NAMS
NATIONAL AGRICULTURAL MONITORING SYSTEM

Climate and Agricultural Update

National Report

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Contacts

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Contributors

The information contained in this report is regularly sourced from the following organisations:

ORGANISATION

Bureau of Meteorology	http://www.bom.gov.au/
Bureau of Rural Sciences	http://www.brs.gov.au/
Department of Primary Industries, New South Wales	http://www.dpi.nsw.gov.au/
Snowy Hydro Limited	http://www.snowyhydro.com.au/
Australian Bureau of Agricultural and Resource Economics (ABARE)	http://www.abare.gov.au/
Department of Agriculture and Food, Western Australia	http://www.agric.wa.gov.au/
Goulburn-Murray Water	http://www.g-mwater.com.au/
Queensland Department of Primary Industries and Fisheries	http://www.dpi.qld.gov.au/
New South Wales Department of Water and Energy	http://www.naturalresources.nsw.gov.au/
Meat and Livestock Australia	http://www.mla.com.au/

Department of Primary Industries and Resources SA Government of South Australia Primary Industries and Resources SA	http://www.pir.sa.gov.au/
Department of Primary Industries, Victoria, Australia Victoria The Place To Be	http://www.dpi.vic.gov.au/
Murray-Darling Basin Authority MURRAY–DARLING BASIN AUTHORITY	http://www.mdba.gov.au/

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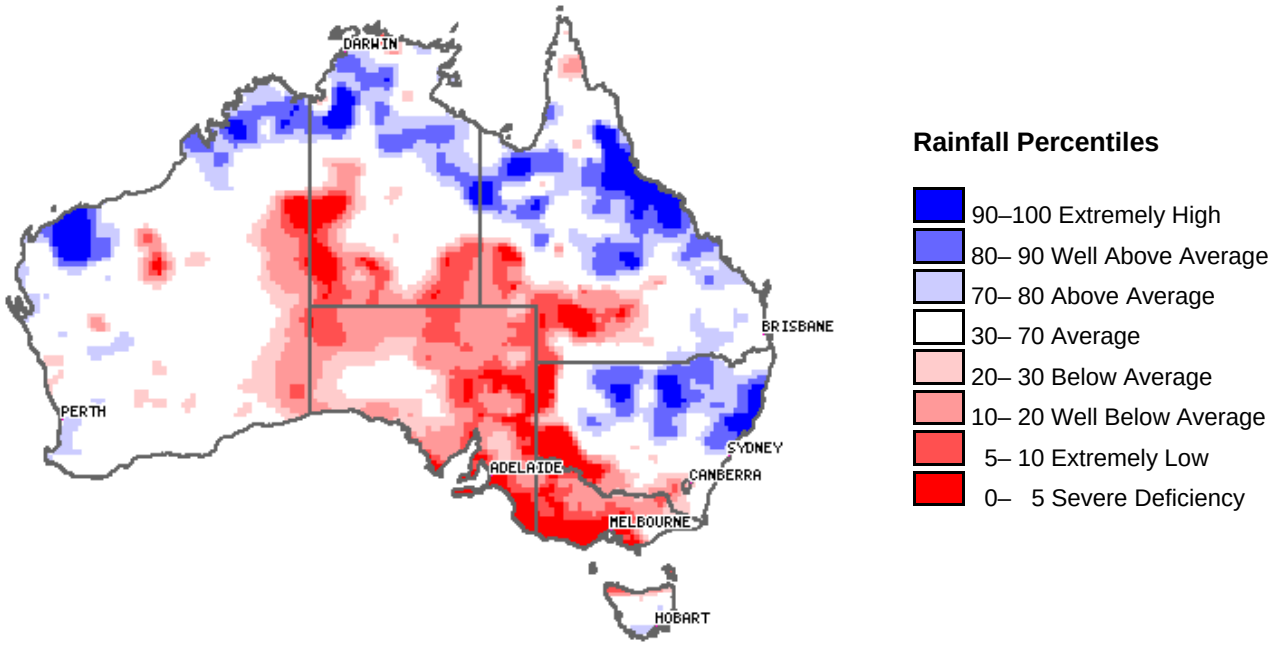
1.0 Rainfall and temperature

1.1 Rainfall

Spatial rainfall analyses are based on historical monthly rainfall data provided by the Bureau of Meteorology. For further information on rainfall data and the interpretation of percentile analyses go to http://www.bom.gov.au/climate/austmaps/.

Rainfall over the last month (February 2009)

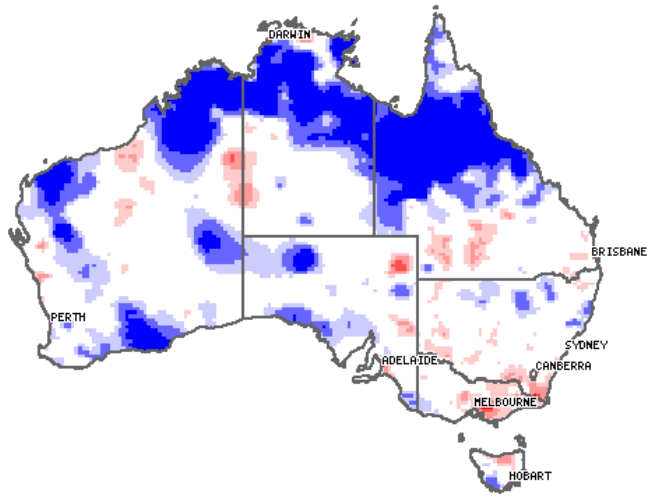


Rainfall percentiles for February 2009

Rainfall in February 2009 was 3 per cent above average for the continent. Nevertheless, it was a very dry month for most of Victoria (eighth driest on record) and South Australia (fourth driest on record). Rainfall was well below average to below average in the south-west and west of New South Wales, south-western Queensland, eastern Western Australia and the southern Northern Territory.

In contrast, above average rainfall was recorded in the tropics and northern New South Wales. In Queensland, extreme rainfall events were concentrated on the coast between Mackay and Innisfail and in the far north-west. Heavy rainfall led to significant flooding early in the month, especially around Ingham. In New South Wales, the mid-north coast and northern inland areas around Bourke received rainfall in the highest tenth percentile range. Rainfall also reached the highest tenth percentile in Western Australian around Karratha, the Kimberley and the north-western Northern Territory.

Ongoing or emerging rainfall situations

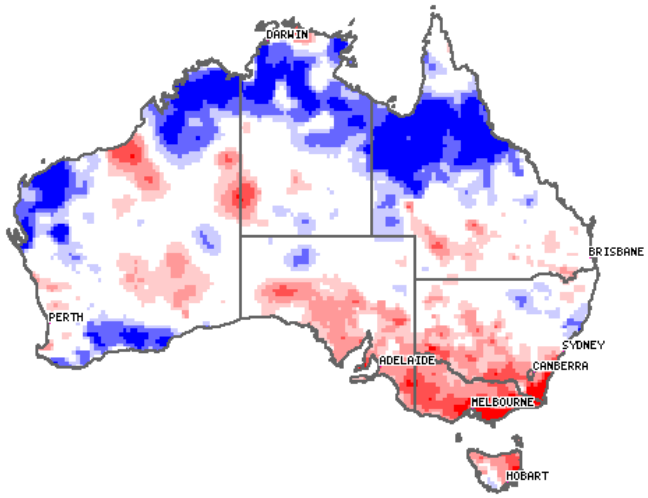


Rainfall Percentiles

- 90–100 Extremely High
- 80– 90 Well Above Average
- 70– 80 Above Average
- 30– 70 Average
- 20–30 Below Average
- 10– 20 Well Below Average
- 5– 10 Extremely Low
- 0– 5 Severe Deficiency

Rainfall percentiles for the last three months
December 2008–February 2009 (Summer)

A persistent monsoonal trough over northern Australia has led to above average to extremely high rainfall in northern parts of Queensland, the Northern Territory and Western Australia during the last three months. Other notable regions of above average rainfall are apparent in western and southern Western Australia and the north-west of South Australia. Rainfall across the rest of the country from December 2008 to February 2009 was largely average with some patches of below average rainfall in eastern Victoria, south-eastern New South Wales and south-western Queensland.



