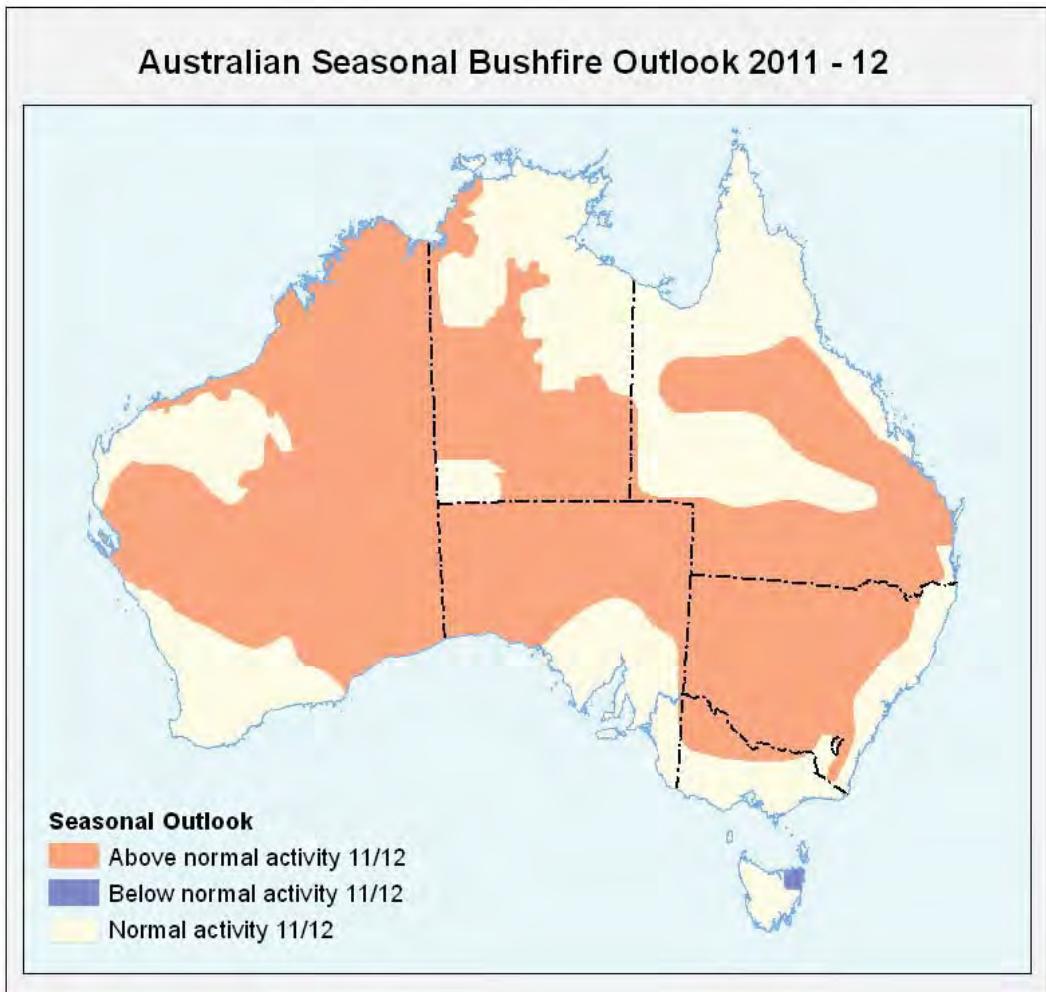


Southern Australia Seasonal Outlook Workshop

August 2011

Compiled by Rob Sandford
SA Country Fire Service



Southern Australia Seasonal Outlook Workshop 2011

**23 & 24 August 2011, CFS Headquarters, Level 4,
60 Waymouth Street Adelaide**

Workshop Participants

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CONTENTS

Workshop Participants

Executive summary

Climate summary – Antecedent conditions and seasonal outlook

Victorian summary

South Australian summary

Queensland summary

New South Wales/ACT Summary

Tasmanian summary

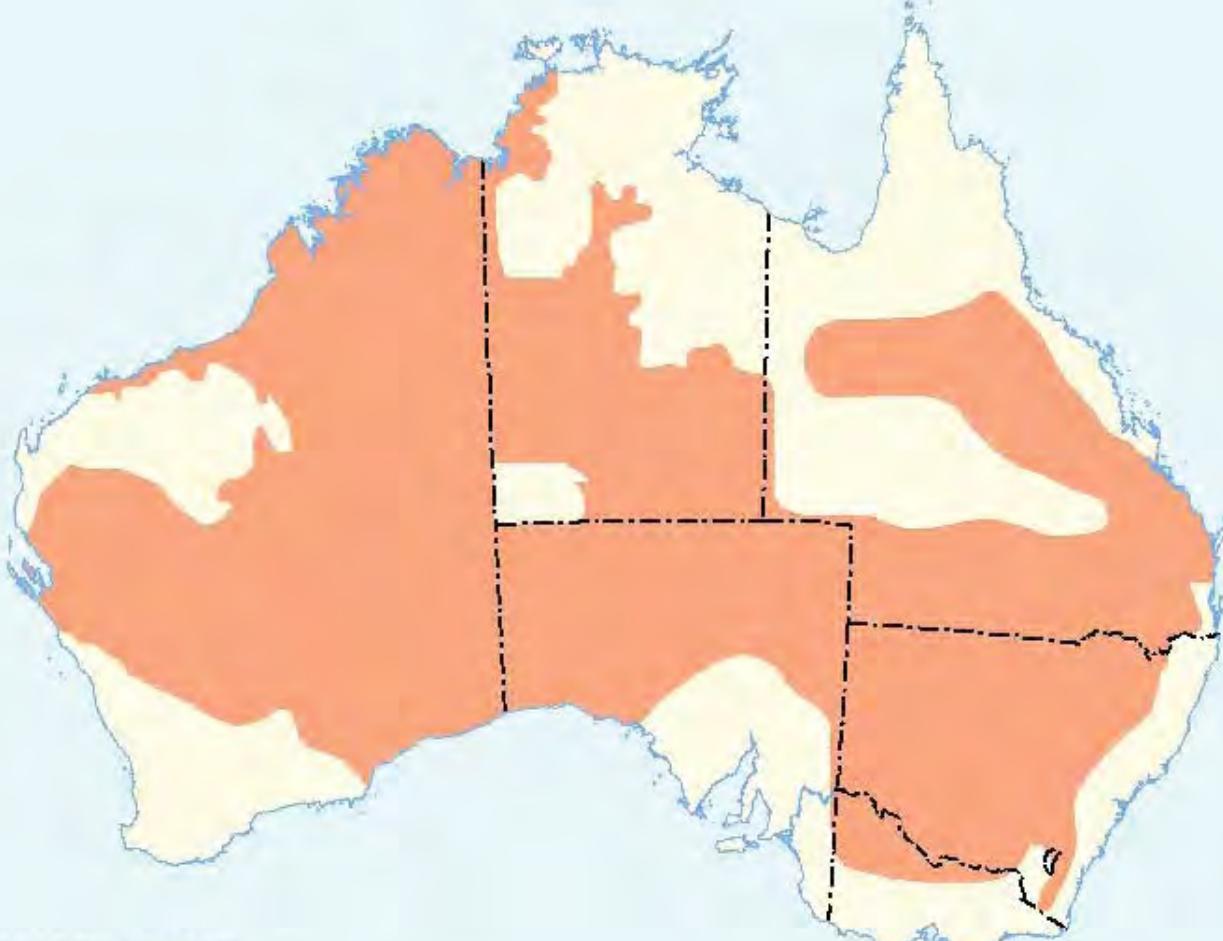
Western Australian summary

EXECUTIVE SUMMARY

FIRE NOTE

ISSUE 86 AUGUST 2011

AUSTRALIAN SEASONAL BUSHFIRE ASSESSMENT 2011-12



Seasonal Outlook

- Above normal activity 11/12
- Below normal activity 11/12
- Normal activity 11/12

INTRODUCTION

A thick, tall band of grass extends across much of central Australia from the Indian Ocean in the west to the Pacific Ocean in southern Queensland and the Great Dividing Range in New South Wales. The grass – waist- and even shoulder-high in places – has flourished because of the heavy

rains that accompanied the very strong La Niña event at the beginning of 2011.

With much of this grass now curing because of drier recent weather, the potential exists for above-normal bushfire activity across the centre of Australia during the 2011-12 southern fire season.

These expectations summarise the views of the attendees at the Southern Seasonal Bushfire Assessment Workshop, held in Adelaide on 23 and 24 August and chaired by Rob Sandford, Assistant Chief Officer of the Country Fire Service, South Australia. The workshop, supported by the Bushfire CRC, brought fire and land managers, climatologists

DEFINITIONS

Fire potential: The chance of a fire or number of fires occurring of such size, complexity or other impact which requires resources (from both a pre-emptive management and suppression capability) beyond the area in which it or they originate. Fire potential depends on many factors including weather and climate, fuel abundance and availability, recent fire history and fire-fighting resources available in an area.

Rainfall decile: A decile is a statistical technique that ranks sorted observations into 10 equal groups. A decile rainfall map (as seen in Figure 1) will show whether the rainfall is above average, average or below average for the chosen time period and area.

and meteorologists together to evaluate the upcoming season for the southern part of Australia, below the Tropic of Capricorn.

This Fire Note is produced from the discussions held at the workshop. Fire Note 85, the seasonal outlook for northern Australia, was published on 9 August.

Bushfire potential depends on many factors. For grass fires, the stage is set by the previous wet season. The volume, location and timing of rainfall are critically important when estimating fuel volumes and growth. They also affect the timing of the curing (that is, the drying) of the fuel.

The climate outlook for the next few months is also a crucial factor. Of particular interest are the future tendencies of Pacific sea surface temperature associated with the El Niño-Southern Oscillation, a major climate driver over Australia. Other less quantifiable factors, such as the distribution and readiness of fire-fighting resources, are also considered.

Workshop attendees noted that major grass fires – once common in many areas – have been relatively few in recent years because of the long drought that ended over much of Australia in 2010.

Some jurisdictions are already warning communities about the potential for major grass fires this season. New South Wales has produced a sticker (reproduced in this Fire Note) to go on petrol pumps, for example.

ANTECEDENT CONDITIONS

One of the strongest La Niña events on record was in full swing at the start of 2011. Severe weather including flooding was widespread across the east of the country. Notable examples included the Fitzroy River, Toowoomba, Grantham and Brisbane floods



▲ Bureau of Meteorology Senior Climatologist Grant Beard finishing off his predictions for the coming fire season.

in Queensland, and the severe floods in northern and western Victoria.

The excessive rains lasted until March. The eight months from August 2010 to March 2011 were the wettest such period on record – the Australia-wide average was 715mm compared with previous high of 671mm in 1973/74. Southwest Western Australia was the only region which was drier than average.

Consistent with the rainfall patterns, maximum temperatures were suppressed over much of the country at the start of the year, with decile 1 values for the January–February–March period across much of the Northern Territory and Western Australia, as well as parts of Queensland, New South Wales, South Australia and Victoria. The Australia-wide maximum temperature was ranked sixth-lowest in the record since 1950.

Coinciding with the declining phase of La Niña, drier weather patterns returned to the southeast and southwest from April, the start of the southern wet season.

April to July rainfalls were in deciles 2 and 3 in southwest Western Australia, eastern and southern South Australia, northern Tasmania, northern Victoria, most of New South Wales west of the Divide; and far southwest Queensland. Above average totals were confined to the central to northern coastal

areas of New South Wales, small pockets of southern Victoria, southern Tasmania and southeast Western Australia. During this same period, maximum temperatures were generally close to average, the exceptions being below average readings in coastal New South Wales and warmer than normal conditions in southwest Western Australia.

August to date has been warmer than average over the southern half of the country, significantly so in the southeast. Rainfall for the month has been near-to or above the average (monthly mean already exceeded in many areas) with the notable exceptions of western Tasmania, south-central Victoria and far northern New South Wales.

EXPECTED CLIMATE OUTLOOK

There are varying outlooks for ENSO (El Niño Southern Oscillation) over the coming season. Central equatorial Pacific Ocean (the key ENSO region) temperatures rose during autumn and early winter, but have been cooling since late June. The latest weekly NINO 3.4 index to 21 August was -0.6 deg C. A minority of global models continue the cooling to beyond La Niña thresholds in the southern spring, so a resurgence of La Niña must be considered as a possibility. The consensus of the models is for Pacific Ocean temperatures remaining in the neutral range.

The Bureau's official spring seasonal outlook

► Top: Figure 1 – April to July rainfall deciles 2011.

Below: Figure 2 – Chance of exceeding the median rainfall, September to November 2011.

indicates an increased chance of below-average rainfall in central to southeast South Australia and the adjacent fringes of New South Wales and Victoria. In contrast, a wetter season is more likely in southwest Western Australia and far southwest Queensland. This outlook is largely driven by the Indian Ocean temperature patterns. The maximum temperature outlook shows an increased chance of a warmer than normal season in tropical areas and a small region ((Box 1))

REGIONAL SUMMARIES

South Australia

Above average fire potential is indicated in the western part of the West Coast, North East Pastoral and North West Pastoral districts due to rainfall received and conducive growing conditions. For the remainder of the state including the southern settled areas the most likely scenario is for near average levels of fire activity.

Resource implications of an average to above average fire danger season may see the need for firefighting resources for a longer period of time. The North East and North West Pastoral areas may pose resourcing issues during this fire season should above level of activity be experienced.

Tasmania

Below normal fire season potential is expected in the northeast up until the end of November. Normal fire season potential is expected for the rest of the state. Grass fuel curing may increase the fire potential in the north later in the season. Below average moisture conditions persist in the southwest.

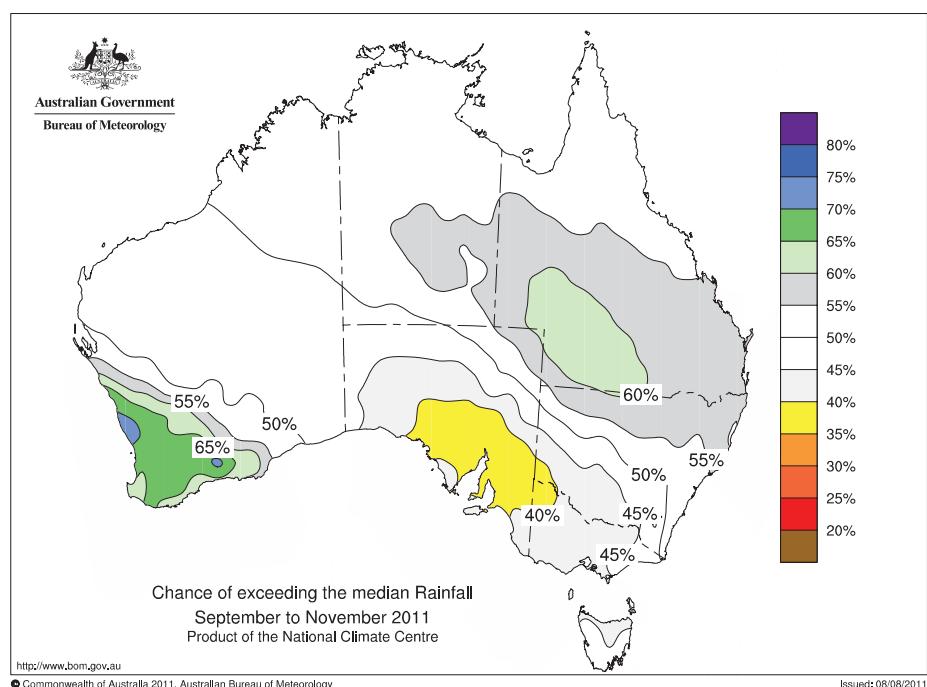
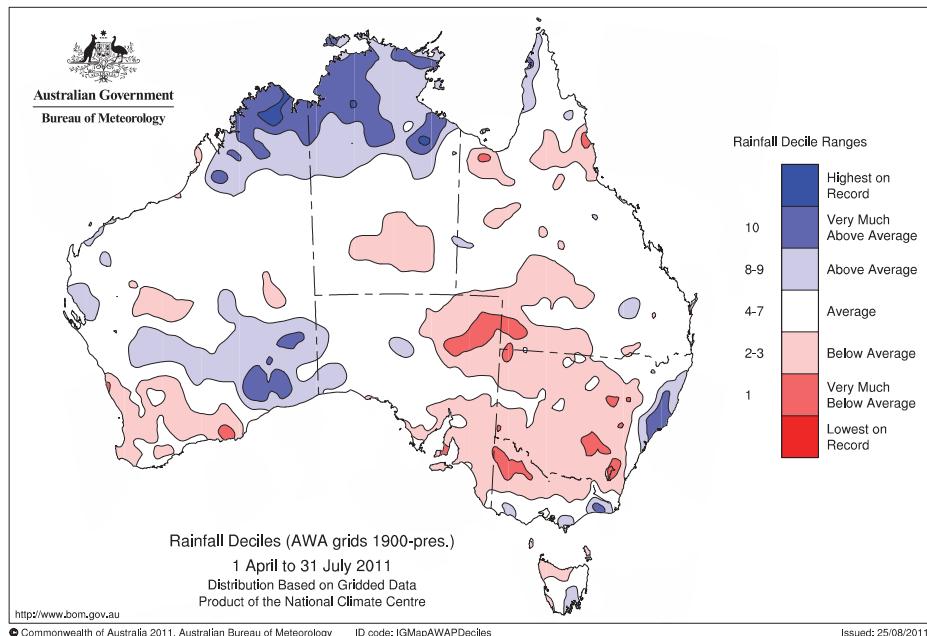
Victoria

Grass growth across the state is prolific and widespread, representing a return to conditions more consistent with the long term average. After the prolonged dry spell, agricultural stocking rates are low, and this is expected to contribute to the incidence of fast moving grass fires.

The Mallee and Wimmera desert country is a fire-prone landscape and it is normal for bushfires to occur each year. Overall there is an above average bushfire potential.

Record rainfall and partial inundation has resulted in significant and widespread native grass growth across the region. Prescribed burning has been hampered by residual soil moisture and by an increase in moisture in native grassland fuels.

The early emergence of crop and pasture species may see harvesting begin a month



▲ A petrol pump label in New South Wales.

earlier than usual, which may see an earlier start to fires. Further rains will delay harvest and will increase fuel loads.

Less irrigation in Victoria's northern country may result in a greater than average incidence

of fast moving grass fires in this area. Intensive cropping practices resulting in a lack of fallow paddocks may also contribute to this expectation.

In Victoria in August the scene for bushfire outlook, particularly for grass fires has been only partially set. Rain events during spring will increase grass fuel loads that will contribute to an increase in fire potential. This will warrant a reassessment of the current outlook.

Western Australia

In the Mid-west, Desert and Nullarbor, there are extensive areas high of fuel loads as a consequence of the very prolific rainfall, in some areas among the highest on record, which has resulted in very high, consistent and widespread grass growth. This has

resulted in above average fire potential. In the southwest (including the Wheatbelt), spring and winter rainfall is approaching average in most areas. In the Wheatbelt, this has resulted in widespread areas of reasonable crops. In the southwest there is a legacy of deep soil moisture deficiency and if the rainfall does not continue to be average or above average, this region may move from normal fire potential to above-normal.

Queensland

Record rainfall during spring 2010 and from December 2010 to April 2011 over southern Queensland provided a wet soil moisture profile that, coupled with a warm summer, created prolific grass growth over southern Queensland extending from Wide Bay to Gold Coast west to the South Australian border.

The grassland sward is continuous with high vertical structure and current curing rates ranging from 80 per cent in coastal areas to 100 per cent over vast inland areas. Forest areas have moist soil conditions with reduced fire potential however the warm temperatures and dry southerly influenced winds are continuing to dry soil moisture rapidly.

Forecast climate conditions indicate a drier spring period with the probability of average to below average precipitation for southern Queensland through September to November 2011 with increasing higher than average daytime temperatures.

Above-normal fire potential is assessed for a large area of southern Queensland, including the Beaudesert, Boonah, Lockyer and Brisbane Valleys through to the Sunshine Coast north to above Wide Bay and west to include most southern Queensland inland grassland areas to the Northern Territory and South Australian border.

Normal fire potential is assessed for South East coastal parts from the Sunshine Coast to Coolangatta and for a significant area of the Central West that includes the west of Taroom to Boulia and the Carnarvon Range area due to a combination of moist soil conditions, recent rainfall and reduced vegetation loading



◀ Mark Chladil, of the Tasmanian Fire Service, and Rob Sandford, of the South Australian Country Fire Service, checking an on-screen presentation during the workshop.

PARTICIPATING AGENCIES

ACT Emergency Services Authority

ACT Parks Service

Australasian Fire and Emergency Service Authorities Council

Bureau of Meteorology

Bushfire Cooperative Research Centre

Country Fire Authority (Vic)

Country Fire Service (SA)

Department of Environment and Natural Resources (SA)

Department of Sustainability and Environment (Vic)

Fire and Emergency Services Authority (WA)

National Parks and Wildlife Service (NSW)

NSW Rural Fire Service

Queensland Fire and Rescue Service

Tasmania Fire Service

associated with the 2009 fires. As the spring fire season progresses and conditions change, these areas may be subjected to reassessment.

New South Wales/Australian Capital Territory

Above average rainfall over the state for much of the previous year has resulted in heavy continuous grass fuel loads through most areas west of the Great Dividing Range and the tablelands. Above normal fire potential has been assessed inland due to dry conditions in the last few months plus increased likelihood of drier than average outlooks for spring. Northern parts of the inland are expected to begin their fire season first as these areas are already quite dry. Southern parts of the inland (Riverina and South Western fire areas) are

expected to follow. Coast and eastern ranges have received significant rainfall and given forecast average precipitation during spring the fire season is expected to be average.

Note: Northern Territory

The small area of normal fire potential shown on the main map in the southwest Northern Territory reflects slightly lower rainfall and fuel loads in that region of central Australia. The record-breaking run of hot weather in January 2011 also contributed to lower fuel load accumulations. Full details of the Northern Territory outlook, as well as full details for northern Western Australia and northern Queensland, were given in the *Northern Australia Seasonal Outlook*, issued as Fire Note 85.

Fire Note is published jointly by the Bushfire Cooperative Research Centre (Bushfire CRC) and the Australasian Fire and Emergency Service Authorities Council (AFAC). This Fire Note is prepared from available research at the time of publication to encourage discussion and debate. The contents of the Fire Note do not necessarily represent the views, policies, practices or positions of any of the individual agencies or organisations who are stakeholders of the Bushfire CRC.

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Bushfire CRC is a national research centre in the Cooperative Research Centre (CRC) program, formed in partnership with fire and land management agencies in 2003 to undertake end-user focused research.
Bushfire CRC Limited ABN: 71 103 943 755

Australasian Fire and Emergency Service Authorities Council
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AFAC is the peak representative body for fire, emergency services and land management agencies in the Australasia region. It was established in 1993 and has 35 full and 10 affiliate member organisations.



→ SOUTHERN SEASONAL BUSHFIRE ASSESSMENT
WORKSHOP 2011-2012

Bushfire Co-operative Research Centre
&
Australasian Fire and Emergency Services
Authorities Council

Background



First held in US in 2003

Vision was to improve information available to fire management decision makers.

Gregg Garfin Tom Swetnam and Barbara Morehouse U Arizona, Tom Wordell NICC, and Tim Brown DRI

Predictive Service units had been created in the National Interagency Co-ordination Centre and the 11 Geographic Area Co-ordination Centres after the 2000 fire season.

Objectives



To use climate history and climate forecasts to improve information available to decision makers to set priorities for allocation of firefighting resources at local, regional, and national scales, as well as for multi-agency coordination and determination of preparedness levels.

Brought together workers from fields of fire management, climate science and fire research.

Wildland Fire Assessment Problem

Wildland fires burn millions of acres each year, in spite of much effort going into fuel treatments, prevention, and fire suppression. Given current fuel loadings, limited resources, and increasing costs in suppressing wildland fires, effective decision-support products and tools must be available to improve resource allocation decisions and maintain a high standard of safety for firefighters and the public.

National Seasonal Assessment Workshop



Mesa, Arizona
February 25-28, 2003



For more information, contact:

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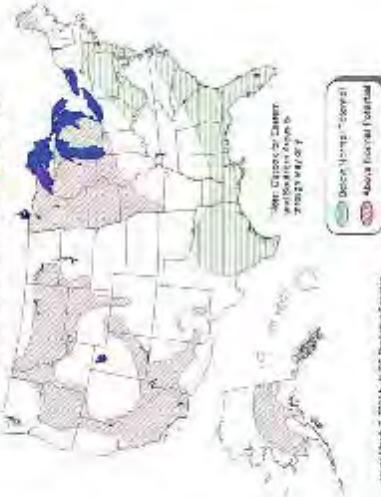
Greg Garfin
Climate Assessment for the Southwest
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Results and Outcomes

- Geographic area wildland fire outlook reports
- NICC pre-season national wildland fire outlook
- 2003 consensus climate forecast
- Standardized protocols for producing long-range fire danger outlooks

National Wildland Fire Outlook for March through August 2003



Source: NIFC/NICCC

© BUSHFIRE CRC LTD 2003

- ### The Solution
- A new Predictive Services program has been launched to anticipate where fires are most likely to occur in order to allocate the appropriate firefighting resources to these areas. Geographic area predictive services units, established by the 2000 National Fire Plan, are tasked with integrating information about climate, weather, fire danger, and firefighting resources to provide decision support to fire managers on the location, timing, and severity of fire potential. These predictive services units identify fire threat areas on a daily/weekly/monthly/seasonal basis and, in turn, provide:
- Proactive fire management
 - Information that can save lives and property
 - Increased public awareness
 - Reduced suppression costs

During the week of February 25-28, 2003, the first annual National Seasonal Assessment Workshop brought together climatologists, predictive service units, and fire managers from across the country to produce seasonal fire outlook reports. The National Wildland Fire Outlook (see figure) is the compilation of the 11 geographic area outlooks generated at the meeting.

The Australian Experience



First held in Australia in 2006
Sponsored by Bushfire CRC as part of Program A.
Fire Behaviour and Suppression

Chris Lucas, Graham Mills, BoM & Tim Brown, DRI

40+ participants including BoM climate
researchers and severe weather forecasters,
agency fire researchers and fire managers.

From 2007 split into Northern and Southern Fire
Season Assessments (May and August).
Northern meeting attached to Northern Australian Fire
Managers Forum (pre-season)

Australian Workshop Products

- Fire Note
Becomes Executive Summary (Workshop/ BCRC)
- Compiled Final Report
- Knowledge Web Site
Monthly updates



FIRE NOTE

ISSUE 5

SEASONAL BUSHFIRE ASSESSMENT 2006-2007

AUSTRALIAN FIRE SEASON OUTLOOK - SEPTEMBER 2006

Above-normal fire potential is predicted for much of Australia for the upcoming fire season, according to expert assessments from climatologists, meteorologists and state based fire-agency personnel. Also expected is an early start to the fire season in southern and eastern Australia. These conclusions were reached during the Inaugural Seasonal Bushfire Assessment Workshop, held in June at the Bureau of Meteorology Head Office. Fire potential is the likelihood of bushfire events influenced by factors including fuel conditions, weather, climate and fire-fighting resource capability.

This report updates the initial findings of the workshop, utilising the latest climate and weather information.

A map created at the workshop (see right) highlights the fire potential outlook for the 2006-7 fire season. The map reflects the outlook through to February 2007. The fire potential conditions indicated are expected to eventuate over the course of the entire outlook period. Rather, the map indicates the fire potential during the active part of the coming fire season for a given region.

CRITICAL FACTORS

Above-normal fire potential is expected across much of Australia for the up coming fire season. The interior of the continent is an exception, with below normal fire potential for much of the centre. Critical factors in this decision making process include:

INCREASED FUEL LOADS

Early 2006 featured an active tropical cyclone season in northern and western Australia, with significantly above normal precipitation observed over much of the region. This heavy rainfall has enhanced grass growth and vegetation in normally vegetation sparse areas. The enhancement of fuel suggests above normal fire potential.

REGIONAL SUMMARIES

NORTHERN AUSTRALIA

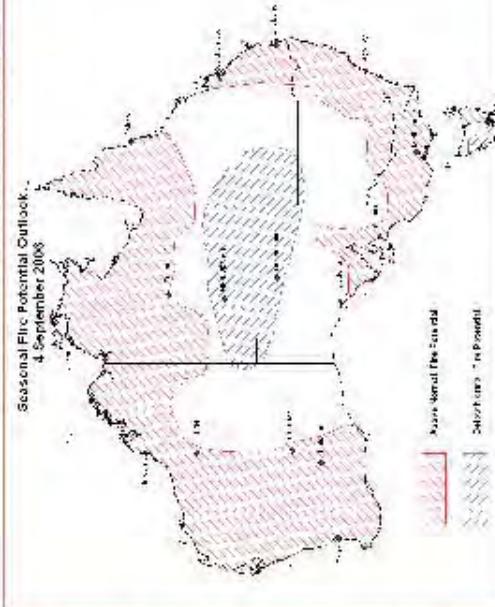
Including the northern and central Northern Territory, Northern Queensland and northwestern Western Australia: Fire potential is likely to be above normal. The long wet season and enhance produced heavy grass fuel loads in many areas and inhibited early season fuel reduction burns. The monsoon extended south into central Northern Territory this year, allowing higher than normal grass fuel loads in those regions. The long wet season produced a late start to the fire season, although it is well underway now.

CLIMATE OUTLOOKS

In recent months, the El Niño/Southern Oscillation has been moving towards weak El Niño conditions, suggesting warm and dry conditions are more likely over eastern and northern Australia. Only small El Niño effects are usually seen in the southwest, but the serious rainfall deficits suggest the continuation of above normal fire potential there.

CENTRAL AUSTRALIA

Including southern Northern Territory, northern South Australia and western Queensland: The low observed rainfall has resulted in higher than normal grass fuel loads. These regions usually only experience large fires after an extended wet period, when fuels become more continuous. Hence, low fire potential is indicated for this season.



Fire Note

Becomes Executive Summary (Workshop/ BCRC)

- Introduction
- Antecedent Conditions
- Climate Outlook
- Area Summaries
- Participating Agencies
- Figures:
 1. National outlook (fire)
 2. Rainfall (received)
 3. Rainfall (expected)

Compiled Final Report

- Executive Summary
(Workshop)

- Introduction and
narrative (Chair)

- Continental wide
climatic outlook (BoM
Climate)

- Area Reports included
verbatim (Agencies &
local BoM)

- Appendices: List of
Participants (Chair)



BUSHFIRE COOPERATIVE RESEARCH CENTRE
PROGRAM A: FIRE BEHAVIOUR AND SUPPRESSION

Seasonal Bushfire Assessment 2006 - 2007

A look ahead at the coming fire season

Chris Lucas¹, Graham Mills² and Tim Brown³

¹ Bureau of Meteorology

² Desert Research Institute

September 2006

FOR INTERNAL USE ONLY



Defining Fire Potential



The chance of a fire or number of fires occurring of such size, complexity or other impact (e.g. biodiversity or global emissions) which requires resources (from both a pre-emptive management and suppression capability) beyond the area in which it or they originate.
(SBAW06)

Fire Potential



Not simply a function of the weather or climate.
Sum of weather and climate, fuel abundance
and availability, recent fire history and fire-
fighting resources available in an area.
The designation of fire potential is between
normal conditions and above or below normal
potential conditions.

Fire Potential (cont.)



Features:

Cross-disciplinary

Consensus outlook

Inter-regional comparison

Relatively objective and authoritative

Fire Potential (cont.)



Applications:

Levels of preparedness

Allocation and movement of resources between regions

High level summary for government, media and community information

Fire Potential (cont.)



Issues:

Assessors need to conform to the agreed definition and realistically applying their knowledge to the assessment.

Doesn't deal well with the local level, small but damaging fires, e.g. WUL, will be missed
Agencies have to become comfortable with showing their hand (and sometimes getting it wrong)

Updates need to occur

Seasonal Bushfire Assessment Workshop 2010- 2011

FIRE NOTE

AUSTRALIAN SEASONAL BUSHFIRE ASSESSMENT 2010-11: SUMMARY

DEFINITION
 The potential... The chance of a fire or bushfire occurring at a particular time and, particularly important, the conditions in which it is likely to occur. This includes the probability of ignition, the likelihood of propagation, the potential for spread, the potential for impact, the potential for damage, and the potential for control.

SUMMARY
 The Australian Seasonal Bushfire Assessment 2010-11 (ASBA) is a seasonal forecast of the potential for bushfires in Australia. It is produced by the Australian Bureau of Meteorology (BoM) and the State Emergency Services (SES) of each state and territory. The ASBA is based on a range of information, including historical data, climate models, and current environmental conditions. The ASBA provides a broad overview of the potential for bushfires across the country, and highlights areas where the risk is highest. The ASBA is used by emergency services and other agencies to inform decision-making and preparedness activities.

OUTLOOK
 The Outlook 1 pager (!) produced in time (!) for AFAC Conference Compiled workshop report not finished

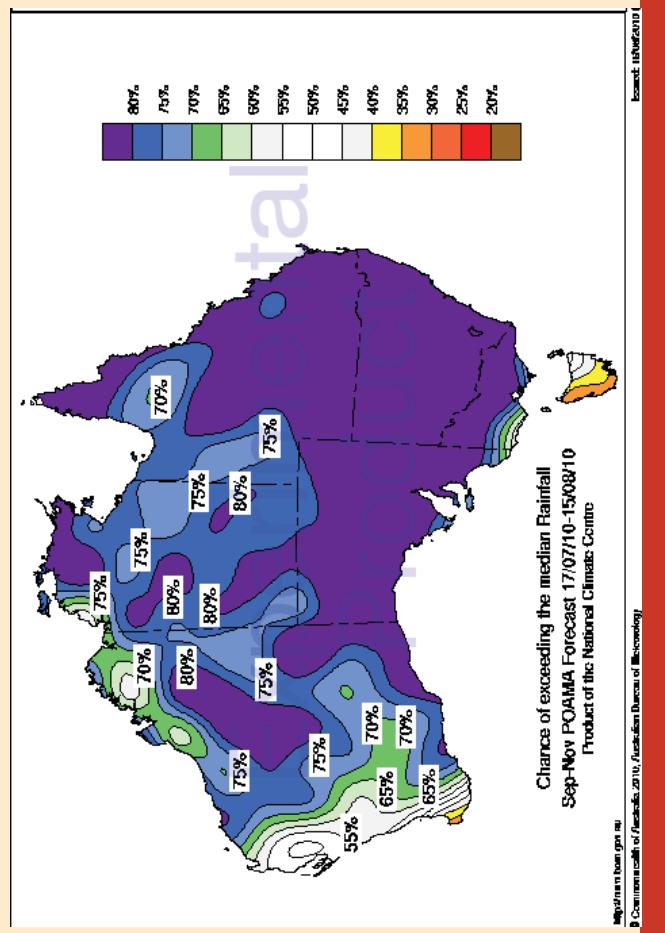
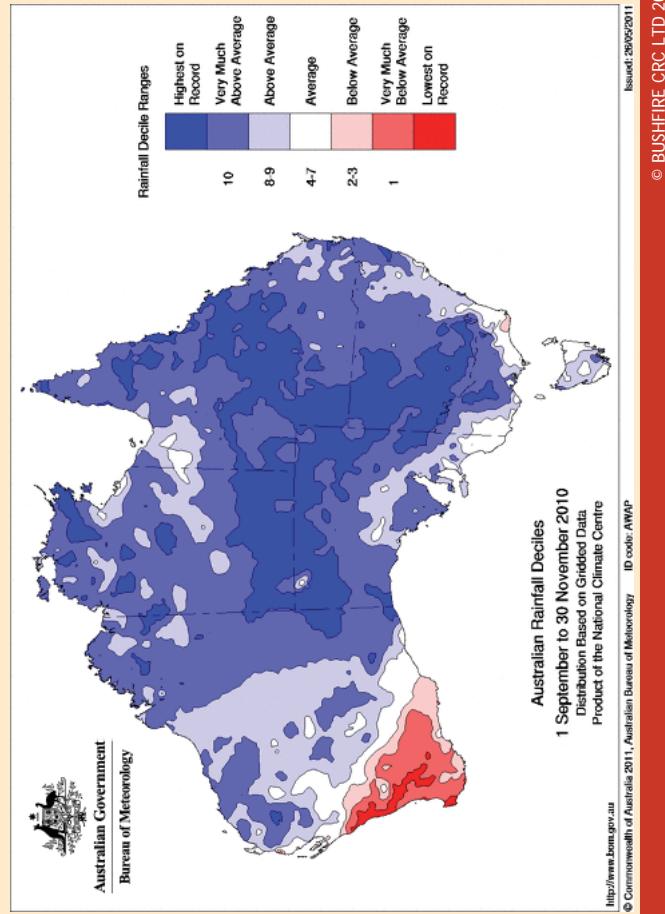
INTRODUCTION
 Across southern Australia, above-normal fire potential is expected over the remaining dry period, affected parts of the southeast, including much of Victoria, and west coast areas of South Australia. Much of the Southwest Land Division of Western Australia will have above-normal potential, as does an area of central Australia and smaller areas in Queensland. Conditions in Tasmania and New South Wales indicate normal fire potential (Figure 1).

These expectations summarize the views of the attendees at the Southern Seasonal Bushfire Assessment Workshop, held on 23 and 24 August 2010 in Melbourne. This workshop, largely as a result of a strengthening La Niña, largely covered eastern Australia. An event, similar to the one in 2009, was due to occur during the period from January through to August. The meeting of February and March were, rather than the meeting of October and November, held in the south east, putting this also for the onset of the southern summer.



Season 2010 -2011

1. La Niña conditions for the east
 - a) Cyclones
 - b) Floods
 - c) Limited fires



CLIMATE SUMMARY

ANTECEDENT CONDITIONS AND SEASONAL OUTLOOK



Australian Government

Bureau of Meteorology



Antecedent conditions and seasonal outlook 2011

National Climate Centre

Bureau of Meteorology

Southern Bushfire Assessment Workshop, Adelaide, 23-24 August 2010

Outline of Presentation

Australian Rainfall

- long-term drought, the big wet and trends
- recent – last month, last 4 months
- this year, compared to last year

Temperatures – recent months

Soil moisture

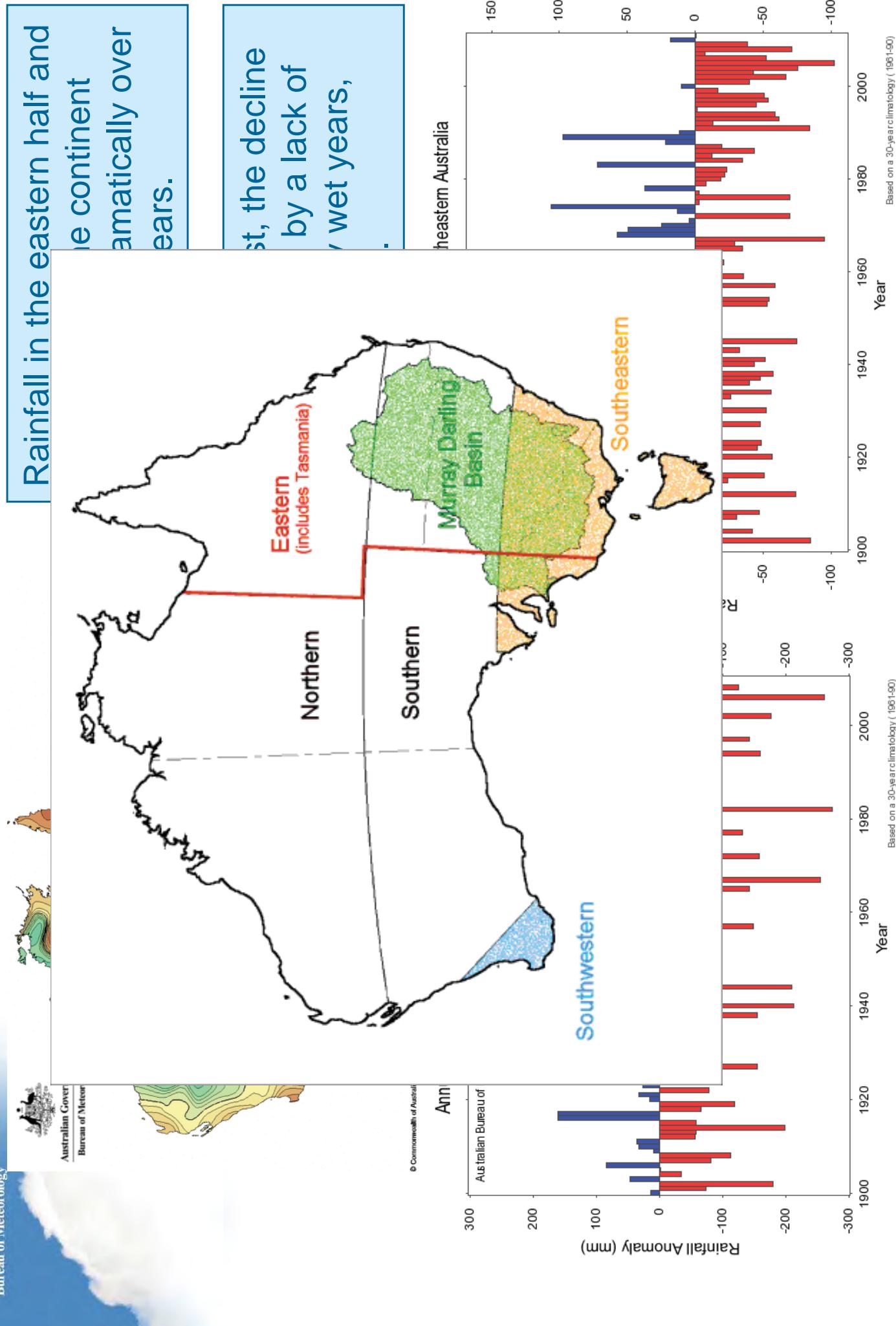
ENSO monitoring and prediction

Seasonal Climate Outlooks

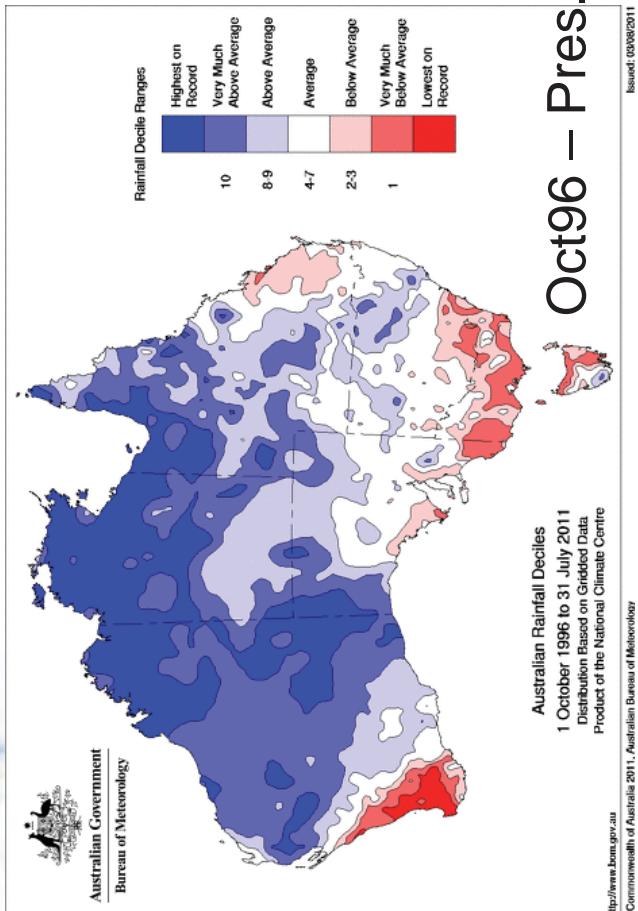
- Rainfall and temperature for next season
- International models
- Streamflow

Long Term Rainfall Trends

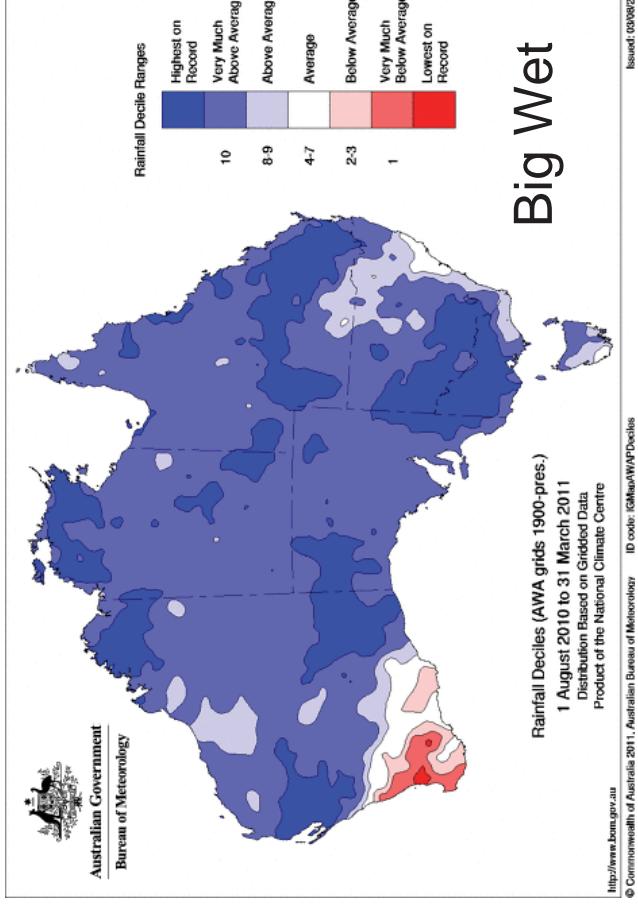
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“The Long Dry” & the “Big Wet”



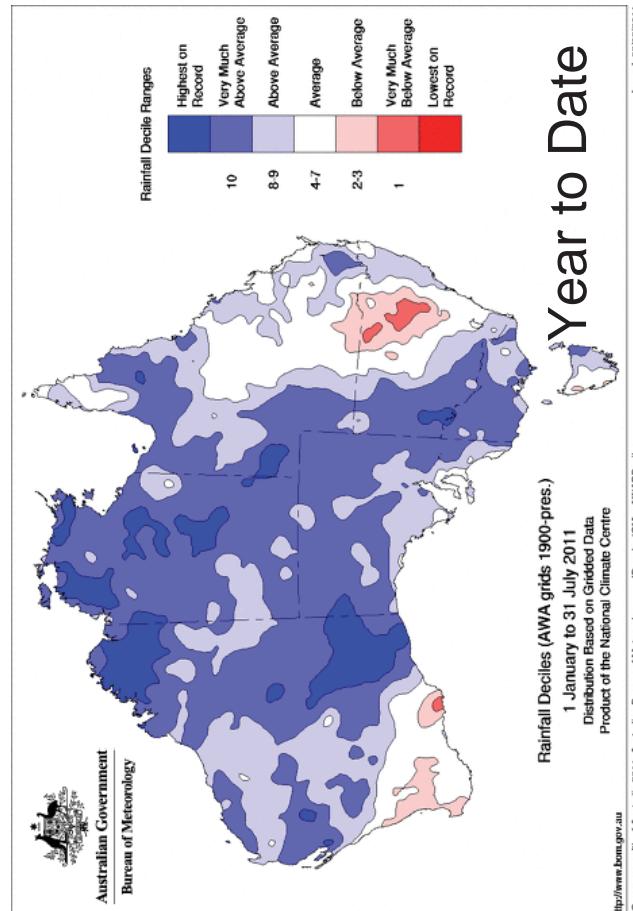
Oct96 – Pres.



Rainfall Deciles (AWA grids 1900-pres.)
1 August 2010 to 31 March 2011
Distribution Based on Gridded Data
Product of the National Climate Centre

<http://www.bom.gov.au> © Commonwealth of Australia 2011, Australian Bureau of Meteorology

Issued: October 2011



Spring-Summer floods brought substantial “relief” from the record dry in SE Australia, but conditions have worsened in southwest WA

2011 pattern is dominated by Jan-March

Take considerable time to erase long term deficits

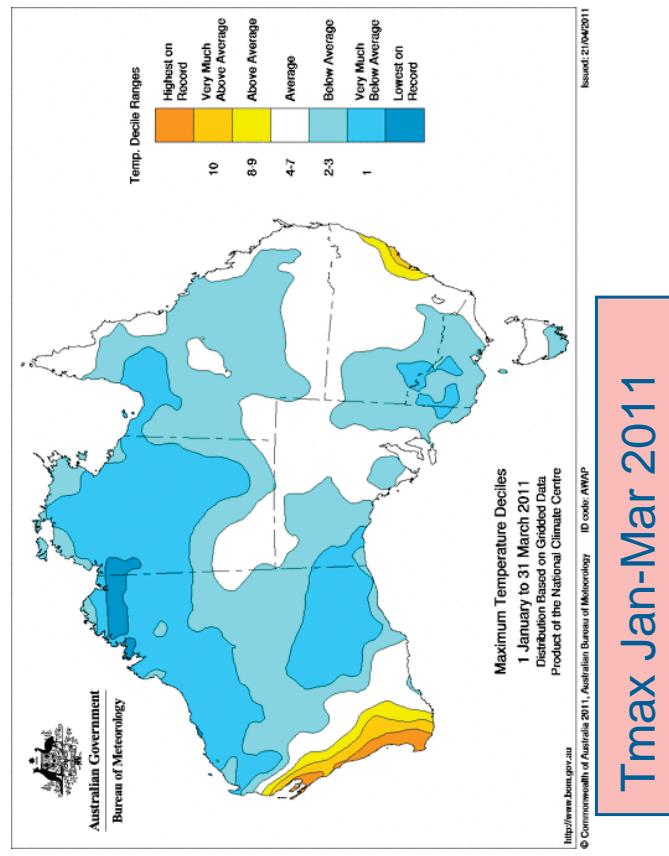
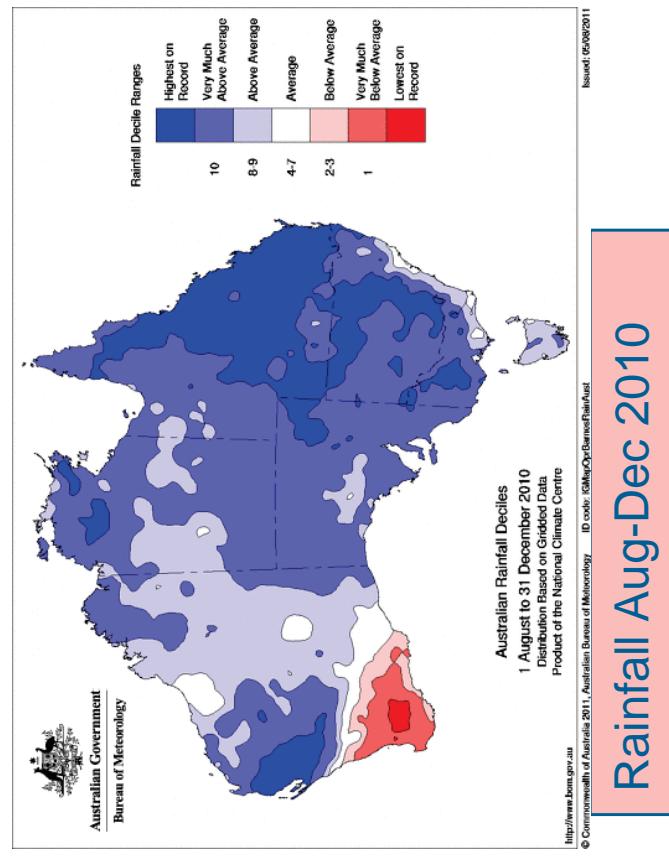
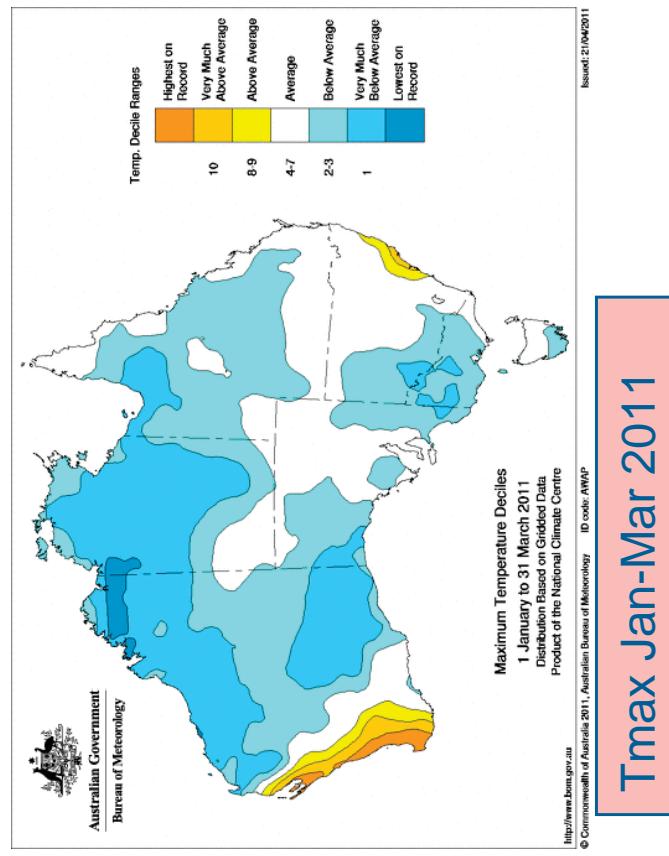
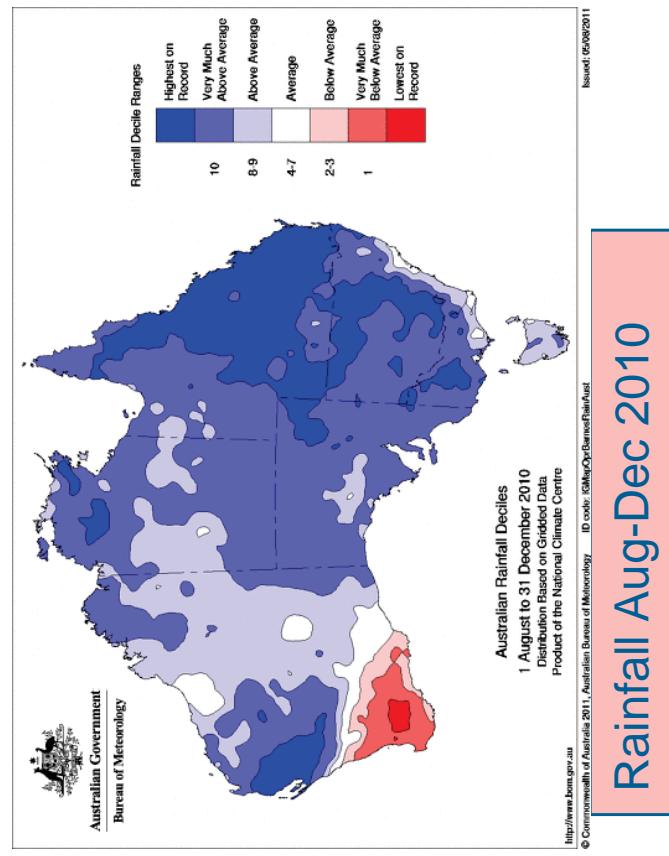
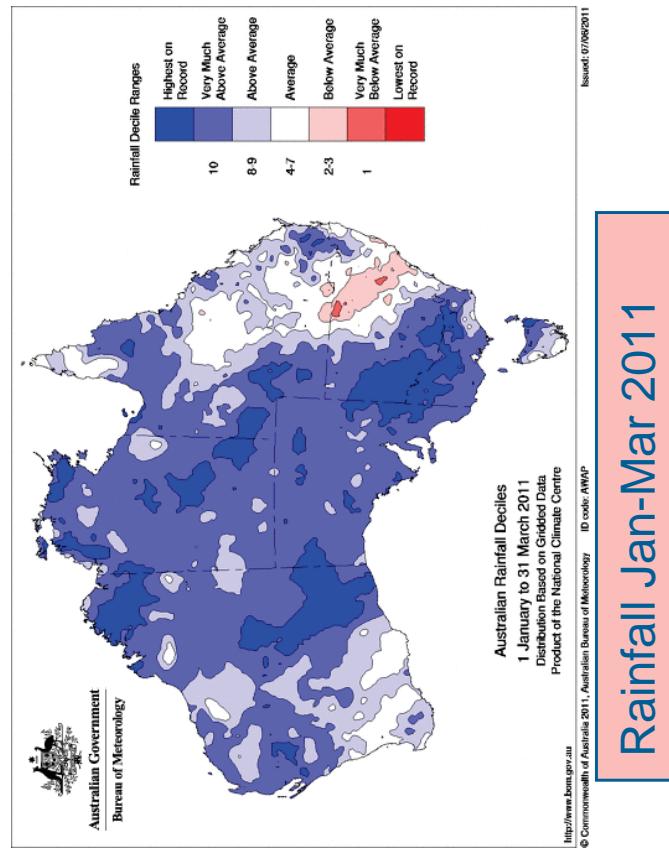
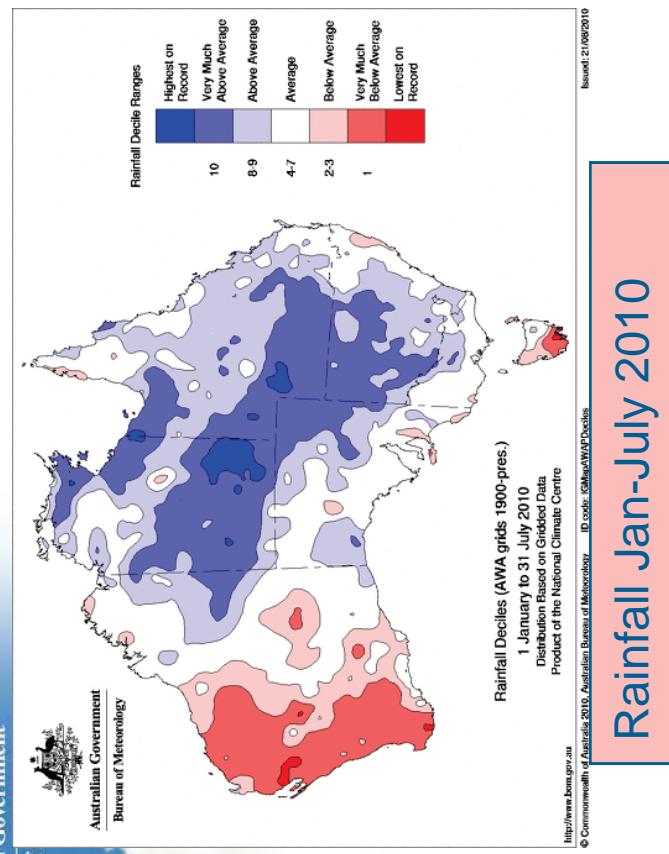
2010 & Antecedent Period of 2011



Bureau of



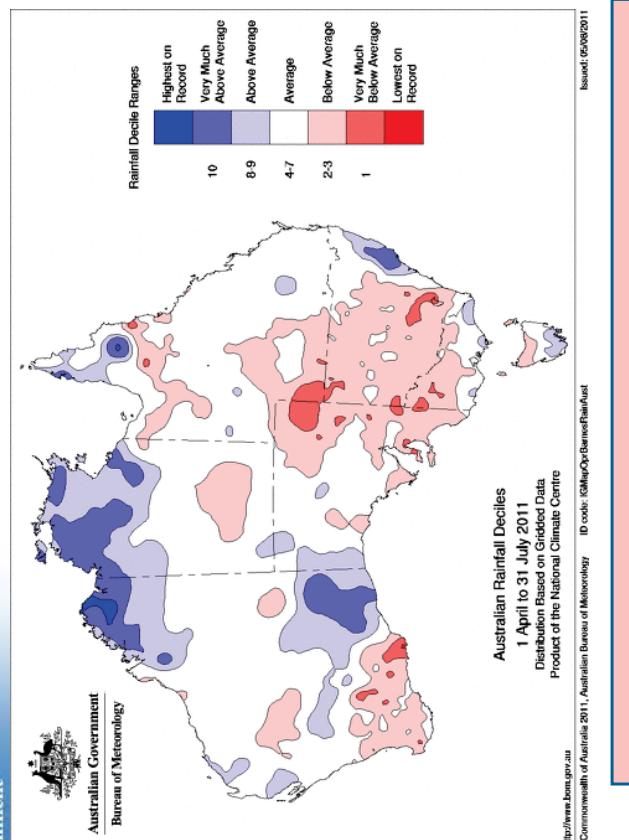
Australian Government



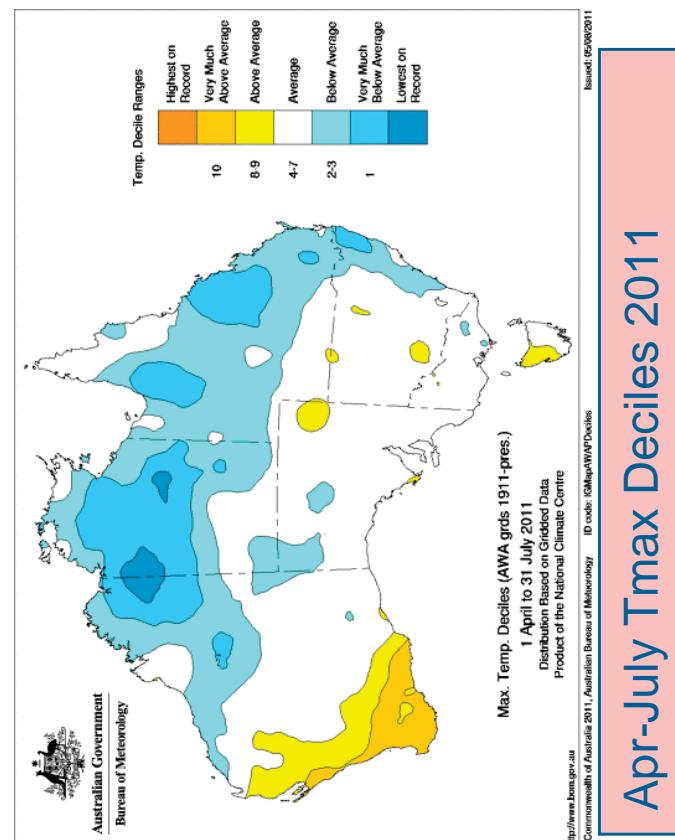
2011 Southern Wet Season



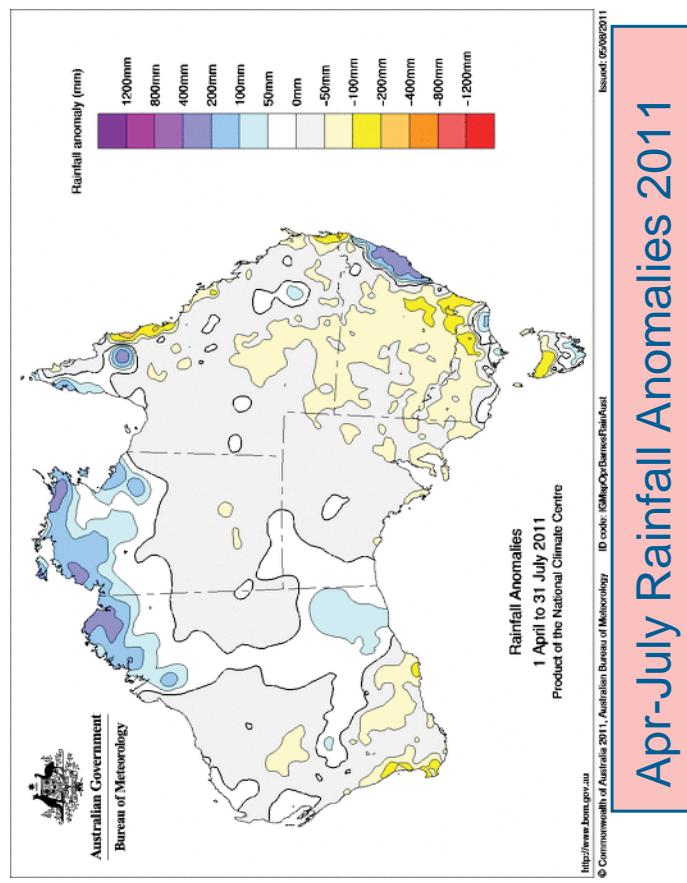
Australian Government
Bureau of Meteorology



Apr-July Rainfall Deciles 2011



Apr-July Tmax Deciles 2011



Apr-July Rainfall Anomalies 2011

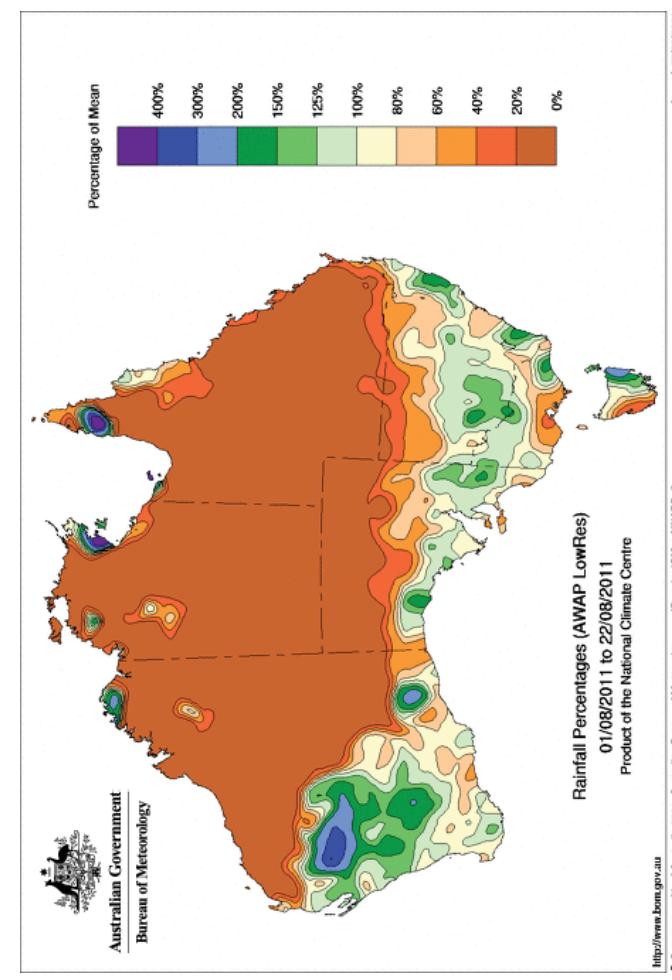
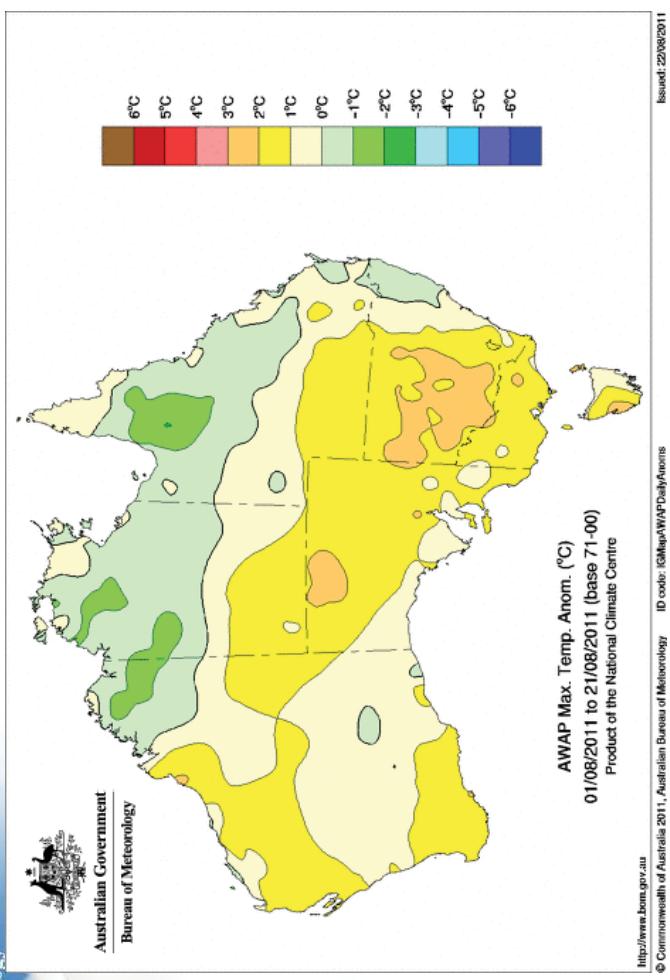
The common pattern of below average rainfall has returned to southern Australia this wet season, with some exceptions.

Daytimes have been warm over southwest WA, near normal elsewhere.

August 2011



Australian Government
Bureau of Meteorology



August max temps have been above to well above average over eastern to central Australia and in southwest WA.

