

Monthly Weather Review

Western Australia

January 2010



Australian Government
Bureau of Meteorology

The *Monthly Weather Review - Western Australia* is produced twelve times each year by the Australian Bureau of Meteorology's Western Australia Climate Services Centre.

It is intended to provide a concise but informative overview of the temperatures, rainfall and significant weather events in Western Australia for the month.

To keep the *Monthly Weather Review* as timely as possible, much of the information is based on electronic reports. Although every effort is made to ensure the accuracy of these reports, the results can be considered only preliminary until complete quality control procedures have been carried out. Major discrepancies will be noted in later issues.

We are keen to ensure that the *Monthly Weather Review* is appropriate to the needs of its readers. If you have any comments or suggestions, please do not hesitate to contact us:

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You may also wish to visit the Bureau's home page, <http://www.bom.gov.au>.

Units of measurement

Except where noted, **temperature** is given in degrees Celsius (°C), **rainfall** in millimetres (mm), and **wind speed** in kilometres per hour (km/h).

Observation times and periods

Each station in Western Australia makes its main observation for the day at 9 am local time. At this time, the precipitation over the past 24 hours is determined, and maximum and minimum thermometers are also read and reset. In this publication, the following conventions are used for assigning dates to the observations made:

Maximum temperatures are for the 24 hours *from* 9 am on the date mentioned. They normally occur in the afternoon of that day.

Minimum temperatures are for the 24 hours *to* 9 am on the date mentioned. They normally occur in the early morning of that day.

Daily rainfall is for the 24 hours *to* 9 am on the date mentioned. This means a significant fraction of the rain may have occurred on the previous calendar day.

Monthly rainfall is for the period from 9 am on the last day of the previous month to 9 am on the last day of this month.

Maximum daily wind gusts are in the 24 hours from midnight to midnight.

Climatological values

The climatological averages shown in the text and tables are generally long-term means based on observations from all available years of record, which vary widely from site to site. They are not shown for sites with less than 30 years of record, as they cannot then be calculated reliably. Climatological extremes are generally taken from available observations from all available years of record. The number of years can vary substantially from site to site.

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Cover photograph

Thunderstorm clouds between Meckering and Northam (Central Wheat Belt of WA) in the mid-afternoon.

Photograph by Caitlin and Sean Gray, 31 January 2010. Used with permission.

If you have a photo you think would make a good cover for the Monthly Weather Review, please contact us at the address above.

Overview

- Monthly rainfall near average
- Mean daily maximum temperature very much above average - 3rd highest January on record
- Mean daily minimum temperature very much above average - 2nd highest January on record

January 2010 was notable for very hot conditions over much of the state. The mean daily maximum temperature for WA ranked at 3rd highest on record and mean daily minimum temperature was 2nd highest on record (since comparable records began in 1950). Very hot conditions during the beginning of the month saw sites in both the Pilbara and Southwest Land Division (SWLD) break January daily maximum records, while many sites in southern parts of the state recorded their hottest January on record in terms of mean maxima.

Monthly rainfall was close to the long-term mean when averaged over WA as a whole. A tropical low that moved south near the WA/NT border at the beginning of the month brought above average rainfall to eastern parts of the state, whilst Tropical Cyclone *Magda* toward the end of the month brought heavy falls to the west Kimberley. The remainder of WA saw mostly average to below average rainfall, with very much below average rainfall particularly near the SWLD west coast as many stations recorded no rainfall for the month.

Extremes in January 2010

Hottest day

(Highest daily maximum temperature)

49.2 °C at Onslow on the 1st

Warmest days on average

(Highest mean daily maximum temperature)

43.3 °C at Paraburdoo Aero

Coollest days on average

(Lowest mean daily maximum temperature)

22.7 °C at Windy Harbour

Coldest day

(Lowest daily maximum temperature)

16.4 °C at Rocky Gully on the 20th

Coldest night

(Lowest daily minimum temperature)

4.1 °C at Eyre on the 3rd and 14th

Coollest nights on average

(Lowest mean daily minimum temperature)

11.8 °C at Rocky Gully

Warmest nights on average

(Highest mean daily minimum temperature)

27.4 °C at Paraburdoo Aero

Warmest night

(Highest daily minimum temperature)

34.6 °C at Paraburdoo Aero on the 2nd

Wettest overall

(Highest total rainfall)

391.8 mm at Kununurra Checkpoint

Wettest day

(Highest daily rainfall)

142.0 mm at Camballin on the 23rd

Highest wind gust

124 km/h at Wyndham Aero on the 31st

Significant weather

Severe thunderstorms

Trayning, in the Central Wheat Belt, was struck by a thunderstorm about 5 pm WST on the 9th which lifted roofs, felled trees and cut power, and which police described as a "mini tornado". A local football ground lost its grandstand roof and some other buildings had shifted off their foundations. About 10 properties were damaged by the storm.

Tropical Cyclone *Magda*

A tropical low formed close to the Indonesian Island of Roti (southwest of Timor) on the 18th January and drifted slowly to the south-southwest under the influence of a mid-level ridge, before reaching tropical cyclone intensity on the 20th. Recurring to the south-southeast, TC *Magda* developed rapidly overnight, reaching category three intensity on the morning of the 21st, close to Browse Island. TC *Magda* weakened for a period during the day but regained intensity during the night again, reaching category three intensity as it crossed the Kimberley coast at Kuri Bay about 210 km north-northeast of Derby, at about 5 am WST on the 22nd.

Magda weakened below tropical cyclone intensity later that day as it moved inland, passing to the east of Derby. Some mostly minor damage to infrastructure occurred at Kuri Bay as *Magda* passed by. Vegetation near the coast was considerably defoliated, however facilities at Koolan Island and Cockatoo Island only experienced the western peripheral gales and no damage was reported. Cumulative rainfall totals exceeded 100 mm over the northwest Kimberley including Derby, the Dampier Peninsula and Kuri Bay regions. The highest daily falls included 142 mm at Camballin and 138 mm at Curtin, while Kuri Bay had a three-day total of 185 mm, most of which fell as *Magda* passed close by.

Synoptic summary

The first month of 2010 in Western Australia began with a ridge along the south coast and a broad area of low pressure centred just south of the Kimberley on the 1st. Isolated showers and thunderstorms were observed over the Kimberley and northern Interior, while a few afternoon thundery showers occurred over the inland Pilbara, northeast Gascoyne and western Interior. A weak front brought morning showers to the south coast of the SWLD. Very hot conditions on the 1st and 2nd over the north of the state resulted in highest daily maximum temperature records being broken near the west Pilbara coast. A high developed in the Bight and a trough developed along the west coast on the 2nd, extending from the Kimberley through the Pilbara. Showers and thunderstorms continued in the Kimberley, extending into the northern half of the Interior, the Pilbara and the northern Gascoyne. A weak front passed to the south of WA on the 3rd, though mostly clear conditions were reported in southern parts while in the north, the trough continued to trigger thunderstorms in the Kimberley, northern Interior, Pilbara and Gascoyne.

On the 4th, the ridge quickly re-established itself to the south of WA in the wake of the weak front, and the trough drifted off the west coast of the SWLD, extending from a low near the northern NT/WA border. Isolated showers were reported near the SWLD south coast as the weak front receded to the southeast, whilst showers and thunderstorms were observed in the Kimberley, northern Interior, Pilbara, inland Gascoyne and northern parts of the SWLD. Paraburdoo, in the Pilbara, recorded a severe wind gust of 91 km/h in the afternoon as a result of a thunderstorm, however no damage was reported. A high to the south of WA moved east on the 5th as the trough remained near the SWLD west coast and the tropical low moved southward along the Kimberley/NT border. Showers and storms were mainly confined to the north and west Kimberley, northern Interior, Pilbara and Gascoyne, while areas of rain, with some heavy falls, were reported in the eastern Kimberley and far northeast Interior associated with the tropical low.

The West Coast Trough moved inland on the 6th whilst the low near the Kimberley/NT border remained almost stationary. Very hot and windy conditions were recorded through central and eastern parts of the SWLD with several daily maximum temperature records for January broken, Hopetoun North in the Southeast Coastal district recorded a maximum temperature of 48.0°C. Isolated showers and storms occurred in the Kimberley, Pilbara, Gascoyne, Central Wheat Belt, eastern Great Southern and western Southeast Coastal with rain clearing the east Kimberley and northeast Interior. Southern Cross Airfield in the Central Wheat Belt reported a wind gust of 91 km/h during the evening due to a thunderstorm although

no damage was reported. A weak cold front passed to the south of WA on the 7th and the trough moved over southeast parts of the state. Showers were reported in the Southwest and South Coastal districts as a result of the front, whilst isolated showers and thunderstorms were observed in the Kimberley, Pilbara, inland Gascoyne, eastern SWLD and southwest Goldfields. The tropical low in the north drifted close to the northeast Interior/NT border but brought no significant weather. The surface trough moved east out of southeast WA on the 8th and the tropical low dissipated over the northern Interior as a broad area of low pressure lay across WA. Isolated showers and thunderstorms were reported in the Kimberley, Pilbara, far east Interior and inland Gascoyne. A trough near the west coast moved inland on the 9th as a cold front approached the Southwest district late in the day. Showers and thunderstorms were reported in the Kimberley, Pilbara, Interior, inland Gascoyne, eastern SWLD and southwest Goldfields. A severe thunderstorm was reported in the Central Wheat Belt in the afternoon, with significant localised damage at Trayning. A weak front brushed the southwest corner of WA on the 10th, causing light showers in mainly the Southwest and South Coastal districts, whilst the trough moved further eastwards across the state as widespread showers and thunderstorms occurred over all but far western parts of WA.