Rainfall Percentiles

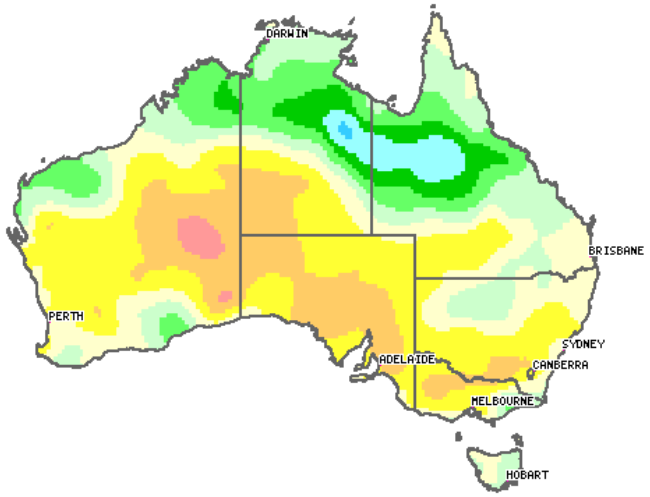
- 90–100 Extremely High
- 80– 90 Well Above Average
- 70– 80 Above Average
- 30– 70 Average
- 20– 30 Below Average
- 10– 20 Well Below Average
- 5– 10 Extremely Low
- 0– 5 Severe Deficiency

Rainfall percentiles for the last 12 months
March 2008–February 2009

For the 12 month period from March 2008 to February 2009, above average rainfall was recorded across northern parts of Australia and in the west and south of Western Australia. Rainfall was well below average across the south-east of the continent, with areas in southern Victoria and north-east Tasmania in the lowest tenth percentile range.

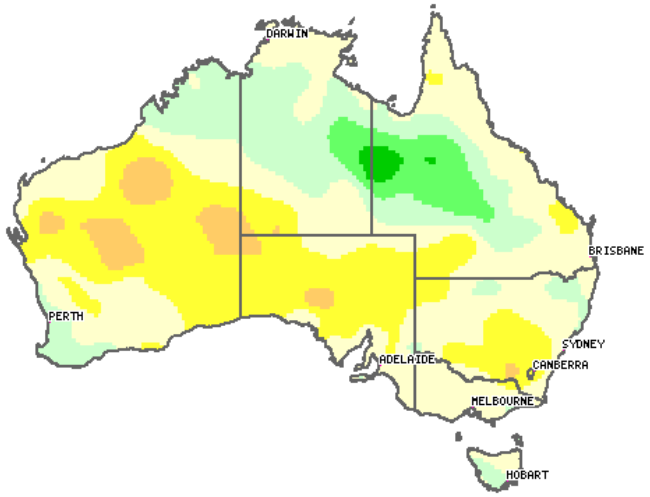
1.2 Maximum and minimum temperature anomalies

Spatial temperature analyses are based on historical monthly temperature data provided by the Bureau of Meteorology. These temperature anomaly maps show the departure of the maximum and the minimum temperature from the long-term average. Temperature anomalies are calculated with respect to the reference period 1961–1990. For further information on temperature anomalies go to: http://www.bom.gov.au/climate/austmaps/.

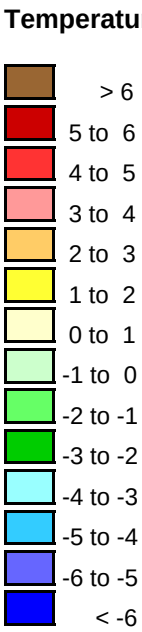


Monthly mean maximum temperature anomalies
February 2009

Maximum temperatures in February 2009 averaged over Australia were 0.14 °C above the long-term average for the month. Most of the southern Australia recorded above average maxima. Anomalies were notably high (2–4 °C above average) in central Western Australia. Strong warm anomalies were also recorded in South Australia (seventh warmest February on record) and Victoria (hottest day on record: 7 February 2009). In contrast, the north of the continent was cooler than average and northern parts of Queensland, the Northern Territory and Western Australia recorded anomalies 1–4 °C below the average maximum.

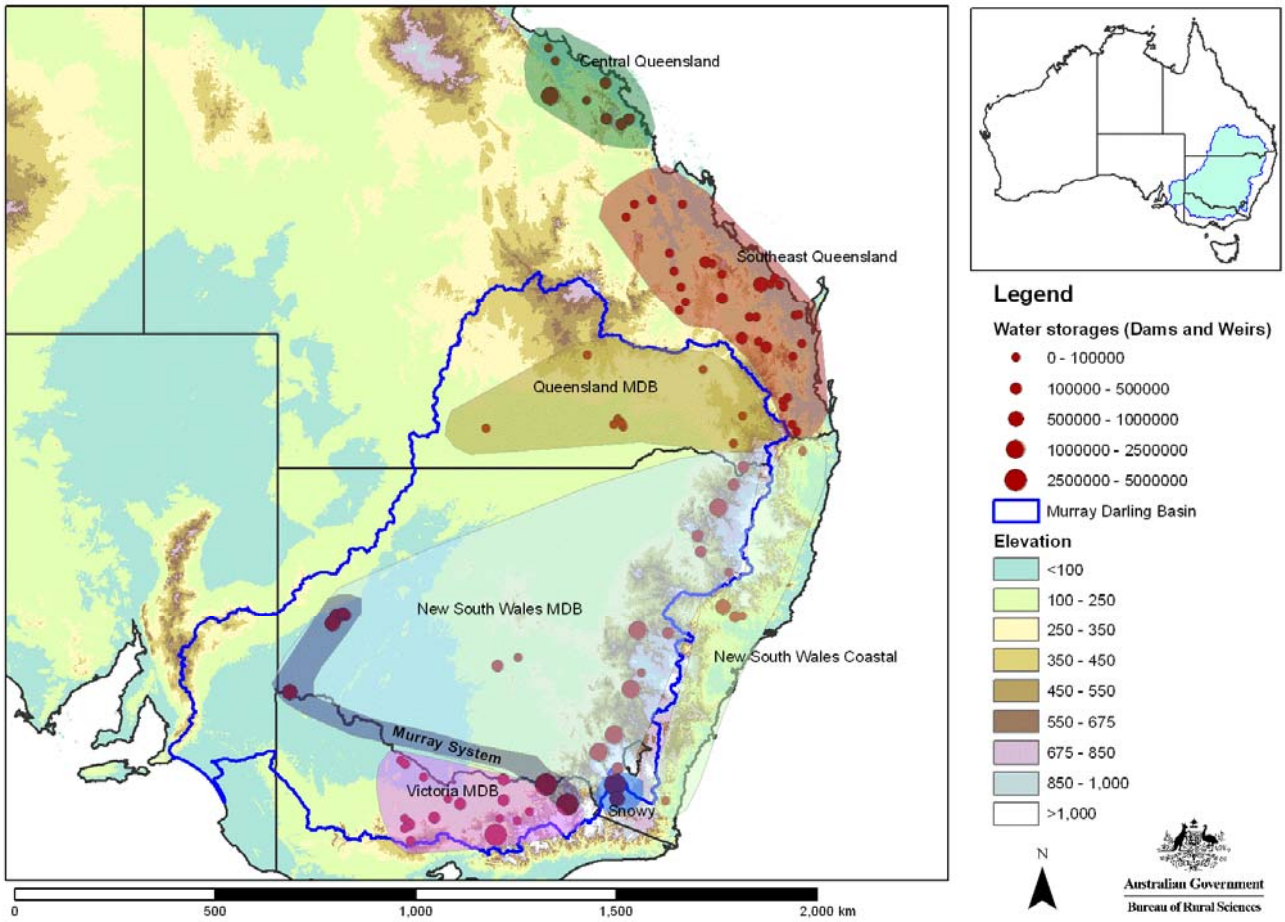


Monthly mean minimum temperature anomalies
February 2009



Minimum temperatures in January 2009 averaged over Australia were 0.44 °C above the long-term average for the month (sixteenth highest on record). Above average minima were recorded across most of Western Australia, South Australia and New South Wales (1–3°C above average). A band of cool anomalies extended from northern Western Australia through the Northern Territory and into Queensland. The lowest minimum temperatures were experienced in western Queensland and the eastern Northern Territory (1–3 °C below average).

