

## NSW Seasonal Conditions Report - May 2013

### Highlights

- Wetter conditions likely for northern & eastern NSW, normal to drier conditions in the south west.
- Cooler daytime temperatures & warmer night time temperatures likely for the north & north east. Warmer daytime temperatures likely in the south west.
- Limited rainfall in inland NSW during April. Relative monthly rainfall well below average or worse west of the divide, average along the coast. Yearly relative rainfall well below average in western & central NSW, with severe deficiencies in many areas.
- Relative April pasture growth generally well below average in central and western NSW & average to above average along the coast & eastern tablelands.
- Modelled topsoil moisture levels are extremely low over most of central & western NSW.
- Conditions have continued to deteriorate across central and western NSW. It is important that farmers have a clear plan & an understanding of their options. Considerable resources are available to assist in management. Details at

<http://www.dpi.nsw.gov.au/agriculture/emergency/drought/managing>

### 1. Summary

The outlook for NSW between May and July indicates that wetter conditions are likely for northern and eastern NSW. Near normal to slightly drier conditions are likely for far western and southern NSW.

Cooler than normal daytime temperatures are likely over this period for northern and north eastern NSW. For southern and south western NSW, warmer than normal daytime temperatures are likely. Near normal temperatures are likely in a band running from the far north west to the far south east. Warmer than normal minimum temperatures are likely for the central and northern areas of the State, and normal to cooler than normal in the south and south west.

Conditions deteriorated during the month over most of the Western, Darling, North West, Central West, Central North, Riverina and Lachlan LHPA districts, and also in areas of the Hume, Tablelands and New England. Severe rainfall deficiencies have developed in most of these districts over the last 6-12 months.

Reports from LHPA Rangers and DPI staff indicate that over much of inland NSW, conditions for winter crop sowing and for crop

and pasture growth are very poor and continuing to deteriorate. Some areas still have reasonable dry feed, but the nutritional value of this is low. While stock condition is stable in more favoured areas, this is a result of supplementary feeding and reasonable dry feed. In many areas, stock condition is declining and an increasing number of stock are being sold despite reduced prices. Stock water supplies are also declining across most of central and western NSW.

Rainfall across during April was limited west of the divide, with a large area of far western, central and north western NSW receiving no rainfall. Areas that did receive rainfall were generally limited to 1-10 mm, increasing up to 25 mm nearer to the tablelands. Coastal areas generally received between 50-200 mm with some heavy falls occurring due to a coastal low pressure system.

Relative to historical records, rainfall for April was well below average to extremely low west of the divide and along the edge of the tablelands. Relative rainfall over the coast and eastern tablelands was generally average. Relative rainfall for the last six months was well below average or worse for much of central NSW and the southern Riverina, and for most of the centre and west of the State over a 12 month period. Conditions on the coast were generally average.

Topsoil moisture declined to very low levels across inland NSW during the month, delaying winter crop sowing and forcing many farmers to sow dry. The increases in topsoil moisture resulting from the late February/early March rainfall have largely disappeared.

Modelled pasture growth during April was variable, but generally extremely low across most of NSW. Modelled biomass levels were less than 1,000 kg/ha, with less than 500 kg/ha in central, far south west and south east NSW. Relative pasture growth for April was variable, but generally well below average for central areas of the State, and parts of the tablelands. Over the last 12 months, relative growth has been very low. Modelled relative biomass levels across central NSW were variable, with large areas being well below average. In many areas, supplementary feeding has become essential to maintain stock condition, particularly due to declines in standing feed and pasture growth.

## 2. Seasonal outlook

Seasonal outlook information is sourced from Bureau of Meteorology operational and experimental forecasts. The Bureau will be updating the model used for their seasonal climatic outlook from a statistical to the new POAMA dynamical (physics based) model from 22<sup>nd</sup> May. Full details on POAMA can be obtained at <http://poama.bom.gov.au/>. Information from both models is included as there are some differences between them.

### 2.1 Rainfall outlook (statistical model)

- Wetter conditions are possible for northern and eastern NSW between May and July.
- Between May and July, the chance of exceeding median rainfall for northern and eastern NSW is between 55-80%. Probabilities are 45-55% for south, south western and far western NSW.
- The outlook confidence (skill) for this forecast is moderately consistent over the north and north east of the State and poorly consistent for the south and south west.
- These percentages mean that for northern and eastern NSW, for every ten years with similar ocean patterns to those currently observed, about six to eight years would be expected to be wetter than average, and about two to four years would be drier.

### 2.2 Temperature outlook (statistical model)

- Cooler than normal daytime temperatures are likely over the three month period to the end of July for northern and north eastern NSW.
- For southern and south western NSW, warmer than normal temperatures are likely.
- Near normal temperatures are likely in a band running from the far north west of NSW to the south and central coast.
- The chance of exceeding the median maximum temperature is between 45% in the north and north east of NSW, and between 55-70% in the south and south west.
- These percentages mean that for north and north eastern NSW, over every ten years about six to seven years will have warmer than average daytime temperatures, and three to four years will be cooler. For southern and south eastern NSW, the probabilities are reversed.
- The outlook confidence (skill) for this forecast is moderately consistent for

southern, central and south eastern NSW, and weakly consistent (low), for the north, north east and central coast.

- Minimum temperatures over the next three months are likely to be warmer than normal in the northern two thirds of the State, and near normal in the south and south west of NSW.
- The probability of exceeding the median minimum temperature is between 45-60% in the south and south west of the State and 60-80% in the central, north and north east of the State.
- Outlook confidence (skill) for this forecast is moderate, being 55-65% (moderately to highly consistent) for the north of the State and being 50-55% (low) in the south west. Outlook confidence for areas of the central west and tablelands is low.

### 2.3 Rainfall outlook (POAMA)

- The dynamical model indicates a somewhat different trend to the statistical model, with a neutral outlook for rainfall over NSW between May and July.
- The chance of exceeding median rainfall according to this model is between 40-60%.
- The outlook confidence (skill) for this forecast is moderate across NSW.

### 2.4 Temperature outlook (POAMA)

- The dynamical model indicates a similar trend to the statistical model, with 60-70% chance of warmer daytime temperatures in southern and south eastern NSW between May and July, and a moderate confidence level.
- Minimum temperatures in NSW between May and July have a 60-80% chance of being above normal, with moderate confidence.

### 2.5 El Niño-Southern Oscillation (ENSO)

- The Pacific Ocean remains in a neutral ENSO state. The Bureau of Meteorology and international climate models indicate this state will continue into winter, although predictions between April and June have lower skill.
- Monthly sea surface temperatures are near average across the NINO 3.4 region of the tropical Pacific. Six of the seven climate models expect NINO 3.4 values to remain between -0.4 to +0.4°C by early spring, within the neutral range.

- The latest Southern Oscillation Index (SOI) 30-day value is -3.6. Values of between -8 and +8 indicate neutral conditions, sustained values above +8 may indicate a La Niña event, and sustained values below -8 may indicate an El Niño event.
- The Indian Ocean Dipole (IOD) is currently neutral, with the latest index value at +0.2°C. Model outlooks suggest it will remain on the cool side of neutral into the winter. Some models suggest a possibility of a negative IOD (below -0.4°C) in spring, which would increase the chances of above normal rainfall.
- A belt of below average to extremely low rainfall extended through the centre of the State and included areas of the Western, Darling, North West, Central West, Lachlan, Riverina, Hume and Tablelands LHPA districts.
- The below average rainfall zone extended from Wanaaring and Enngonia to Cobar, Hillston and then south east to Cootamundra, and east to Walgett then south to Dubbo and Cootamundra. Another area extended along the Murray River from Wentworth to Albury, and north to Balranald, Hay and Narrandera. A smaller area extended north of Broken Hill and Menindee.

### 3. Rainfall

#### 3.1 Relative rainfall

Relative rainfall is calculated by ranking actual rainfall against the same period from every year since 1900.

This means that if the current period has a rank of between 30<sup>th</sup> – 70<sup>th</sup> against all other years, it is regarded as being “average” and the conditions experienced will occur in about 4 out of every 10 years.

##### April

- Relative to historical records, rainfall for April was well below average to extremely low for most of western and central NSW. This includes large areas of Darling, Western, Riverina, North West, Central West, Central North, New England, Tablelands and Hume LHPA districts.
- The far west of the State, the coast, Monaro and parts of the New England and North West slopes received generally average rainfall for the month.

##### February to April (3 months)

- Over the period from February to April, relative rainfall was average over most of the State, above average in the far north west, and above average to extremely high from the central to north coast.
- Below average rainfall occurred in areas of the Darling, Riverina, Central West, Lachlan and New England LHPA districts.

##### November to April (6 months)

- Over the six months to April, relative rainfall was above average or better over north eastern NSW, covering parts of Cumberland, Mid Coast, North Coast, New England and North West LHPA districts.

