



# **Climate and Agricultural Update**

# **National Report**

Issued July 2008



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Australian Bureau of Agricultural and Resource Economics (ABARE) <b>abare</b>	http://www.abare.gov.au/
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New South Wales Department of Water and Energy           NSW Government           Department of Water & Energy	http://www.naturalresources.nsw.gov.au/
Meat and Livestock Australia	http://www.mla.com.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 <a href="http://www.bom.gov.au/climate/austmaps/">http://www.bom.gov.au/climate/austmaps/</a>.

#### Rainfall over the last month (June 2008)



#### Rainfall percentiles for June 2008.

Rainfall in June 2008 was spatially highly-variable across the country. However, the overall Australian rainfall was close to average for June. Much of southern Australia recorded drier than average conditions, particularly in the eastern wheatbelt and the south coast of Western Australia (WA) where the lowest June totals on record were observed over large areas.

In contrast, above average rainfall for the month was recorded in an extensive band from the Kimberley (WA) to northern New South Wales (NSW) and southern Queensland coasts. Another band of above average rainfall stretched from the northwest to the far southeast of WA. A small area straddling the far northeast South Australia (SA) and far southwest Queensland border had its wettest June on record. The remainder of northern Australia recorded patchy areas of above and below average rainfall.



#### Ongoing or emerging rainfall situations



Rainfall percentiles for the last three months April 2008–June 2008

Total rainfall from April to June was below average across the country and in every state and territory. Most states and territories had some areas in the lowest tenth percentile range. Only limited areas had above average rainfall for the season, most notably around the border between Queensland and SA and the coastal area north of Sydney.



Rainfall percentiles for the last 12 months July 2007–June 2008.

In the last twelve months, dry conditions have prevailed across Tasmania, south-western NSW, Victoria, SA, southern WA and central Australia. In contrast, much of the tropical north, central Queensland and areas down the east and west coasts recorded above average rainfall.



#### 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 maxima and minima from the longterm 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/.



It was the sixth warmest June on record (equal to June 2005) with Australia's mean temperature 0.99°C above the long-term mean (1961–90). The nationally-averaged maximum temperature was eleventh warmest on record. Areas in the western slopes of the Great Dividing Range through NSW and Queensland recorded maximum temperatures higher than 2°C above average. The eastern Kimberley (WA), eastern Alice Springs region (NT) and eastern Cape York Peninsula (Queensland) experienced below average maxima.



Minimum temperatures were also above average across the entire eastern half of the country. Some areas of central Queensland and around the Australian Capital Territory (ACT) recorded minimum temperatures more than 3°C above average. NSW and Victoria recorded their fourth highest and third highest June minima on record, respectively. Minimum temperatures in the western half of the continent were mostly average. The Kimberley, south-west and south-central regions were 1 to 2°C below average. The national average minimum temperature was the eleventh warmest on record and 1°C above the long-term mean of 8.93°C.



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### 2.0 Water storages and announcements



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



#### 2.1 Water storages (current to 10 July 2008)





Water storage levels in the Murray-Darling Basin from 1 January 2001 to 10 July 2008. The green line indicates the storage level at the same time last year. Source: Bureau of Rural Sciences.

Over the past month storage levels within the Murray-Darling Basin (MDB) have increased, with inflows exceeding releases. At 10 July 2008 storage levels for irrigated agriculture were at 5143 GL (22.4 per cent of a total capacity of 23 020 GL), an increase of 203 GL (0.9 per cent of total capacity) over the month. Current storage levels are approximately 1166 GL greater 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 10 July 2008. 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 which are reserved for hydro-electricity generation and irrigation purposes, collectively The Snowy Scheme. Current levels in The Snowy Scheme storages (see figure above) are 912 GL (15.9 per cent of a total capacity of 5744 GL).





Water storage levels in northern Queensland from 3 February 2003 to 10 July 2008. Source: Bureau of Rural Sciences.

Storage levels in northern Queensland decreased by 74 GL to 2846 GL (88.9 per cent of a total capacity of 3199 GL) over the last month (see figure above). This storage level is approximately 56 GL higher than at the same time last year.