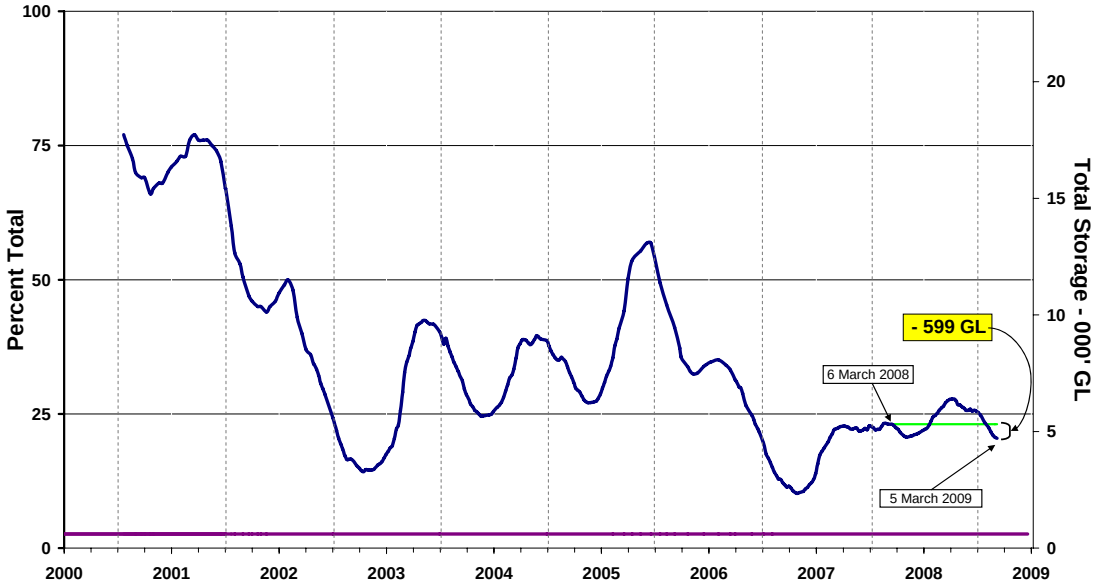
2.0 Water storages and announcements



Water storages in Queensland, New South Wales and Victoria. The blue line indicates the extent of the Murray-Darling Basin. The shaded areas denote the coverage of the individual reporting regions. Source: Bureau of Rural Sciences

2.1 Water storages (current to 5 March 2009)

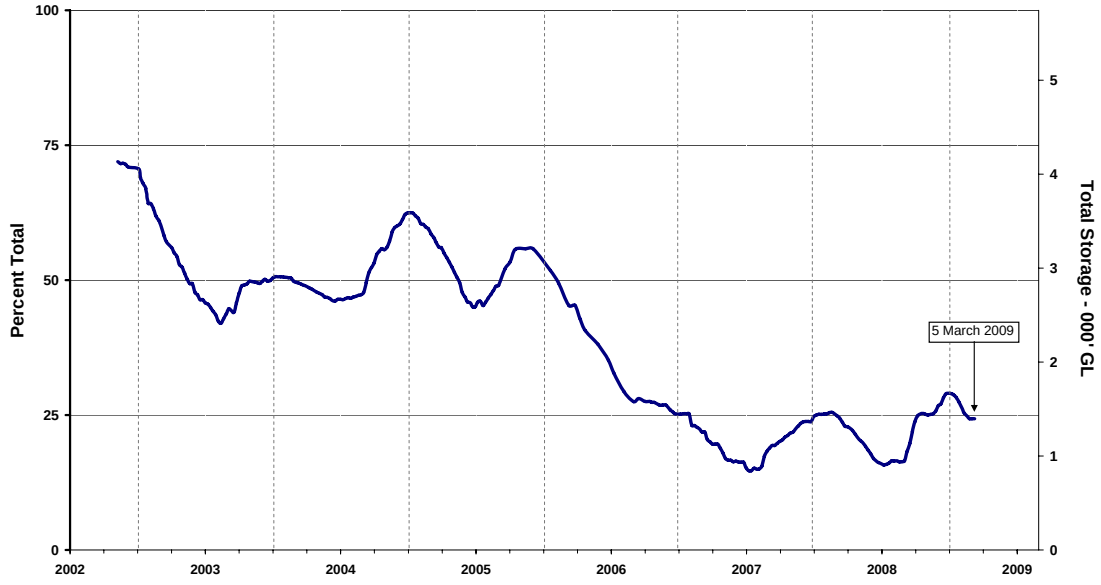
Water storage in the MDB (New South Wales, Victoria and Queensland)



Water storage levels in the Murray-Darling Basin from 1 January 2001 to 5 March 2009. The green line shows the storage level at the same time last year and the purple line shows the dead storage (not calculated).
Source: Bureau of Rural Sciences

Over the past month storage levels within the Murray-Darling Basin (MDB) have decreased. Storage levels generally fall at this time of the year because of the seasonal irrigation drawdown. Storage levels for irrigated agriculture on 5 March 2009 were at 4715 gigalitres (GL) (20.5 per cent of a total capacity of 23 020 GL), a decrease of 430 GL (1.9 per cent of total capacity) over the month. Current storage levels are approximately 599 GL less than at the same time last year.

Water storage in the Snowy Scheme



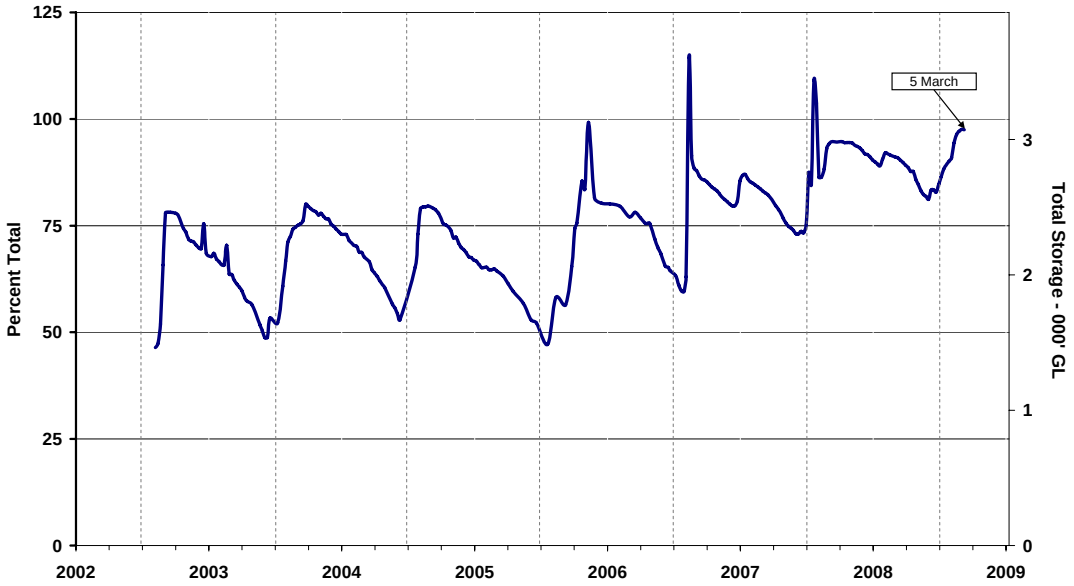
Water storage levels in the Snowy Scheme from 6 November 2002 to 5 March 2009.
Source: Bureau of Rural Sciences

The figure 'Water storage in the MDB' (above top) does not include the capacities of Lake Eucumbene, Tantangara Reservoir and Lake Jindabyne (collectively the Snowy Scheme) which are reserved for hydro-electricity generation and irrigation purposes. Current levels in the Snowy Scheme storages are 1397 GL (24.3 per cent of a total capacity of 5744 GL) (see figure above). This is a decrease of 8 GL (0.1 per cent) from the same time last year.