##### August to April (9 months, BoM)

- Over the 9 month period from August to April, relative rainfall across the State was below average to very much below average across western and central NSW.
- The north coast and mid north coast received above average relative rainfall, with the remainder of eastern NSW receiving mostly average relative rainfall.

##### May to April (12 months)

- Relative rainfall for the last 12 months has been generally well below average to extremely low across most of western and central NSW.
- The Western, Darling, Riverina, Central West and Hume LHPA districts are worst affected, along with the western half of North West and the western edge of Tablelands LHPA districts.
- Areas of below average to well below average relative rainfall also occurred in areas of Central North, South East and New England LHPA districts.
- The eastern side of the tablelands, north west slopes and coastal areas generally had average relative rainfall, with the mid and far north coast having above average to well above average relative rainfall.

#### 3.2 Total rainfall

##### April

- Little rainfall occurred west of the Great Dividing Range during April. Approximately

60% of NSW received no rainfall, with April being the driest on record since 2005.

- Rainfall was near normal along most of the coast, with some above average recordings.
- No rainfall was recorded in Darling LHPA district, and across large areas of Western, Lachlan, Riverina, Central West, Central North and North West LHPA districts. Areas of these LHPA districts that did receive rainfall were generally limited to 1-10 mm, with rainfall increasing to 25 mm nearer to the tablelands.
- Coastal areas generally received between 50-200 mm with heavier falls recorded due to showers early to mid month, and as a result of a coastal low pressure system late in the month.

#### February to April (3 months)

- Rainfall across the State over the quarter was limited to falls of 10-100 mm across western NSW, and 50-200 mm across central NSW. Parts of the tablelands received 200-400 mm, primarily in the north. Much of the rain was due to storms.
- The north and far north coast and associated eastern fall areas of the tablelands received falls of 300-600 mm, with areas of the North Coast LHPA district receiving 600-1,200 mm.
- Areas of the Hunter valley and central coast received 200-600 mm and the south coast and Monaro 100-300 mm.

#### November to April (6 months)

- Rainfall across the State during November to April period ranged from 25 mm to more than 1,200 mm.
- The lowest rainfall over the period (50-100 mm) occurred across the far west of Western LHPA district, and parts of Darling and Riverina LHPA district.
- The central areas of the State generally received 100-300 mm and the east 300 mm or more.
- Parts of the North West, South East, Tablelands and Central North LHPA districts received 400-600 mm.
- Most of Cumberland, Mid Coast and New England LHPA districts received 400-800 mm, with some areas 800-1,200 mm or more. North Coast and areas of Mid Coast received 800-1,600 mm over the period.

## 4. Temperature anomalies

- Maximum temperatures across the State in April were generally 1 to 2°C above normal across most of the western and central areas of the State, with some areas 2 to 3°C above normal. The North West LHPA district, New England, and coastal LHPA districts had near normal maximum temperatures over the month.
- Minimum temperatures during the month were generally 1 to 2°C below normal, with some areas of Western and North West LHPA being 2 to 3°C below normal. Minimum temperatures in the far south west and far south east NSW were near normal.

## 5. Relative soil moisture

### 5.1 Topsoil

- Modelled topsoil moisture declined to very low levels across most of NSW during the month, due to the warm, dry conditions.
- Major declines occurred in 11 out of 14 LHPA districts. Those districts in central and western NSW are worst affected, as is the Tablelands LHPA district and western areas of the New England and Mid Coast LHPA districts. Modelled topsoil moisture also declined dramatically in South East LHPA district.
- Soil moisture in cropping areas is extremely low, forcing many farmers to sow dry or into limited moisture.
- Most of the coastal LHPA districts and the eastern fall areas of the New England have moderate modelled topsoil moisture levels. Despite average rainfall in these areas, levels have declined, though not to the extent in central and western NSW.

### 5.2 Subsoil

- Modelled subsoil moisture levels have remained relatively static during the month, with small declines in most areas.
- Levels across the cropping areas remain generally moderate. The most serious deficiencies are in the Riverina and Central West LHPA districts, in the west of the North West LHPA district between Walgett and Brewarrina, in the central area of Darling and the far south of the Western LHPA districts.



## 6. Pasture growth and biomass

### 6.1 Modelled pasture growth

- Modelled pasture growth was low across NSW in April, due to the dry, warm conditions. For most areas, growth was less than 10 kg/ha of dry matter.
- Small, patchy areas of higher growth reflected storm rainfall that occurred during March and April.
- Extremely low modelled growth occurred across most of Western, Darling, Riverina, Lachlan, Central West, Central North and North West LHPA districts. Low modelled growth also occurred across the west of the Tablelands LHPA district, the north of Hume and areas of South East LHPA districts due to limited rainfall and soil moisture.
- Low growth also occurred in the New England, North Coast and Mid Coast LHPA districts.
- The south east corner of the State had the best pasture growth, although still at low to moderate levels, with growth rates of generally between 50-200 kg/ha.

### 6.2 Modelled biomass

- Modelled total standing dry matter (biomass) levels across most of NSW declined to less than 1,000 kg/ha during April.
- Across large areas of the Darling, Western, Riverina, Lachlan, Central West, North West, Hume and South East LHPA districts, modelled biomass levels have declined to between 250-500 kg/ha or less.
- Patches of modelled biomass of up to 2,000 kg/ha exist in some more favoured areas.

### 6.3 Relative pasture growth

Relative pasture growth and biomass estimates are calculated by ranking modelled pasture growth and biomass against the same period from every year since 1957.

This means that if the current period has a rank of between 30<sup>th</sup> – 70<sup>th</sup> against all other years, it is regarded as being “average” and the conditions experienced will occur in about 4 out of every 10 years.

#### April

Relative monthly pasture growth should be compared to modelled pasture growth for interpretation. “Average” levels of relative growth may correlate with modelled levels (in

kg/ha) that are quite low or high at certain times of year.

- Relative pasture growth for April was variable, but generally below average to well below average through the central areas of the State.
- The area of below average to well below average relative pasture growth extended from Darling, North West and Central North LHPA districts through to Lachlan, Western and into the Riverina LHPA district. Areas of restricted growth also occurred in the Hume and the west of the Mid Coast LHPA district. An area of extremely low relative growth extended from the south east of Lachlan LHPA district through the west of the Tablelands and into the north west of the South East LHPA districts. Other patches occurred in Riverina, Hume, Central North and North West LHPA districts.
- The remainder of the coastal LHPA districts, Tablelands and New England had generally average to above average relative growth. Some areas that received storm rainfall during March also maintained average relative growth.
- Patches of missing data occurred across most of Western LHPA district, and across some of Darling and Riverina, as well as some areas of the North Coast, Mid Coast and New England LHPA areas that received excessive rainfall over the last few months, probably due to waterlogging and surface water flow.

#### February to April (3 months)

- Over the three months to April, the eastern third of the State had above average to extremely high relative pasture growth. This included the eastern half of North West LHPA district, and most of Central North, New England, North Coast, Mid Coast, Cumberland and Tablelands LHPA districts.
- Relative pasture growth across South East LHPA district was been mixed, but generally average or above.
- The remainder of the State had generally average relative pasture growth. Exceptions were an area from Enngonia to Bourke and Louth, Broken Hill, along the Murray River from Wentworth to Barham and Moulamein, as well as Finley to Wagga Wagga, the Harden, Walgett and Dubbo areas. These areas had generally below average to well below average relative growth.

### November to April (6 months)

- In the period to November to April, the eastern third of the State had generally average or better relative growth.
- The worst areas were in the far south and south west of Western LHPA district, the central area of Darling LHPA district and sections of the Riverina, North West, Central West, Lachlan, Hume and Central North LHPA districts.
- The remainder of the State had generally average relative growth over the period.

### May to April (12 months)

- Relative pasture growth across the State over the last 12 months was generally below average to extremely low in the central, western and far eastern areas of the State.
- Only the tablelands and far north west had generally near average growth.
- Areas of extremely low relative growth occurred in the far west near Broken Hill, the northern and central areas of the Darling LHPA and the central area of the Riverina LHPA. Additional areas of extremely low relative growth occurred in patches in the North West, Central West, Tablelands and Lachlan LHPA.

### 6.4 Relative biomass

Relative monthly biomass should be compared to modelled biomass for interpretation. "Average" levels of relative biomass may correlate with modelled levels (in kg/ha) that are quite low or high at certain times of year.

- Modelled relative total standing dry matter (biomass) levels across central NSW were variable, with many areas being well below average.
- Across the coast, tablelands and in far north western of NSW, modelled relative biomass was above average.
- Large areas of Western and Darling LHPA had near average relative biomass for the month.

## 7. Crop production

Crop production information is sourced from the NSW DPI April grains report.