A ridge extended along the WA south coast on the 11th as the surface trough contracted to northern parts of the state, Showers and thunderstorms were observed in the Kimberley, Interior, Pilbara, northeast Gascoyne and Eucla, though they cleared the Eucla during the morning. Isolated showers occurred in SWLD south coast districts in an onshore flow. A high moved to the south of WA on the 12th as the trough in the north contracted to the northern Interior, Pilbara and Kimberley and showers and storms became mainly confined to these regions. Showers near the SWLD south coast cleared during the morning. A typical summer pattern ensued on the 13th, with a high in the Bight and a trough extending from the Kimberley, across the Pilbara and down the west coast with showers and thunderstorms confined to the northern Interior, northern Pilbara and Kimberley. The West Coast Trough moved slowly inland on the 14th as a weak front passed to the south of WA. In the north, an active monsoon trough moved off the Pilbara coast extending across the northern Kimberley. Showers and thunderstorms continued in the Kimberley, northern Interior and Pilbara and extended into the northern Gascoyne, while southern parts of WA saw mostly clear conditions although cloud moved over the Southwest and South Coastal late in the day as the weak front moved over these districts. A high rapidly moved to the south of WA on the 15th and the monsoon trough moved off the north Kimberley coast. Showers and storms were reported in the Kimberley, Pilbara, northeast Gascoyne and north

and west Interior. A severe thunderstorm was reported in the evening at Learmonth in the west Pilbara with a wind gust up to 98 km/h recorded, though no damage was reported. Light showers occurred near the SWLD south coast in the onshore flow.

On the 16th, the high remained south of WA with sunny conditions in the south, whilst isolated showers and thunderstorms were observed over the Kimberley, Pilbara, northern Interior and north and west Gascoyne. The high moved into the Bight on the 17th and a trough developed near the SWLD west coast. Showers and storms cleared the state during the morning, but redeveloped in the Kimberley, Pilbara and northern Interior during the afternoon. The West Coast Trough moved inland on the 18th and the monsoon trough remained north of WA. Clear conditions were reported across most of the state though isolated showers and storms occurred in the Pilbara and Kimberley. A broad area of low pressure lay across WA on the 19th. Isolated thundery showers were reported in the Lower Southwest (southwest of a line from Jurien to Bremer Bay) as a mid-level trough approached the region from the west. In the north, showers and storms occurred in the north and west Kimberley, Pilbara and northern Gascoyne. A ridge extended to the south of WA on the 20th as a surface trough through central and southeast parts of the state combined with the approaching middle level trough to bring showers and thunderstorms to the South and Southeast Coastal, southern Great Southern, southern Goldfields, southeast Gascoyne and western Eucla, whilst showers were also reported in the Southwest district in an onshore flow. Showers and thunderstorms continued over the Kimberley, Pilbara, northern Interior and northern Gascoyne. A tropical low off the north Kimberley coast reached tropical cyclone intensity during the 20th and was named Tropical Cyclone *Magda* as it tracked to the southeast toward the northwest Kimberley coast.

Magda intensified to category three on the morning of the 21st, close to Browse Island off the northwest Kimberley coast, but then weakened slightly to category two before re-intensifying late in the day as it approached the Kimberley coast near Kuri Bay. Scattered showers, thunderstorms and areas of rain developed along the northwest Kimberley coast as *Magda* approached, whilst showers and storms occurred in the remainder of the Kimberley, central and eastern Pilbara and Interior. A ridge extended along the WA south coast on the 21st and showers and thunderstorms cleared the Eucla during the morning. Extensive low-level cloud lay over southern WA in the morning with associated showers in SWLD south coast and neighbouring districts. TC *Magda* was at category three intensity as it crossed the Kimberley coast near Kuri Bay at about 5 am WST on the 22nd. Some mostly minor damage to infrastructure occurred at Kuri Bay, whilst facilities at

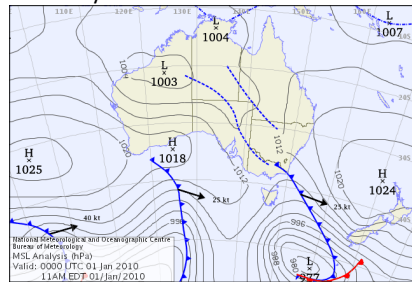
Koolan Island and Cockatoo Island only experienced the western peripheral gales and no damage was reported. *Magda* weakened below cyclone intensity late in the day as it moved inland, passing east of Derby and bringing areas of rain and thunderstorms to the west Kimberley. Rainfall with the passage of *Magda* saw highest daily falls of 142 mm at Camballin and 138 mm at Curtin Aero in the 24 hours to 9 am on the 23rd, while Kuri Bay had a three-day total of 185 mm. Isolated showers and storms were reported in the remainder of the Kimberley, central and eastern Pilbara and northern half of the Interior, whilst a ridge south of WA brought fine and clear conditions to most of the southern half. A deepening trough over the SWLD on the 23rd brought showers and thunderstorms to most WA districts apart from the Central West, west Gascoyne and west Pilbara, while areas of rain over the west Kimberley associated with ex-tropical cyclone *Magda* rapidly cleared. A trough through the SWLD slowly moved eastward on the 24th as the low associated with ex-tropical cyclone *Magda* dissipated in the southwest Kimberley. Showers and thunderstorms occurred in the Kimberley, east Pilbara, Interior, southeast Gascoyne, Goldfields, west Eucla and SWLD. The trough over the SWLD moved over southeast WA on the 25th and weakened as showers and storms and were mainly confined to the Southeast Coastal, Eucla, Goldfields and Interior, though some showers persisted in southern SWLD districts. Isolated showers and thunderstorms also occurred in the northeast Pilbara and Kimberley.

A ridge pushed eastward to the south of WA on the 26th, while a broad area of low pressure persisted over the north of WA and a trough lay along the west coast. Similar synoptic conditions persisted through to the 29th. Mainly afternoon showers and thunderstorms were observed in the Kimberley, Interior, Goldfields and Eucla on the 26th, with some showers in SWLD southern districts. Similar weather was reported on the 27th, though showers and storms were also reported in the southeast Gascoyne and northeast Central Wheat Belt. Showers and thunderstorms were reported across WA apart from the SWLD on the 28th, whilst showers were reported in the Eucla in an onshore flow. A thunderstorm produced a severe wind gust of 96 km/h at Kununurra in the Kimberley during the afternoon of the 28th. Showers and thunderstorms were confined to the Kimberley, Pilbara, Gascoyne and northern Interior on the 29th with the remainder of WA experiencing mostly clear conditions. On the 30th a weak front brushed the southwest corner of the state and the West Coast Trough moved eastwards ahead of a strong ridge. Isolated showers and thunderstorms occurred over the Kimberley, Pilbara, eastern Interior and northern Gascoyne, whilst showers occurred in SWLD south coast districts. A high moved into the Bight on the 31st as a trough developed down the west coast. Showers and storms occurred in the Kimberley,

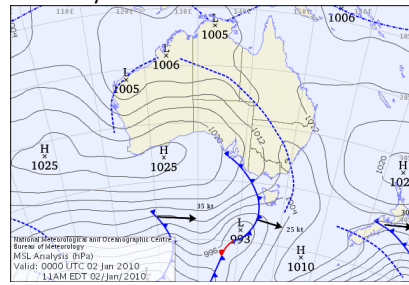
Pilbara, northeast Gascoyne and Interior, as thunderstorms produced severe wind gusts of 124 km/h at Wyndham and 98 km/h at Kununurra in the afternoon, however no damage was reported. Morning showers were reported in south coast SWLD and adjacent parts of neighbouring districts in the onshore flow.