August rainfall generally running near-to or above pro-rata ($\frac{2}{3}$) over southern Australia. Some exceptions – e.g. south-central Victoria.
(Map shows % of whole-month mean)

Other Tools – Soil moisture



Australian Government

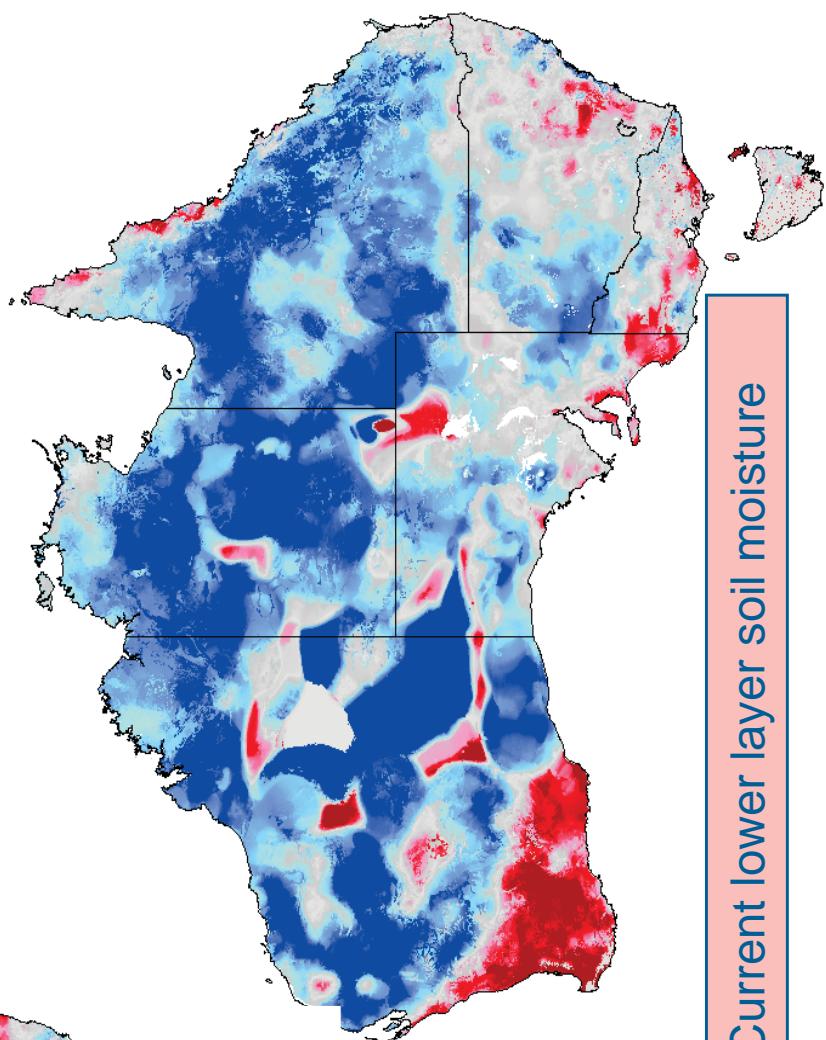
Bureau of Meteorology
Percent Rank Relative Soil Moisture (Upper Layer) [%]

2011/08/08 to 2011/08/14

Current upper layer soil moisture

2011/08/08 to 2011/08/14

Percent Rank Relative Soil Moisture (Lower Layer) [%]



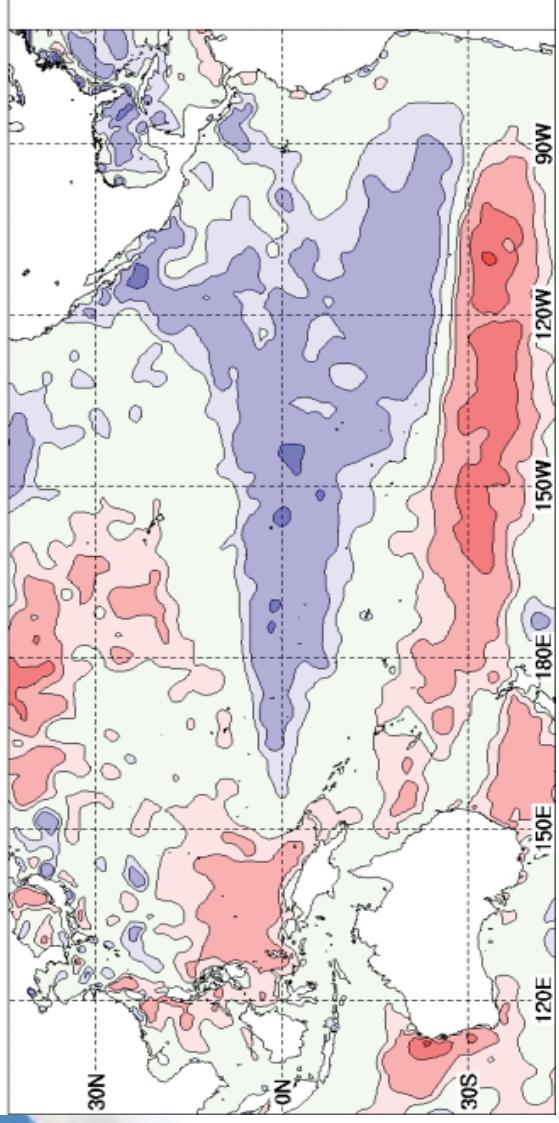
Current lower layer soil moisture

Top layer drying evident in parts of SE Aus, although lower layers are generally OK.

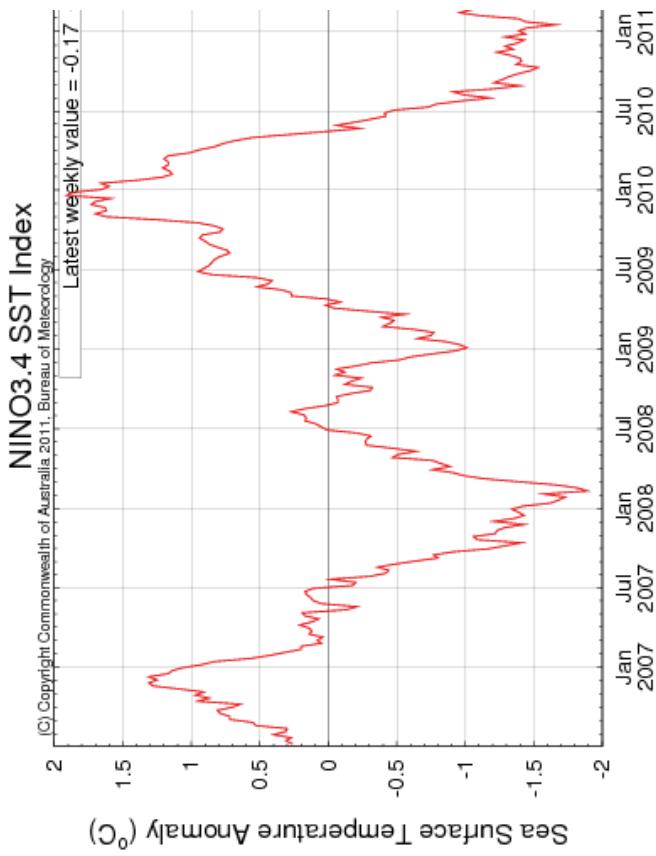
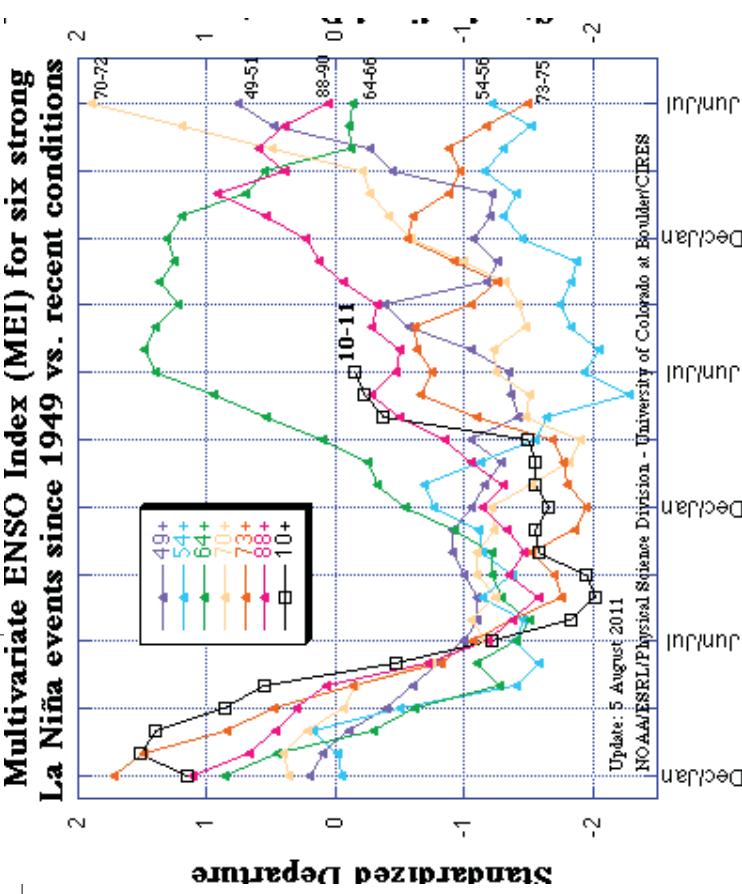
Reverse is true in southwest WA.

ENSO in 2010

SSTAn 1.0X1.0 NMOC OCEAN ANOMALIES (G) 20110101 20110101



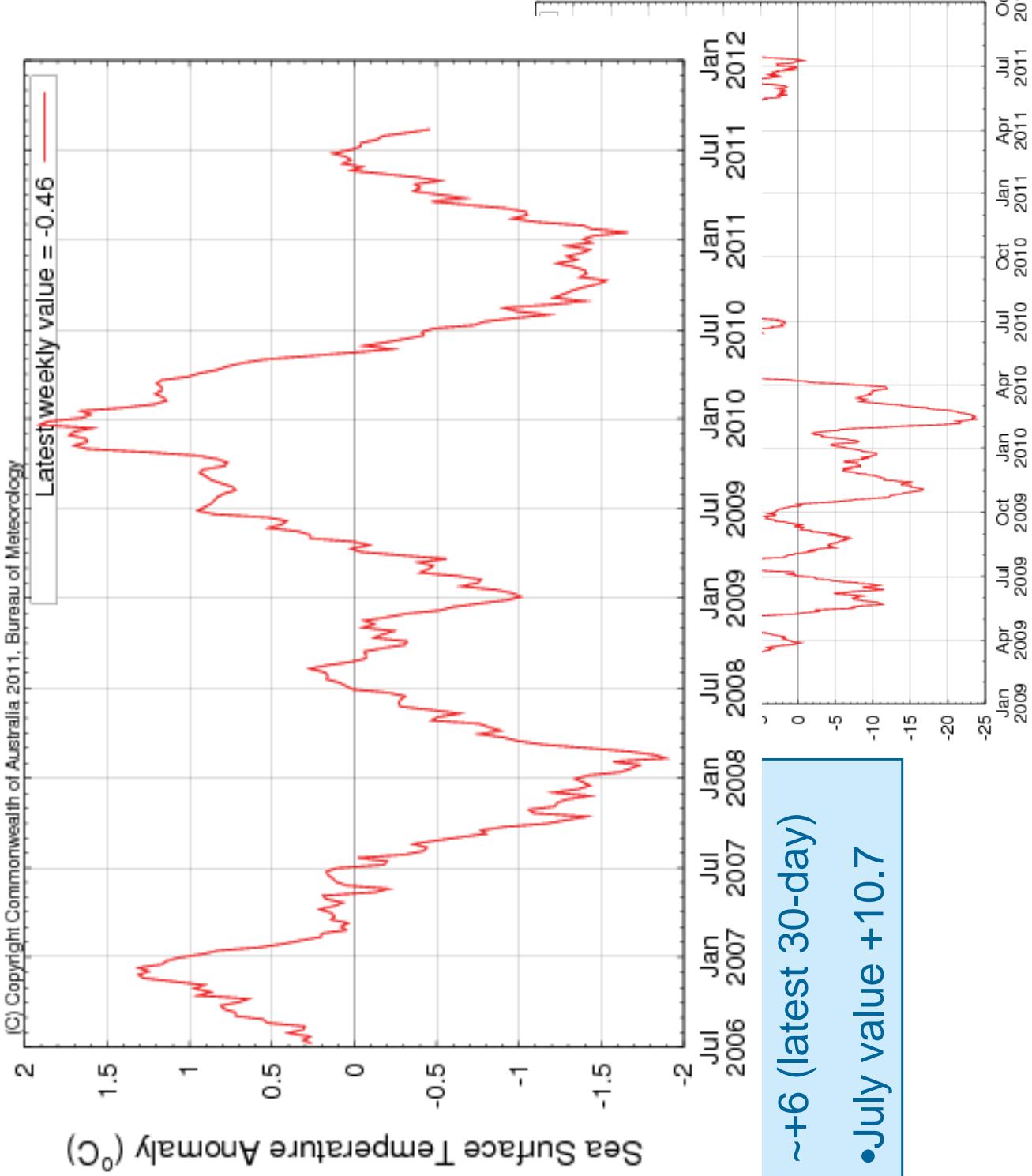
- La Niña peaked in January 2011
- In top two or three La Niñas on record
- Dissipated by May (SOI +2)



Current state of ENSO

10

NINO3.4 SST Index

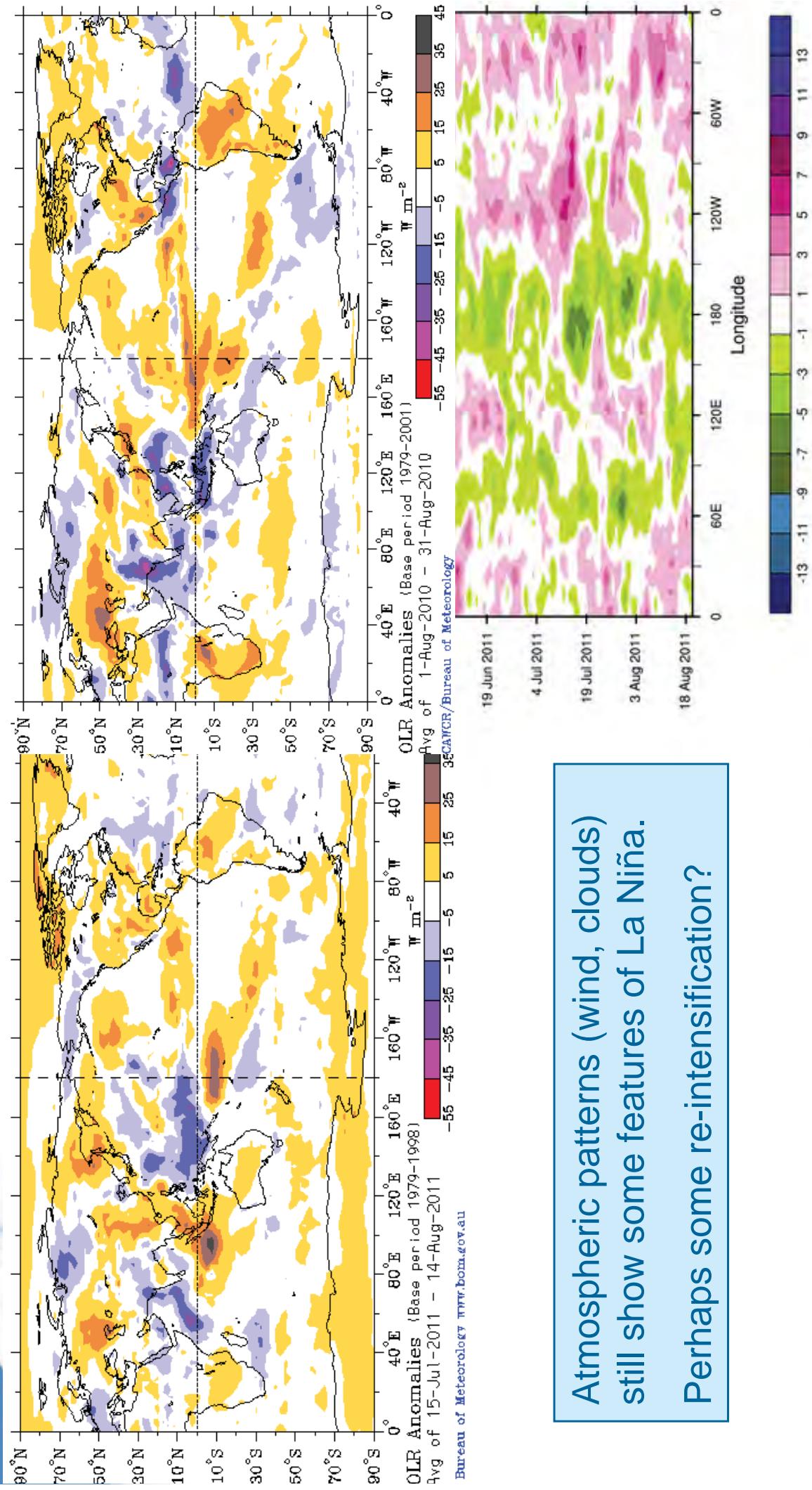


- Sea surface temperatures along the equatorial Pacific have increased during most of 2011. Currently marginally below average.

- Recent trend has been cooling.

- NINO3.4: -0.5°C
NINO4: -0.1°C
(weekly values)

Current state of ENSO



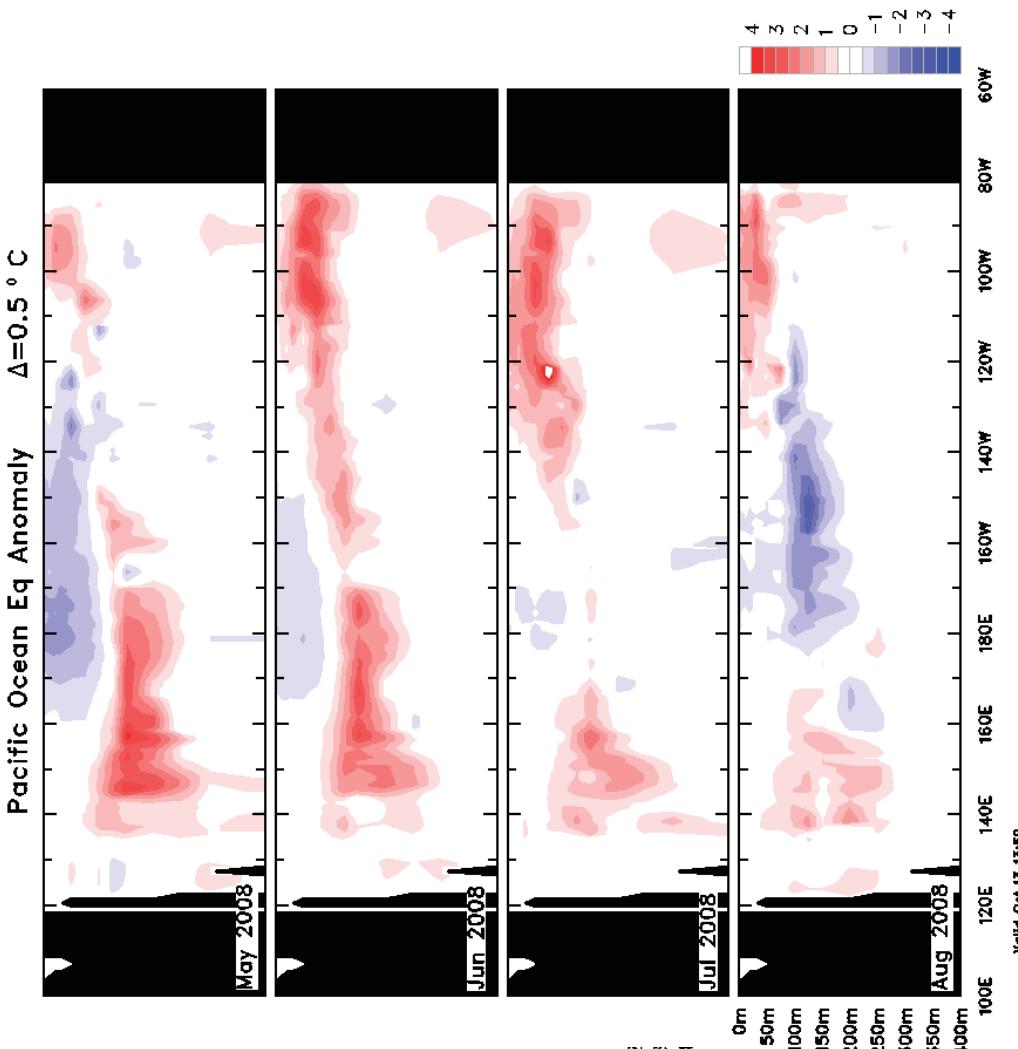
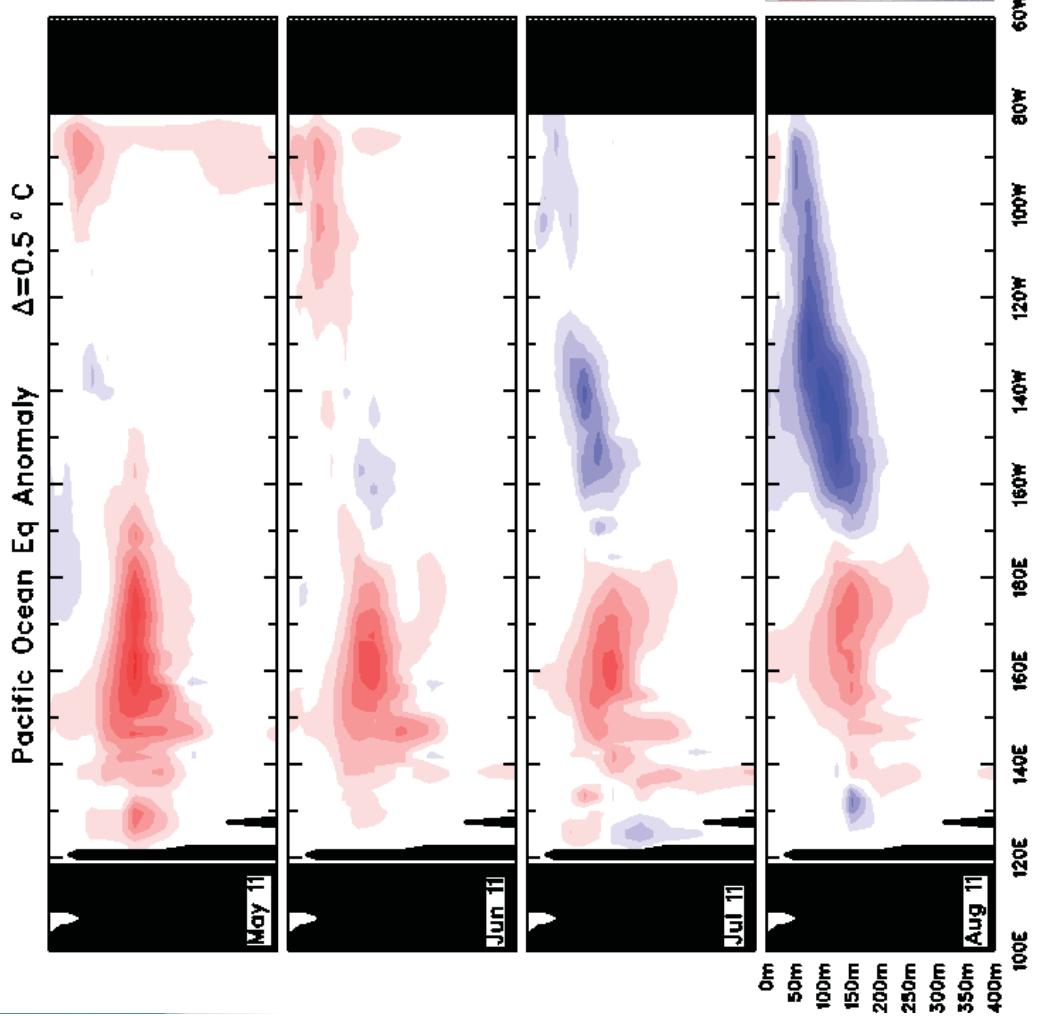
Current state of ENSO

12



Australian Government
Bureau of Meteorology

Subsurface temperatures indicate collapse of western Pacific warm anomaly & re-intensification of central Pacific cool anomaly. (Compare 2008)



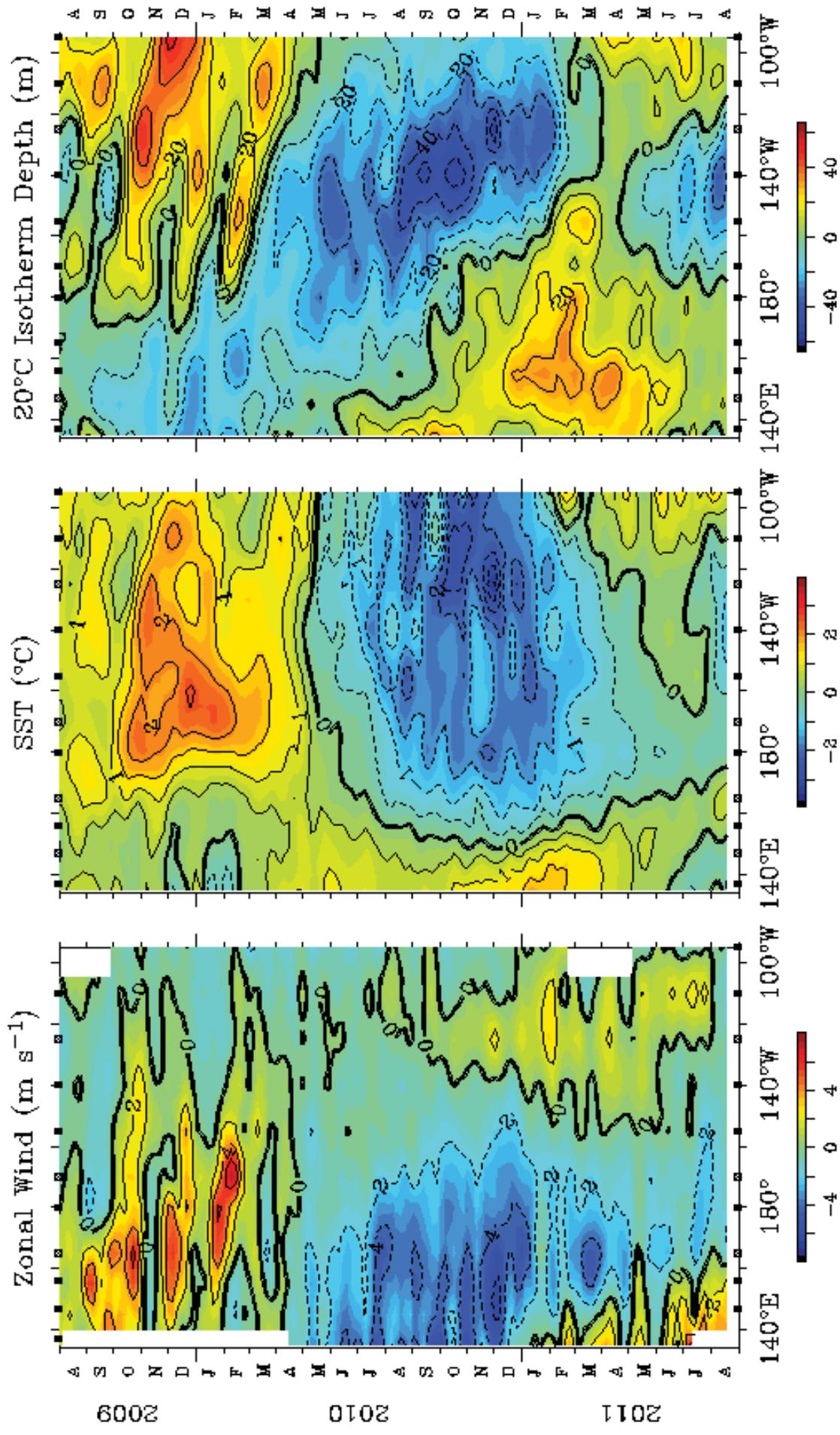
Current state of ENSO



Australian Government

Bu

Five Day Zonal Wind, SST, and 20°C Isotherm Depth Anomalies 2°S to 2°N Average

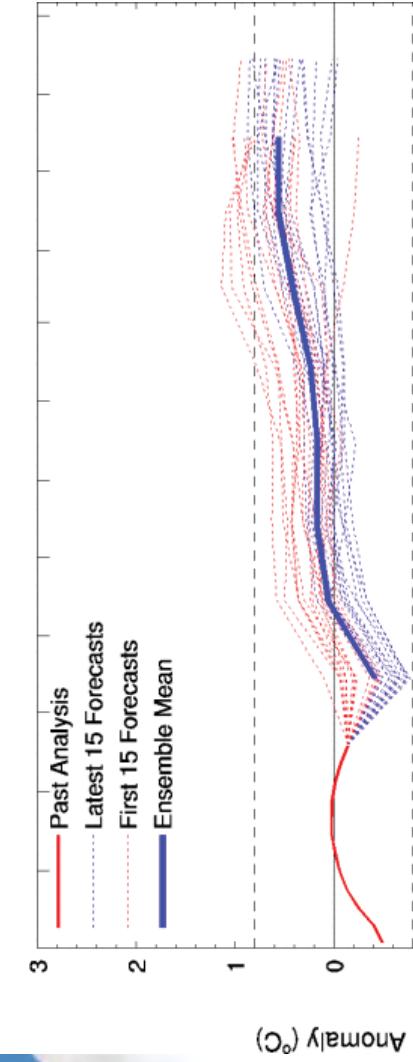


Coupled Model Forecasts of Sea Surface Temperatures

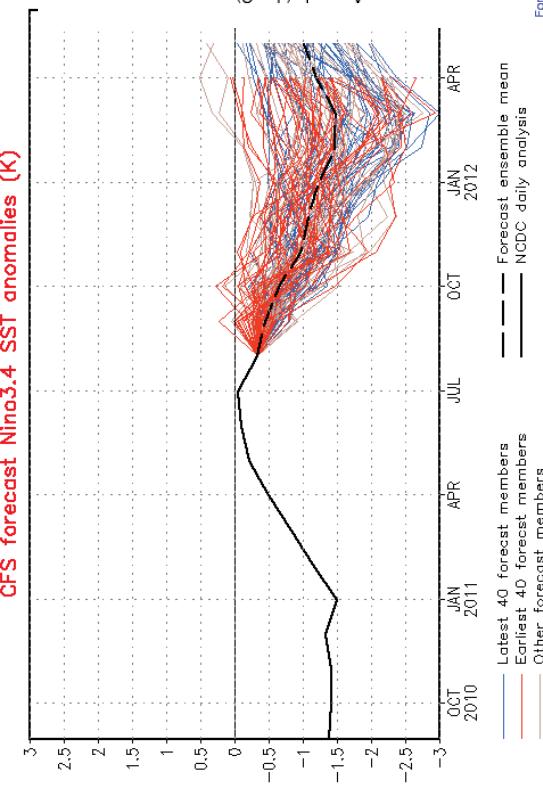
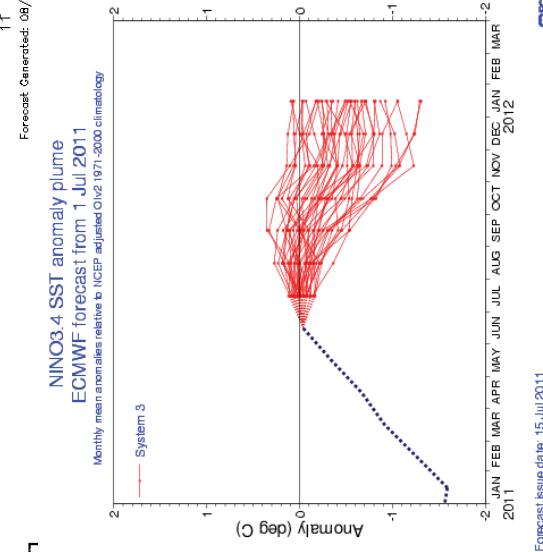
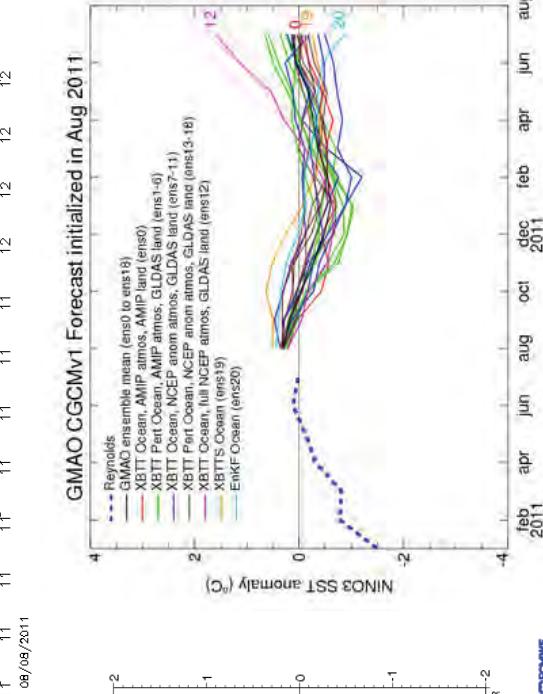
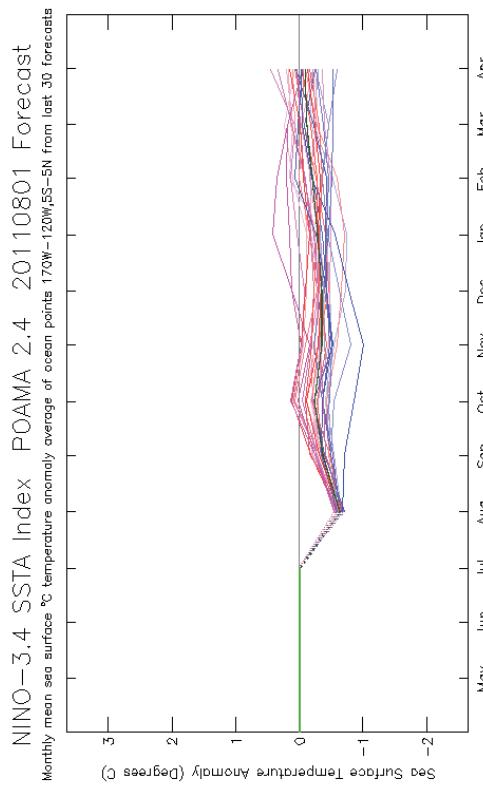


14

Nino3.4 SST plumes from POAMA Forecasts 22 Jul 2011 - 20 Aug 2011



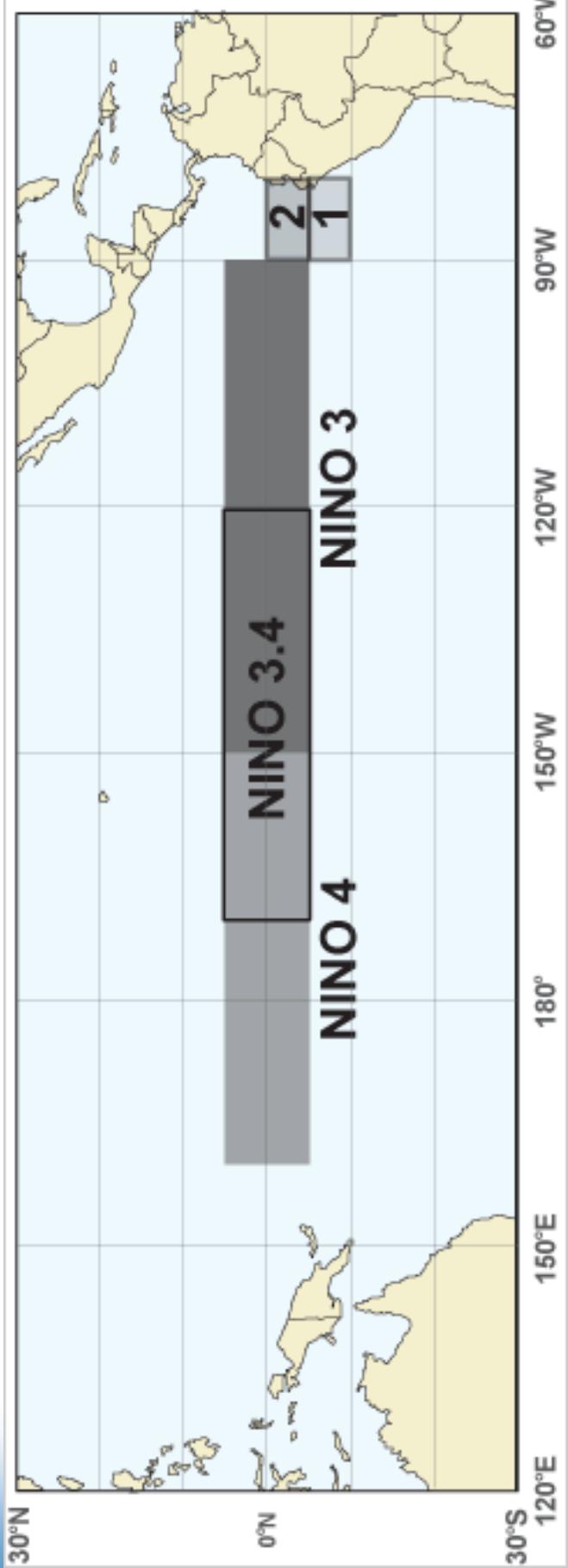
POAMA 1.5 suggests Pacific SSTs will warm slowly. Other international models disagree.



Another La Niña this year?

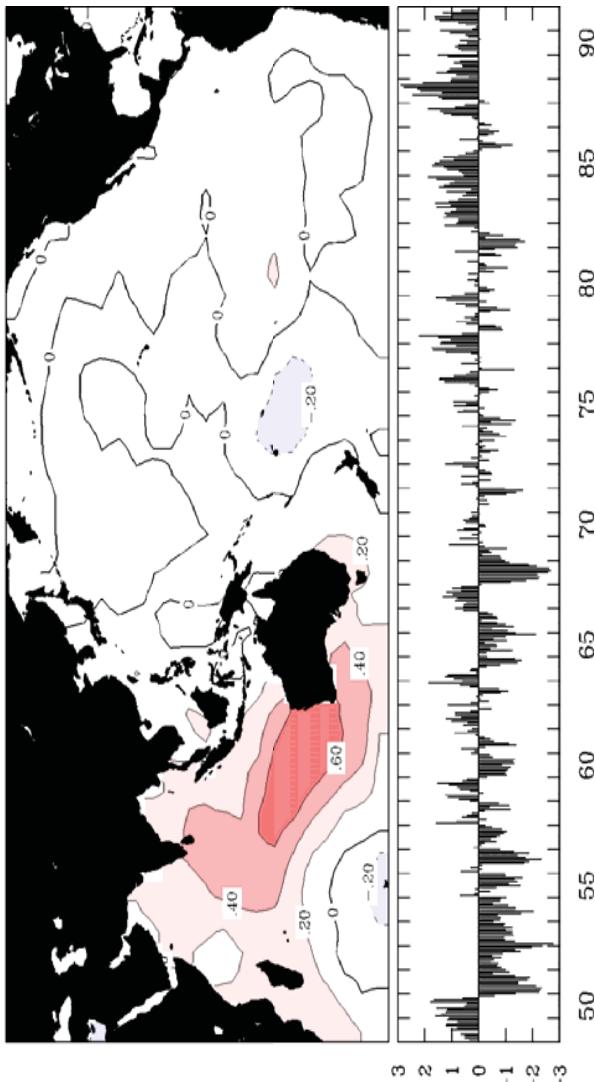
- The chance has risen over the past few months
- Model consensus is for neutral
- 50% of La Niña events are followed by another in the following year
 - If an event does occur, it's likely to be weaker than the strong 2010/11 event
- Some other late (re)forming events are:
1962/63, 1967/68, 1984/85, 1995/96,
1999/00, 2000/01, 2007/08, 2008/09

Seasonal Outlook model



Patterns of SST variability used for seasonal prediction

NINO3.4 is a proxy for ENSO, SST2 mainly reflects the Indian Ocean

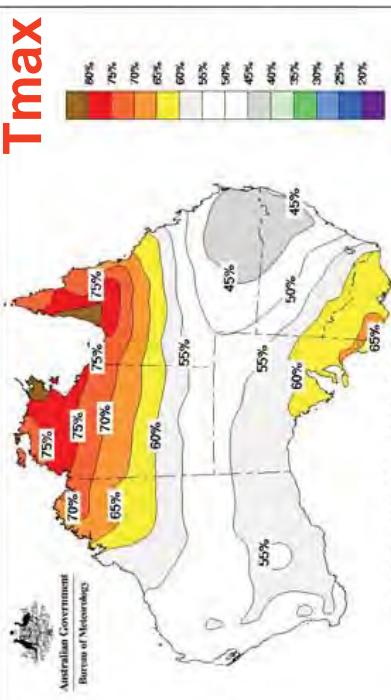




Verification of Seasonal Forecast

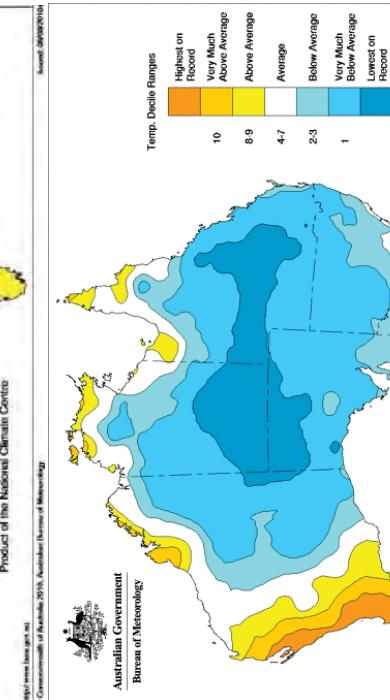
17

Rainfall



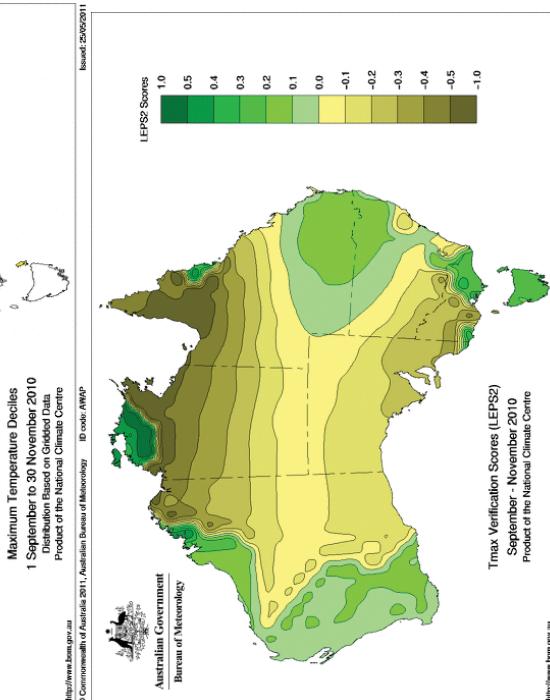
For spring 2010,
wetter in SW
WA, warmer in
SE Aus with
patches drier.

http://www.bom.gov.au/climate/seasons/verif/deciles/rainfall/sep10.html



SW WA was
warm and dry.
Generally cooler
& wetter
elsewhere.

http://www.bom.gov.au/climate/seasons/verif/deciles/rainfall/sep10.html



Forecast
Verification was
Positive (Green)

Rainfall Verification Scores (LEPS2)
September - November 2010
Product of the National Climate Centre

http://www.bom.gov.au/climate/seasons/verif/deciles/rainfall/sep10.html



Rainfall Verification Scores (LEPS2)
September - November 2010
Product of the National Climate Centre

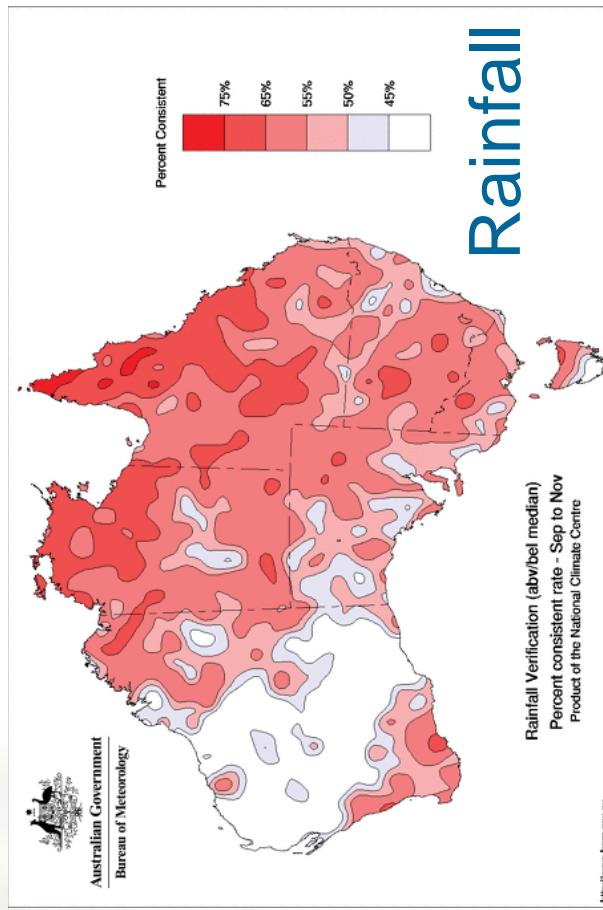


Historical Outlook Percent Consistent: Sep-Nov

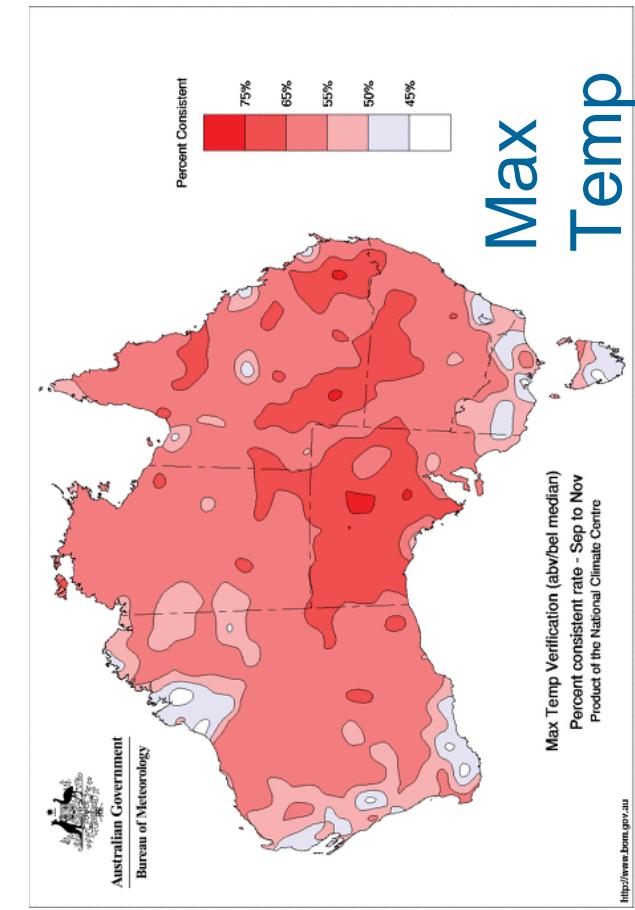
Percent consistent is analogous to a hit-rate.

Over the verification period (Sep-Nov) rainfall forecasts have some accuracy/skill in east Aus & SW WA. Patchy in SA & Tas.

For temperature, results are good for QLD, SA & NSW, but less so for SW WA, Victoria and Tasmania.



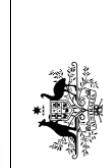
Rainfall



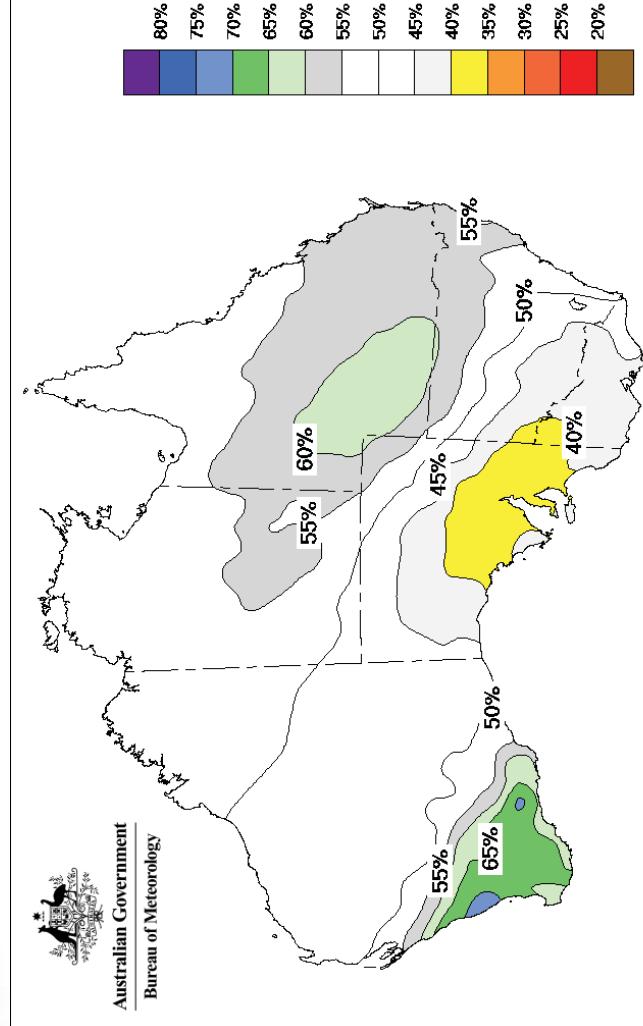
Max Temp

Seasonal Climate Outlooks

Sep-Nov % chance above median rainfall



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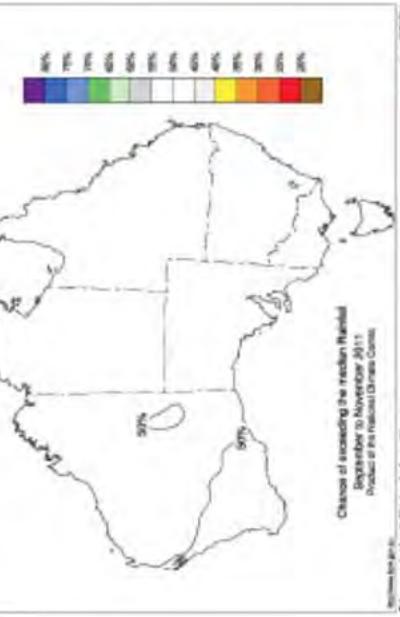
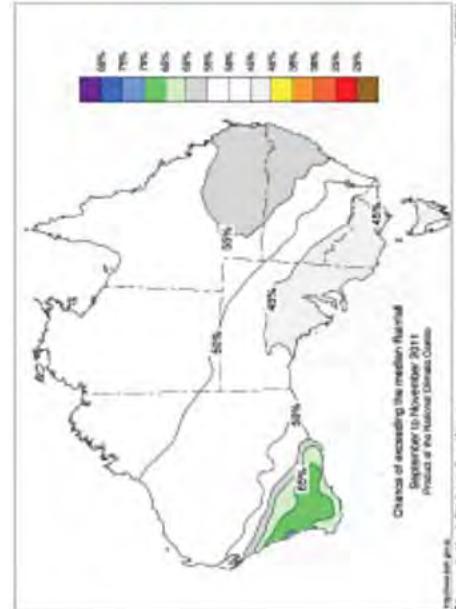


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Produced by the National Climate Centre
Information contained in this document is current at the time of issue.

Based on SST patterns, the outlook for spring is mixed: wetter SW WA, drier in parts of SA, Vic & NSW. Large areas with generally neutral odds (not exceptionally wet or dry)

Indian Ocean signal is dominant.

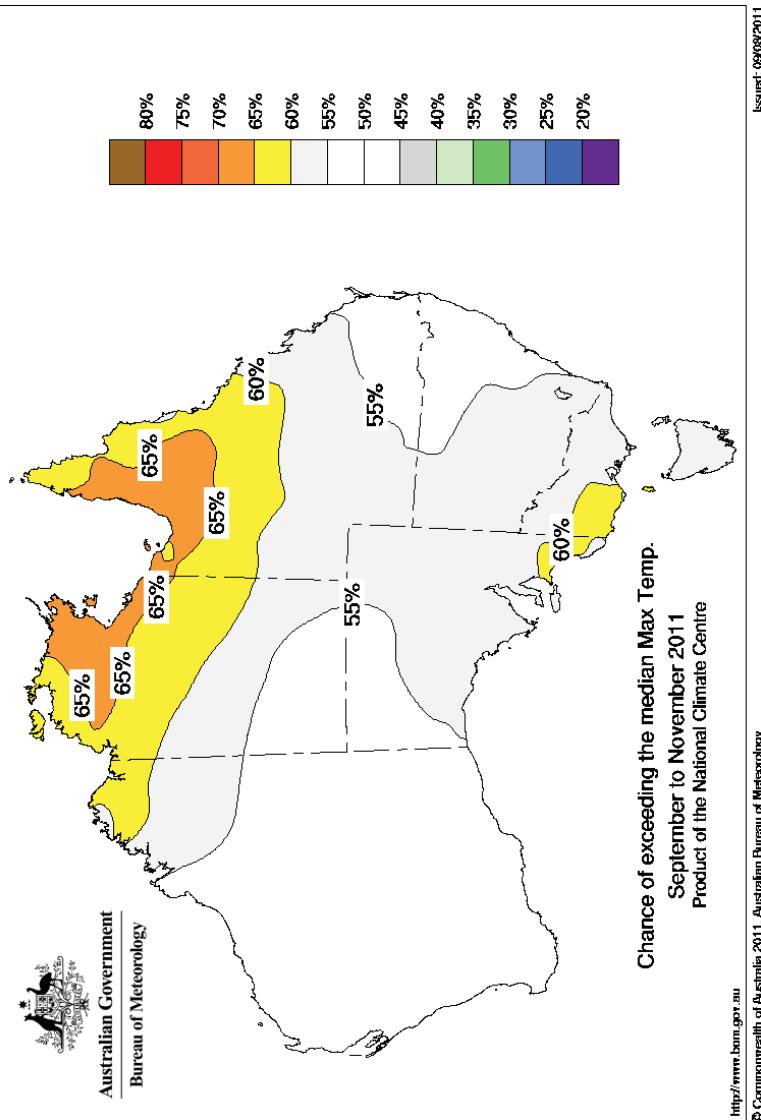
Indian Ocean signal



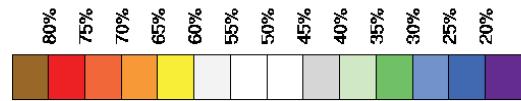
Pacific Ocean signal

Seasonal Climate Outlooks

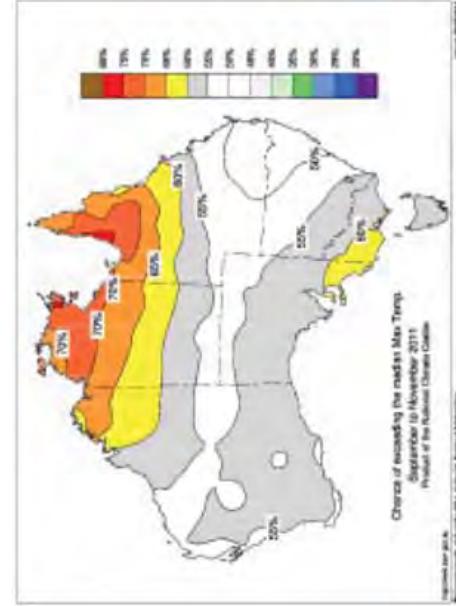
Sep-Nov % chance above median seasonal mean maximum temp



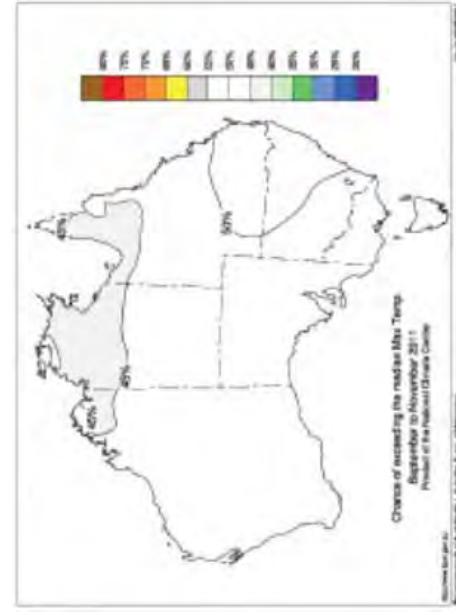
Max temp seasonal forecast: moderate chance of warmer than normal in western Vic & far SE of SA. Neutral odds elsewhere.



Indian Ocean signal



Pacific Ocean signal

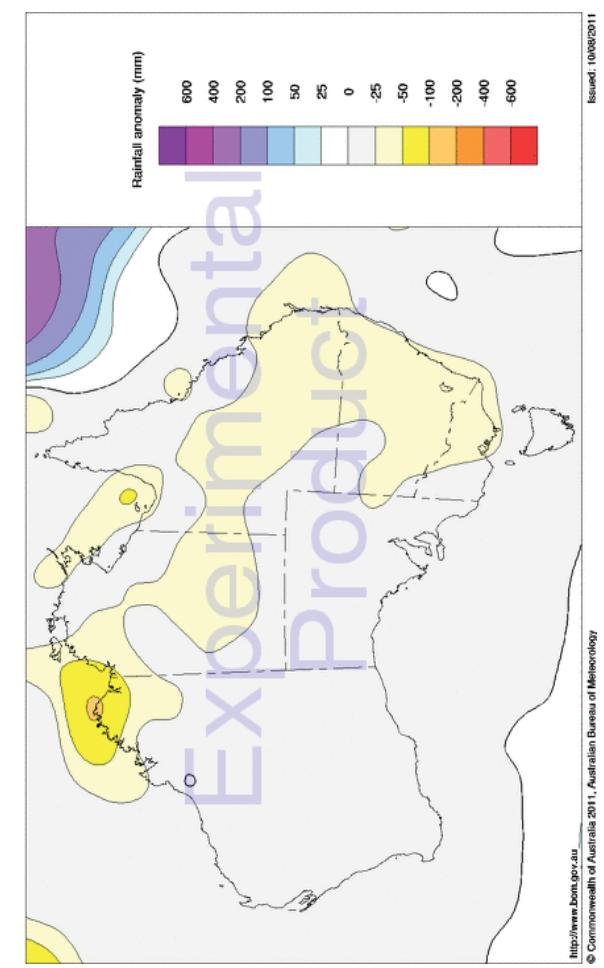
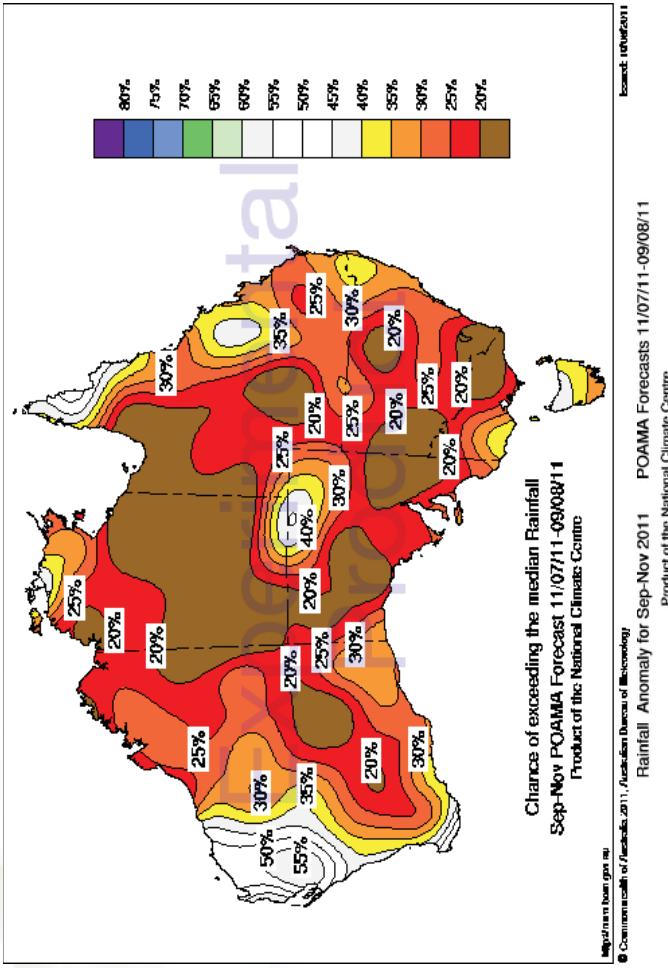


POAMA Outlooks: Rainfall

21

The POAMA dynamical forecast suggests strong odds of below median rainfall over much of southern Australia (NB: POAMA is historically overconfident)

Largest rainfall anomalies in eastern Australia.

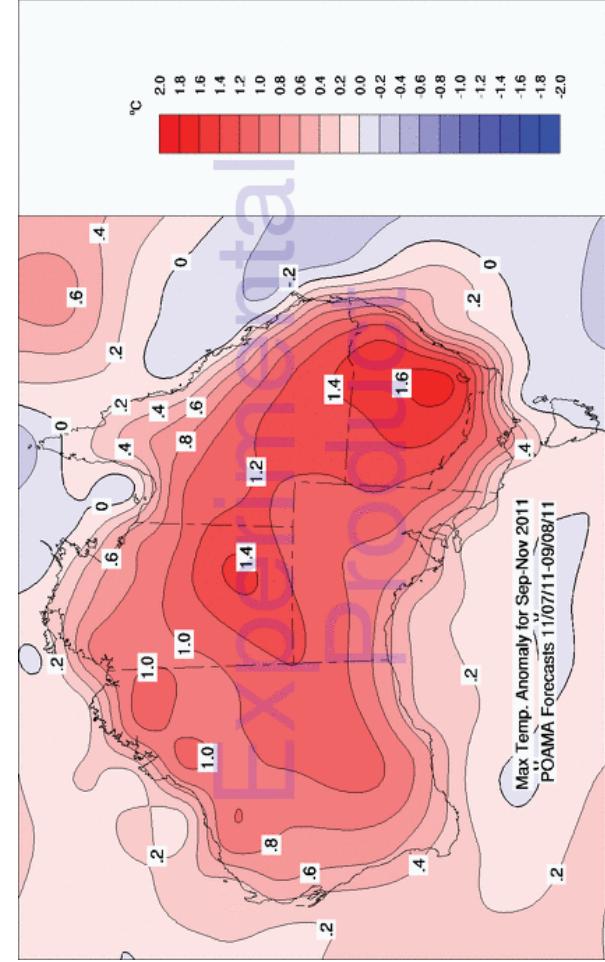
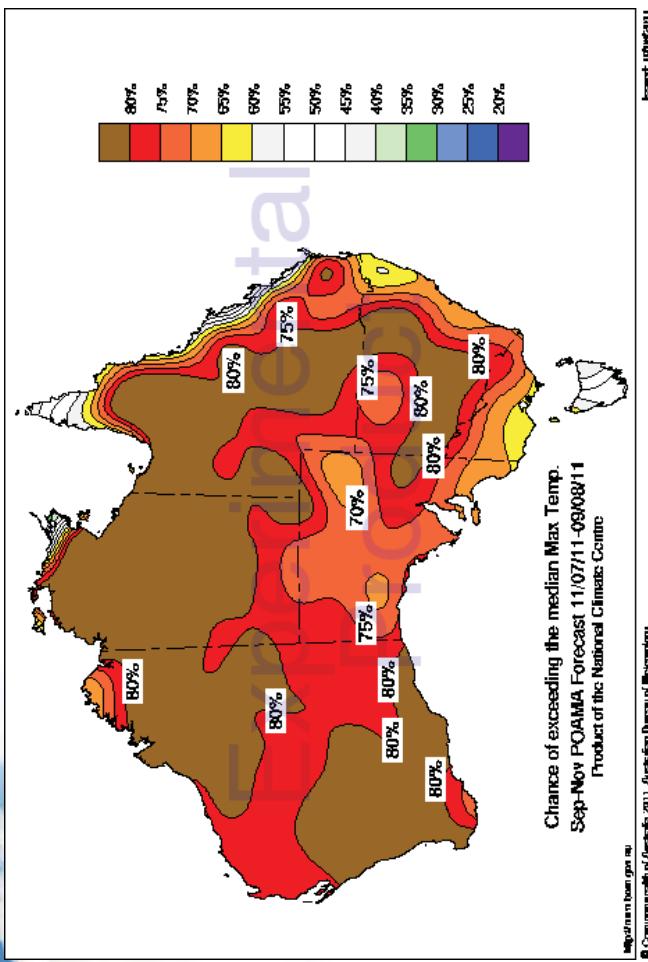


POAMA Outlooks: Max Temp

22

The POAMA dynamical forecast suggests strong odds of above median temperatures over southern Australia, except in Tas (NB: POAMA is historically overconfident)

Strongest anomalies over southern inland NSW.

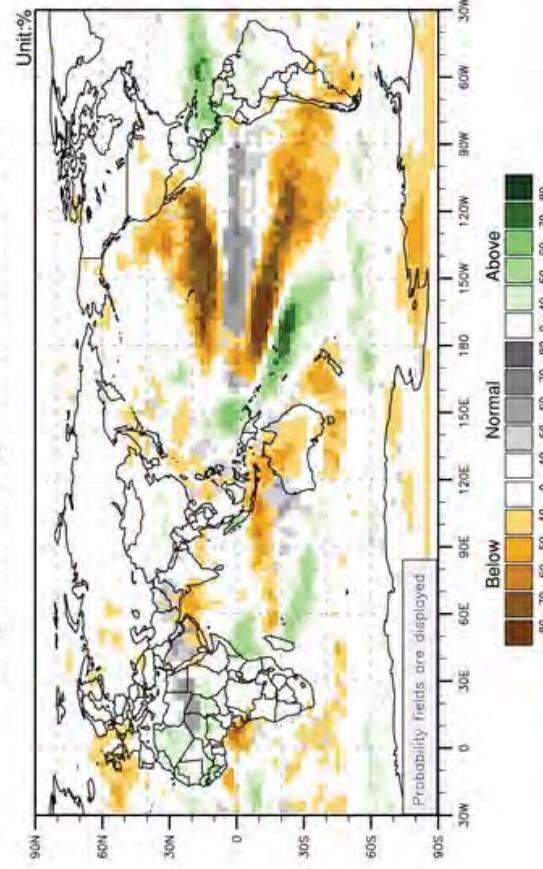


Multi-model ensembles

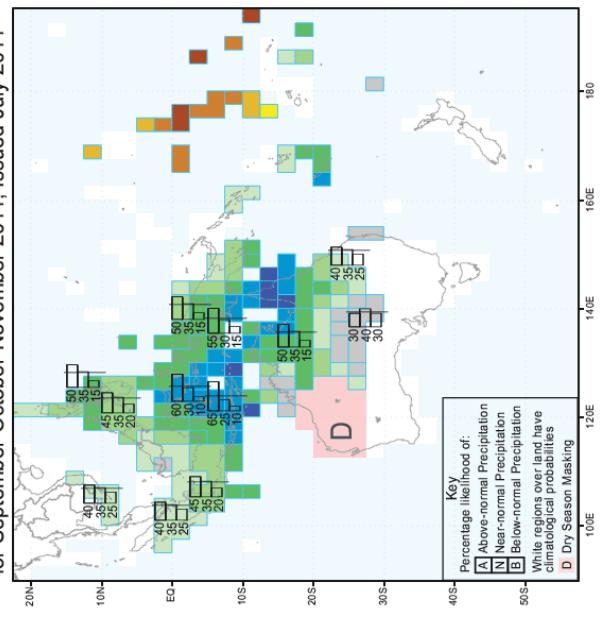


Australian Gov
Bureau of Met

Precipitation for September-November 2011

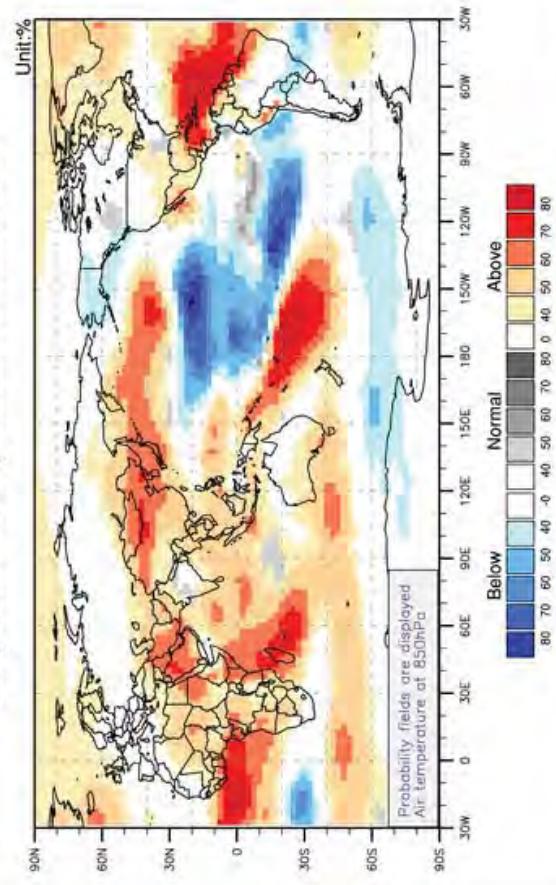


IRI Multi-Model Probability Forecast for Precipitation
for September-October-November 2011 Issued July 2011



APEC Climate Center for
September-November: Increased
chance of dry, especially in north.
Warmer in southern half. Pacific
looks La Niña-like.