For further details see

<http://www.dpi.nsw.gov.au/aboutus/resources/periodicals/newsletters/grains-report-nsw>

### 7.1 Crop production summary

- Grain sorghum production is forecast at 413,825 tonnes from an estimated 120,480 ha.
- Harvest of the estimated 496,890 ha summer crop (excluding rice) is progressing in fine weather. Irrigated rice and cotton are expected to record above average yields but yield potential of other summer crops is variable due to heat and moisture stress.
- Preliminary estimates are for the sowing of 4.90 M ha of winter crops in 2013, comprising 4.10 M ha of winter cereals and 0.81 M ha of pulses and oilseeds.
- Forecast canola sowings of 475,650 ha are well down on last season and will fall further if conditions remain dry for the next few weeks.
- Estimated wheat plantings have dropped by 3% this year compared to 2012. This is largely being driven by the current low forecast cereal grain prices compared to alternative broadleaf crops and lack of subsoil moisture reserves in most of the State.
- Compared to the last two autumns much of the State's cropping regions have little or no subsoil moisture reserves.
- A lack of summer rainfall has reduced the need to spray cropping fallows to control summer weeds. For growers who received some rainfall through summer, the return to dry conditions has resulted in some fallows not being sprayed as the weeds have been stressed and not ideal for applying herbicides.
- There are isolated reports of damage to early sown grazing cereal crops from locusts in the central western region, with control measures being undertaken to stop further damage.
- After last year's disappointing protein levels in most regions, growers will be focusing on improved nitrogen management to avoid the discounts from missing the higher delivery grades. An increase in the amount of nitrogen, either pre-drilled or applied at sowing, is expected this year given the lack of response from later top-dressed nitrogen in the 2012 season.
- Planting of grazing cereals has occurred on the tablelands and slopes areas which benefited from rainfall in February and early March. Surface moisture is now fast disappearing or non-existent in most areas of the State, delaying further sowing of dual-

purpose crops and causing many sown crops in the western areas to struggle to establish properly.

- Lack of rainfall has seen an increase in demand for irrigation water, with many growers needing to buy additional water to finish out summer crops.

## 7.2 Winter crop forecast

NSW area '000 hectares

	2013 forecast	2012 harvest estimate
Wheat	2,896	2,756
Barley	650	632
Oats	368	236
Triticale	111	113
Canola	476	685
Chickpea	169	203
Faba bean	32	59
Field pea	65	44
Lupin	65	50

## 7.3 Summer crop forecast

NSW production '000 tonnes

	2012/13 harvest estimate	2011/12 harvest estimate
Grain Sorghum	414	682
Maize	313	169
Mungbean	11	13
Soybean	66	46
Sunflower	17	27

## 8. Water storage and irrigation allocations

### 8.1 Storage levels

Storage levels are given as at 9<sup>th</sup> May 2013.

Storage	Current Volume (GL)	Effective Capacity (%)	Monthly Change (%)
Toonumbar	11	101	-1
Glenbawn	745	99	-1
Glennies	278	98	-1
Lostock	-	-	-
Brogo	9	101	1
Cochrane	0	-	-
Dartmouth	3571	92	-1
Hume	1329	44	-3
Blowering	994	60	1
Burrinjuck	389	38	0
Brewster	-	-	-
Carcoar	23	64	-4
Cargelligo	23	54	-12
Wyangala	855	70	-6
Glenlyon	228	-	-
Pindari	196	63	0
Copeton	1010	74	0
Chaffey	50	79	-2
Keepit	189	44	0
Split Rock	350	88	0
Burrendong	511	41	-1
Oberon	38	84	-2
Windamere	206	56	0
Lake Cawndilla	413	60	2
Lake Menindee	324	46	3
Lake Pamamaroo	338	123	4
Menindee	-	-	-
Total Menindee	-	-	-
Wetherell	193	100	12
<b>Total</b>	<b>12273</b>		
<b>Average</b>		<b>73</b>	

- Levels in water storages remain generally moderate, with the average effective capacity being 73%. Some of the major dams are now at levels of 38-50%, such as Burrinjuck, Burrendong and Hume.
- Storage levels have remained stable on average during the last month, with the major reductions/outflows being generally low.
- The greatest monthly changes in storage capacity were the slight to moderate increases in Lakes Cawndilla, Menindee, Pamamaroo and Wetherell, the slight

decreases in the Hume, Wyangala and Carcoar dams and the moderate decrease in Lake Cargelligo.

## 8.2 Irrigation allocations

- Most general security allocations are unchanged from January. Allocations are at 100% or more, except for the Lachlan, Belubula, Macquarie-Cudgegong, Lower Namoi, Peel and Bega-Brogo river valleys where they are low to moderate.
- The allocation for the Macquarie-Cudgegong valley increased from 62-64%, the Lower Namoi from 47-48% and the Bega-Brogo from 70-75% since the last report.

River valley	Allocation	Licence category
NSW	100%	General security A Class
Border Rivers	100%	General security B Class
	100%	High security
Richmond	100%	General security
	100%	High security
Gwydir	150%	General security
	100%	High security
Hunter	100%	General security
	100%	High security
Paterson	100%	General security
	100%	High security
Lachlan*	0%	General security
	100%	High security
Belubula*	39%	General security
	100%	High security
Lower Darling	100%	General security
	100%	High security
Macquarie and Cudgegong*	64%	General security
	100%	High security
Murray	100%	General security
	100%	High security
Murrumbidgee*	100%	General security
	100%	High security
Lower Namoi*	48%	General security
	100%	High security
Upper Namoi	100%	General security
	100%	High security
Peel	83%	General security
	100%	High security
Bega Brogo	75%	General security
	100%	High security

\* Carry over water may be available

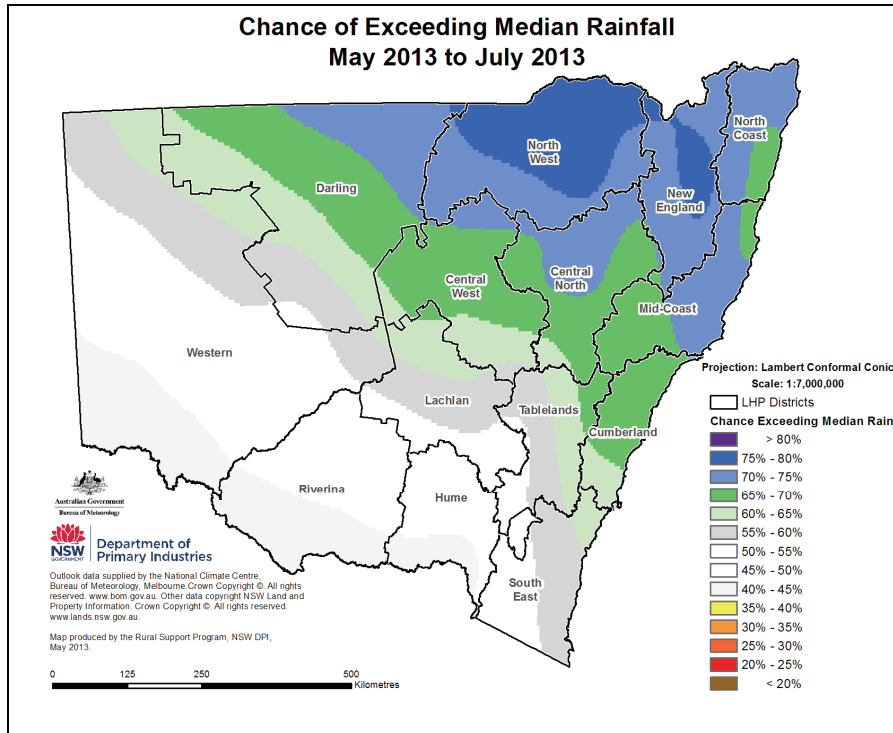


## Appendix

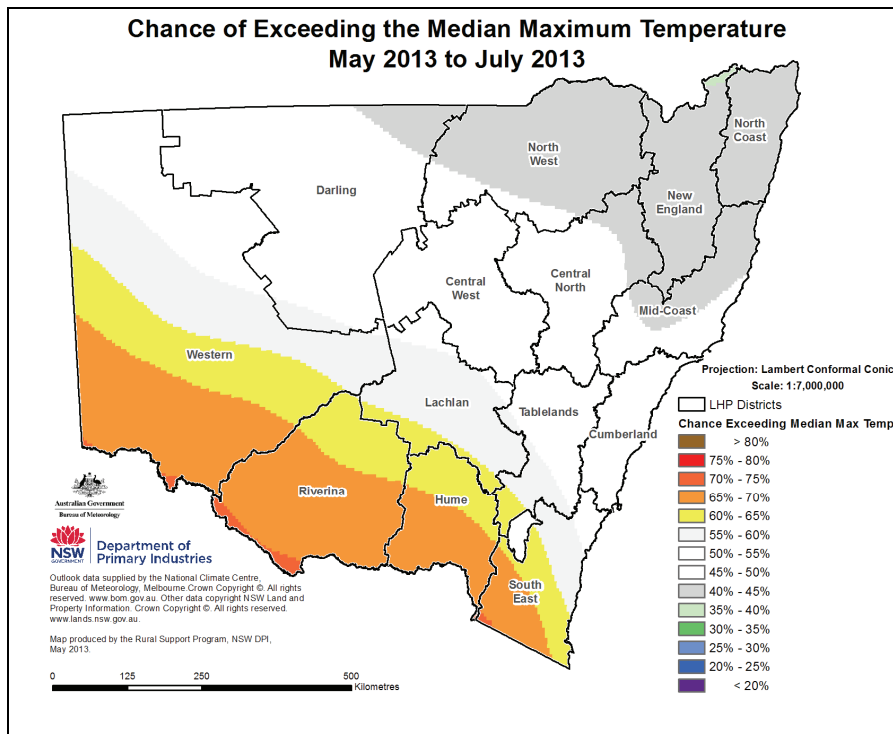
Maps and data used in the production of this report.