Daily mean sea level pressure analyses

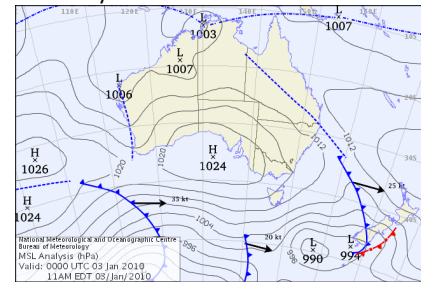
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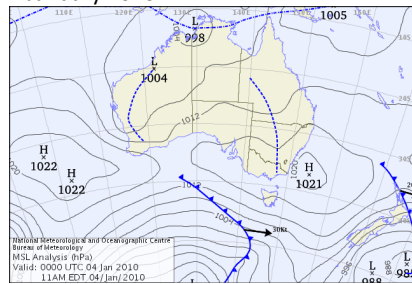
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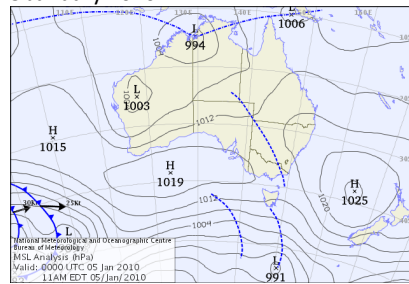
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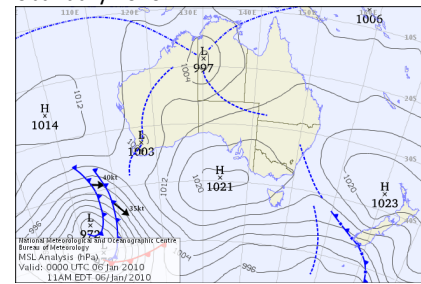
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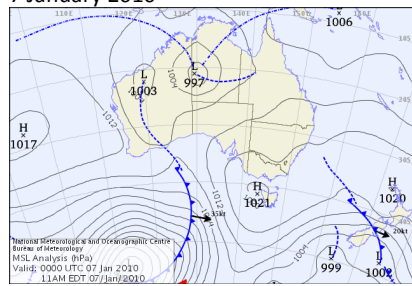
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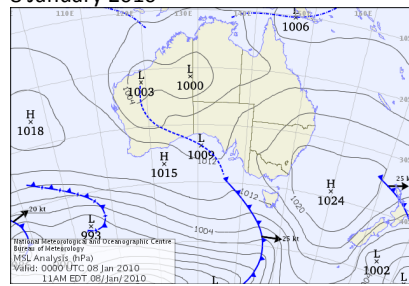
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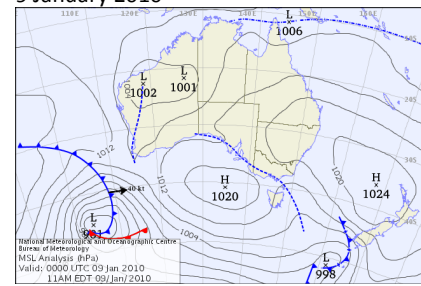
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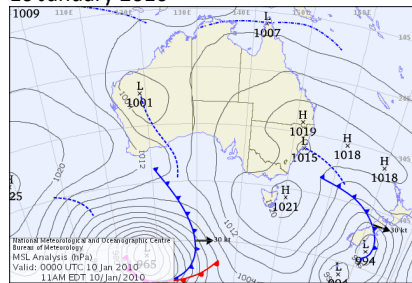
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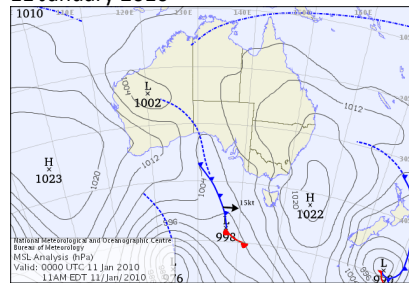
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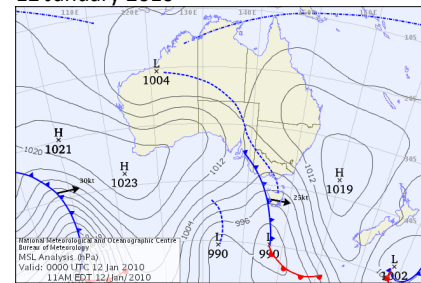
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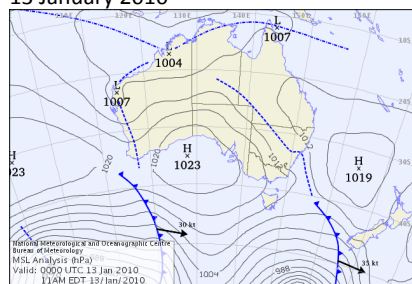
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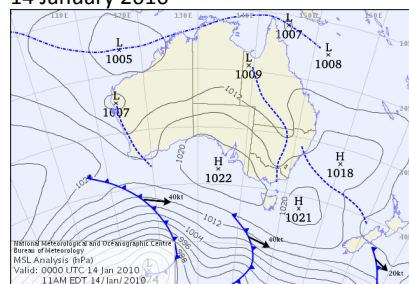
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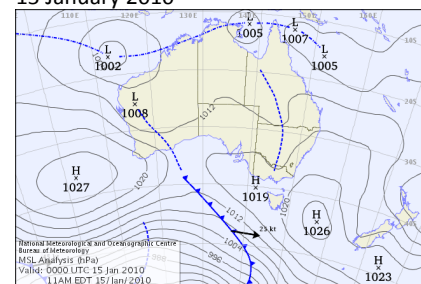
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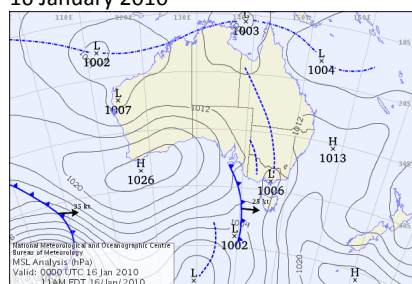
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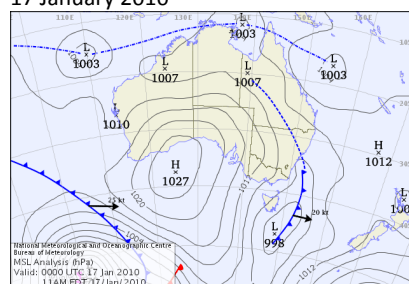
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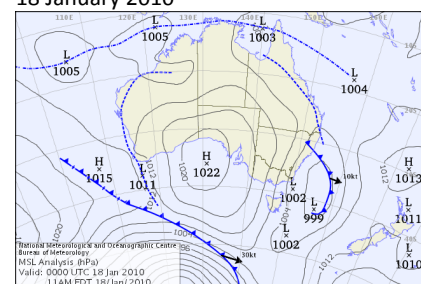
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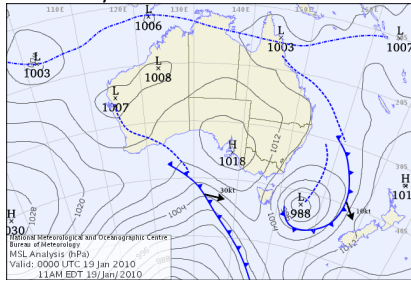
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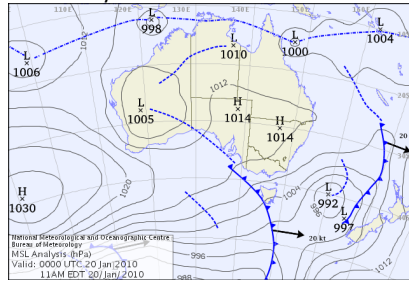
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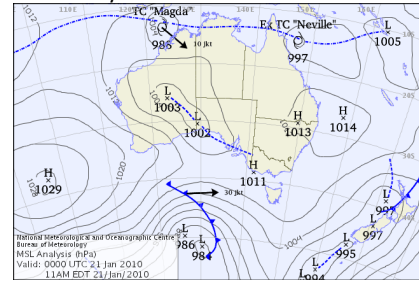
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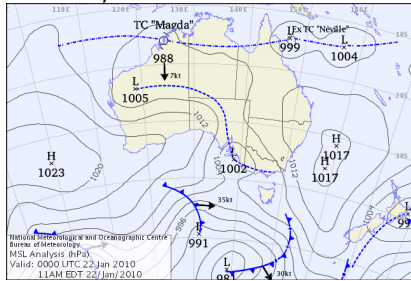
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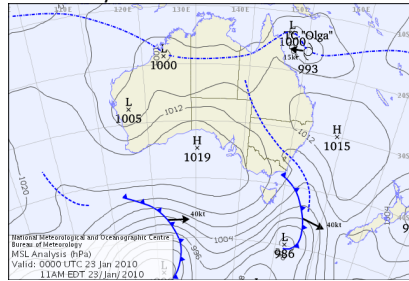
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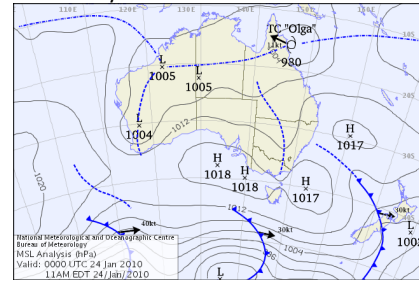
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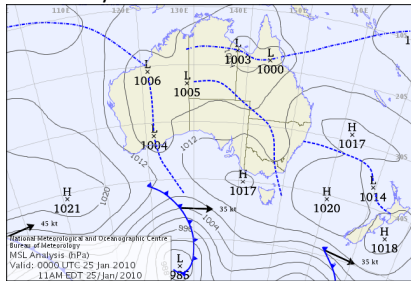
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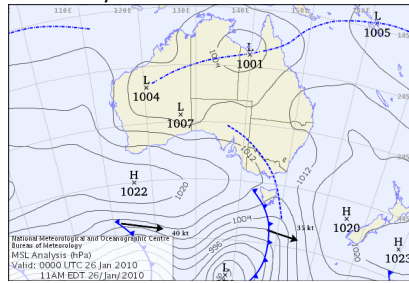
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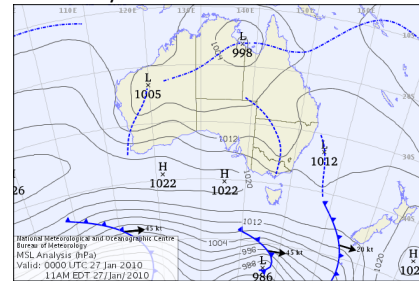
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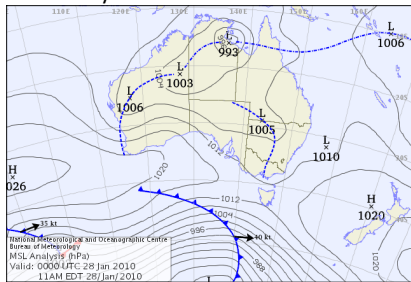
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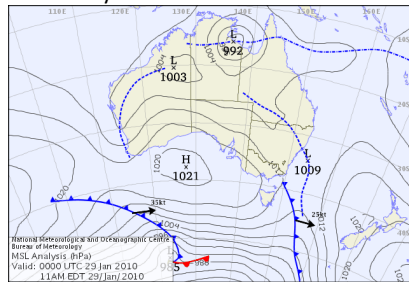
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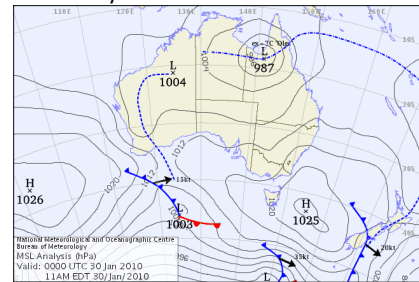
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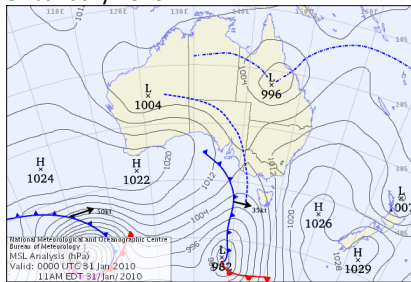
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30 January 2010