Temperature for September-November 2011

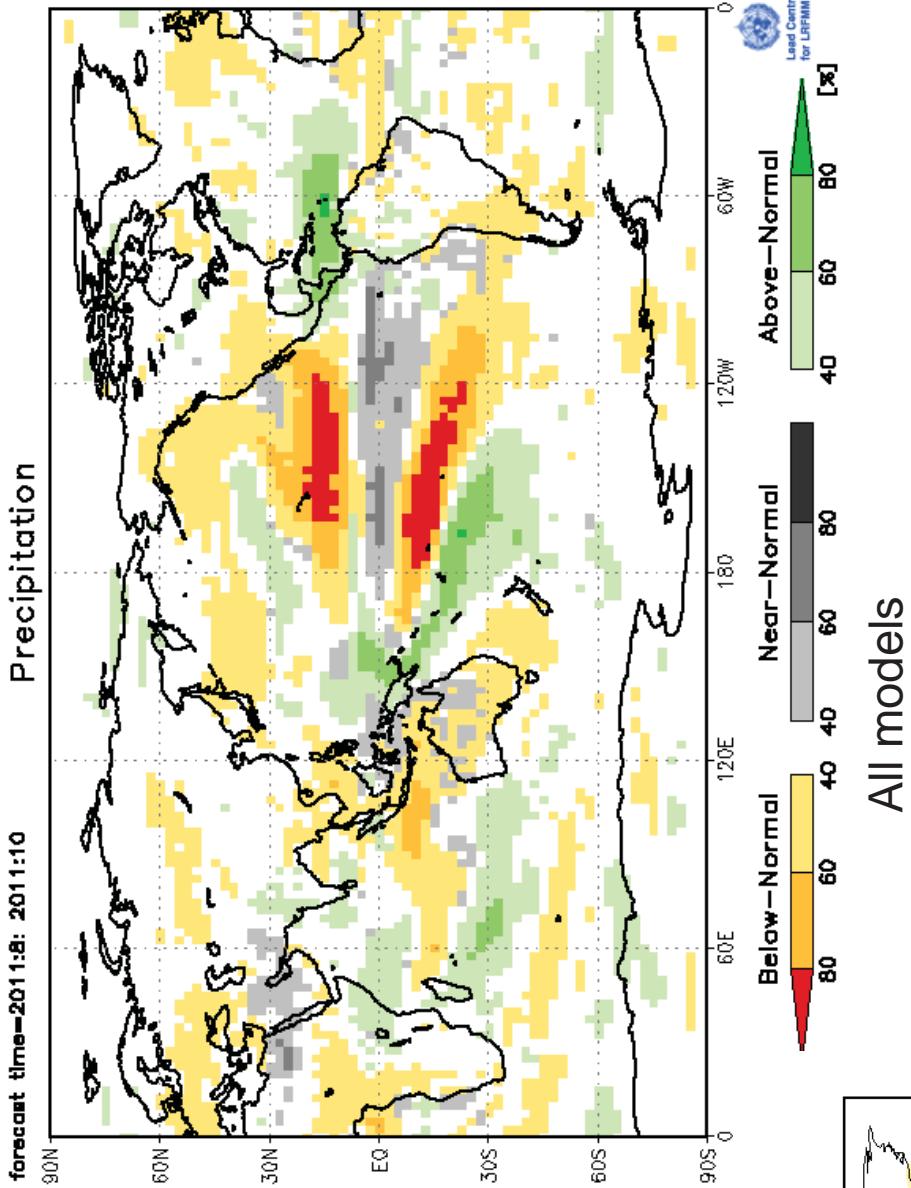


© APEC Climate Center

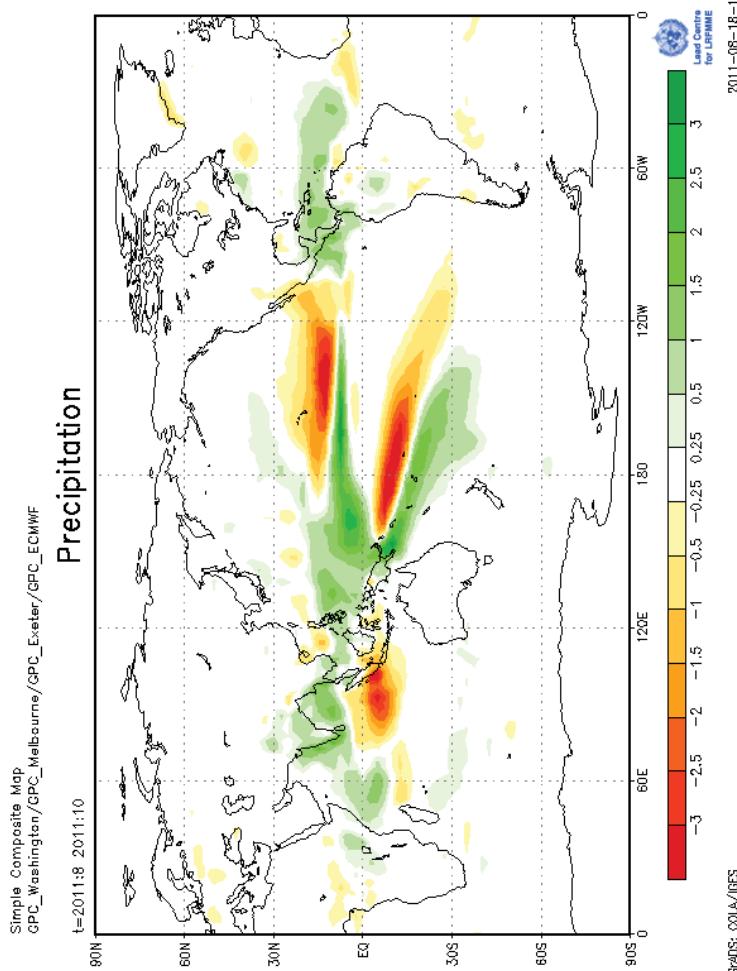
International Research Institute (IRI) for
Climate and Society multi-model
ensemble: wetter for parts of northern
Australia, but neutral in south.

WMO Lead Centre – Multi Model Ensembles

Probabilistic Multi-Model Ensemble Forecast
 /GPC_leoul/GPC_washington/GPC_melbourne/GPC_tokyo/GPC_exeter/GPC_montreal_beijing
 forecast time=2011:8: 2011:10



NOAA/BoM/UKMO/ECMWF

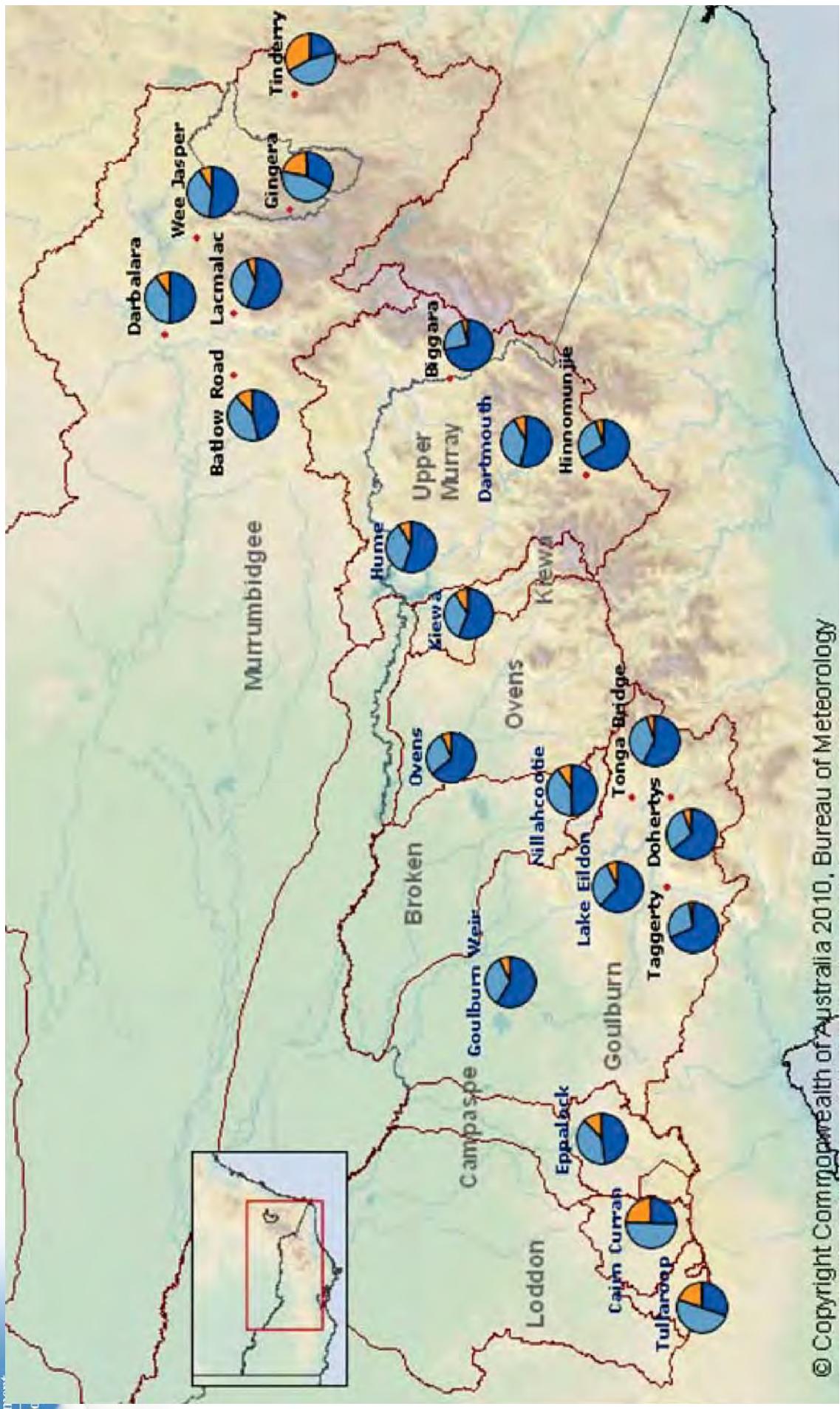


Streamflow forecasts

25



Australian Government
Bureau of Meteorology



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The majority of forecast locations reported streamflows that were above median for July. Near median or high flows are the most likely outcome for all forecast sites for the August to October period.

Summary of climate features

Rainfall

- Long term drought persists in the SW of the continent, but has eased significantly in the SE.
- The 2011 southern wet season has seen a return to below average falls, except along parts of the NSW coast. August is generally near-to or above pro-rata.

Temperature

- Maxima have tended to be close to average for the southern wet season.
- Exceptions – cool along NSW coast (in line with wet), and warm in southwest WA. Some very warm conditions at times in the top end and inland Qld during August

Summary of climate features

Outlooks for Spring

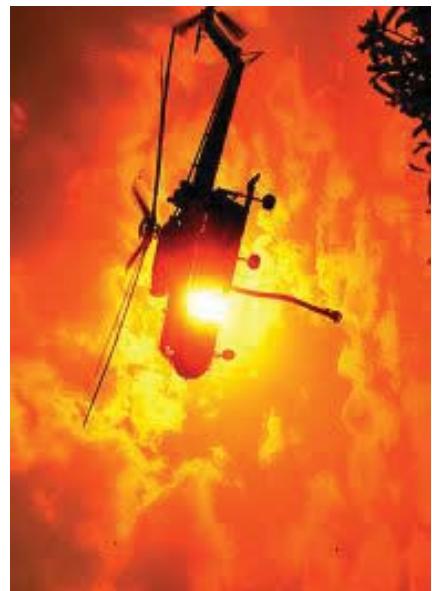
- Mixed guidance from global models
- Cooling in the Pacific (currently neutral), so a late La Niña is possible.
- Central Indian Ocean is warm, but will east IO be cool?
- Mixed rainfall outlook – wetter in southwest WA, drier parts of SA/NSW/Vic & wetter in parts of south Qld.
- Average to above average streamflow in the SE
- Neutral temperature outlook overall.

Thank you

VICTORIAN SUMMARY

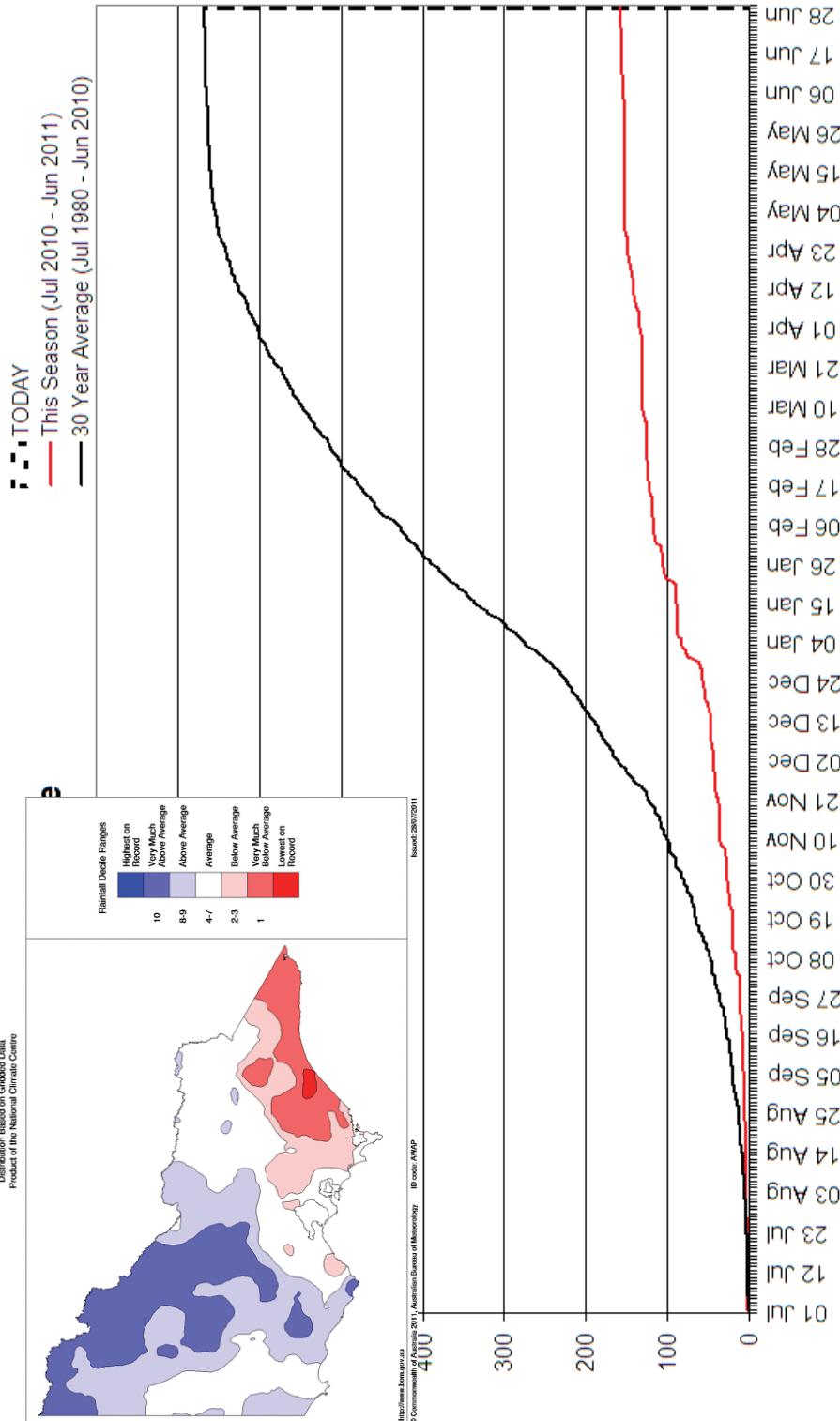
Bushfire and Planned Burn Operational Outlook

23 August 2011



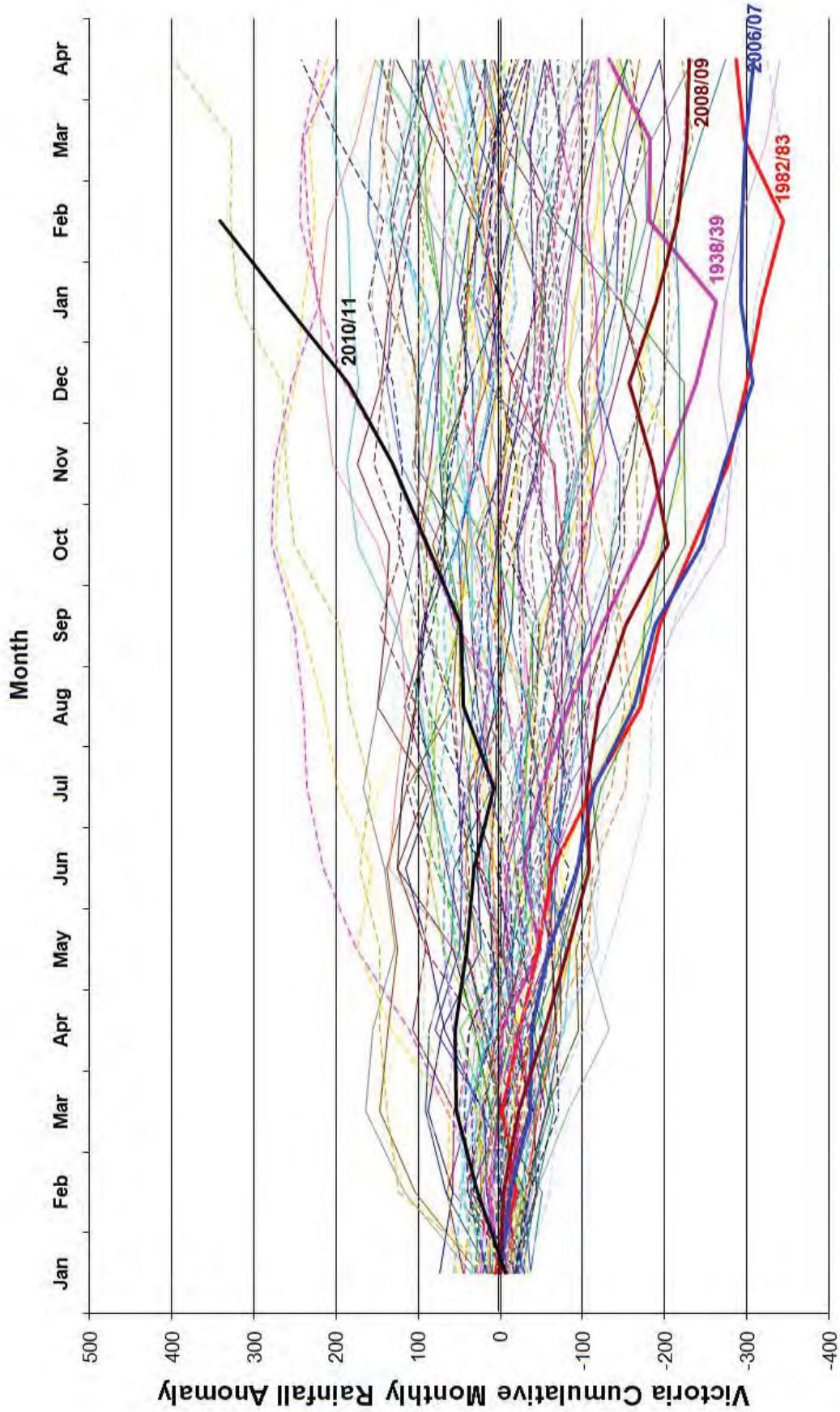
Key characteristics of 2010-11

2010-2011 fire season was the least active in 30 years.



- Record or near record rainfall events in spring and summer.
- Widespread flooding in north and west.
- Daily maxima moderated, and soil and fuel retained moisture.

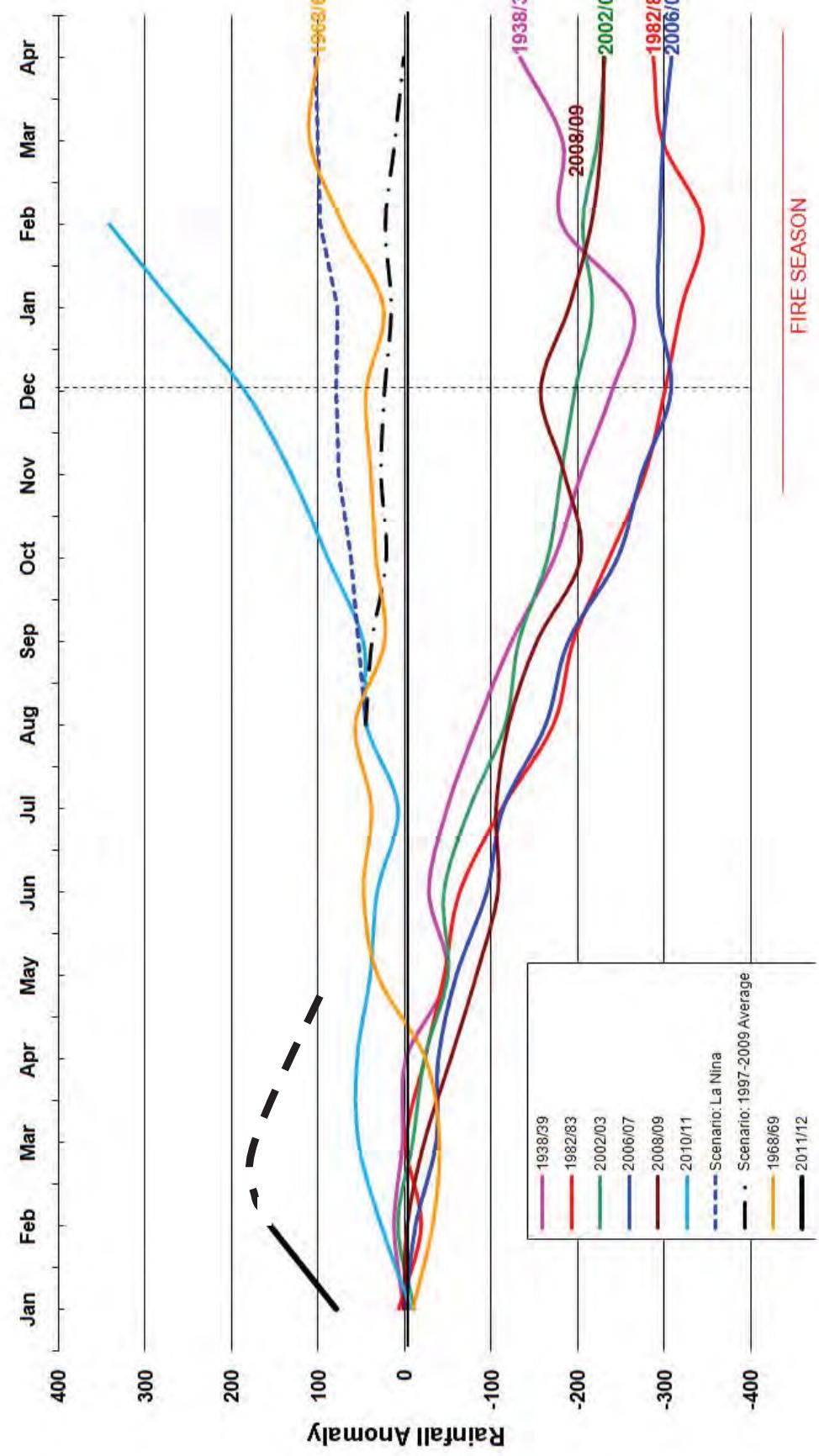
Victorian Rainfall Anomaly 1900 - present



Victorian Rainfall Anomaly 2011

Victoria Cumulative Monthly Rainfall Anomaly & Severe Fire Seasons

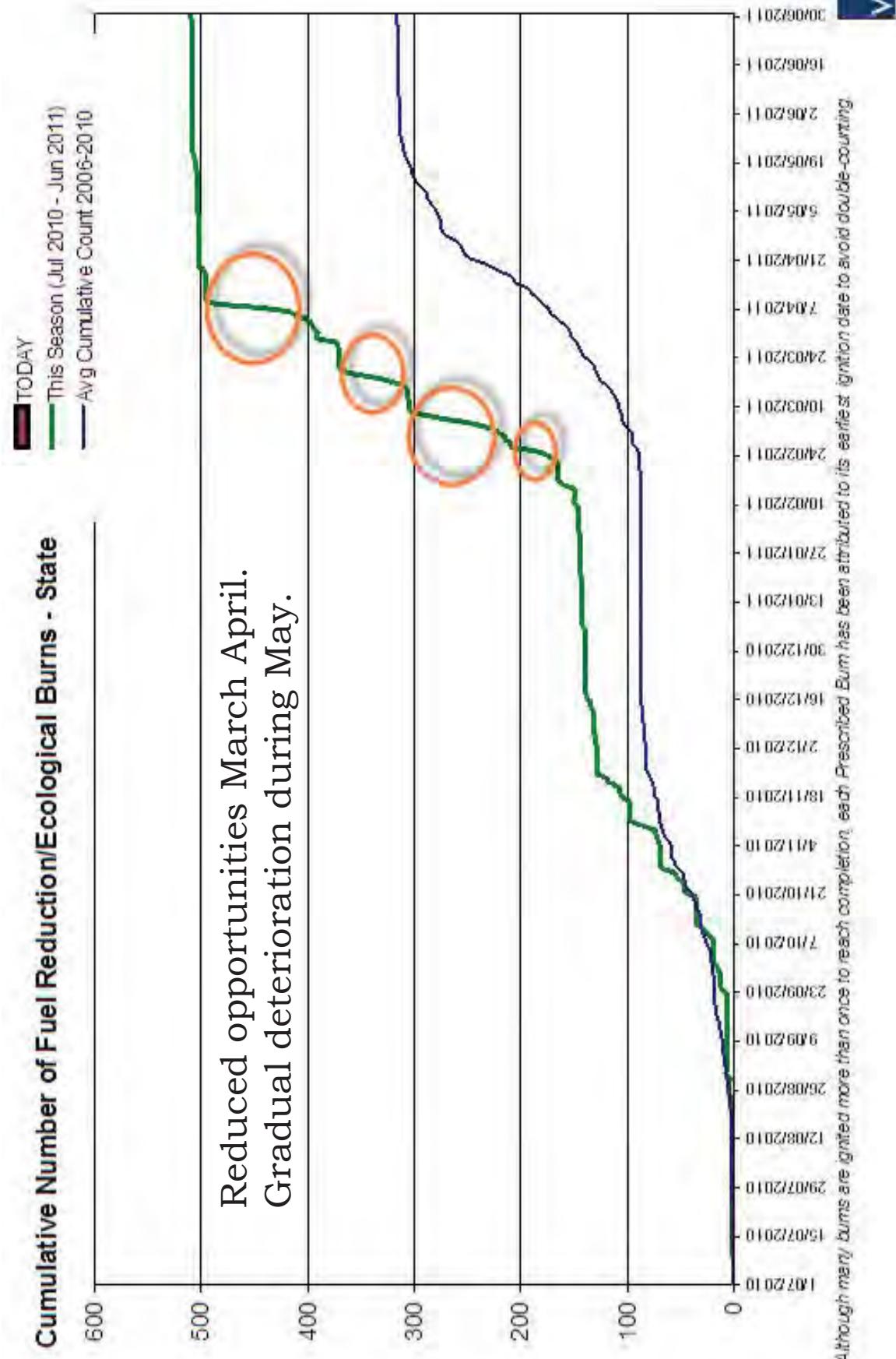
Data sourced from Commonwealth of Australia 2008, Bureau of Meteorology, rainfall anomaly is based on difference from 1961-1990 average



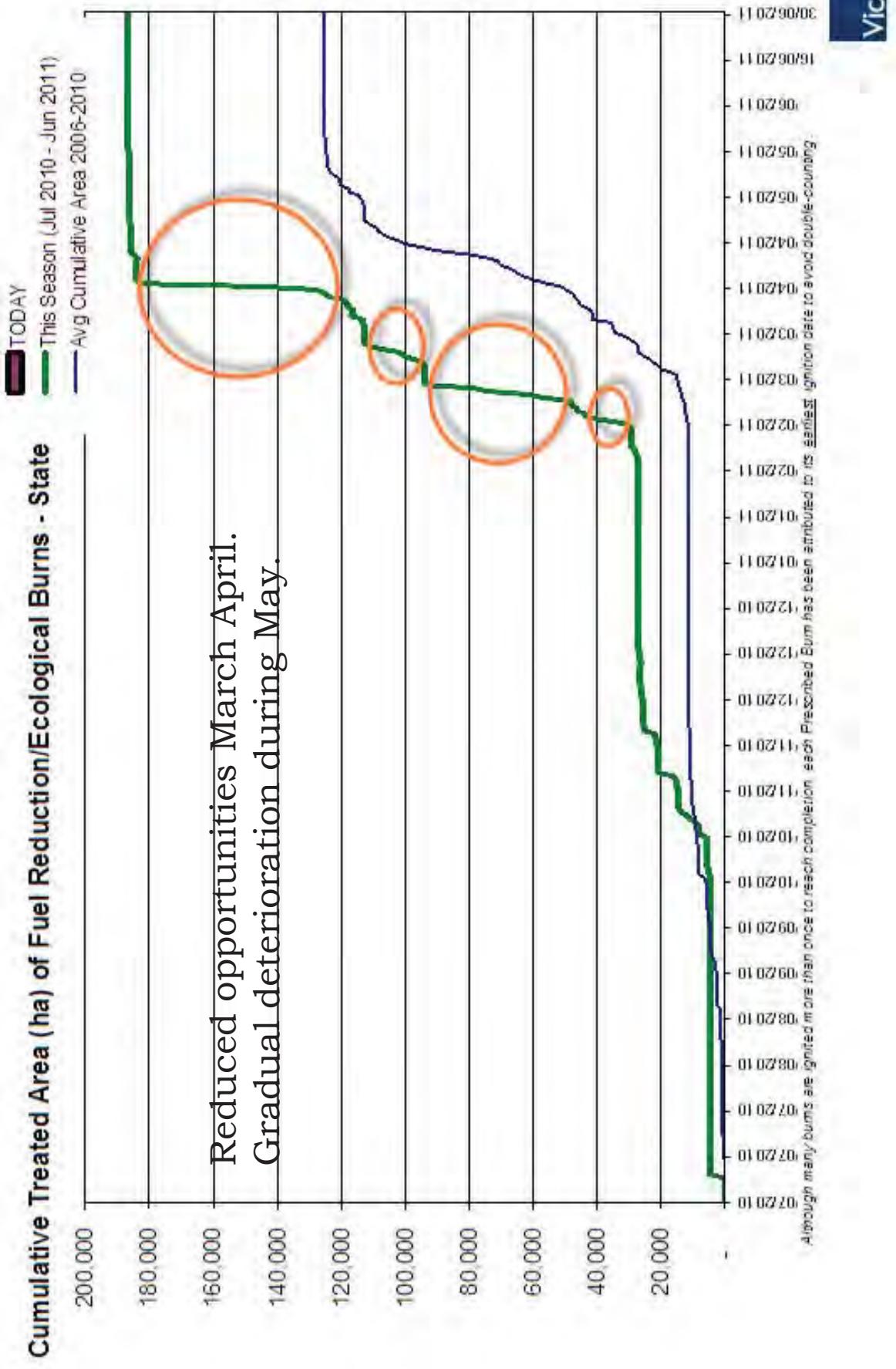
Planned Fire. What we achieved 2010-11

Burn Region	Program 10/11 Area (ha)	Total Area Treated (Hectares)	Total Estimated Area as a % of Program
CENTRAL Total	11,399	1,234	11%
EAST GIPPSLAND Total	71,932	54,040	75%
NORTH EAST Total	43,296	64,235	148%
NORTH WEST Total	40,984	32,981	80%
SOUTH WEST Total	32,511	34,277	105%
Total FRB/ECO	200,122	186,766	93%
Other Burns (Regeneration and Heaps)		2,231	
VICTORIA Total all burning		188,997	94%

Number of burns



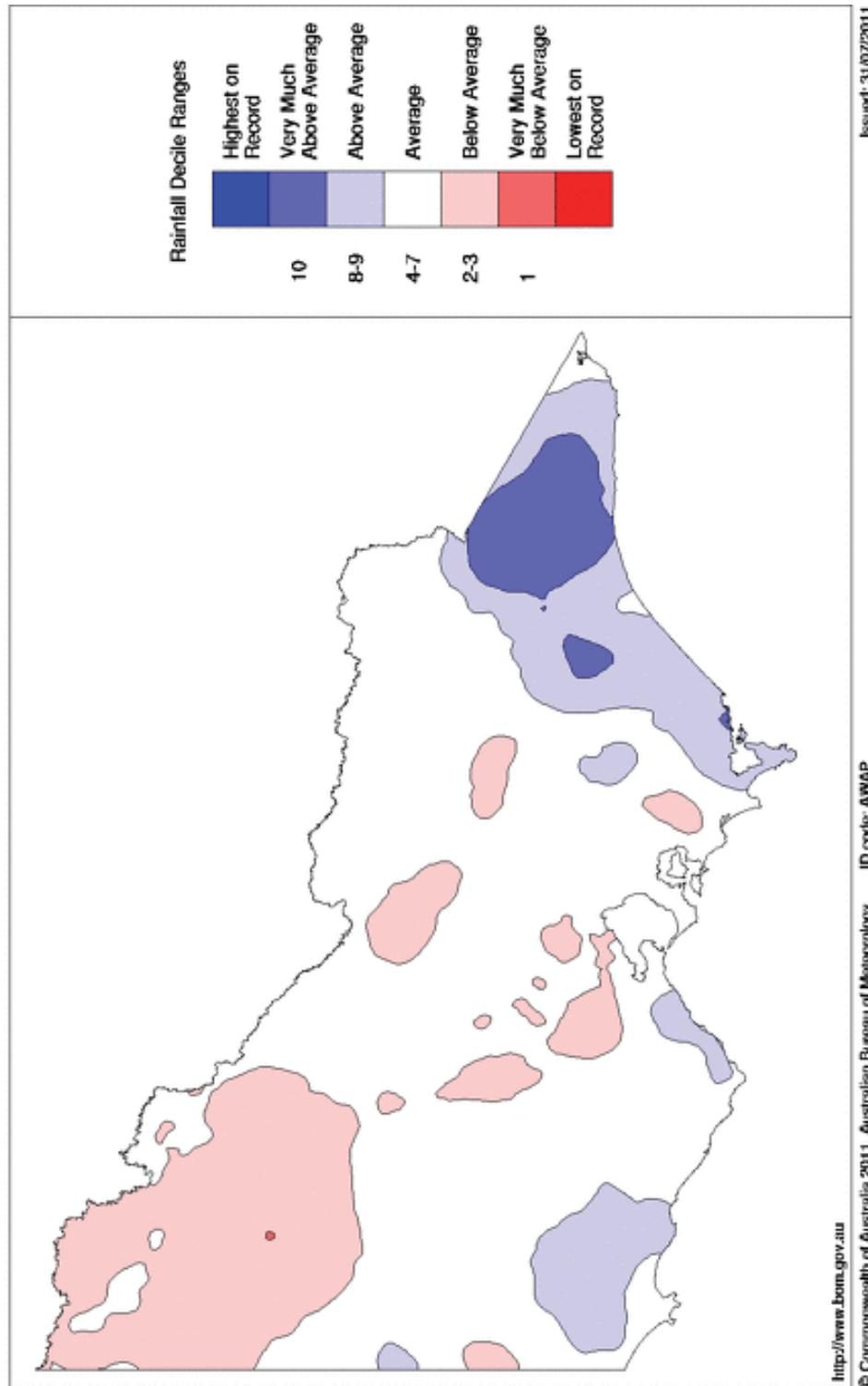
Area treated (hectares)



Key characteristics of 2011-12

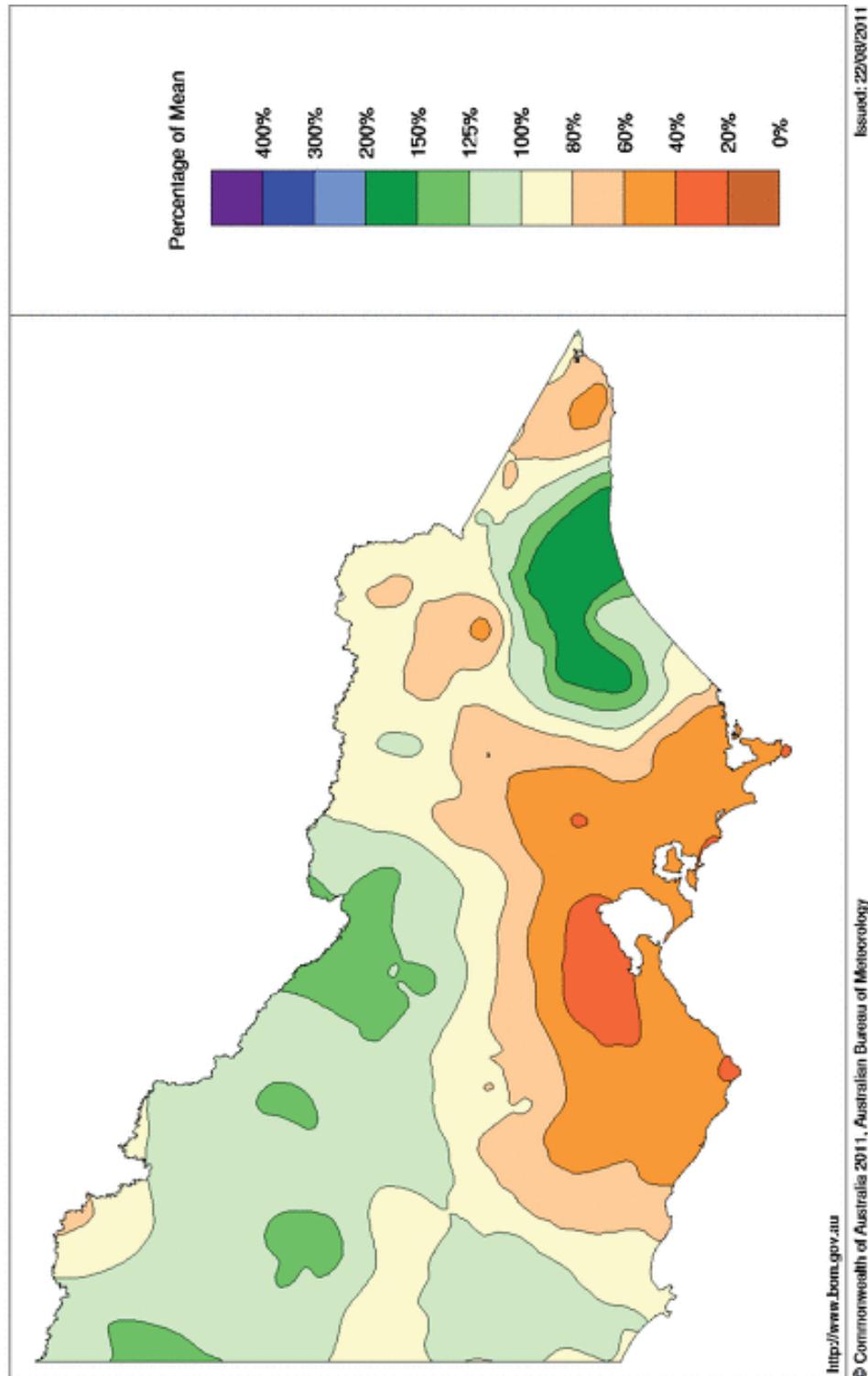
Rainfall deciles. July 2011

Victorian Rainfall Deciles
Distribution Based on Gridded Data
Product of the National Climate Centre

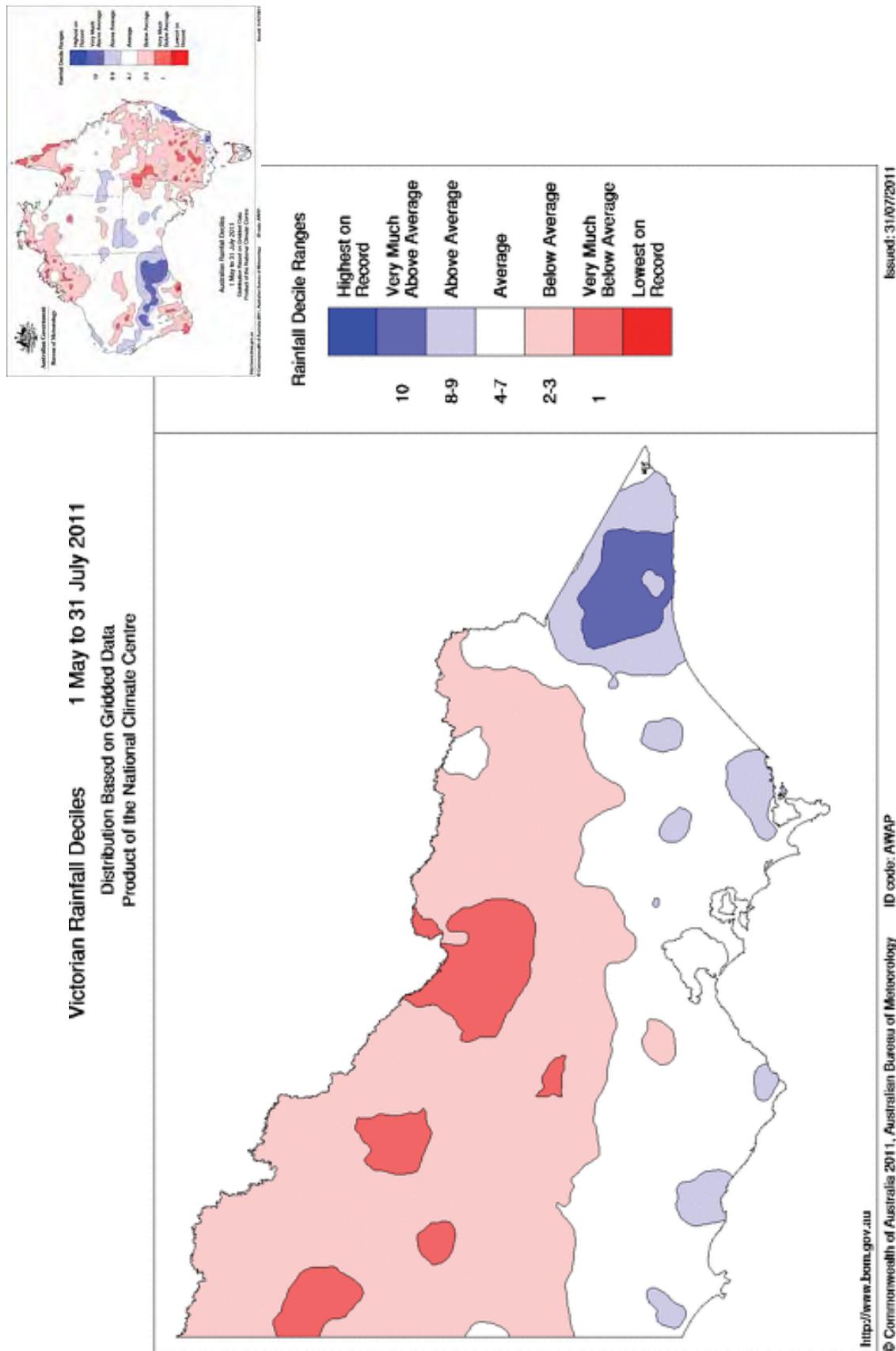


Rainfall percentages. Month to Date August 2011

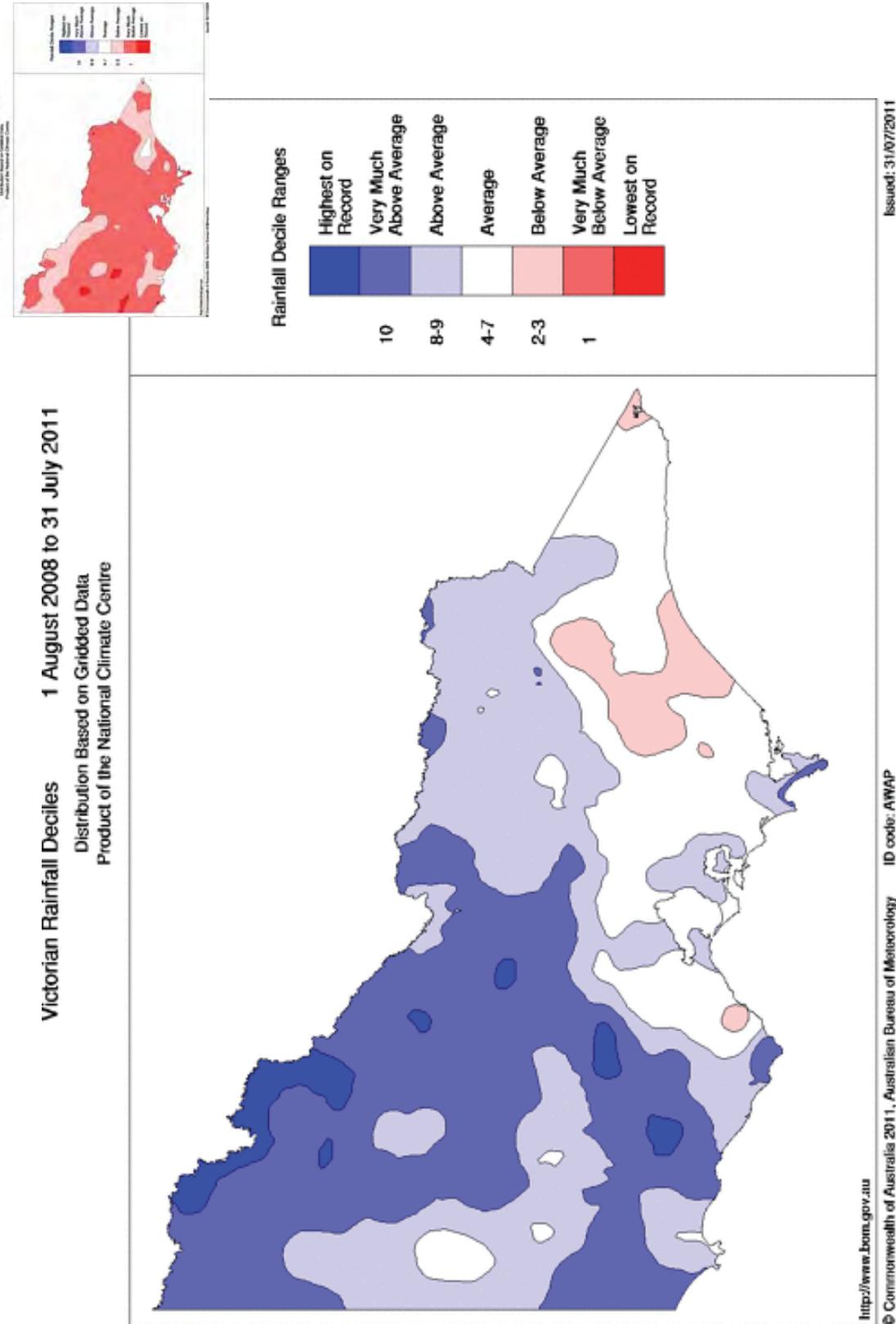
Rainfall Percentages
1st to 22nd August 2011
Product of the National Climate Centre



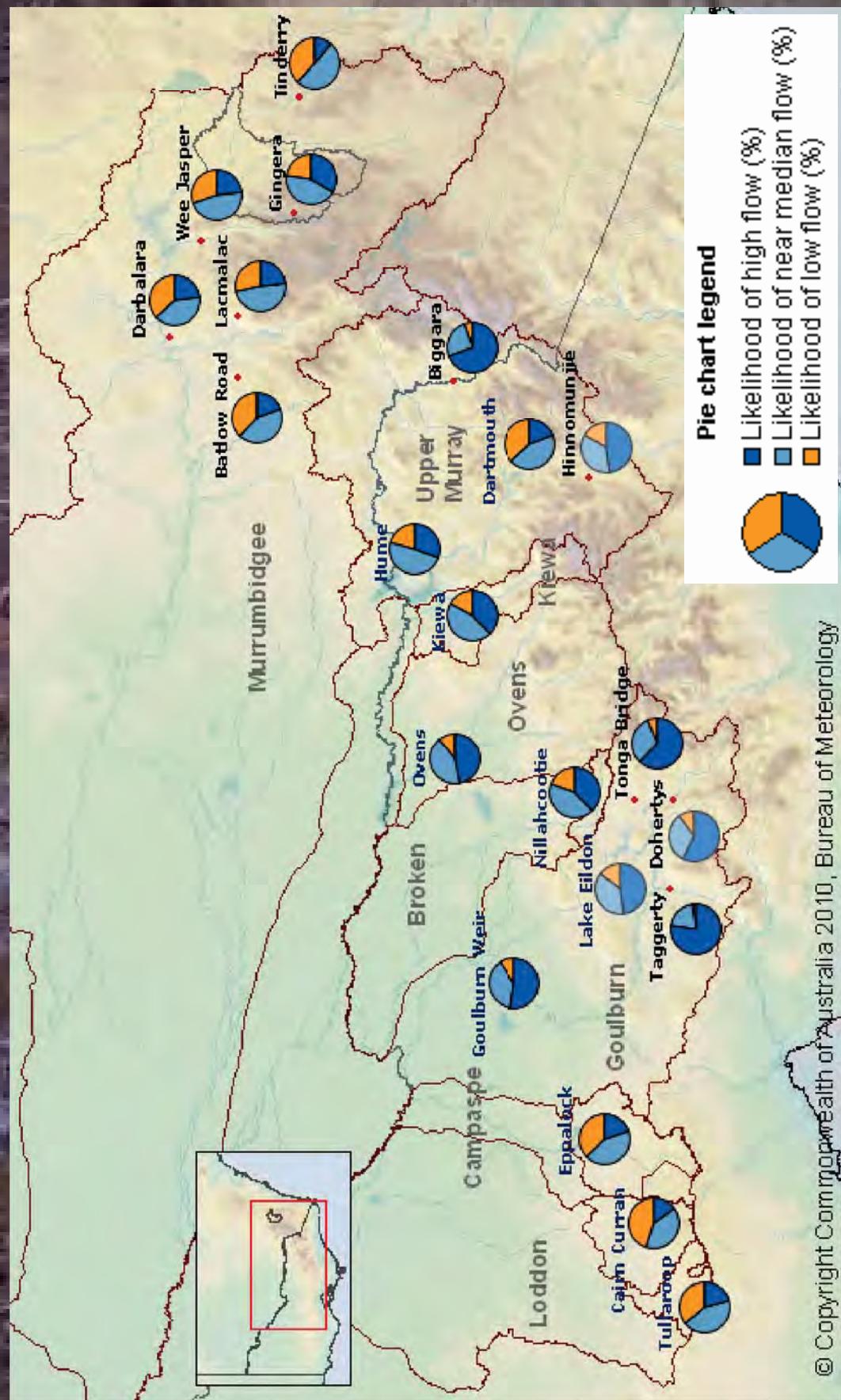
Three month rainfall deciles (inset Aust.)



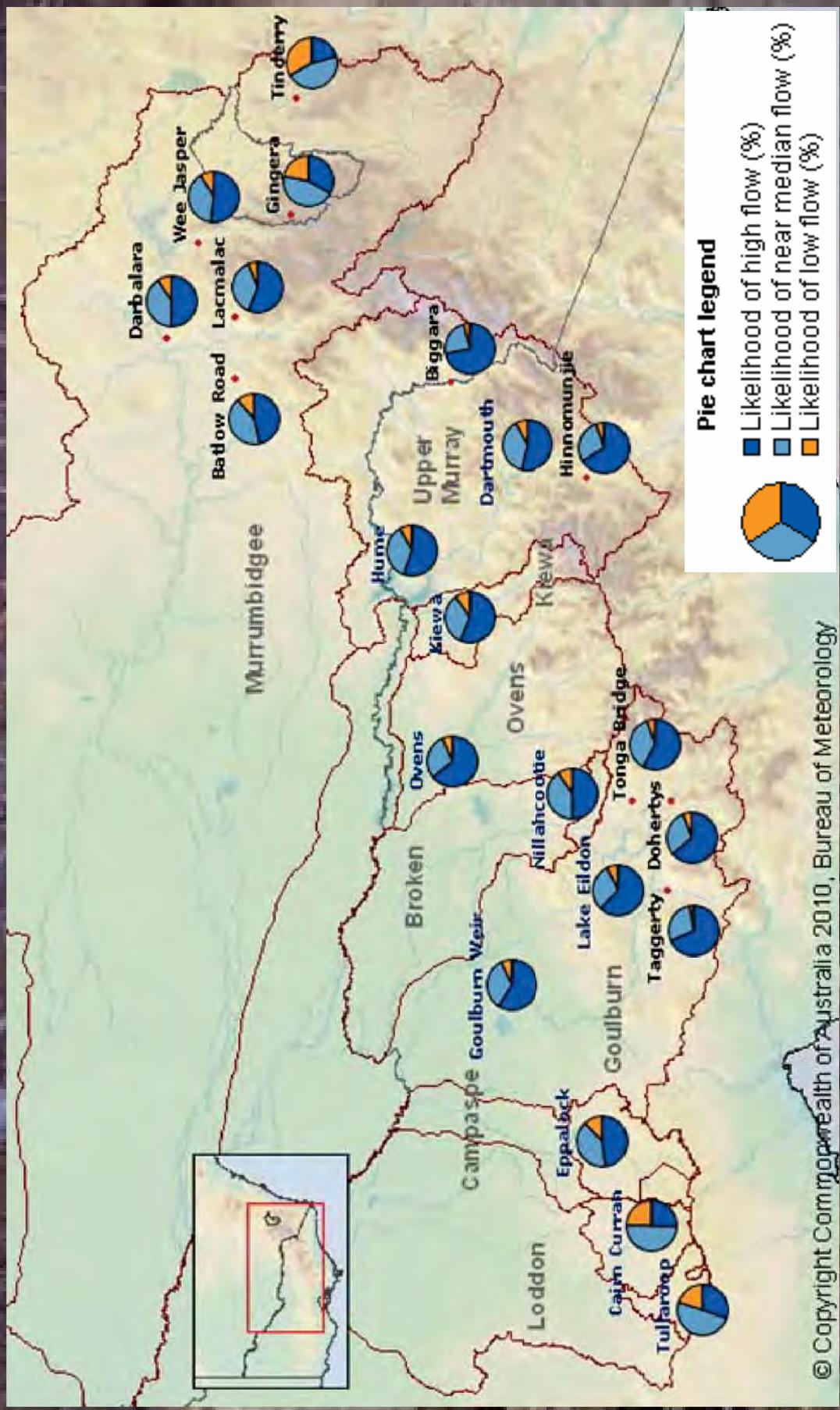
Rainfall deciles 36 month (inset 2005 - 2008)



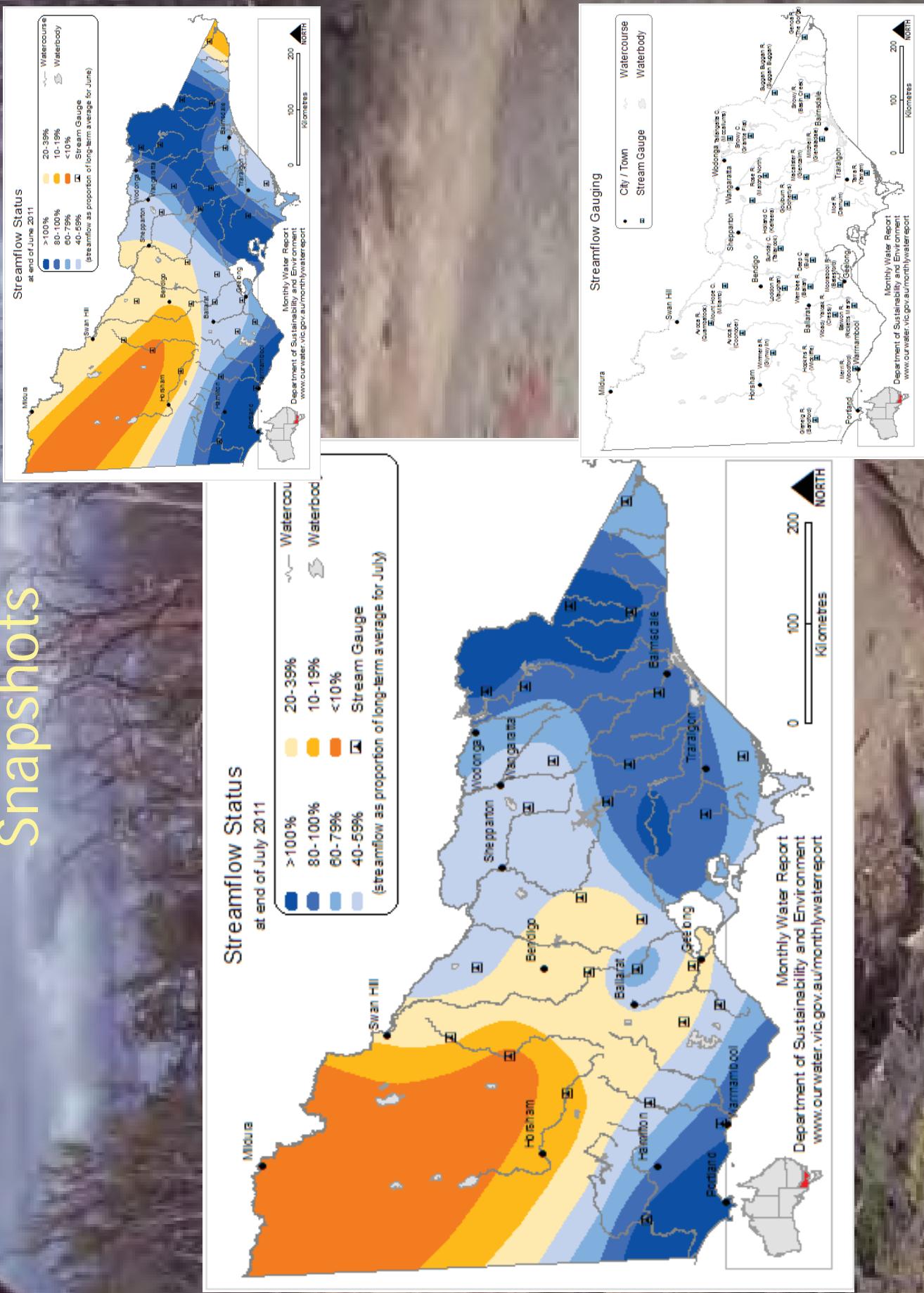
Seasonal Streamflow Forecasts. July to September 2011



Seasonal Streamflow Forecasts. August to October 2011



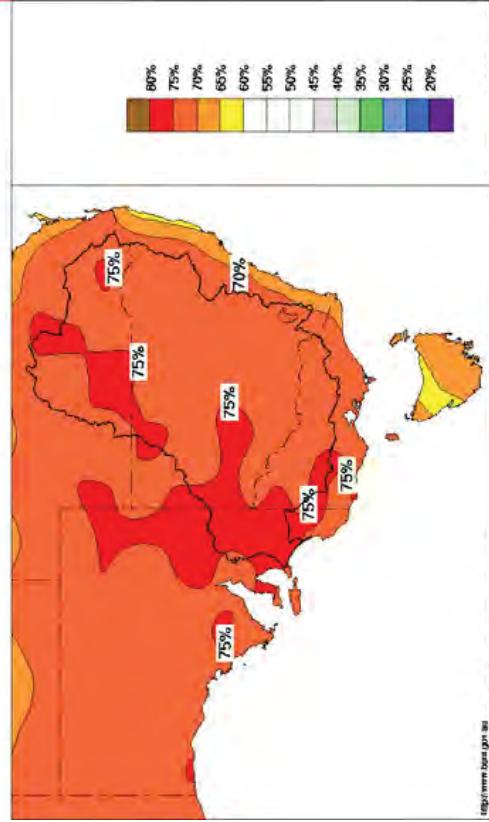
Seasonal Streamflow Forecasts and Latest Snapshots



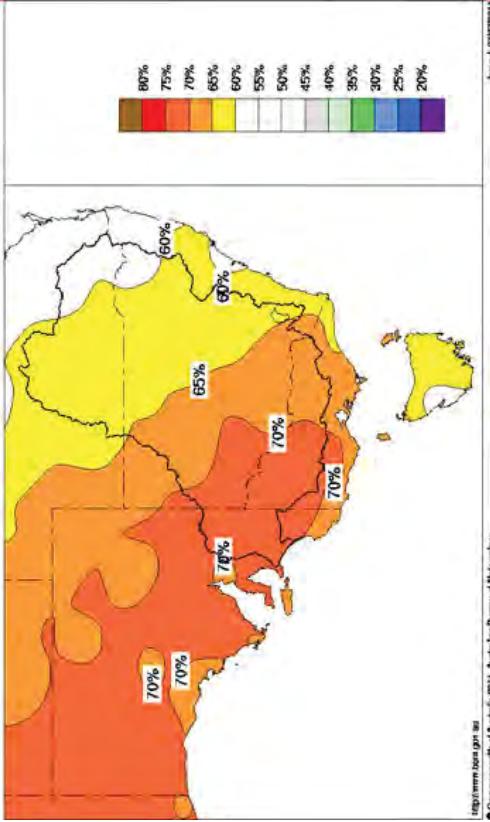
Grassland condition

- Heavy fuel loads, due to abundant growth
- Rainfall outlook for spring, average for most of Victoria with the exception of the Mallee which favours drier conditions
- Warmer min and max temperatures expected
- Curing to commence early in the Mallee

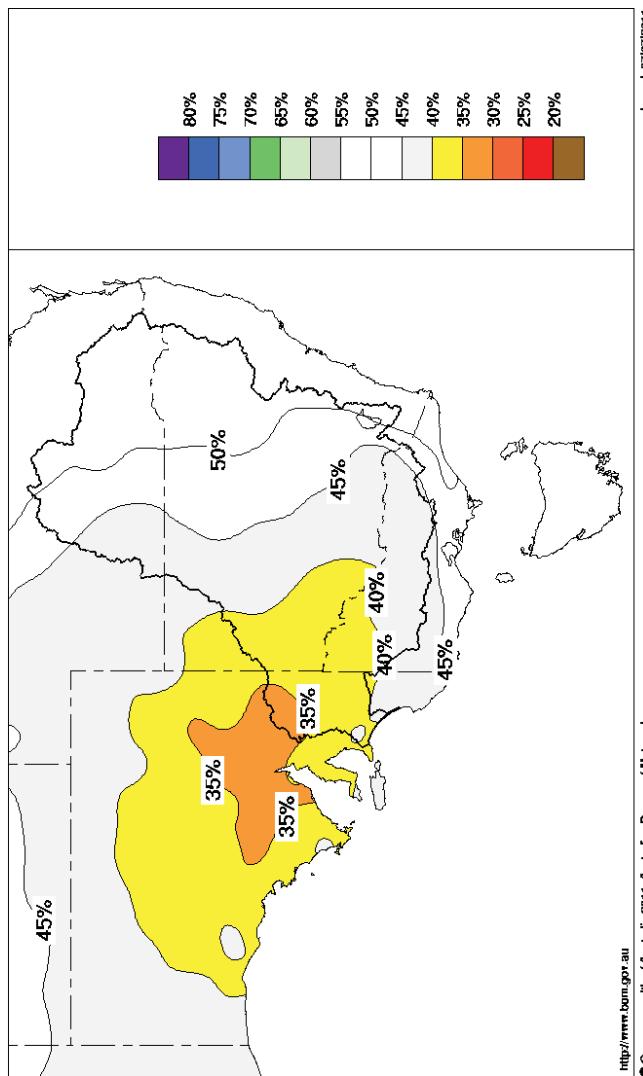
Chance of exceeding the median Max Temp August to October 2011
Product of the National Climate Centre



Chance of exceeding the median Min Temp August to October 2011
Product of the National Climate Centre

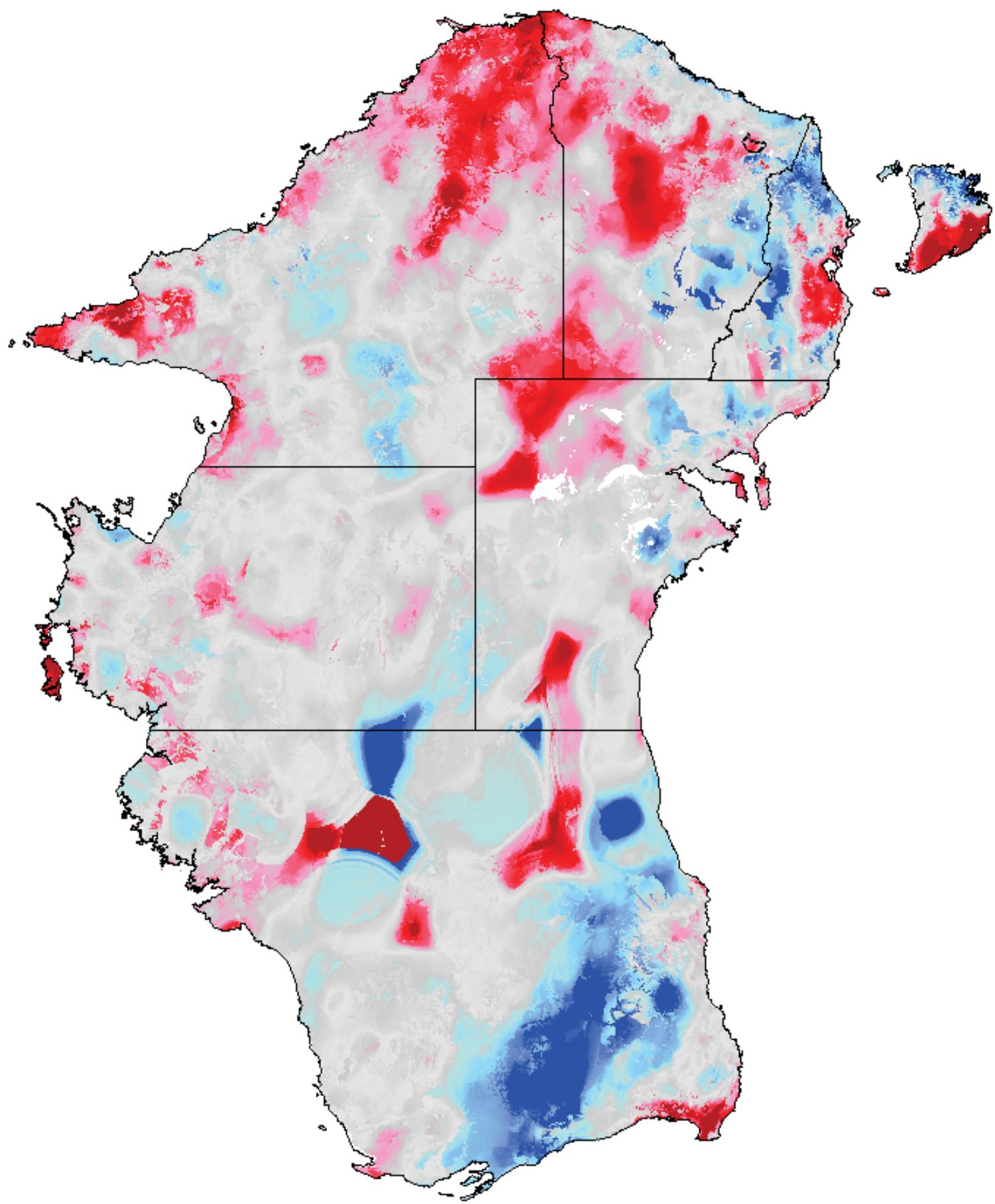


Chance of exceeding the median Rainfall August to October 2011
Product of the National Climate Centre



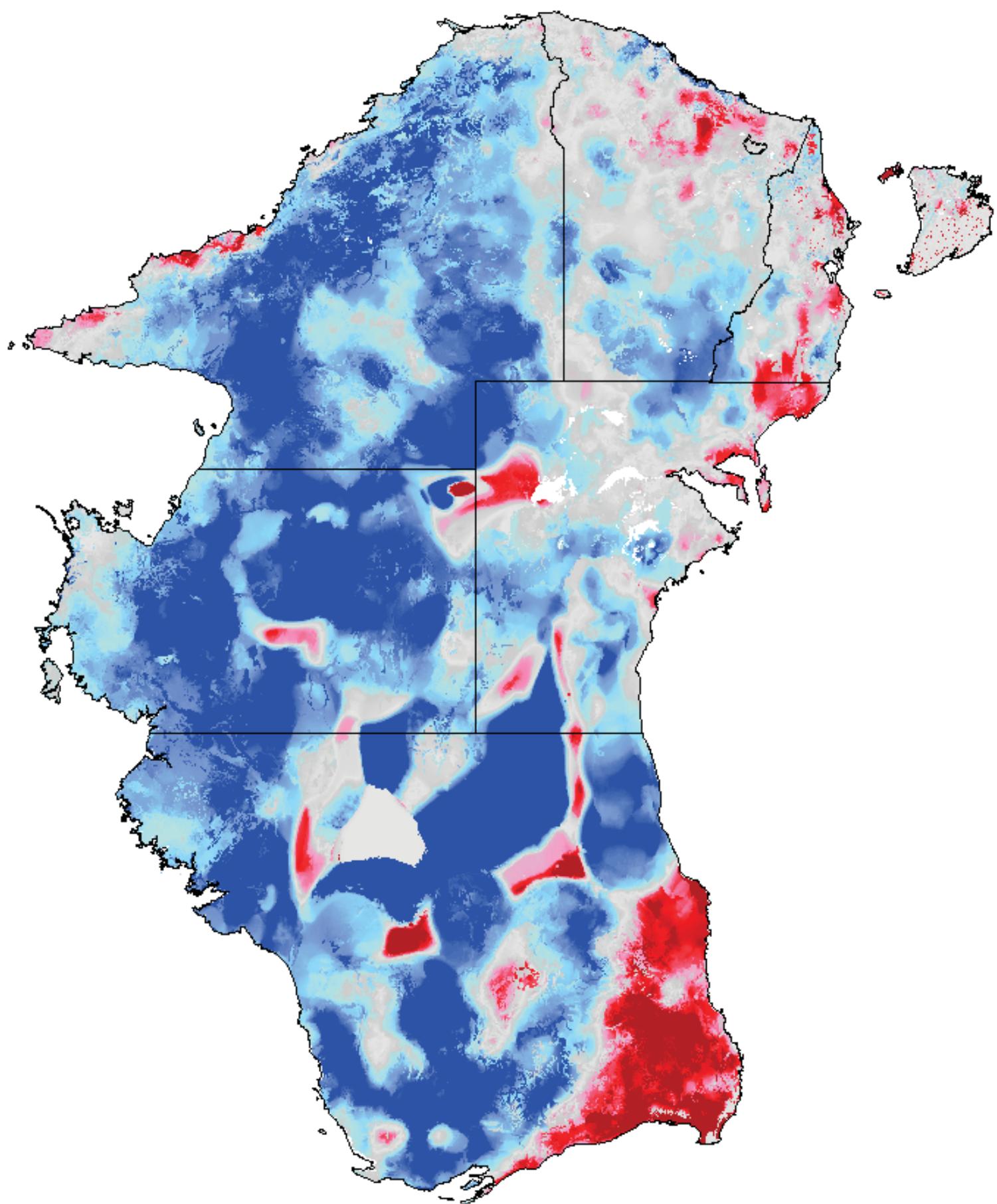
2011/08/08 to 2011/08/14

Percent Rank Relative Soil Moisture (Upper Layer) [%]



2011/08/08 to 2011/08/14

Percent Rank Relative Soil Moisture (Lower Layer) [%]



Operational Outlook Summary

Opportunities for planned burning.