Water storage levels in southern Queensland from 3 February 2003 to 10 July 2008. Source: Bureau of Rural Sciences.

In southern Queensland storage levels decreased by 95 GL to 2547 GL (60.6 per cent of a total capacity of 4203 GL) over the last month (see figure above). This storage level is approximately 1421 GL higher than at the same time last year.



#### Water storage in New South Wales



Water storage levels in northern New South Wales from 28 October 2002 to 10 July 2008. Source: Bureau of Rural Sciences.

Storage levels in northern NSW increased by 3 GL to 2122 GL (29.8 per cent of a total capacity of 7114 GL) over the last month (see figure above). This storage level is approximately 1099 GL higher than at the same time last year.



Water storage levels in southern New South Wales from 28 October 2002 to 10 July 2008. Source: Bureau of Rural Sciences.

In southern NSW storage levels increased by 174 GL to 2209 GL (28.2 per cent of a total capacity of 7844 GL) over the last month (see figure above). This storage level is approximately 400 GL higher than at the same time last year.





Storage levels in northern Victoria increased by 56 GL to 1464 GL (16.4 per cent of a total capacity of 8950 GL) over the last month (see figure above). This storage level is approximately 27 GL lower than at the same time last year.

#### Murray-Darling Basin update

- This year, the Murray-Darling Basin has experienced its fourth driest autumn on record. As a result, Murray system inflows in autumn approached the record low levels experienced in 2007. The dry weather in the southern half of the Basin set a record low June inflow of 95 GL, compared with 220 GL in June last year and the long term average of 680 GL.
- The chance that upper Murray inflows will be above average for the remainder of winter and spring is very low. Until there is significant rain and run-off, the prospects remain grim for irrigation and the environment.
- Murray-Darling Basin Commission active storage at the end of June 2008 was 1270 GL or 15 per cent capacity. About 400 GL has been carried over from 2007–08 by individual license holders. The end of year active storage was well below the long-term average but 280 GL above the record low of 990 GL in June 2007. There is an additional 550 GL in Menindee Lakes. This remains under NSW control and up to 170 GL is committed to underwrite Murray system contingencies for 2008–09. Menindee Lakes also supply Broken Hill with drinking water.
- An account of total commitments indicates that approximately 2380 GL of water is required this year to meet critical needs, individual carryover and river and storage losses that would occur during supply of this water. Just over half of this volume is currently in storage. An additional 900 GL is effectively assured from system inflows during the year, even under a 'worst case' dry scenario. Under this dry scenario, the remaining 190 GL would need to be supplied from contingency measures, which include water stored in Menindee Lakes, wetland savings and the drawdown of weir pools at the end of the season.
- The prospects for irrigation allocations in 2008–09 are entirely dependent on improved system inflows during winter and spring, which is the critical period for runoff in the upper Murray and its tributaries. The current situation is reflected in the opening irrigation allocations for 2008–09 which are between 0 and 2 per cent. Further details about allocations and access to carryover are provided later in this report.



#### 2.2 Water announcements

#### Announcements for New South Wales (current at 10 July 2008)

- The Department of Water and Energy announced Available Water Determinations on 1 July 2008 for licensed water users across NSW for the commencement of the 2008–09 water year. Initial water allocations for many inland regions are identified as still critically low. Coastal catchments have fared better at the start of the new water year.
- Commencing allocation announcements for the major water systems in NSW for the 2008–09 season are summarised in the table below.

Water system	High Security Licences (%)	General Security Licences (%)
NSW Murray Valley	0	0
Murrumbidgee Valley	0	0
Lower Darling	0	0
Macquarie Valley	100	0
Hunter Valley	100	100
Lachlan Valley	20	0
Border Rivers	100	0
Peel Valley	100	30