31 January 2010



Temperatures

The first month of 2010 is ranked as the second warmest January on record in terms of mean temperature (note: mean temperature is the average of daily maximum temperature and daily minimum temperature). The average mean temperature for WA for January was 29.9 °C, which is 1.2 °C above the long term average of 28.7 °C.

New temperature records

Record highest January daily maximum temperature

	New record	Old record	Years of record
Mardie	49.0 on the 1st	48.9 on the 4th in 1963	54
Ravensthorpe	45.4 on the 6th	45.0 on the 3rd in 1997	49
Esperance	46.9 on the 6th	44.7 on the 22nd in 1990	41
Emu Creek Station	49.1 on the 2nd	49.0 on the 10th in 2009	38
Eneabba	47.3 on the 18th	47.0 on the 31st in 1991	37
Hyden	47.0 on the 9th	46.4 on the 3rd in 2008	36
Learmonth Airport	48.9 on the 2nd	48.2 on the 21st in 2003	35

Record highest January mean maximum temperature

	New record	Old record	Years of record
Eucla	30.1	30.0 in 1985	75
Kalgoorlie-Boulder Airport	36.6	36.1 in 1993	69
Bencubbin	37.6	37.0 in 1993	57
Dalwallinu Comparison	37.8	37.5 in 1980	54
Eyre	30.7	29.2 in 2007	51
Merredin	37.4	36.1 in 2009	45
Wongan Hills	37.7	36.9 in 2009	43
Narembeen	37.0	36.7 in 1993	42
Beverley	36.9	36.4 in 1997	40
Pingelly	34.3	34.0 in 2009	39
Hyden	36.6	36.3 in 1993	36
Wagin	32.9	32.8 in 1997	36

Record highest January daily minimum temperature

	New record	Old record	Years of record
Balladonia	27.8 on the 10th	24.9 on the 14th in 1999	45

Maximum temperatures

Above to very much above average maximum temperatures were recorded in January across a large area of WA stretching from the central Pilbara into the Gascoyne, southwest Interior, Goldfields, Eucla and much of the SWLD, with areas of up to 5 °C warmer than normal in the southeast Gascoyne. Small parts of the eastern Interior and coastal areas of the Pilbara experienced below average daytime temperatures, whilst the remainder of the state was near average. When averaged over the whole state, January 2010 was the third hottest January since comparable records commenced in 1950.

A number of sites in the Eucla, Goldfields and SWLD broke their mean daily maximum temperature records for January with Wongan Hills, Bencubbin, Merredin, Hyden, Narembeen and Eyre recording their hottest ever month on record.

Several daily maximum temperature records for January were broken or equalled in the Pilbara on the first two days of the month, with maxima near to or exceeding 49 °C. In the south, a near stationary trough off the west coast on the 6th combined with a high in the Bight to direct hot northeasterly winds over the SWLD with several sites in eastern parts of the SWLD breaking their hottest January day, as well as hottest ever day on record. Hopetoun North, in the Southeast Coastal district, recorded a maximum temperature of 48.0 °C, which was the second hottest January day ever officially recorded in the SWLD. On several other occasions during January, maximum temperatures in the SWLD exceeded 46 °C and particular site records for January were broken or equalled.

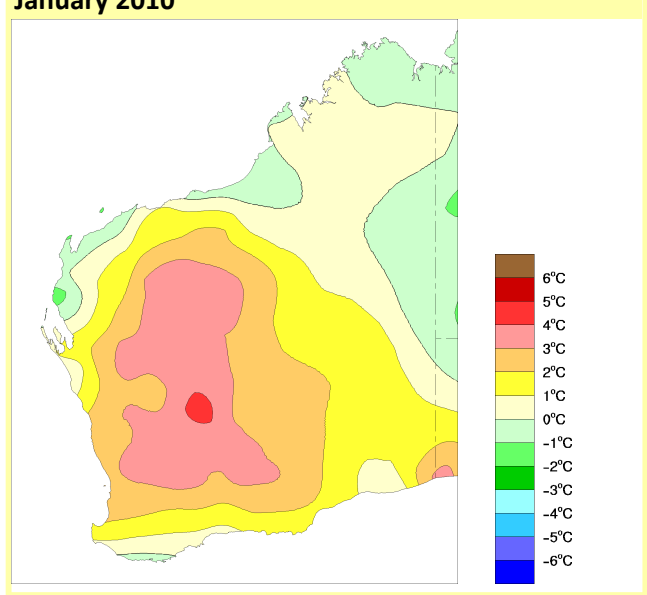
The hottest day was 49.2 °C at Onslow on the 1st, followed by 49.1 °C at Emu Creek Station on the 2nd.

The warmest days on average were 43.3 °C at Paraburdoo Aero, followed by 42.2 °C at Gascoyne Junction.

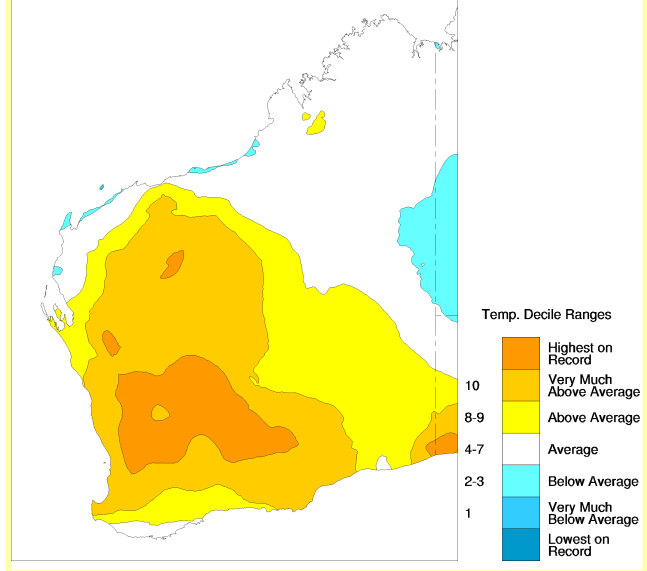
The coolest day was 16.4 °C at Rocky Gully on the 20th, followed by 16.5 °C at Shannon on the 20th.

The coolest days on average were 22.7 °C at Windy Harbour, followed by 23.0 °C at Albany.

Anomalies of mean daily maximum temperature in January 2010



Decile rank of mean daily maximum temperature in January 2010



There could be discrepancies between the values shown on these maps and those at individual locations, as a result of the way the maps are generated.

Minimum temperatures

Much of WA saw above to very much above average mean minimum temperatures in January, in particular in parts of the Pilbara, Gascoyne, Interior and Eucla which recorded up to 3 °C above average mean minima. When averaged over the whole state, January 2010 was the second hottest January on record.

Balladonia, in the Eucla, recorded its highest January overnight temperature with 27.8 °C on the 10th as northerly winds directed hot desert air over the station.

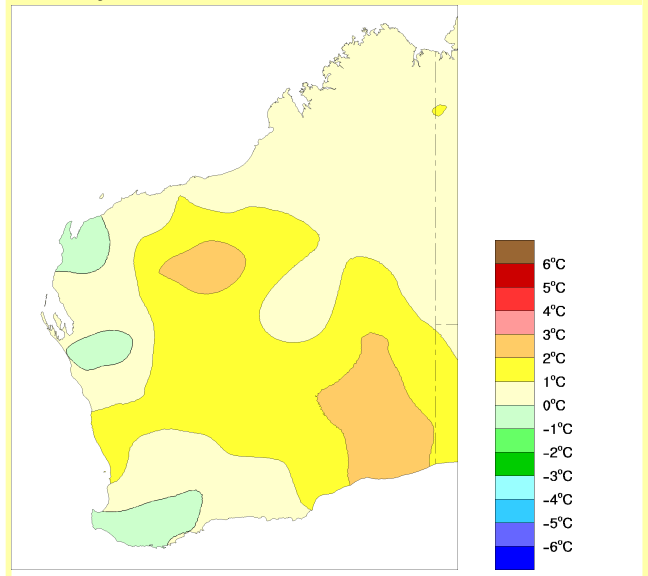
The coldest night was 4.1 °C at Eyre on the 3rd and 14th.

The coolest nights on average were 11.8 °C at Rocky Gully, followed by 12.1 °C at both Bridgetown and Shannon.

