



Australian Government  
Australian Bureau of Agricultural and  
Resource Economics and Sciences

# Australian climate and agricultural monthly update

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January 2011



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## Key issues

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Heavy rainfall has delayed the winter grain harvest and downgraded grain quality in the eastern states. Flooding in parts of central and southern Queensland, New South Wales, Victoria and north-west Western Australia resulted in damage to crops, livestock losses and damage to infrastructure in some areas. The extent of the damage is unknown but reports suggest that producers not directly affected by flooding will benefit from the rainfall. Rainfall over south-west Western Australia in December 2010 was too late to assist winter crops, but should improve pasture growth. The current La Niña event has continued in the Pacific Ocean and is expected to persist into autumn 2011. The seasonal outlook for January to March 2011 favours wetter conditions for eastern and western Australia. The outlook for the summer cropping season is partly dependent on drier conditions enabling producers to sow crops.

## Summary

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The second half of 2010 was Australia's wettest on record, with La Niña bringing heavy rain and easing the drought but causing widespread flooding. December 2010 was the second wettest December on record for the country as a whole, and the wettest December on record for Queensland. Upper and lower layer soil moisture increased in most areas. Daytime temperatures and night-time temperatures were generally below average across the country.

Inflows to the Murray–Darling Basin (MDB) for December 2010 remained above the long-term average and water storage levels across the Basin increased further during December 2010. The MDB recorded its wettest year on record in 2010, ending a record sequence of below average rainfall years extending back to 2001.

High rainfall in December 2010 over parts of central and southern Queensland, New South Wales, Victoria and north-west Western Australia resulted in flooding, with damage to crops, livestock losses and damage to infrastructure in some areas. The extent of the damage is unknown but reports suggest that producers not directly affected by the flooding will generally benefit from improved soil moisture, pasture growth and water availability.

Winter crop production in some of the eastern states is expected to achieve record yields, but wet conditions during December 2010 delayed the harvest of winter crops and reduced grain quality in many areas.

At least average rainfall over south-west Western Australia in December 2010 was too late to assist crops, but should improve pasture growth. Heavy rainfall in central-western Western Australia should benefit pasture production, despite flooding in some areas.

Livestock prices have increased throughout the year in response to improved seasonal conditions and increased demand, particularly from producers intending to restock.

The current La Niña event remains well established in the Pacific Ocean. It is expected that the current event will persist into autumn 2011. The outlook for the summer cropping season is generally favourable with a large area expected to be planted, although this is dependent on drier conditions. The seasonal outlook for January to March 2011 favours wetter conditions for parts of eastern and western Australia and drier conditions for parts of central Australia.

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# 1. Climate

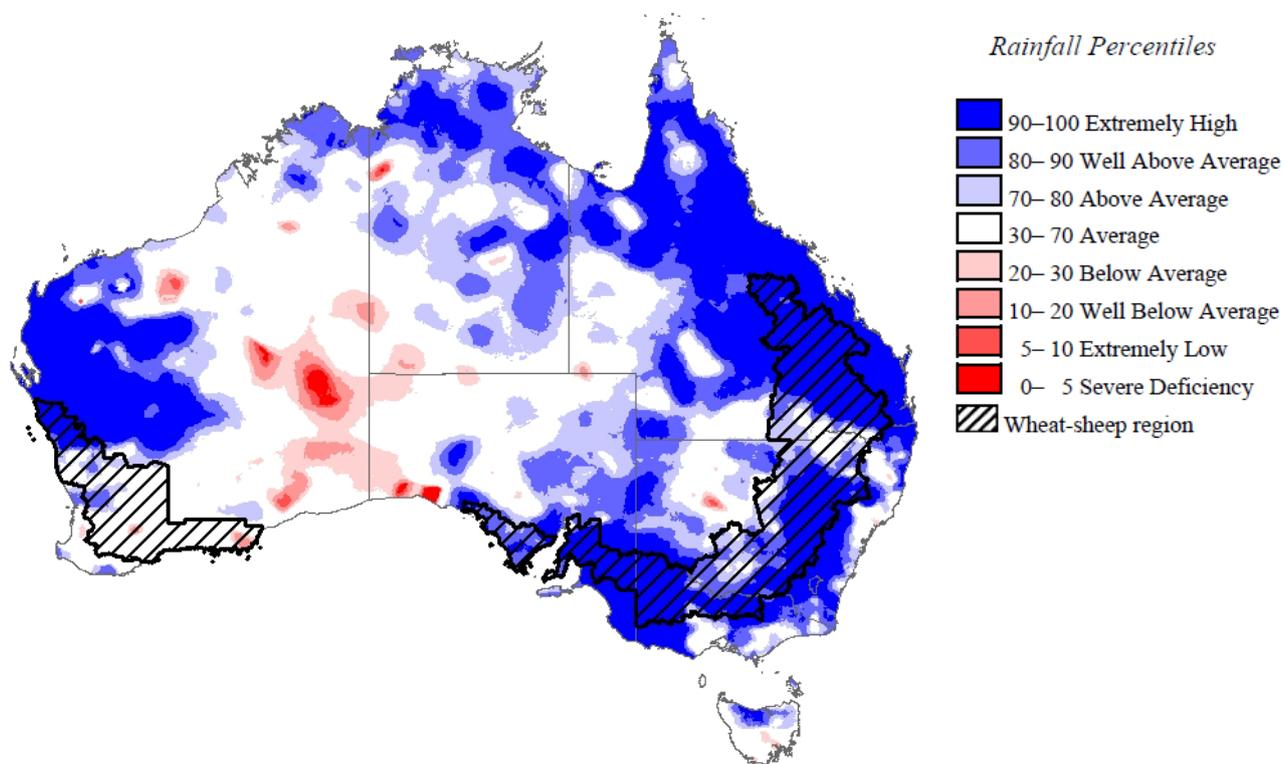
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## 1.1 Rainfall

### Rainfall over the last month (December 2010)

December 2010 was very wet across large parts of Australia, with Queensland recording its wettest December on record, Victoria recording its fifth wettest December on record and New South Wales recording its eighth wettest December on record. Parts of north-west Western Australia also received record-breaking rainfall. Extremely high rainfall over parts of southern and central Queensland, New South Wales, Victoria and north-west Western Australia led to widespread flooding. Australia as a whole recorded its second wettest December on record.

Widespread rainfall over eastern Australia during December 2010 maintained generally favourable conditions for pasture production, but excess moisture in eastern cropping regions has resulted in some downgrades to grain quality. In south-west Western Australia, at least average rainfall during December 2010 was too late to assist moisture-stressed crops, but may assist pastures in this area.

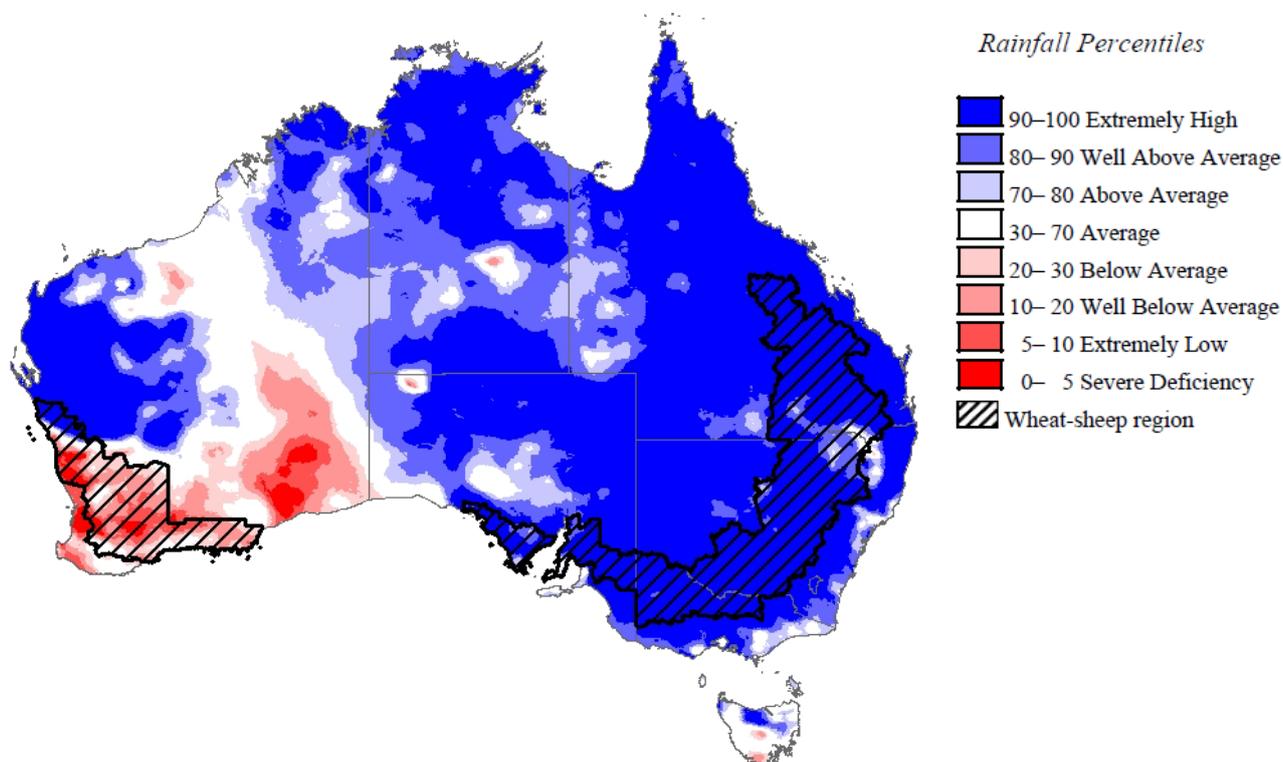


**Rainfall percentiles (December 2010)**

## Rainfall over the last three months

The October to December 2010 period was very wet across most of Australia, with the exception of parts of south-western Australia. Extremely high rainfall was recorded across the eastern two-thirds of the continent and in areas of Western Australia.