Water storage in Queensland

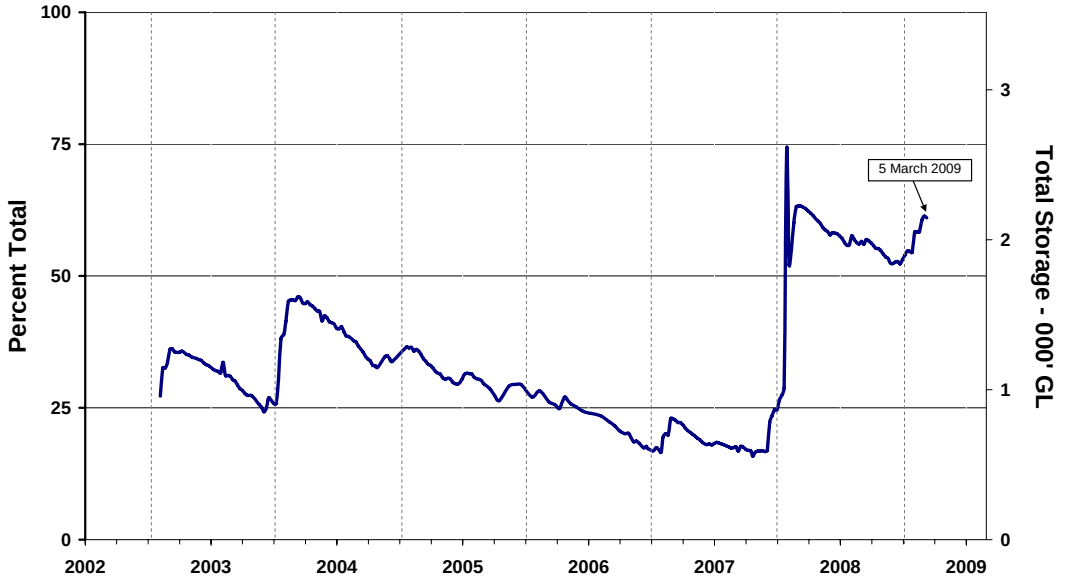
Water storage levels in Queensland MDB from 3 February 2003 to 5 March 2009.
Source: Bureau of Rural Sciences

Storage levels in Queensland MDB increased by 21 GL to 126 GL (68.2 per cent of a total capacity of 185 GL) over the last month (see figure above). This storage level is approximately 53 GL lower than at the same time last year.



Water storage levels in central Queensland from 3 February 2003 to 5 March 2009.
Source: Bureau of Rural Sciences

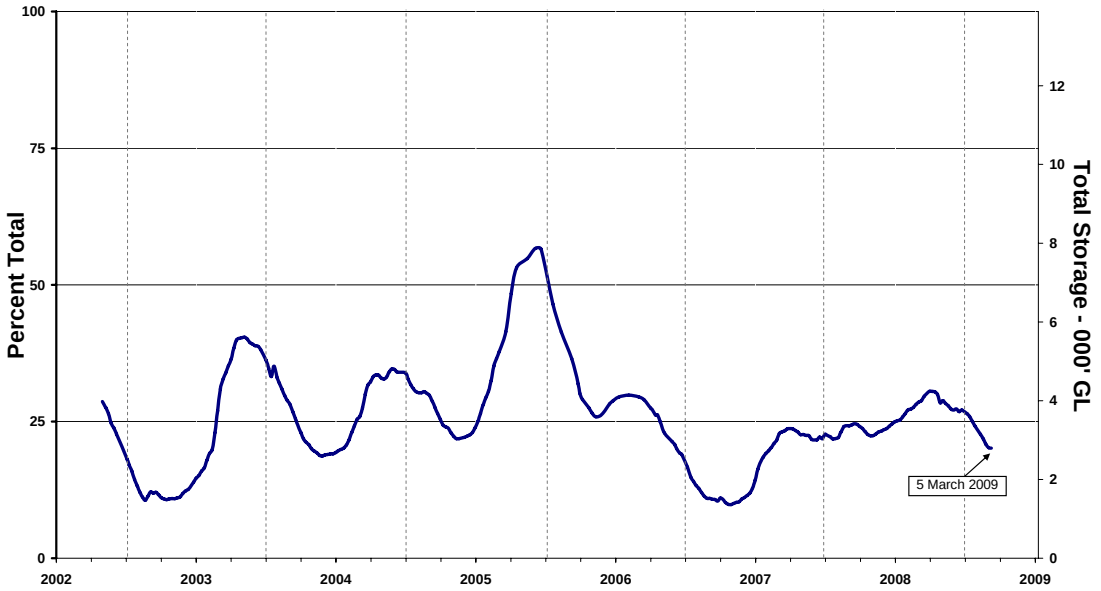
In central Queensland storage levels increased by 99 GL to 3076 GL (97.5 per cent of a total capacity of 3155 GL) over the last month (see figure above). This storage level is approximately 88 GL higher than at the same time last year.



Water storage levels in south-east Queensland from 3 February 2003 to 5 March 2009.
Source: Bureau of Rural Sciences

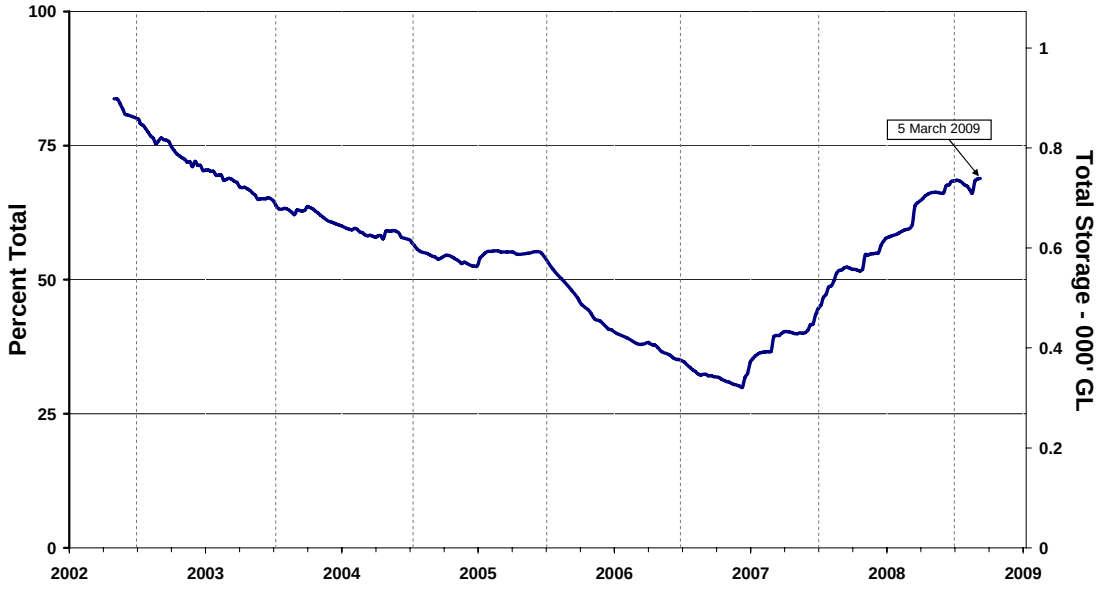
In south-east Queensland storage levels increased by 93 GL to 2147 GL (61.0 per cent of a total capacity of 3517 GL) (see figure above). This storage level represents a decrease of 78 GL (2.2 per cent) compared to the same time last year.