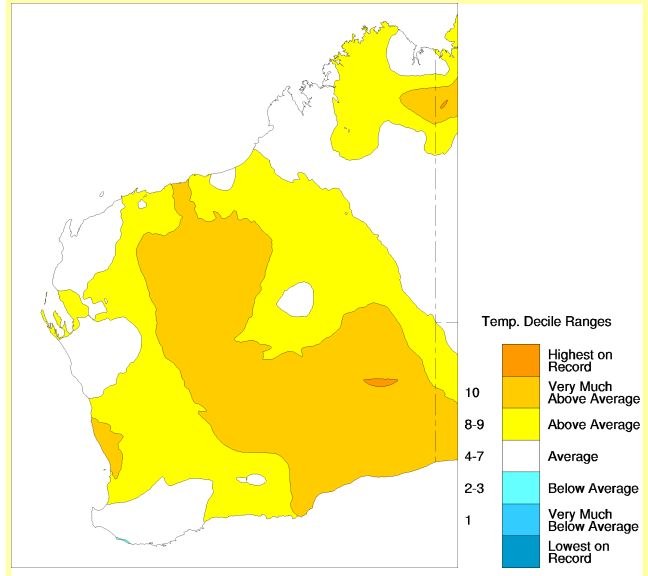
The warmest nights on average were 27.4 °C at Paraburdoo Aero, followed by 27.2 °C at Bedout Island.

The warmest night was 34.6 °C at Paraburdoo Aero on the 2nd.

Anomalies of mean daily minimum temperature in January 2010



Decile rank of mean daily minimum temperature in January 2010



There could be discrepancies between the values shown on these maps and those at individual locations, as a result of the way the maps are generated.

Rainfall

Rainfall in January 2010 saw below to very much below average falls in parts of the Gascoyne, Goldfields and northern and western parts of the SWLD. In contrast, above average falls were reported over most of the Interior and parts of the Kimberley, grading to very much above average in the eastern Interior. Averaged across the state, the rainfall for January 2010 was near average.

A tropical low at the beginning of the month moved near the WA/NT border and brought moderate to heavy falls over mainly the central and eastern Kimberley and Interior. Moola Bulla in the southeast Kimberley recorded the highest daily fall during this event with 139.0 mm on the 11th, which was a record daily January fall for this station.

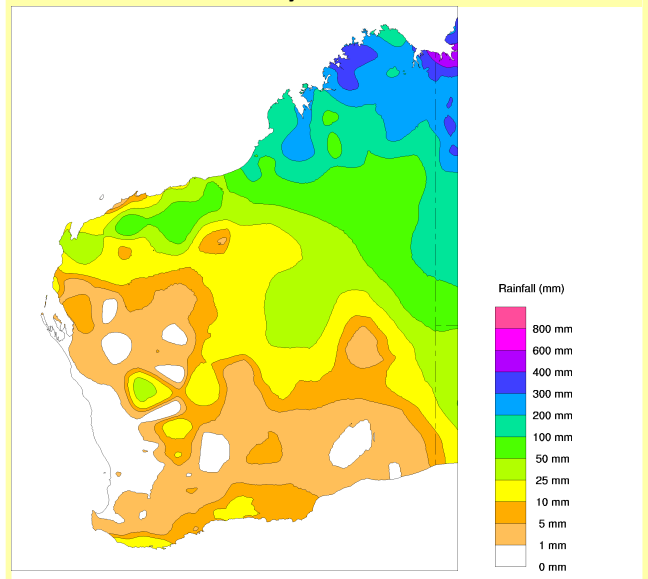
Tropical Cyclone *Magda* on the 22nd and 23rd produced moderate to heavy rainfall in the west Kimberley, although the tropical low associated with *Magda* rapidly dissipated after landfall. The highest daily total as a result of *Magda* was 142.0 mm at Camballin.

Persistent strong high pressure systems to the south of the state, along with a lack of moisture and little support from the upper atmosphere, prevented any meaningful rainfall for large parts of inland and western WA in January. In particular, there was a weaker than normal level of thunderstorm activity near the SWLD west coast and many stations in this region recorded no rainfall for the month.

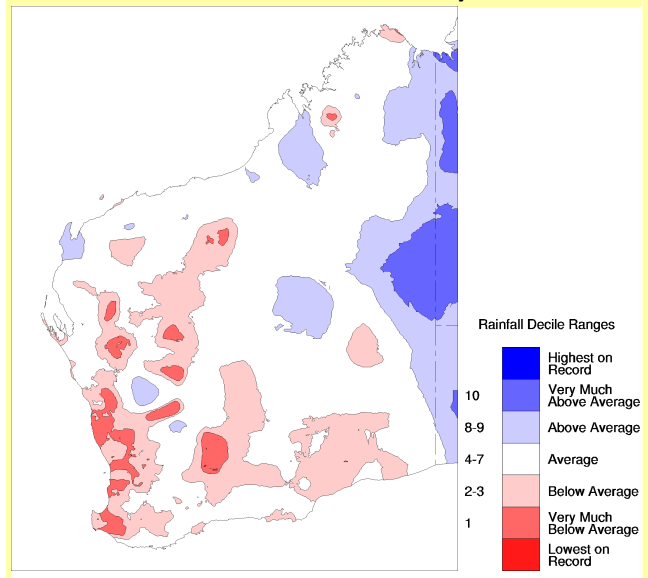
The wettest overall was 391.8 mm at Kununurra Checkpoint, followed by 342.0 mm at Doongan (both in the Kimberley).

The wettest single day was 142.0 mm at Camballin on the 23rd, followed by 139.0 mm at Moola Bulla on the 11th.

Total rainfall in January 2010



Decile rank of total rainfall in January 2010



There could be discrepancies between the values shown on these maps and those at individual locations, as a result of the way the maps are generated.

New rainfall records

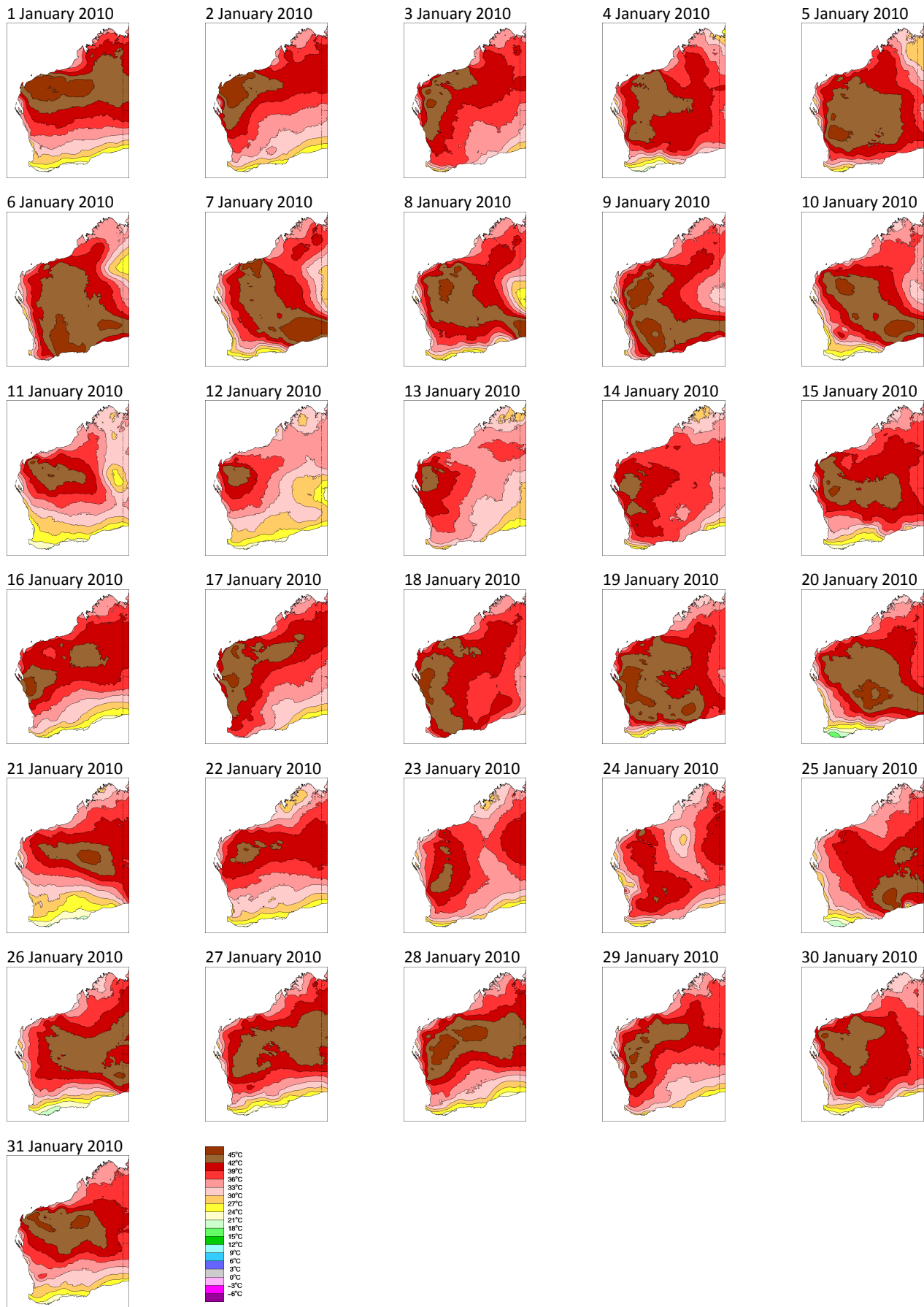
Record highest January daily rainfall

	New record	Old record	Years of record
Moola Bulla	139.0 on the 11th	136.5 on the 30th in 1993	95