In the south-west of Western Australia, short and long-term rainfall deficiencies remain despite at least average rainfall in December 2010.



**Rainfall percentiles (October to December 2010)**

## Rainfall during 2010

The year of 2010 was Australia's third wettest year on record. The second half of the year was Australia's wettest on record, with La Niña bringing heavy rain and easing the drought but causing widespread flooding.

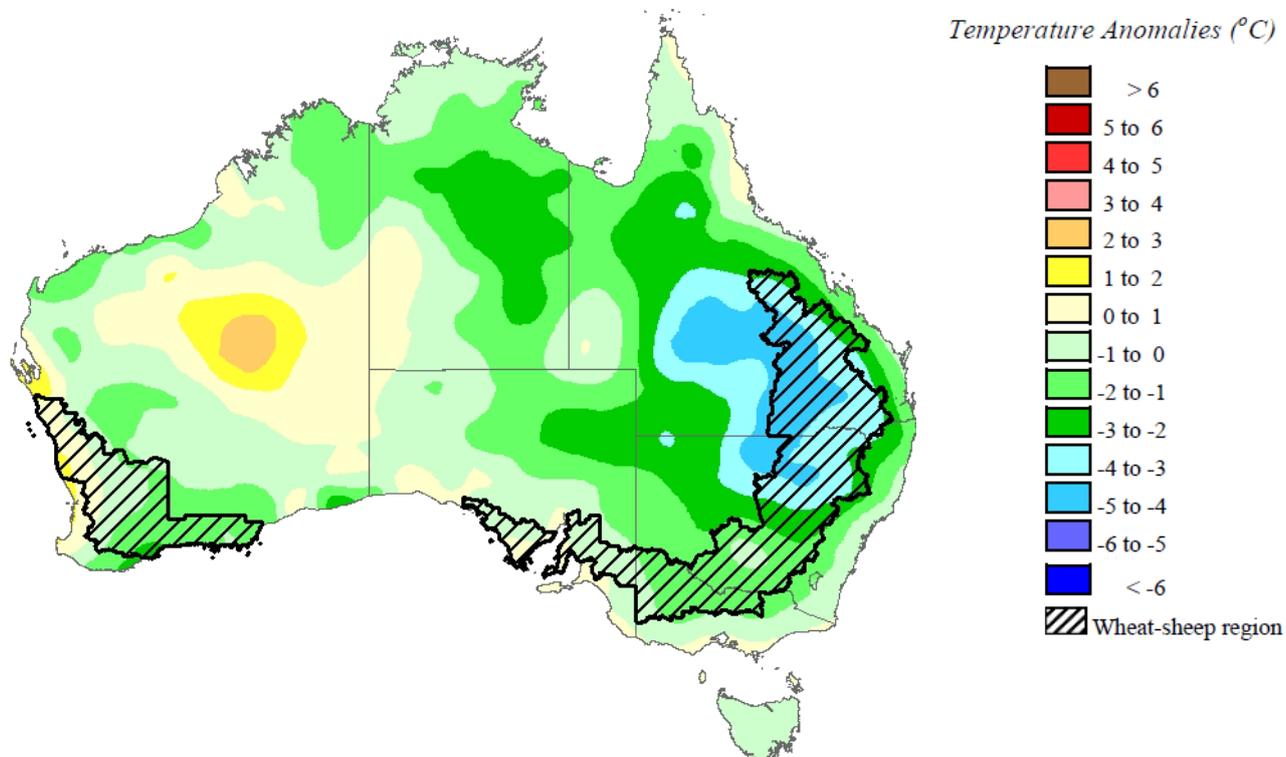
The year was Australia's coolest year since 2001, reflecting the wetter conditions, although the decade from 2001 to 2010 was Australia's warmest on record. Long-term rainfall deficiencies remain in south-west Western Australia.

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/about-rain-maps.shtml>.

## 1.2 Temperature

### Mean maximum temperature

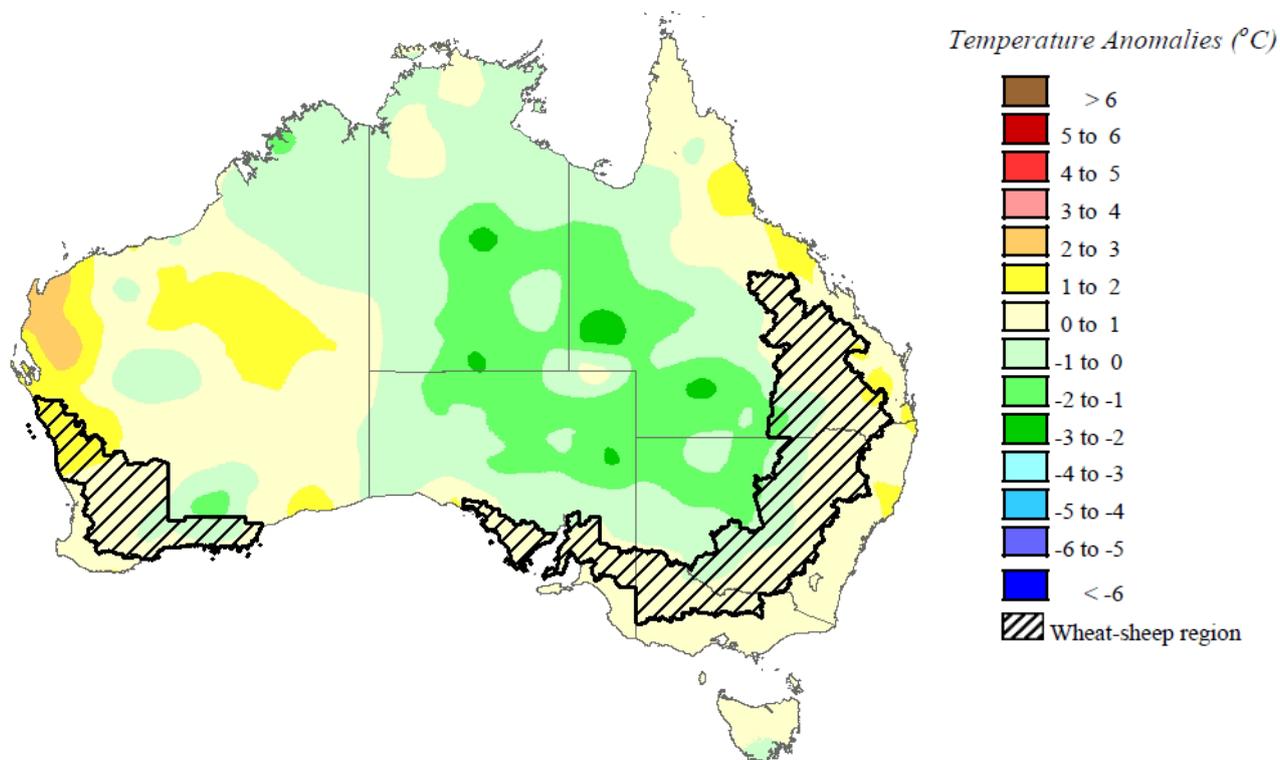
The mean maximum temperature for Australia during December 2010 was well below the long-term December average across most of the continent. Maximum anomalies of 2 to 5° C below average were recorded across large parts of eastern, northern and central Australia.



Monthly mean maximum temperature anomalies  
(December 2010)

## Mean minimum temperature

Mean minimum temperatures for much of Australia during December 2010 were close to the long-term December average. Parts of Western Australia recorded minimum temperatures up to 3° C above the long-term December average and parts of inland Australia recorded minimum temperatures up to 3° C below the long-term December average.