Water storage in New South Wales



Water storage levels in New South Wales MDB from 28 October 2002 to 5 March 2009.
Source: Bureau of Rural Sciences

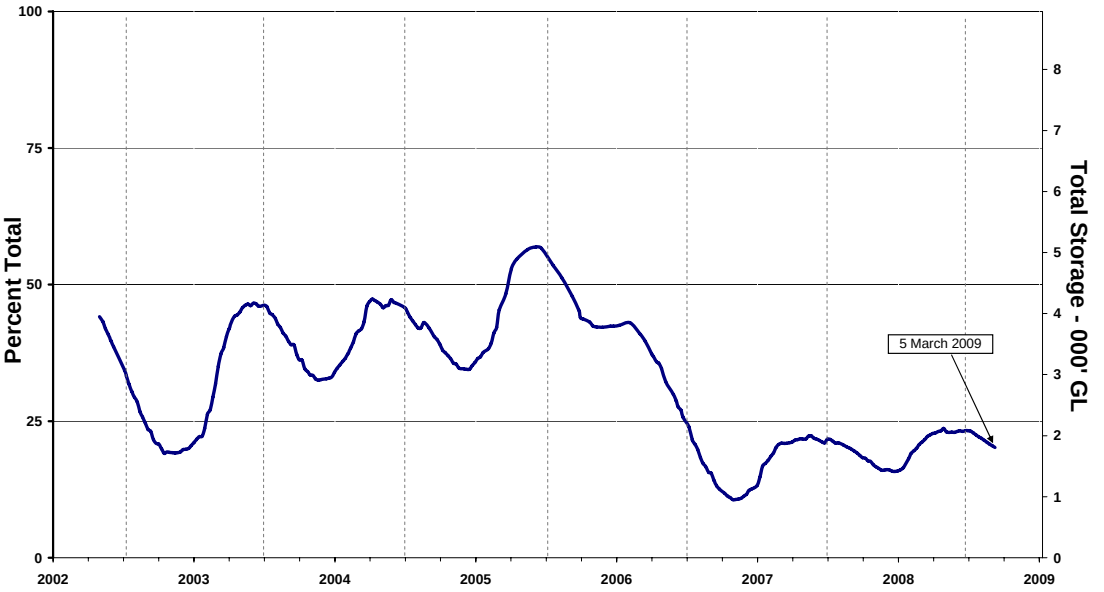
Storage levels in the New South Wales MDB decreased by 355 GL to 2798 GL (20.2 per cent of a total capacity of 13 884 GL) over the last month (see figure above). This storage level is approximately 590 GL less than at the same time last year.



Water storage levels in coastal New South Wales from 28 October 2002 to 5 March 2009.
Source: Bureau of Rural Sciences

In coastal New South Wales storage levels increased by 22 GL to 739 GL (68.9 per cent of a total capacity of 1073 GL) over the last month (see figure above). This storage level is approximately 179 GL higher than at the same time last year.

Water storage in Victoria

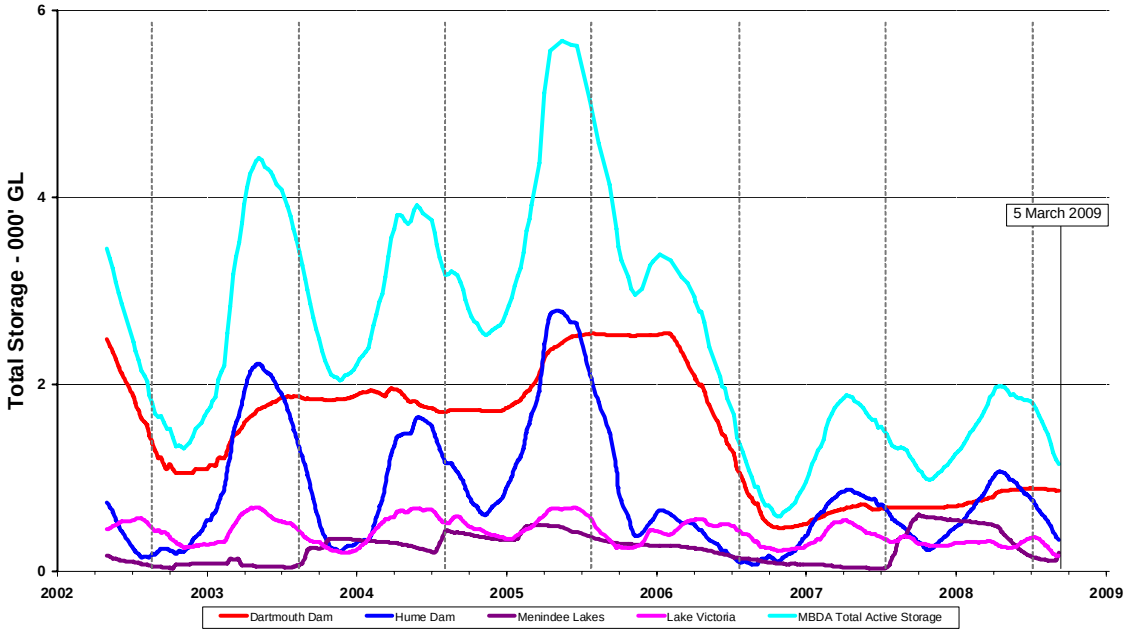


Water storage levels in Victoria MDB from 28 October 2002 to 5 March 2009.
Source: Bureau of Rural Sciences

Storage levels in Victoria MDB decreased by 120 GL to 1736 GL (20.2 per cent of a total capacity of 8950 GL) over the last month (see figure above). This storage level is approximately 60 GL higher than at the same time last year.

Murray-Darling Basin Authority water storages

- During February 2009, above average rainfall and below average temperatures were recorded across the northern half of the Murray-Darling Basin. However, February saw a continuation of above average temperatures and dry conditions across the southern half of the Basin. The longer-term rainfall deficits, particularly across the higher yielding catchments of the Victorian Alps and Snowy Mountains continue to persist.
- Murray-Darling Basin Authority active storages declined during February 2009, and are currently at 1195 GL or 14 per cent capacity, which is slightly lower than this time last year (1280 GL) and well below the long-term average of 4900 GL.
- The total volume of water in all Basin storages managed by the Murray Darling Basin Authority (MDBA) or by State governments decreased over the last month. Elsewhere in the Basin, storage levels remain low. At the end of February 2009, Basin storages held about 4720 GL, or 20.5 per cent of capacity. Storage in the Snowy Mountains reservoirs (which is managed by Snowy Hydro) also remain low, with Lake Eucumbene at only 21 per cent capacity.
- There is also a small volume of water (about 130 GL) in Menindee Lakes under New South Wales control. Inflows into the Darling River, Border Rivers and upper Barwon catchment is expected to provide approximately 200 GL of inflow into the Menindee Lakes. At 25 February 2009, about 25 GL had arrived at Menindee Lakes. This water will be used to secure town water supply for Broken Hill for at least 21 months, secure water for Lower Darling permanent plantings for 2009–10 and underwrite water for critical human needs in the Murray Valley.
- Storage in Hume Reservoir, which continues to provide for the bulk of downstream requirements, decreased by 211 GL to 370 GL (or 12 per cent capacity) during February 2009. In the coming weeks, storage in Hume Reservoir is likely to fall below 300 GL (10 per cent capacity).
- The Dartmouth Reservoir decreased by 11 GL during February to 868 GL (22 per cent of capacity). During the last few months small volumes of water were released from Dartmouth Reservoir to supplement the storage in Hume Reservoir and to sustain the Mitta Mitta River. The water that now remains in Dartmouth Reservoir will provide a reserve for critical human needs and also meet individual carryover requirements of irrigators for 2009–10.
- Storage in Lake Victoria decreased by 120 GL to 168 GL (or 25 per cent capacity) during February. Current flows to South Australia are 5100 ML/day, the majority of which is released from Lake Victoria. As storage levels in the Lake decline, an increased proportion of this water will be supplied from sources further upstream.
- The trend of MDBA water storages updated to 5 March 2009 is shown in the figure below.