- Across NSW total storage levels for State Water operated dams, excluding the Snowy, are just over 4000
  gigalitres or around 21 per cent of total capacity. The upper Murray and Murrumbidgee storages are at
  critically low levels with opening allocations for both general and high security irrigators in these valleys at
  zero and licensed water users relying on carryover or trade.
- The prospects of receiving good rainfall in the immediate future has deteriorated with the Bureau of Meteorology indicating neutral El Nino - Southern Oscillation (ENSO) conditions. As no autumn break occurred in the central and south-western portions of the state, additional water allocations in these areas are now dependent on rainfall and stream flows over the rest of winter.
- The provision of stock and domestic water also remains an issue west of the range and cannot be guaranteed for all systems. There is enough water reserved to meet the critical human needs in towns for both the Murray and Murrumbidgee valleys. Councils and water supply authorities have been asked to remain extremely conservative with all water use. If water availability remains low it is expected that severe water restrictions will be implemented in the coming year.
- In the Murrumbidgee, Murray and Lower Darling, town water supplies, as well as licensed stock and domestic, will have an initial allocation of 50 per cent of entitlement.
- The north-west river valleys of the state have had some good inflows to storages over the last year, particularly during the summer. The Border River, Gwydir River and Namoi River valleys have full allocations for town water supplies, high security, and stock and domestic water users. All general security water users in these northern valleys will benefit from a general security carry over.
- Favourable conditions in the Peel River valley will allow full allocations for town water supplies, high security, and stock and domestic water users. General security water users will receive 30 per cent as an opening allocation.
- The central-west valleys of the Lachlan and Macquarie rivers are subject to reduced initial allocations with general security users in both areas commencing the year with a zero allocation. In the Lachlan, local water utilities will receive 70 per cent of entitlement, while stock and domestic, and high security users will get 20 per cent. Water users in the Macquarie will receive full allocations for town water supplies, stock and domestic, and high security users.
- The water outlook for coastal river valleys is more positive following above-average rainfall and, in several
  coastal areas, flooding since June 2007. Storages on the coast have generally shown an upward trend in
  total capacity over the last year, which has allowed full allocations for water users in nearly all coastal areas.
- Following several years of reduced entitlement, in the Hunter Valley, good falls in recent months have led to improved storage capacities allowing full allocations for all licence classes.



• The Department of Water and Energy has identified the state-wide water outlook as remaining serious for the majority of users. There are hopes that winter rains will help bolster dam levels and provide much needed water for NSW irrigators and industry. The Department will closely monitor the situation so that any possible increase to water entitlements can be announced as soon as conditions allow.

#### Announcements for Victoria (current at 10 July 2008)

• Goulburn-Murray Water announced opening season allocations on 1 July 2008 (see below).

Water system	High-reliability share (%)
Murray	0
Broken	0
Goulburn	0
Campaspe	0
Loddon	0
Bullarook Creek	0

- A zero per cent opening allocation for the 2008–09 season was announced across all water systems in northern Victoria. Record low inflows mean that northern Victoria is entering the 2008–09 season with extremely low water reserves and future allocations will depend on inflows over coming months.
- There is enough water to supply essential human needs in all systems, but good winter and spring inflows are needed to cover system operating requirements. July, August and September are usually the peak inflow months so there is potential for this situation to improve. However, the region is currently extremely dry and the catchments need a good soaking to produce sustained inflows.
- Allocation outlooks for the Murray and Goulburn water systems are presented below. The outlooks have been prepared using current inflow conditions and monthly inflow records from seasons with dry autumn and early winter conditions. The terms are defined as: *wet* (inflow volumes that are higher in one year out of every ten years) and *average* (inflow volumes that are higher in five years out of every ten years).

murray System (% of High-Reliability water Share at Date Shown)					
Inflow Conditions	15 Aug 2008	15 Oct 2008	15 Dec 2008	15 Feb 2009	
wet	0	79	100	100	
average	0	25	56	69	

#### Murray System (% of High-Reliability Water Share at Date Shown)

Inflow Conditions	15 Aug 2008	15 Oct 2008	15 Dec 2008	15 Feb 2009
wet	28	93	100	100
average	0	50	75	85

#### Goulburn System (% of High-Reliability Water Share at Date Shown)

- Average inflow conditions will not provide sufficient water for irrigation allocations in the Murray or Goulburn systems by 15 August 2008. By 15 October 2008, average inflows are expected to produce a seasonal allocation of 25 per cent of high-reliability water shares in the Murray system and a 50 per cent allocation in the Goulburn system.
- Under dry conditions (inflow volumes that have nine chances in ten of being exceeded) the Murray system has no allocation for the season and the Goulburn system reaches 14 per cent by 15 February 2009. A repeat of the 2007–08 inflow conditions is expected to produce a Murray seasonal allocation of 30 per cent of high-reliability water shares and a 40 per cent allocation in the Goulburn system. Goulburn-Murray Water will announce an update of seasonal allocations for all water systems on 1 August 2008.