- *Mallee and Wimmera desert country and parts of East Otway are likely to present the first opportunities on current trends of temperature, wetting and drying.*
- *Slopes and foothill country on both sides of the Great Divide may also present opportunities for edge preparation, candling and multi stage burns. There is good opportunity to take advantage of moisture differentials between exposed areas and gully systems. Access may currently be a problem.*
- *Regeneration burns began in the Central Highlands last month before the August rain spells.*
- *Parts of the east Otway Range and South Wombat may develop opportunities rapidly.*
- *Accumulations of grass in Mallee vegetation will see fire persisting overnight (where wind conditions permit), earlier in the season.*

Soil Moisture

- *Southern and eastern gullies in many areas are likely to remain wet throughout summer.*
- *Drier areas in the north of the State with accumulations of grass may present an increased risk of fast moving fire.*

Expected seasonal conditions August to October 2011

- *Frequent cold fronts with drier air; reduced NW cloud and rain activity – watching this one.*
- *Most of northern Victoria is expected to receive below-average rainfall for the three months to end of October. Above average daily maxima are expected across the State for this period.*

REGIONAL FUEL STATE TABLE VICTORIA:

BoM Forecast Districts	Descriptor	Dominant Forest Fuel	Fuel ¹ Grass	Relative Aug KBDI	Long Term Rainfall Decile	Summer Season Outlook
Mallee	Mallee Desert country	Mallee woodland	Native grasses Grazing cropping	Moderate	Very much above average	Above Average
Wimmera	Desert Country Nth. Grampians	Woodland	Native grasses Grazing cropping	Moderate	Above average	Average
South West	Coast Sth. Grampians Western Districts grazing	Heath Woodland Open Forest	Native grasses Grazing cropping	Low	Very much above average	Average
Northern Country	Riverine Plains Goldfields	Woodland Open Forest	Native grasses Grazing cropping	Low	Very much above average	Above Average
North Central	Great Dividing Range	Open forest Tall forest	Grazing cropping	Low	Above average	Average
Central	Port Phillip Urban interface Water Catchments	Open forest Tall forest	Grazing cropping	Low	Average	Average
North East	Alpine Foothills	Woodland Open Forest Tall forest	Grazing cropping	Low	Above average	Average

¹ Grass = perennial both native and introduced including stiper

			Grazing	Low	Below average	Average
			cropping			
West and South Gippsland	Sub-alpine Foothills Coastal Plain	Woodland Open Forest Tall forest				
East Gippsland	Far East Gippsland forest Plateaux Coastal	Woodland Open Forest Tall forest	Grazing cropping	Low	Average	Average

Draft Preparatory Statement for Bushfire Potential – Victoria.

Above normal bushfire potential is the chance of fires occurring that may be complex, protracted or could require resources beyond the local capacity.

Grass growth across the State is prolific and widespread. General comments from the field are that this represents a return to conditions more consistent with the long term average. After the prolonged dry spell agricultural stocking rates are low, and this is expected to contribute to an overall increased incidence of fast moving grass fires.

Mallee and Northern Wimmera. The Mallee and Wimmera desert country is a fire prone landscape and it is normal for bushfires to occur each year. Overall there is an above average bushfire potential. The area has been subject to record rainfall and partial inundation, and this has resulted in significant and widespread crop and native grass growth across the region. Prescribed burning has been hampered by residual soil moisture and by an increase in the amount of moisture in native grassland fuels. Localised frosts have contributed to advanced curing in some areas, and these areas are expected to provide early planned burning opportunities.

Northern Country: The change in land use from irrigated crop and pasture to non – irrigated may result in a greater than average incidence of fast moving grass fires in this area. Intensive cropping practices resulting in a lack of fallow paddocks may also contribute to this expectation.

Great Dividing Range. There is generally an average fire potential across the Great Dividing Range. Forests are wet, and the expectation of fast running grass fires represents a return to conditions approximating a thirty year average.

Parts of the region, including the alpine areas have been subject to above average rainfall over the last 9-12 months and this has resulted in the saturation of many creeks and drainage lines that have not been regularly wet for ten or more years.

These areas have an accumulation of dead fuels from many years without fire, and so had previously generated a threat of more intense fire behaviour that adjacent parts of the landscape that burnt more frequently. In previous years they had also supported fire overnight on many occasions when adjacent areas would not. The result being larger, more complex fires.

On balance, these gullies and drainage lines, it is expected, would remain damp well into summer period, and will either not support fire, or only support fires of lower intensity than those on north facing slopes, ridges, spurs and plateaux. This will enhance success in the implementation of direct attack and other offensive strategies and may also enhance multi-stage burning regimes in foothill and sub-montane areas.

Grass and crop fires in these areas will arise particularly where there is limited grazing opportunity. The occurrence of fast moving grass fires is expected to return to conditions consistent with the long term average.

The western foothill country and the Otway Range will experience average fire potential though it is expected the onset of fire season may occur more rapidly in coastal heath and southern parts of the Wombat State forest once surface moisture evaporates. Considerations at this stage indicate the threat posed by grass fires in this area is average.

Western District

Average bushfire conditions are expected across southern and central parts of the Western District with some areas of prolific growth in areas towards the north of this area

The majority of leading international climate models predict the continuation of neutral conditions well into summer and some are considering the possibility of a return to a weak La Nina. What this means for south eastern Australia is not clear, though the seasonal outlook is currently predicting drier conditions in the north. This is reflected in the fire potential.

Likely Weather Conditions: Cloudband activity over the interior of the Continent is currently suppressed. This may moderate the expectation of high temperature anomalies in the interior, moderating north west airflows across Victoria. These airflows may also be drier and this is reflected in the current outlook.

Typical SW cold front activity will bring drier, cold maritime air across southern areas of the State. A more southerly trajectory of the high pressure ridge across Australia may continue to force many cold fronts offshore. Under this effect, moisture bearing cold fronts will skim the southern tip of the continent and may moderate expectations for rainfall in southern areas. The remainder of weather conditions will be subject to synoptic patterns.

SOUTH AUSTRALIAN SUMMARY

SOUTH AUSTRALIA

2010/11 Overview & Review of Outlook

On reviewing the 2010/11 outlook, the areas identified for potential above level of activity were confirmed throughout the fire danger season. Whilst overall the state only had a small number of significant fires, these occurred in the areas identified in the outlook. With regard to the fire danger season, none of the 15 fire ban districts commenced restrictions early, however all districts closed at the end of March, which is earlier than normal due to rain received.

The State received average to above average rainfall over key risk areas in the 6 months up to November, with the north east pastoral receiving very much above average for the same period. As a result, heading into late spring early summer, most forest fuels were wetter than normal and grass fuels were greener, with curing occurring in late spring early summer. South Australia had its second wettest first five months of the year (January to May) on record. January to March this year was the wettest first 3 months of the year on record, but with below average rainfall in April, and close to average rainfall in May 2011.

From the 23 November 2010 to 1 February 2011 a total of 62 total fire bans were issued compared to 207 for the previous season.

South Australia had forecast catastrophic ratings 7 times across 7 districts on two different days. Actual observed conditions occurred once, this was un-forecast.

The 2010 – 11 fire danger season has seen a 30% reduction in the number of rural type fires attended by CFS compared to the 2009 – 10 season. The State has recorded minimal major bushfires, however of note was a fire caused by lightning on Saturday 8 January on Todmorden Station 60km North West of Oodnadatta, the fire burnt 129,000 hectares (this same area experienced significant rainfall during February).

Whilst we have recorded a reduction in the number of rural type fires across the state, we have recorded an overall increase total incidents attended by 5-10%, this includes vehicle related incidents, fixed alarms, and assist other agencies.

Overall the CFS has responded to 8,888 incidents in the period 1/7/10 to 30/06/11, with an additional 5,716 support responses, of these 1,786 have been rural type fires, with a total of 307,432 hours committed to incidents by CFS Volunteers.

The following table outlines the most significant rural fires in South Australia during the 2010-11 fire season:

Incidents of note:

Date	Location	Size	Type	Cause
05/11/10	Mercunda (Galga)	60 ha	Grass	Unknown
03/12/10	Dawesley	175 ha	Grass	Slasher/mower
15/12/10	Sherlock	80 ha	Grass	Suspected lightning
18/12/10	Spalding	200 ha	Grass	Harvesting
22/12/10	Rudall	50 ha	Grass	Harvesting
26/12/10	Bagot Well	90	Grass	Unknown
07/01/11	Bowmans	370 ha	Grass	Unknown
08/01/11	Todmorden (Oodnadatta)	129,000 ha	Grass/Scrub	Lightning
09/01/11	Parndana	80 ha	Grass/Scrub	Unknown
17/01/11	Gosse (KI)	50 ha	Scrub	Suspicious
20/01/11	Western River (KI)	150 ha	Grass/Scrub	Suspicious
25/01/11	Peterborough	100 ha	Grass	Suspicious
08/02/11	Wisanger (KI)	320 ha	Grass	Suspicious
06/03/11	Balaklava	100 ha	Grass	Harvesting

Todmorden: CFS was advised of a fire caused by lightning on Saturday 8/1/11 on Todmorden Station 60km North West of Oodnadatta burning in Mitchell Grass and Mulga scrub. The CFS Regional HQ in Pt Augusta maintained contact with the Station Owner who provided earthmoving equipment and flew the area. The earthmoving equipment established a number of breaks, however as the wind increased mid week, the fire took a run to the North East onto the adjoining Mt Sarah Station. On Thursday 13/1/11, the station owner requested additional support, CFS provided an observation aircraft which flew the fire on Friday 14/1/11 as well as providing a Strike Team of ground based resources (Volunteers and DENR staff) which assisted in containing then mopping up the eastern edge of the fire. The fire was declared contained on Sunday 16/1/11, final area burnt 129,000 hectares.

Throughout the fire danger season, CFS has been involved with preplanning for potential deployments of personnel in support of Queensland flooding/cyclone, Victoria flooding, Western Australia bushfires and New Zealand earth quake. The CFS had offered Incident Management Teams, Specialist Hazardous Material Technicians, Aerial Firefighting Specialists and Firefighters.

2011/12 Preliminary Overview

Outlook conditions indicate the most likely scenario is for near average levels of fire activity across southern settled areas of the state, with the pastoral areas and west coast likely to be above normal. The areas where indications are for potentially higher levels of activity include:

- Western part of the West Coast due to rainfall received and conducive growing conditions
- North East Pastoral due to rainfall received and conducive growing conditions
- North West Pastoral due to rainfall received and conducive growing conditions

The Bureau of Meteorology climate outlook for the period September to November 2011 shows that the odds are slightly in favour of warmer maximum temperatures throughout the State, with these being closer to average towards the end of the outlook period. The rainfall outlook indicates we should expect close to average rainfall. Outlook is suggesting only slightly drier than average conditions about the Central, Northern Agricultural and Murray districts, and eastern parts of the Western Agricultural area.

In the **worst-case scenario** rainfall through the spring period may be below average and max. temperatures above average through spring and summer leading to higher than average level of fire potential during the second half of the fire danger season.

Resource implications of an average to above average fire danger season may see the need for firefighting resources for a longer period of time, with longer mop-up required in forest fuels. The North East and North West Pastoral areas may pose resourcing issues during this fire season, should above level of activity be experienced.

In the **best-case scenario**, the threat of fire potential would diminish in forested areas if spring rainfall is average, and, with the occurrence of a weak La Nina, summer rainfall is above average, with concurrent cooler temperatures. However, in this scenario grass fuels are likely to be heavier than in previous years.

SA Seasonal Outlook Prognosis August 2011

BoM Fire Ban District	3 Month Rain	6 month Rain	Current SDI (Where applicable) 11/8/11	Fuel Hazard Risk (above average/ average/ below average) Grass Forest	Curing %	# Normal FDS Season Start Date	2011/12 Season Start Date Prognosis	High Risk Period	Overall Summary
							Prognosis		
North West Pastoral	Average	Very much above average	n/a	Above average	Above average	1 Nov – 31 March	Normal	JFM	High to very high fuels loads, native grasses in abundance
North East Pastoral	Below average	Very much above average	n/a	Above average	Above average	1 Nov – 31 March	Normal	JFM	High to very high fuels loads, native grasses in abundance
West Coast	Average	Above average	n/a	Above average	Above average	1 Nov – 15 April	Normal	NDJF	High to very high fuels loads
Eastern Eyre Peninsula	Average	Above average	n/a	Average	Average	1 Nov – 15 April	Normal	NDJF	Moderate fuel loads
Lower Eyre Peninsula	Average	Average to above average	Average	Above average	Average	1 Nov – 15 April	Normal	DJFM	High to very high fuels loads
Flinders	Average to below average	Above average to very much above average	n/a	Above average	Average	1 Nov – 15 April	Normal	DJFM	High to very high fuels loads
Mid North	Average to below average	Average to above average	Average	Average	Average	15 Nov – 30 April	Normal	DJFM	Appears to be an average year at this stage but will depend how the season develops.

BoM Fire Ban District	3 Month Rain	6 month Rain	Current SDI (Where applicable)	Fuel Hazard Risk (above average/ average/ below average)	Curing %	# Normal FDS Season Start Date	2011/12 Season Start Date Prognosis	High Risk Period	Overall Summary
Yorke Peninsula	Below average	Average to above average	Average	Average	Average	15 Nov – 30 April	Normal	DJFM	Appears to be an average year at this stage but will depend how the season develops.
Mt Lofty Ranges	Below average	Average	Below average	Average	Average	1 Dec – 30 April	Normal	DJFM	Appears to be an average year at this stage but will depend how the season develops.
Kangaroo Island	Below average	Above average	Average	Average	Average	1 Dec – 30 April	Normal	JFM	The western end and southern side of the island are experiencing an above average year whilst the remainder of the island is experiencing an average year
Adelaide Metropolitan Riverland	Below average	Average	n/a	Average	Average	1 Dec – 30 April	Normal	JFM	
Murray Lands	Below average	Average to above average	Average	Above average	Above average	15 Nov – 15 April	Normal	DJFM	High to very high fuel loads

BoM Fire Ban District	3 Month Rain	6 month Rain	Current SDI (Where applicable)	Fuel Hazard Risk (above average/ average/ below average)	Curing %	# Normal FDS Season Start Date	2011/12 Season Start Date Prognosis	High Risk Period	Overall Summary
		average	Average	Average					
Upper South East	Below average	Average	Average	Average		15 Nov – 15 April	Normal	DJFM	
Lower South East	Average to below average	Average to above average	Average	Average		22 Nov – 30 April	Normal	JFM	

These dates may change due to seasonal conditions

NOTE: Average MSDIs

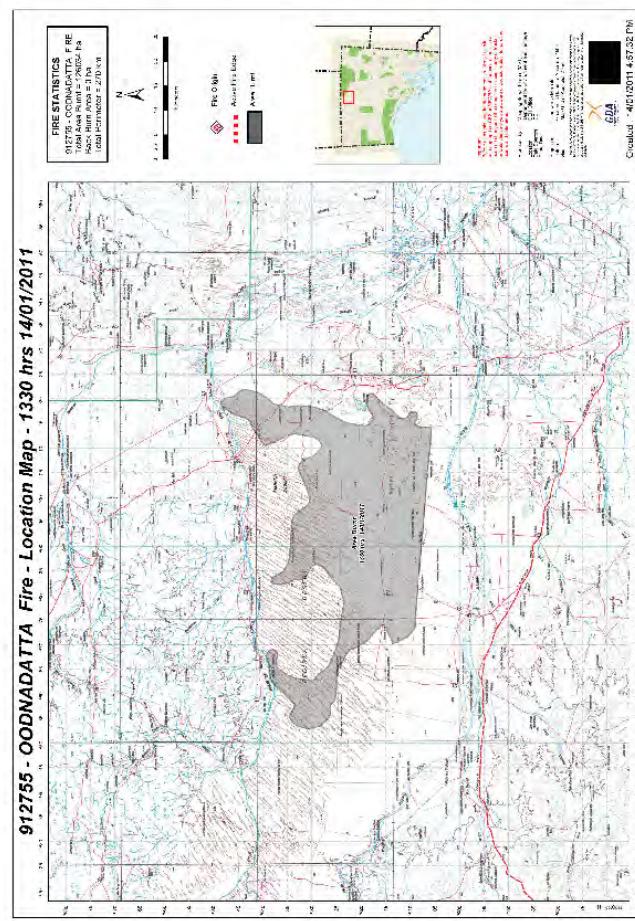
District	Average August MSDI
Eastern Eyre Peninsula	Dry (around 125)
Lower Eyre Peninsula	Normal (around 80)
Mid North	Wet (around 30)
Yorke Peninsula	Normal (Around 50)
Mount Lofty Ranges	Wet (10 to 25)
Kangaroo Island	Normal to wet (25 to 60)
Adelaide Metropolitan	Normal to wet (40 to 75)
Riverland	Dry (around 150)
Murraylands	Dry (around 125)
Upper South East	Normal (70 to 90)
Lower South East	Normal to wet (25 to 80)



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Seasonal Workshop 2011



2010 – 11 South Australian
Summary

2010-11 Predictive map

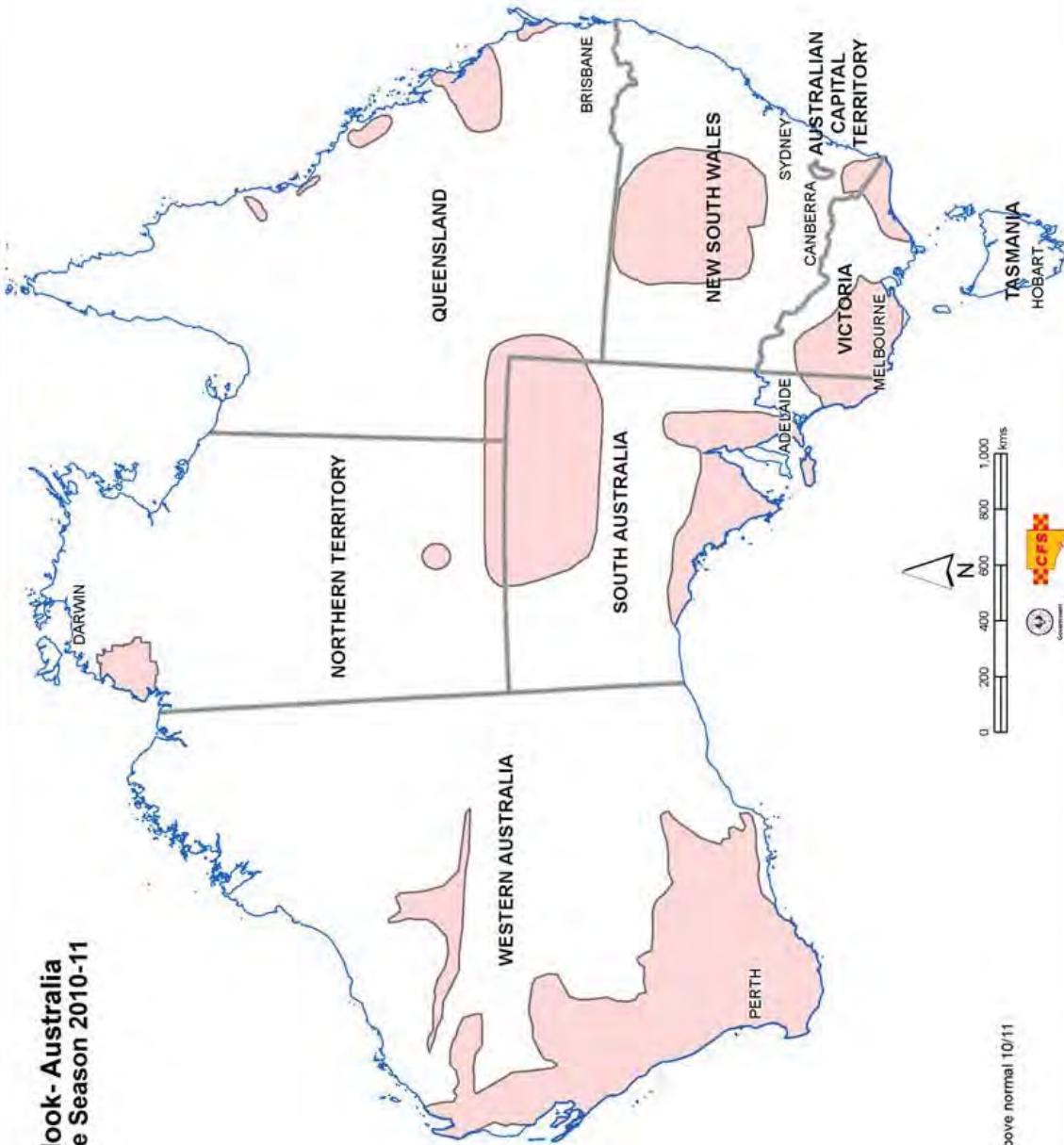


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SA Country Fire Service

Seasonal outlook- Australia
Predicted for Fire Season 2010-11



Seasonal outlook-above normal 10/11

© 2010 Department of Environment, Water, Heritage and the Arts, Australia

2010-11 Summary



- A number of the areas identified as having potential for above average activity were confirmed throughout the fire danger season
- The state only had a small number of significant fires, these occurred in the areas identified in the outlook. Overall we had a 30% reduction in the number of rural type fires compared to the previous 12 months
- With regard to the fire danger season, all districts commenced restrictions at “normal” times, however all districts concluded at the end of March, which is earlier than normal due to the rain received

2010-11 Summary



SA Country Fire Service

- The state received average to above average rainfall over key areas in the 6 months up to November
- Grass curing occurred in late spring – early summer, forest fuels remained wetter than previous years for longer
- SA experienced its second wettest first five months of the year (January – May) on record
 - January – March was the wettest first three months of the year on record, with below average rain in April and average in May

2010-11 Summary



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SA Country Fire Service

Incidents of note

Date	Location	Size	Type	Cause
05/11/10	Mercunda (Galga)	60 ha	Grass	Unknown
03/12/10	Dawesley	175 ha	Grass	Slasher/mower
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25/01/11	Peterborough	100 ha	Grass	Suspicious
08/02/11	Wisanger (KI)	320 ha	Grass	Suspicious
06/03/11	Balaklava	100 ha	Grass	Harvesting

2010-11 Summary



SA Country Fire Service

- The State experienced several days of thunderstorms resulting in multiple fires, generally all less than 50 hectares, not listed above
- CFS responded to a total of 8,888 incidents for the period 1 July 2010 to 30 June 2011, plus a further 5,716 support responses. Of these 1,786 were rural type fires

2010-11 Summary



SA Country Fire Service

- *Todmorden:* CFS was advised of a fire caused by lightning on Saturday 8/1/11 on Todmorden Station 60km North West of Oodnadatta burning in Mitchell Grass and Mulga scrub.
- The wind increased mid week, the fire took a run to the North East onto the adjoining Mt Sarah Station. On Thursday 13/1/11, the station owner requested additional support, CFS provided an observation aircraft which flew the fire on Friday 14/1/11 as well as providing a Strike Team of ground based resources (Volunteers and DENR staff) which assisted in containing then mopping up the eastern edge of the fire.
- The fire was declared contained on Sunday 16/1/11, final area burnt 129,000 hectares.

2010-11 Summary



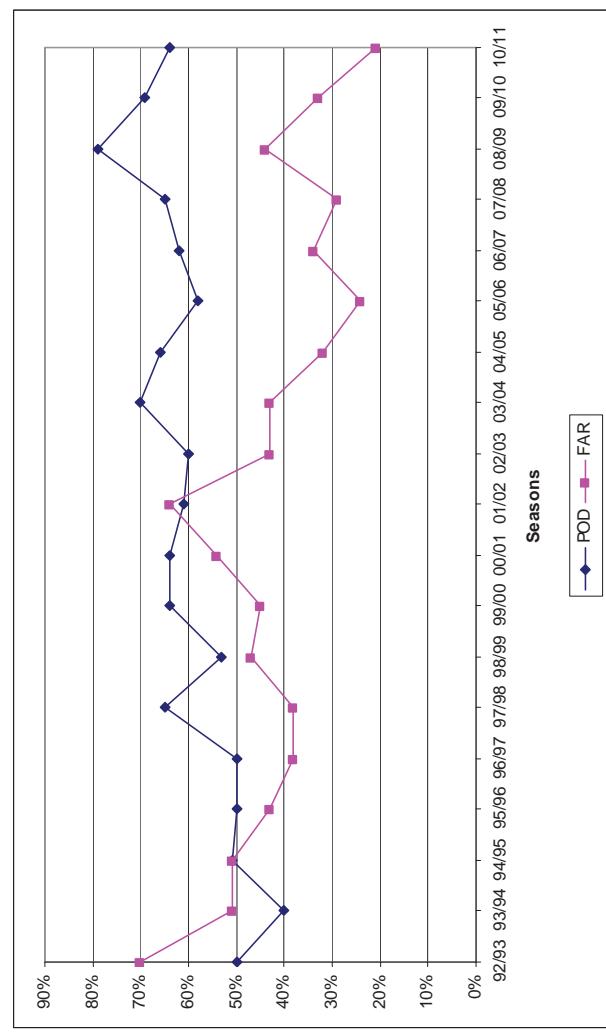
BOM Summary of 2010-11 Fire Season

Season Statistics

- Season length: 9 November 2010 – 31 March 2011 (143 days, shorter than normal)
- Severe or higher fire danger events: 77 on 24 days (cf 201 in 2009-10)
- Total Fire Bans recommended: 62 on 14 days (cf 207 in 2009-10)
- Special fire forecasts: 210 (cf 317 in 2009-10)
- Wind change maps: 18 on 5 days (cf 46 in 2009-10).

Warning performance (forecasting Severe or higher fire danger events)

- POD = 64 % (cf 69 % in 2009-10)
- FAR = 21 % (cf 33 % in 2009-10)



2010-11 Summary



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SA Country Fire Service

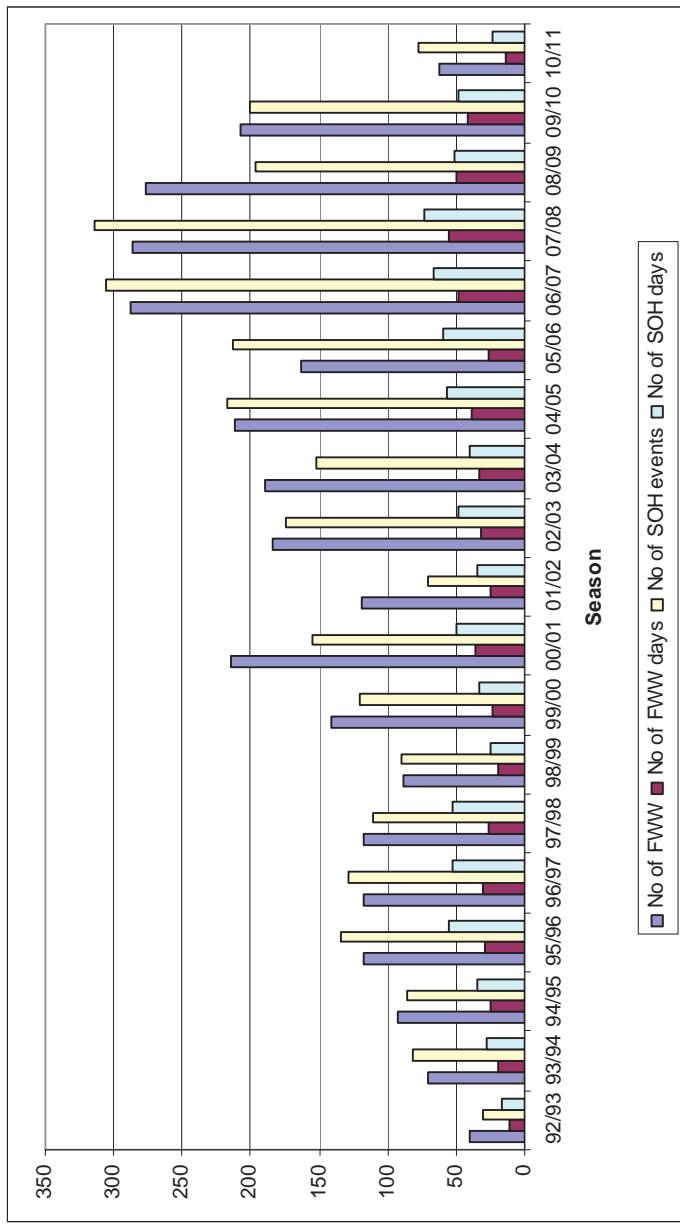
BOM Summary of 2010-11 Fire Season

Catastrophic Fire Danger:

Note: Adjustments made to Grassland Fire Danger Rating categories.

Season Statistics

- Catastrophic fire danger events: 1 district on 1 day, un-forecast (cf 30 times 2009/10)
- Catastrophic FDR forecasts: 7 districts on 2 days (cf 26 times 2009/10)





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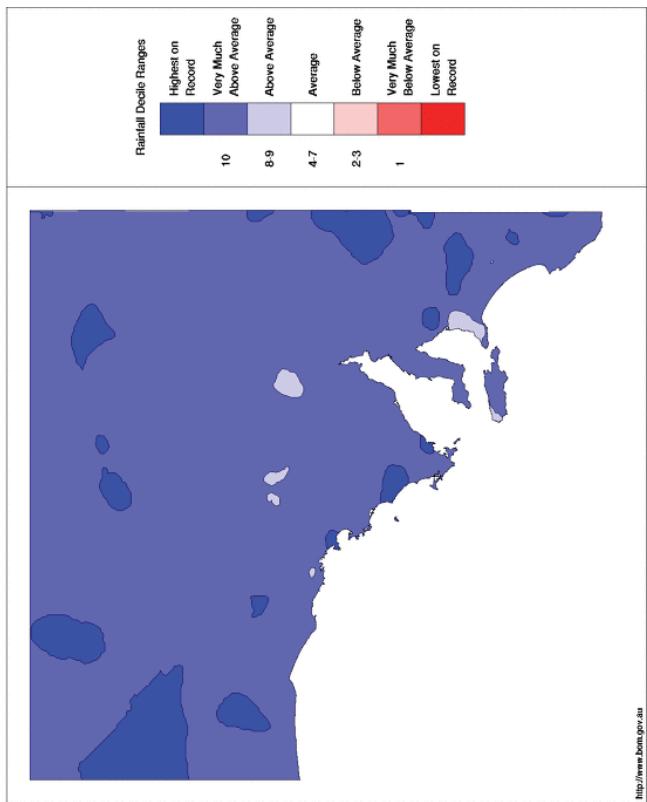


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SA Country Fire Service

Seasonal Workshop 2011

South Australian Rainfall Deciles
1 September 2010 to 31 May 2011
Distribution Based on Gauged Data
Product of the National Climate Centre



<http://www.bom.gov.au> © Commonwealth of Australia 2011. Australian Bureau of Meteorology ID code: AWAP

Issue date: 21/06/2011

2011 – 12 South Australian Predicted Outlook

1

2011-12 Predicted Outlook



- Outlook conditions indicate the most likely scenario is for near average levels of fire activity across southern settled areas of the state, with the pastoral areas and west coast likely to be above normal

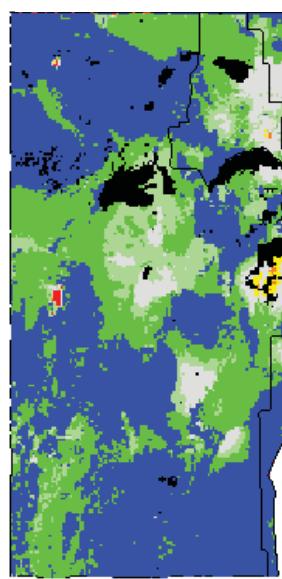
2011-12 Predicted Outlook



- Western part of the West Coast due to rainfall received and conducive growing conditions
- North East Pastoral due to rainfall received and conducive growing conditions
- North West Pastoral due to rainfall received and conducive growing conditions

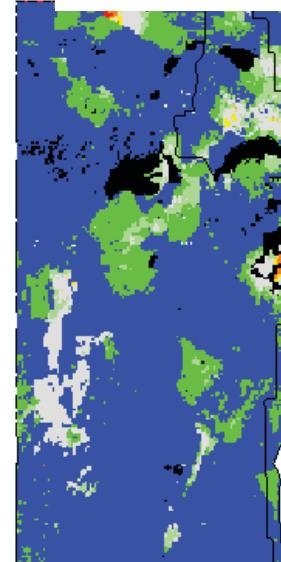
2011-12 Predicted Outlook

TSDM Relative to Historical Records from 1957
July 2011



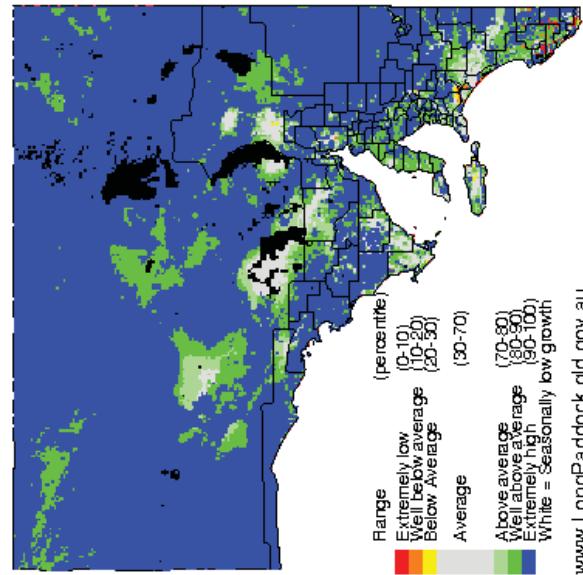
www.LongPaddock.qld.gov.au

Pasture Growth Relative to Historical Records from 1957
February to July 2011



www.LongPaddock.qld.gov.au

Pasture Growth Relative to Historical Records from 1957
August 2010 to July 2011



www.LongPaddock.qld.gov.au

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SA Country Fire Service



2011-12 Predicted Outlook



SA Country Fire Service

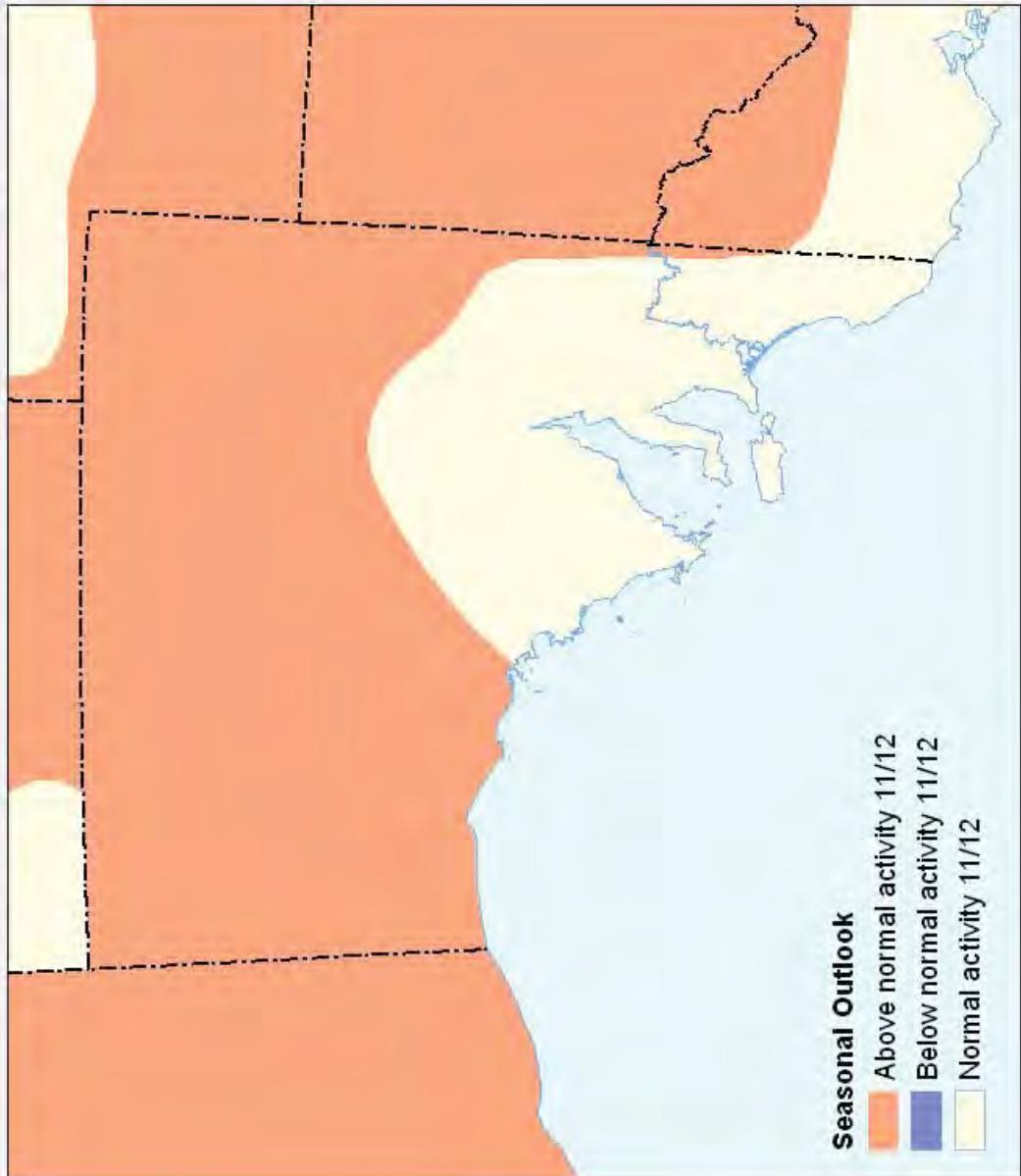
The Bureau of Meteorology climate outlook for the period September to November 2011 shows that the odds are slightly in favour of warmer maximum temperatures throughout the State, with these being closer to average towards the end of the outlook period. The rainfall outlook indicates we should expect close to average rainfall. Outlook is suggesting only slightly drier than average conditions about the Central, Northern Agricultural and Murray districts, and eastern parts of the Western Agricultural area



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SA Country Fire Service

South Australian Seasonal Bushfire Outlook 2011 - 12



South Australia

Above average fire potential is indicated in the Western part of the West Coast, North East Pastoral and North West Pastoral districts due to rainfall received and conducive growing conditions. For the remainder of the state including the southern settled areas the most likely scenario is for near average levels of fire activity.

Resource implications of an average to above average fire danger season may see the need for firefighting resources for a longer period of time. The North East and North West Pastoral areas may pose resourcing issues during this fire season, should above level of activity be experienced.

QUEENSLAND SUMMARY

South Australia Bushfire Assessment Workshop

Queensland Report & Outlook

Adelaide

22 – 23 August 2011

Fergus Adrian

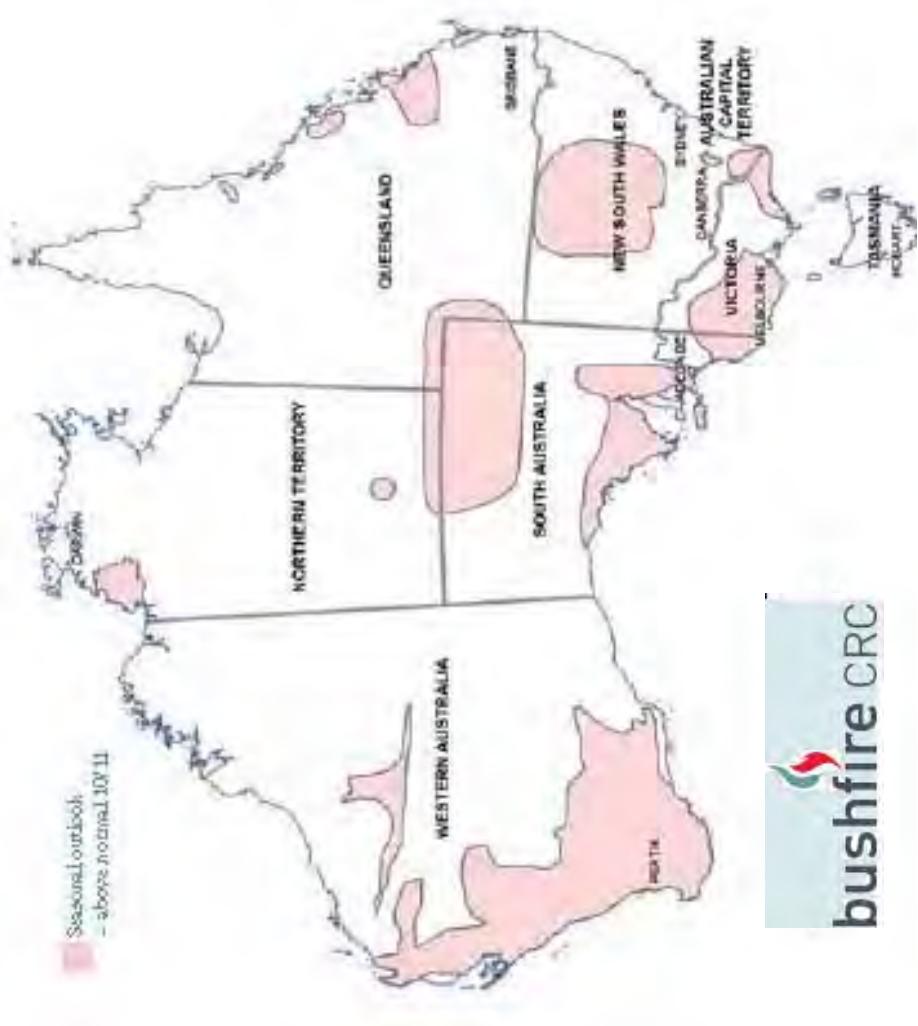


Queensland

- 2010 Bushfire Season Potential
- Seasonal conditions 2010 to July 2011
- 2011 Bushfire Season Assessment Outlook



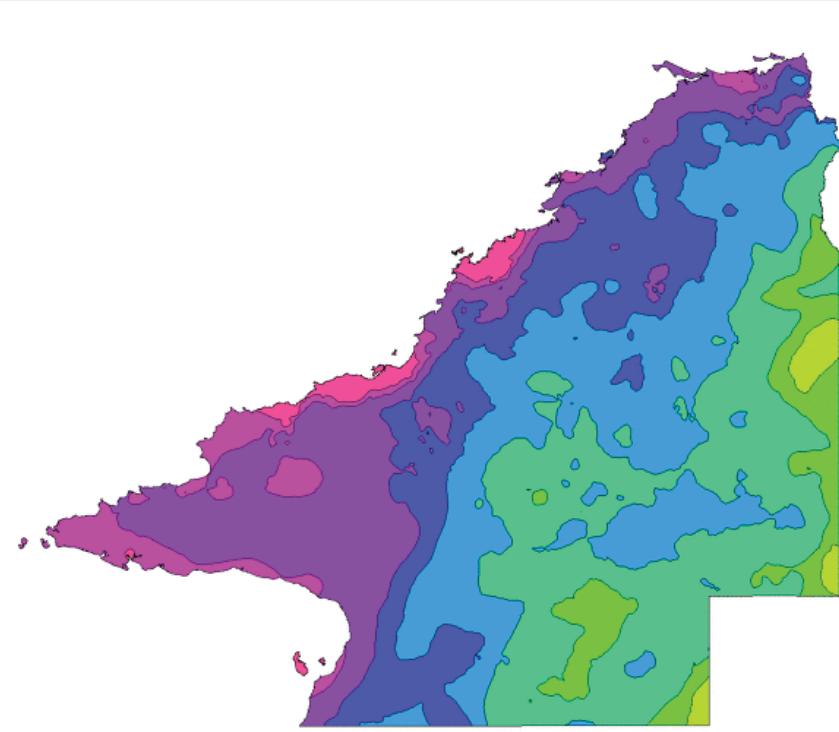
2010 Bushfire Potential



Weather

1 November 2010 – 31 July 2011

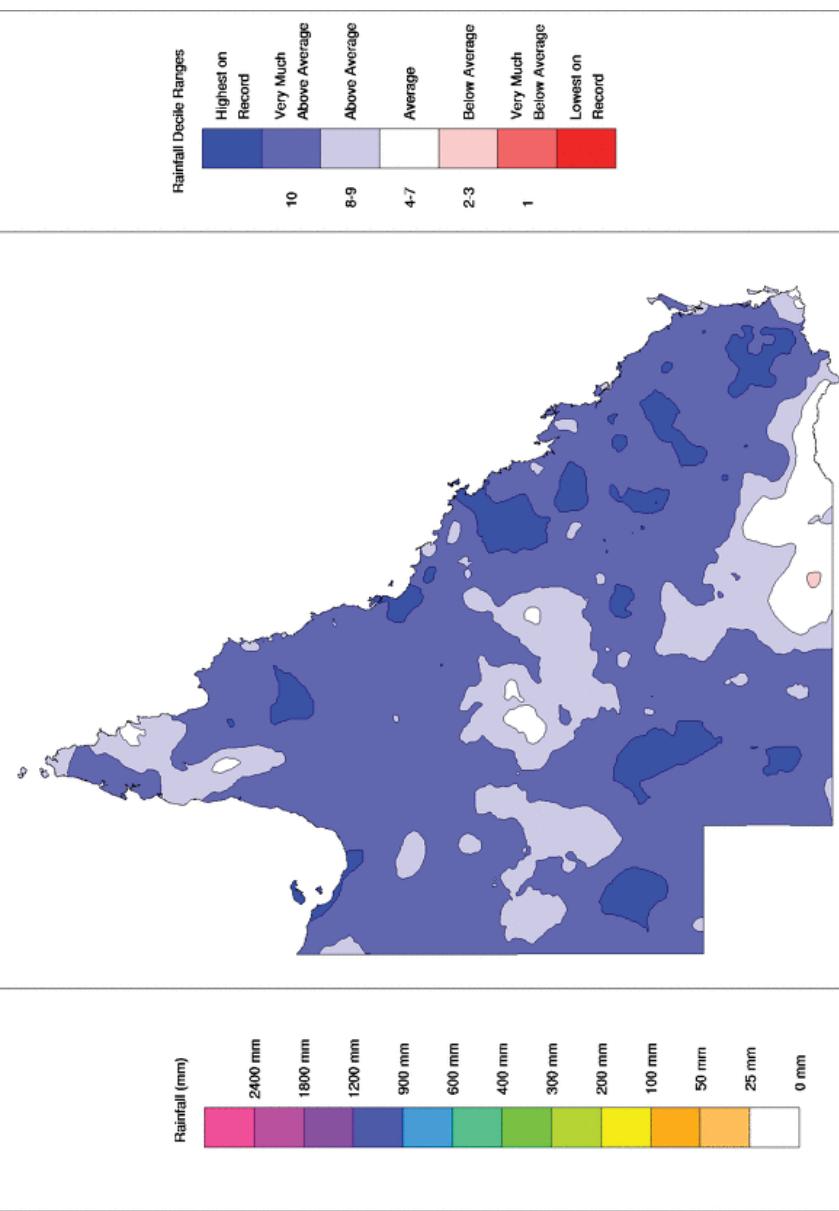
Queensland Rainfall Totals (mm) 1 November 2010 to 31 July 2011
Product of the National Climate Centre



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Issued: 03/08/2011
1 November 2010 to 31 July 2011

Queensland Rainfall Deciles 1 November 2010 to 31 July 2011
Distribution Based on Gridded Data
Product of the National Climate Centre



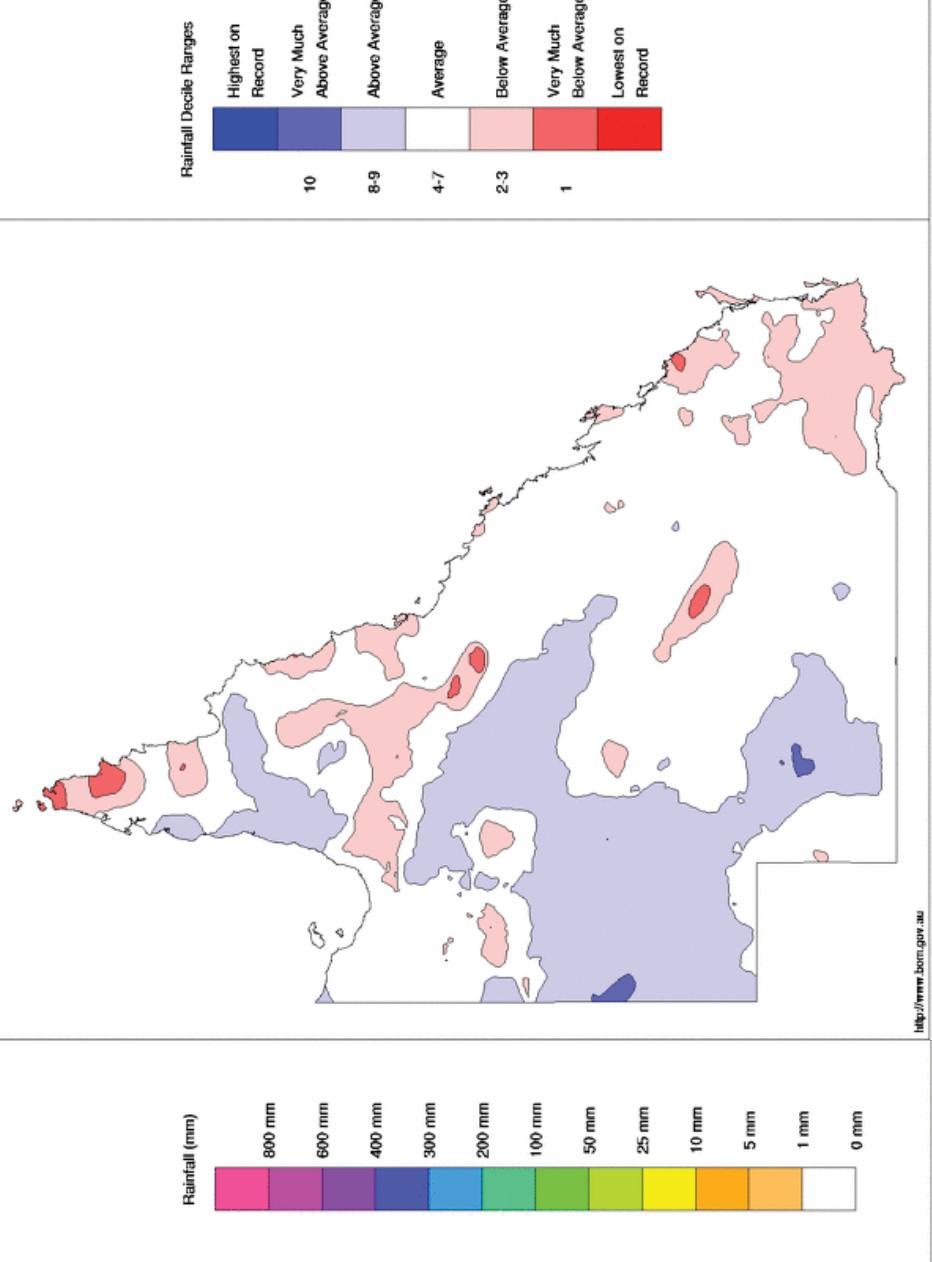
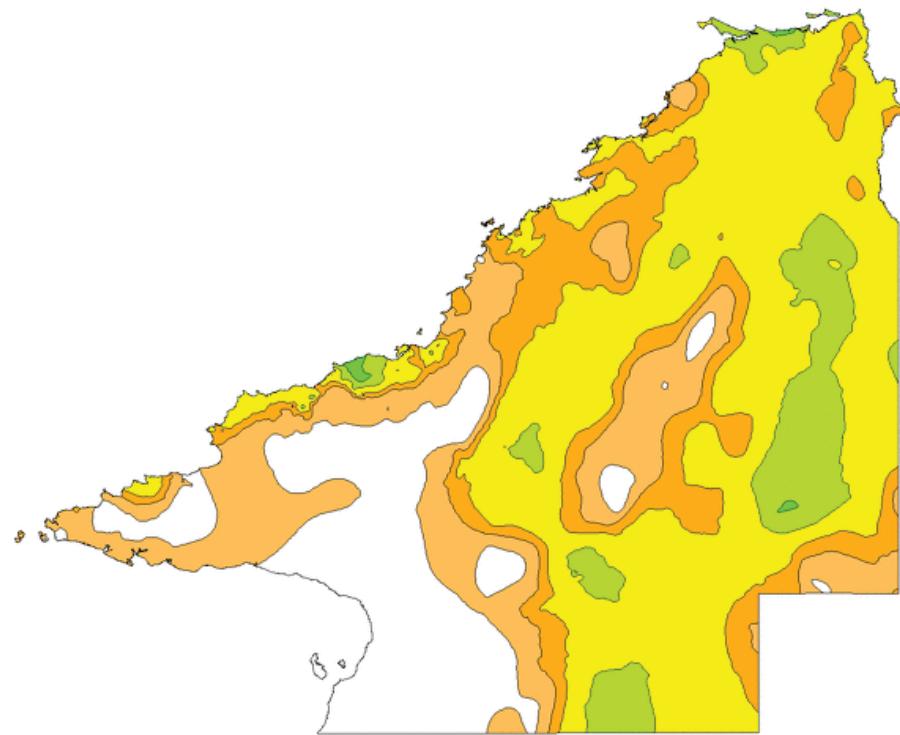
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Issued: 03/08/2011
1 November 2010 to 31 July 2011



Rainfall July 2011

Queensland Rainfall Totals (mm) July 2011
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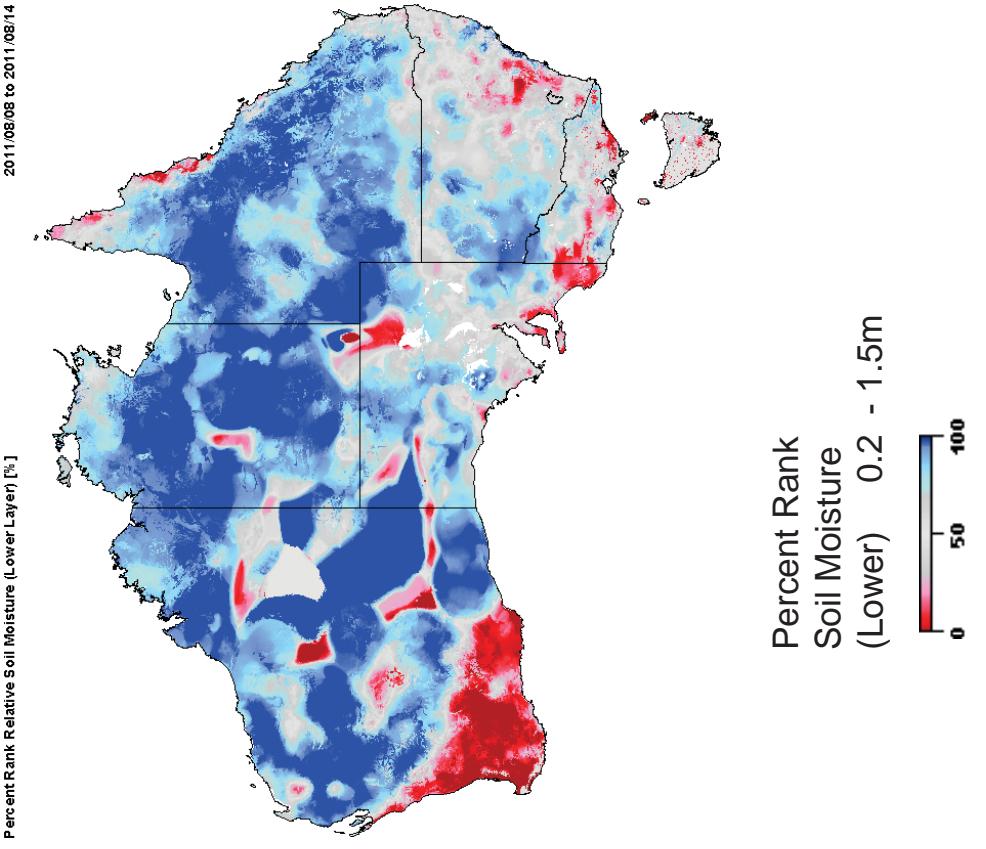
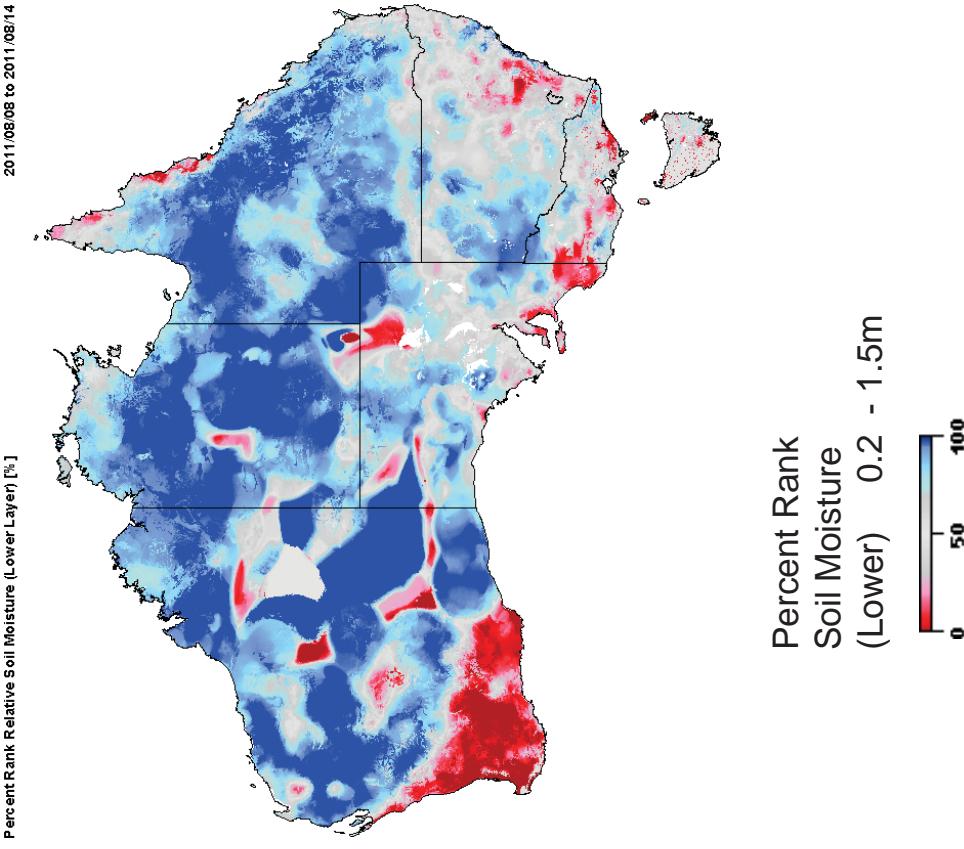
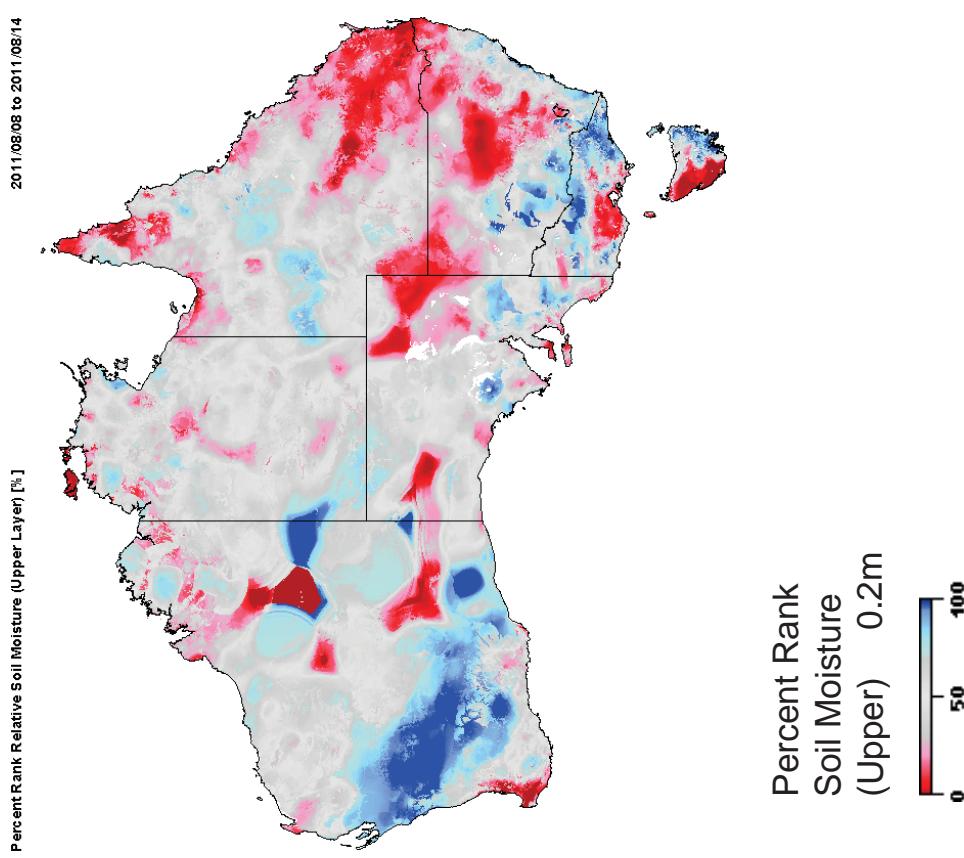
Issued: 02/08/2011



Queensland
Government

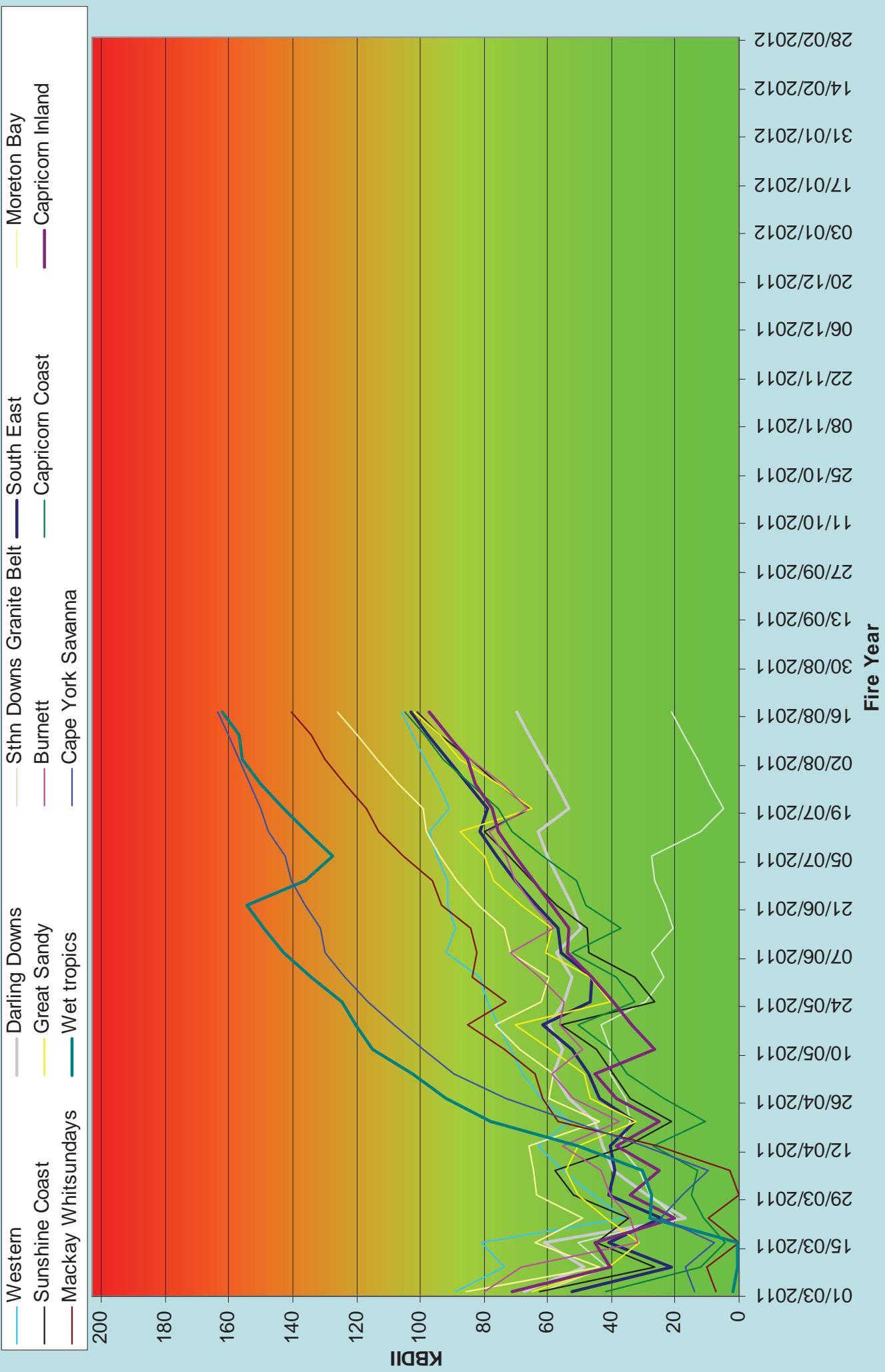


Soil Moisture Profile (AWAP CSIRO)