Water volumes in the Murray-Darling Basin Authority Storages from 28 October 2002 to 5 March 2009. Source: Murray-Darling Basin Authority

For further information on water storages, go to:

Snowy Scheme
http://www.snowyhydro.com.au/lakeLevels.asp?pageID=360&parentID=6

Queensland
http://www.sunwater.com.au/pdf/water/CurrentStorageSummary.pdf

New South Wales
http://www.statewater.com.au/indexes/index.asp

Northern Victoria
http://www.g-mwater.com.au/water-resources/storage-levels/

Murray–Darling Basin Authority
http://www.mdba.gov.au/

2.2 Water announcements

Announcements for New South Wales (current as at 2 March 2009)

- On 2 March 2009 the New South Wales Department of Water and Energy announced that there would be no change to water allocations in the Murray, Murrumbidgee and Lower Darling river valleys. The water allocations for all New South Wales Southern Murray-Darling Basin licence holders remain unchanged for the 2008–09 water year, as summarised in the table below.

Water system	High Security Licences (%)	Change (%)	General Security Licences (%)	Change (%)
NSW Murray Valley	95	0	9	0
Murrumbidgee Valley	95	0	21	0
Lower Darling	100	0	50	0
Macquarie Valley	100	0	5	0
Hunter Valley	100	0	100	0
Lachlan Valley	30	0	0	0
Border Rivers	100	0	0	0
Peel Valley	100	0	80	0

- Conditions across the Murray and Murrumbidgee valleys have remained hot and dry and high evaporation losses have largely offset minor natural inflows.
- Rainfall in the north-west of the State late last month has provided some useful inflows into the Darling River. Combined with additional inflows from the Border Rivers and upper Barwon catchment, this is expected to increase inflows into the Menindee Lakes to approximately 200 gigalitres and will increase the amount of water stored in the Menindee Lakes from seven per cent to about 18 per cent of capacity
- This water will be used to secure town water supply for Broken Hill for at least 21 months, secure water for Lower Darling permanent plantings for 2009–10 and underwrite water for critical human needs in the Murray Valley. This includes the delivery of conveyance and carryover in 2009–10 if required.
- Despite the Darling River flows, water availability in the Murray-Darling Basin remains seriously low. Without substantial autumn and winter rain, water availability, including the ability to deliver carryover at the start of 2009–10, will be limited.
- The Department of Water and Energy reminds licence holders that all temporary trades, including interstate trades, need to be lodged with State Water by close of business on 31 May 2009.
- While the Water Sharing Plans remain suspended in both valleys, the carryover rules that applied in 2008–09 will apply again in 2009–10.
- A full assessment will be carried out mid-month with details available in the Murray and Murrumbidgee critical water planning communiqués, available on the 16 March from the Department's website: www.dwe.nsw.gov.au.

Announcements for Victoria (current as at 2 March 2009)

- On 2 March 2009 Goulburn-Murray Water (G-MW) announced the updated season allocations (see below).

Water system	High-reliability share (%)	Change (%)
Murray	35	0
Broken	0	0
Goulburn	31	+1
Campaspe	0	0
Loddon	0	0
Bullarook Creek	0	0

- On 2 March 2009 G-MW announced an increase of 1 per cent high-reliability water shares (HRWS) in the Goulburn system. No other allocations were possible, with the Murray system remaining at 35 per cent HRWS. The allocations for all other water systems in Northern Victoria remain at zero.
- The Resource Manager for the G-MW, Graeme Hannan, explained that the increase in the Goulburn system resulted from operating efficiencies in the G-MW channel system. Milder temperatures during the past two weeks combined with less than planned deliveries to this point in the season, contributed to the reduction of the system operating requirements. While, in the Murray system, river transmission losses have remained very high.
- The next allocation announcement for all water systems will be available on 16 March 2009.
- Goulburn-Murray Water will update the allocation outlook for 2009–10 on Friday 15 May 2009.

Announcements for South Australia (current as at 16 February 2009)

- There will be no improvement in River Murray water allocations for irrigators for another month. According to the Minister for the Murray River, Karlene Maywald, allocations will stay at 18 per cent of the usual entitlement because of continuing drought.
- 70 GL flowed into the Murray system during January, compared with the long-term monthly average of 234 GL.
- Allocation updates will continue to be issued on the fifteenth of each month and information on water resource conditions will be available on the first of each month or on the first business day.

For further information on water announcements, go to:

Murray-Darling Basin Authority
http://www.mdba.gov.au/

Goulburn-Murray Water
http://www.g-mwater.com.au/news/media-releases/

New South Wales Department of Water and Energy
http://www.naturalresources.nsw.gov.au/

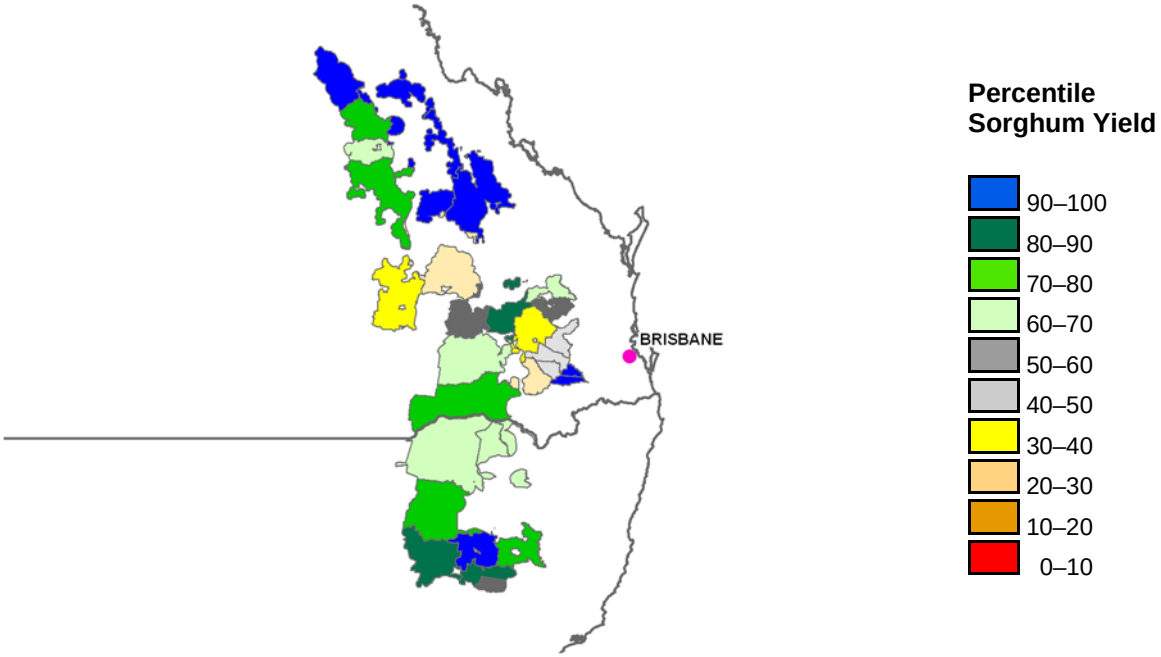
South Australian Department of Water, Land and Biodiversity Conservation
http://www.dwlbc.sa.gov.au/media.html

3.0 Crop and livestock production

3.1 Crops

Summer Crops

Predicted sorghum yields for the coming season are provided by the Queensland Department of Primary Industries and Fisheries, as shown in the Figure below. The forecast is based on a sorghum stress index model that incorporates water availability, climate data and a soil moisture profile. The following figure shows shire sorghum yield forecasts across Australia based on climate data up to the end of the forecast month and projecting forward based on the long-term average calculated over all available years.



