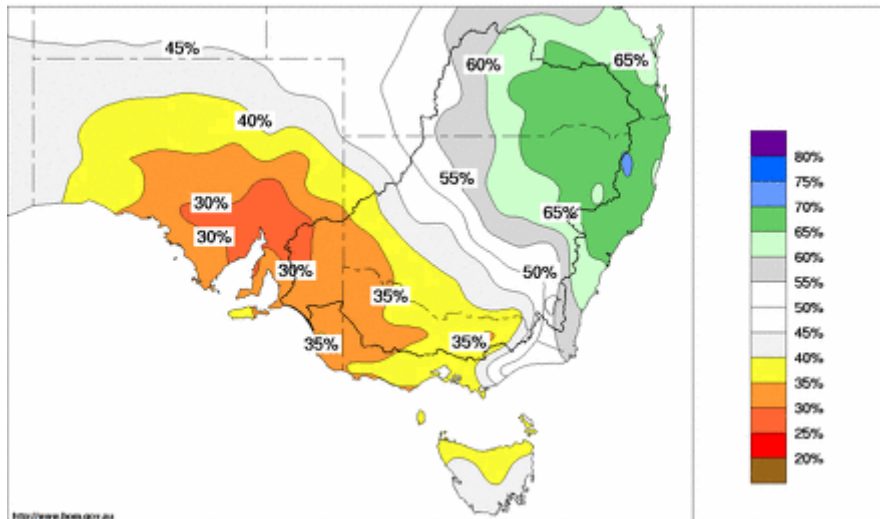
## Outlook

Autumn is a critical time for wetting of the catchment prior to winter rainfall, and there needs to be a sustained period of above average rainfall during the remainder of autumn, and throughout winter, for inflows to recover towards the long term average. However, the latest rainfall outlook issued by the Bureau of Meteorology shows a moderate to strong shift in the odds favouring drier than normal conditions across the southern half of the Murray-Darling Basin for the next 3 months (see Figure 5). Conversely, there is a moderate shift in the odds favouring wetter than normal conditions in the northern Basin. Further information can be obtained from [www.bom.gov.au/climate/ahead/rain.seaus.shtml](http://www.bom.gov.au/climate/ahead/rain.seaus.shtml).

The rainfall outlook, combined with the fact that only about 7 % of annual Murray system inflows normally occur in April and May, indicate that the chances of a significant improvement in Murray system inflows for the remainder of the 2008-09 water year, are very low. It is more likely that storage levels (including water stored in inter-valley accounts) will be very low by the end of autumn, and similar to the end of May 2008.

Despite the low storage levels, all three States have sufficient volumes of water to meet critical human water needs in 2009-10. However, if conditions are very dry, it may be that delivery of all carryover cannot be assured until the volume of water to meet system operating requirements is available. Similar to the last two years, the prospects for irrigation allocations in 2009-10 will be highly dependent on future rainfall and system inflows.

Overall, the outlook for the beginning of the 2009-10 water year is poor, and is similar to the previous two years.



**Figure 5. Forecast chance of exceeding median rainfall; April to June 2009  
(source; Bureau of Meteorology)**

## Additional Information

Additional information is available at [www.mdba.gov.au](http://www.mdba.gov.au) and also from the relevant Australian and State Government Agencies. For media interviews with MDBA personnel, please contact Sam Leone, MDBA Media Liaison, telephone 0407 006 332.

## Acknowledgements

Front cover photo: Vineyard in the Merbein Irrigation District near Mildura. Photo courtesy of Edwina Carter, MDBA.