### Seasonal outlook

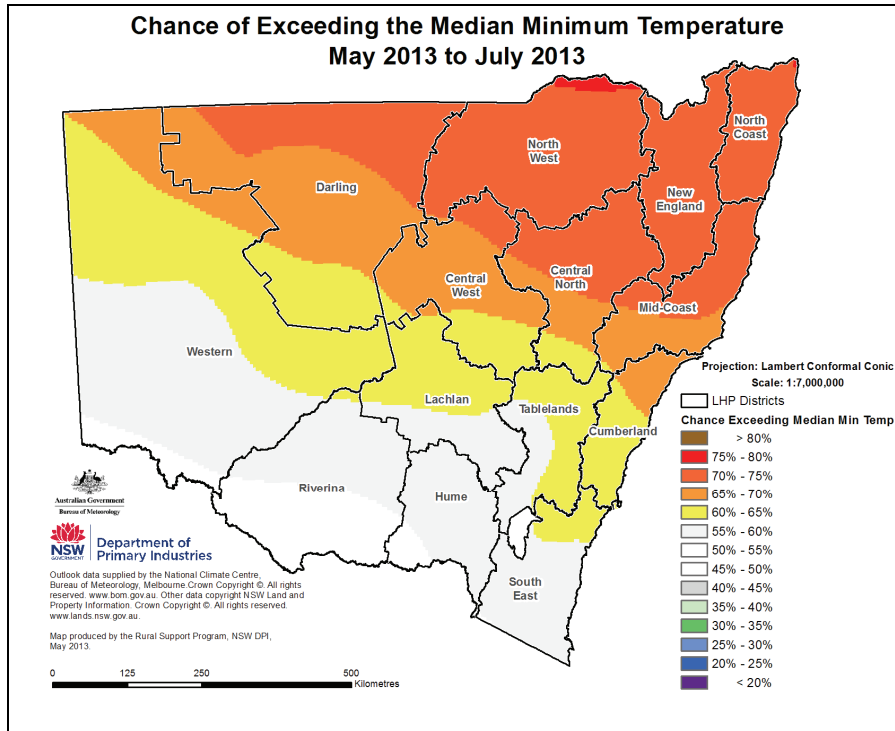
#### Quarterly rainfall outlook



#### Quarterly maximum temperature outlook

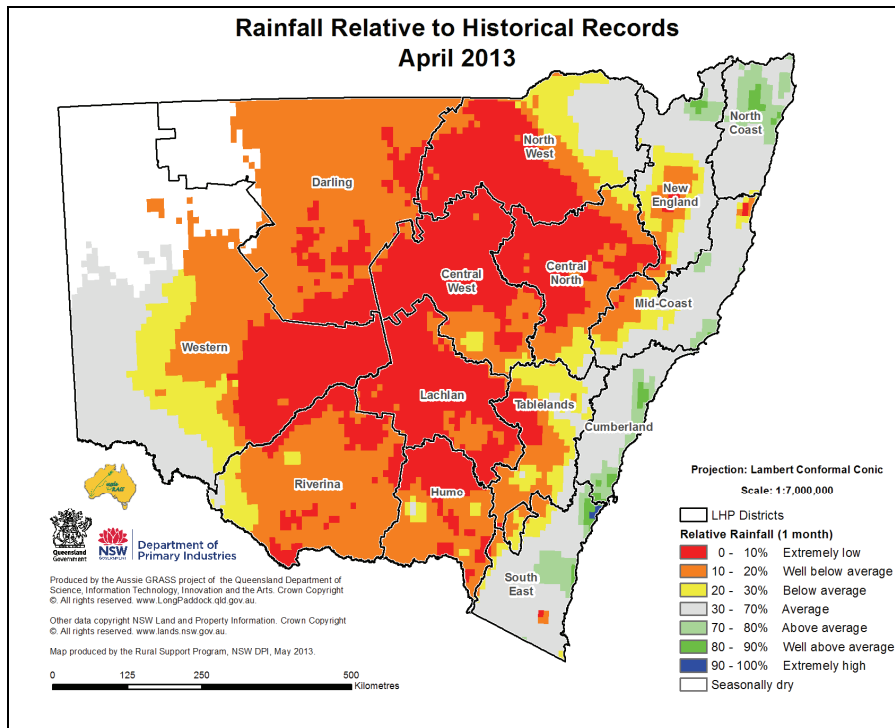


## Quarterly minimum temperature outlook

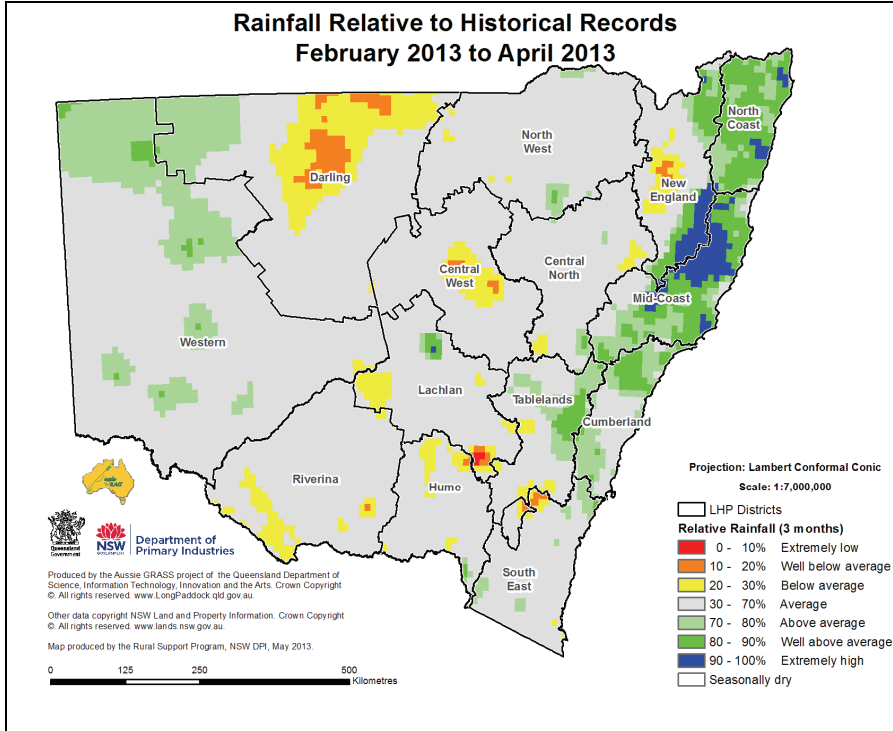


## Rainfall

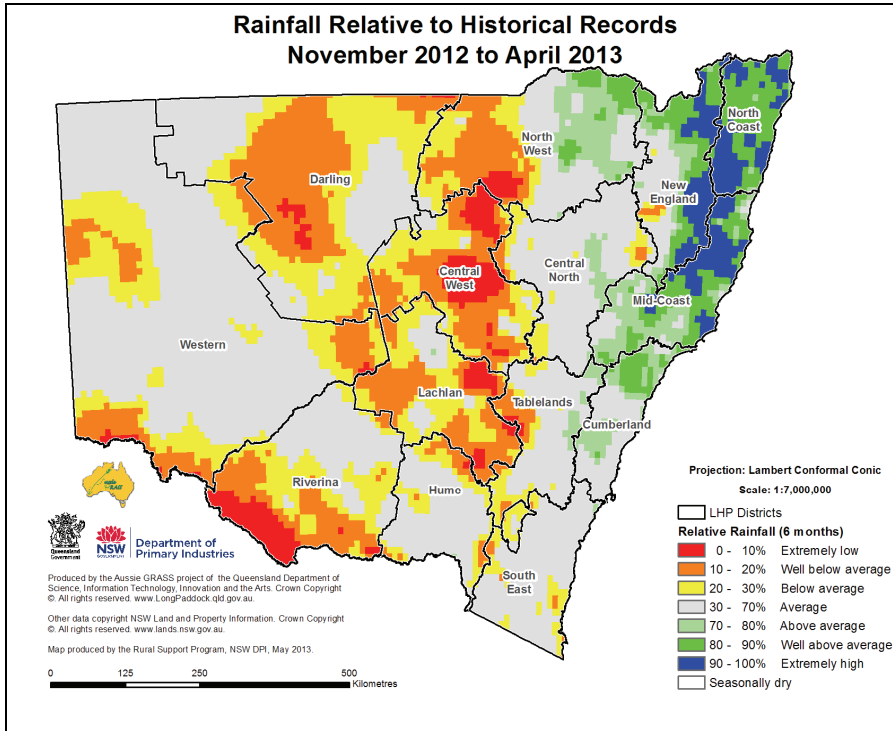
### Relative rainfall – monthly



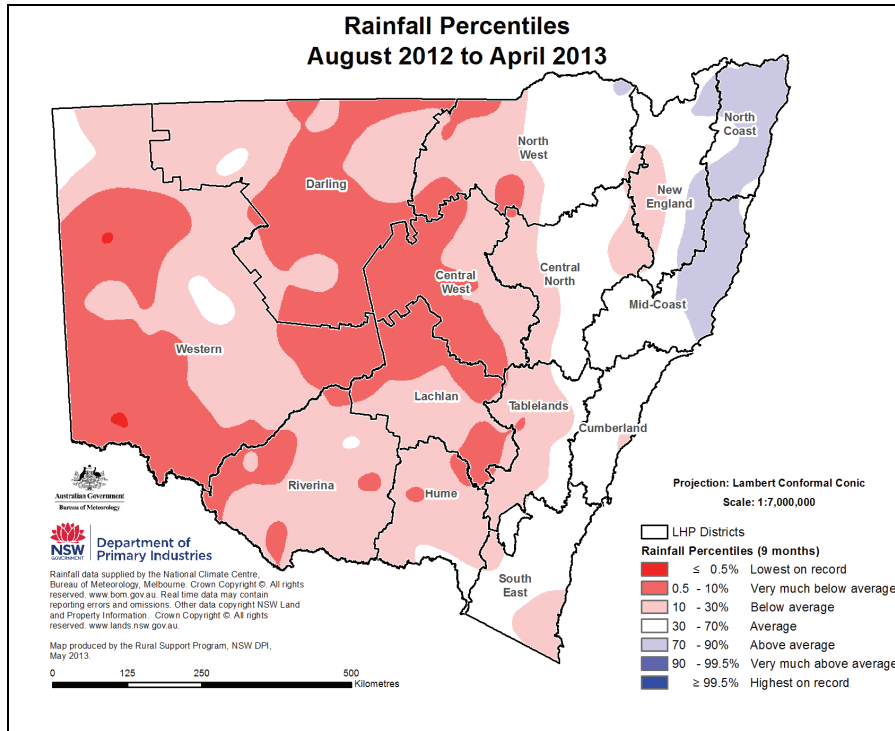
Relative rainfall – quarterly