Record lowest January total rainfall

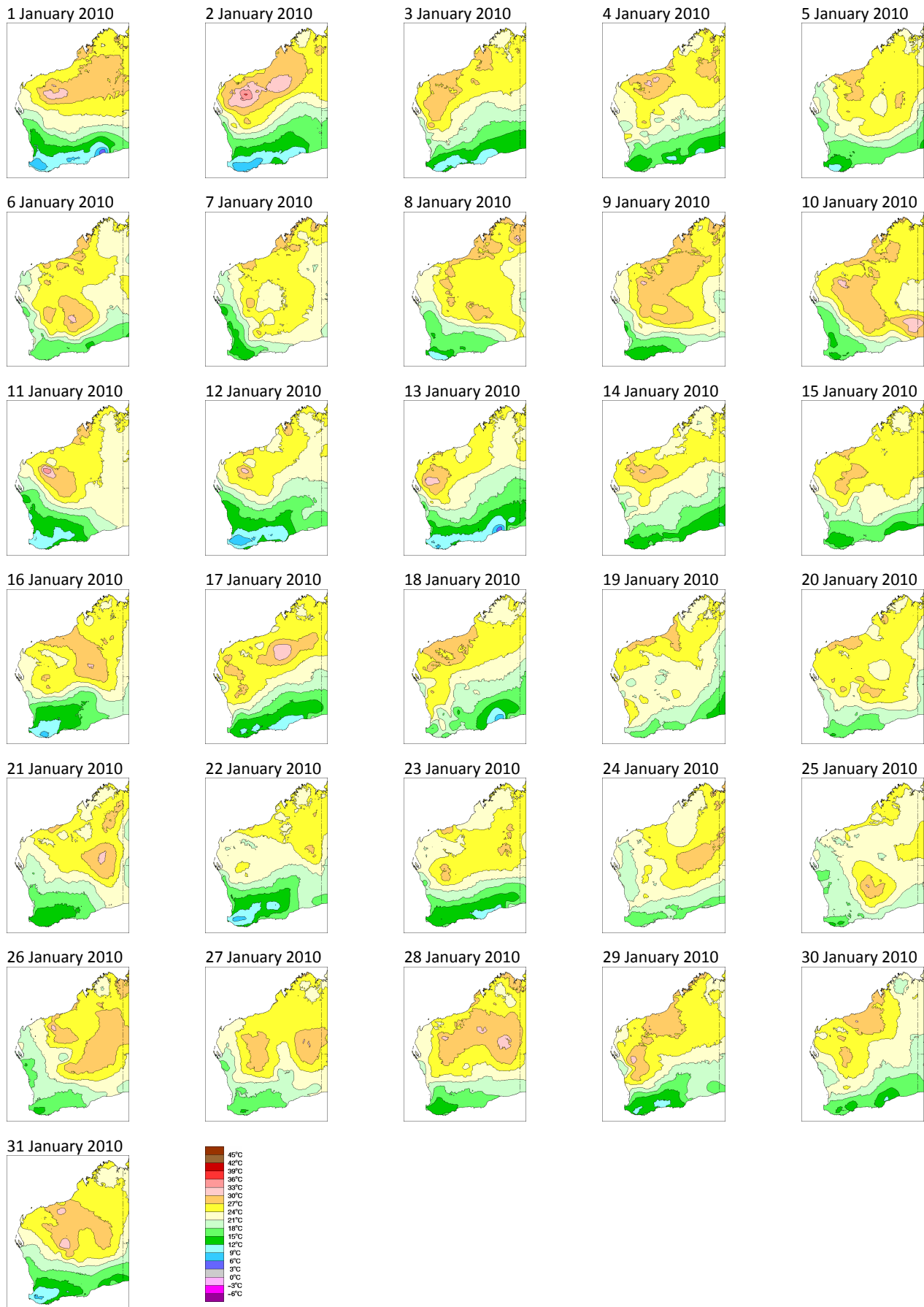
	New record	Old record	Years of record
Yanmah	1.8	2.6 in 2008	40

Daily maximum temperature for January 2010



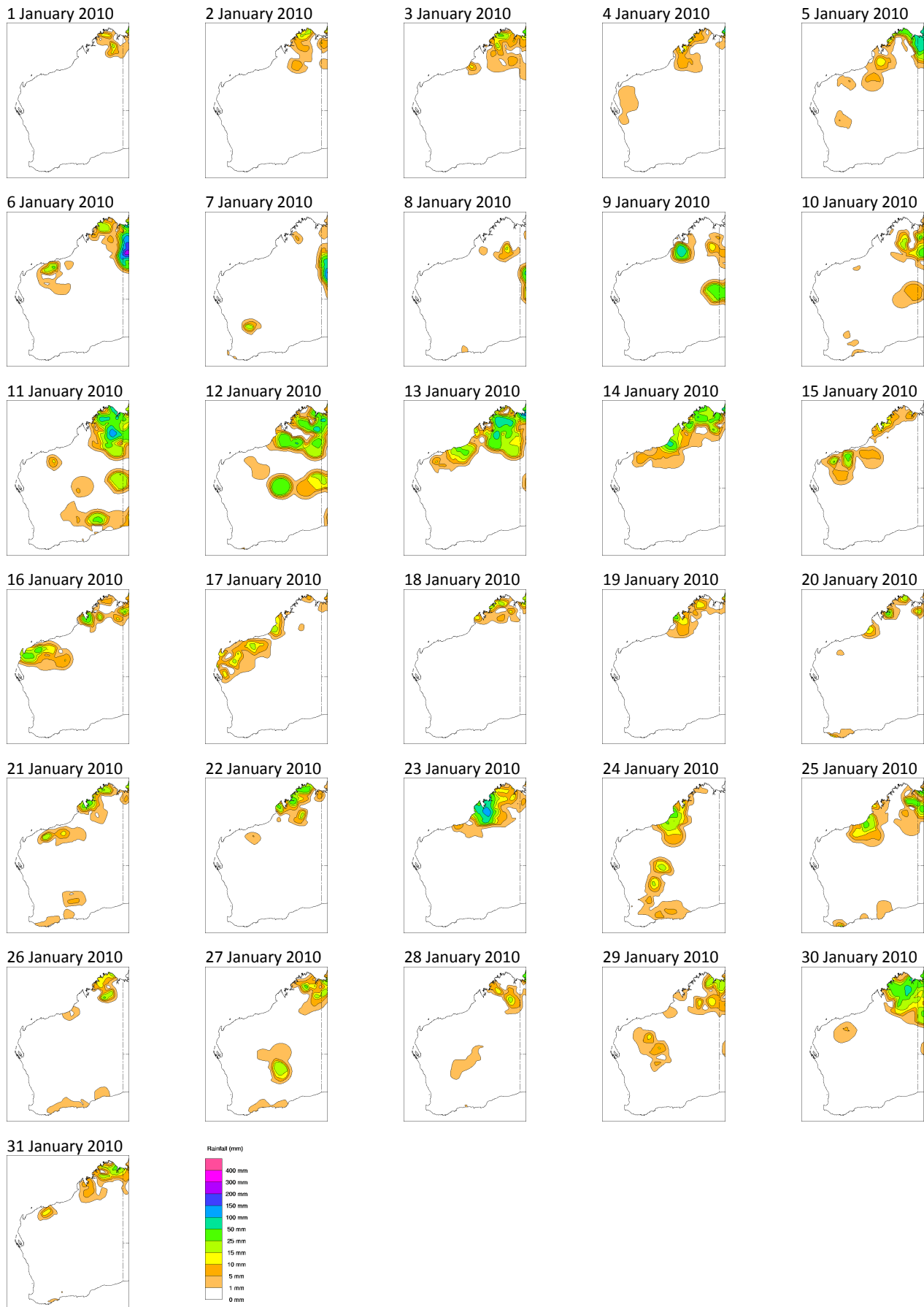
These maps are presented to give a statewide overview of conditions on each day through the month. There could be discrepancies between the values shown on these maps and those at individual locations, as a result of the way the maps are generated.

Daily minimum temperature for January 2010



These maps are presented to give a statewide overview of conditions on each day through the month. There could be discrepancies between the values shown on these maps and those at individual locations, as a result of the way the maps are generated.

Daily rainfall for January 2010



These maps are presented to give a statewide overview of conditions on each day through the month. There could be discrepancies between the values shown on these maps and those at individual locations, as a result of the way the maps are generated.

Summary of observations for Perth in January 2010

Observations and most climatological values are from the "Perth Metro" site at Mount Lawley, except for sunshine, evaporation and phenomena which are taken from Perth Airport. Extremes are captured from a composite of sites including Mount Lawley, former Regional Office sites near the city centre, and Perth Airport.