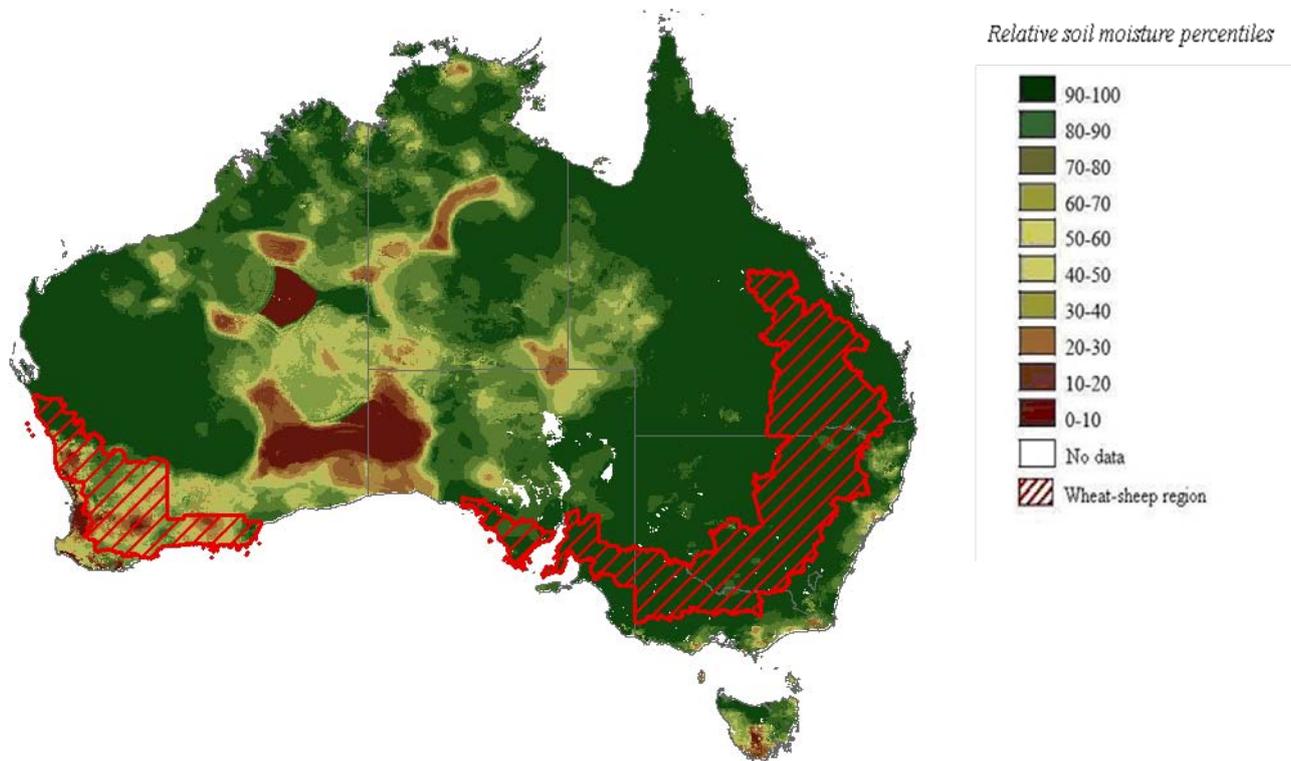
**Monthly mean minimum temperature anomalies  
(December 2010)**

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 with respect to the reference period 1961 to 1990. For further [information on temperature anomalies](http://www.bom.gov.au/climate/austmaps/) go to <http://www.bom.gov.au/climate/austmaps/>.

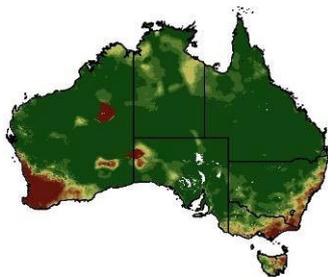
## 1.3 Relative soil moisture

### Upper layer soil moisture

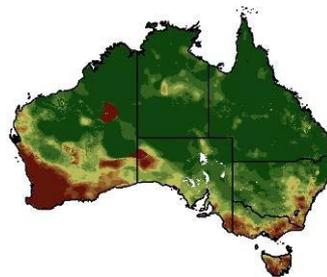
Relative soil moisture in the upper layer of the soil profile was above average across most of Australia reflecting the generally wet conditions during December 2010. Deficiencies in relative soil moisture decreased across most of the continent. In south-west Western Australia, parts of central-western Australia and southern Tasmania, relative upper layer soil moisture remained below average in some areas.



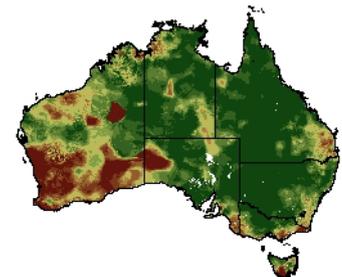
Upper layer soil moisture percentiles  
(December 2010)



September 2010



October 2010

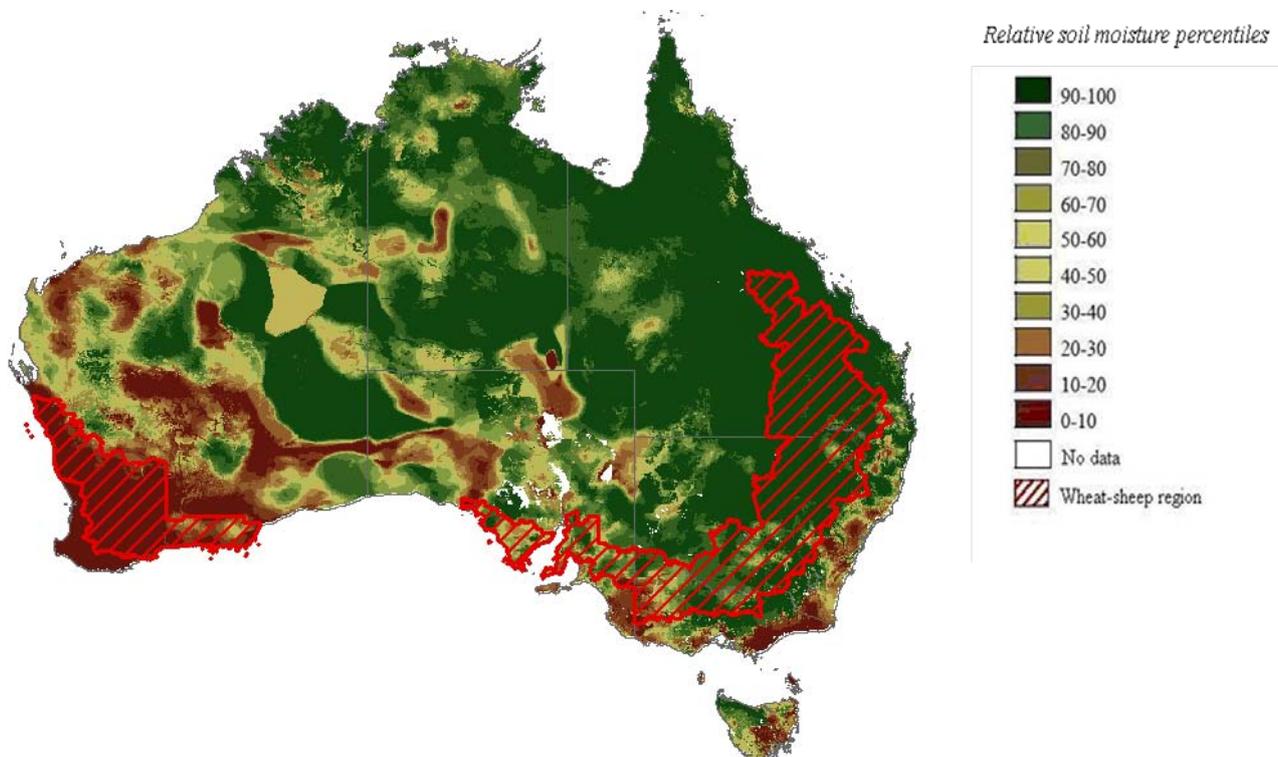


November 2010

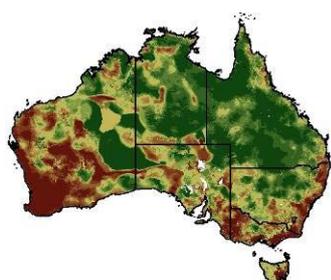
The bulk of plant roots occur in the top 0.3 metres of the soil profile and soil moisture in the upper layer of the soil profile (0.2 metres) is the most appropriate indication of the availability of water, particularly for germinating plants.

## Lower layer soil moisture

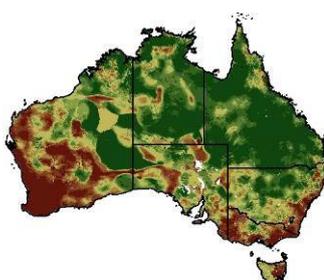
Relative soil moisture levels in the lower layer of the soil profile increased slightly during December 2010 across most of the continent. However, lower layer soil moisture levels remained below average in areas of Western Australia and parts of western Victoria, South Australia, Tasmania and along the New South Wales coast. Lower layer soil moisture is a larger, deeper store that is slower to respond to rainfall and tends to reflect accumulated events over seasonal and longer time scales.