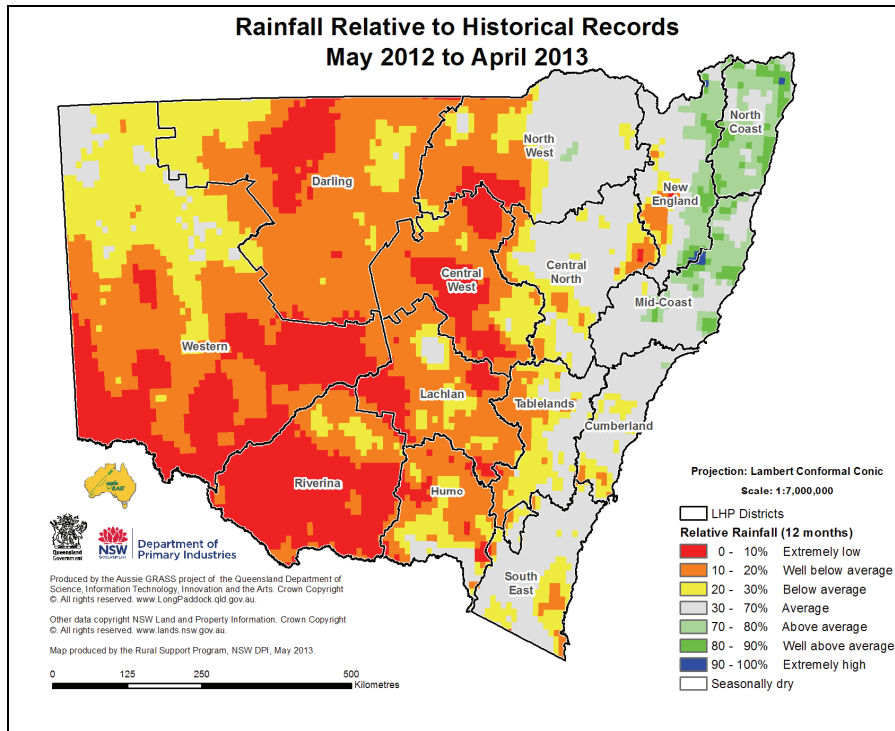
Relative rainfall – half yearly



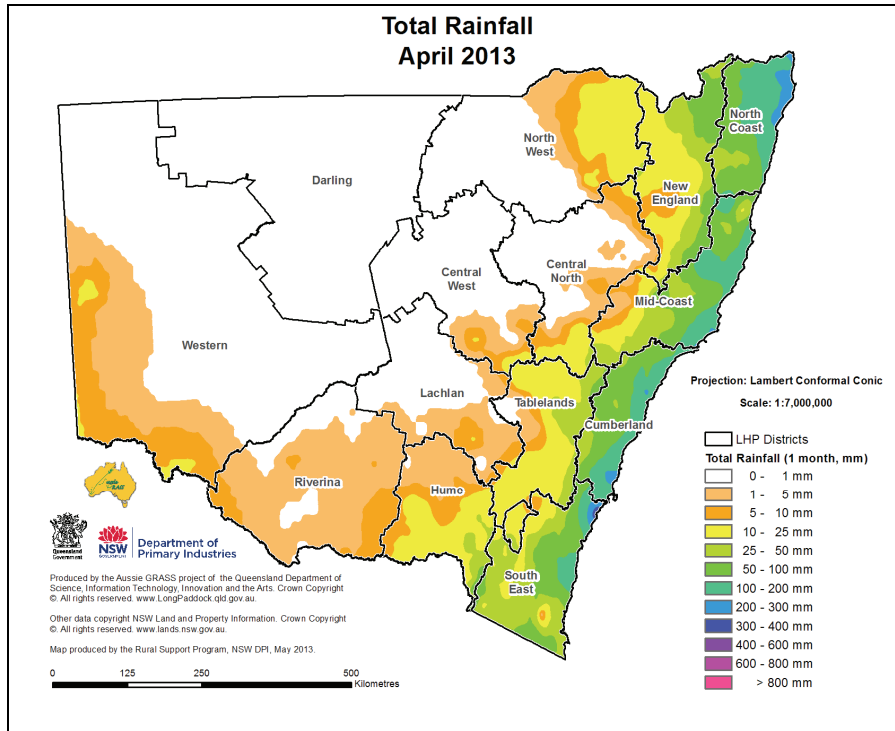
### Relative rainfall – nine monthly



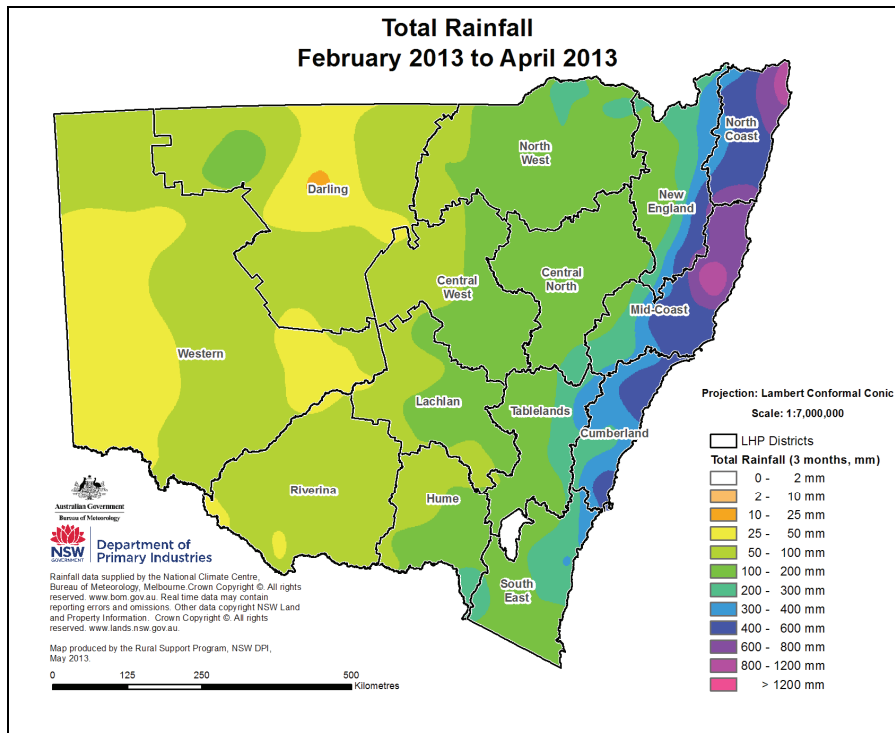
### Relative rainfall – yearly



Total rainfall – monthly

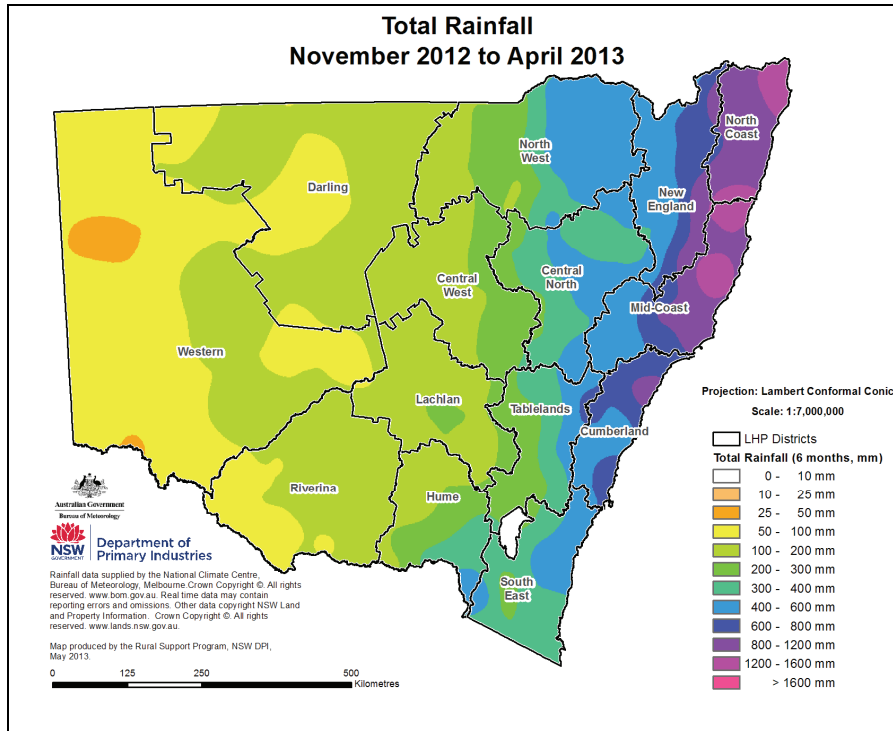


Total rainfall – quarterly



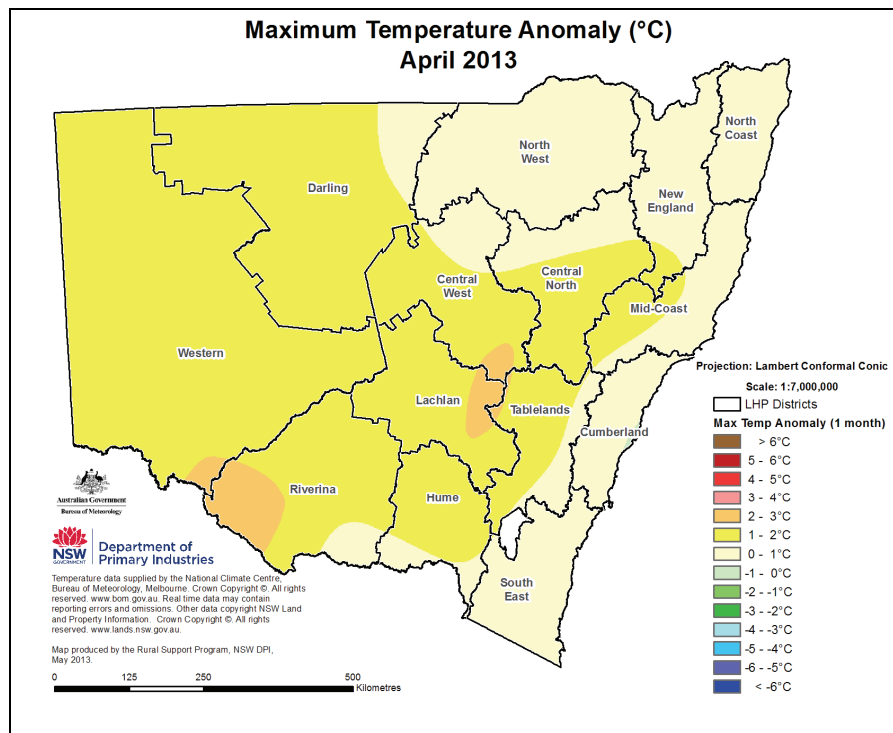


## Total rainfall – half yearly

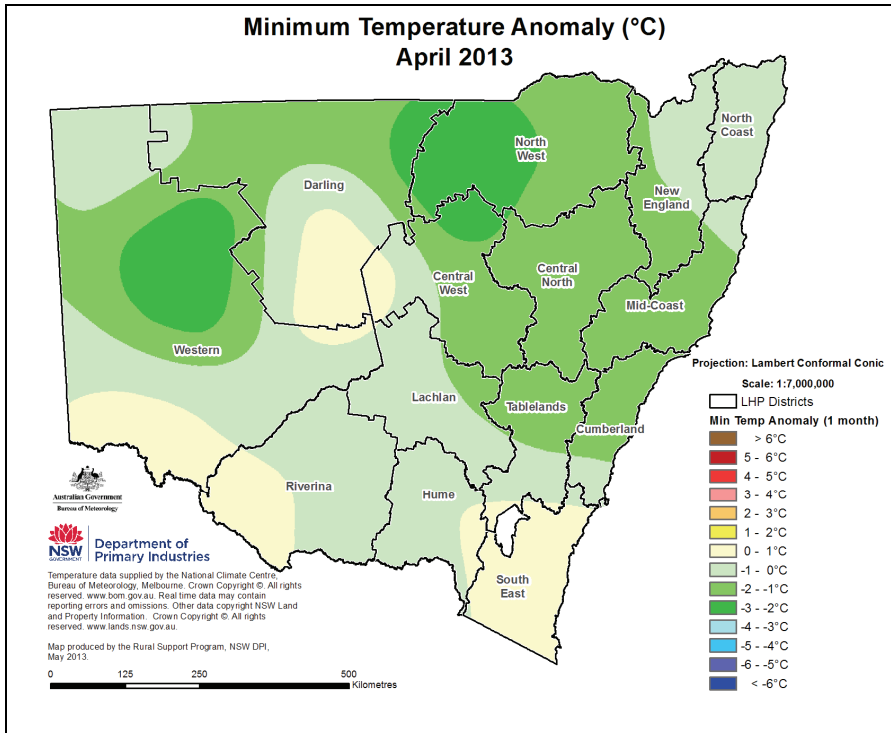