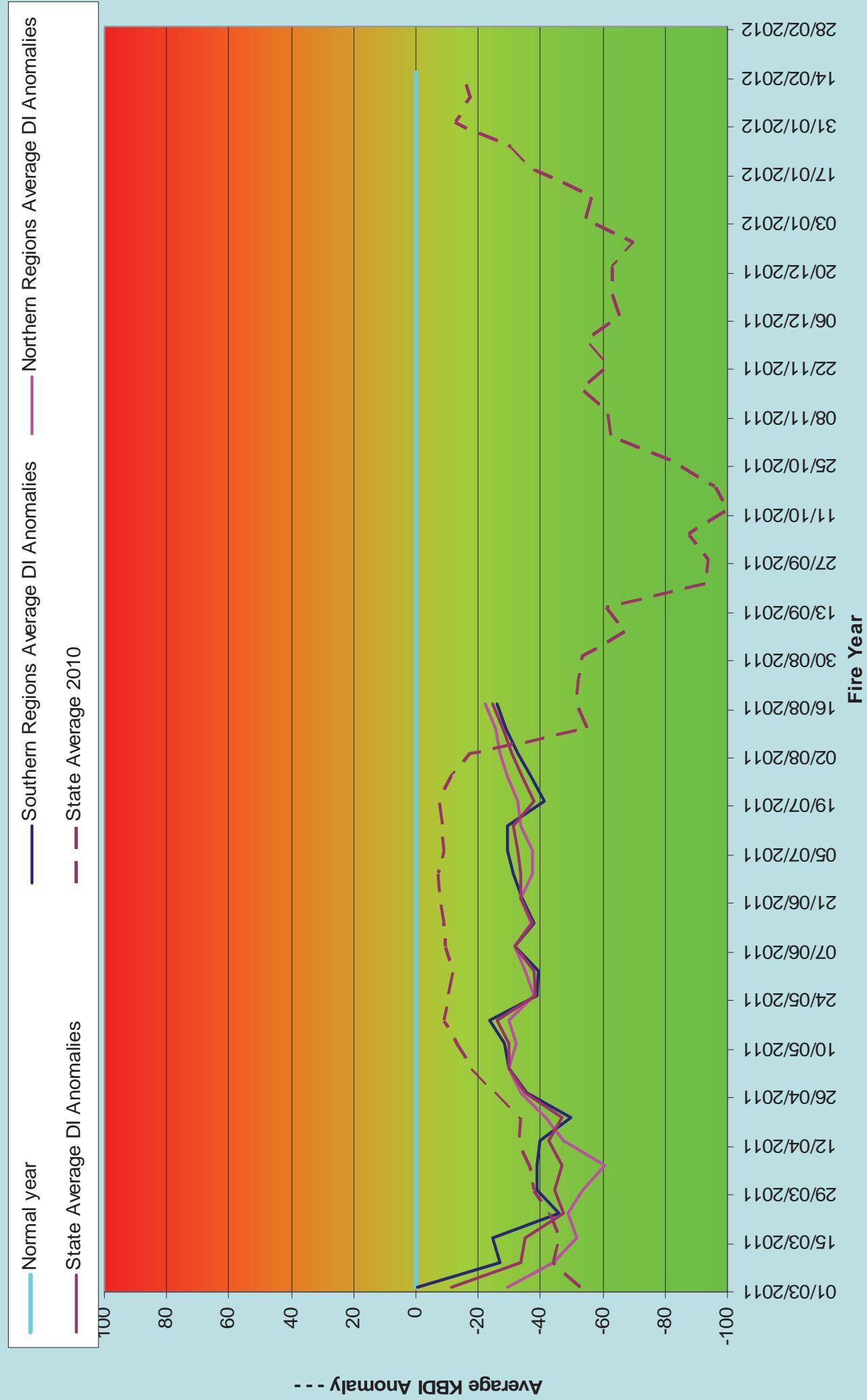
Soil Moisture

KBDI Regional Trendlines 2011



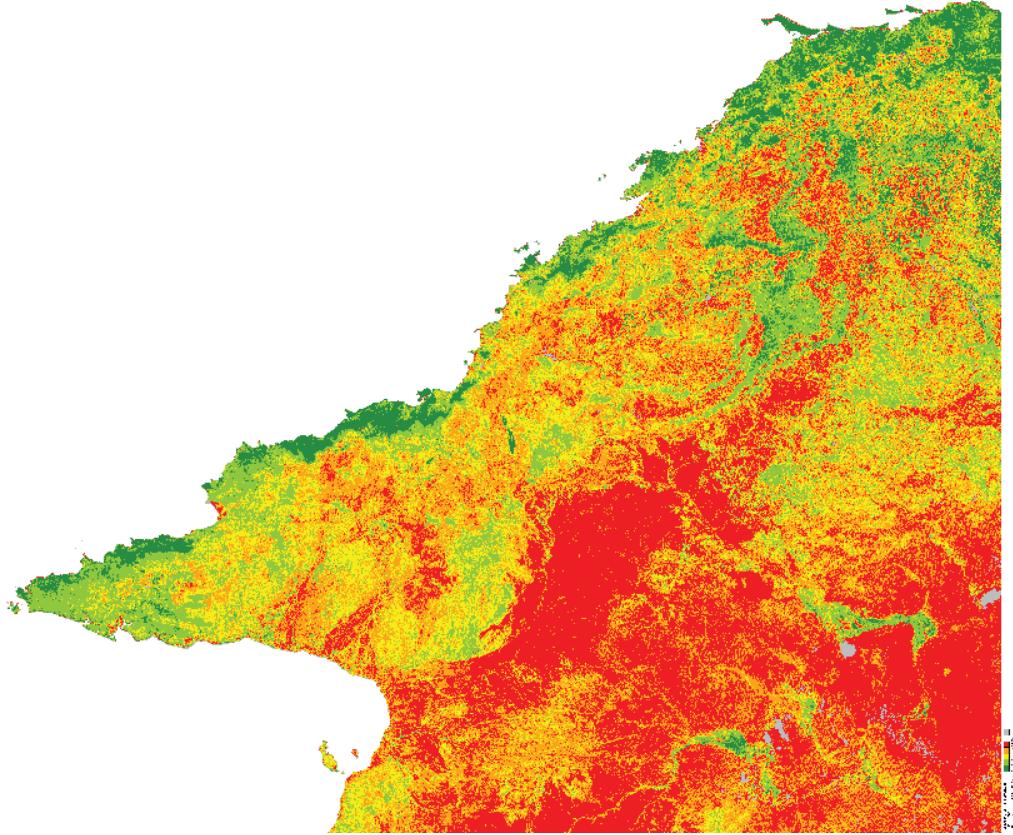
KBDI Anomalies

KBDI Regional Trendline Anomalies 2011



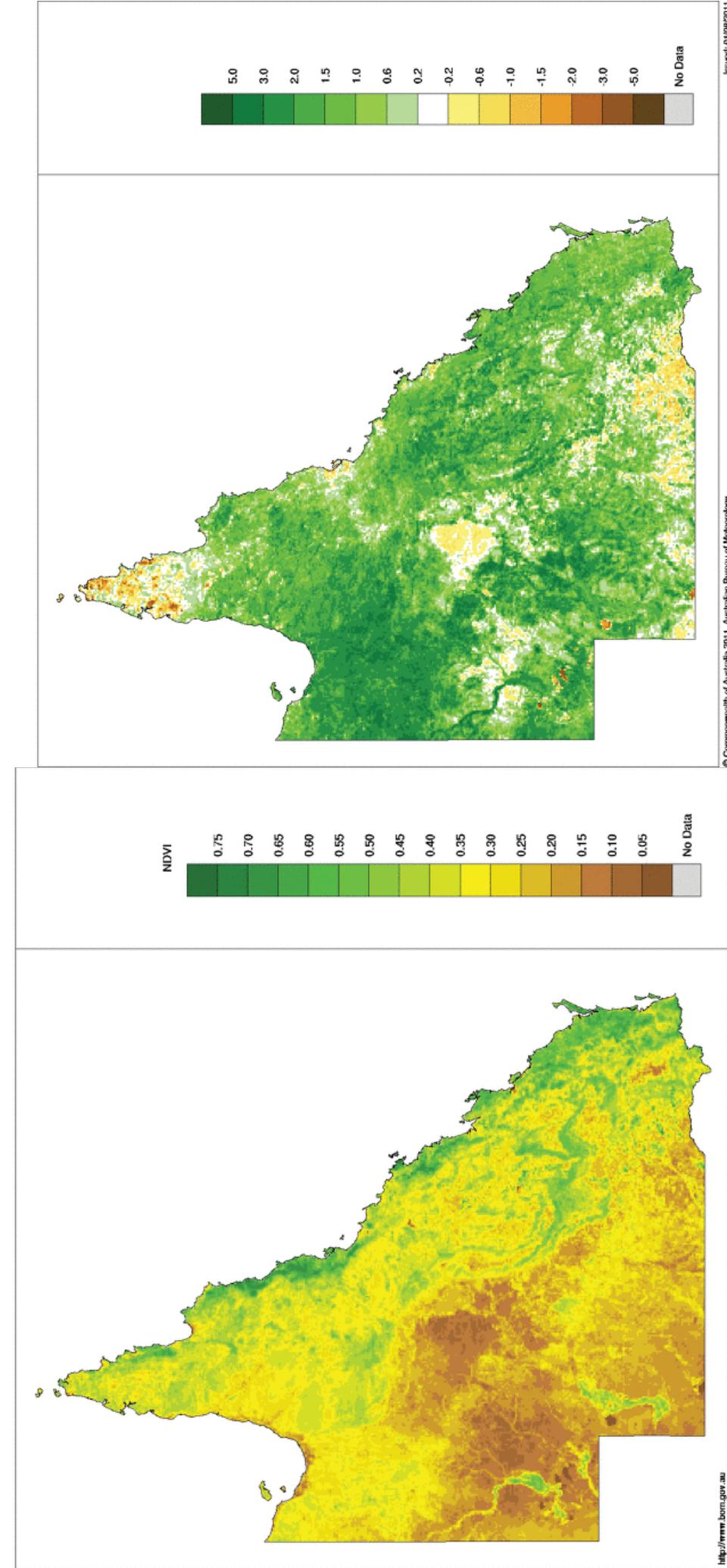
Grasslands

- 85% SEQ Abundant
 - Continuous
 - High =>1.5m
- 85% Curing coastal areas
 - 100% Curing far inland areas



NDVI

Normalised Difference Vegetation Index July 2011
Product of the National Climate Centre



Issued: 01/08/2011

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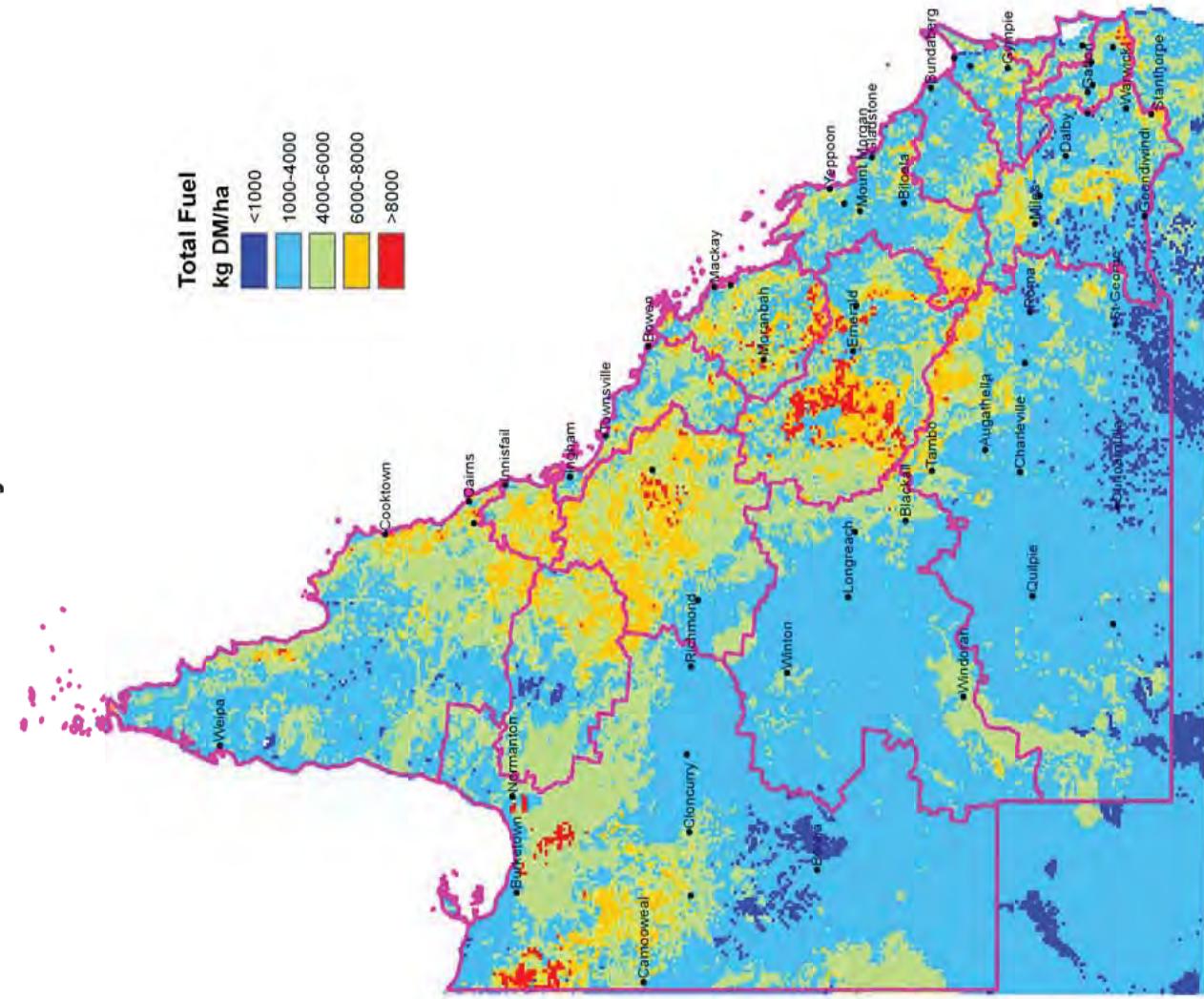
http://www.bom.gov.au



Queensland
Government



Aussiegrass Total Fuel Load 27th July 2011



Total fuel includes grass (dead and green), grass litter and tree leaf litter.

Includes -

- Standing Grass
- Live & Dead
- Grass litter
- Leaf Litter
- Fire Scar



Climate Outlook (Queensland)

- ENSO – Neutral
- Median rainfall
- Warming daytime temps
- Cooler nights – frosts
- Depend on dry southerly – s/westerly winds

Fire Season

- Normal/delayed fire season commencement
- Duration - Storm Season – Northern wet





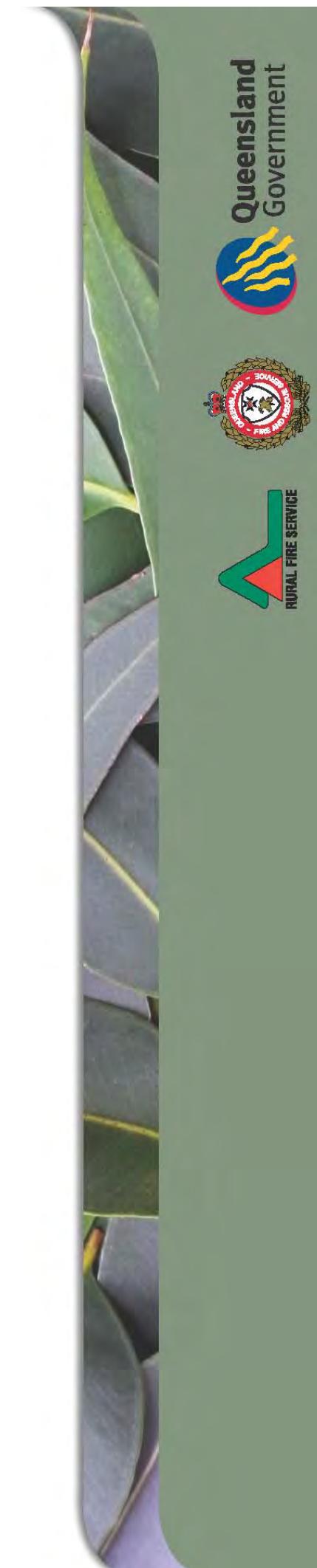
SABAW & NABA W 2011 DraftV3

Map generated by the TOW Web Mapping Application
Not to scale
Printed: Aug 23, 2011



Summary

- Continuous horizontal arrangement of above average fuels over most of Southern Queensland. Moisture continues to contribute to a reduced fire risk in forest areas.
- Winter frosts and dry southerly and south westerly winds are affecting fuel conditions while curing values have peaked in western areas.
- The current high level fuel and soil moisture makes fuel reduction burning restrictive in many areas.
- Large area of the north coast and inland southern Qld have an Above Normal Fire Potential for 2011.



Queensland
Government

Thankyou

Questions

Queensland
Government



Southern Australia Bushfire Assessment Workshop

Queensland Summary

23 – 24 August 2011

Adelaide
South Australia

Seasonal Bushfire Assessment

Queensland Fire Season Potential Outlook 2011/2012

State Summary

Bushfire potential depends on multiple factors. The stage is set by previous and future rainfall events which are important for estimating fuel load and growth; as well as determining the drying and curing rates of available fuel.

The climate outlook provided by various meteorological resources over the period from August to December is a further critical factor. Besides future rainfall probability, the future tendencies of the Pacific sea surface temperatures with the El Niño pattern (ENSO), Southern Oscillation Index (SOI) are of interest as they are the major drivers of the climate of Eastern Australia.

Influenced by a strong La Niña event, the combination of a strong monsoon wet and three tropical cyclones increased the October 2010 to April 2011 rainfall deciles to above to well above average for the majority of coastal and inland Queensland. Significant flooding was experienced over southern and central parts of the state causing inundation and disruptions to many areas of the Queensland.

The wet conditions together with warm temperatures promoted productive growth over the majority of grassland across regional areas of Queensland.

Above Normal Fire Potential for 2011 outlook is assessed as a result of an abundant and continuous highly cured grassland sward throughout extensive coastal and nearby inland areas from Caloundra north to Yeppoon as well as vast inland areas of South Western Qld from Toowoomba escarpment to the SA border, Central and Northern Queensland to the far north-west. Wide spread frosts have occurred over a vast inland area further adversely affecting the grass condition.

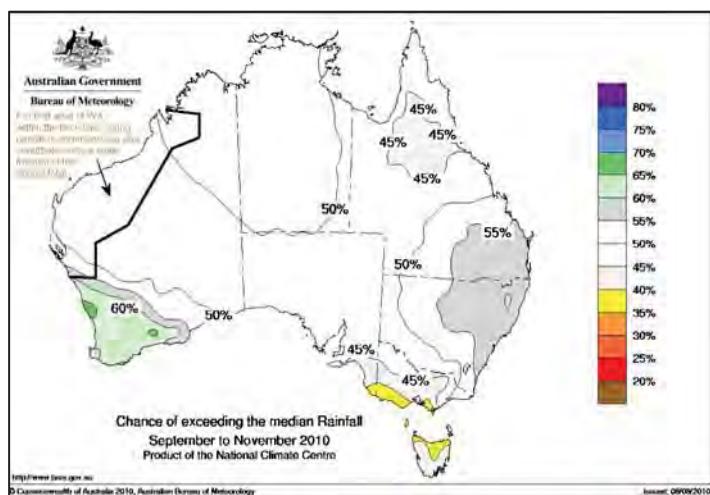
Normal Fire Potential has been assessed for 2011 for Cape York Peninsula, The Wet Tropics, and Tablelands to the Lower Gulf and Coastal areas from Caloundra to Coolangatta due to a delayed curing response and continuing wet conditions leading into the dry winter period. In addition a significant area of the Central West that includes the west of Taroom to Boulia is also assessed as Normal Fire Potential due to a combination of moist soil conditions, recent rainfall and reduced vegetation loading associated with the 2009 fires in the Carnarvon Ranges. **Figure 5** illustrates the Above Normal and Normal Fire Potential areas of Queensland.

Climate Outlook

The ENSO long term outlook for spring 2011 indicates a trend of neutral conditions with the chance of a return to a moderate El Niño trend during Queensland summer. For the period September to November 2011 there is the potential for lower than median rainfall for Queensland. **Figure 1** indicates that there is a 50% chance of exceeding median rainfall for the period September to November 2011 inclusive.

Figure 1: Potential for less than median rainfall

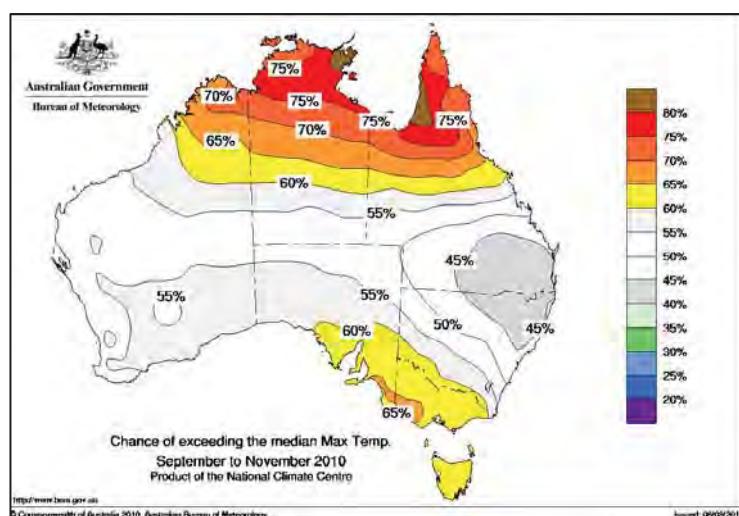
Source – Bureau of Meteorology



The national outlook for maximum and minimum temperatures for Queensland averaged over September to November 2011 shows a moderate to strong shift in the odds favouring higher than median temperatures for North Qld while there is a less than 50% chance of below median temperatures for Southern Qld. **Figure 2** indicates the chance of exceeding the median maximum temperature for September to November 2011.

Figure 2: Chance of exceeding maximum temperature

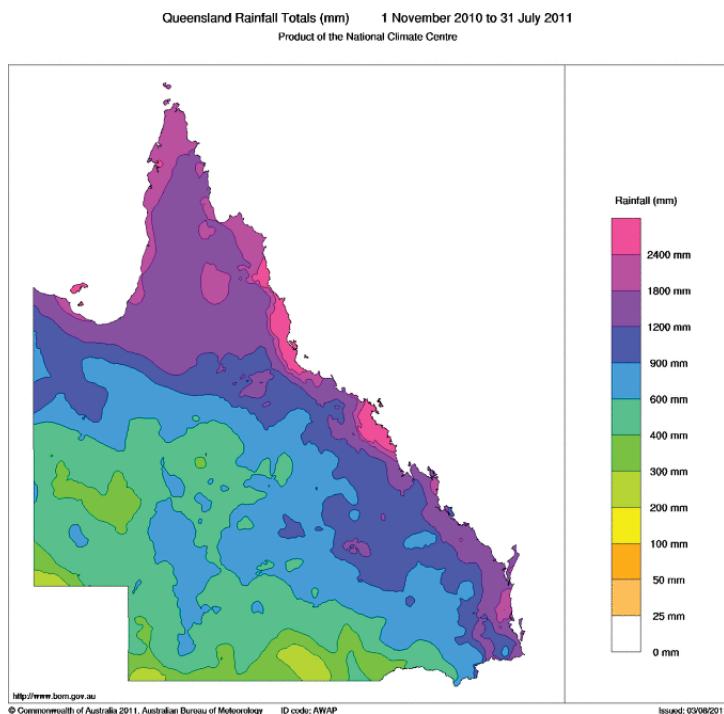
Source – Bureau of Meteorology



The combination of Intensive and widespread monsoon rainfall together with three tropical cyclones during November 2010 to July 2011 and in first half of 2009 as shown in **Figure 3** has promoted abundant growth in grasslands throughout Queensland. Significant flooding was experienced over southern and central parts of the state causing inundation and disruptions to many areas of the Queensland.

Figure 3: Rainfall from 1 November 2010 to 31 July 2011

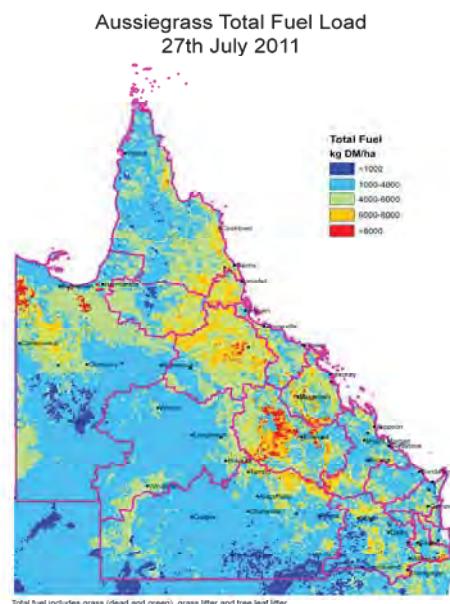
Source – Bureau of Meteorology



Abundant and continuous grassland fuel loads exist across vast areas of coastal and inland parts with a curing rate of 80% to 100%. In addition the Aussie Grass Total Fuel Model **Figure 4** confirms these high fuel loads throughout the state.

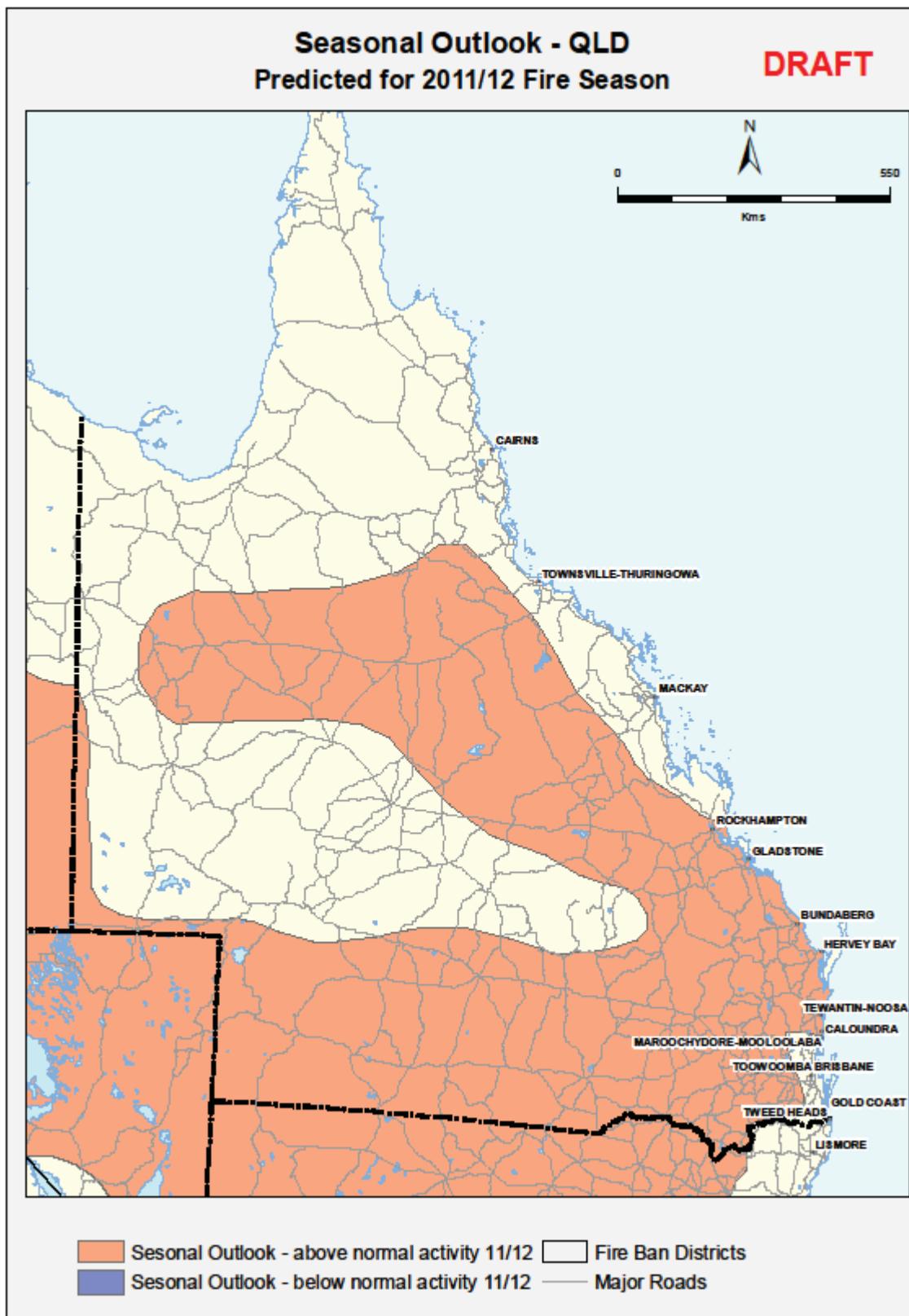
Figure 4: Aussiegass Total Fuel Load as of 27 July 2011

Source - Queensland Department of Environment and Resource Management.



The outlook for period of drier than normal climate conditions with the likelihood of higher daytime temperatures and abundant grassland fuels produces the above normal fire season potential for a wide area of Northern, Central and inland Southern parts of Queensland (**Figure 5**).

Figure 5: Draft Fire Potential Map (update 24/08/2011)



Far Northern Region

Rural Operations Areas: Cairns Peninsula, Innisfail

Bioregions: Cape York Peninsula, Gulf Plains, Wet Tropics and Einasleigh Uplands.

The Bushfire Season Outlook;

- A normal bushfire potential outlook is predicted for Cape York Peninsula, The Wet Tropics, and Tablelands to the Lower Gulf

Fuel Conditions estimated 24 August 2011;

- Grasslands are abundant with average of 85% curing in the Einasleigh Uplands and the Gulf Plains and 90% and 80% cured in the Cape York Peninsula and Coastal Tropics respectively.
- KBDI – throughout the region in the 170 to 200 with Drought Factor of 10

Grassland curing will continue rapidly as the dry season progresses. Strategic aerial incendiary program has been conducted over Cape York Peninsula reducing the potential for large late season bushfire and protect property and infrastructure in remote areas while climate conditions allow.

The onset of the Northern Wet is expected early late spring early summer.

Northern Region

Rural Operations Areas: Townsville, Charters Towers, Cloncurry

Bioregions: Northern Brigalow, Wet Tropics, Einasleigh Uplands, Desert Uplands, North West Highlands, Mitchell Grass Downs and Channel Country.

The Bushfire Season Outlook;

- An above normal bushfire potential outlook is predicted for areas west of the Great Dividing Range west to include Mt Isa south to the northern boundary of QFRS Central Region.
- A normal bushfire season potential is also predicted for coastal areas east of the dividing ranges south of Ingham to Bowen and in the far North West NT border area. Throughout this area bushfire activity is expected to be average during the bushfire season due to pre-season mitigation activities in high risk areas. Strategic aerial incendiary program conducted in the far North West NT border area will assist reduce large scale bushfires.

Fuel Conditions estimated 24 August 2011;

- Grasslands areas are abundant with continuous sward average curing of 85% to 90% in coastal areas. Abundant continuous grass sward to 95% cured across lower gulf and in north western parts with sparse grass in the far south western inland areas.

QFRS Rural Operations

- KBDI – average 90 to 127 in the far western areas. Northern and coastal parts of the region average 160 to 192. A Drought Factor of 10 exists across the most of the QFRS Northern Region.

Existing warm climate conditions are producing a fast drying environment and savanna grasslands are rapidly curing. Cold nights with some inland frost further damaged the vegetation promoting fast running and intense grass fires.

The climate outlook for this region is for normal to below average spring rainfall, and higher than average maximum and minimum temperatures.

Central Region

Rural Operations Areas: Mackay, Rockhampton, Emerald and Barcaldine

Bioregions: Central Queensland Coast, Brigalow Belt, Desert Uplands, Mitchell Grass Downs, Channel Country and Southeast Queensland.

The Bushfire Season Outlook;

An Above Normal Fire Potential is predicted for the Capricorn Coast from Agnes Waters north to Yeppoon along the ranges west of Mackay, to include the Coalfields and Central Highland areas west of Emerald south of Springsure and east to Agnes Waters. The grass sward in this area is continuous with high curing values and high fuel loading.

A normal bushfire season is predicted for Central Western areas around and west of Jericho to Boulia including the Carnarvon Range. A Normal Fire Potential is also predicted for St Lawrence to the Mackay coast and Whitsunday areas. The coastal areas have moister conditions, however fire activity will increase during warmer spring period.

Fuel Conditions estimated 24 August 2011;

- Grasslands are abundant averaging 75% to 90% cured in coastal areas from Proserpine to Saint Lawrence. Grasslands in the Capricornia area are abundant with an average of 95% curing. Coastal parts around Agnes Waters have abundant grass with 90% cured.
- The Coalfields and Central Highlands areas have abundant continuous grasslands being 95% cured.
- Abundant grass fuel loads averaging 95 % cured exist in Central Western parts around Blackall, Barcaldine and Longreach while in the far Central West abundant grass fuel loads with 80% curing.
- KBDI – values are in the 125 – 160 range for Emerald, Longreach, Rockhampton and Mackay with Drought Factor values of 9.5 to 10 throughout the region.

The climate outlook for this region is for below average rainfall, maximum and minimum temperatures. Cold overnight temperatures and frosts may further affect vegetation conditions over a wide area of central and central western Queensland.

Large fast running fires are expected in areas with above normal and normal bushfire potential. Lightning ignitions during the spring months may initiate large bushfires in western areas.

Rural Research and Training

QFRS North Coast Region

Rural Operations Areas: Bundaberg, Maryborough and Caloundra.

Bioregions: Brigalow Belt and South East Queensland.

The Bushfire Season Outlook;

An Above Normal Fire Potential is assessed for the majority of this region due to the continuous abundant levels of grass growth and high curing rates. Wet soil and fuel conditions prevented fire appliance access and restricted prescribed burning activities. Grasslands in western areas are abundant and highly cured while in coastal parts the grassed areas are moderate to abundant.

The forest and bushland vegetation conditions and the delay in prescribed burning place an increased risk of bushfire hazards in the adjoining coastal residential communities in the Wide Bay area. Areas to the west of the region have a large body of fuel this year due to record rainfall earlier in 2011.

Normal bushfire potential is predicted southern Sunshine Coast parts. Depending on future climate conditions later assessments may increase the bushfire potential in these coastal inland parts.

Fuel Conditions estimated 24 August 2011;

- Grassland fuels in coastal areas are moderate to abundant with 75% to 85% cured. Grassland fuels in areas around Gayndah through to Kingaroy are abundant with 85 to 100% curing.
- Curing values in coastal areas are much less than normal for this time of year. The climate outlook may provide conditions for rapid curing of grass in coastal areas, especially those areas just west of the coastal ranges.
- KBDI varies across the region with a range from 86 to 110 in Kingaroy and Gayndah respectively, while coastal areas average 110. Drought Factor ranges from 1.5 to 4.5 in coastal areas to an average of 9.7 in the inland upper Burnett Region.

The climate outlook for this region is for below average spring rainfall, and above normal maximum and minimum temperatures.

Bushfire fuels will increase due to continuing warming and dry windy conditions.

Large grassfires have been occurring in western parts of the region and more fires can be expected over high and normal bushfire potential areas. Lightning ignitions during the spring months may cause further fires in western areas.

Brisbane Region

Rural Operation Area: Caboolture

The Bushfire Season Outlook;

Current conditions are wetter than normal and these conditions have impacted on some delaying hazard reduction activities especially in the coastal areas east of Caboolture.

A normal fire season potential is predicted for this region with an expected high number of short duration fires throughout. Moist soil conditions have reduced the current fire potential in forest areas although a rapid drying stage is expected during the spring period.

Depending on future climate conditions later assessments may increase the bushfire potential.

The above normal autumn rains increased the soil moisture content and provided an abundant level of new growth.

Fuel Conditions estimated 24 August 2011;

- Grassland fuels in are abundant throughout with average of 80% cured east of the coastal ranges and up to 90% cured in inland parts around Kilcoy.
- KBDI – of 97 and Drought Factor of 9.4 indicating wetter conditions than normal for this time of year.

Continuing winter frosts can be expected over a wide area of the region. Coastal areas have received good seasonal rainfalls and some winter rain.

Bushfire fuels will continue to dry as warmer seasonal conditions prevail. Frosts impacted adversely on vegetation in lower drainage areas during winter. The forest areas experienced significant rainfall in the Brisbane, Bremer and the Stanley River catchments as evidenced by the increased storage in the Somerset and Wivenhoe storage reservoirs. This increased rainfall contributes to stream flow thus re-establishing riparian areas used as a natural break to contain down slope fire spread.

The prompt deployment of available ground and air resources will be required to combat expected short duration fast running grass fires in urban-rural bushland interface zones (iZone) and rural areas.

Due to the seasonal wet conditions and the effects on fuel moisture landowners and land management agencies have been active during a reduced time period in conducting hazard reduction activities. In some areas due to the rainfall and subsequent erosion, fire break maintenance has been a priority.

QFRS South East Region

Rural Operation Area: Ipswich

Bioregion: South East Queensland

The Bushfire Season Outlook;

QFRS Rural Operations

An Above Normal Fire Potential is predicted for all grassland valley areas of the Region. The areas have dry continuous well cured grassland sward and include the Beaudesert Boonah, Lockyer and Brisbane Valley areas. Fast running grassfires in iZone areas can be expected.

Rural Research and Training

A normal fire season potential is predicted for the Coastal area of the region with a number of short duration fires throughout.

Depending on future climate conditions later assessments may increase the bushfire potential Coastal areas of the region.

Fuel Conditions estimated 28 August 2009;

- Grassland fuels are Abundant with average of 90% cured west of coastal ranges.
- KBDI – average 44 and Drought Factor of 9.4. Recent warm daytime temperatures and dry windy conditions are continuing to dry soil moisture.

The climate outlook for this region is for below average spring rainfall, with above average maximum and minimum temperatures. Depending on the climate trend, the deterioration of fuel and fuel moisture conditions may necessitate a re-assessment of bushfire potential.

Short duration fast running bushfires in iZone areas will place a demand on both ground and air resources. The prompt deployment of available ground and air resources will be required to combat expected the short duration fast running grass fires in iZone and rural areas.

South West Region

Rural Operations Areas: Toowoomba, Miles and Roma.

Bioregions: Southeast Queensland, New England Tablelands, Southern Brigalow Belt, Mulga Lands, Mitchell Grass Downs and Channel Country.

The Bushfire Season Outlook;

An Above Normal Fire Potential is predicted for all grassland areas of the Region due to the highly cured and continuous grass sward. This includes this region from the Toowoomba escarpment on the eastern border to the South Australian border. There is potential for large high intensity fast running grass fires.

Fuel Conditions estimated 24 August 2011;

- Grassland fuels are continuous and Abundant throughout the Region with curing peaking at 100%.
- KBDI readings vary across the region. Applethorpe is 9 while Warwick and Toowoomba are 32 and 60 respectively. Western sites are drier with a KBDI averaging 97 to 111. The Drought Factor averages from 6 in Applethorpe highland parts to 10 in the western areas of the region.

QFRS Rural Operations

Rural Research and Training

The climate outlook potential for this region is for a below average spring rainfall, with above average maximum and minimum temperatures. Winter frosts have occurred over a wide area of South Western Queensland. Recent abnormal high temperature with hot dry windy conditions contributing to very high fire danger continues to dry out bushfire fuels. In western downs areas grass fires are now burning overnight. Air operations will be required to assist in suppression activities.

Areas of forest in Carnarvon Range burnt during 2009 and these areas are assessed as having a reduced fuel load with a normal fire potential.

Dictionary

Bushfire Potential: The chance of a fire or a number of fires of such size or complexity or other impact occurring that require resource from beyond the area which it or they originate. Fire potential depends on many factors including weather and climate, fuel abundance and the availability of firefighting resources in an area.

Curing: Drying and browning of herbaceous vegetation due to mortality or senescence. Grass will not burn when 0 to 50% cured while above 50% grass will burn freely. Grass curing rates above 80% will promote very high intensity grassfires with very high difficulty of suppression.

KBDI: Keetch - Byram Drought Index. A numerical value reflecting the dryness of soils, deep forest litter, logs and living vegetation and expressed as a scale from 0 to 200 where the number represents the amount of rainfall (mm) to return the soil to saturation. 0 being saturated and 203 extremely dry.

DF : Drought Factor. A numerical value reflecting the dryness of the soils, deep forest litter, logs and living vegetation. The value is used in calculating the Fire Danger.

QFRS Region	Rural Operations Area	BOM Weather Area	Rainfall	Soil Moisture Condition Relative July 10	Curing Onset	Grassland Fuel Quantity	Grassland Fuel Curing Status	Seasonal Condition	Wet Season Outlook	High Risk Period	Fire Potential
Far Northern	Cairns Peninsula	Peninsula	Average	Slightly Dryer	Late	Moderate to Abundant	85%	Normal	Normal	Aug to Nov 2011	Normal
Far Northern	Cairns Peninsula, Innisfail	North Tropical Coast and Tablelands	Above Average	Slightly Dryer over Tablelands Wetter over Coastal areas	Late	Abundant	90%	Normal	Normal	Aug to Nov 2011	Normal
Far Northern	Innisfail	Gulf Country	Above Average	Wet	Late	Abundant	60%	Normal	Normal	Aug to Nov 2011	Normal
Northern	Townsville	Herbert and Lower Burdekin	Above Average	Wet	Normal	Abundant	90%	Normal	Normal	Aug to Nov 2011	Normal
Northern	Charters Towers	Northern Goldfields	Above Average	Dry	Normal	Abundant	80%	Normal to Above Normal	Normal	Aug to Nov 2011	Normal to Above Normal
Northern	Cloncurry	Northwest	Above Average	Dry	Normal	Abundant	90%	Normal to Above Normal	Normal	Aug to Nov 2011	Normal to Above Normal
Northern	Cloncurry	Channel Country	Above Average	Wet	Late	Abundant	80%	Normal	Normal to Above Normal	Sept 2011 to Jan 2012	Normal to Above Normal
Central	Mackay	Central Coast and Whitsundays	Above Average	Wet	Normal	Abundant	70%	Normal	Normal	Aug to Nov 2011	Normal
Central	Emerald	Central Highlands and Coalfields	Above Average	Wet	Normal	Abundant	95%	Normal to Above Normal	Normal	Aug to Nov 2011	Normal to Above Normal
Central	Barcaldine	Central West	Above Average	Dry	Normal	Abundant	95%	Normal	Normal	Aug to Nov 2011	Above Normal
Central	Rockhampton	Capricornia	Above Average	Dry	Normal	Abundant	95%	Normal to Above Normal	Normal	Aug to Nov 2011	Above Normal

QFRS Region	Rural Operations Area	BOM Weather Area	Rainfall	Soil Moisture Condition Relative July 09	Curing Onset	Grassland Fuel Quantity	Grassland Fuel Curing Status	Seasonal Condition	Wet Season Outlook	High Risk Period	Fire Potential
North Coast	Bundaberg Maryborough Caloundra	Wide Bay and Burnett	Above Average	Wet	Late – coastal Normal - inland	Moderate to Abundant	75% Coastal 100% inland	Above Normal	Normal	Sept to Nov 2011	Above Normal
Brisbane	Caboolture	Southeast Coast	Above Average	Wet	Late	Abundant	85%	Normal	Normal	Sept to Nov 2011	Normal
South East	Ipswich	Southeast Coast	Average	Wet Coastal Dry Inland	Normal	Abundant	90% inland 60% coastal	Normal to Above Normal	Normal	Sept to Nov 2011	Normal to Above Normal
South West	Toowoomba Miles	Darling Downs and Granite Belt	Average	Early	Abundant	100%	Above Normal	Normal	Sept 2011 to Jan 2011	Above Normal	Above Normal
South West	Roma	Maranoa and Warrego	Above Average	Wet	Normal	Abundant	100%	Above Normal	Normal	Sept 2011 to Jan 2011	Above Normal

North Australia Bushfire Assessment Workshop**2011****North Queensland Regional Summary**

Influenced by a strong La Niña event, the combination of a strong monsoon wet and three tropical cyclones increased the October 2010 to April 2011 rainfall deciles to above to well above average for the majority of coastal and inland Queensland. Significant flooding was experienced over southern and central parts of the state causing inundation and disruptions to many areas of the Queensland.

The wet conditions together with warm temperatures promoted productive growth over the majority of grassland across regional areas of northern, central and western Queensland.

Above Normal fire potential over a vast area of coastal and inland areas of Central and Northern Queensland has been assessed for 2011 contributed by an abundant and continuous highly cured grassland sward throughout. Wide spread frosts have occurred over this vast area.

Cape York Peninsula, The Wet Tropics, and Tablelands to the Lower Gulf areas are expecting a Normal fire potential for 2011 due to a delayed curing response and continuing wet conditions leading into the dry winter period. Tropical Cyclone Yasi caused considerable wind damage to native forests, hardwood and softwood timber plantations increasing ground fuels however with moist tropical climate and soil conditions quick decomposition is expected to assist reduce fire potential.

South Australian Bushfire Assessment Workshop**Adelaide 24 August 2011****South Queensland Regional Summary**

Record rainfall during spring 2010 and from December 2010 to April 2011 over Southern Queensland provided a wet soil moisture profile that coupled with warm summer created prolific grass growth over Southern Queensland extending from the Wide Bay to Gold Coast west to the South Australian border.

The grassland sward is continuous with high vertical structure and current curing rates ranging from 80% in coastal areas to 100% over vast inland areas. Forest areas have moist soil conditions with reduced fire potential however the warm temperatures and dry southerly influenced winds are continuing to dry soil moisture rapidly.

Forecast climate conditions indicate a dryer spring period with the probability of average to below average precipitation for southern Queensland through September to November 2011 with increasing higher than average daytime temperatures.

Above Normal Fire Potential is assessed for a large area of Southern Queensland including the Beaudesert, Boonah Lockyer and Brisbane Valleys through to the Sunshine Coast north to above Wide Bay and west to include most Southern

Queensland inland grassland areas to the Northern Territory and South Australian border.

A Normal Fire Potential is assessed for South East coastal parts from the Sunshine Coast to Coolangatta and for a significant area of the Central West that includes the west of Taroom to Boulia and the Carnarvon Range area due to a combination of moist soil conditions, recent rainfall and reduced vegetation loading associated with the 2009 fires. As the spring fire season progresses and conditions change these areas may be subjected to reassessment.

NEW SOUTH WALES SUMMARY



NSW Pre-Season Briefing

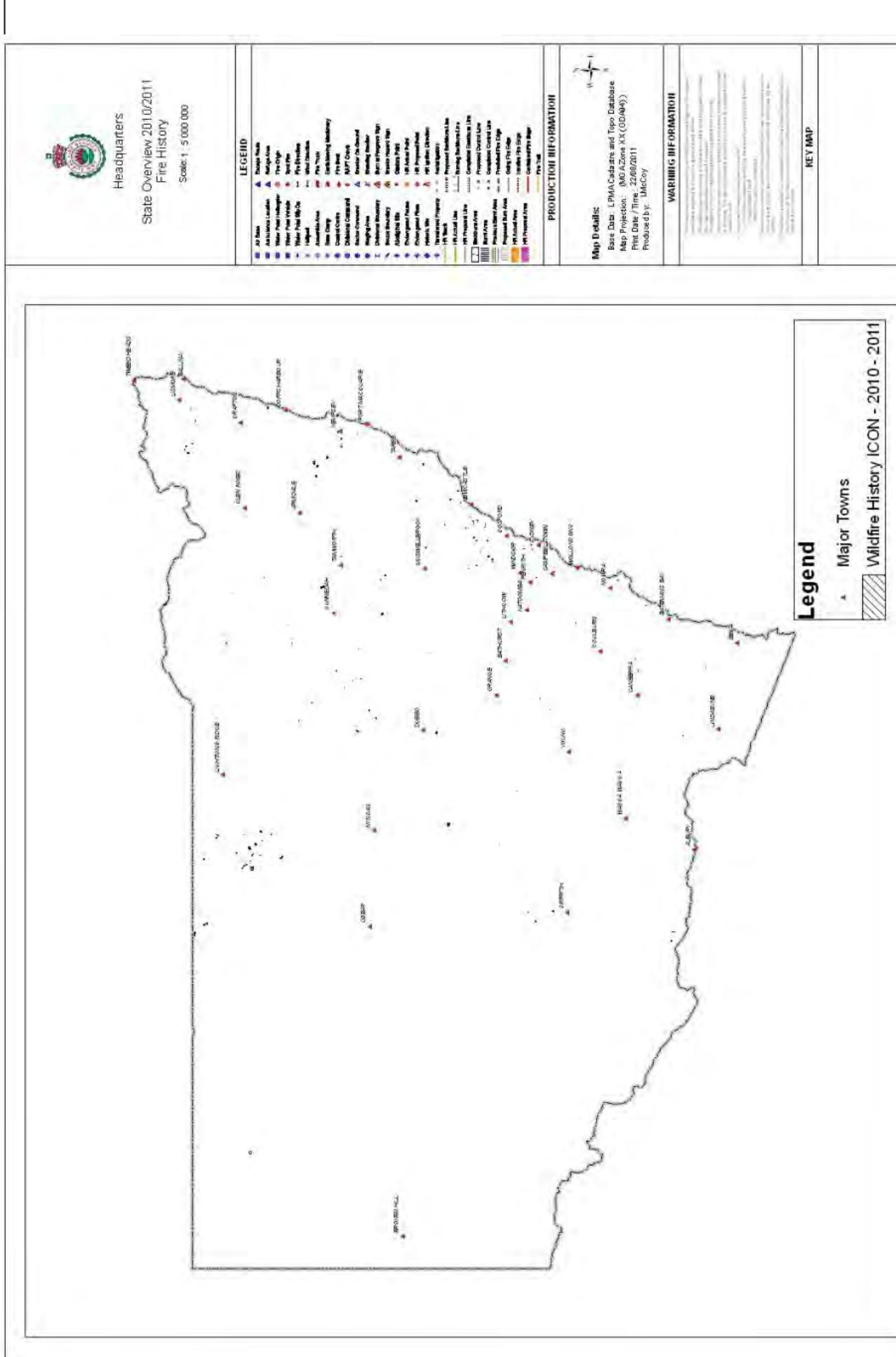
NSW RURAL FIRE SERVICE

2010 -11 Bush Fire Season

- Between 1 October 2010 – 31 March 2011 – 2223 Bush/Grass Fires
- 4 Total Fire Ban days
- Aircraft taskings – 308 including flood relief
- Area burnt – 32081 hectares
- Flood Deployments - 55 personnel to Queensland
109 personnel to Victoria
- 1 RFS fatality and 1 NPPWS Fatality



Fire History Map 2011



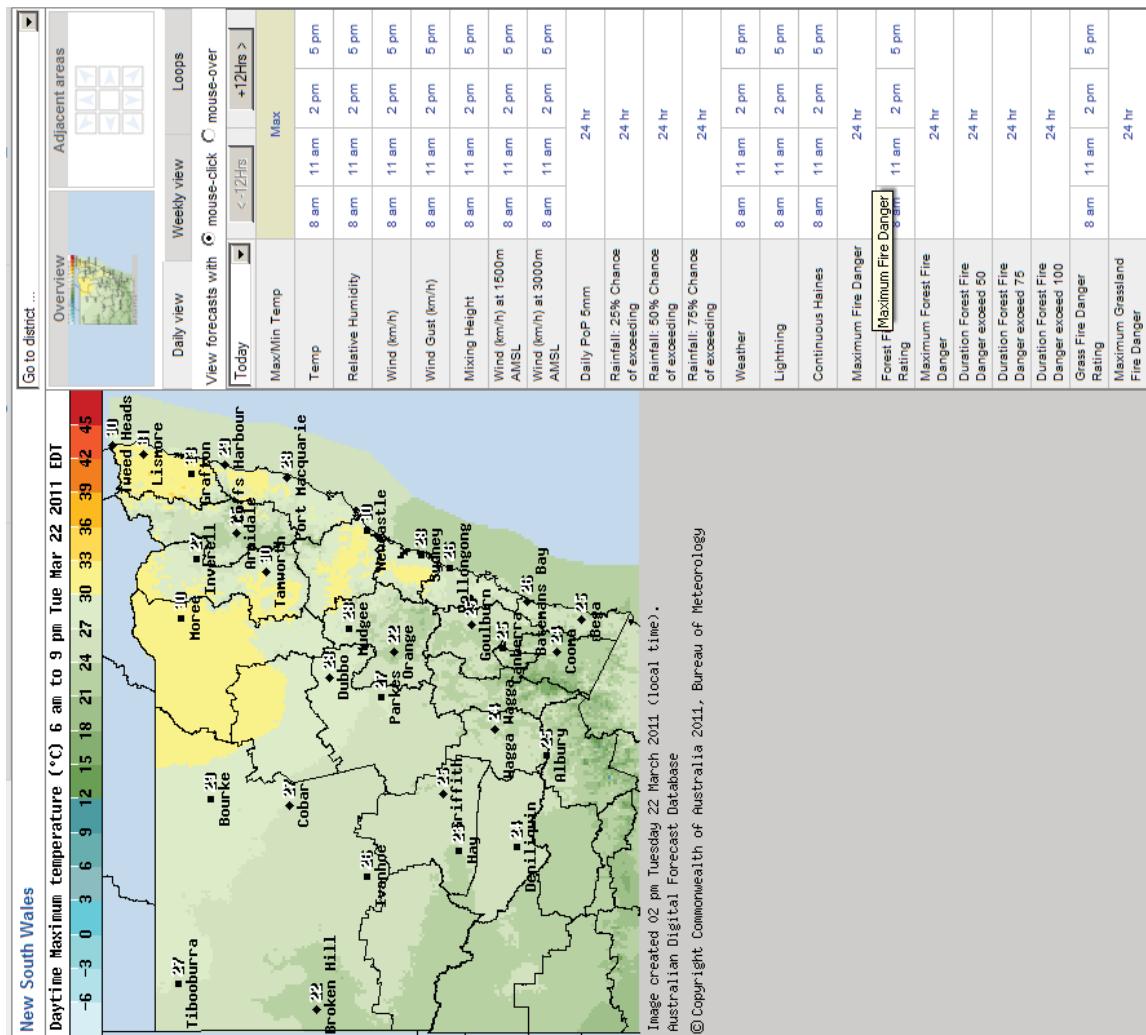


NSW Weather Related Materials

- GFE and changes for this season
- Daily Outlook and Summaries (Ratings Forms)
- SPOT Fire weather Forecasts
- Vegetation mapping
- TOBAN Triggers and Methodology
- Grassland Curing
- Fuel Loading
- Smoke Plume Modelling
- Proposed Hazard Reduction Product

GFE (Graphical Forecast Explorer)

- Improvements
 - Larger map
 - Fix the Greater Sydney Area glitch
 - Ability to get fire weather variables from clicking on a cell. Not just the temperature



Daily Outlook and Summaries

- Refinements for the 2011/2012 season.
 1. Re-adjusting layout of daily summary - point data located with area forecast.
 2. Include a category for Very High Fire Danger Rating
 3. Last season, fire areas were classified forest, grass or combined. This season each GFE grid cell to be classified as either forest, grass or combined.
 4. Time of max FDR reporting. Point data locations to be allocated a classification either forest, grass. The peak FDI aligning with the representative fuel type is always reported for the "time of maximum fire danger", regardless of whether it aligns to the maximum of the GFDR and FFDR.
- To be implemented using automated process by RFS Met.



2010-2011 Template



Location Forecasts at Time of Maximum Fire Danger
for Thursday 31 March 2011

Area	Regions	Time	Temp	RH	Wind (km/h)	Max	Cur	Fuel	Neuroff	Wind Change (km/h)		
				Dir	Spd	Gust	Temp	%	Dir	Spd	Gust	Time
1	Lismore	18	20	45	SE	15	25	20	35	4.5	3	F
FNC	Grafton	14	28	51	SE	15	20	27	40	4.5	8	F
2	Coffs Harbour	11	26	68	S	15	25	25	35	4.5	3	F
NC	Taree	12	24	68	S	15	30	25	45	4.5	7	F
3	Williamtown	12	23	61	S	30	45	22	40	4.5	10	F
HUN	Cessnock	13	24	54	SSE	25	40	23	45	4.5	10	F
	Scone	14	26	51	SE	20	35	23	70	4.5	10	F
4	Sydney Airport	13	22	57	S	25	40	21	65	4.5	7	F
GSYD	Taren Point	14	21	80	S	25	40	20	50	4.5	2	F
	Richmond	15	22	57	S	10	20	21	50	4.5	7	F
5	Kabumba	00	14	88	NNW	5	10	13	45	4.5	2	F
ILSH	Bowral	15	16	68	SSE	10	20	14	40	4.5	6	F
	Nowra	14	18	58	S	15	25	20	35	4.5	4	F
6	Moruya	14	19	48	S	20	30	18	35	4.5	5	F
FSC	Bega	13	18	45	S	5	15	19	35	4.5	2	F

Area	Regions	Time	Temp	RH	Wind (km/h)	Max	Cur	Fuel	Neuroff	Wind Change (km/h)		
				Dir	Spd	Gust	Temp	%	Dir	Spd	Gust	Time
7	Cooma	16	16	48	SE	5	5	17	50	4.5	6	F
MON	Gombakia	15	13	51	SSW	5	10	14	50	4.5	3	F
9	Goulburn	16	17	58	E	15	20	15	50	4.5	0	F
SRNG	Bridgwood	15	18	51	SE	10	15	14	45	4.5	6	F
10	Orange	15	19	40	W	15	20	19	50	8.0	8	F
	CRNG Mudgee	18	24	50	E	15	20	23	65	6.0	10	F
11	Armidale	12	21	53	SSE	10	15	21	55	4.5	7	F
NENG	Tenterfield	14	22	43	ESE	10	20	22	50	4.5	9	F



2011/12 Daily Outlook State Fire Ratings Template

Fire Weather Forecast

Wednesday 19 August 2011

Forecast updated at 12:17 PM EST on Wednesday 10 August 2011.

Greater Sydney Region [Extreme]

East North Coast [Savanne]

Regional Climate Summary - Q3 2023											District Values		
Location	Time	Temp °C	RH %	Wind km/h		Fuel	DF	Max FDI Fuel	Wind Change km/h			WIND (1500m) %	RAIN: %
				Dir	Spd				Dir	Spd	Gust		
Lismore	14:00	38	5	WNW	20	25	38	40	4.5	9	F	1500m: 15	LAI: 0
Grafton	14:00	39	5	N	15	20	39	50	4.5	9	F	1500m: 15	LAI: 0
Forest	Area FFDD:59		%VH+1:00 Hs:8 Start:1000 %SEV+70 Hs:4 Start:1200		%EXT+0		%CAI+0		Rating: Severe			ChHail: 6	
Grass	Area GFD:27		%VH+1:0		%EXT+0		%CAI+0		Rating: Severe			Rating: Severe	

National Content

Coff's Harbour Weather Report - 15:00 UTC												District Values			
Location	Time	Temp °C	RH %	Wind km/h		MaxT °C	Fuel	DF	Max. FDI Fuel	Wind Change km/h		Gust	Time		
				Dir	Spd					Dir	Spd				
Coffs Harbour	14:00	38	4	N	15	20	38	50	4.5	8	F				RAIN: < 5%
Tatree	14:00	37	8	W	25	35	37	90	4.5	9	F				LAL: 0
Forest	Area FFDI: 61	%VH: 80	Hrs: 7 Start: 10000 %SEV: +51 Hrs: 4 Start: 12000												Chaines: 8
Grass	Area GRN: 55	%VH: 40	Hrs: 7 Start: 11000 %SEV: +7 Hrs: 4 Start: 12000												Partner Coverage

District Ratings Template



Fire Weather Forecast for New England District

for Wednesday 10 August 2011

[View the current warnings for New South Wales](#)

Forecast updated at 12:17 pm EST on Wednesday 10 August 2011.

Fuel Type	District FDI %	FFDI > 25			FFDI > 50			FFDI > 75			FFDI > 100			FFDI > 150		
		Start	Hours	%	Start	Hours	%	Start	Hours	%	Start	Hours	%	Start	Hours	%
New England	F	53	2		1400	3		1400	3		1400	3		1400	3	
England	G	62	26		1400	3		1400	3		1400	3		1400	3	
LAI: 1	cHaines: 4	Prob Rain > 5mm: 10%			1500m Wind: WSWN40			m Wind:			MMX(m):2200					

Location	Time	Temp °C	RH %	Wind km/h	Fuel Dir	Fuel Spd	Fuel Gust	MaxT °C	CUR %	Fuel DF	Max. FDI Fuel	Wind Change km/h	Dir	Spd	Gust	Time
Armidale	15:00	37	8	W	35	45	37	100	4.5	8	G					
Tenterfield	15:00	36	6	W	30	40	36	100	4.5	8	G					

Nearby Fire Areas

Fire Area	Area FDI	Area GFDI	Area Rating	Percent Coverage	Fire Weather Warning	Total Fire Ban
Far North Coast	59	22	Severe	51	Y	Y
Greater Hunter	55	69	Severe	51	Y	Y
Northern Slopes	56	35	Severe	18	Y	Y

Outlook

Wednesday	Sunny.	Armidale	Min:	Max:19
Thursday	Sunny.	Armidale	Min:0	Max:18
Friday	Morning frost Mostly sunny.	Armidale	Min:1	Max:17
Saturday	Partly cloudy.	Armidale	Min:4	Max:16
Sunday	A few showers.	Armidale	Min:3	Max:15
Monday	Possible shower.	Armidale	Min:2	Max:13
Tuesday	Mostly sunny.	Armidale	Min:0	Max:13



Vegetation Mapping Integration with GFE

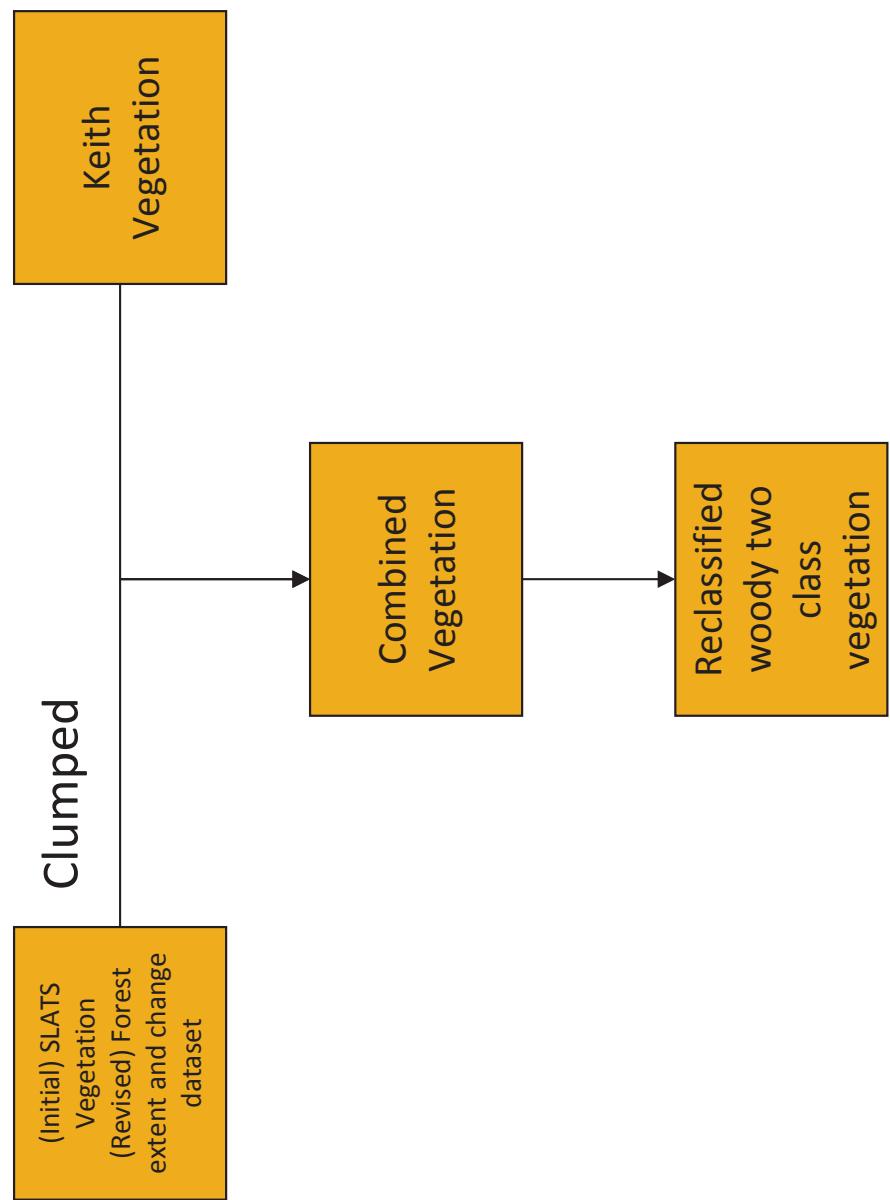
- Vegetation mapping – combination of Keith and MODIS satellite data
- Averaged to 6km x 6km Grid Cells for GFE
 - Will improve with refinement to 3km x 3km grid cells.
- Classification for each cell
 - Forest (70-100%)
 - Grass (0-30% Forest within pixel)
 - Mixed (30-70%)
- Mixed areas to have both a Forest and Grass rating



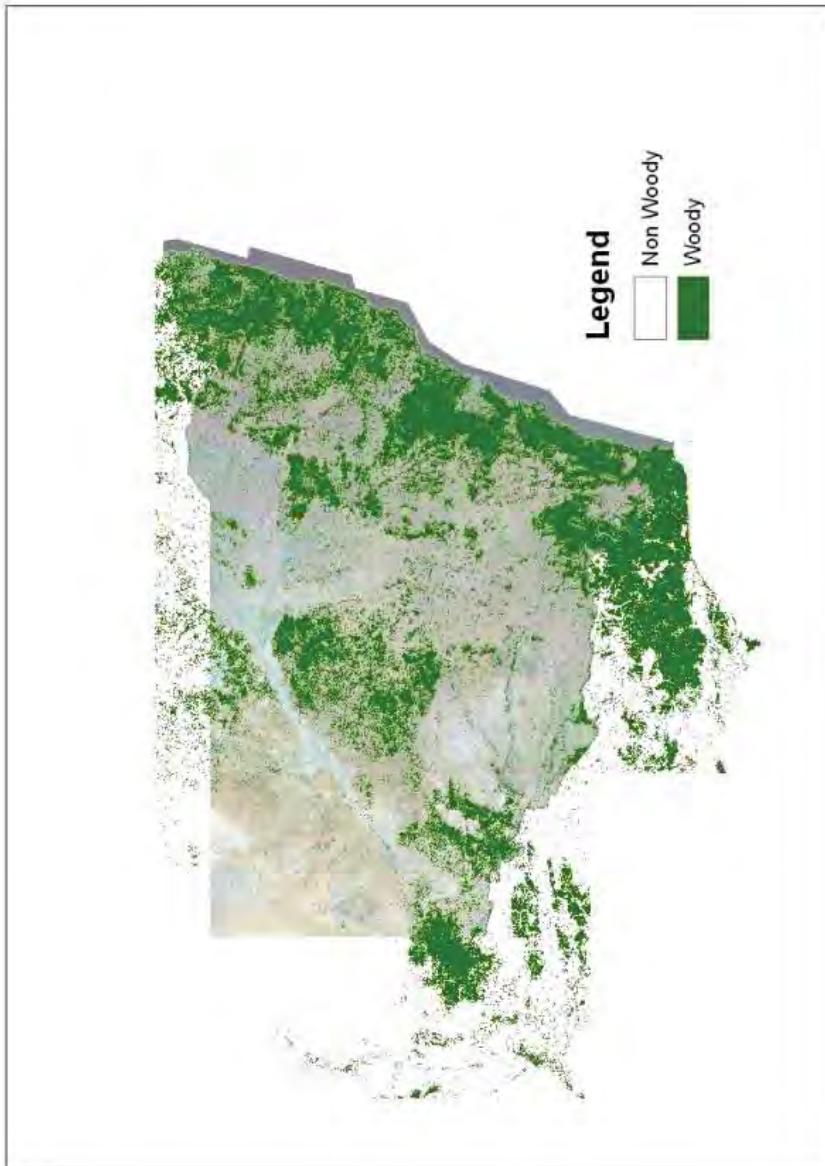
Vegetation Mapping Integration with GFE

- Benefits:
 - Better reflects actual fire danger ratings in the landscape
 - Potential for more accuracy in forecasting TOBANS based on appropriate rating system (forest or grass), weather and their interaction in the landscape.
- Issues
 - Interpretation may be a challenge
 - Combined forest and grass cells
 - Pixilated images

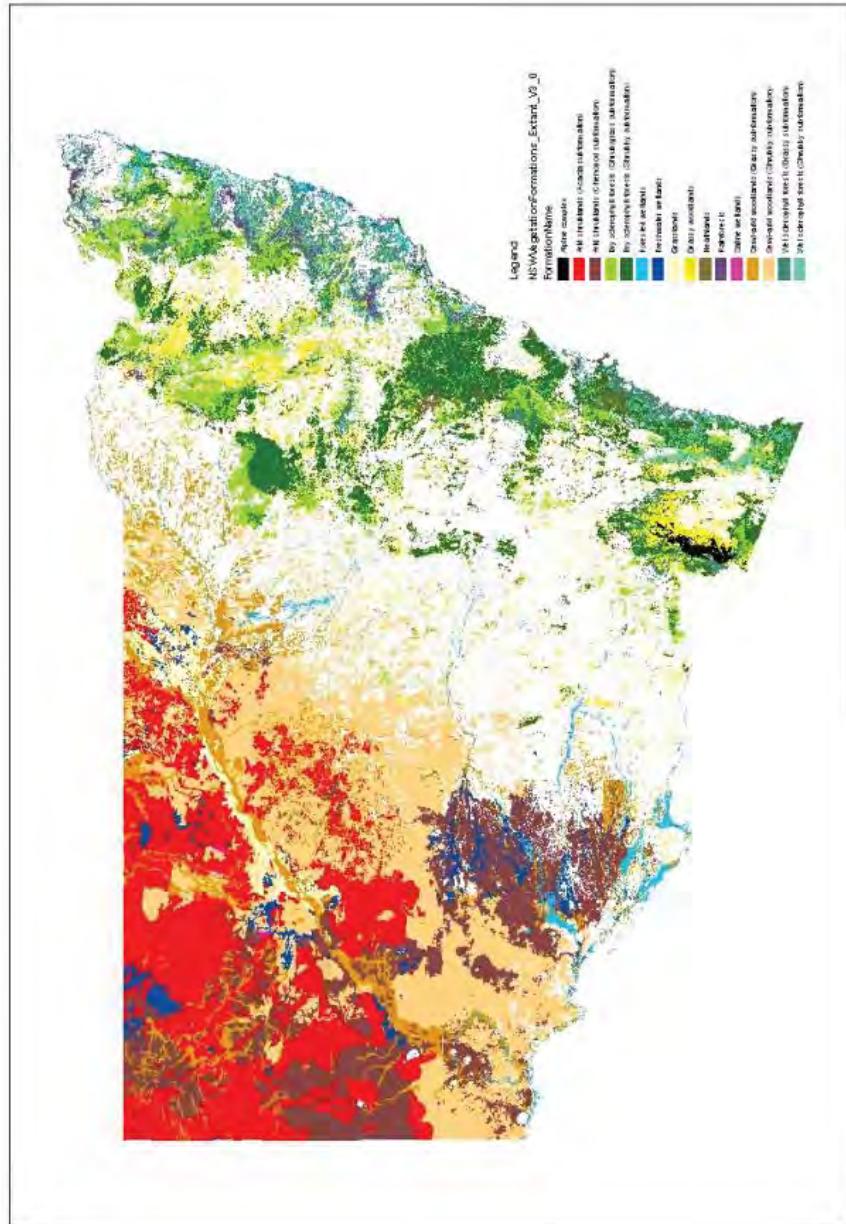
Vegetation Mapping Process



Tree/No Tree Layer



Keith Vegetation Map

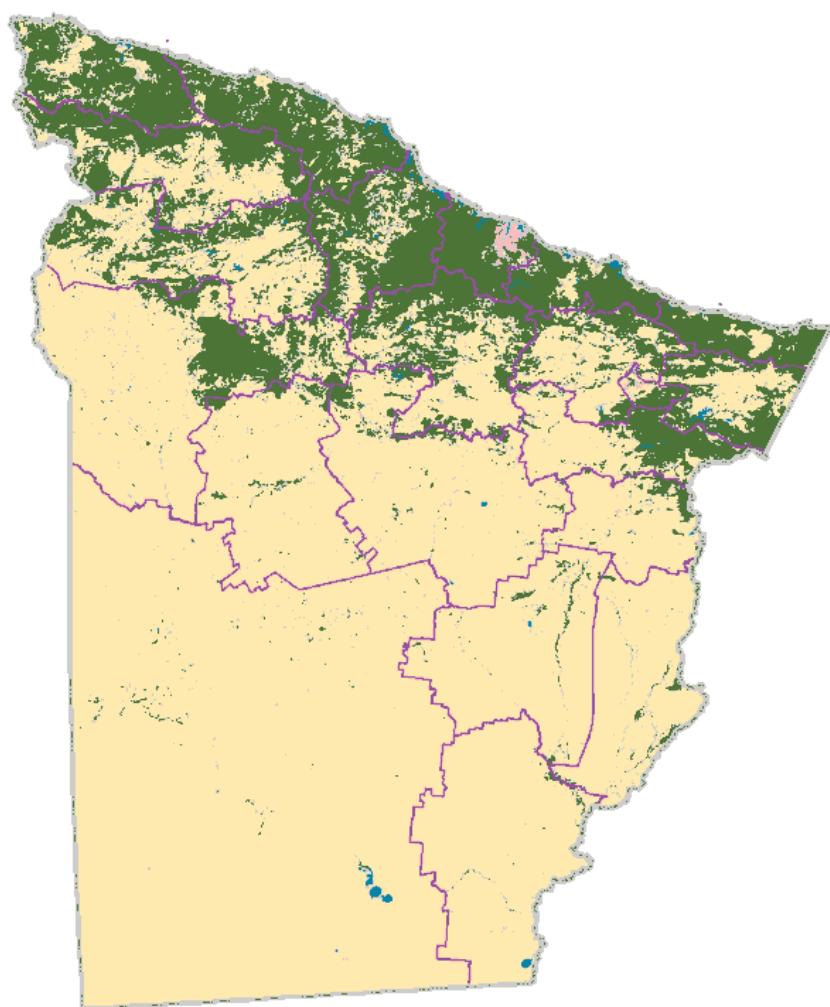




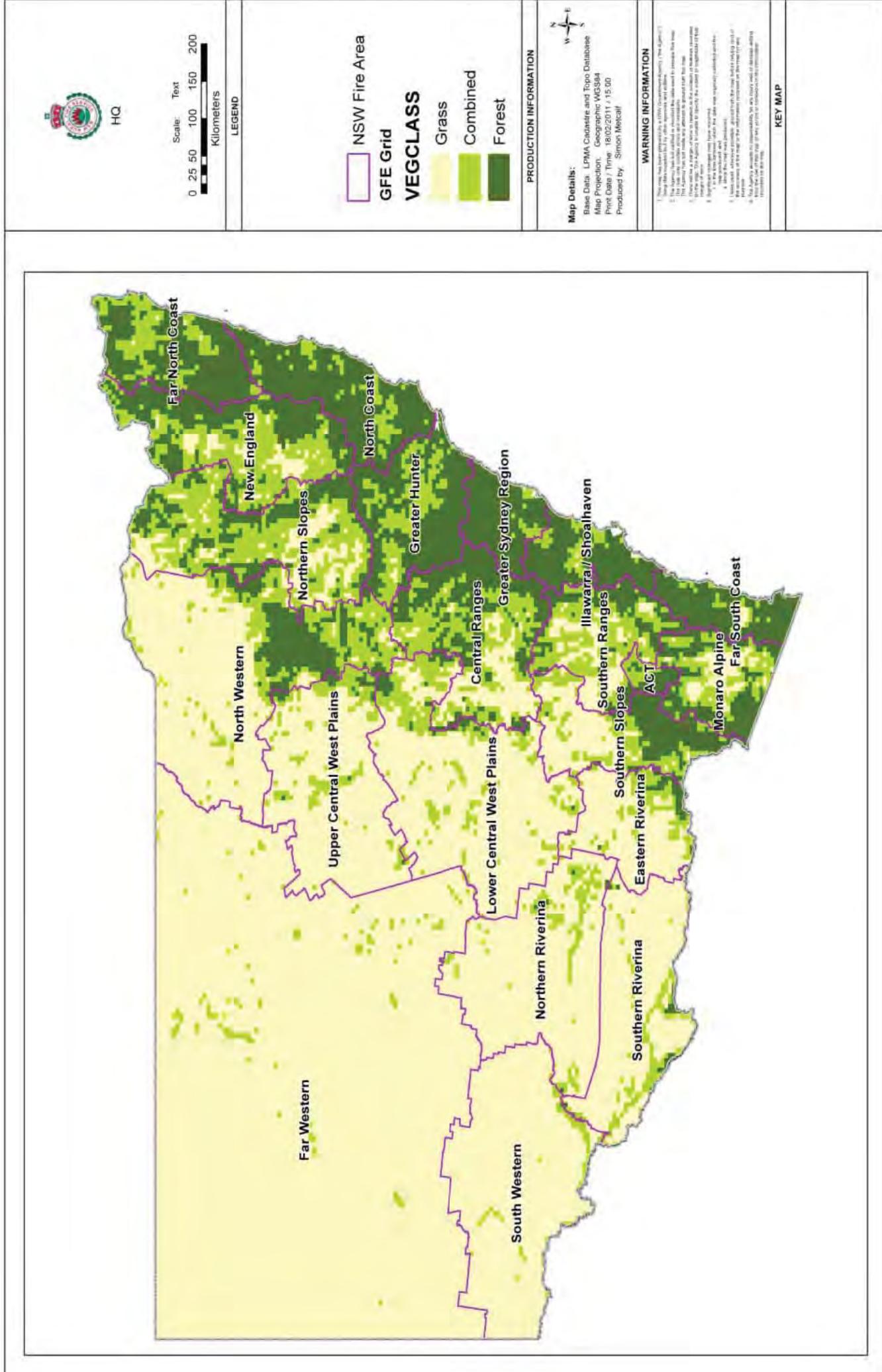
Reclassified Keith Woody

Vegetation Map

(Map going into GFE)



GFE Vegetation Grid



TOBANS

- Automatic trigger > 10% of a fire weather area forecast within Severe FDR
- Discretionary triggers 1-10% of a fire weather area forecast within severe FDR
- Legislative factors – Triggered for other reasons.