	Observed this month	Climatological value
Temperature		
Mean daily maximum temperature	33.4 °C	30.6 °C
Mean daily minimum temperature	18.9 °C	17.8 °C
Mean temperature	26.2 °C	24.2 °C
Mean temperature at 9 am	25.3 °C	23.7 °C
Mean temperature at 3 pm	31.3 °C	28.9 °C
Highest temperature	42.9 °C on the 17th	45.8 °C on the 31st in 1991
Lowest temperature	14.0 °C on the 1st	8.9 °C on the 25th in 2001
Days 30 °C or warmer	23	16.1
Days 32 °C or warmer	18	12.1
Days 35 °C or warmer	12	6.5
Days 40 °C or warmer	3	0.9
Nights 5 °C or cooler	0	0.0
Nights 2 °C or cooler	0	0.0
Humidity		
Mean relative humidity at 9 am	43 %	51 %
Mean relative humidity at 3 pm	34 %	40 %
Pressure		
Mean MSL pressure at 9 am	1012.2 hPa	1013.5 hPa
Mean MSL pressure at 3 pm	1009.7 hPa	1011.4 hPa
Wind		
Strongest wind gust	SSW 54 km/h on the 30th	SW 89 km/h on the 28th in 1990
Mean wind speed at 9 am	12.9 km/h	14.0 km/h
Mean wind speed at 3 pm	19.2 km/h	19.0 km/h
Days with gale-force gusts	0	0.1
Rainfall		
Total precipitation	0.0 mm	9.5 mm
Number of rain days	0	2.2
Wettest day	0.0 mm	104.0 mm on the 22nd in 2000
Sunshine		
Mean daily sunshine	12.4 hours	11.6 hours
Evaporation		
Mean daily evaporation	11.1 mm	10.1 mm
Phenomena		
Days of thunder	0	1.0
Days of hail	0	0.0
Days of frost	0	0.0
Days of fog	0	0.4
Days with mist or haze	23	15.4

Daily and mean maximum temperatures for January 2010

Mean is the average of the daily maximum temperature for January 2010; it is only shown if there are sufficient days available. Anom is the difference between the mean daily maximum temperature for January 2010 and the long-term average maximum temperature for January. Decile is the decile rank of mean daily maximum temperature for January 2010 in the climate record of other January mean daily maximum temperatures; "L" indicates this is the lowest on record, and "H" it is the highest on record. Anomalies and deciles are only shown if there are sufficient years of climate record available. The lowest and highest maximum temperatures for each site for January 2010 are highlighted.

Table with columns for location, Mean, Anom, Decile, and 31 days of temperature data. Locations include North Kimberley (01), East Kimberley (02), West Kimberley (03), De Grey (04), Fortescue (05), West Gascoyne (06), East Gascoyne (07), Murchison (07A), Central Coast (08), South Coast (09A), North Central (10), and South Central (10A).

Daily and mean maximum temperatures for January 2010

Mean is the average of the daily maximum temperature for January 2010; it is only shown if there are sufficient days available. **Anom** is the difference between the mean daily maximum temperature for January 2010 and the long-term average maximum temperature for January. **Decile** is the decile rank of mean daily maximum temperature for January 2010 in the climate record of other January mean daily maximum temperatures; "L" indicates this is the lowest on record, and "H" it is the highest on record. Anomalies and deciles are only shown if there are sufficient years of climate record available. The **lowest** and **highest** maximum temperatures for each site for January 2010 are highlighted.

Ravensthorpe	29.7	+0.8	7	24.2	28.0	36.5	22.9	34.0	45.4	26.0	32.0		44.6	24.1	25.1	33.0	37.8	24.0	26.8	35.9	42.8	28.9	23.2	21.9	25.5	33.0	35.0	27.2	21.5	22.5	26.2	32.5	26.1	23.8
Wagin	32.9	+1.9	H	28.9	32.1	38.5	28.8	35.9	40.8	32.8	34.1	40.5	28.9	26.2	28.3	35.3	39.1	30.0	31.3	39.6	43.1	34.6	26.9	27.3	29.6	35.2	37.0	28.0	28.1	30.5	32.6	36.6	30.3	28.1
Wandering	34.6			30.3	34.4	39.5	32.7	38.1	39.8	33.6		38.5	29.7	26.6	29.6	36.0	40.1	32.9	32.9	40.1	43.6	42.1	30.2	29.0	31.2	37.2	38.5	29.8	31.8	33.6	34.3	38.1	33.4	29.1
Eucia (11)	Mean Anom Decile			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Balladonia	34.1	+2.8	10	29.1	30.3	33.5	38.0	39.0	45.0	42.5	37.0	42.6	41.2	28.9	27.0	31.9	35.8	35.5	27.2	32.0	37.0	43.2	34.1		29.5	33.0	36.1	42.5	24.7	27.1	27.2	31.0	36.5	25.7
Eucia	30.1	+4.3	H	23.6	23.6	27.3	32.1	35.1	38.4	42.6	43.6	36.4	38.7	23.3	23.9	23.4	29.4	31.6	23.3	23.9	30.9	37.7	39.9	30.4	24.0	24.5	27.7	37.8	37.3	25.7	23.3	24.2	25.8	25.0
Eyre	30.7	+4.3	H	24.3	24.5	31.0	35.5	37.2	40.0	45.6	27.0	39.1	42.2	24.5	25.5	25.5	31.0	35.2	24.0	25.0	34.3	40.1	35.5	25.0	25.9	25.6	28.0	44.5	26.0	25.9	24.1	25.9	28.1	25.0
Forrest	34.1			30.3	28.6	31.5	36.2	39.2	41.9	42.0	43.0	42.8	37.7	23.2	26.8	27.2	31.6	37.6	27.3	29.3	32.2	39.1	43.0	33.0	28.7	31.5	33.4	40.5	41.5	35.9	27.9	30.3	35.2	29.8
South East (12)	Mean Anom Decile			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Bulga Downs	41.0			39.1	35.9	38.3	41.2	44.3	45.2	44.9	45.2	45.5	45.5	37.2	36.5	39.0	41.0	44.0	37.2	40.0	42.2	45.2	45.5	34.6	36.0	41.0	41.0	39.5	41.8	42.2		39.0	43.0	40.0
Kalgoorlie-Boulder Airport	36.6	+2.9	H	32.5	32.8	35.3	39.1	42.3	44.2	44.6	40.9	42.9	41.6	31.9	28.9	33.1	36.6	39.1	31.7	33.4	38.4	42.3	45.0	26.1	30.3	35.7	41.4	40.7	33.6	35.5	32.0	32.7	39.0	31.1
Laverton Aero	37.7			35.8	33.1	34.8	39.3	42.0	42.3	41.8	42.0	41.5	41.5	34.3	31.4	32.2	36.0	40.8	34.3	34.6	37.5	41.1	44.1	33.5	33.2	36.6	39.4	41.0	41.4	38.0	34.9	34.3	39.5	35.4
Leinster Aero	39.9			39.4	35.2	37.2	40.6	43.6	43.5	43.7	43.1	42.8	42.8	37.4	35.0	35.6	38.1	42.8	38.0	37.9	39.4	42.0	44.8	35.3	35.3	39.8	40.2	40.8	42.0	42.6	38.6	37.4	41.7	41.3
Leonora	39.2	+2.1	9	36.5	34.5	37.0	41.5	43.1	44.6	45.0	43.6	42.9	44.0	35.3	33.0	34.6	38.0	42.2	35.6	35.6	39.0	43.0	46.5	33.7	34.0	38.1	42.0	42.0	42.0	39.0	36.1	36.1	41.5	36.5
Norseman	34.9	+2.4	10		34.0	38.4	40.2	44.0	39.0		41.5	28.0	27.7	33.5	37.5	28.6	31.1	33.4	39.0	43.0	37.2	24.5		34.5	37.6	38.6	30.0	33.0	31.8	32.5	38.5	30.0		
Salmon Gums Res.Stn.	32.8	+2.3	10	28.3	32.0	35.4	32.9	38.8	45.7	31.0	33.5	43.7	28.7	26.6	27.0	33.1	37.6	26.2	29.9	34.1	40.3	37.9	33.6	24.1	29.2	34.3	35.7	35.0	23.8	28.2	30.3	33.1	37.8	28.5
Southern Cross Airfield	37.3			33.5	34.4	37.2	40.0	43.2	45.7	40.9	39.6	44.9	37.0	29.7	31.0	36.1	39.0	34.2	34.2	37.3	41.3	43.3	39.1	29.7	32.6	37.8	42.2	35.0	35.4	37.0	35.1	36.4	40.3	32.4
Yeelirrie	40.8	+2.8	10	40.1	36.5	39.0	41.0	43.8	43.8	44.0	43.7	43.0	44.0	38.0	36.4	36.8	39.0	43.0	39.3	39.0	40.0	42.5	45.2	37.0	36.5	40.7	40.2		43.0	42.0	40.7	38.2	43.2	43.0
North East (13)	Mean Anom Decile			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Balgo Hills	38.3	-0.4	4	43.3	41.2			34.7	29.0	33.5	38.8	39.2	37.1	31.9	33.5	36.3	37.7	39.3	40.9	41.0	39.2	39.2	39.4	39.1	39.5	39.6	39.1	38.5	41.0	42.9	42.4	38.2	37.2	39.0
Carnegie	40.2			41.5	37.3	38.9	42.4	43.0	42.5	41.9	41.5	39.5	42.6	41.4	32.5	34.5	38.5	42.5	40.5	37.5	39.0	42.0	43.5	44.0	38.5	36.0	35.0	40.5	43.5	41.9	41.8	38.9	40.5	42.1
Giles Meteorological Office	36.7	-0.6	4	42.5	36.2	36.8	38.0	39.0	36.6	32.3	27.5	32.1	31.8	25.5	28.7	31.0	34.6	37.6	39.7	35.7	35.7	36.8	38.1	40.0	40.5	39.4	39.8	41.5	41.6	42.3	41.7	39.0	37.2	38.6
Telfer Aero	41.2	+0.6	6	46.5	42.8	42.7	39.9	41.6	43.0	41.0	41.6	41.6	40.7	39.5	37.0	35.7	38.7	40.4	43.3	44.2	42.4	43.8	42.6	40.8	41.5	37.6	32.1	37.2	39.7	42.0	45.2	43.3	43.0	44.4
Warburton Airfield	38.7	+0.8	7	39.7	35.6	37.2	40.4	41.7	40.6	38.4	38.1	34.7	38.9	34.9	27.5	33.1	38.0	41.9	40.2	36.4	38.1	40.3	41.7	43.5	37.8	35.4	36.1	41.9	42.0	43.7	42.5	36.9	40.6	42.0
Wiluna	41.2	+3.3	10	41.0	40.5	38.5	43.0	44.0	43.7	43.5	43.2	42.1	43.4	40.0	36.6	38.0	40.0	42.5	40.6	39.5	40.1	42.1	43.9	39.9	38.5	40.5	38.5	41.0	42.5	42.0	41.5	38.7	42.9	43.5