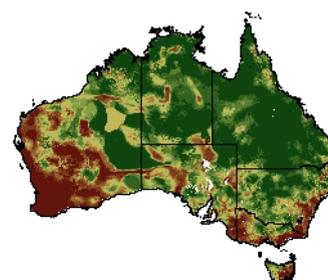
### Lower layer soil moisture percentiles (December 2010)



September 2010



October 2010



November 2010

The above maps show the relative levels of modelled upper (0 to ~0.2 metres) soil moisture and lower (~0.2 to ~1.5 metres) soil moisture at the end of December 2010 and the three preceding months. This data comes from a collaborative project between the Bureau of Meteorology, the CSIRO and the former Bureau of Rural Sciences to develop estimates of soil moisture and other components of the water balance at high resolution across Australia. These maps show soil moisture estimates relative to the long-term average with respect to the reference period 1961 to 1990.

For further [information on relative soil moisture](http://www.daff.gov.au/brs/climate-impact/awap) go to <http://www.daff.gov.au/brs/climate-impact/awap>.

## 1.4 Climate outlook

### El Niño Southern Oscillation (ENSO)

A major La Niña event continues to affect the tropical Pacific Ocean, with all climate indicators of ENSO remaining above La Niña thresholds. It is expected that the current event will persist into autumn 2011.

La Niña periods are usually, but not always, associated with above normal rainfall during the second half of the year across large parts of Australia, most notably eastern and northern regions. Night-time temperatures are historically warmer than average and tropical cyclones occurrence for northern Australia is typically higher than normal during the cyclone season (November–April).

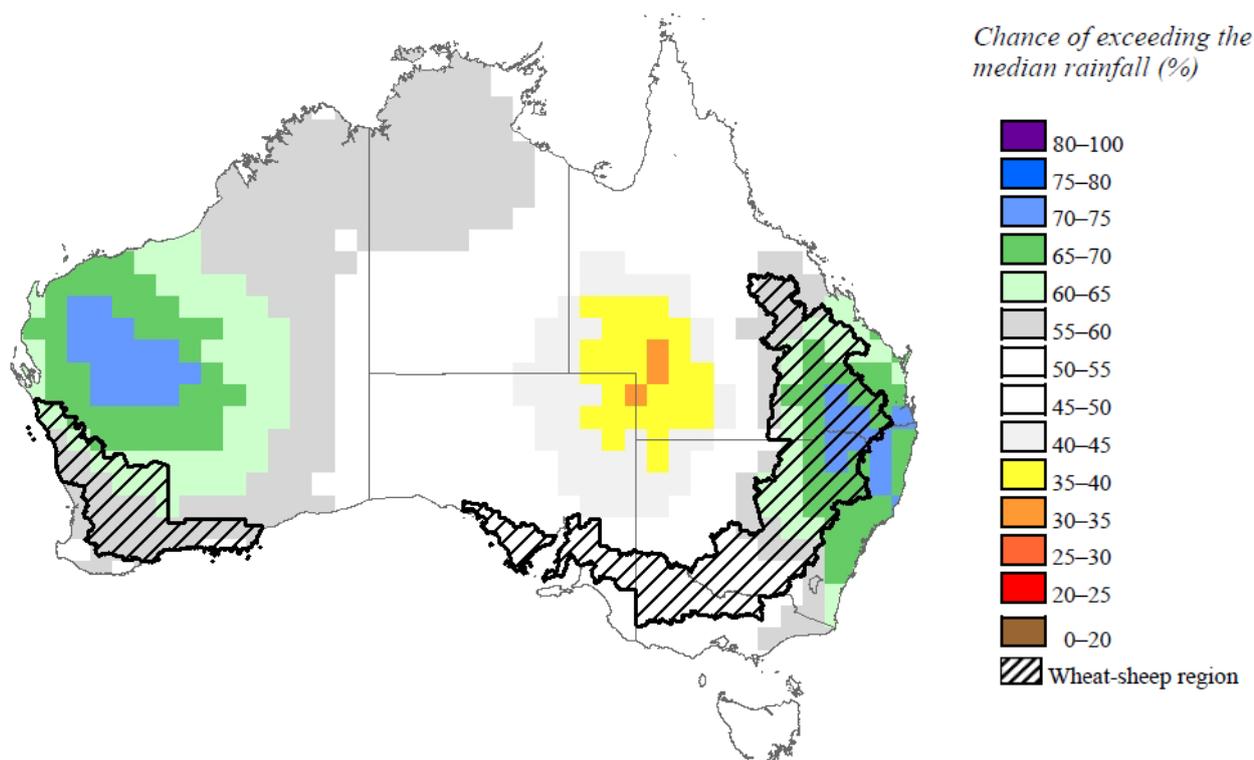
For further information on the [Bureau of Meteorology interpretation of the El Niño–Southern Oscillation](http://www.bom.gov.au/climate/enso/), go to <http://www.bom.gov.au/climate/enso/>.

The current La Niña event is associated with warm conditions in the Indian Ocean and cool conditions in the equatorial Pacific Ocean, which are influencing the January to March 2011 rainfall and temperature outlook.

### Rainfall outlook

The seasonal outlook for January to March 2011 favours wetter conditions for eastern and western Australia and drier conditions for parts of central Australia.

The chance of exceeding the median rainfall for January to March 2011 is between 60 and 70 per cent across the eastern half of New South Wales, south-east Queensland and the west of Western Australia.

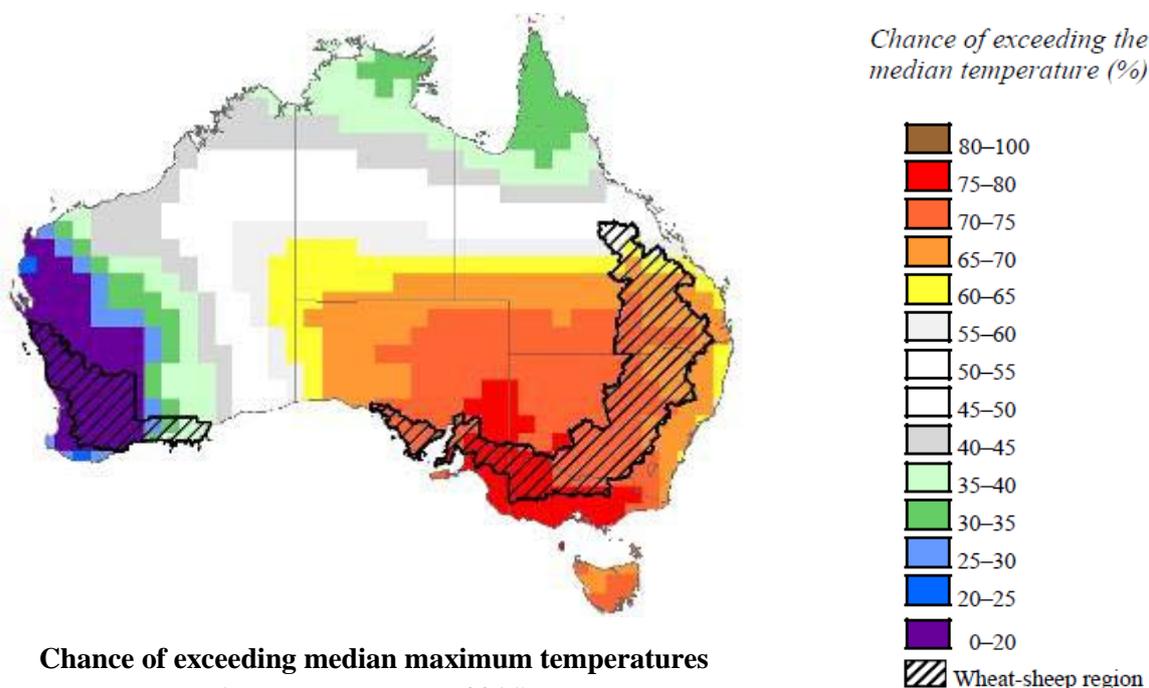


**Chance of exceeding the median rainfall  
(January to March 2011)**

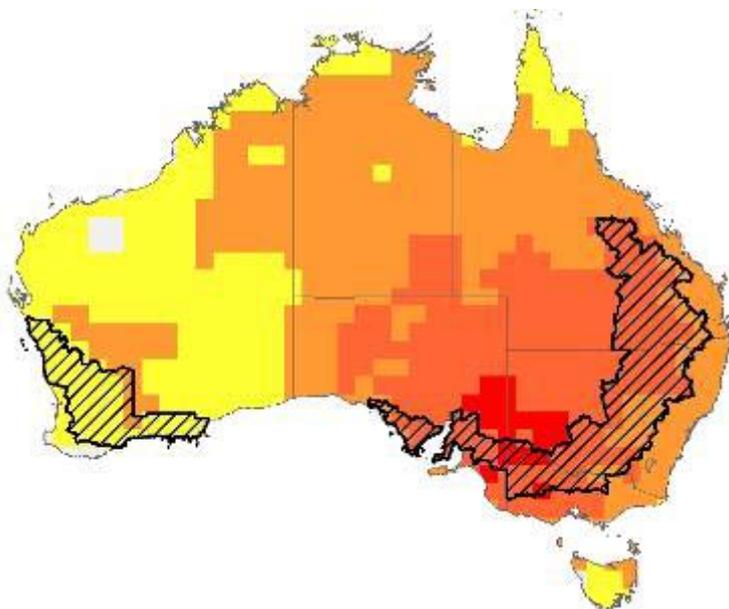
## Temperature outlook

The temperature outlook for January to March 2011 favours warmer than average daytime temperatures over the south-east third of the continent and cooler daytime temperatures for parts of northern and western Australia. Warmer night-time temperatures are favoured across the continent.