10/11 Grassland Curing

- CSIRO/BOM data – primarily MODIS derived.
- Spatial Analysis at RFS
 - Clipped out tree canopy, waterbodies, urban areas.
 - When cloud affected image, used a layered mosaic.
- Values derived by calculating an average of curing within a 20km radius around a point.
- Accuracy validated with field reports before sending to BOM





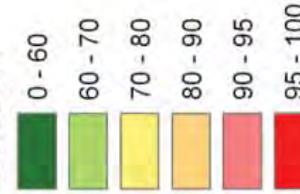
HQ

Scale: Text
0 25 50 100 150 200
Kilometers

LEGEND

NSW Fire Area

Curing %
27/7/2011



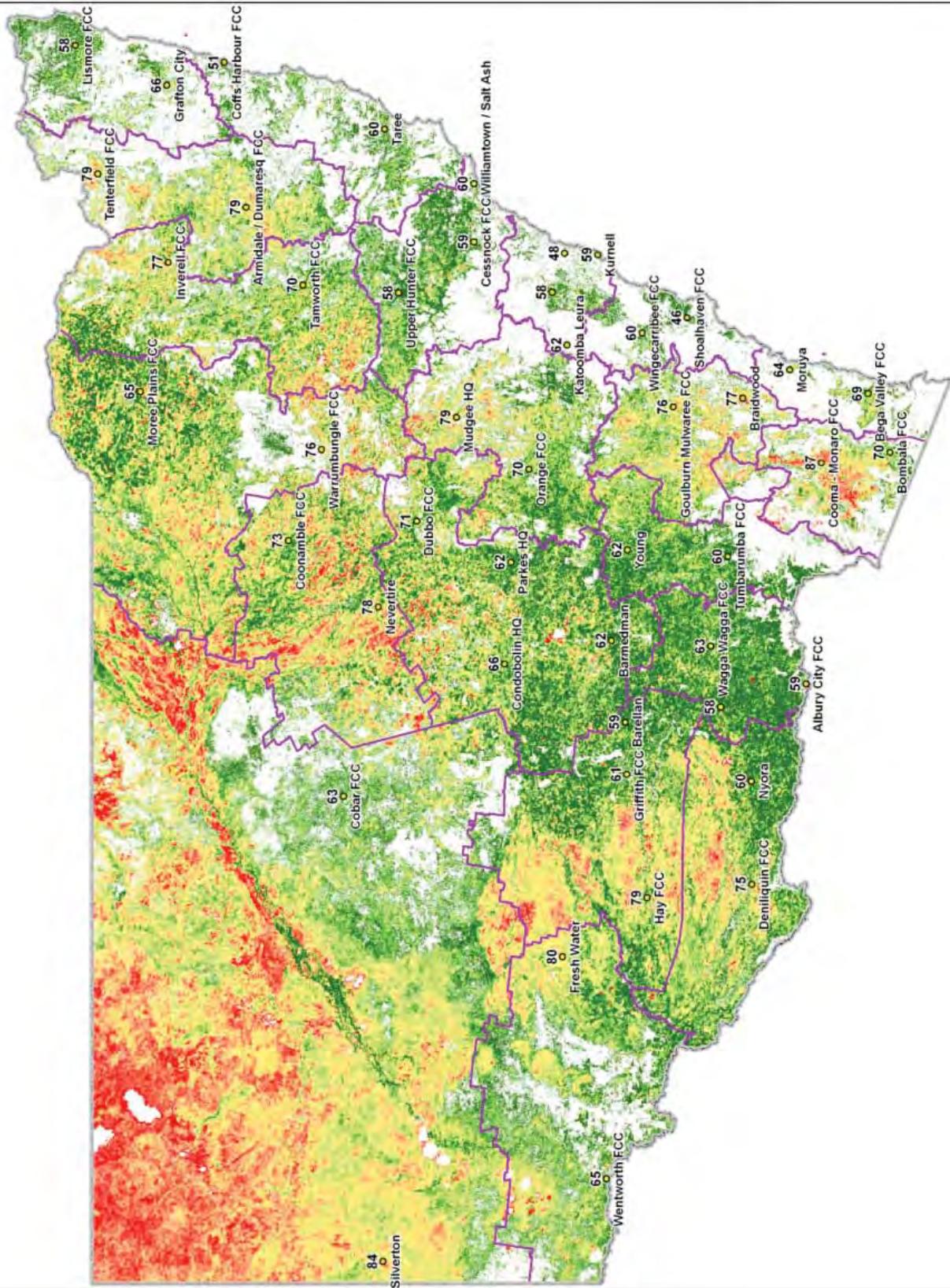
PRODUCTION INFORMATION

Map Details:
Base Data: LPMA Catchment and Topo Database
Map Projection: Geographic WGS84
Print Date / Time: 05/08/2011 / 14:10
Produced by: Simon McAll

WARNING INFORMATION

- 1 This map displays information for a fire event that occurred on 11/07/2011. It is based on available data at the time of production and is subject to change.
The information contained in this map is for general reference only and is not intended for use in place of professional advice.
This map is not a substitute for a detailed map of the area affected by the fire. It is intended to provide a broad overview of the location of the fire and its impact on the environment and infrastructure in the area.
- 2 This map displays information for a fire event that occurred on 11/07/2011. It is based on available data at the time of production and is subject to change.
The information contained in this map is for general reference only and is not intended for use in place of professional advice.
This map is not a substitute for a detailed map of the area affected by the fire. It is intended to provide a broad overview of the location of the fire and its impact on the environment and infrastructure in the area.
- 3 If you are in the area affected by the fire, please contact your local fire authority or emergency services for the latest information and advice.
- 4 Local council authorities will be providing advice on the safety of roads and other infrastructure in their areas. Please contact your local council or emergency services for the latest information and advice.
- 5 This map is not a substitute for a detailed map of the area affected by the fire. It is intended to provide a broad overview of the location of the fire and its impact on the environment and infrastructure in the area.

KEY MAP





10/11 Grassland Curing

- Issues

- 90th percentile used early last season, comparison with field reports showed values appeared too high. Possible “wet season” effect.
- Average curing (average of a 20km radius around point locations) provided more accurate values when compared to field reports. Possible “wet season” effect.

11/12 Grassland Curing

- BOM/CSIRO to process
- Incorporation into GFE this season to create average curing in 6km x 6km grid cells (as opposed to 20km averages last season then interpolated or smoothed between sampling points).
 - Much greater accuracy
 - Still evaluating whether average or 90th percentile will give the best result.
- Validate using field reports
- Grassland fuel load to be derived using field reporting. Investigating automating using models.





Grassland Curing Issues

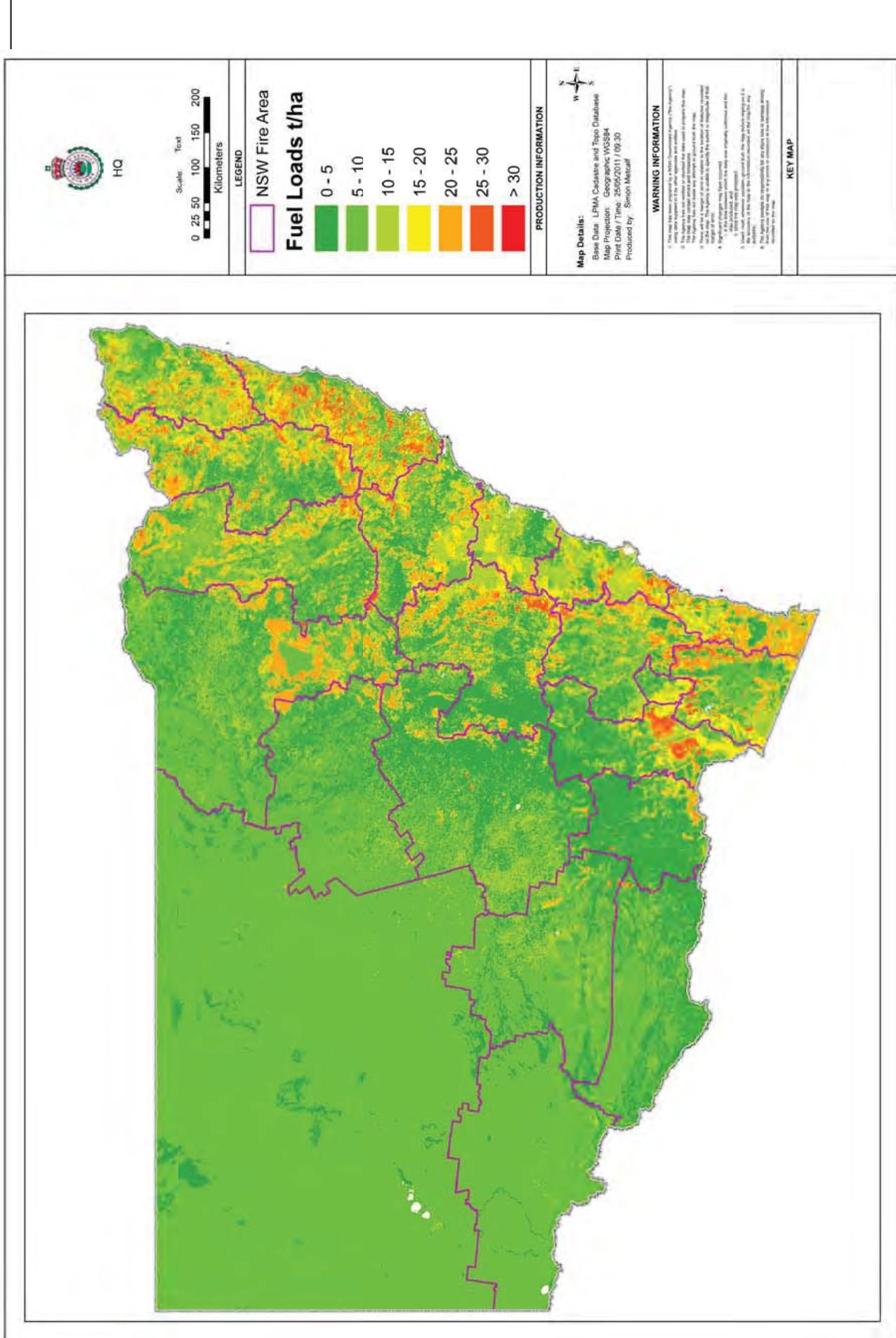
- Reliability. NASA consider the data as “not real time”. CSIRO looking at new source options.

Fuel State 2011

- Forest
 - Watson research
 - GIS processing to develop indicative fuel load map (limited by fire history, needs field validation)
- Grassland
 - Field reporting
 - Investigation of models (e.g. Aussie Grass)

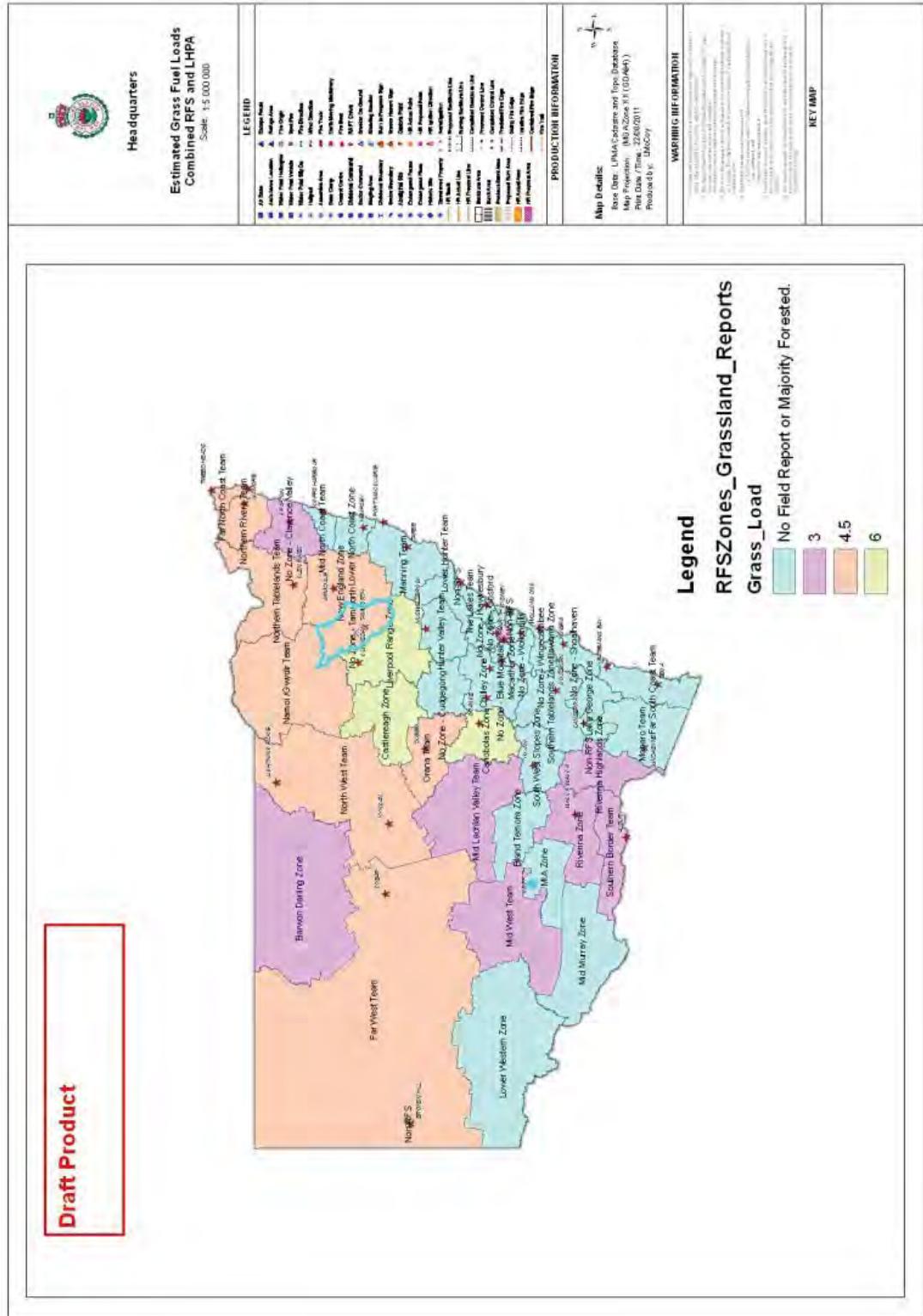


Fuel Load Map



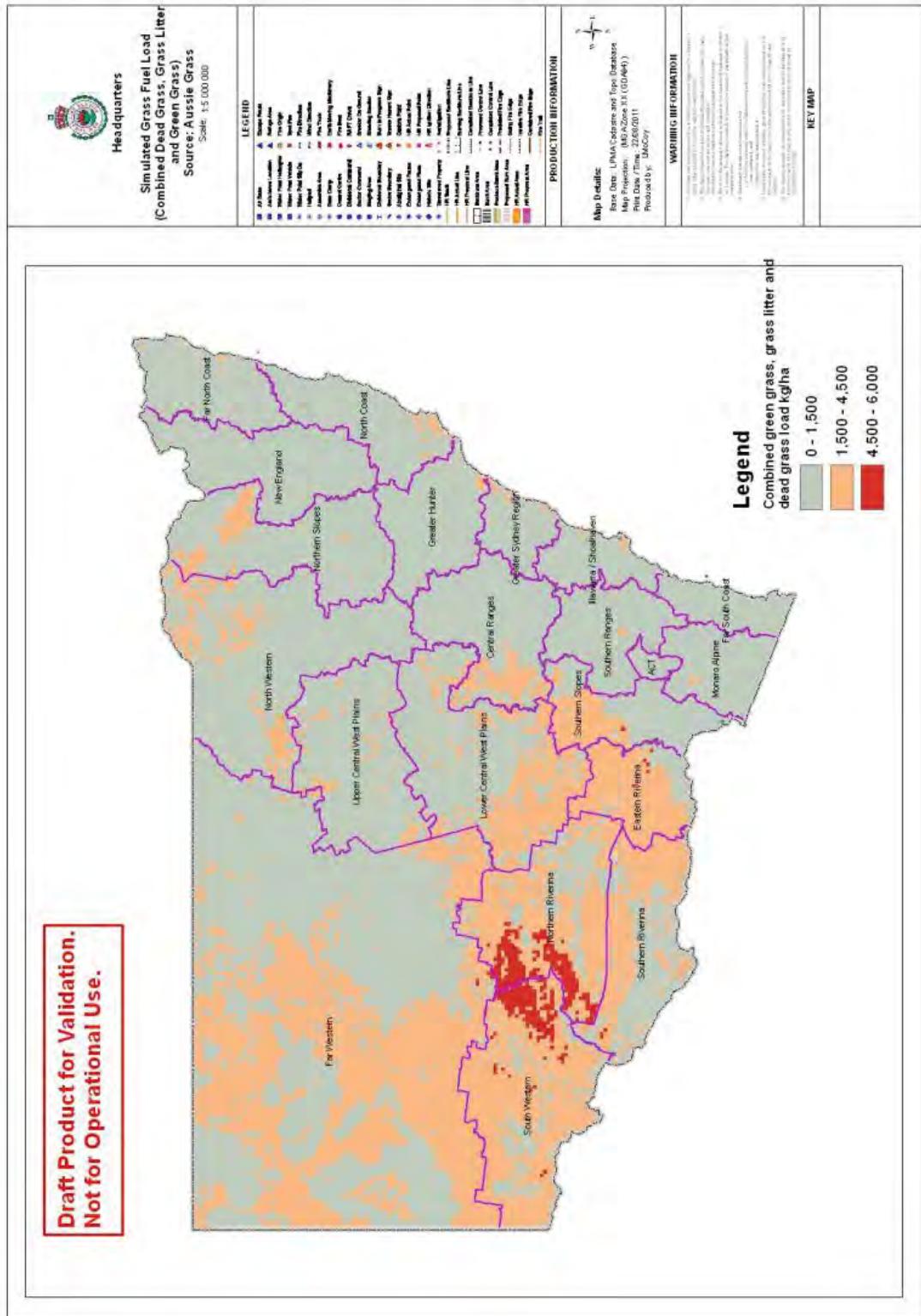
Grass Fuels – Field Reports

Draft Product

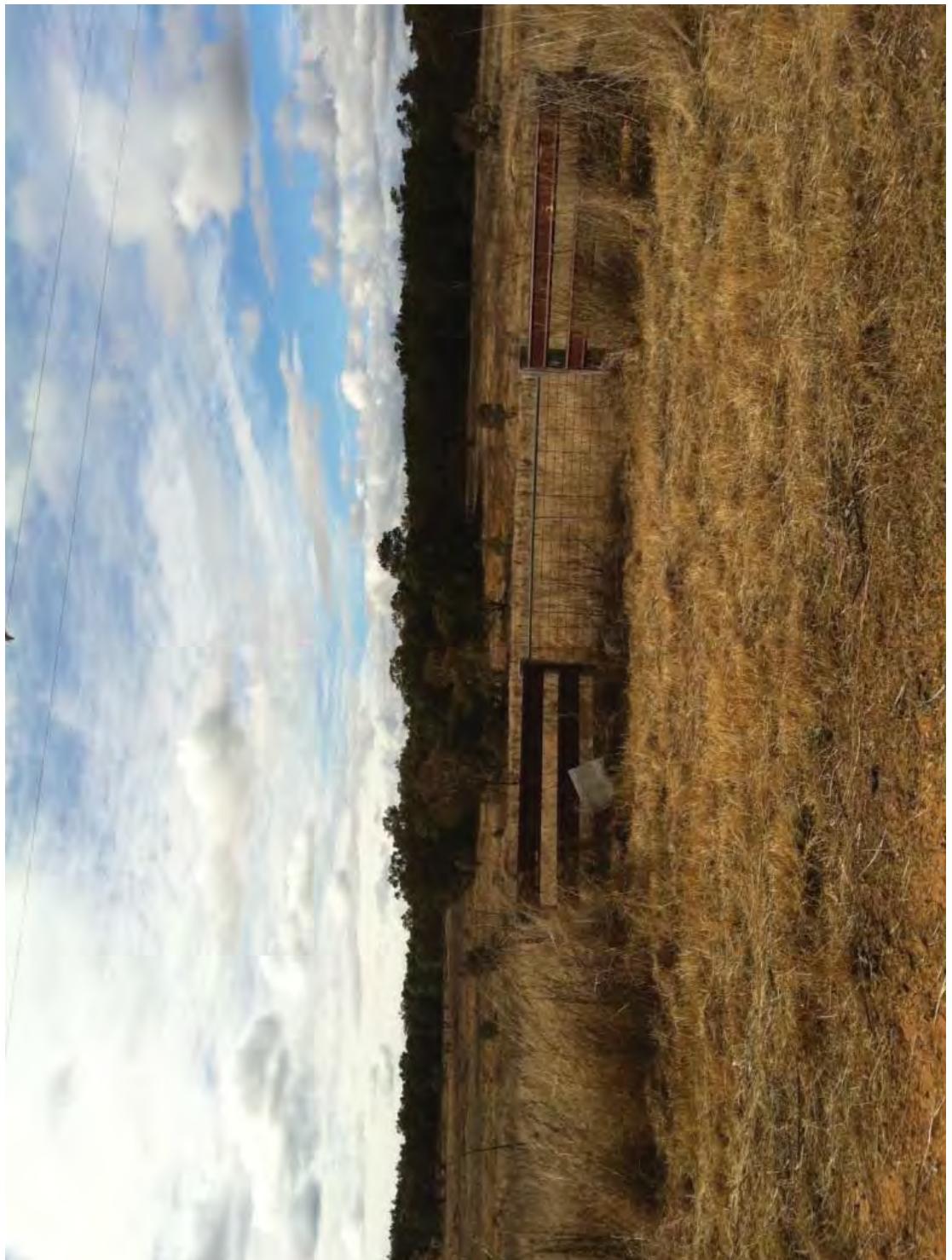


Grass Fuel – Aussie Grass

Draft Product for Validation.
Not for Operational Use.



Grass Growth – near Coonabarabran (NorthWest)



Grass Growth – Mid Western Highway (Central West)

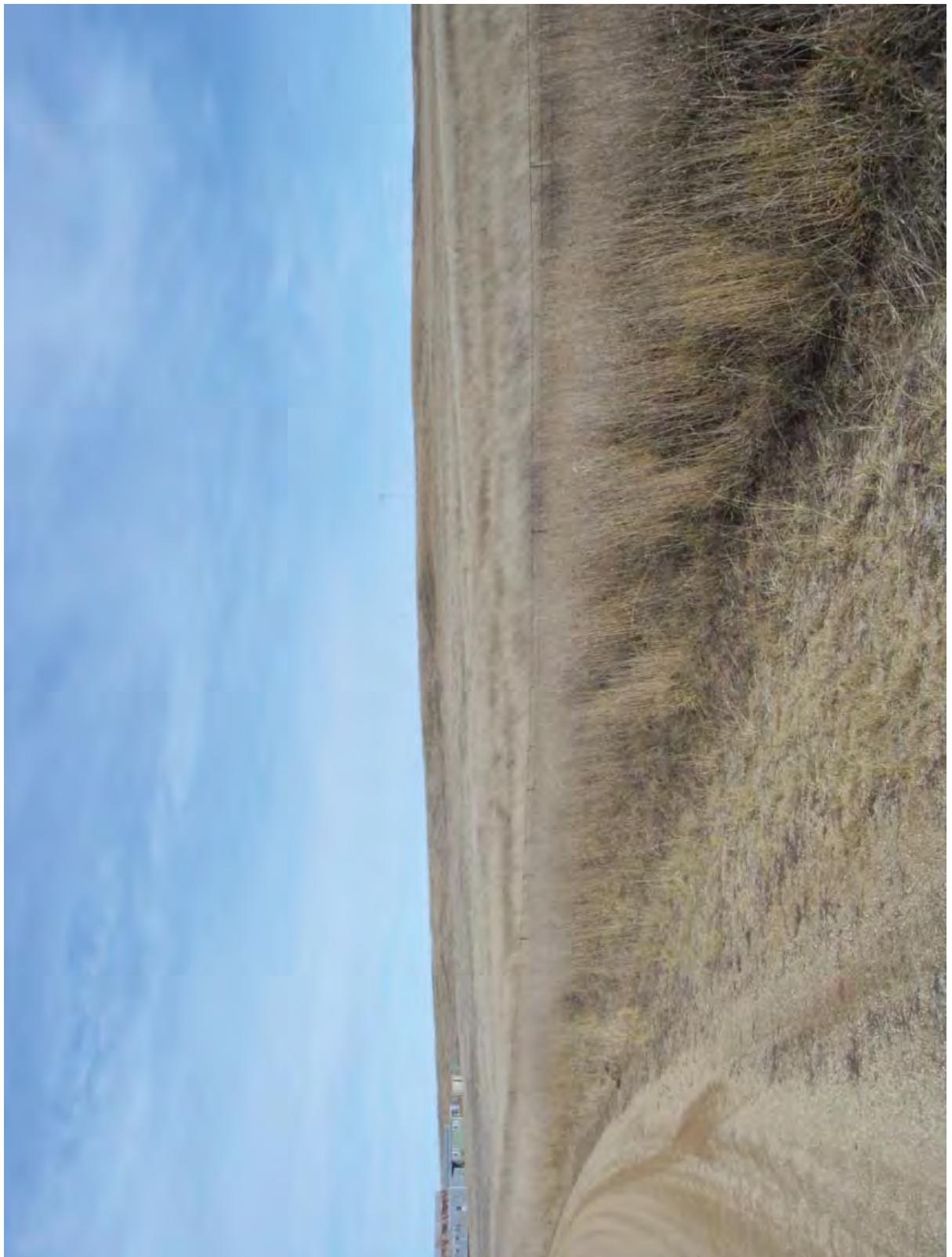


Grass Growth – near Dubbo





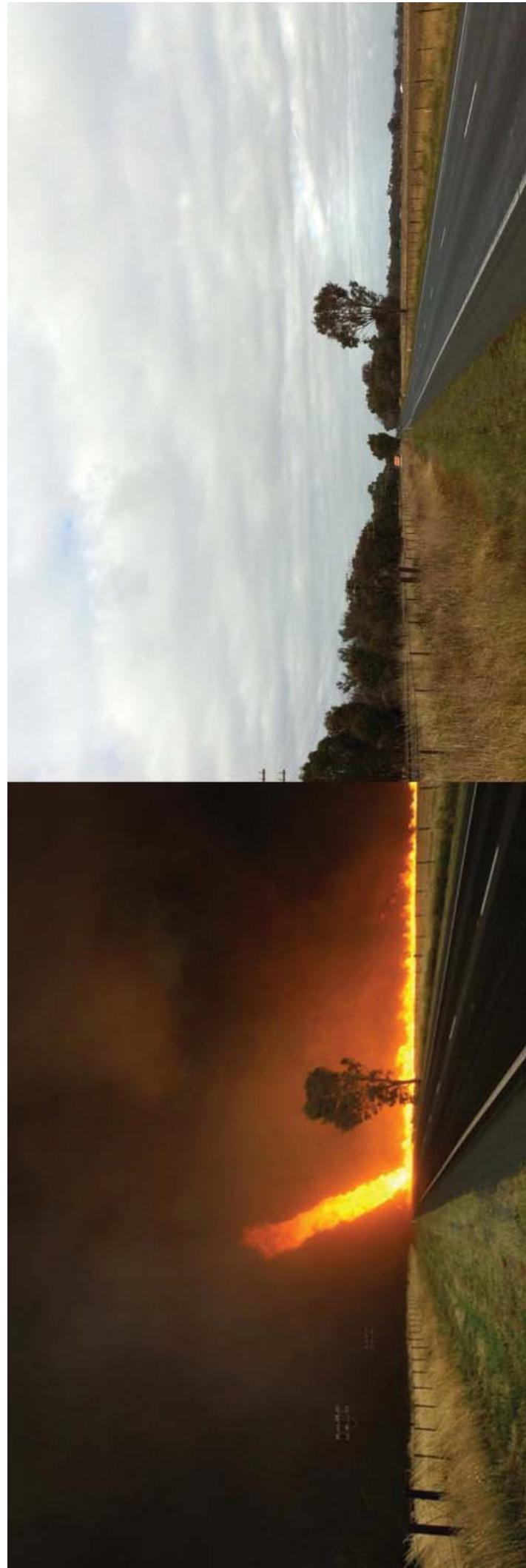
Grass Growth – near Jindabyne (South)



Grass Growth – near Beckom (Centre South)

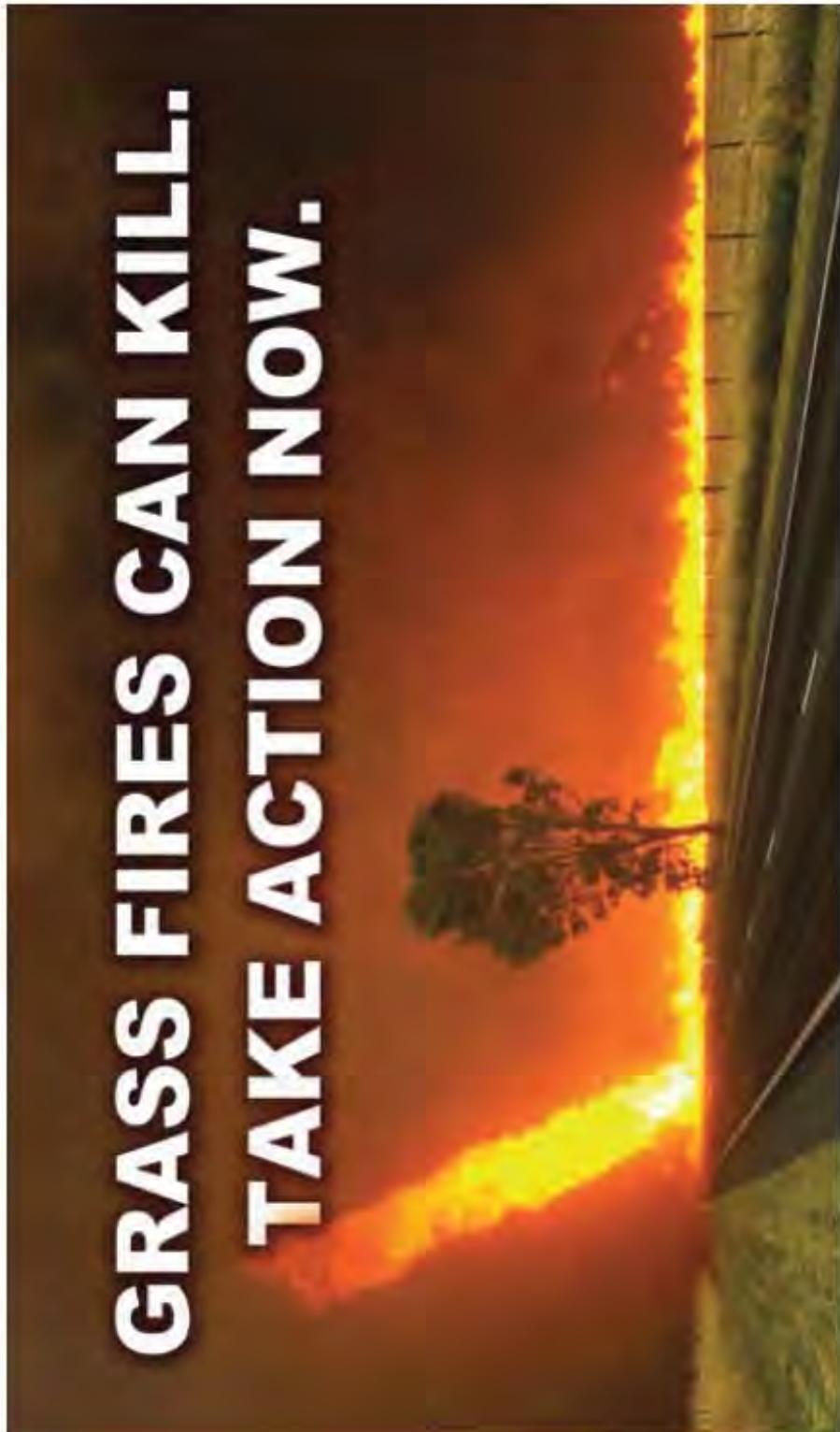


Gerogery - 2009 and today





GRASS FIRES CAN KILL. TAKE ACTION NOW.



PREPARE. ACT. SURVIVE.

After years of drought, the recent rain has been welcome – however it has also brought an unwelcome threat. The risk of grass fires is very real. Grass fires start quickly and spread rapidly, devastating life and land. They generate huge amounts of heat that can be fatal.

Take steps now. Build fire breaks in and around your property. Mow, cut or plough grass. Make sure you've completed your Bush Fire Survival Plan. Visit rfs.nsw.gov.au for more critical information. People have been killed in grass fires, don't wait till it's too late.



rfs.nsw.gov.au
1800 679 737

Petrol Pump Nozzle Advertisements



PREPARE. ACT. SURVIVE.

**rfs.nsw.gov.au
1800 679 737**



Broken Hill and Moree.

The 'Prepare. Act. Survive' public awareness campaign for grass fires will appear on pump handles at 29 locations around NSW, from Albury to

Pre Season Prediction

- Potential for significant grassland fires across the state
- Fire activity more likely as “drying trend” on significant grass fuel levels across inland NSW
- Bush Fire Danger Periods
 - As at 1 August:
Armidale, Dumarassq, Guyra, Uralla, Walcha, Glenn Innes, Severn, Inverell and Tenterfield LGA's
 - As at 1 September:
Bega Valley, Clarence Valley, Ballina, Byron, Tweed, Cessnock, Maitland, Muswellbrook, Singletown, Kempsey, Bellingen, Coffs Harbour, Kyogle, Lismore, Richmond Valley, Shoalhaven & Namucca LGA's





A photograph of a rural landscape at sunset or sunrise. The sky is filled with dramatic, colorful clouds in shades of orange, yellow, and blue. A river or large body of water curves through the scene, with fields and trees along its banks. The sun is low on the horizon, casting a warm glow over the entire scene.

Sarah Hicks

Seasonal Outlook

23 August 2011



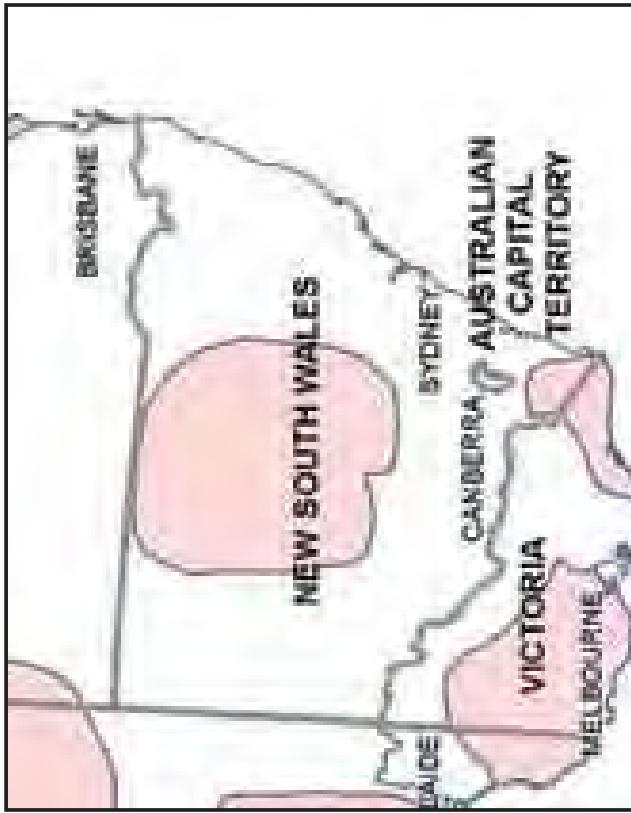
Outline

- 2010-2011 Recap
- Recent rainfall
- El Niño/La Niña update
- Seasonal Climate Outlook

Recap 2010-2011 Season

- Strong La Nina event
- Below Average Fire Season
- GFE introduced

<i>Seasonal Statistics</i>	<i>2009-2010 Season</i>	<i>2008-2009 Season</i>
Routine Ratings Commenced	1 st September 2010	1 st September 2009
Routine Ratings Ceased	1 st April 2011	1 st April 2010
Fire Weather Warnings	4 days	68 days
Total Fire Bans issued by RFS	4 days	58 days
Days Catastrophic Observed	0 days	4 days
Special Fire Forecasts	294	1327

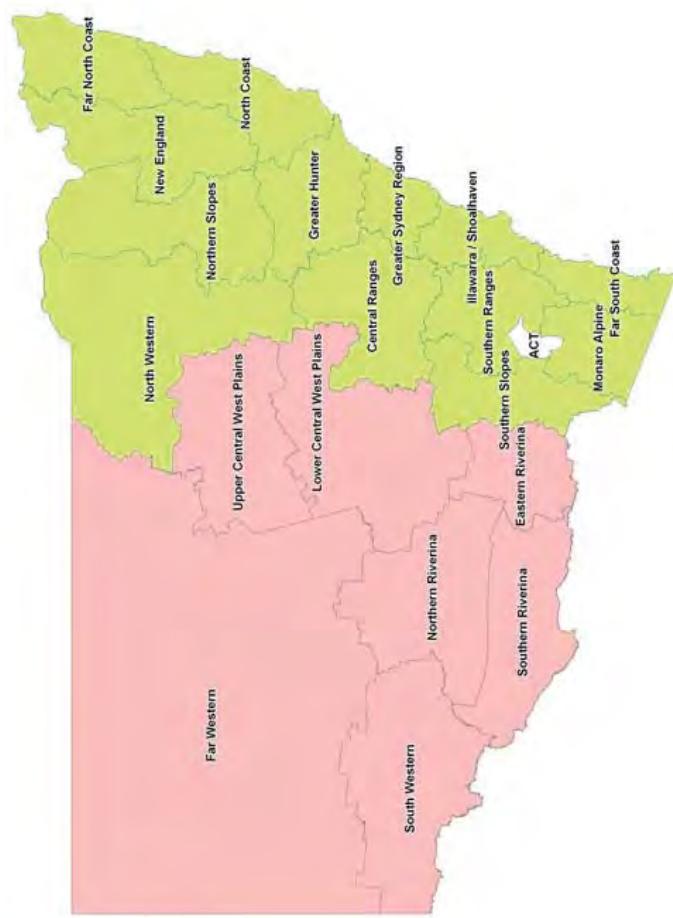
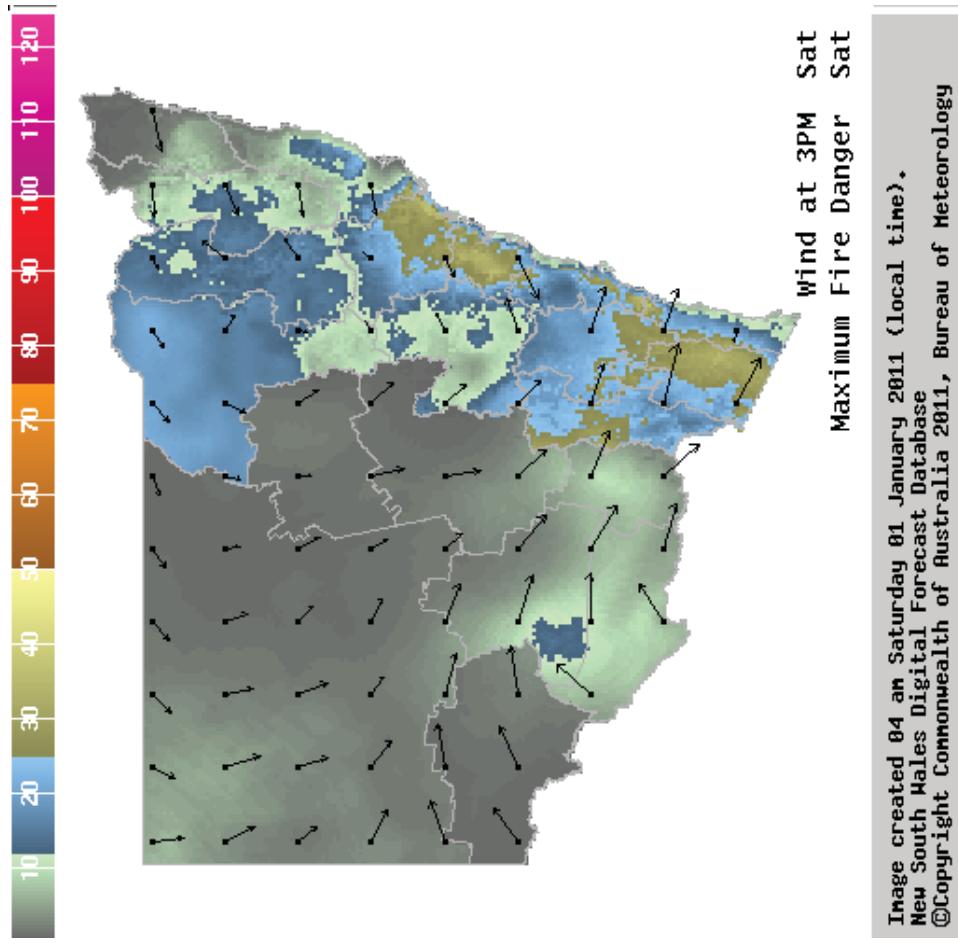


<i>All Fire Areas</i>	<i>2010-2011 Season</i>	<i>2009-2010 Season</i>
Hits	4	193
Misses	5	53
False Alarms	6	110
POD	0.44	0.78
FAR	0.66	0.36



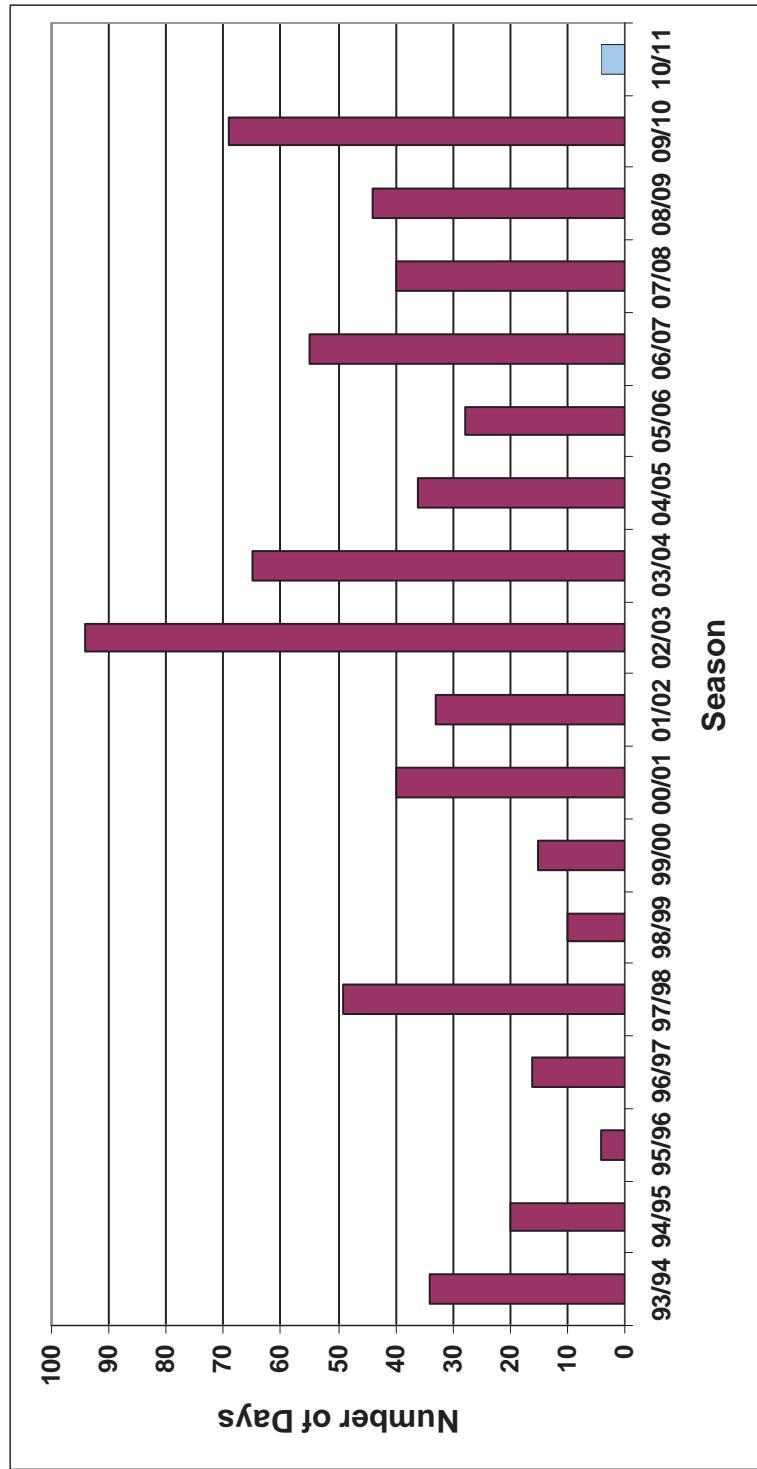
GFE introduced 2010-2011

GFE was introduced in NSW Region
Major changes to the Fire Wx Service

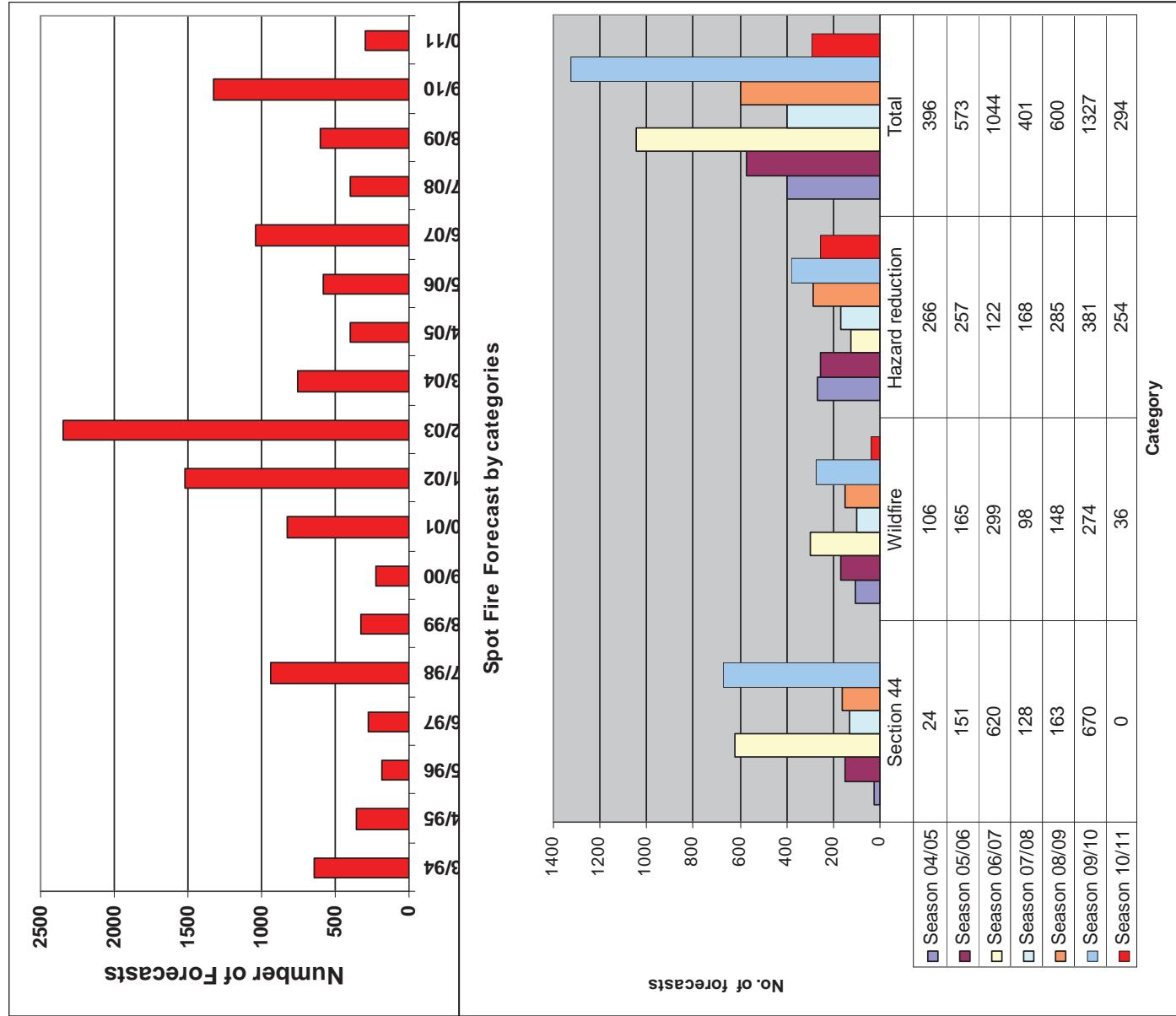


Days Warned

- Warnings & Total Fire Bans issued on just 4 days – Below Average!



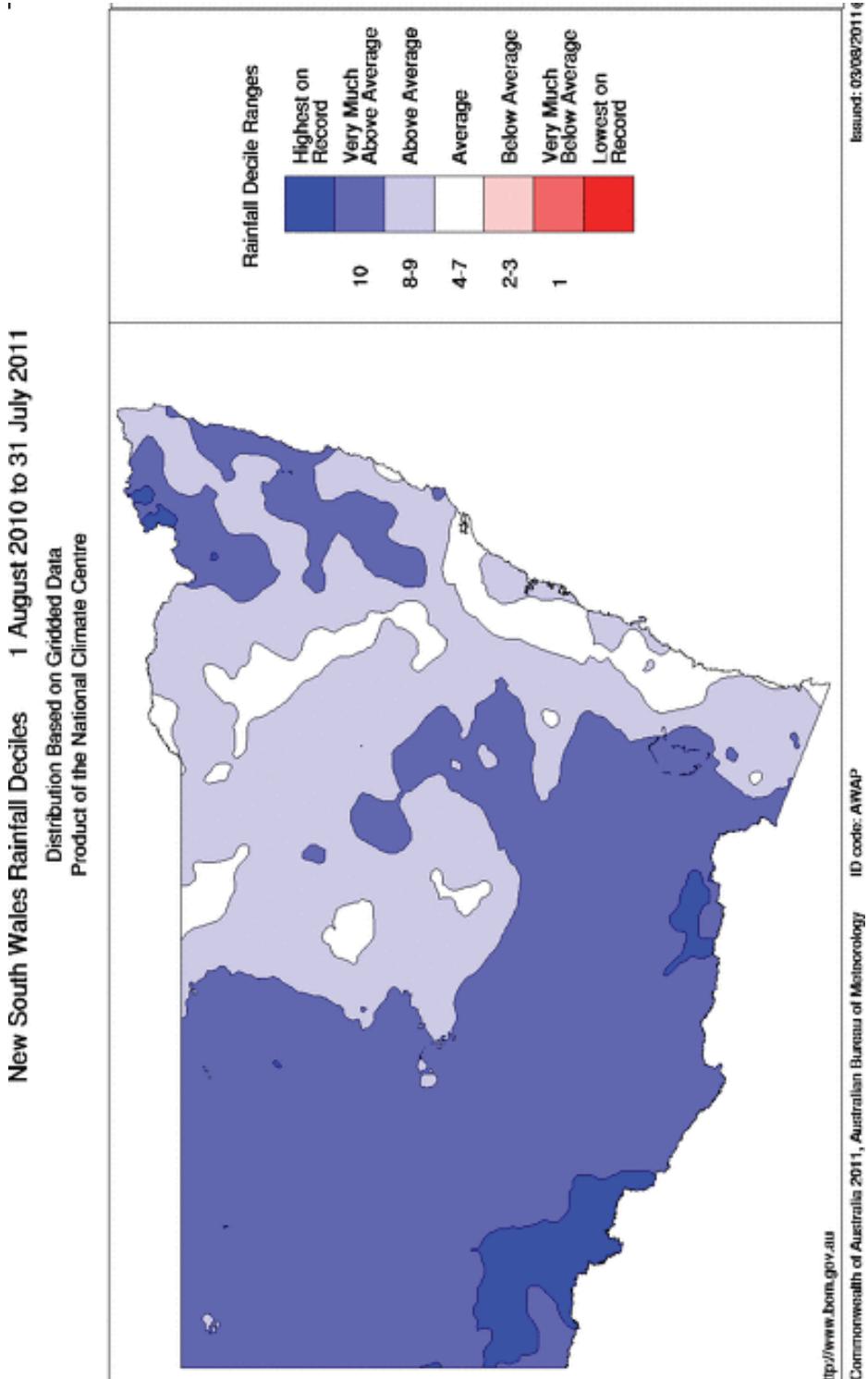
Spot Fire Forecast 2010-2011



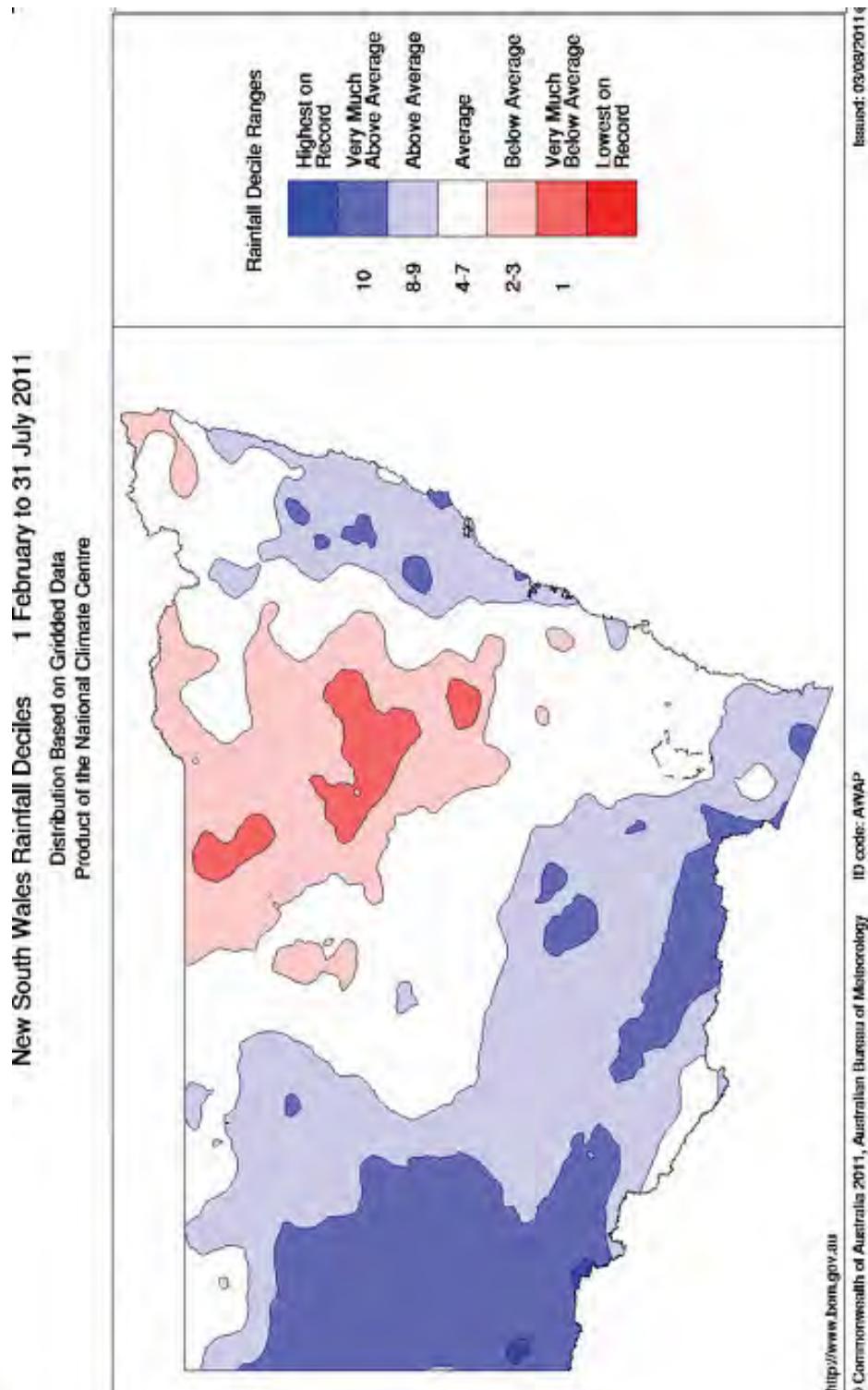
- 294 Spot Fire Forecasts (254 HR, 40 WF and 0 S44)
- Compared to 1327 in 2009-2010

Recent Rainfall

Yearly Rainfall Deciles Aug 10 - Jul 11



Feb – July rainfall deciles

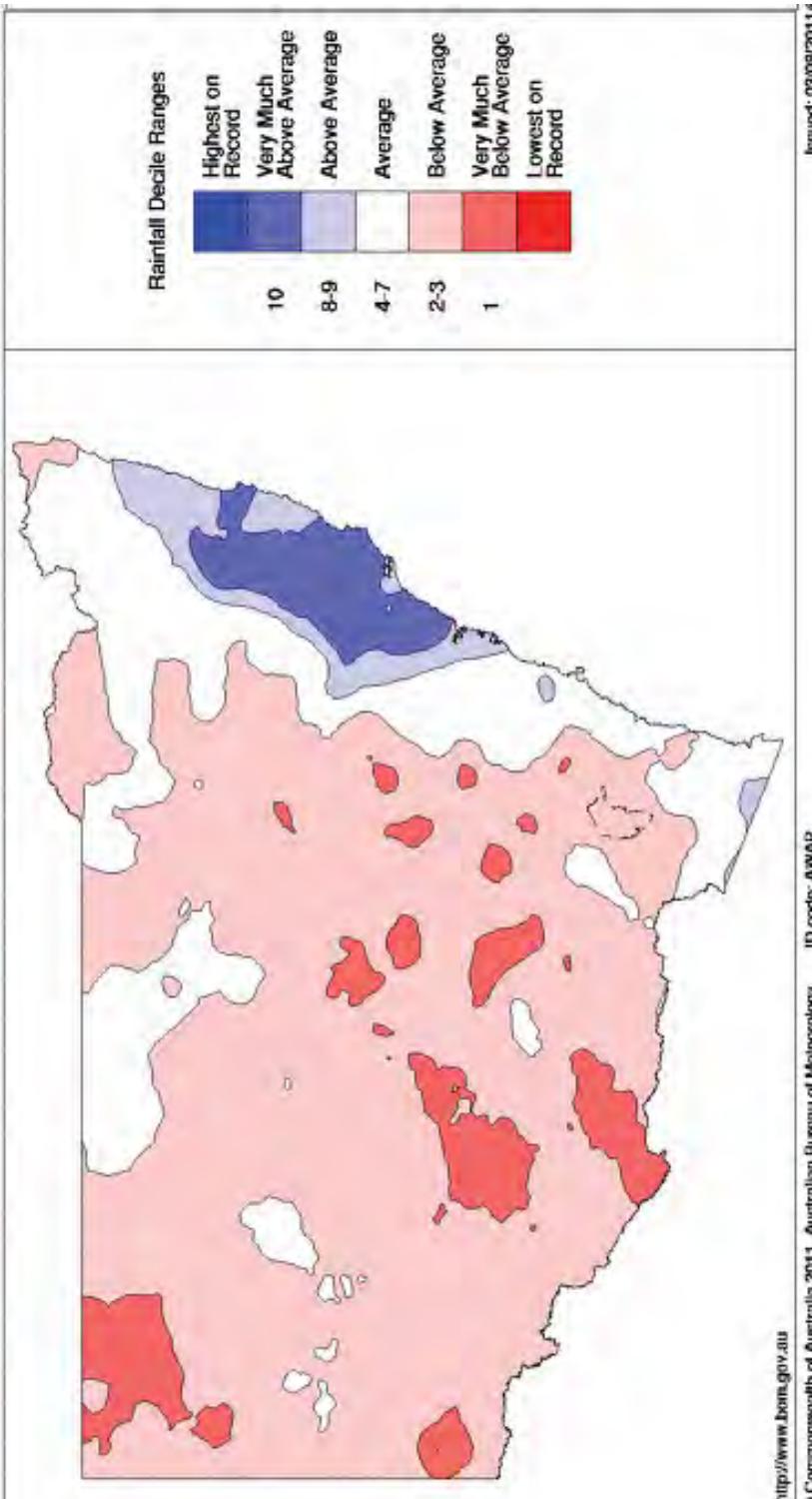


- Very much above average in the far southwest
- Below to very much below average over the northern and central western slopes and plains.