Daily and mean minimum temperatures for January 2010

Mean is the average of the daily minimum temperature for January 2010; it is only shown if there are sufficient days available. Anom is the difference between the mean daily minimum temperature for January 2010 and the long-term average minimum temperature for January. Decile is the decile rank of mean daily minimum temperature for January 2010 in the climate record of other January mean daily minimum temperatures; "L" indicates this is the lowest on record, and "H" it is the highest on record. Anomalies and deciles are only shown if there are sufficient years of climate record available. The lowest and highest minimum temperatures for each site for January 2010 are highlighted.

Table with columns for location, Mean, Anom, Decile, and daily minimum temperatures (1-31). Rows are grouped by region: North Kimberley (01), East Kimberley (02), West Kimberley (03), De Grey (04), Fortescue (05), West Gascoyne (06), East Gascoyne (07), Murchison (07A), North Coast (08), Central Coast (09), South Coast (09A), and South Central (10A).

Daily and mean minimum temperatures for January 2010

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Wagin	14.5	+0.1	5	11.4	10.5	12.9	14.0	14.6	17.0	14.1	16.7	14.7	16.8	11.0	8.9	12.0	15.5	14.2	11.5	13.3	21.4	21.1	16.8	13.3	9.7	13.9	17.7	18.4	15.9	16.2	14.5	13.1	16.7	11.1	
Wandering	14.3			10.5	11.0	14.6	14.9	15.0	15.2	11.6	15.1		12.5	11.3	8.1	11.1	13.1	14.3	11.3	13.6	18.8	21.0	16.8	13.2	11.6	13.0	18.0	18.7	18.2	17.8	14.7	14.4	17.9	11.1	
Eucla (11)		Mean Anom Decile		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Balladonia	16.1	+1.5	10	11.1	11.1	10.2	15.0	16.6	14.8	25.7	16.5	18.4	27.8	16.4		11.0	12.9	15.1	16.5	10.5	12.2	18.5	18.5	16.4		11.8	17.6	20.2	19.5	19.2	17.1	16.9	12.2	15.9	
Eucla	18.2	+1.7	10	17.6	16.6	13.8	12.7	16.1	16.1	22.0	25.2	18.7	27.7	22.3	16.8	16.5	12.6	15.4	19.0	16.8	18.0	13.9	20.4	22.6	17.7	18.5	17.7	19.1	21.1	20.1	19.3	18.2	17.3	15.1	
Eyre	14.3	-0.9	2	5.5	10.0	4.1	10.7	9.7	17.0	21.4	19.1	19.5	20.3	19.3	17.3	5.9	4.1	12.9	17.5	11.9	7.4	16.5	14.2	20.8	18.5	12.2	12.3	19.5	20.5	20.6	18.2	18.7	4.5	14.0	
Forrest	17.4			15.1	15.3	11.9	13.0	15.6	16.2	20.8	23.1	22.4	29.6	21.5	12.4	11.3	12.3	15.3	18.9	12.3	12.6	14.5	20.7	22.7	17.3	12.9	17.3	22.5	24.8	20.1	19.0	16.6	14.6	16.7	
South East (12)		Mean Anom Decile		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Bulga Downs	23.2			22.1	22.8	21.6	23.1	23.5	25.1	25.1	25.2	27.8	29.5	22.2	20.5	22.0	22.0	20.2	23.0	23.2	19.5	21.2	22.0	19.8	20.2	24.4	21.3	23.3	25.2	27.2	26.0		25.2	21.5	
Kalgoorlie-Boulder Airport	19.8	+1.6	10	17.4	15.1	17.9	22.8	20.6	27.3	24.8	18.3	21.7	27.7	15.8	15.5	17.6	20.3	22.5	13.9	16.9	19.5	25.5	21.8	17.3	13.7	18.1	21.6	26.8	19.6	19.0	18.9	16.3	20.9	17.2	
Laverton Aero	22.7			21.2	17.7	18.9	21.5	25.6	28.8	25.8	28.5	29.0	27.8	22.5	17.1	18.6	19.6	23.4	17.1	18.8	20.9	25.0	27.7	22.0	16.9	21.1	25.5	26.7	27.4	21.2	22.5	19.1	21.1	24.6	
Leinster Aero	24.3			22.6	23.0	20.6	22.0	23.8	28.0	24.9	26.4	26.1	28.0	25.4	23.1	21.5	21.3	22.5	22.8	23.2	21.3	22.5	28.9	22.4	20.9	24.0	25.8	26.1	28.0	26.6	23.7	24.0	25.0	28.1	
Leonora	22.9	+1.2	9	21.8	19.4	20.6	19.5	25.9	30.7	23.3	25.2	29.0	28.8	21.9	18.4	20.2	18.9	21.6	18.8	19.9	18.7	21.4	25.8	20.8	18.8	22.7	24.0	29.9	26.9	25.7	24.9	21.4	22.9	21.9	
Norseman							12.5	16.0	22.0	22.8	16.2			13.9	11.7	13.5	19.0	17.2	14.6	13.8	16.7	20.0	16.5	15.5	9.9		13.6	24.0	17.6	17.4	17.5	13.5	17.6	15.5	
Salmon Gums Res.Stn.	14.1	+0.2	5	8.6	5.9	12.8	10.0	15.4	15.3	18.6	17.3	15.5	18.3	11.2	8.5	11.6	12.0	17.9	13.2	12.3	16.2	13.6	14.9	14.6	14.7	11.7	18.7	21.4	17.3	16.4	15.5	7.3	15.5	13.4	
Southern Cross Airfield	18.2			15.4	15.1	18.0	17.4	16.9	22.5	26.1	17.7	20.0	21.5	13.5	13.7	17.8	18.8	17.8	12.9	18.5	15.8	18.2	18.7	16.0	12.7	17.9	25.4	20.2	18.9	19.0	19.0	19.3	22.2	16.1	
Yeelirrie	23.3	+1.1	8	21.2	25.2	22.5	19.3	22.6	26.5	21.4	23.9	24.0	27.7	26.6	22.7	22.0	22.1	20.0	24.9	24.5	19.2	17.5	21.6	24.5	22.0	25.8	21.4	25.0		27.2	25.2	23.6	24.0	24.2	
North East (13)		Mean Anom Decile		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Balgo Hills	25.3			27.4	26.7				24.3	21.7	23.6	26.7	25.4	23.2	23.3	23.3	24.9	25.7	26.4	27.8	25.9	23.5	23.7	26.2	26.0	27.0	26.2	22.0	28.3	25.5	27.6	26.2	22.6	26.1	
Carnegie	24.1			25.3	22.9	20.7	21.5	23.3	24.9	24.1	25.7	26.4	26.6	24.9	21.7	20.6	22.3	24.0	28.0	24.0	22.0	22.0	23.0	26.5	22.0	26.0	27.5	22.5	27.0	23.6	25.9	24.9	22.2	25.9	
Giles Meteorological Office	23.7	+0.2	5	26.3	22.3	22.7	24.7	24.5	22.8	23.7	23.6	21.3	23.1	21.9	21.2	17.7	19.6	23.9	23.7	21.3	21.1	21.1	24.0	26.1	26.3	26.2	26.6	24.4	27.3	28.8	28.7	23.7	20.7	25.1	
Telfer Aero	26.9	+0.9	9	28.5	31.5	27.4	27.3	25.6	27.4	25.5	26.0	29.5	27.4	25.9	25.4	25.8	25.3	25.6	28.8	31.2	27.1	27.4	26.3	24.5	24.7	26.2	22.7	23.9	25.5	26.2	29.7	28.0	28.4	28.8	
Warburton Airfield	24.4	+1.7	10	25.3	19.2	20.6	23.4	26.8	22.6	25.4	25.7	24.7	23.7	23.6	19.6	18.4	22.2	26.1	27.6	22.2	21.3	23.1	25.6	29.5	21.4	25.0	27.3	23.6	29.2	28.8	29.2	22.5	23.5	27.9	
Wiluna	24.8	+2.0	10	25.0	25.5	20.2	25.1	26.5	29.6	22.2	27.2	29.7	29.2	29.5	26.5	22.5	23.5	24.8	26.1	24.9	23.6	21.2	27.9	25.4	23.5	26.5	22.8	26.5	20.5	18.0	19.0	24.5	26.5		