Predicted sorghum yields for the 2008–09 cropping season at 1 March 2009 ranked relative to all years

- Average to above average rainfall recorded across the cropping regions in eastern Australia led to further replenishment of soil water profile and generally improved the crop yield outcomes. However, a wet finish to the summer cropping season might increase the risk of diseases and harvesting problems, especially for late-sown crops. These conditions, combined with the seasonal rainfall outlook at the end of February indicate an above average sorghum yield of 2.52 tonnes per hectare (t/ha) (sixty eighth percentile) for Australia. This is 0.19 t/ha higher than the national long-term average and 0.01 t/ha higher than the prediction for February 2009 (Queensland Department of Primary Industries and Fisheries http://www.dpi.qld.gov.au/cps/rde/dpi/hs.xsl/26_8099_ENA_HTML.htm).
- Queensland: Harvesting has already commenced for early-planted crops in some areas of southern Queensland. Predicted sorghum yields for Queensland are higher than the long-term average (2.33 t/ha compared with 2.18). This is 0.08 t/ha higher than the prediction for February 2009. Crop forecasts are above average for central Queensland and average for southern Queensland (Queensland Department of Primary Industries and Fisheries http://www.dpi.qld.gov.au/cps/rde/dpi/hs.xsl/26_8099_ENA_HTML.htm).
- The wide-spread floods in north-western Queensland have caused significant damage to the state's sugar industry and infrastructure. In far-north Queensland floods have washed out vegetable crops and have delayed the transport of produce to southern markets, pushing up prices. The price of bananas has risen to $46 per 8kg box (http://qcl.farmonline.com.au/news/state/agribusiness-and-general/finance/floods-cane-sugar-crops/1433952.aspx, http://www.theaustralian.news.com.au/story/0,,25019295-11949,00.html).
- New South Wales: Harvesting has already commenced for early-planted crops in some cropping areas of northern NSW. Crop yield is expected to be above average (3.17 t/ha compared with 2.82 t/ha). This is 0.21 t/ha higher than the prediction for February 2009 (Queensland Department of Primary Industries and Fisheries http://www.dpi.qld.gov.au/cps/rde/dpi/hs.xsl/26_8099_ENA_HTML.htm).

- Large areas of New South Wales have been declared natural disaster zones after heavy rain and extensive flooding in Bourke and the Mid-North Coast causing damage to houses, infrastructure and crops. Initial estimates at Bourke put the damage bill at $6 million (http://theland.farmonline.com.au/news/nationalrural/agribusiness-and-general/general/flooded-regions-now-disaster-zones/1438047.aspx).
- Victoria: The horticulture industry in the fire-affected areas has seen permanent plantings destroyed that will take years to replace and bring back to full production (Victorian Farmers Federation, Media Release: http://www.vff.org.au/main/index2.php?option=com_content&do_pdf=1&id=677).

3.2 Livestock

Beef cattle

- The economic environment has led to reduced rates of cattle for slaughter. Since the beginning of 2009, cattle prices fell across most of Australia and particularly in New South Wales (Meat and Livestock Australia, Market News: http://www.mla.com.au/NR/exeres/31F26934-778F-4328-AA8E-3F2891CCF6DE.htm).
- The record heatwave experienced across southern Australia during early February, combined with weaker export prices at the time, saw feeder cattle purchases at Australia's regional livestock saleyards decline early in the month (http://www.mla.com.au/NR/exeres/3C7B49FC-307E-4775-A4AB-8BCF033CC8DD.htm).
- Sale yardings increased as a result of rising prices and fine weather during the later part of February in Queensland and New South Wales (Meat and Livestock Australia, Market News: http://www.mla.com.au/TopicHierarchy/News/MarketNews/2009/Cattle+market+alert.htm).
- The quality of cattle through the sale yards in central and southern New South Wales has been low, while producers are offloading unfinished lines in Victoria and South Australia. Conversely well-finished lines have been offered in northern New South Wales and Queensland (Meat and Livestock Australia, Market News: http://www.mla.com.au/TopicHierarchy/News/MarketNews/2009/Cattle+market+alert.htm).
- Australian beef exports to the United States are forecast to increase by around 11 per cent in 2009–10 to 300 000 tonnes (ABARE, Australian commodities: http://www.abare.gov.au/interactive/09ac_mar/htm/beef.htm).
- The weakened economic situation has forced many shoppers at Coles to trade down expensive cuts of meat, including T-bone for sausages, chicken and eggs (Meat and Livestock Australia, Market news http://www.mla.com.au/TopicHierarchy/News/MarketNews/2009/Shoppers+switch+to+cheaper+protein+at+supermarkets.htm).
- The Victorian Department of Primary Industries has made an initial estimate that 1100 head of cattle have been lost in the Victorian fires during February. In addition to animal stock losses, more than 5600 kilometres of fencing and more than 2200 farm facilities have been reported lost (Victorian Department of Primary Industries, Media Release: http://www.dpi.vic.gov.au/DPI/dpincor.nsf/LinkView/9A3C46B9F5D19B45CA2575610017D9699F838E54F27113DFCA257553000A71C9/$file/Media%20Releases%20DPI%20rural%20recovery%20figures.pdf).
- Beef and lamb exports posted record volumes in February due to the combination of a lower Australian dollar, strong manufacturing, beef demand and US and Middle East lamb demand (http://news.mla.com.au/rp/362/process.clsp?EmailId=109000&Token=2F98DA106EE92C98A88584F3A60B184BC).

Sheep and lambs

- Restocker demand rose following rainfall in New South Wales and Queensland with the Eastern Young Cattle Indicator (EYCI) up to 314¢/kg carcase weight (Meat and Livestock Australia, Market News: http://www.mla.com.au/TopicHierarchy/News/MarketNews/2009/Young+cattle+prices+rise.htm).
- Lamb prices remain high for this time of year, up 23 per cent on last year for heavy export and 14 per cent for both trade and light lambs (Meat and Livestock Australia, Market News: http://www.mla.com.au/TopicHierarchy/News/MarketNews/2009/Young+cattle+prices+rise.htm).
- The quality of lightweight trade lambs has declined due to the extreme climatic conditions experienced over the past month (Meat and Livestock Australia, Market News: http://www.mla.com.au/TopicHierarchy/News/MarketNews/2009/Sheep+and+lamb+market+alert.htm).

- Meat and Livestock Australia's National Livestock Reporting Service (NLRS) recorded an increased proportion of trade lambs in February (49 per cent of total lamb offerings) compared to the same period last year (40 per cent of total lamb offerings). The trend is primarily the result of strong trade lamb prices prompting producers to offload stock (Meat and Livestock Australia, Market News: http://www.mla.com.au/TopicHierarchy/News/MarketNews/2009/Lamb+and+sheep+market+wrap-up.htm).
- The Victorian Department of Primary Industries has made an initial estimate that 2200 head of sheep have been lost in the February fires. Graziers are still securing agistment for their livestock which were grazing in areas that are now burnt out (Victorian Department of Primary Industries, Media Release: http://www.dpi.vic.gov.au/DPI/dpincor.nsf/LinkView/9A3C46B9F5D19B45CA2575610017D9699F838E54F27113DFCA257553000A71C9/$file/Media%20Releases%20DPI%20rural%20recovery%20figures.pdf).