May-July Rainfall Deciles

New South Wales Rainfall Deciles 1 May to 31 July 2011

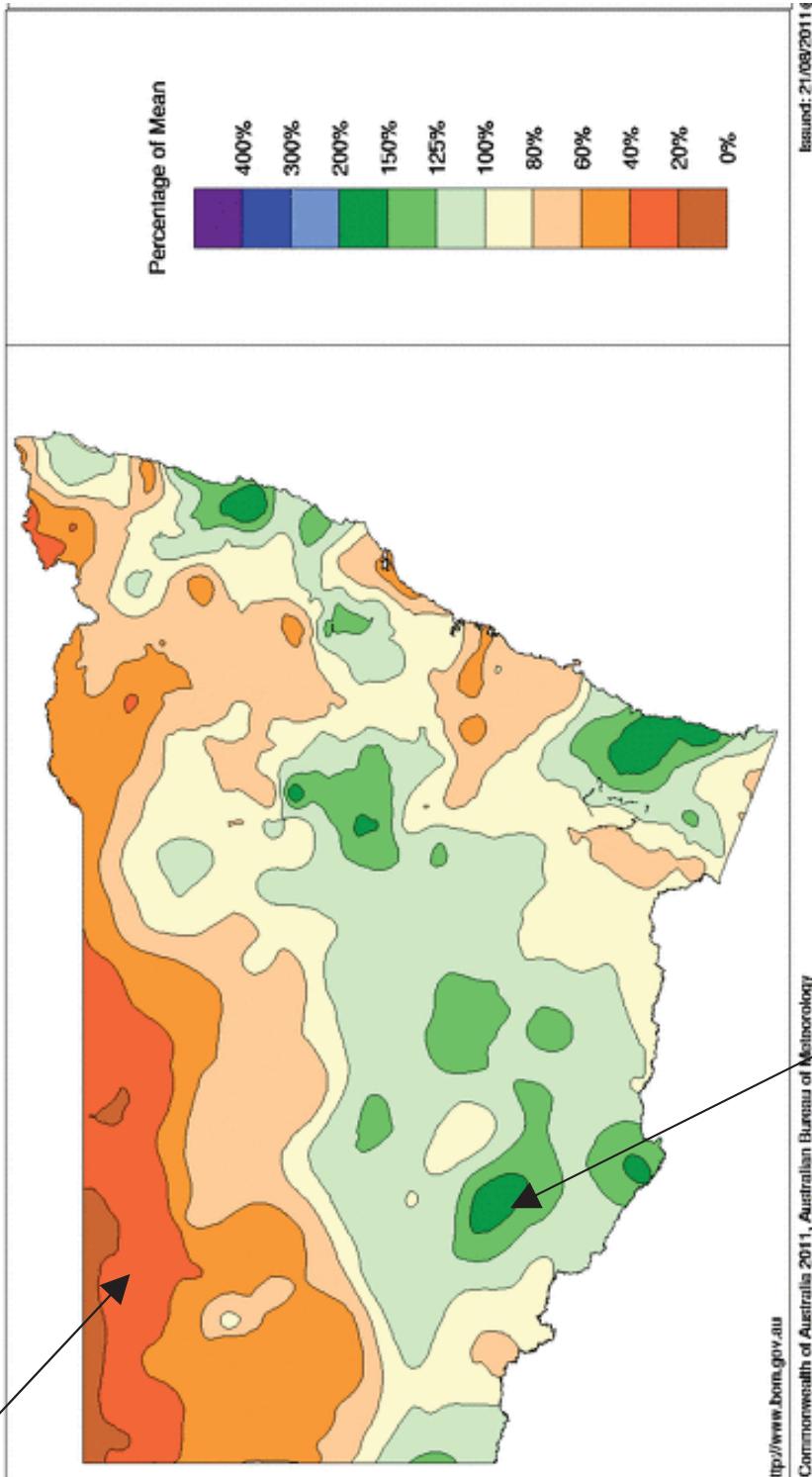
Distribution Based on Gridded Data
Product of the National Climate Centre



August Month to Date

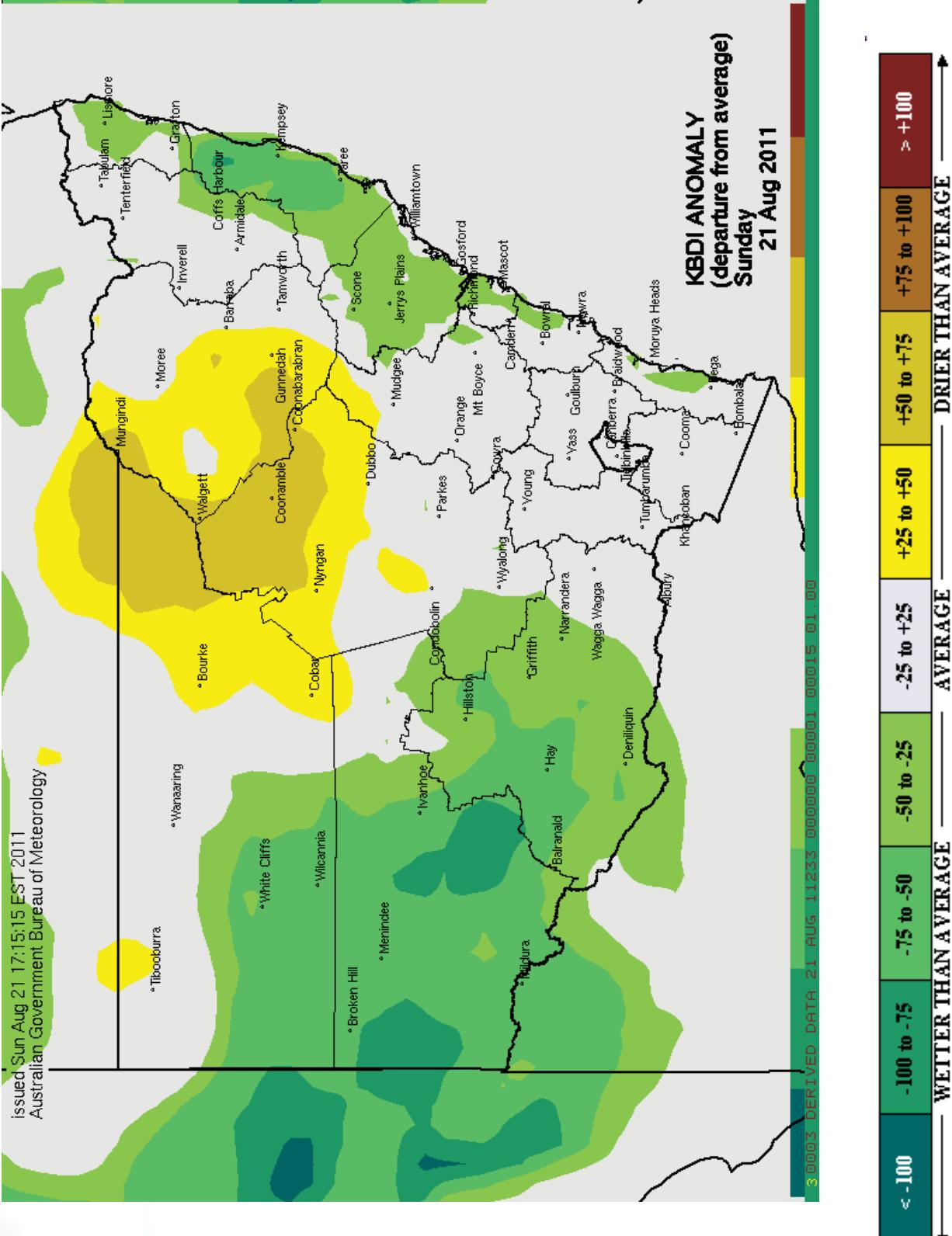
Not yet exceeded average August rainfall

Rainfall Percentages
1st to 21st August 2011
Product of the National Climate Centre



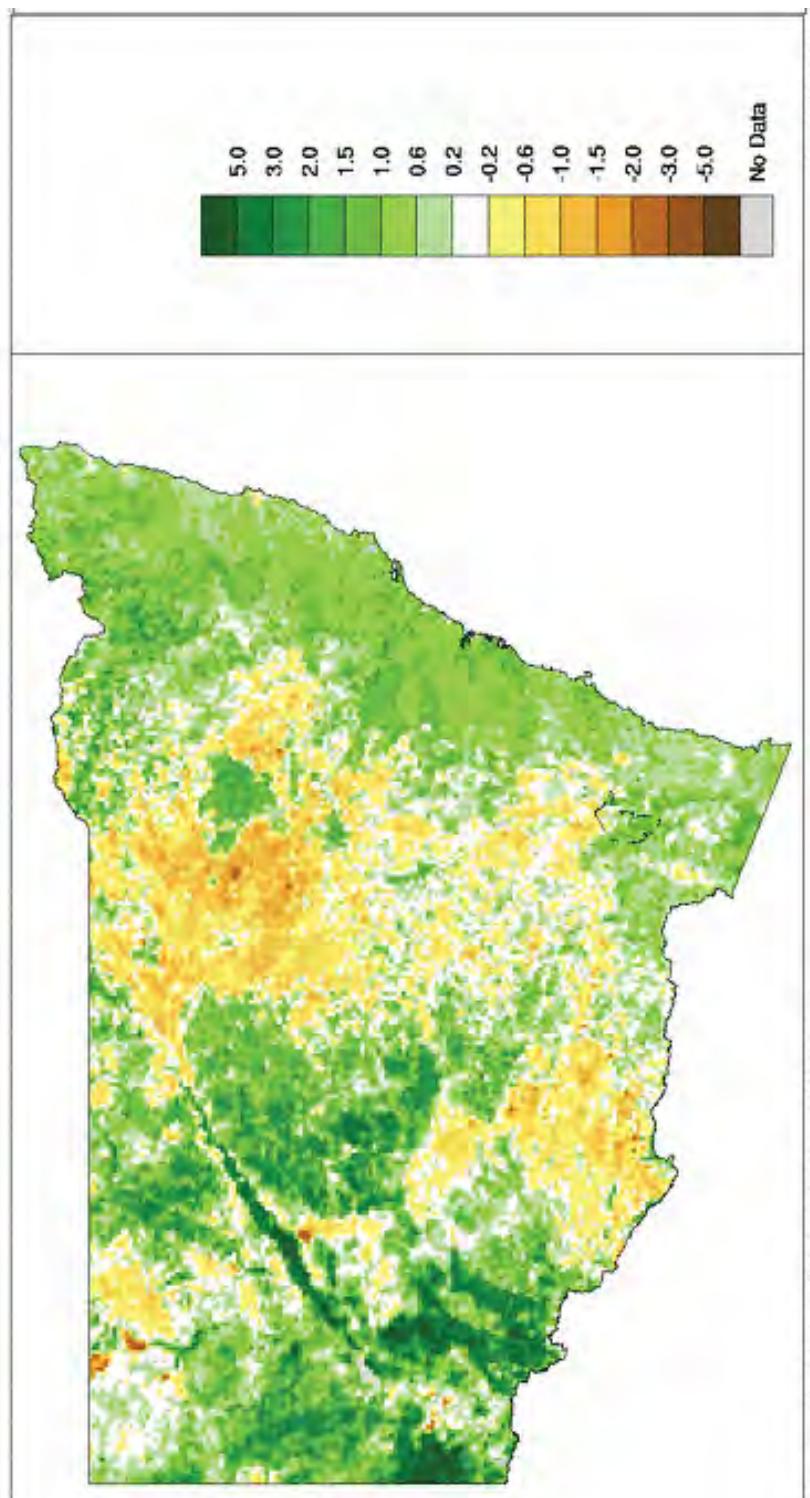
Already exceeded average August rainfall

21 Aug KBDI Anomaly



NDVI July Anomaly

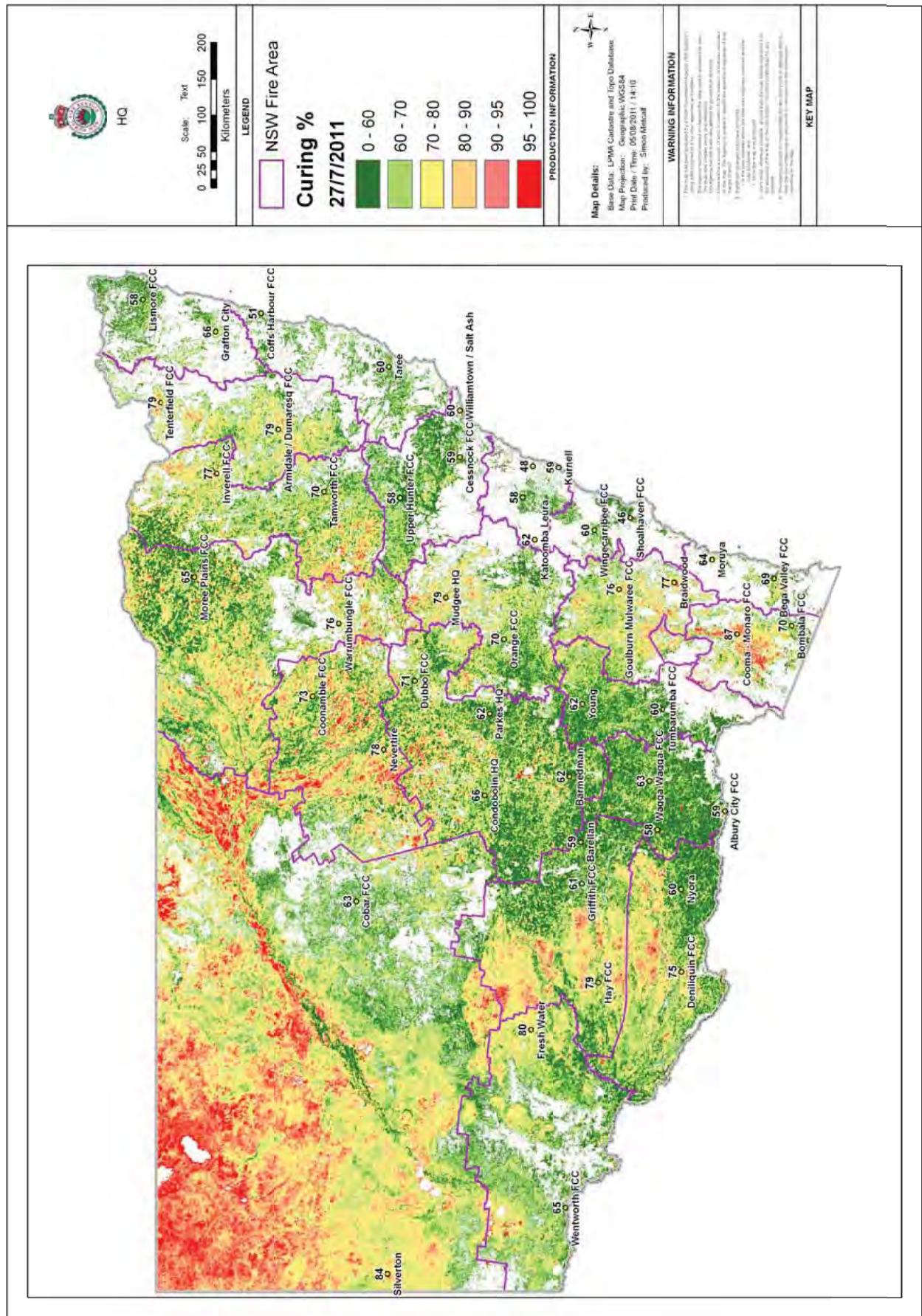
NDVI STANDARDISED ANOMALY July 2011



© Commonwealth of Australia 2011, Australian Bureau of Meteorology

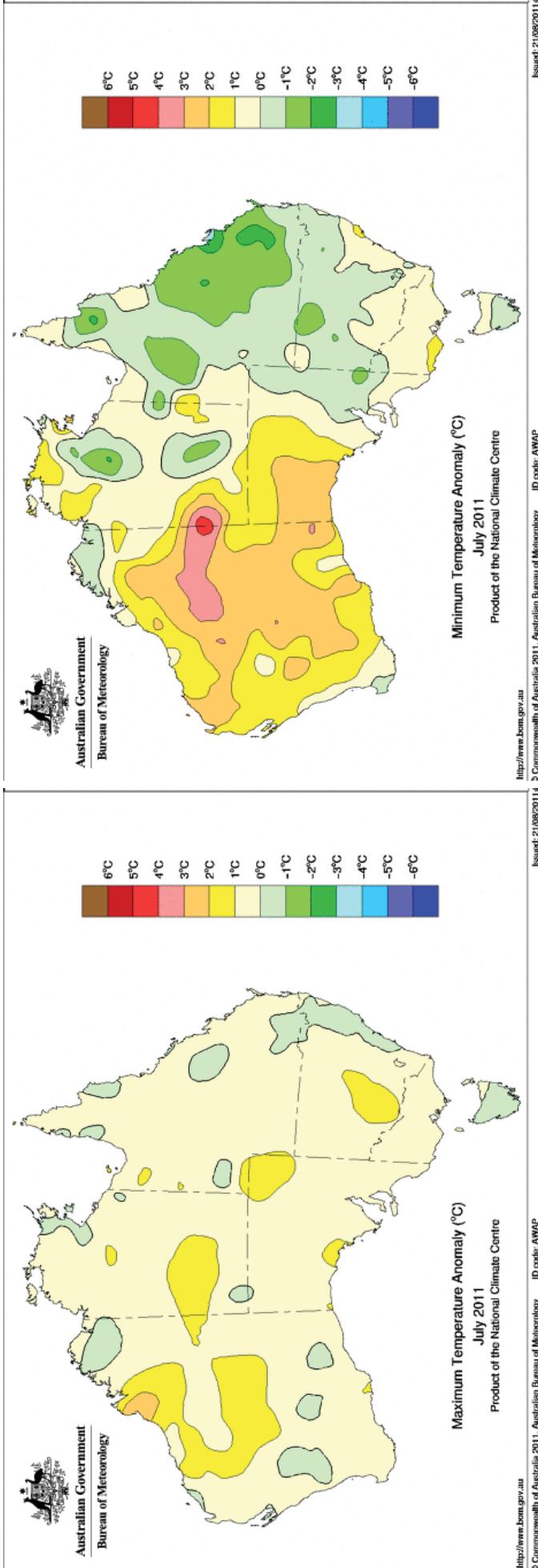
Issued: 01/08/2011 4

Curing as at 27 July 2011



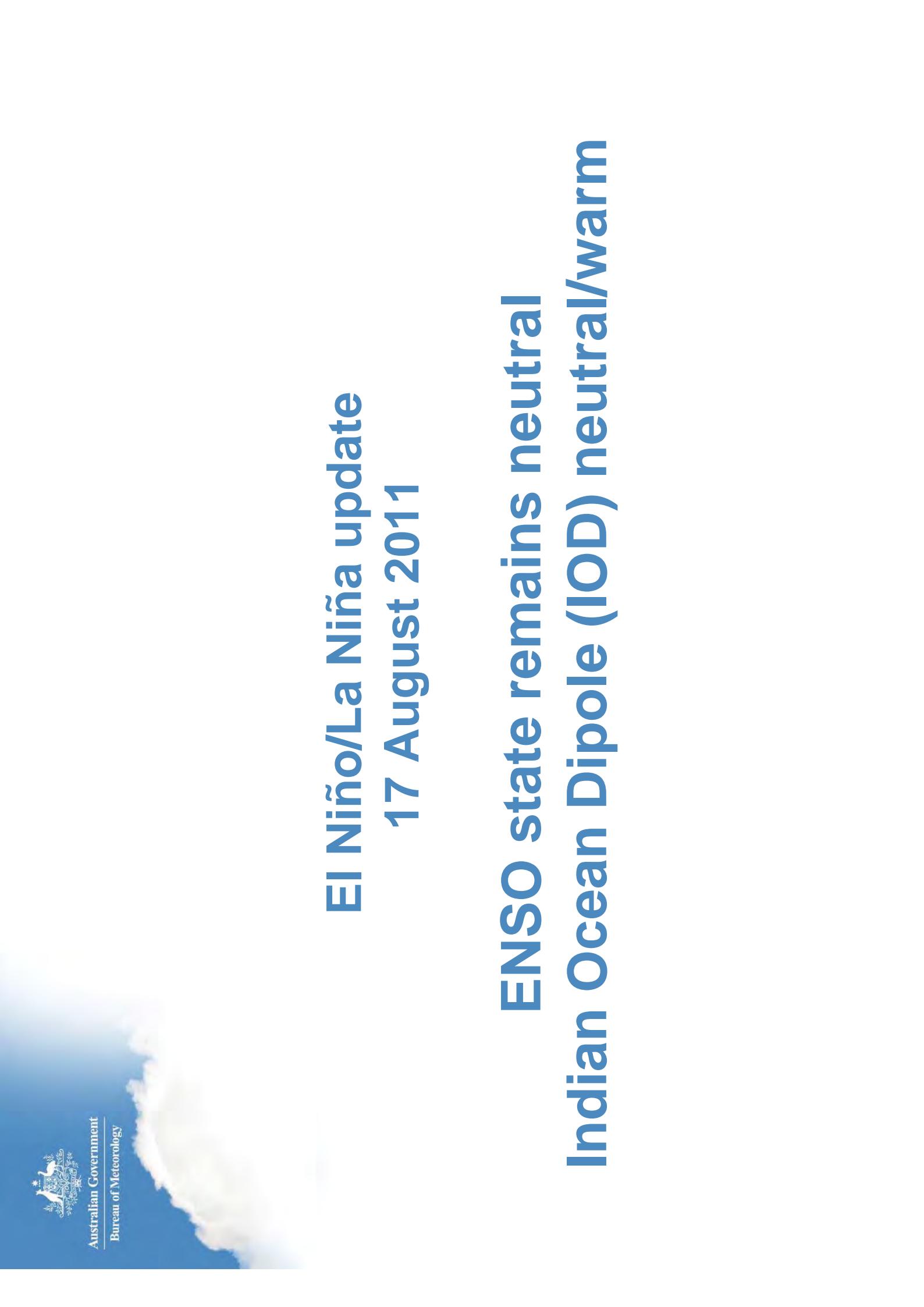
June temperature anomalies

Maximum temperature



Minimum temperature

- 0.4 °C above average Australia
- 0.1 °C below average NSW/ACT
- 0.6 °C above average Australia
- 0.6 °C above average NSW/ACT

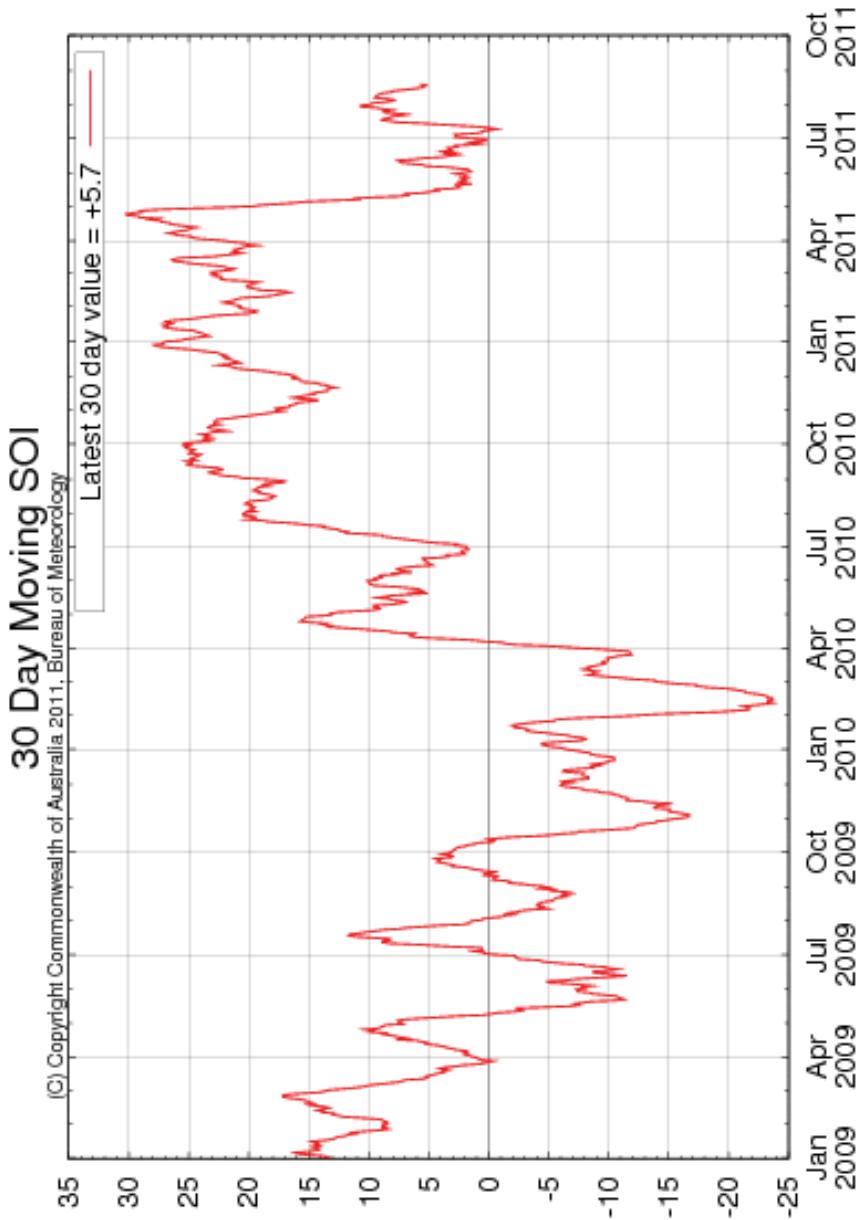


EI Niño/La Niña update

17 August 2011

**ENSO state remains neutral
Indian Ocean Dipole (IOD) neutral/warm**

Southern Oscillation Index

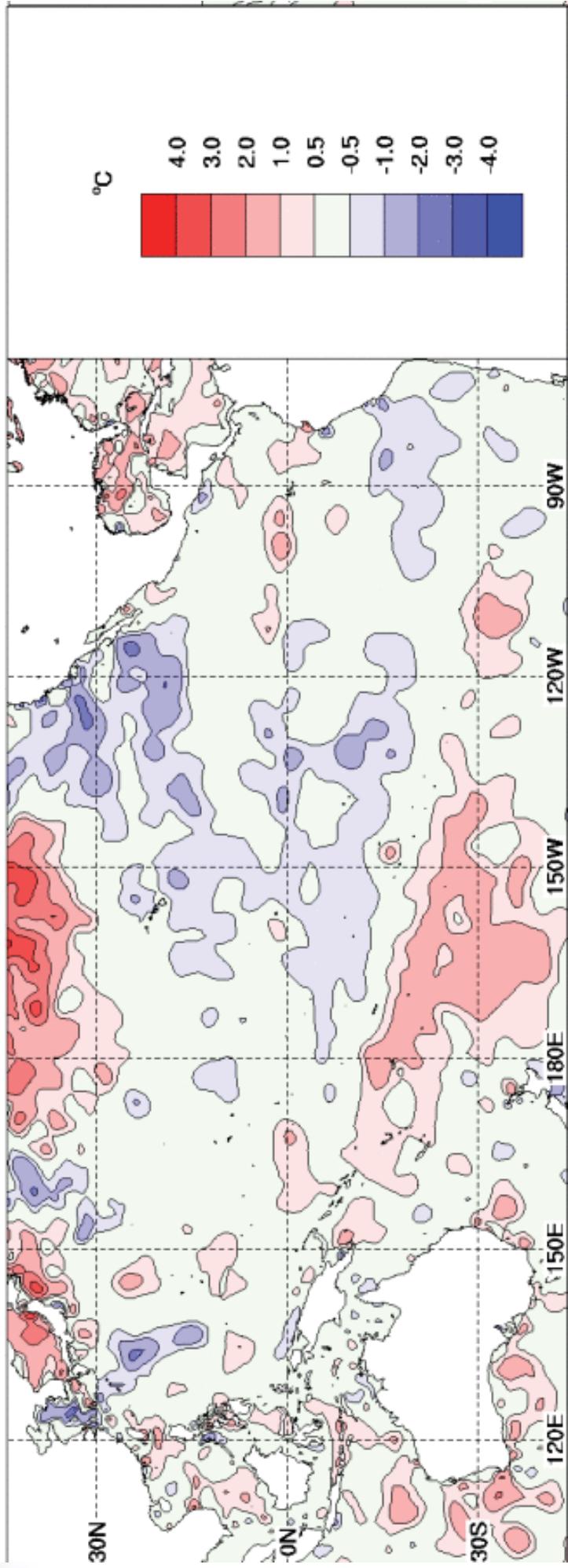


El Niño : SOI < -8

La Niña : SOI >+8

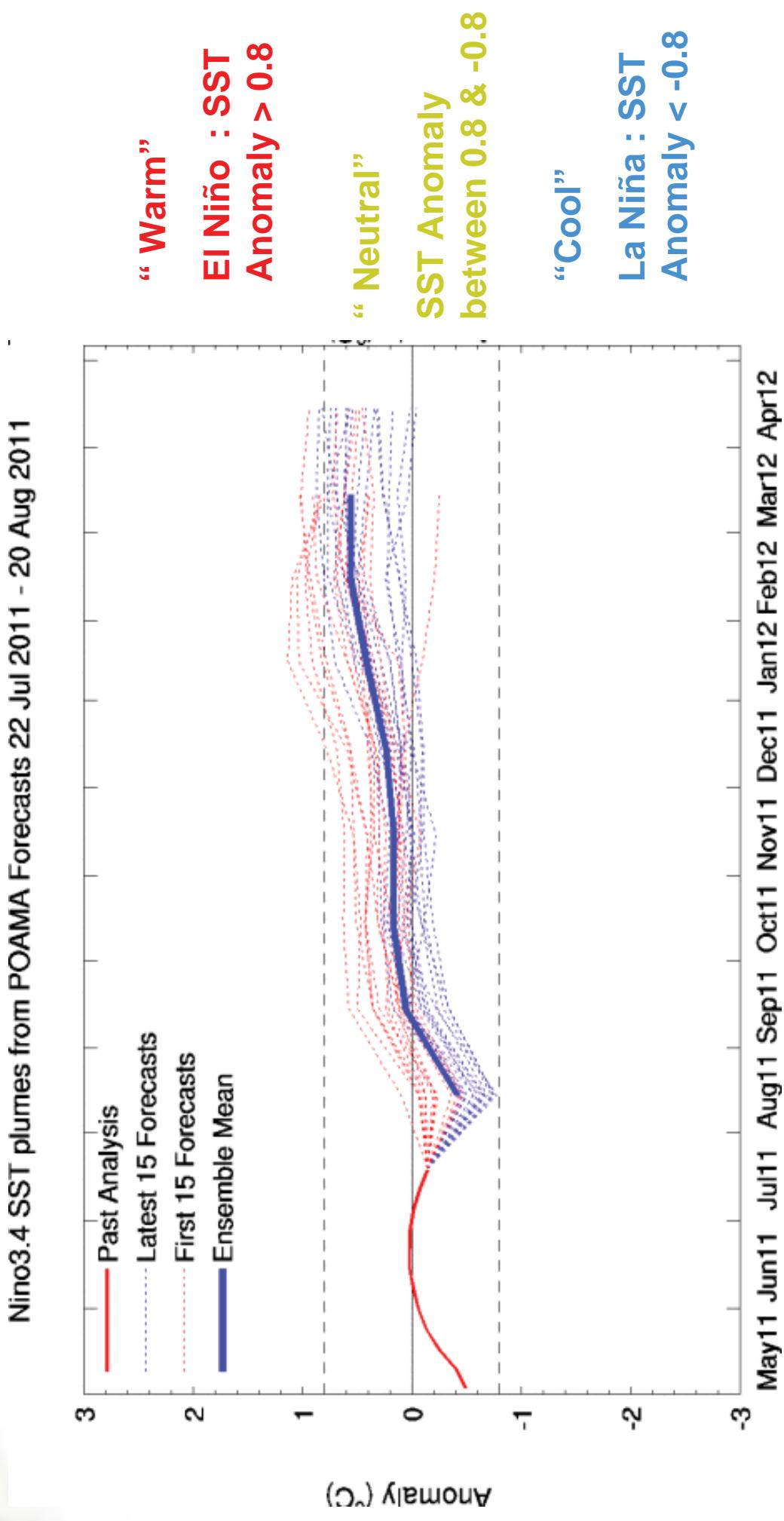
Pacific SST Anomaly

SSTA 1.0x1.0 NMOC OCEAN ANOMALIES (C) 20110808 20110814



- Neutral to weakly cool sea surface temperatures in the equatorial pacific.

ENSO forecast (POAMA model)



Model Outlooks: Niño 3.4

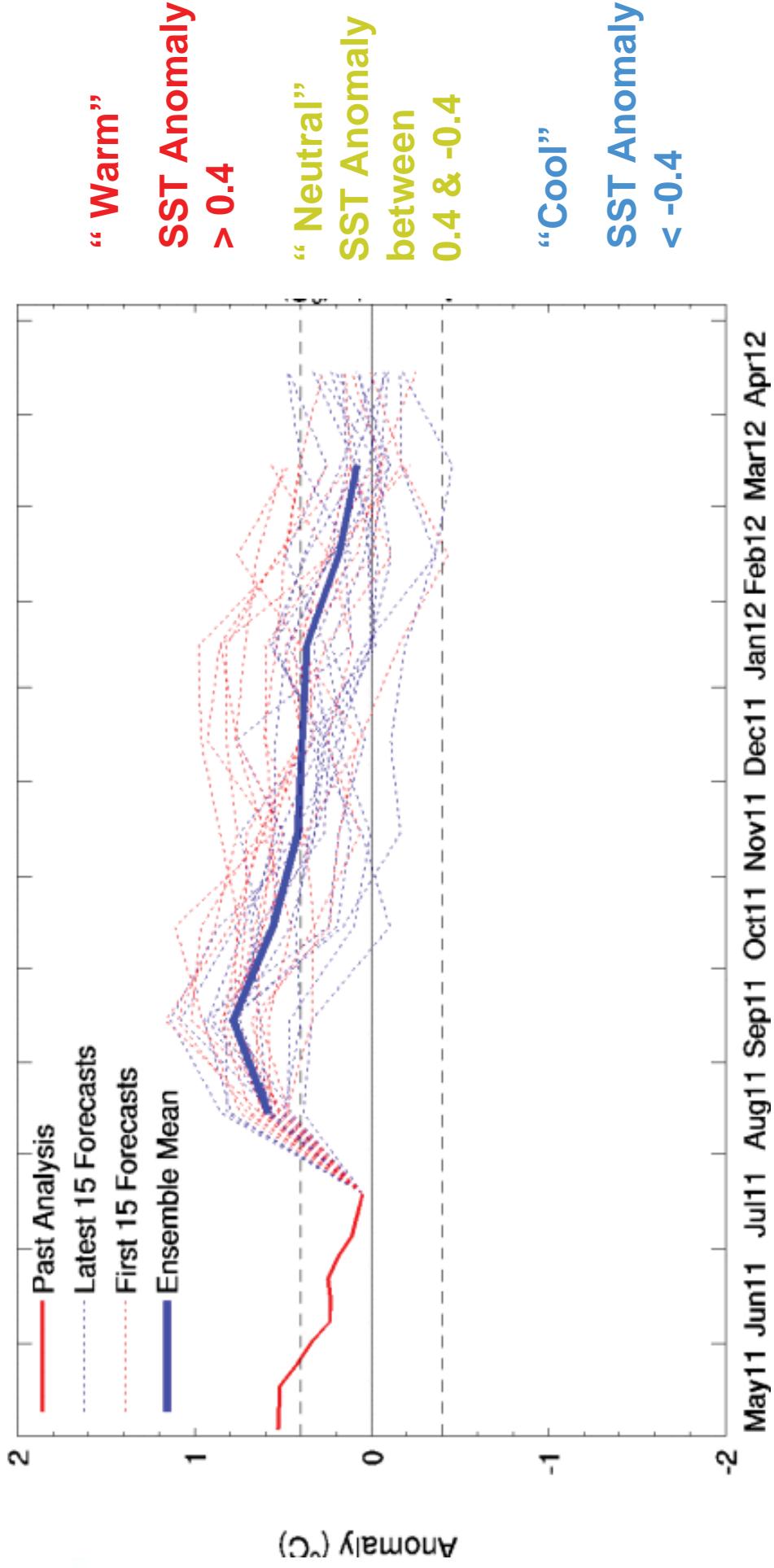
Neutral conditions expected to persist for spring, with continued neutral to weakly cool conditions most likely in summer.

MODEL / GROUP	Forecast Start Date	1-3 MONTHS (Sep 2011 to Nov 2011)	4-6 MONTHS (Dec 2011 to Feb 2012)
<u>POAMA</u> Australian Bureau of Meteorology	15 August	Neutral	Neutral
<u>POAMA-2 (Experimental)</u> Australian Bureau of Meteorology	1 August	Neutral	Neutral
<u>GloSea</u> UK Met Office	15 August	Neutral/Cool	Neutral/Cool#
<u>CFS</u> NCEP (US)	14 August	Neutral/Cool	Cool
<u>CGCMv1</u> [*] NASA Goddard GMAO (US)	1 August	Neutral	Neutral
<u>System 3</u> ECMWF (EU)	15 July	Neutral	Neutral/Cool#
<u>JMA-CGCM02</u> Japan Met. Agency	1 July	Neutral	Neutral#
<u>KMA-SNU</u> Korean Met. Administration	1 July	Neutral	Neutral
<u>BCC-CMA</u> BCC/CMA (China)	Unavailable	Unavailable	Unavailable

Forecast period ends in January.

IOD forecast (POAMA model)

IO Dipole SST plumes from POAMA Forecasts 22 Jul 2011 - 20 Aug 2011

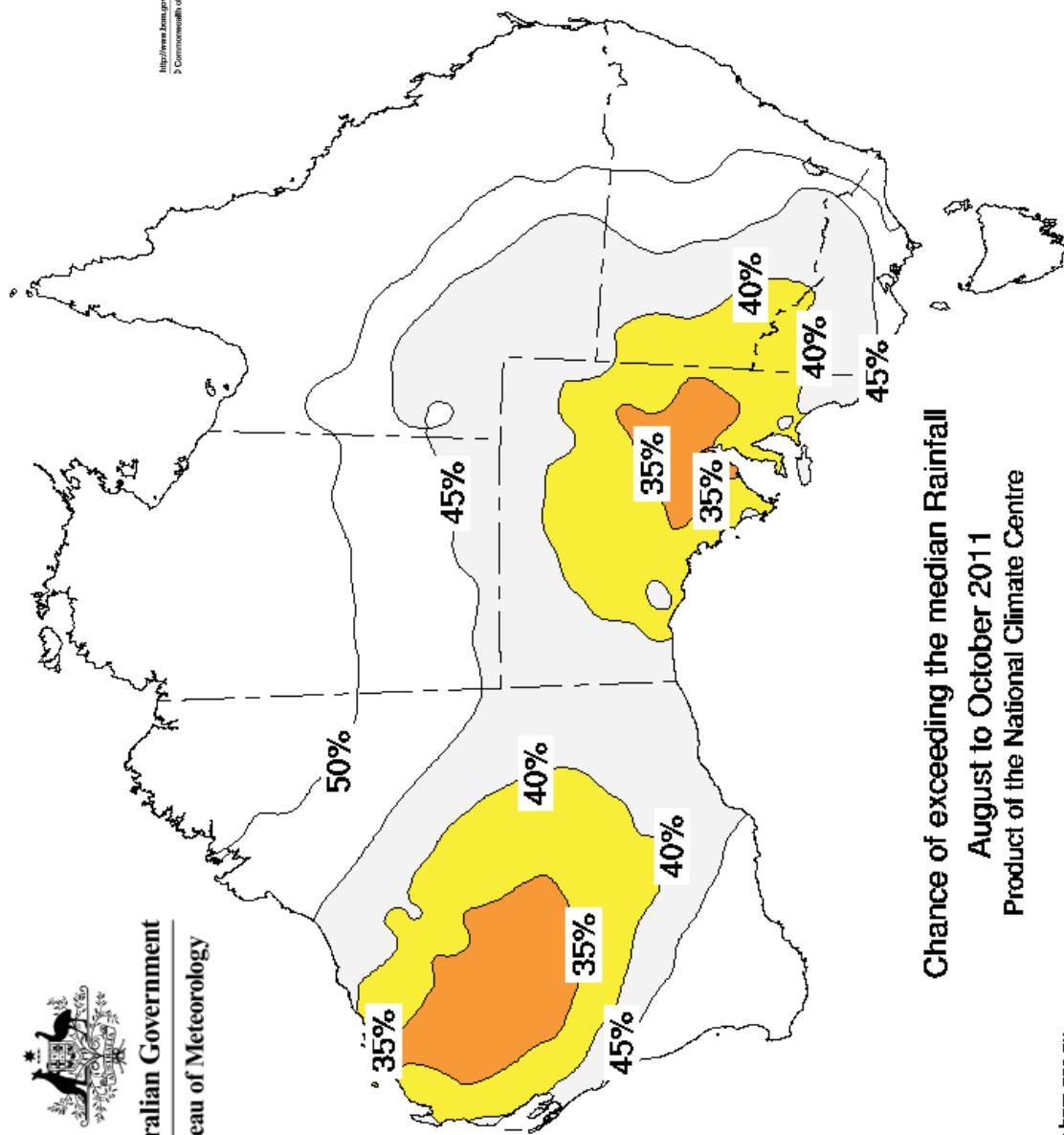


Seasonal Climate Outlook

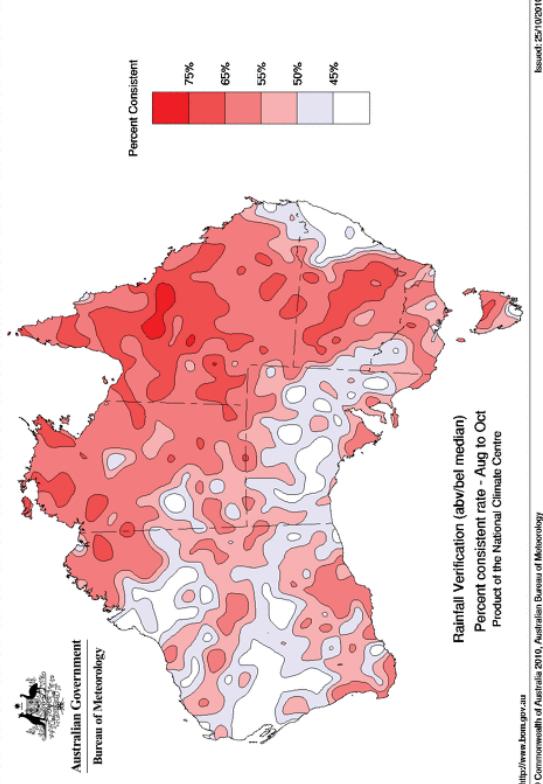
August to October 2011

Warm temperatures strongly favoured
Rainfall neutral to dry in west favoured

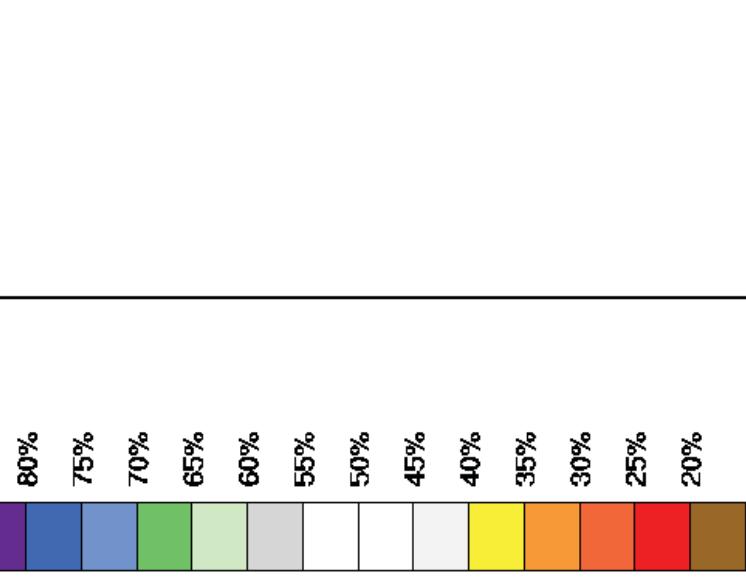
Rainfall



Chance of exceeding the median Rainfall
August to October 2011
Product of the National Climate Centre

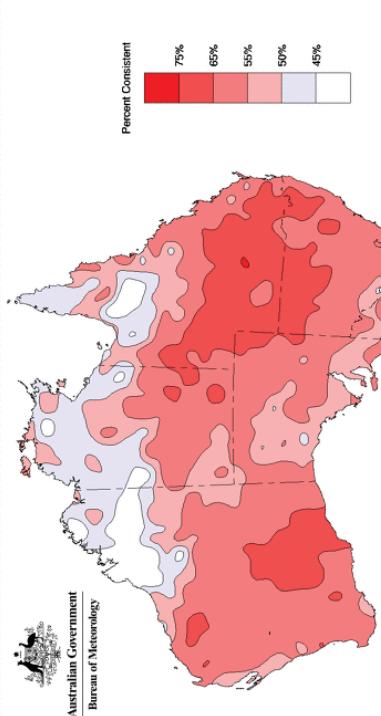


Rainfall Verification (above/below median)
Percent consistent rate - Aug to Oct
Product of the National Climate Centre
<http://www.bom.gov.au>
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Issued: 07/07/2011
Issued: 25/10/2010

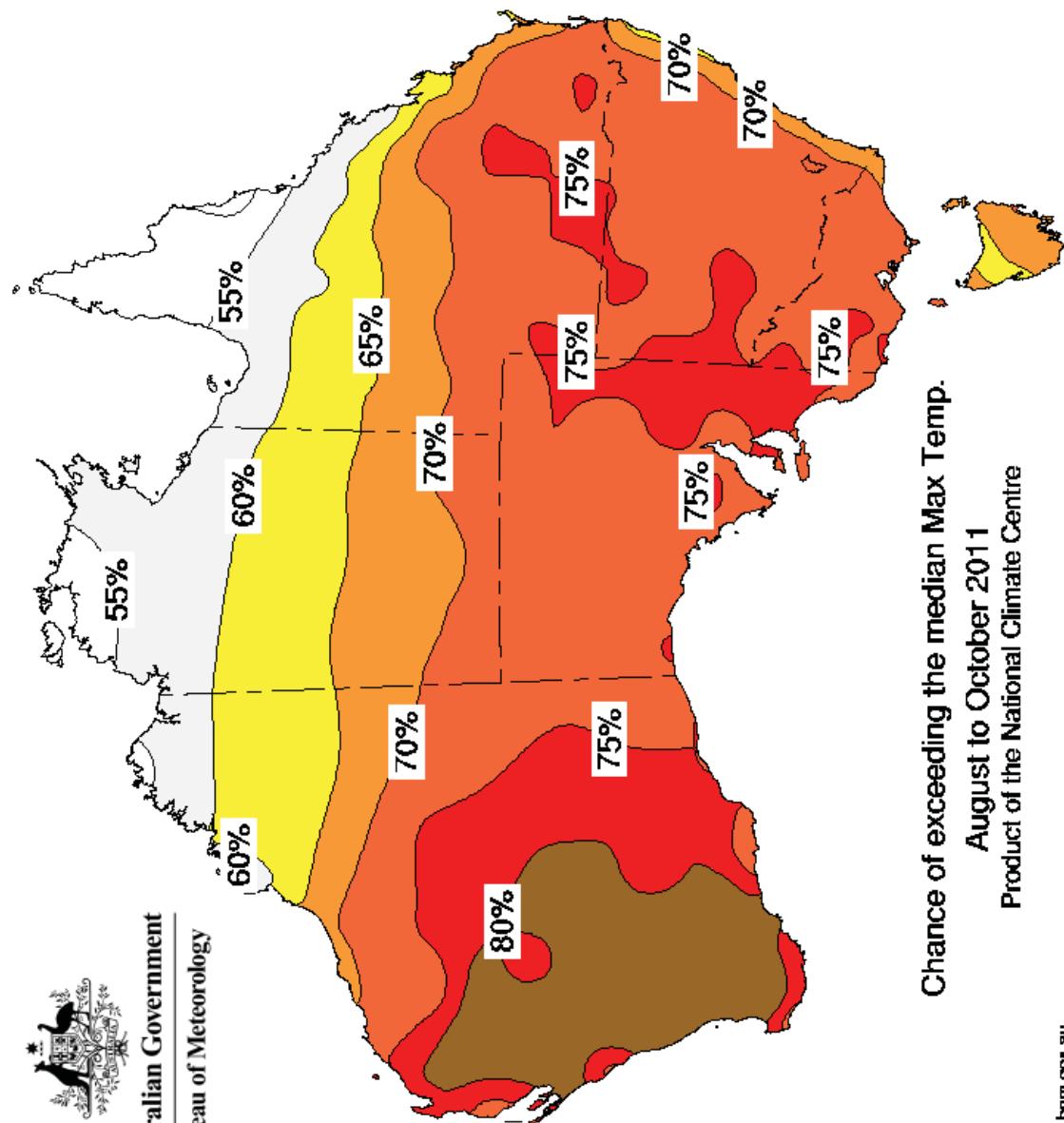
Max Temperature



Max Temp Verification (abv/bel median)
Percent consistent rate - Aug to Oct
Produced by the National Climate Centre

Issued: 25/09/2010

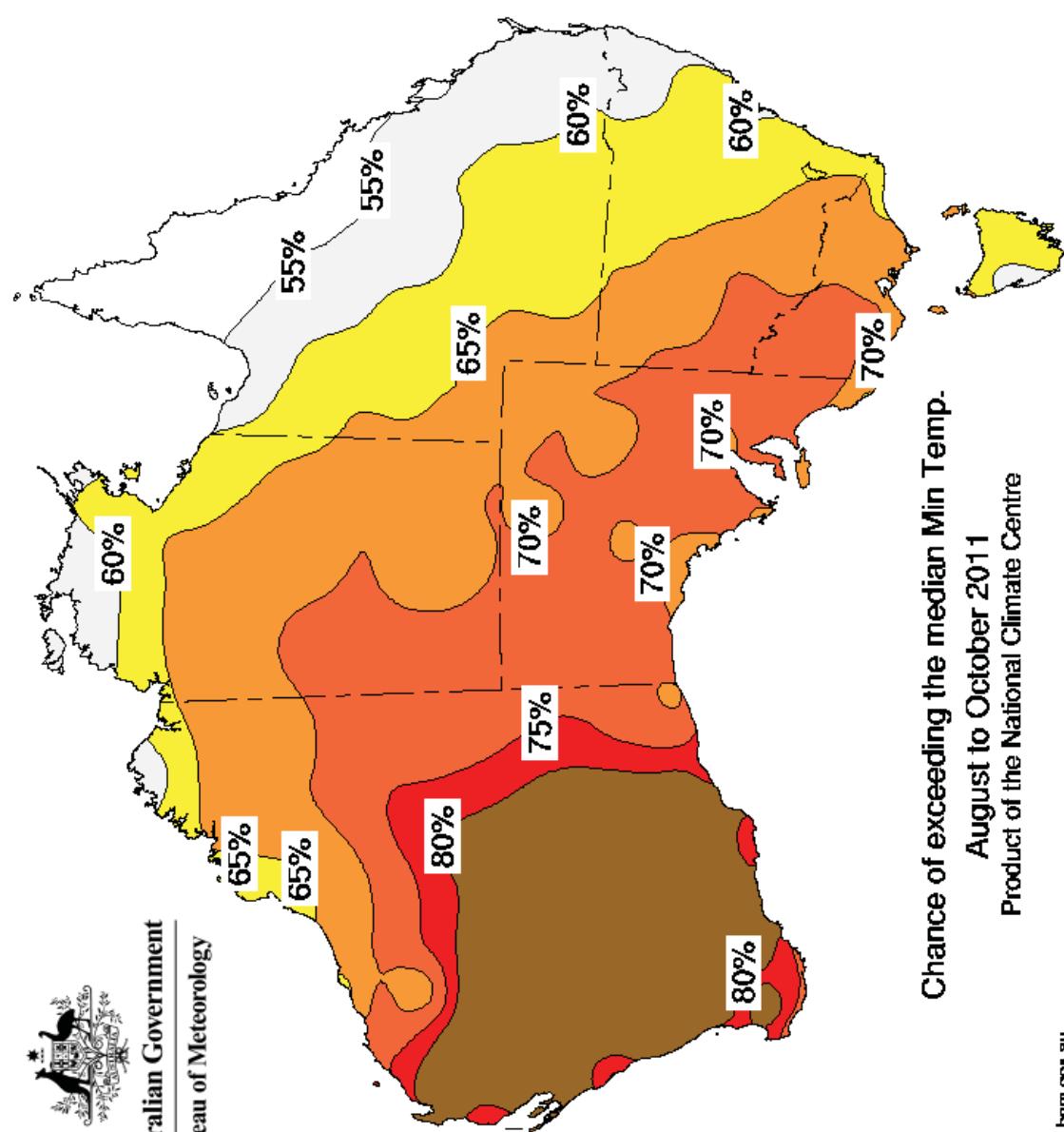
http://www.bom.gov.au
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Issued: 07/07/2011

http://www.bom.gov.au/climate/ahead/temps_ahead.shtml

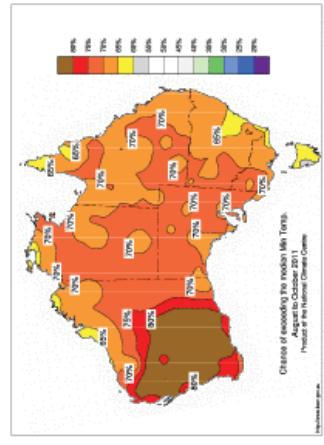
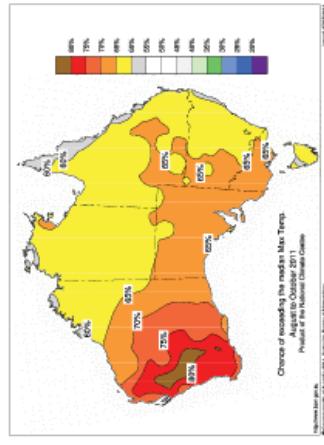
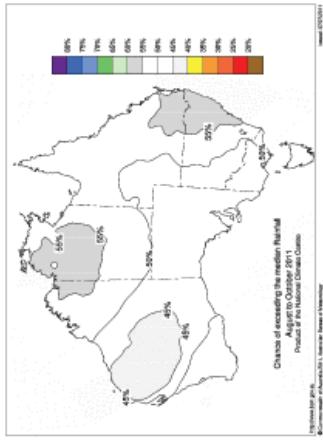
Min Temperature



Contributions

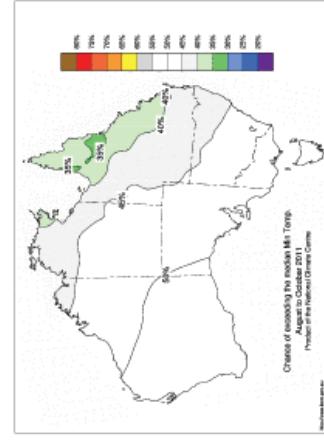
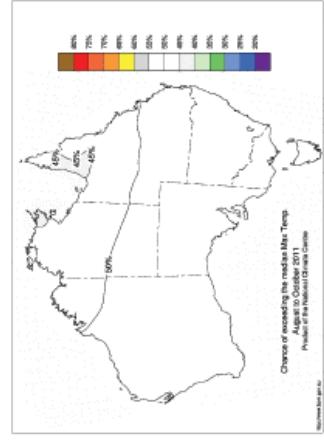
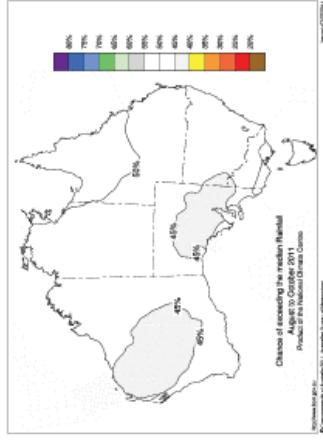


Indian Ocean (SST 2)



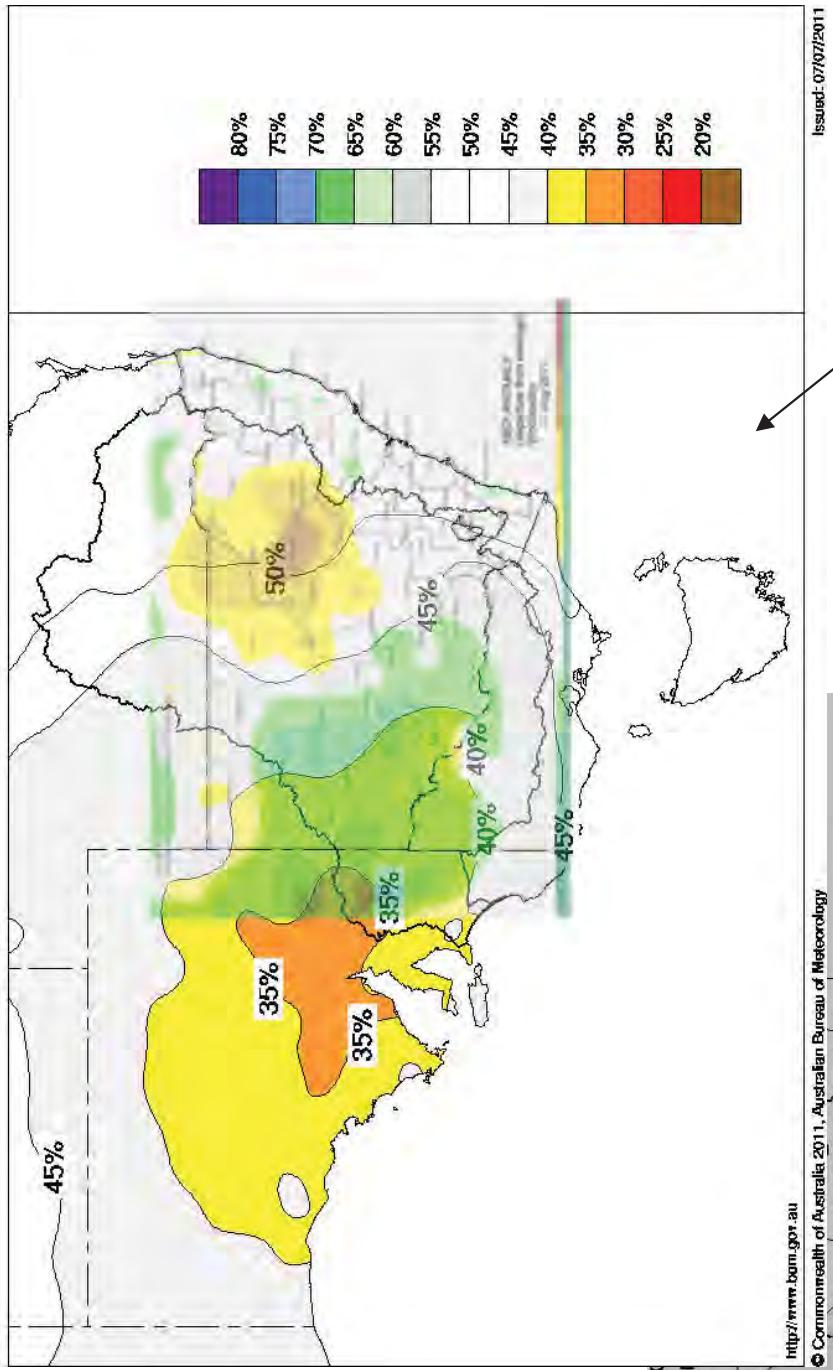
Rainfall

Pacific Ocean (Nino 3.4)

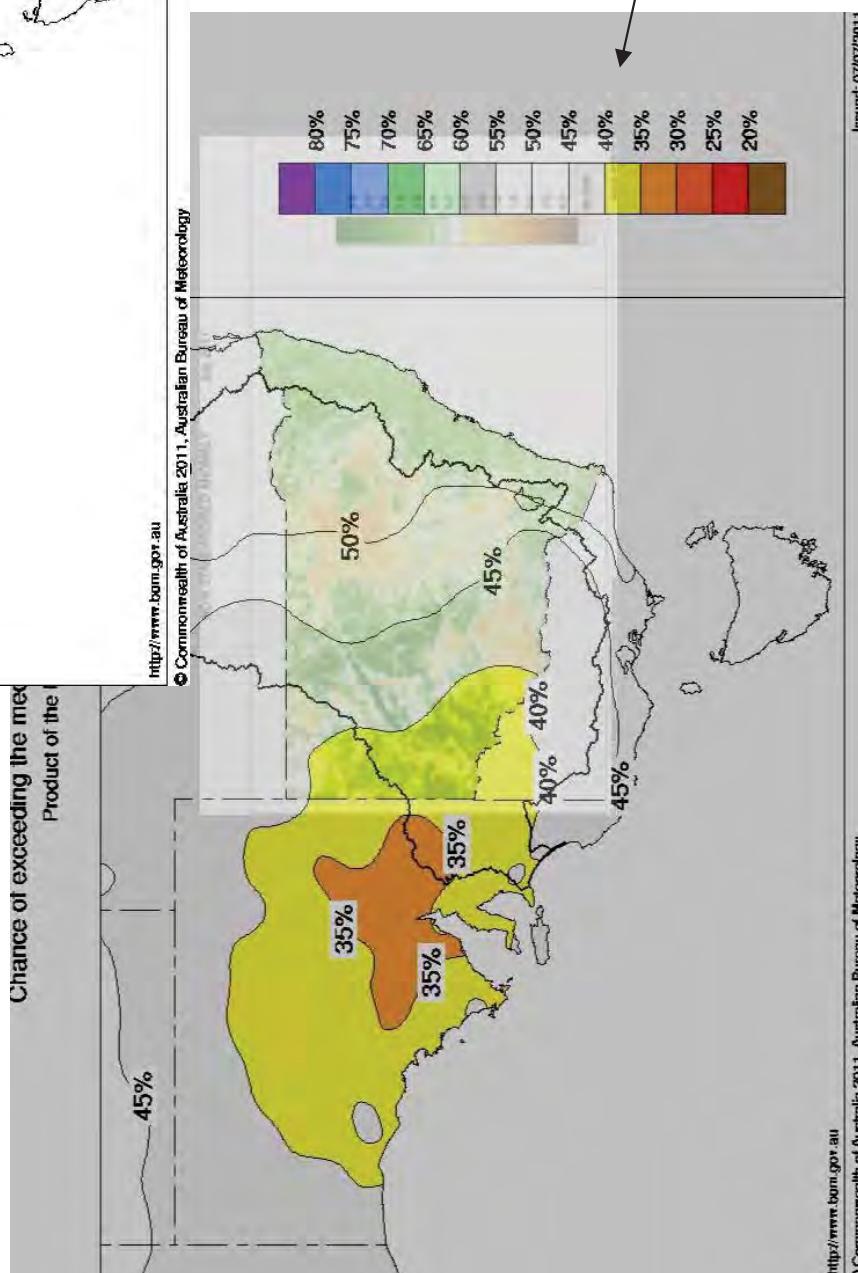


Max temp

Min temp



KBDI Anomaly overlayed with
Seasonal Rainfall Outlook
for Aug - Oct



NDVI Anomaly overlayed with
Seasonal Rainfall Outlook
for Aug - Oct

NSW/ACT

Above average rainfall over the state for much of the previous year has resulted in heavy continuous grass fuel loads through most areas west of the dividing range and the tablelands. Above average fire potential inland due to dry conditions in the last few months plus increased likelihood of drier than average outlooks for spring. Northern parts of the inland are expected to begin their fire season first as these areas are already quite dry. Southern parts of the inland (Riverina and South Western Fire Areas) are expected to follow. Coast and eastern ranges have received significant rainfall and given forecast average precipitation during spring the fire season is expected to be average.