Warmer daytime temperatures contribute to increased evaporation. Cooler daytime temperatures may help to maintain high soil moisture levels and benefit pasture and crop growth.



**Chance of exceeding median maximum temperatures  
(January to March 2011)**



**Chance of exceeding median minimum temperatures  
(January to March 2011)**

These outlooks are based on the statistics of chance (the odds) and are not categorical predictions.

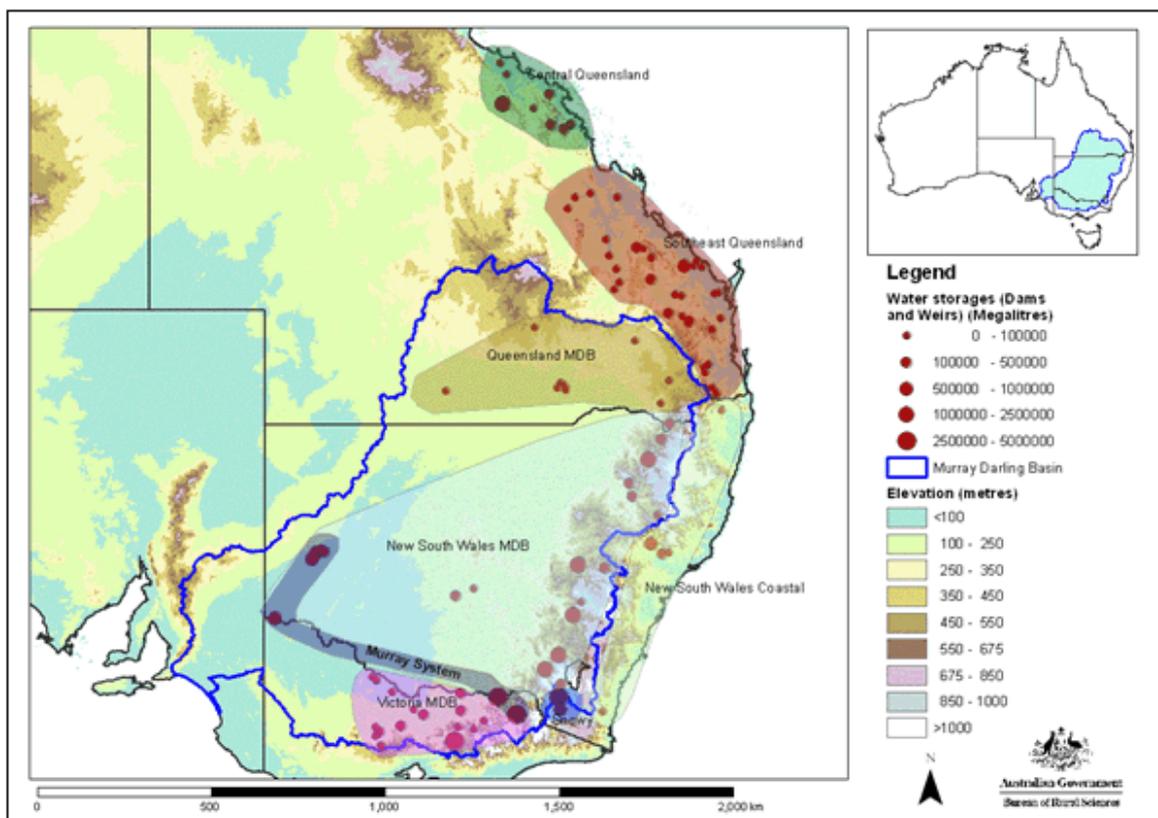
For further [information on these seasonal outlooks and their interpretation](http://www.bom.gov.au/climate/ahead/) go to <http://www.bom.gov.au/climate/ahead/>.

## 2. Water

### 2.1 Water storages

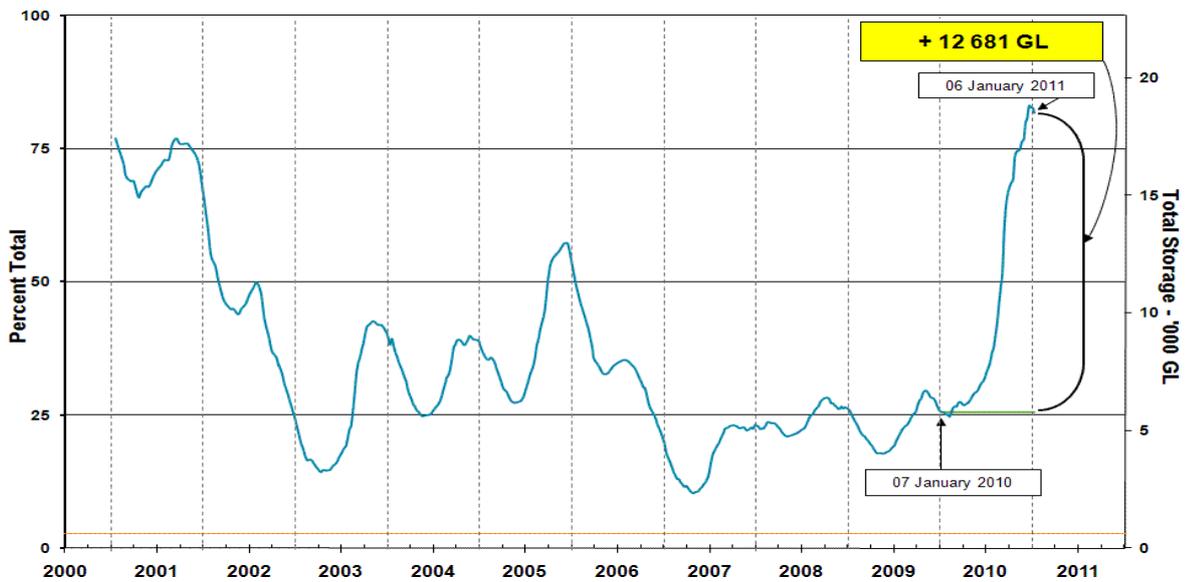
Changes in regional water storage for January 2011 and the previous 12 months are summarised in the table and graphs below (current at 6 January 2011).

Region	Total capacity (GL)	Current volume (GL)	Current volume (%)	Monthly change (GL)	Monthly change (%)	Annual change (GL)
Murray–Darling Basin (MDB)	22 560	18 440	82	+216	+1	+12 681
Snowy Scheme	5 744	2 046	36	-26	0	+38
Murray–Darling Basin Authority (MDBA)	9 352	6 966	72	-261	-3	+4 866
Queensland MDB	185	184	99	-2	-1	+141
Central Queensland	3 154	3 144	100	92	+3	+835
South-east Queensland	3 517	3 489	99	+444	+13	+1 878
New South Wales MDB	13 918	12 303	88	-46	0	+9 326
Coastal New South Wales	1 074	901	84	+18	+2	+118
Victoria MDB	8 488	5 958	70	+267	+3	+3 216

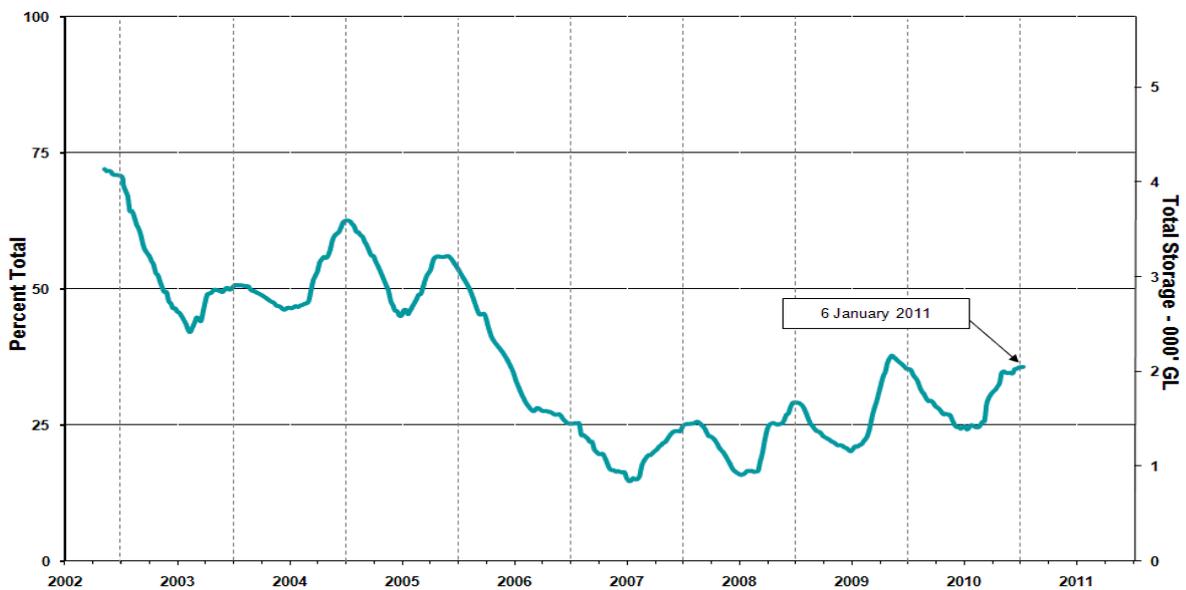


**Water storages in Queensland, New South Wales and Victoria:** The blue line indicates the extent of the Murray–Darling Basin and the shaded areas denote the coverage of the individual reporting regions.