#### Announcements for South Australia (current at 10 July 2008)

- The South Australian Minister for the River Murray, Karlene Maywald, announced on 16 June 2008 that SA irrigators will commence the 2008–09 water year with a 2 per cent opening allocation and access to 50 per cent of their approved carry-over water volume.
- While conditions across the Murray-Darling Basin remain serious, slight improvements during May have made this small opening allocation possible. In addition, about 80 gigalitres has been set aside so far to meet carry-over commitments. It is anticipated that up to 80 per cent of this carry-over will be available from 1 September 2008, when the final meter readings for 2007–08 are completed.
- The Department of Water, Land and Biodiversity Conservation has completed projections for flows to SA, based on date provided by the Murray-Darling Basin Commission. The projections show that, depending on how water is allocated, there is a 75 per cent chance that allocations will be 32 per cent by the end of 2008-09 and a 50 per cent chance that allocations will be higher than 32 per cent by the end of 2008–09.

For further information on water announcements, go to:

Murray-Darling Basin Commission <u>http://www.mdbc.gov.au/</u>

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

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

SA Water http://www.sawater.com.au/SAWater/WhatsNew/NewsRoom/



### 3.0 Crop and livestock production

#### 3.1 Crops

#### Winter Crops

Predicted median wheat yields are provided by the Queensland Department of Primary Industries and Fisheries. The following figure shows shire wheat yield forecasts across Australia as percentiles of a 105 year historic data set (1901 to 2005).



## Predicted shire wheat yields for the 2008 cropping season ranked relative to all years (1901-2005)

- Australia: The predicted median wheat yield at 1 July 2008 for Australia is 2.07 tonne/hectare (t/ha), which
  is identical to the long-term median. Predicted yields are slightly above the long-term median in NSW
  (2.42 t/ha) and Queensland (1.43 t/ha), and slightly below the median in SA (1.83 t/ha), WA (2.01 t/ha) and
  Victoria (2.13 t/ha).
- Queensland: The traditional planting window is closing in most of the state's cropping area. Average to above average June rainfall in most areas has increased soil water to above average levels (>70 per cent). The wheat yield outlook has improved over the past month as a result of improved soil moisture and a favourable seasonal rainfall outlook. The chances of exceeding the long-term median wheat yield are average to above average in most areas. Widespread above average rainfall is needed over the next few weeks to further enhance the current wheat outlook (Queensland Department of Primary Industries and Fisheries, Seasonal Crop Outlook Wheat, July 2008: http://www.dpi.gld.gov.au/cps/rde/dpi/hs.xsl/26 6256 ENA HTML.htm).
- NSW: Winter crop estimates of 5.18 million hectares are achievable following early June rain in northern areas. Most crops have been sown (~90 per cent) and the remainder is expected to be planted by mid-July. Yield potential is holding with areas receiving up to 60 mm of rainfall during June. Sub-soil moisture levels have improved in many northern areas as a result of June rain supplementing the previous summer falls. Soaking rains are still needed across most areas of the state to promote crop establishment and growth. Above average temperatures during May and June produced rapid development in early sown crops (NSW Department of Primary Industries, NSW Grains Report, June 2008: http://www.dpi.nsw.gov.au/aboutus/news/newsletters/grains-report-nsw).