For further information on crops and livestock, go to:

Australian Bureau of Statistics
http://www.abs.gov.au/

Australian Bureau of Agricultural and Resource Economics
http://abareconomics.com/

Meat and Livestock Australia
http://www.mla.com.au/

Department of Agriculture and Food Western Australia
http://www.agric.wa.gov.au/

New South Wales Department of Primary Industries
http://www.dpi.nsw.gov.au/aboutus/news/

Primary Industries and Resources South Australia
http://www.pir.sa.gov.au/grains/cpr/

Queensland Department of Primary Industries and Fisheries
http://www.dpi.qld.gov.au/fieldcrops/

The Land Farmonline
http://theland.farmonline.com.au/

Victorian Department of Primary Industries
http://www.dpi.vic.gov.au

4.0 Climate Outlook

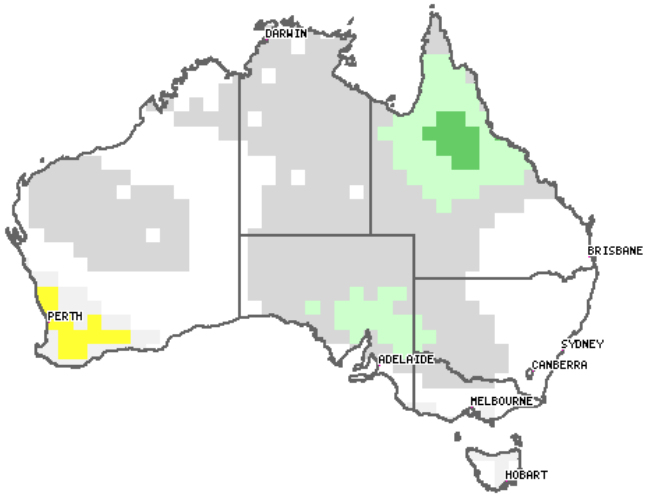
4.1 El Niño Southern Oscillation (ENSO)

Current Southern Oscillation Index (SOI) values of about +17 (for the 30 days up to the 22 February) are stronger than last month. This strengthening of the SOI is a result of the cessation of ocean surface warming in the eastern and central equatorial Pacific during February and sea surface temperatures in the far-eastern Pacific are currently cooler than the neutral levels. Trade winds have responded to the strengthening SOI and are now stronger than average in the western half of the basin, but remain weaker in the east. Sub-surface waters in the east and west of the basin have warmed over the past three weeks but the central Pacific has experienced a slight cooling. Model outlooks suggest that the cooler surface temperatures in the Pacific are likely to persist for a short time into the autumn. It is likely that neutral conditions will continue as the central and eastern Pacific warm over the coming months. The Indian Ocean Dipole remains neutral, as is typical for this time of year. It will be monitored this autumn for any signs of an emerging event.

For further information on the Bureau of Meteorology interpretation of the El Niño–Southern Oscillation go to http://www.bom.gov.au/climate/enso/

4.2 Rainfall Outlook

The Bureau of Meteorology provides seasonal outlooks that are statements about the probability of wetter or drier than average weather over a three-month period. The outlooks are based on the statistics of chance (the odds) taken from Australian rainfall, temperature and sea surface temperature records for the tropical Pacific and Indian Oceans. They are not categorical predictions about future rainfall and they do not indicate the expected rainfall amount for the three-month outlook period.



The chance of exceeding median rainfall March–May 2009 (Autumn)

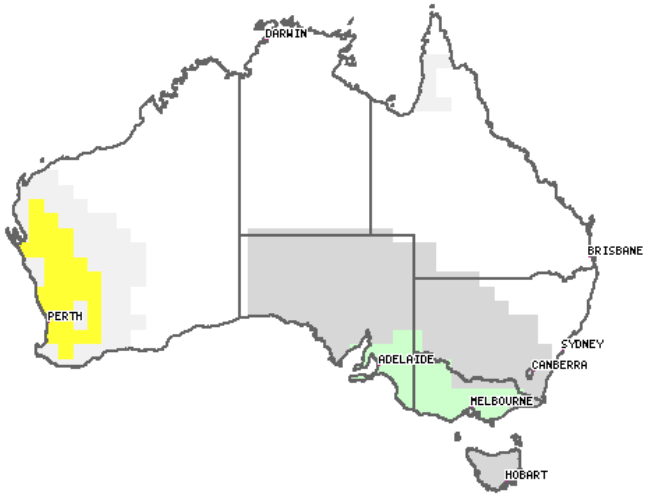
Chance of Exceeding the Median Rainfall (%)

- 80–100
- 75–80
- 70–75
- 65–70
- 60–65
- 55–60
- 50–55
- 45–50
- 40–45
- 35–40
- 30–35
- 25–30
- 20–25
- 0–20

The national outlook for total autumn rainfall suggests higher chances for exceeding the median rainfall over much of northern Queensland (60–70 per cent) and south-eastern South Australia (60–65 per cent). Conversely, there are lower chances for exceeding the median rainfall for the autumn over the south-west of Western Australia (35–40 per cent). Across the rest of the country, the likelihood of exceeding the median rainfall during autumn is between 40 and 60 per cent, meaning that above average rainfall is equally likely as below average rainfall.

The pattern of seasonal rainfall odds across Australia is mainly a result of warm conditions in the Indian Ocean in January, while the Pacific Ocean had little contribution to this forecast.

4.3 Temperature Outlook



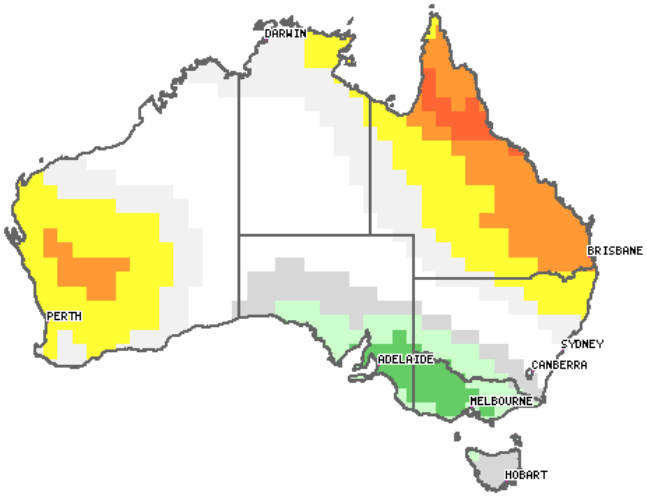
3 Month Temp. Max Outlook (%)

80–100
75–80
70–75
65–70
60–65
55–60
50–55
45–50
40–45
35–40
30–35
25–30
20–25
0–20

The chance of exceeding median maximum temperatures March–May 2009 (Autumn)

The national outlook for maximum temperatures during autumn is for higher than average day-time temperatures in the west of Western Australia (55–65 per cent). In contrast, chances of exceeding the median maximum temperatures are about 40 per cent for south-eastern South Australia and Victoria. The outlook for the rest of the continent is for maximum temperatures typical of the median (40 and 60 percent).

During autumn, history shows the effect of the Pacific and Indian Oceans on maximum temperatures to be moderately consistent over Victoria, Tasmania, the northern Northern Territory and south-eastern South Australia. In northern Queensland the effect is strongly consistent in autumn.



3 Month Temp. Min Outlook (%)

80–100
75–80
70–75
65–70
60–65
55–60
50–55
45–50
40–45
35–40
30–35
25–30
20–25
0–20

The chance of exceeding median minimum temperatures March–May 2009 (Autumn)

The national outlook for minimum temperatures during autumn indicates cooler than average minimum temperatures for Victoria, southern South Australia and south-western New South Wales and warmer than average minimum temperatures in the west and north-east of the country. The rest of the nation should expect close to average night time temperatures.

History shows the oceans' effect on minimum temperatures during the February to April period to be moderately consistent over large parts of the country.

For further information on the Bureau of Meteorology seasonal outlooks go to http//www.bom.gov.au/climate/ahead/