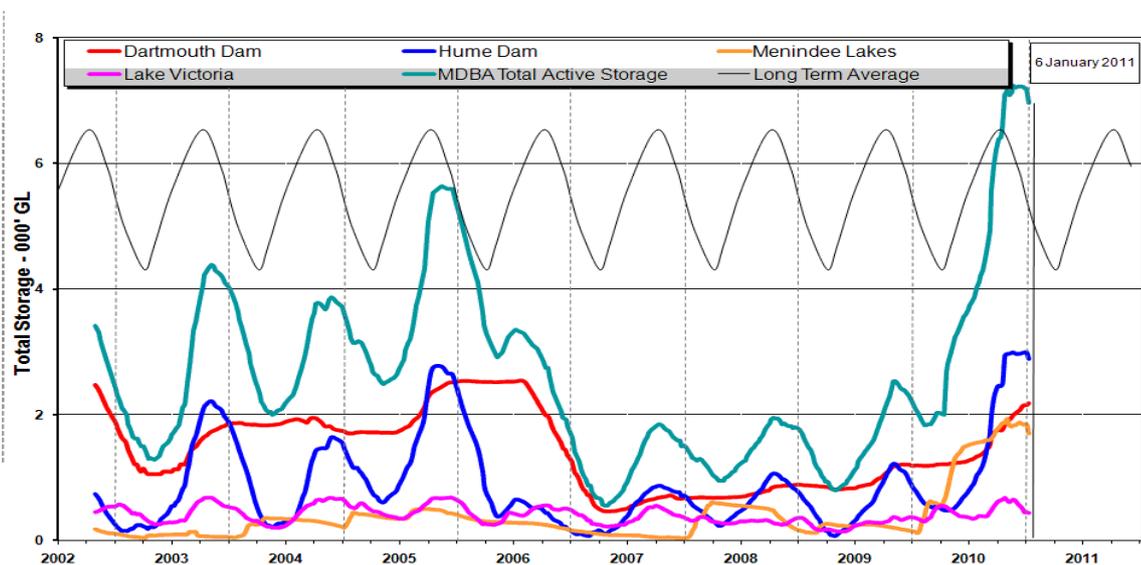
### MDB (New South Wales, Victoria and Queensland)



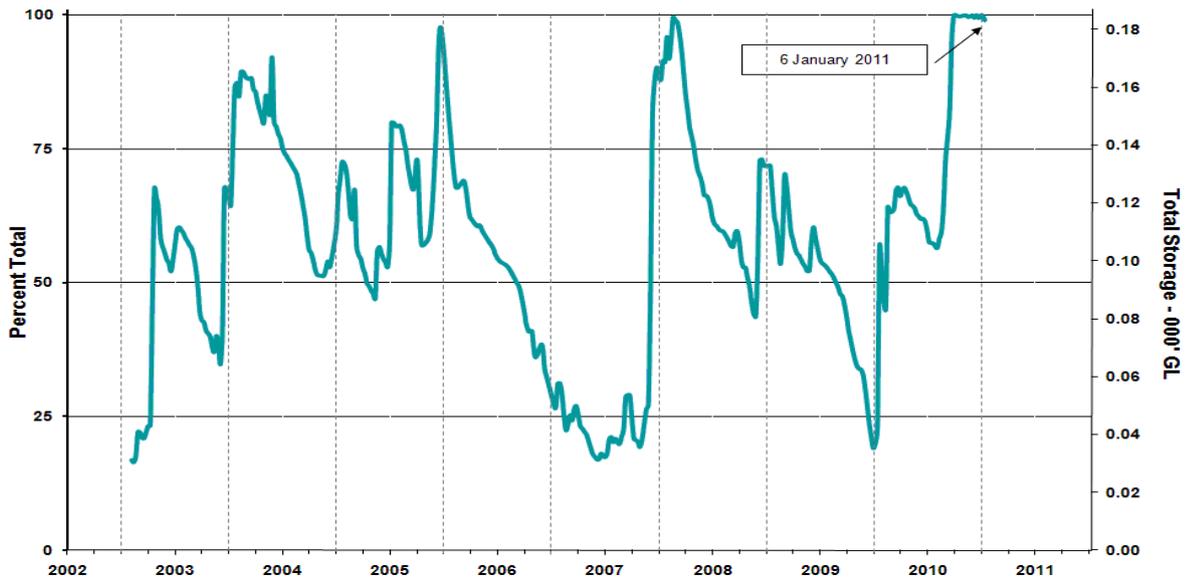
### Snowy Scheme



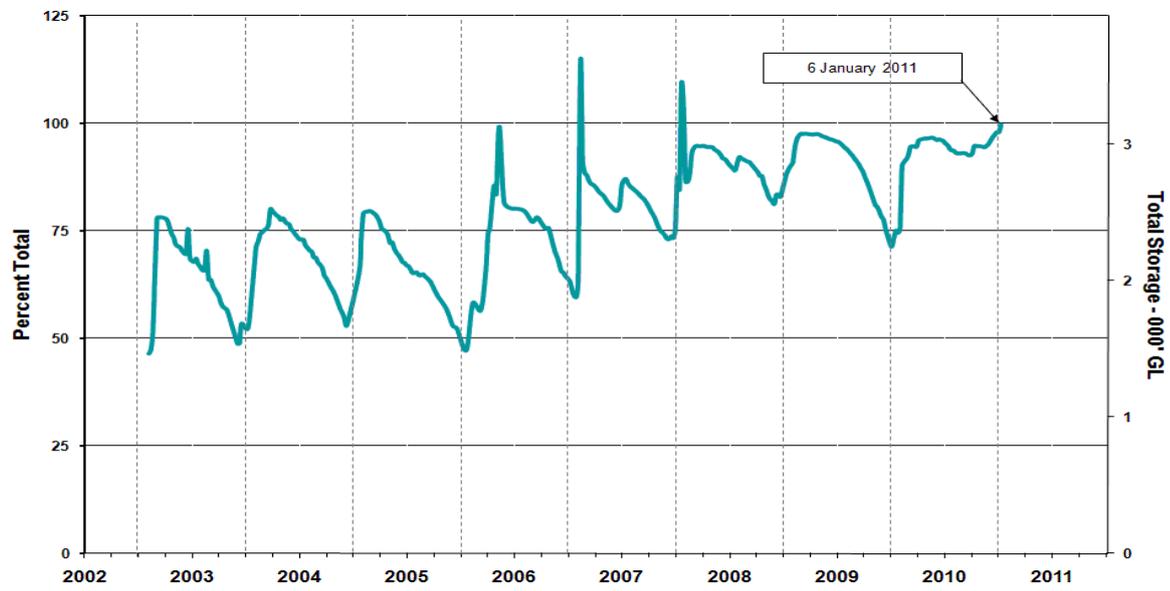
### MDBA – Active storage under the control of the Murray–Darling Basin Authority