## Temperature

### Maximum monthly temperature anomaly

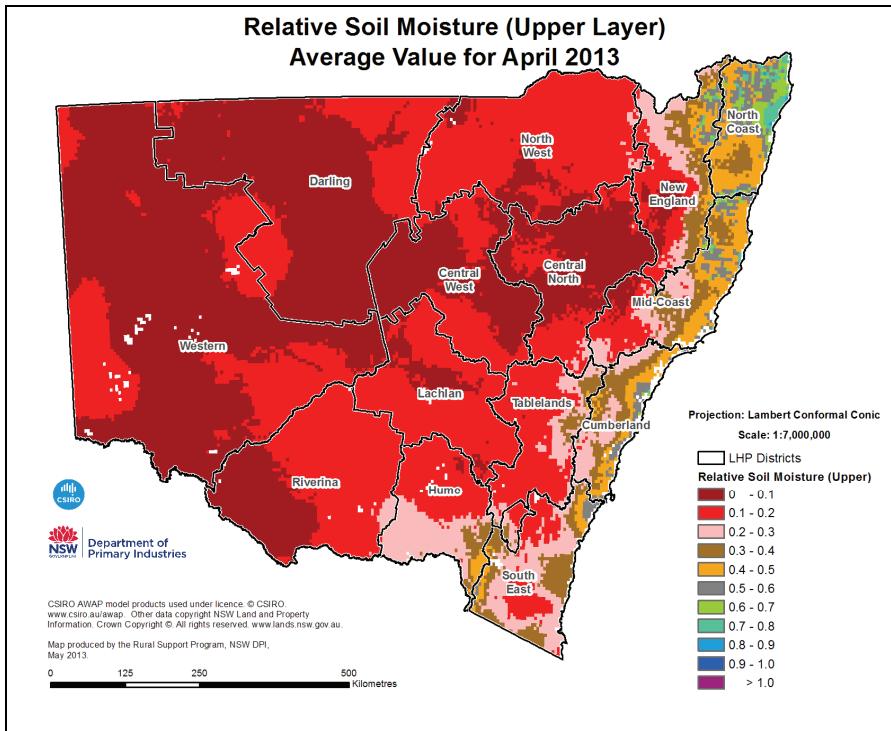


## Minimum monthly temperature anomaly

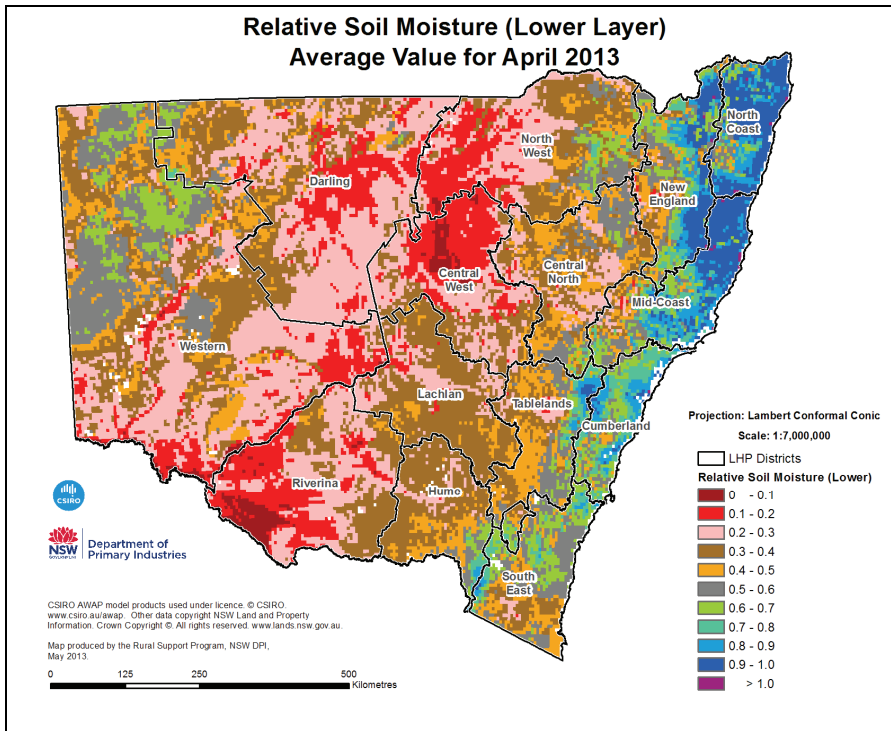


## Soil moisture

### Relative topsoil moisture

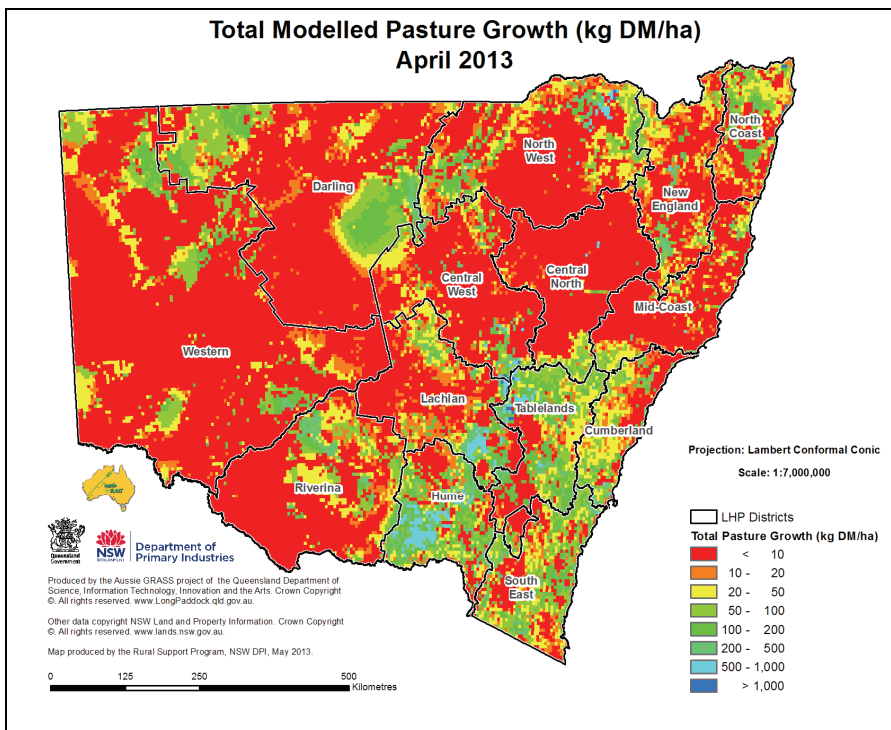


## Relative subsoil moisture

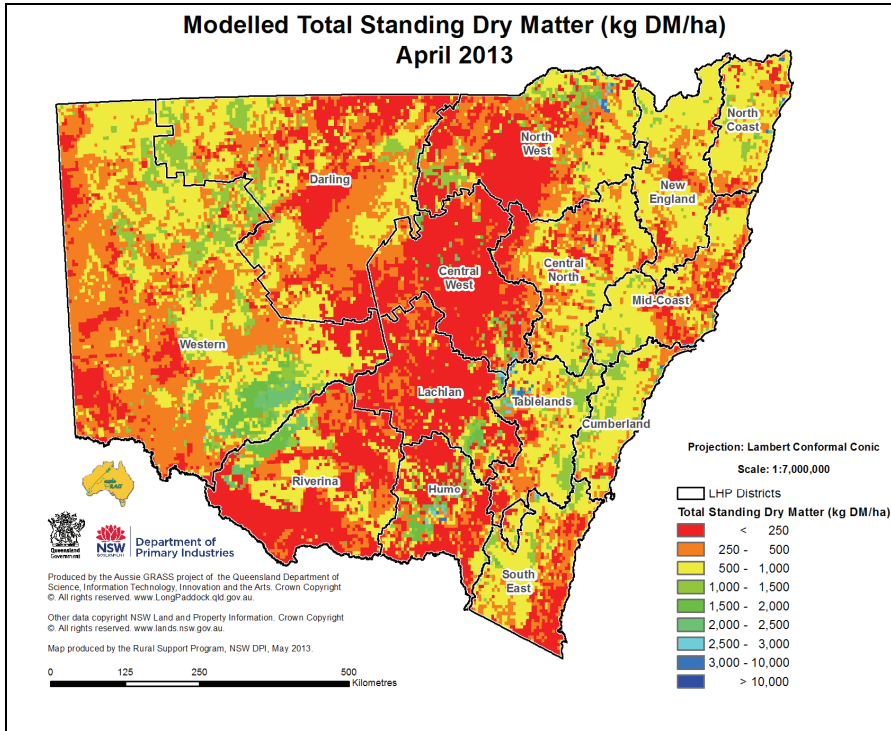


## Pasture growth and biomass

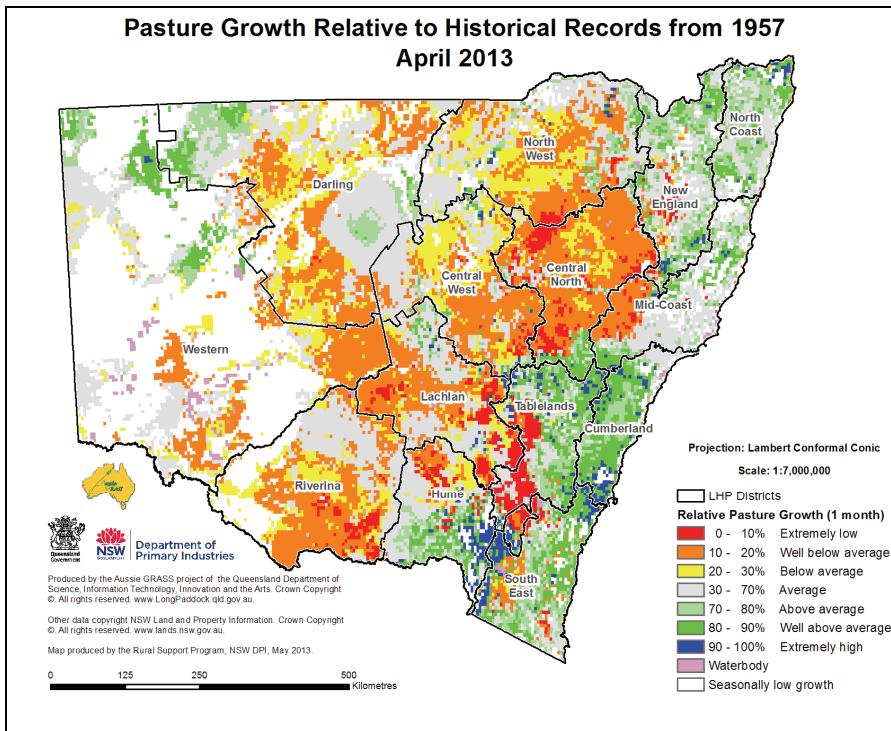