- Victoria: Crop sowing is largely complete across Victoria, although dry conditions prevail. The exception is West and South Gippsland where ample soil moisture is promoting good growth in cereal crops and rye. Farmers in the Wimmera are optimistic of reasonable yields although recent dust storms indicate poor soil cover and high erosion potential. Additional rainfall is required in most districts (Department of Primary Industries, Victoria, Dry Seasonal Conditions, July 2008: <a href="http://www.dpi.vic.gov.au/dpi/nrenfa.nsf/LinkView/5654004287EF4E8CCA25745D00190A36987715D08D02\_05F9CA2573E100030E40/\$file/DSCreport78-5Jun2008.pdf">http://www.dpi.vic.gov.au/dpi/nrenfa.nsf/LinkView/5654004287EF4E8CCA25745D00190A36987715D08D02\_05F9CA2573E100030E40/\$file/DSCreport78-5Jun2008.pdf</a>).
- WA: The crop estimate at 1 July 2008 was 9.87 million tonnes (Mt) comprising 6.40 Mt wheat, 2.03 Mt barley, 0.53 Mt canola, 0.44 Mt lupins, 0.38 Mt oats, and 0.07 Mt peas. This is similar to estimates at 1 June 2008 with some regional adjustments. Improved conditions in northern districts have been off-set by reduced planting estimates and lower expected yields in the central and eastern wheatbelt and Esperance districts. Most areas require early July rainfall to secure crops that have been planted (Department of Agriculture and Food Western Australia, Seasonal Update, July 2008: http://www.agric.wa.gov.au/content/LWE/CLI/SeasonalUpdateJul08.PDF).
- SA: Seeding has been largely completed and with the relatively mild temperatures, crop growth has been rapid. Establishment has been patchy in drier areas and strong winds have caused some damage. There is little stored soil moisture and significant rainfall is required to maintain crop and pasture growth. With below average rainfall for June, good falls are needed during the next couple of months to maintain yield potential and build up stored soil moisture going into spring (Primary Industries and Resources SA, Crop and Pasture Report, June 2008: <a href="http://www.pir.sa.gov.au/">http://www.pir.sa.gov.au/</a> data/assets/pdf file/0009/74943/jun08cpr.pdf</a>).

#### 3.2 Livestock

#### Beef cattle

- Beef and veal exports fell 4.5 per cent to 930 319 tonnes in 2007–08, from the record in 2006–07, reflecting a fall in beef supplies and the higher Australian dollar against almost all other key currencies. Beef exports to the US in 2007–08 fell 21 per cent to 240 000 tonnes, the lowest for 10 years. This reflected the low US dollar, sluggish consumer demand and better prices in other markets. In contrast, demand was buoyant across a range of secondary markets, led by Russia. Exports to the Commonwealth of Independent States (almost all to Russia) hit a record high of 45 584 tonnes, up from 8 000 tonnes the previous year (MLA Market News 4.7.2008).
- In May, the trend estimate for beef production increased for the fourth consecutive month, to 181 000 tonnes, and was up 3 per cent compared to the same time last year (ABS 7218.0.55.001 May 2008).
- The drought conditions across the southern half of the Northern Territory and far west of Queensland are producing significant movement of cattle to the east for agistment and sales. The early wet season has provided good pasture around Kynuna, Blackall, Tambo, Augathella and Cunnamulla, to which large numbers of breeders are being relocated (Queensland DPI news update 11.6.2008).

#### Sheep and lambs

- Total Australian wool production is forecast to decline slightly in the 2008–09 season despite a higher expected output in Queensland and NSW. For 2008–09, shorn wool production is forecast to be 4 per cent lower than 2007–08. High global grain prices and continuing dry conditions in some parts of eastern Australia are contributing to a decline in sheep numbers and lower overall production (AWI media release, 3.7.2008).
- In May, the trend estimate for sheep slaughterings increased for the eleventh consecutive month to 1.1 million, and was 14 per cent higher than the same time last year (ABS 7218.0.55.001 May 2008).
- In May, the trend estimate for lamb slaughterings fell for the seventh consecutive month to 1.7 million, and was 3 per cent lower than the same time last year (ABS 7218.0.55.001 May 2008).
- In May, the trend estimate for mutton production continued to rise for the eleventh consecutive month to 23,400 tonnes, and was 23 per cent higher than the same period last year (ABS 7218.0.55.001 May 2008).
- In SA, pastures continued to put on growth but limited rainfall and lower temperatures later in the month caused growth to slow. Paddock feed is barely adequate for stock requirements in many areas and grazing pressure needs to be carefully managed with supplementary feeding. In the driest areas paddock feed is critically low and minimal cover is increasing susceptibility to severe wind erosion. Early sown cereal crops are providing good feed for stock in some areas (PIRSA Crop and Pasture Report, June 2008).