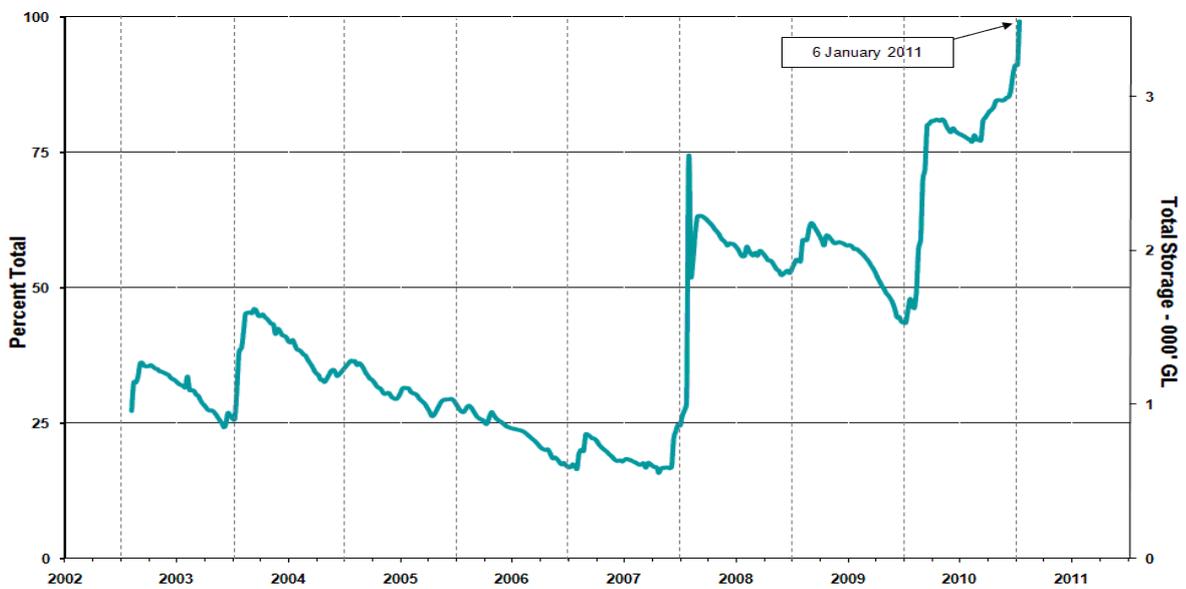
### Queensland MDB



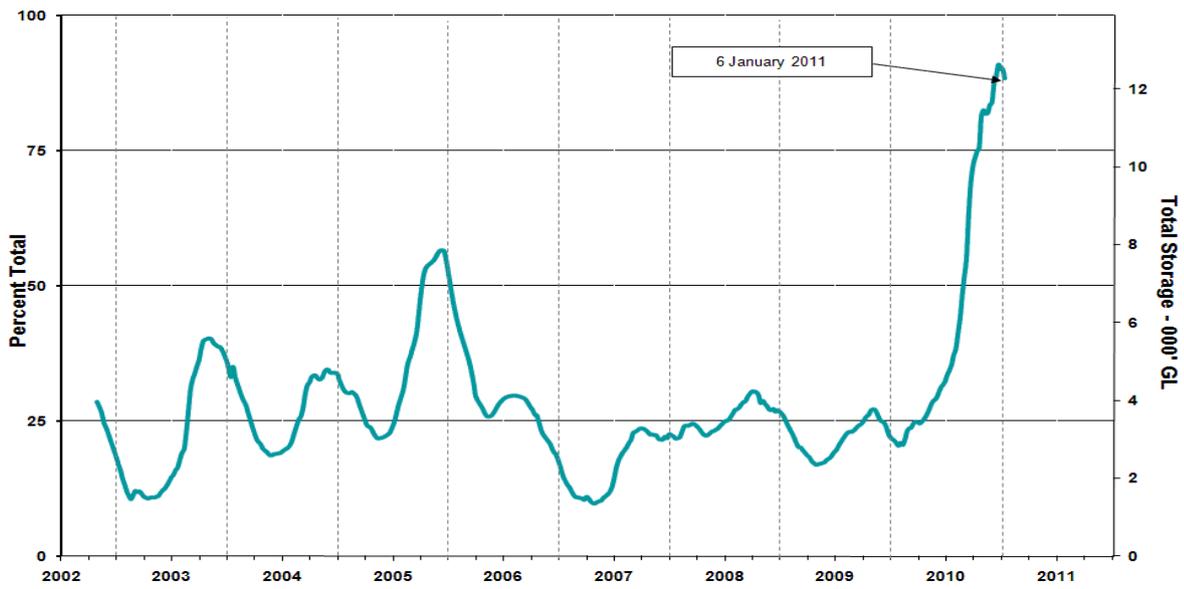
### Central Queensland



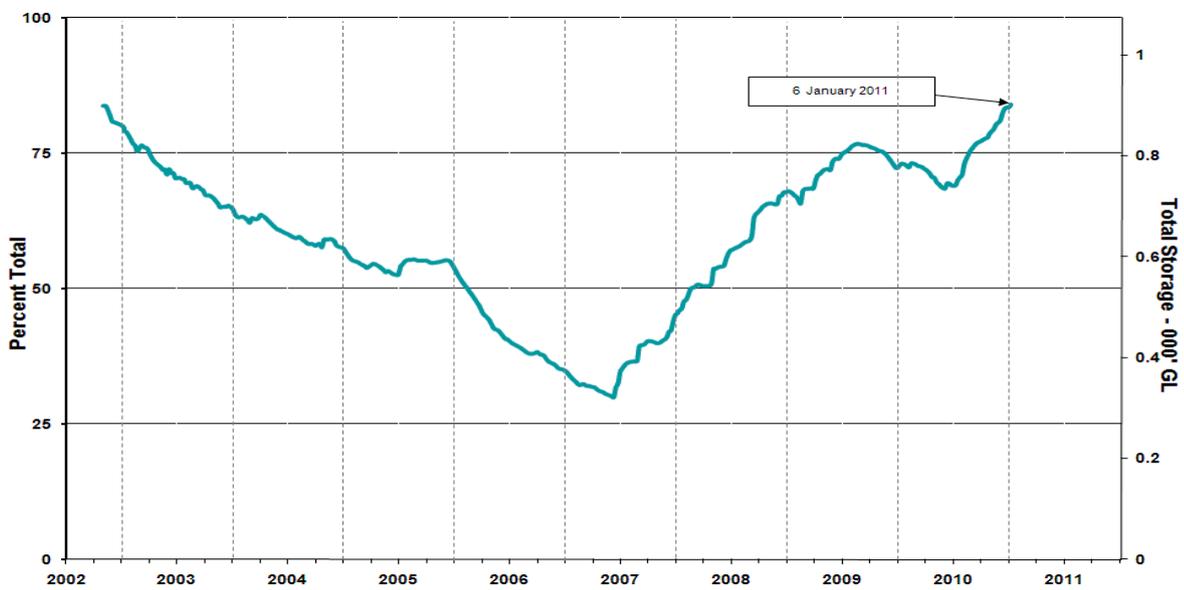
### South-east Queensland



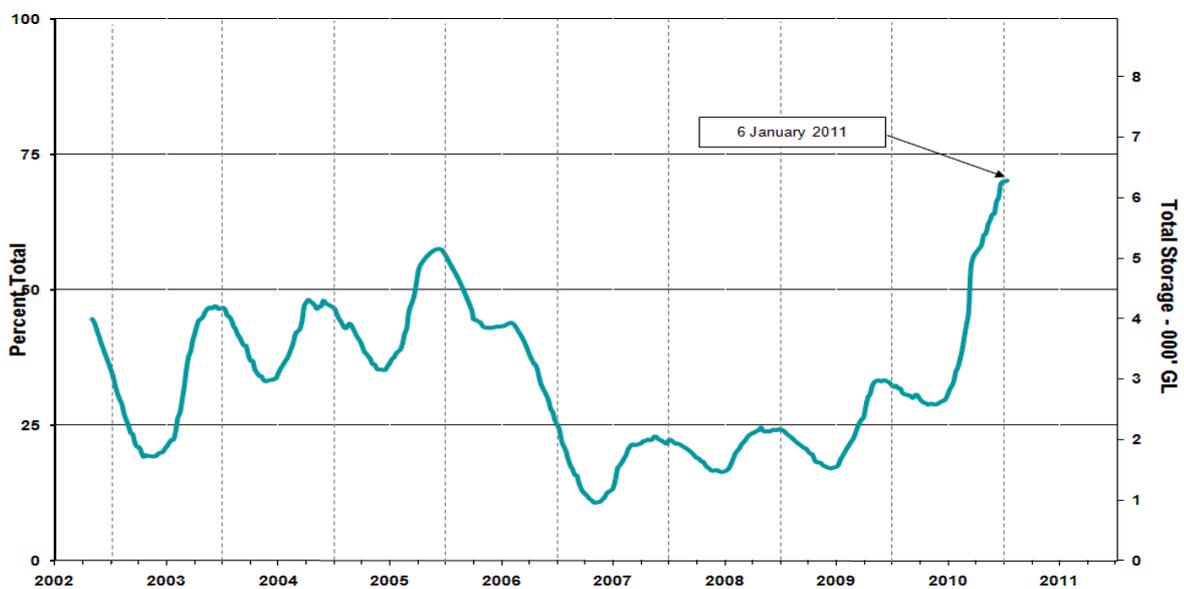
### New South Wales MDB



### Coastal New South Wales



### Victoria MDB



For further information on water storages, go to:

- Bureau of Meteorology Water Storages:  
<http://water.bom.gov.au/waterstorage/awris/index.html>
- Snowy Hydro Water Resources:  
<http://www.snowyhydro.com.au/lakeLevels.asp?pageID=360&parentID=6>
- Sun Water Queensland:  
<http://www.sunwater.com.au/pdf/water/CurrentStorageSummary.pdf>
- New South Wales Water Information:  
<http://www.waterinfo.nsw.gov.au/>
- Goulburn-Murray Water (Northern Victoria):  
<http://www.g-mwater.com.au/water-resources/storage-levels/>
- Murray–Darling Basin Authority:  
<http://www.mdba.gov.au/>

## 2.2 Water allocations

The water allocations and changes over the past month for all licence holders in New South Wales, Victoria and South Australia water systems are summarised in the following table.