### Modelled pasture growth



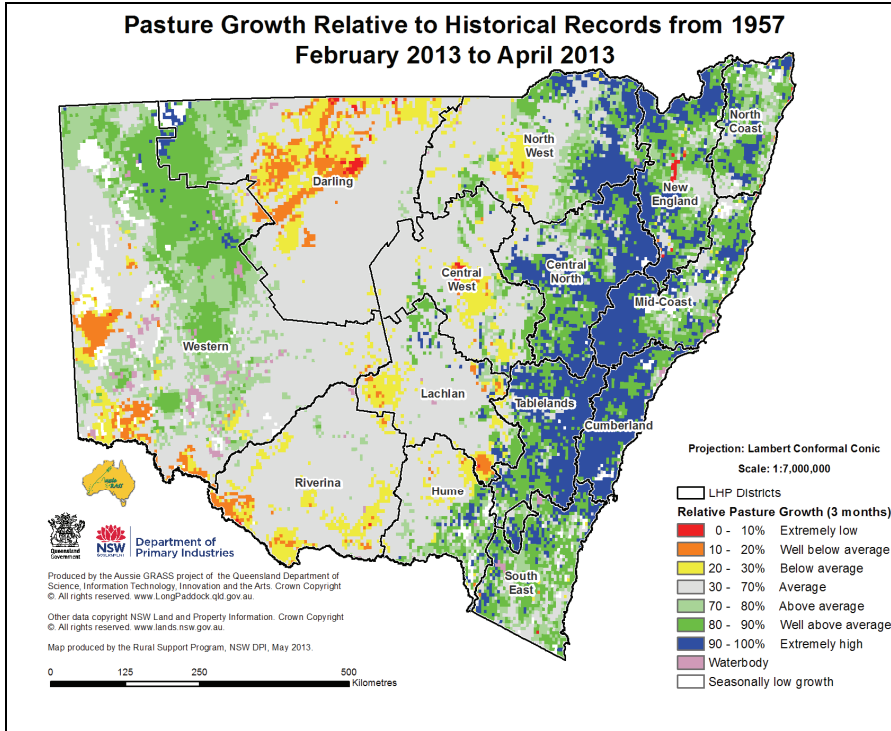
Modelled biomass



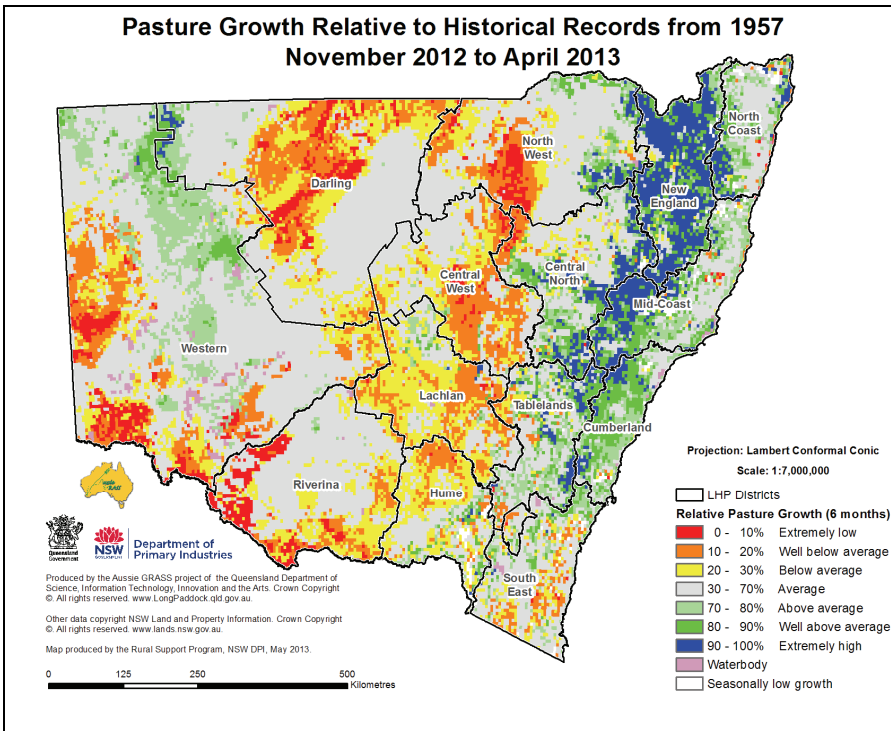
Relative pasture growth – monthly



Relative pasture growth – quarterly

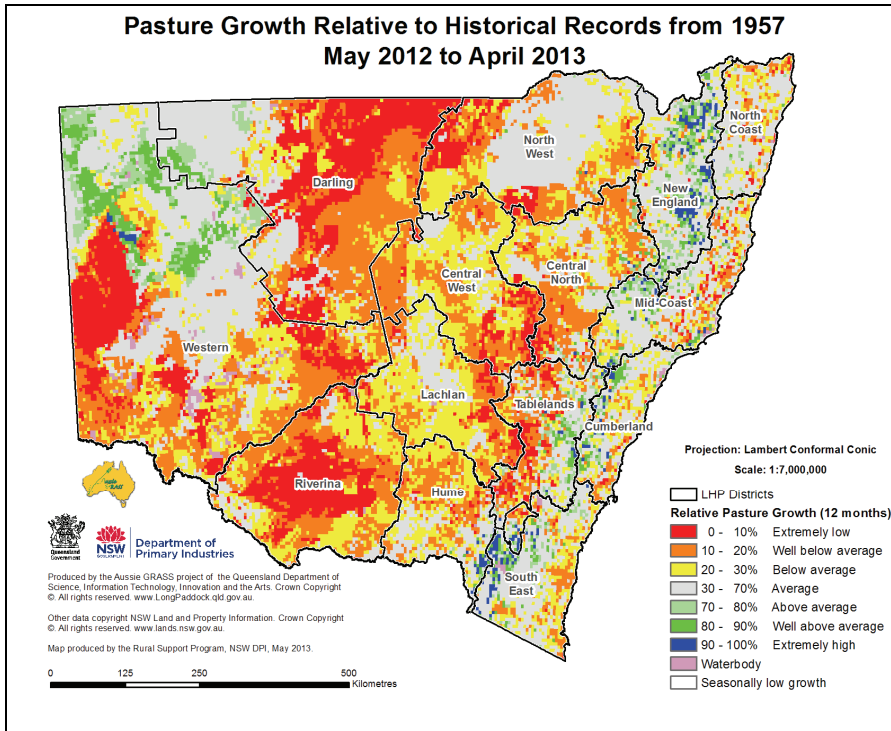


Relative pasture growth – half yearly

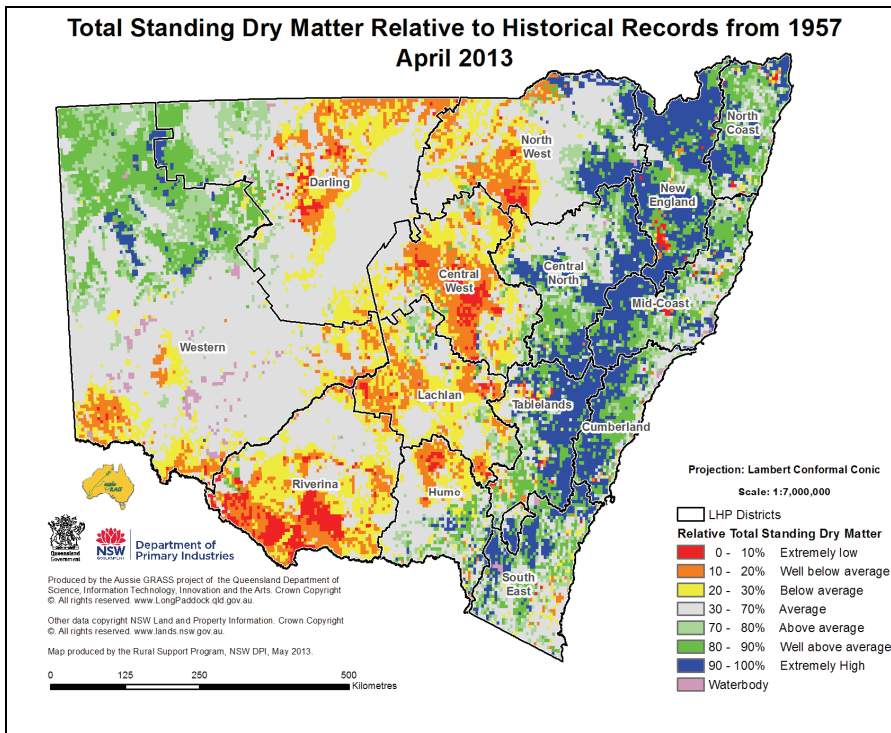




### Relative pasture growth – yearly



### Relative biomass – monthly



## More information

For more information, contact the NSW Department of Primary Industries on 02 6391 3100.

## Acknowledgments

Information used in this report was sourced from the Bureau of Meteorology, CSIRO, the Queensland Department of Science, Information Technology, Innovation and the Arts, NSW Livestock Health and Pest Authorities and the NSW Department of Primary Industries.

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