For further information on crops and livestock, go to:

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

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

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

Department of Agriculture and Food Western Australia <a href="http://www.agric.wa.gov.au/">http://www.agric.wa.gov.au/</a>

New South Wales Department of Primary Industries <a href="http://www.dpi.nsw.gov.au/aboutus/news/">http://www.dpi.nsw.gov.au/aboutus/news/</a>

Primary Industries and Resources South Australia <a href="http://www.pir.sa.gov.au/grains/cpr/">http://www.pir.sa.gov.au/grains/cpr/</a>

Queensland Department of Primary Industries and Fisheries <a href="http://www.dpi.qld.gov.au/fieldcrops/">http://www.dpi.qld.gov.au/fieldcrops/</a>

The Land Farmonline <u>http://theland.farmonline.com.au/</u>



### 4.0 Climate Outlook

#### 4.1 El Niño & Southern Oscillation Index

On 2 July 2008 the Bureau of Meteorology reported that all El Nino - Southern Oscillation (ENSO) indicators were neutral. These conditions are now firmly established in the tropical Pacific. Sea surface temperatures are near normal across the entire Pacific Basin, including close to the dateline, where the last remnants of the La Niña had persisted. The trade winds have moderated and cloudiness near the dateline has been near-normal. The 30-day SOI has steadily climbed to a value of + 4 (at 30 June).

Computer model predictions suggest that neutral conditions are likely to continue for the remainder of 2008. There is still a small chance of an El Niño development in 2008, as events have been known to evolve later in the year. Some warming for the coming season is predicted by most models. Development of a La Niña is not predicted.

The positive phase of the Indian Ocean Dipole (IOD) continues, but has weakened considerably since its peak in early June. Models forecast that the IOD will moderate further throughout the rest of the year. A positive IOD is known to increase the chance of below normal winter-spring rainfall in south eastern Australia, so this signal will be closely monitored.

#### 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/temperatures 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. For further information on this rainfall outlook, go to <a href="http://www.bom.gov.au/climate/ahead/rain\_ahead.shtml">http://www.bom.gov.au/climate/ahead/rain\_ahead.shtml</a>.



# Chance of Exceeding the Median Rainfall (%)

The national outlook for total rainfall over the next three months (July to September) is for a high chance of drier conditions over a large portion of the country. The chance of exceeding median rainfall over the forecast period is between 25 and 40 per cent over a broad band from central WA, across most of SA and Victoria into western NSW. It should be noted that this is a seasonally drier time for northwest WA. Confidence in these predictions is not high in WA and Victoria so this outlook needs to be used with caution in those areas. Over the rest of the country there is a 40 to 50 per cent chance of exceeding the three-month median rainfall.



#### 4.3 Temperature Outlook

#### 3 Month Temp. Max Outlook (%)



There is a high chance of exceeding median maximum temperatures from July to September over the west and south of the country. The chances are between 60 and 75 per cent for above-average maximum temperatures over most of WA, southern NT, all of SA and Victoria, far south-western Queensland, western NSW and most of Tasmania. The likelihood of exceeding the median is higher in central and western WA (75–85 per cent) and average over the rest of the country (40–60 per cent).



The chance of exceeding median minimum temperatures from July to September is above average for southwestern WA (60–70 per cent) and below average for Queensland (35–45 per cent). For the remainder of the country the chances of minimum temperatures being warmer than normal are about the same as the chances of being cooler.

The pattern of seasonal maximum temperature odds across Australia is a result of the combined effects of above average temperatures in the Indian Ocean off the west coast of WA, and a warming trend in the Pacific. The Indian Ocean signal dominates the outlook.

For further information on the Bureau of Meteorology seasonal outlooks go to <a href="http://www.bom.gov.au/climate/ahead/">http://www.bom.gov.au/climate/ahead/</a>



#### 3 Month Temp. Min Outlook (%)