	Closing allocations 2009–10 (%)	Increases from 1 December 2010 (%)	Allocations at 1 January 2011 (%)
<b>NSW Murray Valley</b>			
High security	97	3	100
General security	27	36	100
<b>NSW Murrumbidgee Valley</b>			
High security	95	5	100
General security	27	41	100
<b>NSW Lower Darling</b>			
High security	100		100
General security	100		100
<b>NSW Macquarie Valley</b>			
High security	100		100
General security	0		100
<b>NSW Hunter Valley</b>			
High security	100		100
General security	100		100
<b>NSW Lachlan Valley</b>			
High security	10		100
General security	0	72	95
<b>NSW Border Rivers</b>			
High security	100		100
General security	4.4		100
<b>NSW Peel Valley</b>			
High security	100		100
General security	100	18	100
<b>Victoria Murray Valley</b>			
High reliability	100		100
<b>Victoria Goulburn</b>			
High reliability	71		100
<b>Victoria Campaspe</b>			
High reliability	0		100
<b>Victoria Loddon</b>			
High reliability	3		100
<b>Victoria Bullarook</b>			
High reliability	19		100
<b>Victoria Broken</b>			
High reliability	17		100
<b>South Australia Murray Valley</b>			
High security	62		67

For further information on water announcements, go to:

- New South Wales Office of Water, Department of Environment, Climate Change and Water:  
<http://www.water.nsw.gov.au/Home/default.aspx>
- Media releases:  
<http://www.water.nsw.gov.au/About-Us/Media-Releases/default.aspx>,
- Water allocations:  
<http://www.water.nsw.gov.au/Water-Management/Water-availability/Available-water-determinations/default.aspx> and <http://www.water.nsw.gov.au/Water-management/Water-availability/Water-allocations/water-allocations-summary/default.aspx>
- Available water determinations register:  
<http://www.wix.nsw.gov.au/wma/DeterminationSearch.jsp?selectedRegister=Determination>
- Goulburn-Murray Water:  
<http://www.g-mwater.com.au/>
- Media releases:  
<http://www.g-mwater.com.au/news/media-releases/default.asp>
- South Australian Department of Water:  
<http://www.waterforgood.sa.gov.au/>
- Murray–Darling Basin Authority:  
<http://www.mdba.gov.au/>

## 3. Production

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### 3.1 Winter crops

#### Australia

While winter crop production in some of the eastern states is expected to achieve record or near-record yields, continuing wet conditions have downgraded quality in many areas. Continued heavy rainfall during December 2010 delayed the harvest in many areas.

In Western Australia, winter crop yields are generally below average as a result of continued dry conditions but the quality of the grain is high in some areas.

#### New South Wales

Harvest progress is underway across New South Wales with progress more advanced in the north. The wet conditions during December 2010 delayed the harvest in some areas and resulted in downgrades to grain quality. However, high yields are expected and receival records have reportedly been broken at a number of sites in southern New South Wales. Quality is reportedly better than expected in some areas.

#### Queensland

The recent heavy rainfall and flooding has resulted in uncertainty about the progress of the Queensland winter crop. With the harvest in central Queensland complete, harvest of the remaining crops in southern Queensland will be dependent on weather conditions over the next few weeks.

#### South Australia

Continuing rain into mid-December 2010 resulted in delays to the harvest in South Australia. Some regions report completion of the harvest while in other areas the harvest is only partially complete. Grain quality is reported to be less affected by heavy December 2010 rainfall than in the eastern states, with the exception of much of the eastern cropping regions. Record or near-record yields have been reported.

#### Victoria

In Victoria harvesting is continuing in all of the major cropping regions after delays caused by untimely December rainfall. Yields have been reported to be record or near record, although there have been significant downgrades to quality in some areas.

#### Western Australia

In Western Australia, harvesting was complete in mid-December 2010. Yields across the state were generally below average with reports of below average yields in the north, lowest on record yields in the centre of the grain belt and slightly below average yields in the southern grains belt around Esperance. In some areas, good grain quality and improved grain prices will offset lower than average yields.

### 3.2 Summer crops

Summer crops in Queensland and northern New South Wales are expected to be affected by the ongoing wet conditions. Drier conditions are needed to enable producers to increase plantings of grain sorghum. The extent of flood damage to the 2010–11 cotton crop is unknown.

### 3.3 Livestock

Livestock prices have increased throughout the year in response to improved seasonal conditions and an increased demand, particularly from producers intending to restock.

Flooding in parts of Queensland has resulted in livestock losses in some areas, requirements for fodder drops, and alternative agistment requirements for some herds until flood levels lower. Flooding has also affected the transportation network and this has short-term implications, including for the ability of graziers to sell livestock and meatworks processing ability.

Declining pasture availability and dam water storages in parts of Western Australia, particularly in the south, have forced producers to sell stock. The lighter condition of livestock at market in parts of Western Australia reflect the poorer seasonal conditions. These stock continue to be transported to the eastern states where seasonal conditions are better.

The currently favourable soil moisture levels and forecast rain for the January to March 2011 period are likely to maintain pasture quality in grazing regions of Australia, particularly for the northern summer dominant production areas.

## **Beef cattle**

The Eastern Young Cattle Indicator (EYCI) finished the year at 390 cents per kilogram (¢/kg) carcass weight (cwt), 82.25 ¢/kg cwt higher than the start of the year.

The improved seasonal conditions during the year have encouraged producers to hold onto livestock, particularly in the eastern states. Total Australian beef and veal production for the January to October 2010 period was 1.78 million tonnes cwt which is 0.3 per cent lower than the corresponding period in 2009. Due to the improved seasonal conditions during 2010, producers have been increasing breeding herds. Total adult cattle slaughter for the January to October 2010 period declined by 3 per cent year-on-year. Female cattle slaughter was 5 per cent lower during the January to October 2010 period year-on-year. The exception was in Western Australia where dry seasonal conditions have influenced the increased turnoff of cattle. Female cattle slaughter in Western Australia was 9 per cent higher for the January to October 2010 period, compared to the corresponding period of 2009, and 15 per cent higher than the 5 year average.

Australian exporters have reportedly received steady enquiries from Korean buyers but constrained Australian supply has limited export volumes. According to Meat & Livestock Australia (MLA), between 1 and 13 December 2010, Australian beef exports to the Republic of Korea were 3968 tonnes shipped weight (swt), with chilled beef making up 25 per cent.

Live cattle export numbers between January and October 2010 were 3 per cent below the 2009 numbers for the same period, at 731 100 head of cattle. Most of the decline stemmed from a 24 per cent decline in exports to Indonesia (at 463 459 head), following the enforcement of weight and permit restrictions in that market.

## **Sheep and lambs**

National lamb throughput at MLA's reported physical markets during December 2010 to date (as at 17 December 2010) declined by 17 per cent year-on-year. Lambs destined for slaughter accounted for 76 per cent of yardings, while restocker purchases represented 14 per cent.

MLA reports that the improved seasonal conditions across most regions in the eastern states has meant fewer store lambs have been sold. Feeder operators have also been quieter in comparison to 2009, purchasing 47 per cent fewer lambs, with most buying activity recorded in Western Australian markets.

The proportion of lambs to slaughter in December 2010 increased by 7 per cent compared to December 2009, following the favourable seasonal conditions in 2010 and strong prices. However, turnoff is lower than it otherwise would be, with higher rainfall discouraging producers from turning off lambs, leading to a 27 per cent drop in processor purchases year-on-year.

MLA data indicate that the national mutton indicator for 2010 to date (as at 17 December 2010) was 74 per cent above the five-year average and 47 per cent higher than 2009. Lamb prices for 2010 to date (as at

17 December 2010) were 12 to 24 per cent above 2009, with restocker lambs having the largest increases. Lamb prices for 2010 were 28 to 42 per cent higher than the five-year averages.

Meat & Livestock Australia – Market News

<http://www.mla.com.au/Prices-and-markets/Market-news/Higher-weights-boost-beef-production-in-October>

<http://www.mla.com.au/Prices-and-markets/Market-news/Strong-lamb-prices-during-2010>

<http://www.mla.com.au/Prices-and-markets/Market-news/WA-weekly-cattle-summary171210>

<http://www.mla.com.au/Prices-and-markets/Market-news/Korean-wholesale-market-slow>

<http://www.mla.com.au/Prices-and-markets/Market-news/MLA-lamb-survey-points-to-a-flock-rebuild>

<http://www.mla.com.au/Prices-and-markets/Market-news/December-lamb-yardings-shrink>

<http://www.mla.com.au/Prices-and-markets/Market-news/Live-cattle-exports-surge-in-October>

<http://www.mla.com.au/Prices-and-markets/Market-news/Cattle-and-sheep-market-alertb221210>

Bureau of Meteorology, January to March 2011 Seasonal Rainfall Outlook

[www.bom.gov.au/climate/ahead/rain\\_ahead.shtml](http://www.bom.gov.au/climate/ahead/rain_ahead.shtml)

Bureau of Meteorology, January to March 2011 Seasonal Temperature Outlook

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