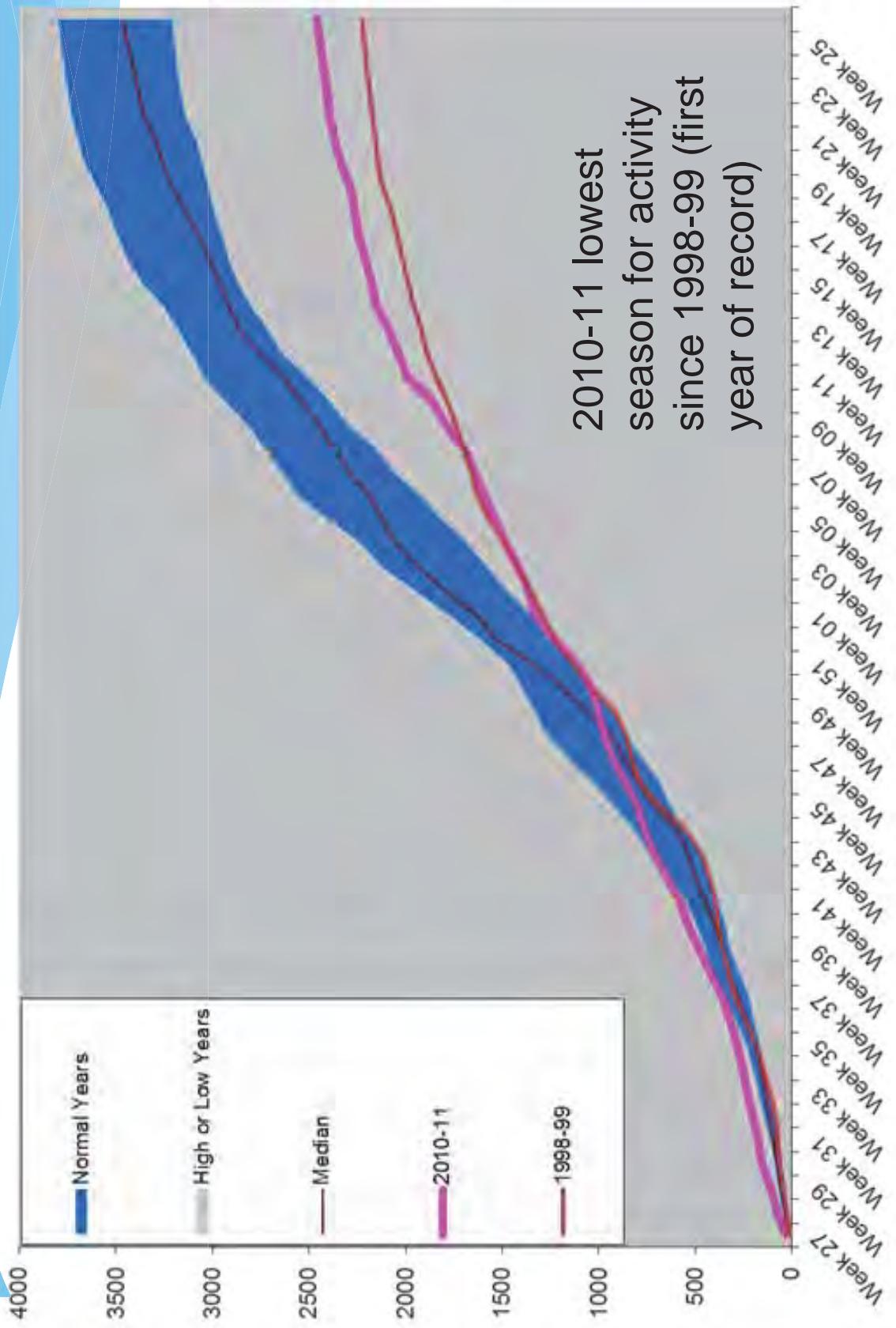
TASMANIAN SUMMARY

SBAW
Tasmania
2011 – 2012

Mark Chladil, TFS & Vicky Lucas, BoM
Report compiled August 24 2011

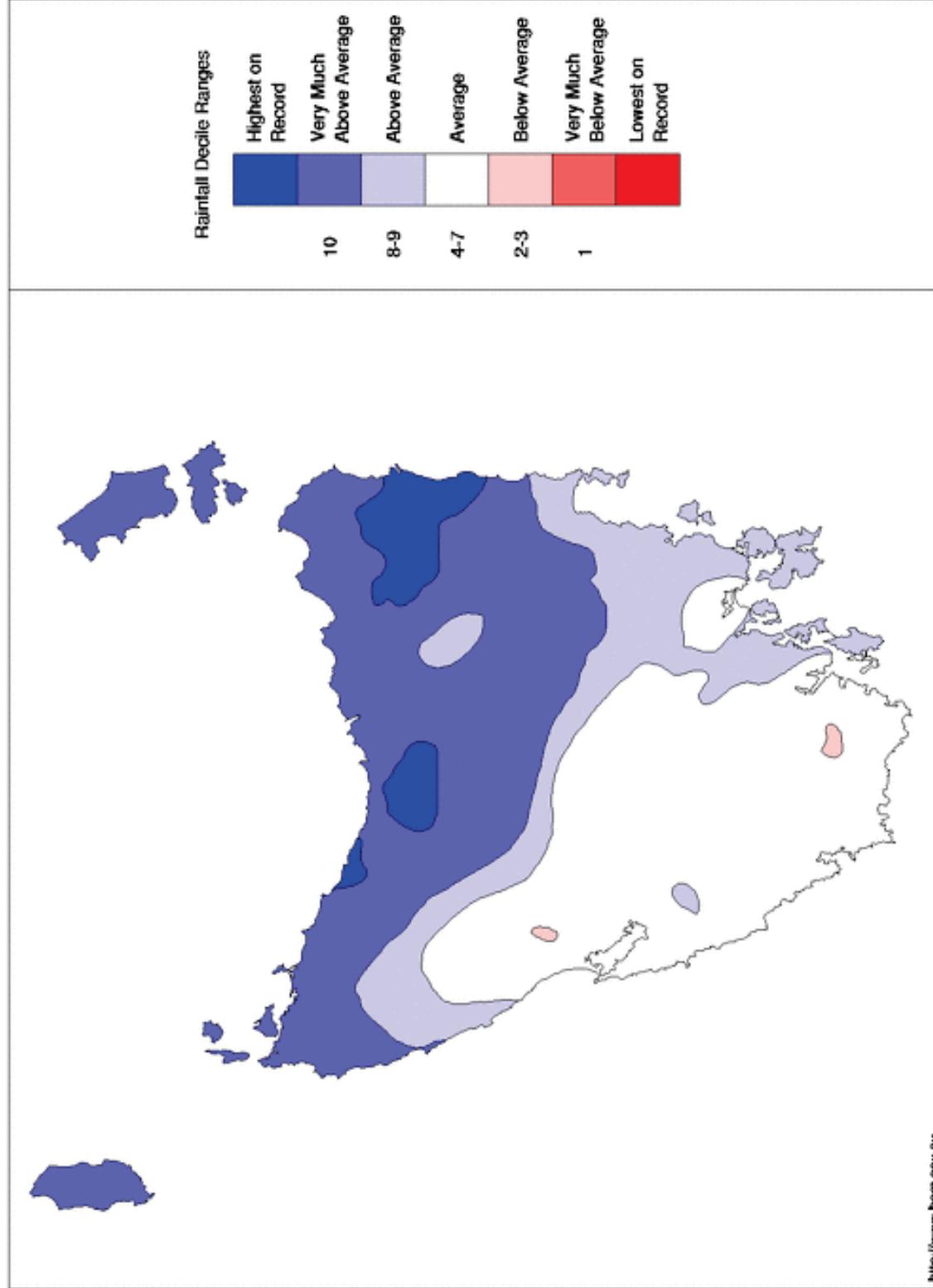
2010 - 2011

Fire Activity Season 2010-11



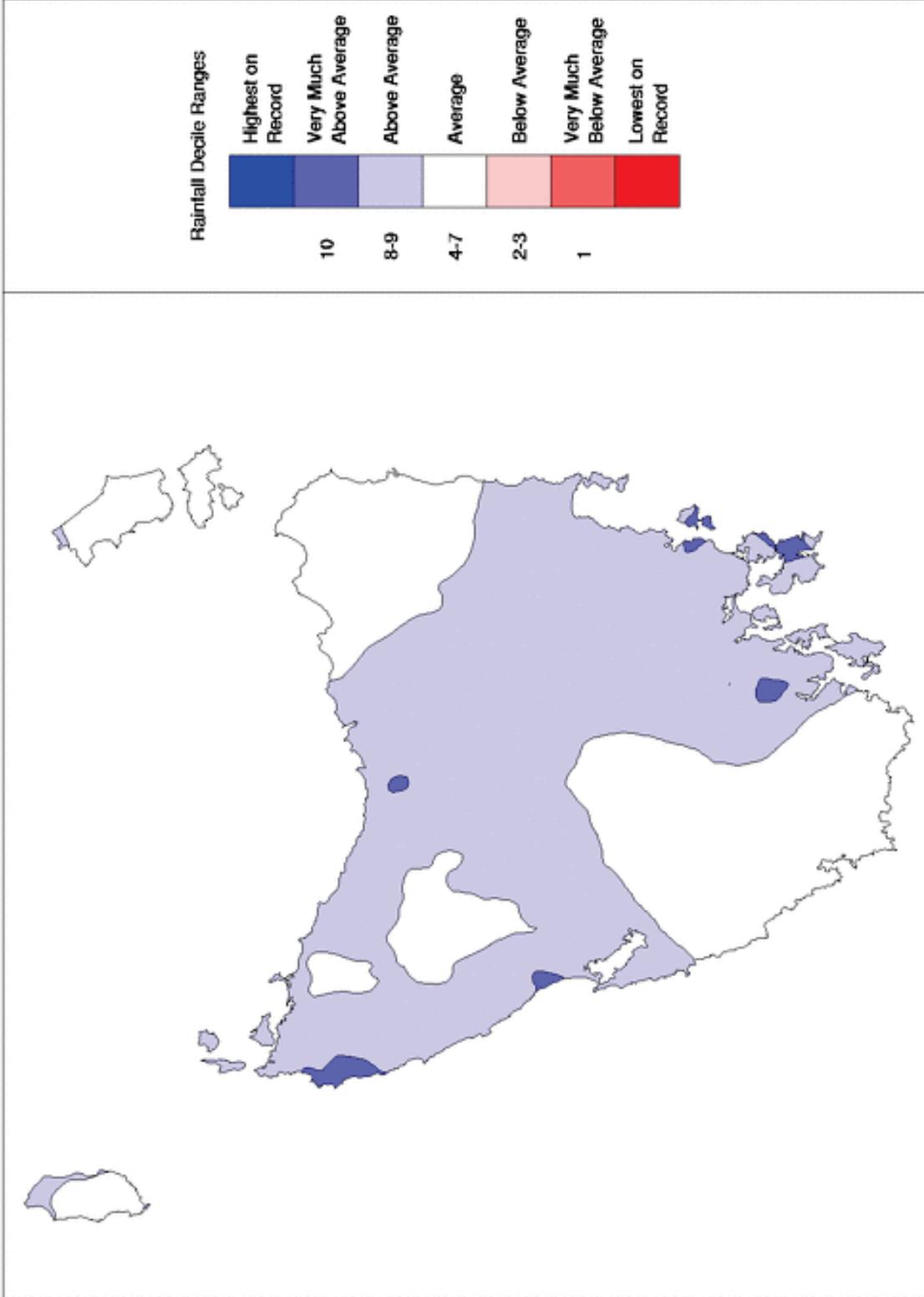
2010-11

Tasmanian Rainfall Deciles
1 October 2010 to 31 March 2011
Distribution Based on Gridded Data
Product of the National Climate Centre



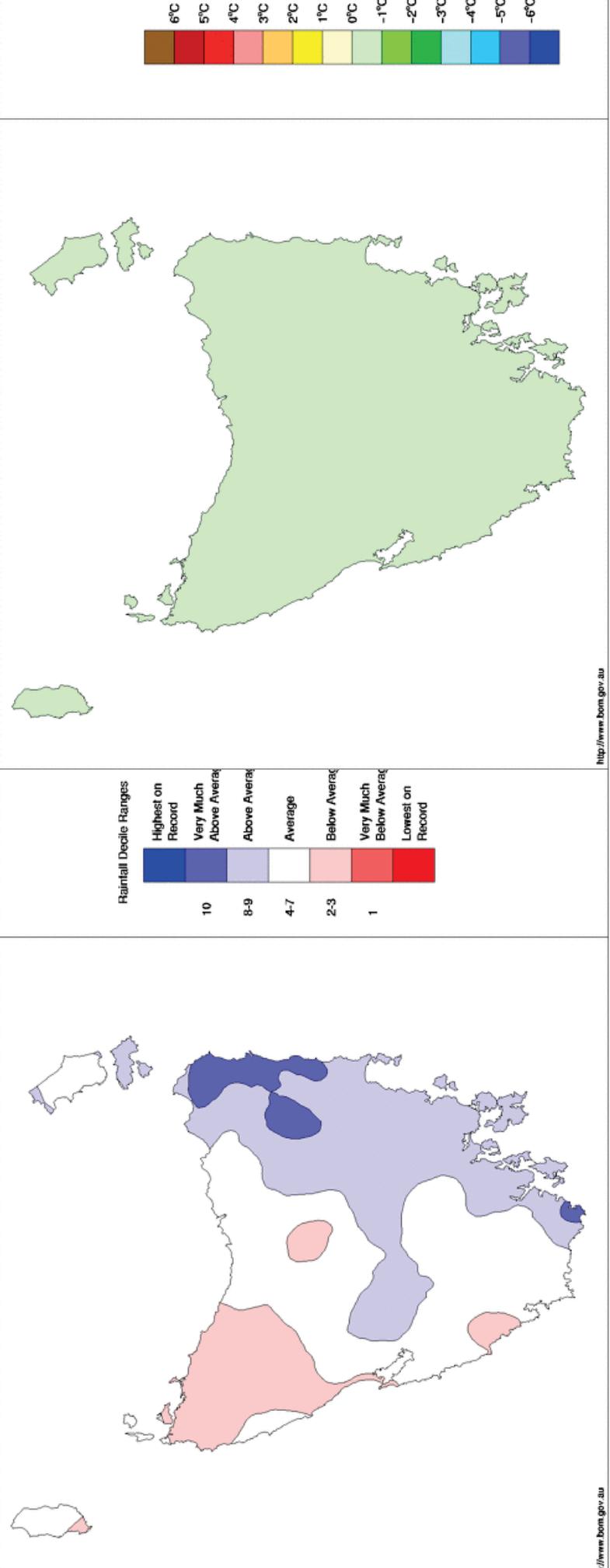
Analogue 1998-1999

Tasmanian Rainfall Deciles 1 October 1998 to 31 March 1999
Distribution Based on Gridded Data
Product of the National Climate Centre

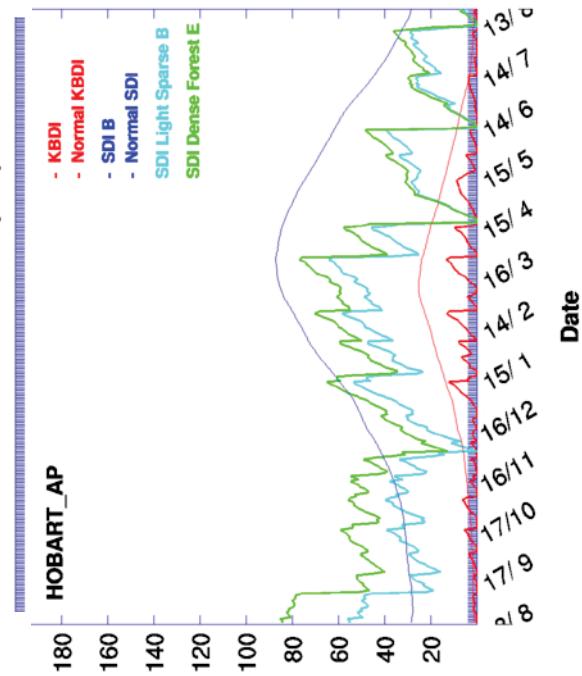
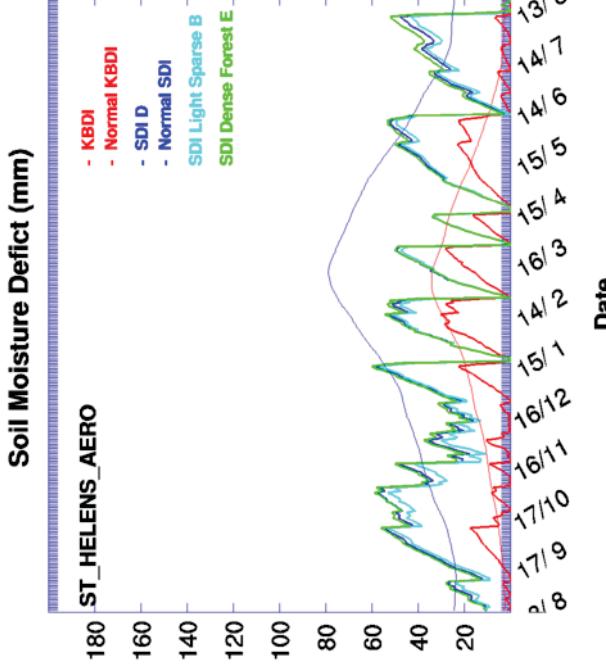
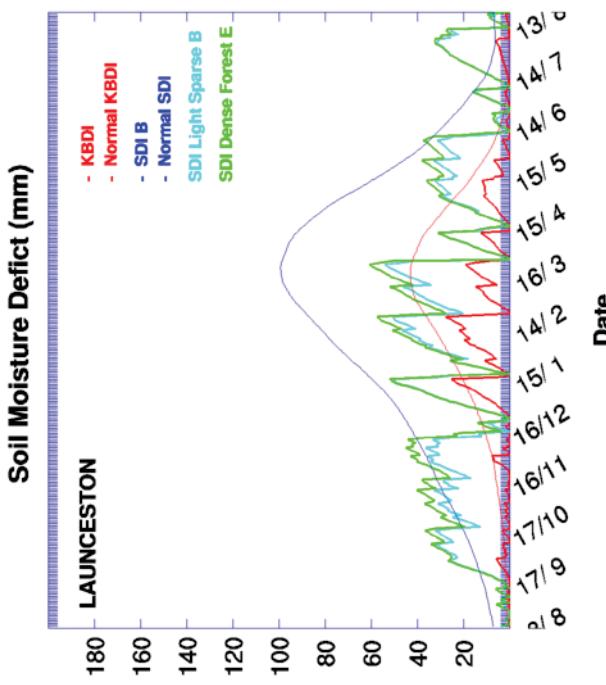


Six month deciles

Tasmanian Rainfall Deciles
1 February to 31 July 2011
Distribution Based on Gridded Data
Product of the National Climate Centre



Soil Moisture History

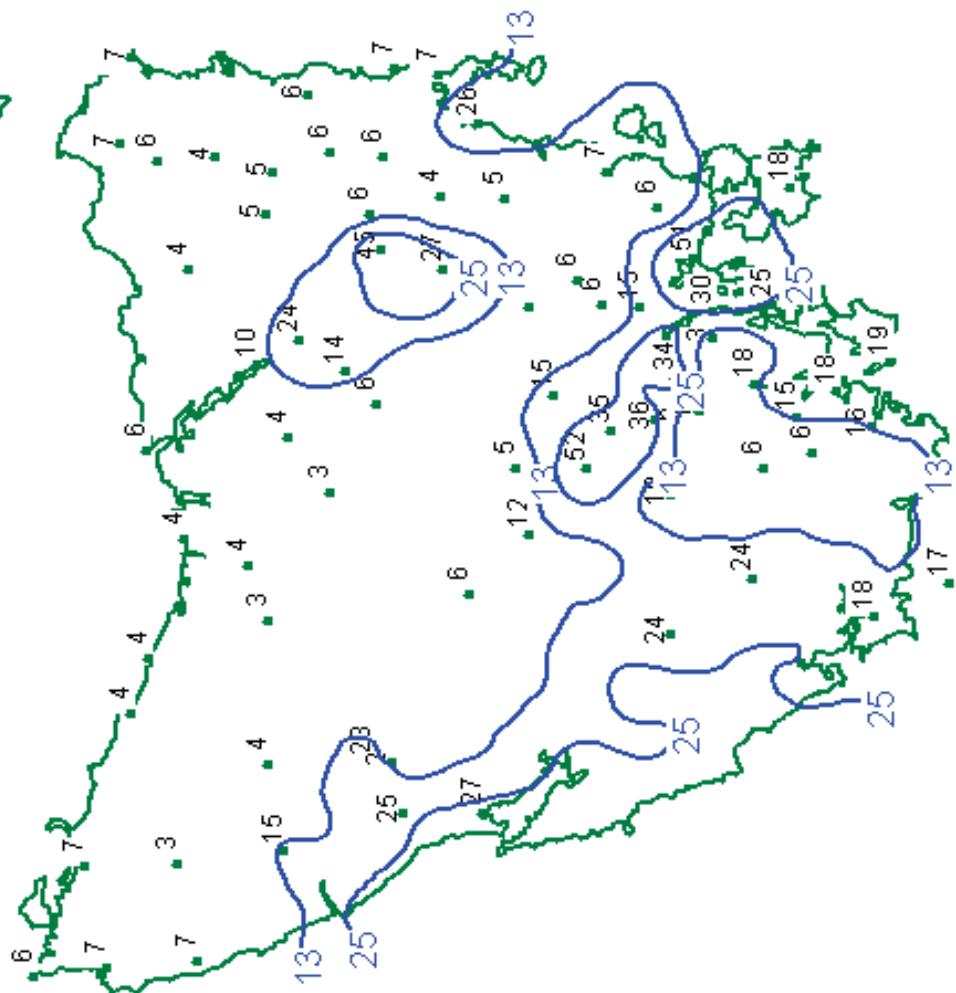


Current SDI

Australian Government, Bureau of Meteorology

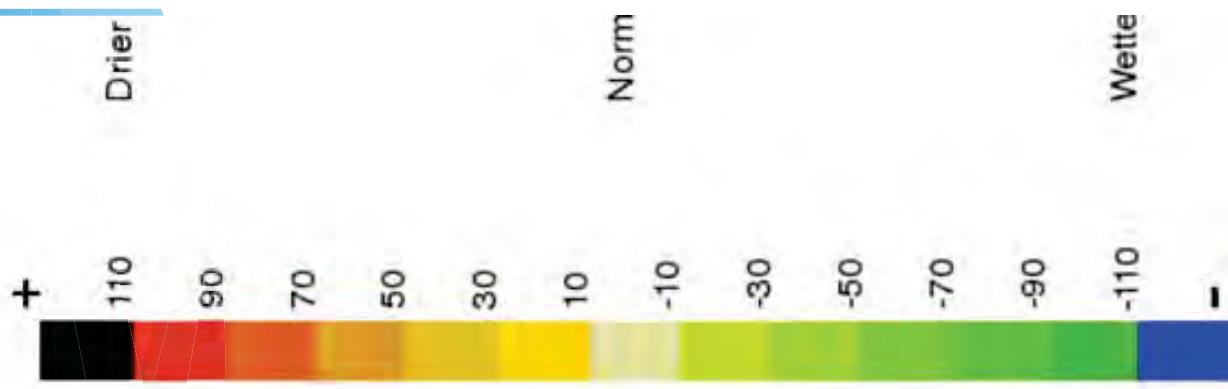
SOIL DRYNESS INDEX

(Heavy Fuel Dryness)
for 9am 22 08 2011



SDI Anomaly

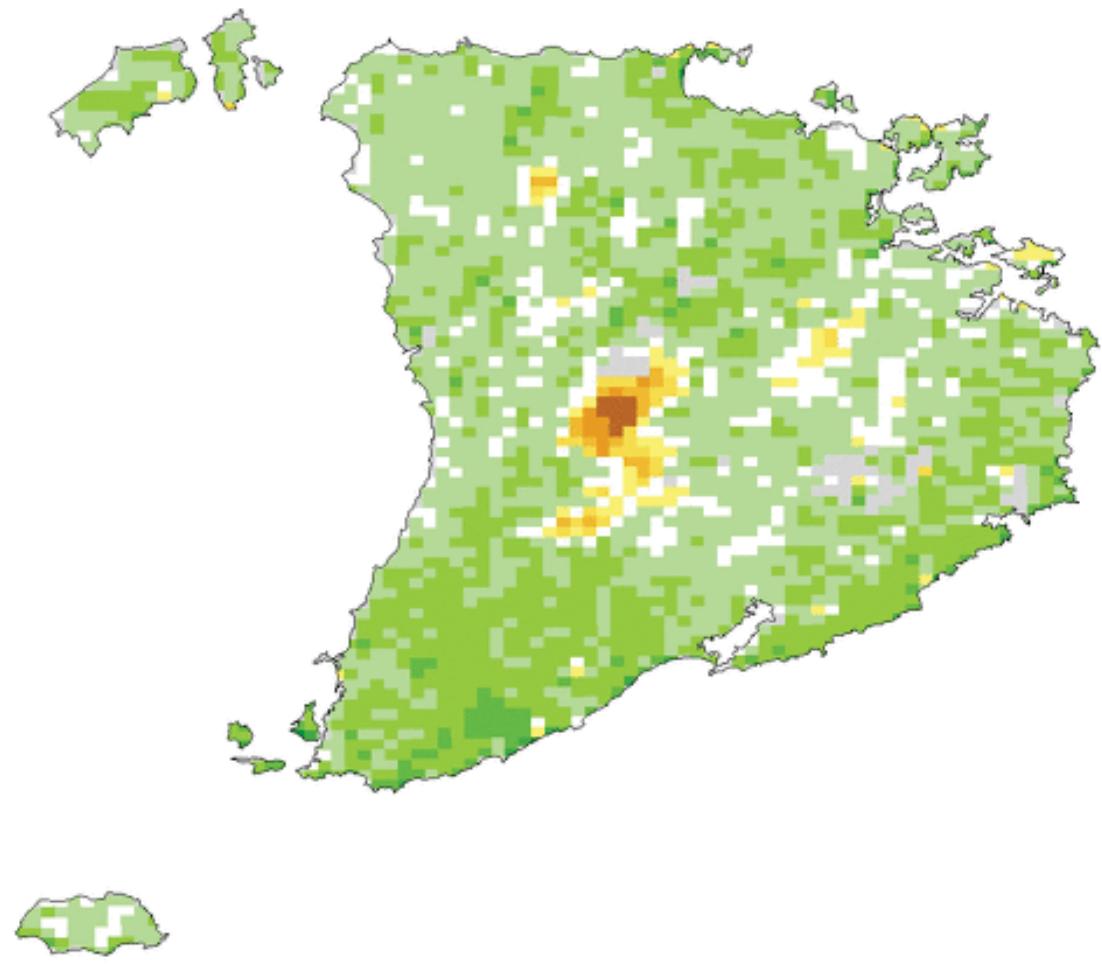
10km Grid SDI1 anom 20110822



NDVI

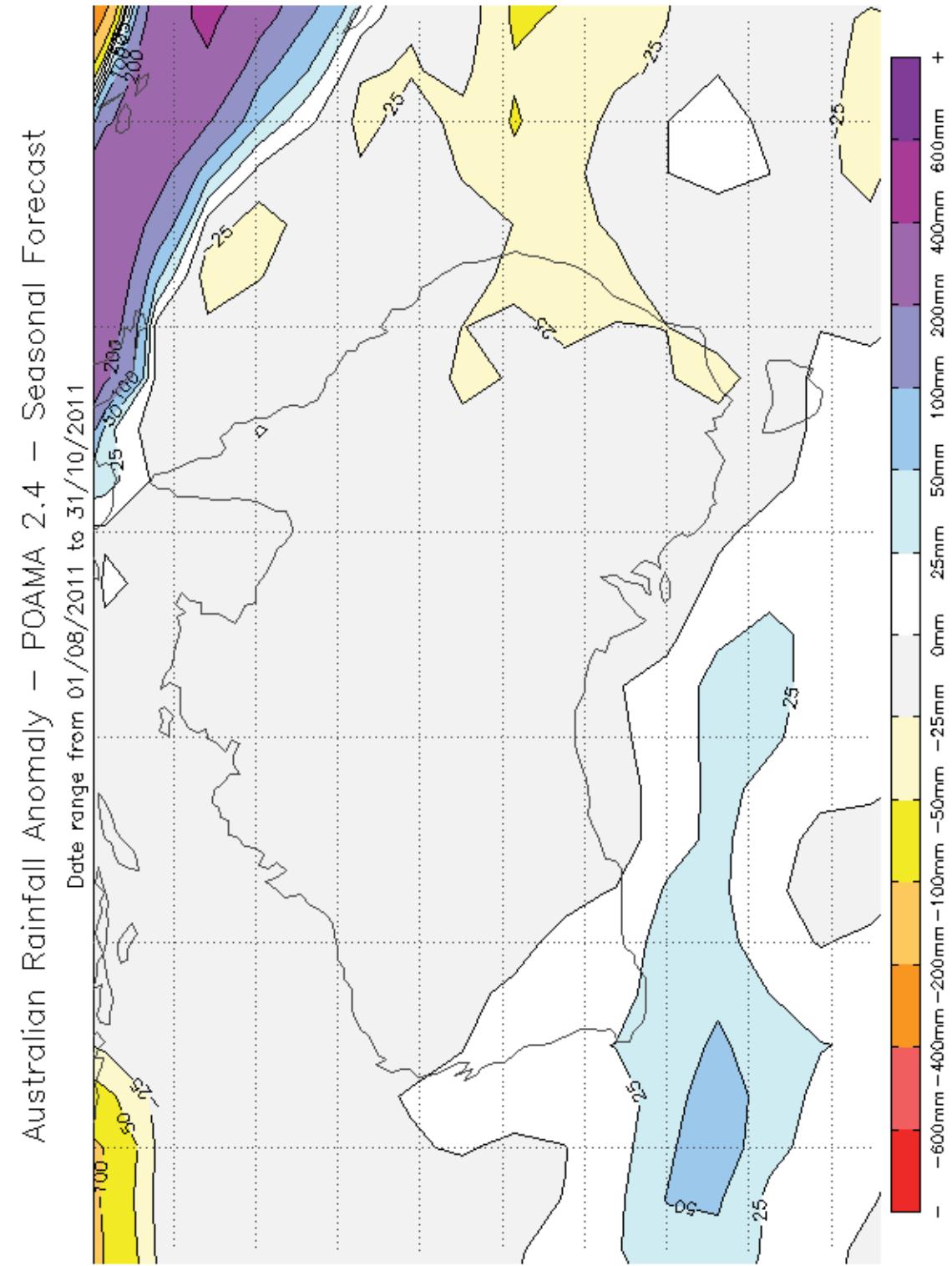
NDVI STANDARDISED ANOMALY

July 2011



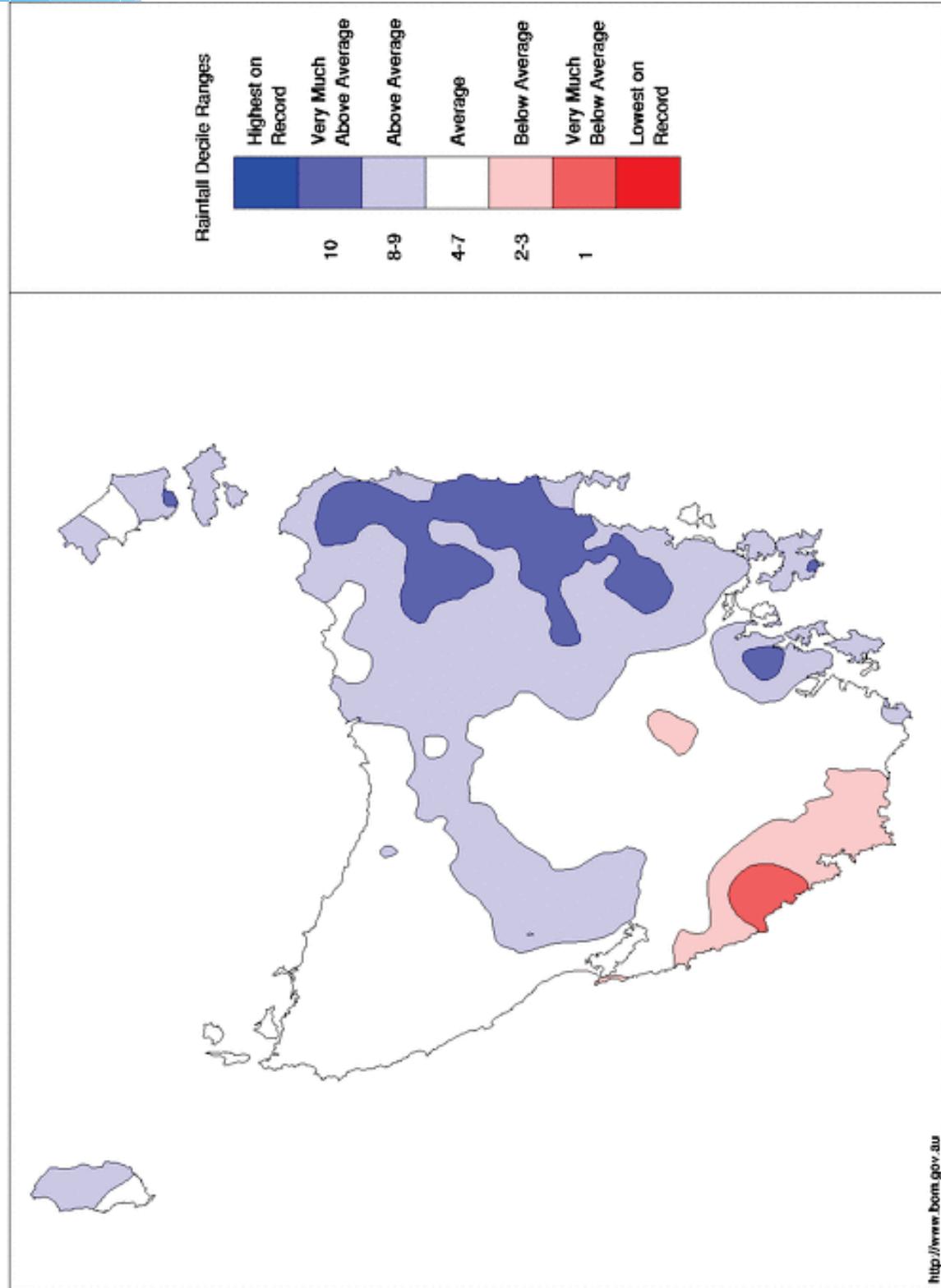
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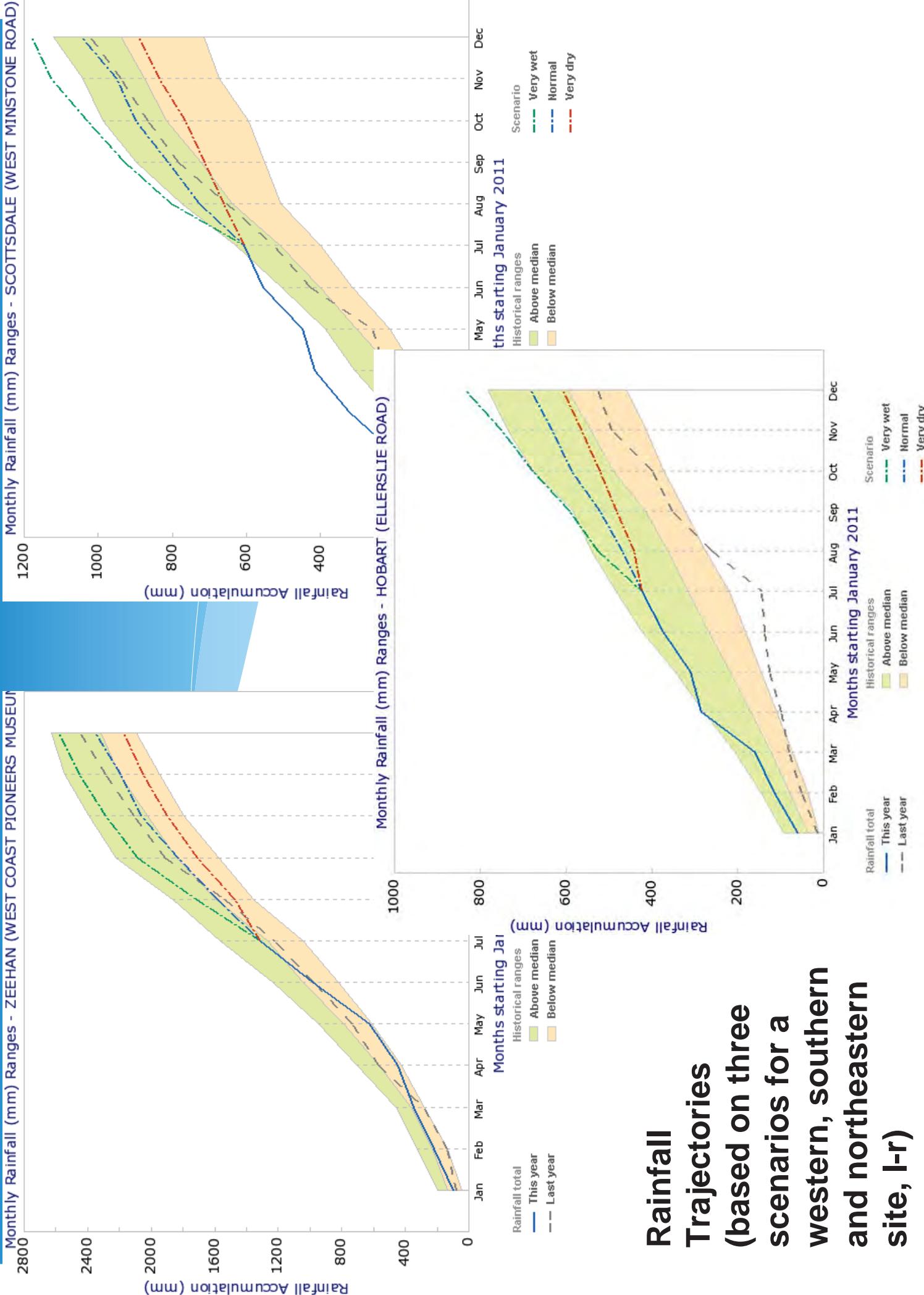
Experimental POAMA 2.4



Antecedent Rainfall

Tasmanian Rainfall Deciles 1 August 2008 to 31 July 2011
Distribution Based on Gridded Data
Product of the National Climate Centre





**Rainfall
Trajectories
(based on three
scenarios for a
western, southern
and northeastern
site, l-r)**

Fire Season 2011 – 2012

Situation at August 24 2011

- Average in the south, average to moist in the north, dry in the southwest

Outlook

- No signal for above or below average spring rains
- Some likelihood of above average moisture during summer

Fire Season 2011 – 2012

Expectation

- Difficult season in north due to grass fuel loads and continuity (once cured).
- Reduced planned burning window in north.
- Normal season start in south, late start in north

Potential

- Below normal potential in the northeast for Sept-Nov, normal elsewhere.
- Normal or above normal potential in Dec-Feb in northeast, normal elsewhere.

Tasmanian SBAW (three lines) Summary 2011-2012 (compiled August 24 2011)

Below normal fire season potential is expected in the northeast up until the end of November. Normal fire season potential is expected for the rest of the State. Grass fuel curing may increase the fire potential in the north later in the season. Below average moisture conditions persist in the southwest.

Statewide Overview (text for report)

Moisture conditions are dry in the southwest but elsewhere conditions are average or above average. Grass fuel loads in many areas are continuous and high. Curing of these grass fuels should commence normally in most areas but will be delayed in the northeast. The fire potential outlook for the three months from September to November 2011 indicates normal potential except for the northeast which is very moist.

Fire potential significantly increases when fully cured grass fuels provide local fuel continuity between other fuels such as forests and woodlands. Summer bushfire potential will be driven by the spring rainfall pattern which will drive both the timing of the season and the locations of either accelerated or delayed curing and/or drying.

The current dryness in southwest Tasmania has the potential to burn peat and threaten alpine communities and will reduce the potential window for planned burning. Similarly the window for planned burning in the north will be delayed and may also be reduced.

Regional Breakdown

Sub-region	Rainfall	Fuel	Near future SDI	High Risk period	Other
Northeast	Above average rainfall	Heavy fuels wet; fine fuels wet; grass fuels wet and growing	Subsoil wet; surface wet	JFM	Below Normal Potential Late start due to rains and delayed curing. Grass fuels will have above normal fire potential once cured. Planned burning will be delayed.
North and Northwest Coast	Average or higher rainfall across north	Heavy fuels wet*; Fine fuels wet; Grass fuels still growing	Subsoil wet; Surface wet	JFM	Normal Fire Potential Fire season may be delayed in grass fuels while forest and scrub fuels will be normal.
South	Average rainfall	Heavy fuels partly wet*; Fine fuels wet	Subsoil partly wet; Surface wet	DJFM	Normal Fire Potential Long term antecedent rainfall deficits have been reduced. Season timing should be normal.

Southwest	Southwest rainfalls have been below normal	Heavy fuels partly wet*; Fine fuels partly wet; Moorland fuels dry	Subsoil at least partly wet; Surface dry	DJFM	Normal Fire Potential Moorlands may have an early season but normal potential. Surrounding forests and scrub will be normal although the SDI may be under- estimated below these fuels. Planned burning potential reduced on peat soils.
*Subject to Field Verification					

WESTERN AUSTRALIA SUMMARY



Australian Government
Bureau of Meteorology



Government of Western Australia
Fire & Emergency Services Authority



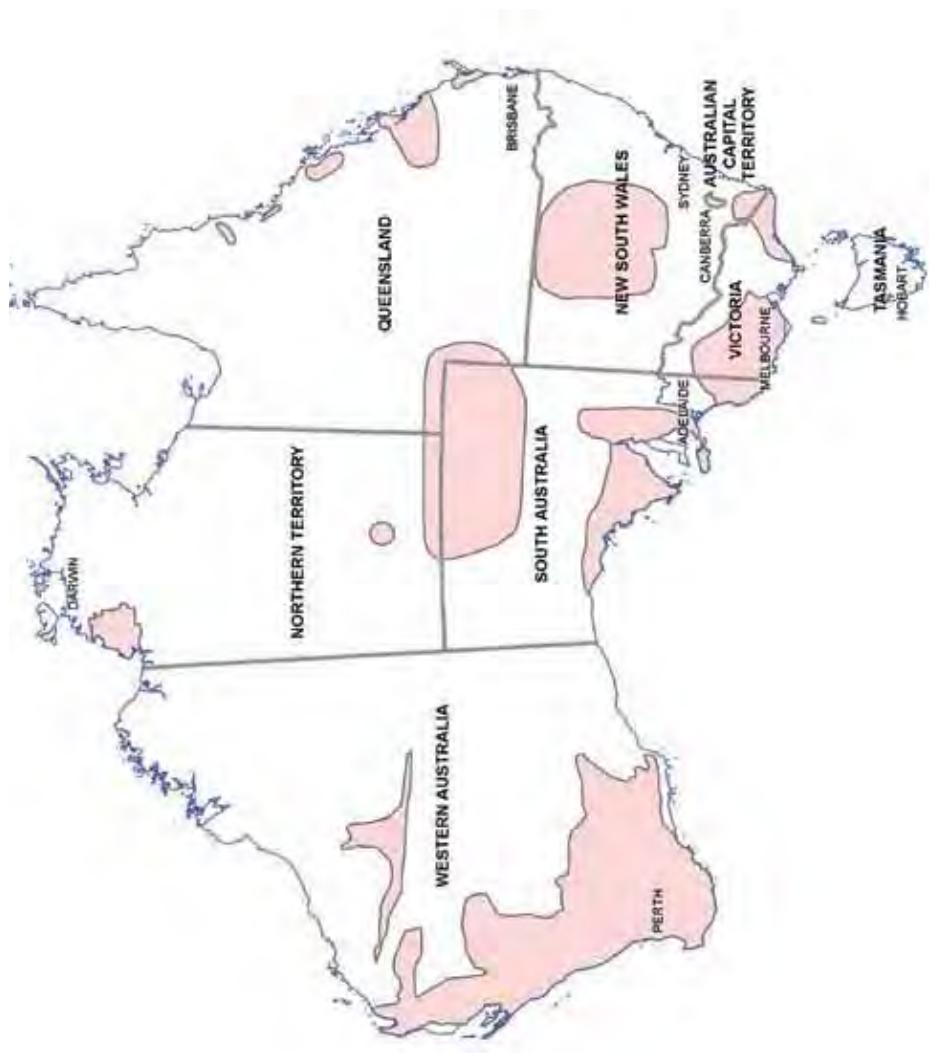
Southern Seasonal Bushfire Assessment 2011/12

(FESA), (DEC), (BOM)

Review of 2010/11

Western Australia

Above normal fire potential is indicated through most parts of the south-west Land Division due to increased grassland fuels following recent winter rains across the southwest forests and grasslands combined with anticipated El Nino conditions. A normal fire potential is expected through the Gascoyne, Goldfields, Eucha and parts of the interior after near average rainfall.



- 1. Review of 2010/11**
- 2. Outlook for Southern Western Australia**

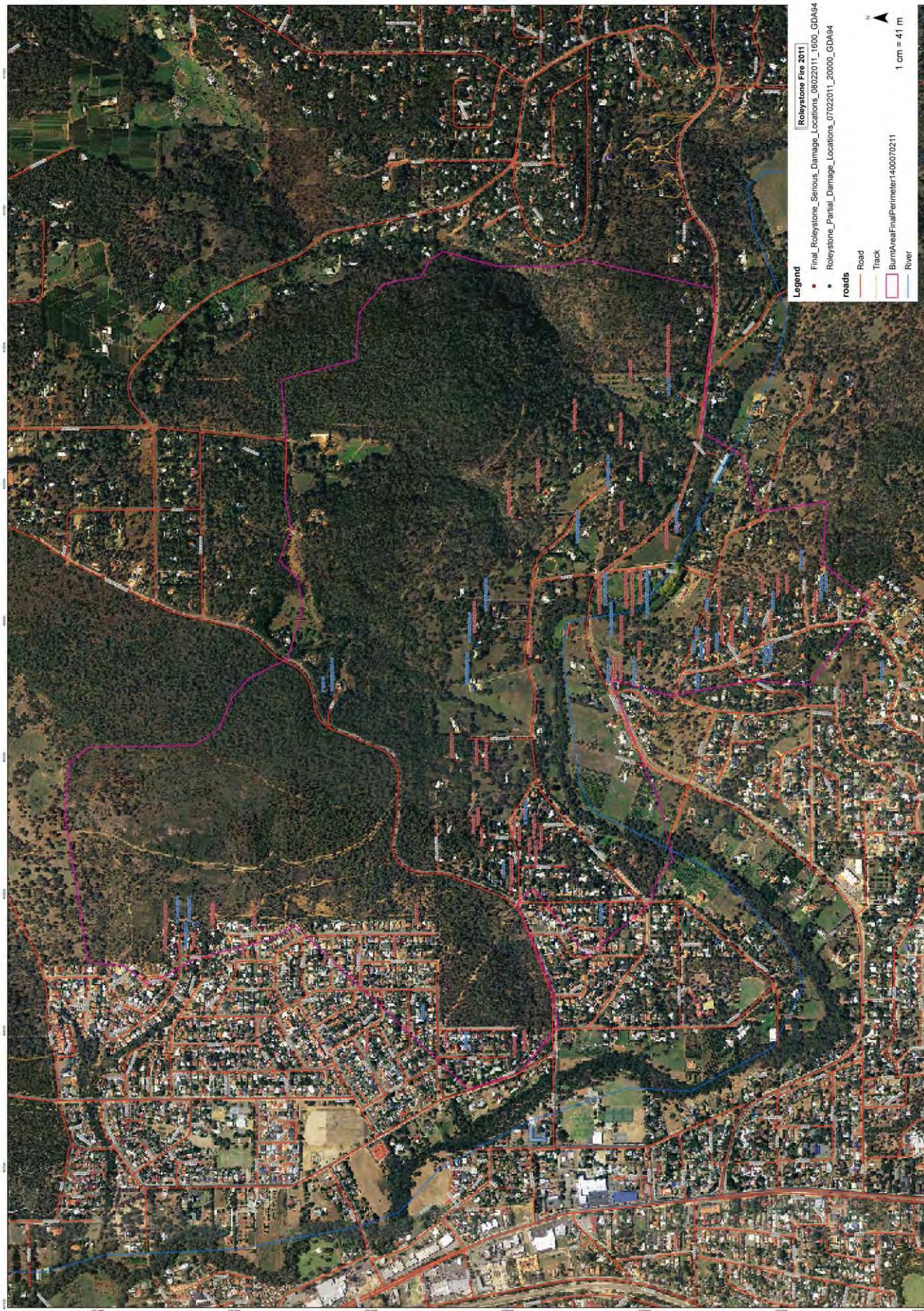
- Notable fires
- Outlook for next summer

Significant fire events last summer

All the fires listed were located in the boundary between “Above normal fire potential”.

- **Roleystone** – 72 homes destroyed, 37 homes damaged. This is the single biggest house loss in Western Australia to a single fire event
- **Red Hill** – Large interface fire on the same day as Roleystone
- **Lake Clifton** – 9 houses destroyed and 3 damaged

Rolleystone / Kelmscott Fire



Weather – Bickley AWS

Time	Wind (km/hr)	Temp	Dew Pt	RH	HFRoS Forest (m/hr)	HFRoS Grassland (km/hr)
1200	43	23.2	5.1	30.9	1414	5.7
1300	39	24.2	5.1	29.1	1423	5.1
1400	37	26.1	5.7	27.1	1552	5
1500	33	26.4	4.8	25	1511	4.3
1600	30	26.7	5.1	25.1	1456	3.9
1604	35	26.6	4.4	24	1692	4.8
1700	31	26.3	4.7	25	1442	4
1800	33	25.1	4.3	26.1	1413	4.2
1900	30	24.2	4.6	28.1	1192	3.6
2000	30	23.3	4.8	30.1	1079	3.4
2046	33	22.9	4.4	30	1157	3.8
2100	35	23	5	31.1	1173	4.1
2200	37	22.1	5.1	33	1112	4.3
2300	33	21.5	5.8	36	916	3.5

Fire started on 6th February at around 11.42 hours (first 000 call)

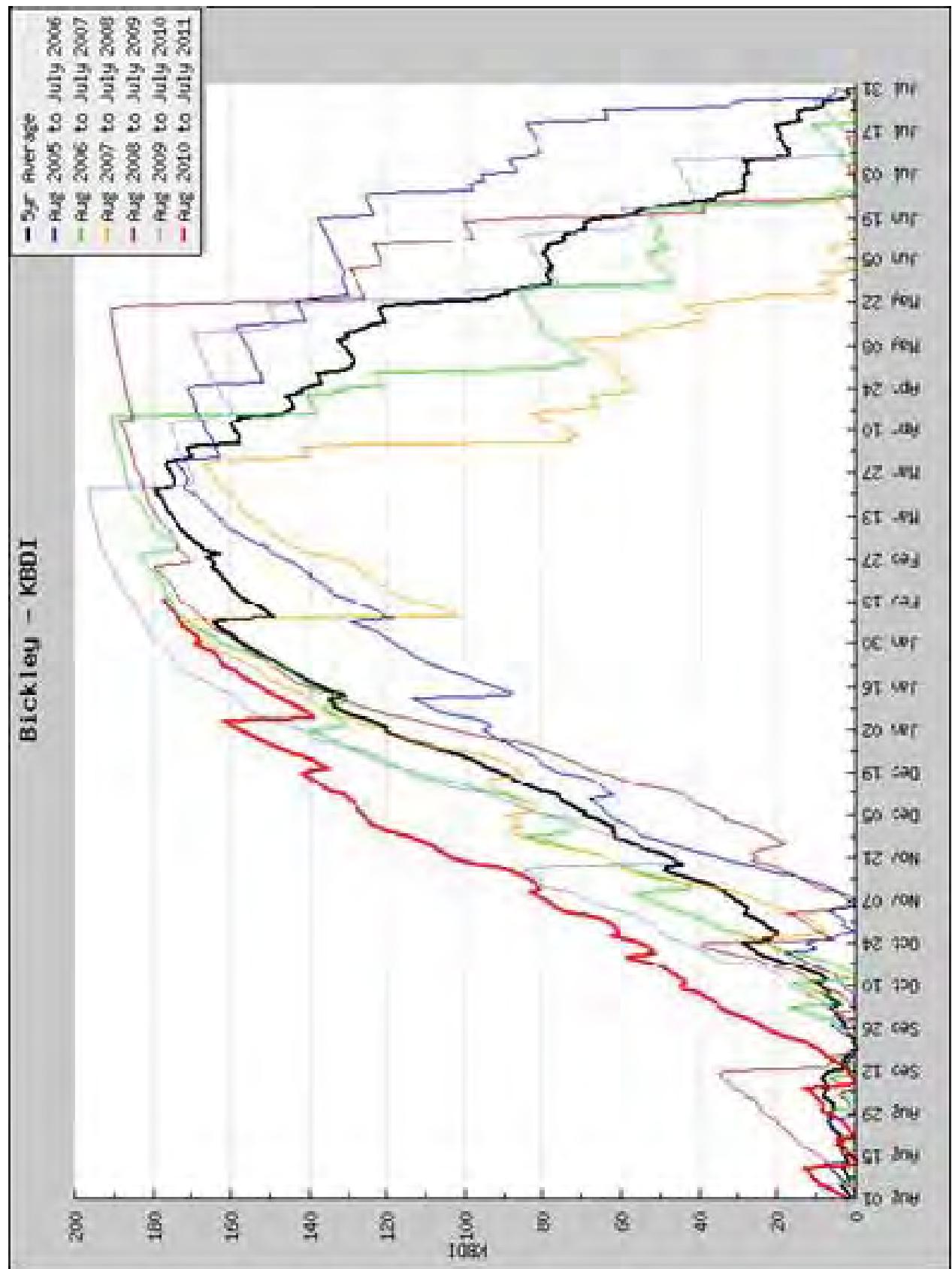
Weather – Champion Lakes

Time	Wind (km/hr)	Temp	Dew Pt	RH	HFRoS Forest (m/hr)	HFRoS Grassland (km/hr)
1100	28	23	5.9	33.1	931	3
1200	31	24.7	6.4	30.9	1142	3.7
1202	30	24.8	5.6	29.1	1192	3.6
1300	28	26	6.1	28	1216	3.4
1328	31	26.3	5.8	27	1349	3.9
1346	43	26.5	5.5	26.1	1909	6.5
1352	35	27.2	6	25.9	1583	4.7
1400	28	27	5.9	26	1344	3.6
1417	28	26.7	5.6	26	1344	3.6
1500	30	28	6.2	25.1	1505	4
1554	37	28.5	6	24	1895	5.4
1558	28	28.7	6.1	23.9	1535	3.7
1600	22	28.7	6.1	23.9	1334	2.9
1604	28	28.6	5.5	23.1	1587	3.8
1700	26	29.1	5.9	23.1	1515	3.5
1800	15	28.9	5.1	22.1	1530	2.3
1825	28	28.5	5.4	23.1	1587	3.8
1846	39	28.2	5.1	23	1986	5.8
1900	35	28.1	5.6	23.9	1749	4.9
2000	22	27.4	5.6	24.9	1207	2.8
2100	15	26.5	6	27	1212	2.1
2200	24	26.1	6.2	28	1107	2.9
2300	24	25.5	6.7	30.1	1036	2.9

Significant Issues

- The AWS data does not show the wind gusts to 80km/hr
- Very steep slopes and limited access
- Construction standards of the houses a factor in the high house loss
- Bushfire Safety Policy resulted in no one killed but house loss and damage probably greater as a consequence
- Embers a major contributing factor to the house losses and damage

KBDI













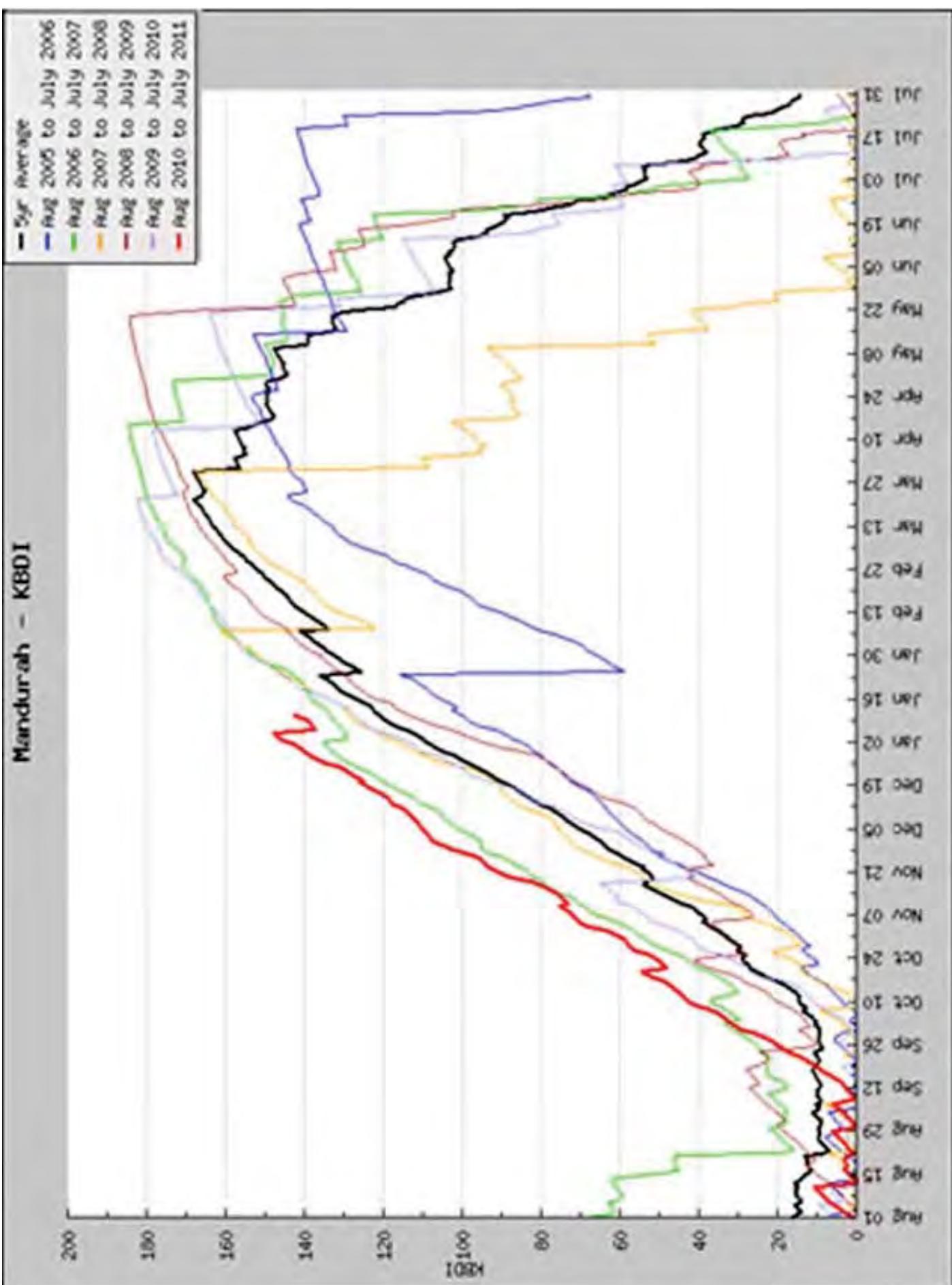
Lake Clifton

- Fire started on the 10 January at around 12 noon adjacent to the Forrest Highway
- 6 separate ignition points
- 9 houses destroyed
- 3 houses damaged

Mandurah – AWS

Time (WST)	Temp (°C)	Relative Humidity (%)	Wind Speed (km/h)	HFRoS (m/hr) for undulating topography	Fuel type
1200	31.6	32	15	1,000	Grass
1300	30.8	39.9	22	1,200	Grass
1400	29.8	43.9	28	1,400	Grass
1500	31.4	41.1	22	1,100	Grass
1600	32.2	29.9	22	1,300	Grass
1700	31.6	26.1	31	1,900	Grass
1800	29.6	37.1	28	1,500	Grass
1900	27.9	43.9	26	1,200	Grass
2000	27.4	47	19	900	Grass
2100	27.3	48.8	19	900	Grass
2200	26.9	51	19	900	Grass







www.eldersmandurah.com.au

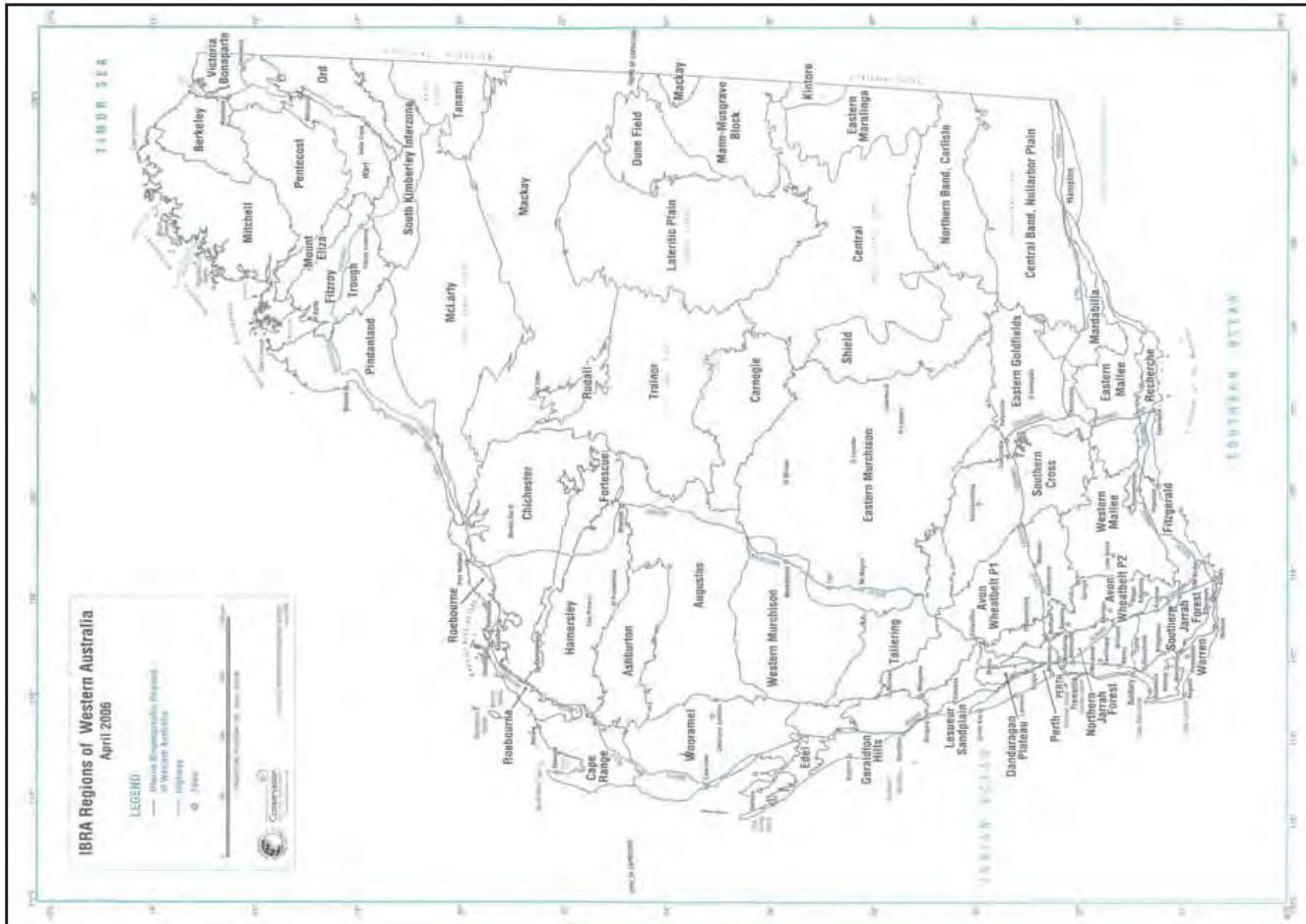


INCENT RURAL RETREAT
bush property

9111

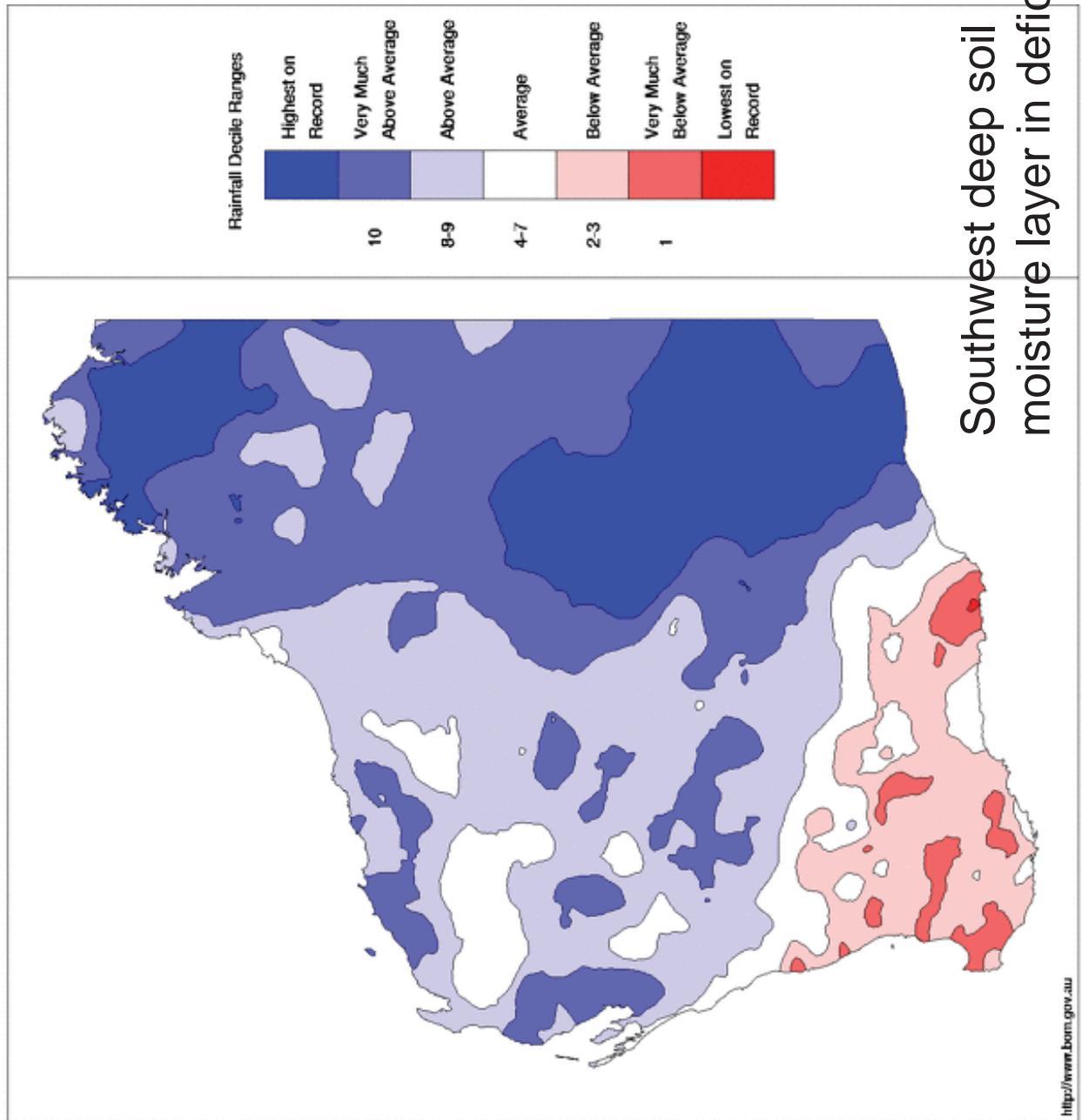


Seasonal outlook 2011/12



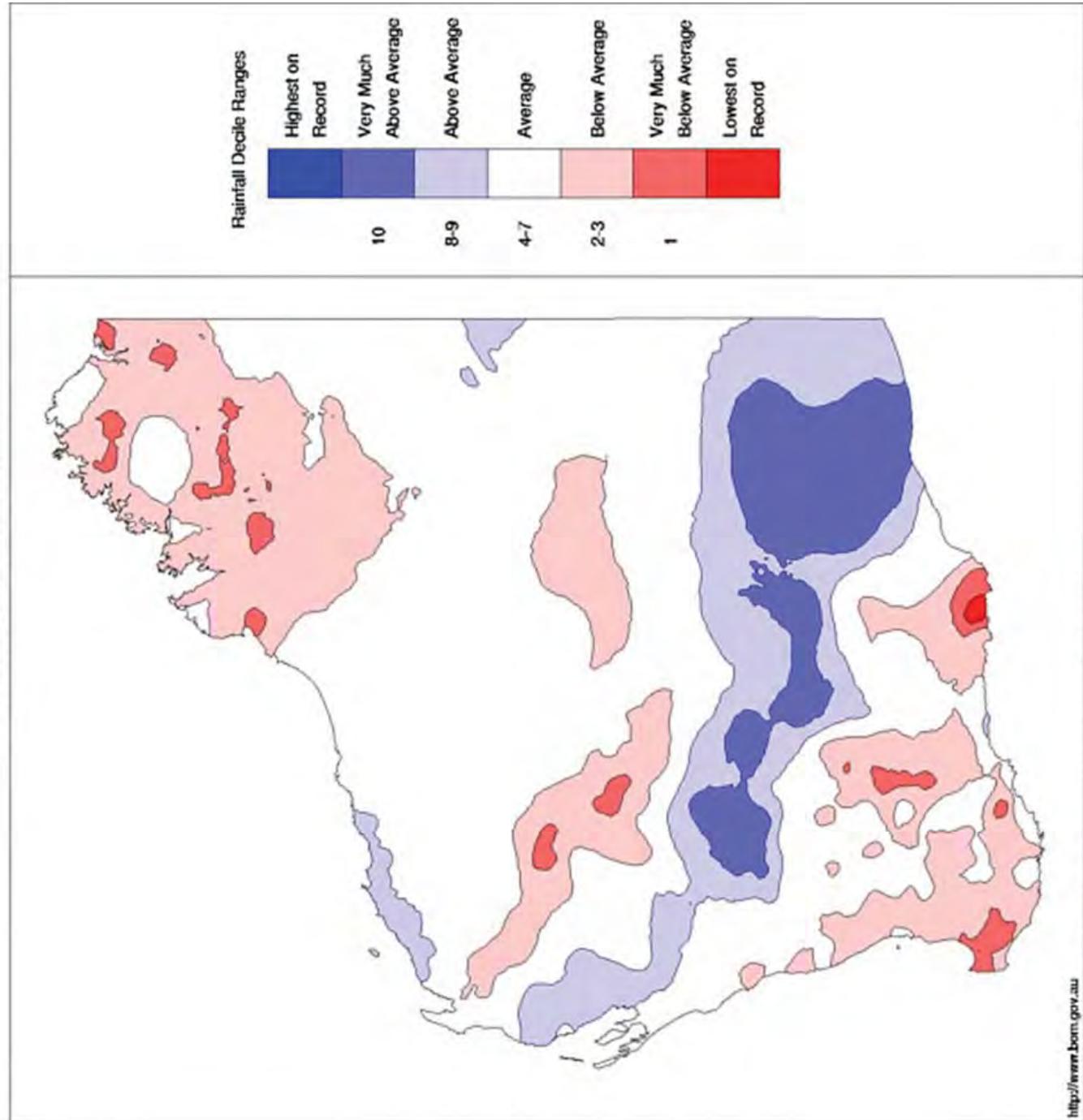
Southern Wet Season Rainfall to end of July

Western Australian Rainfall Deciles 1 February to 31 July 2011
Distribution Based on Gridded Data
Product of the National Climate Centre



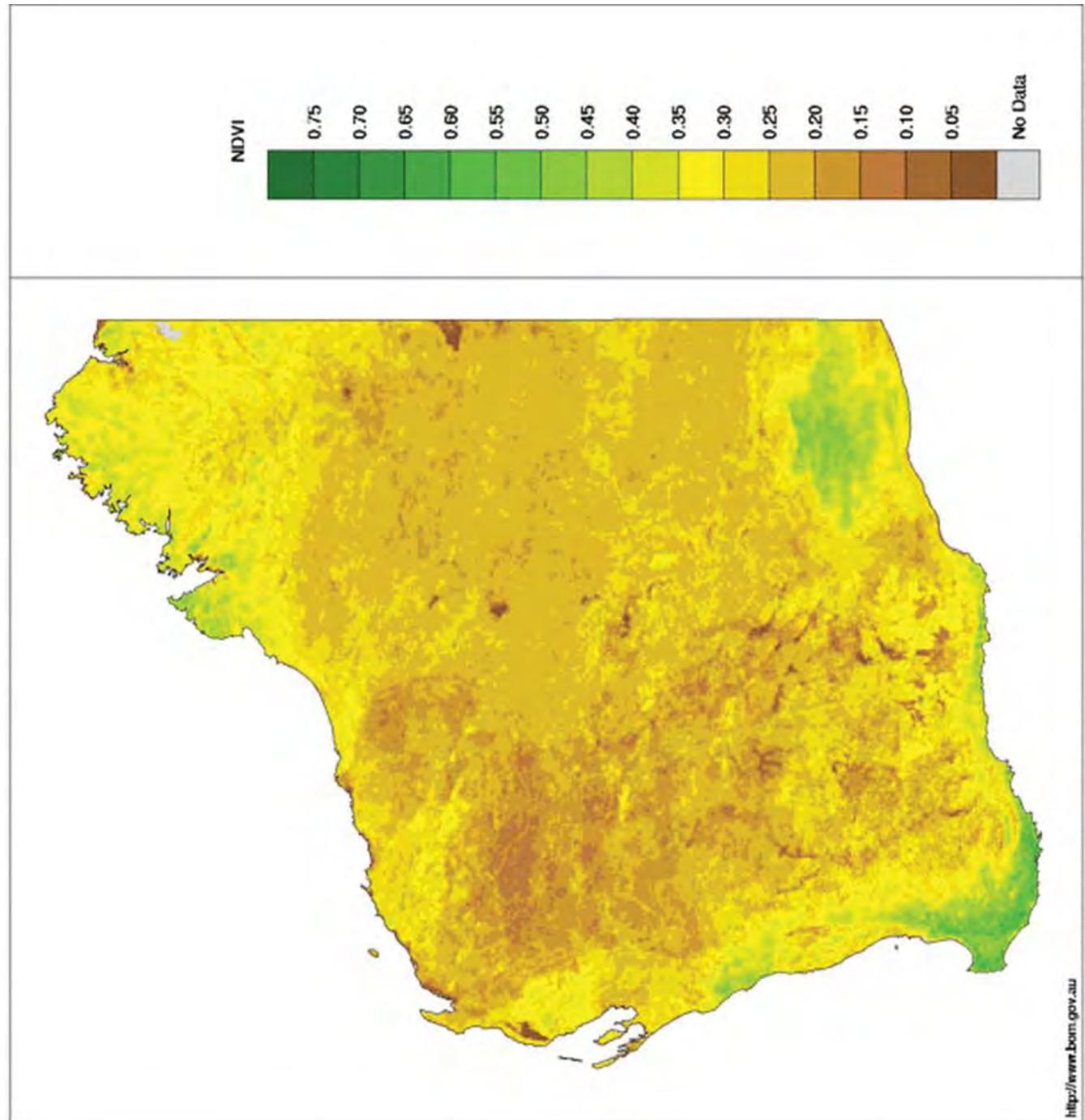
Western Australian Rainfall Deciles 1 May to 31 July 2011

Distribution Based on Gridded Data
Product of the National Climate Centre



Normalised Difference Vegetation Index 1 May to 31 July 2011

Product of the National Climate Centre

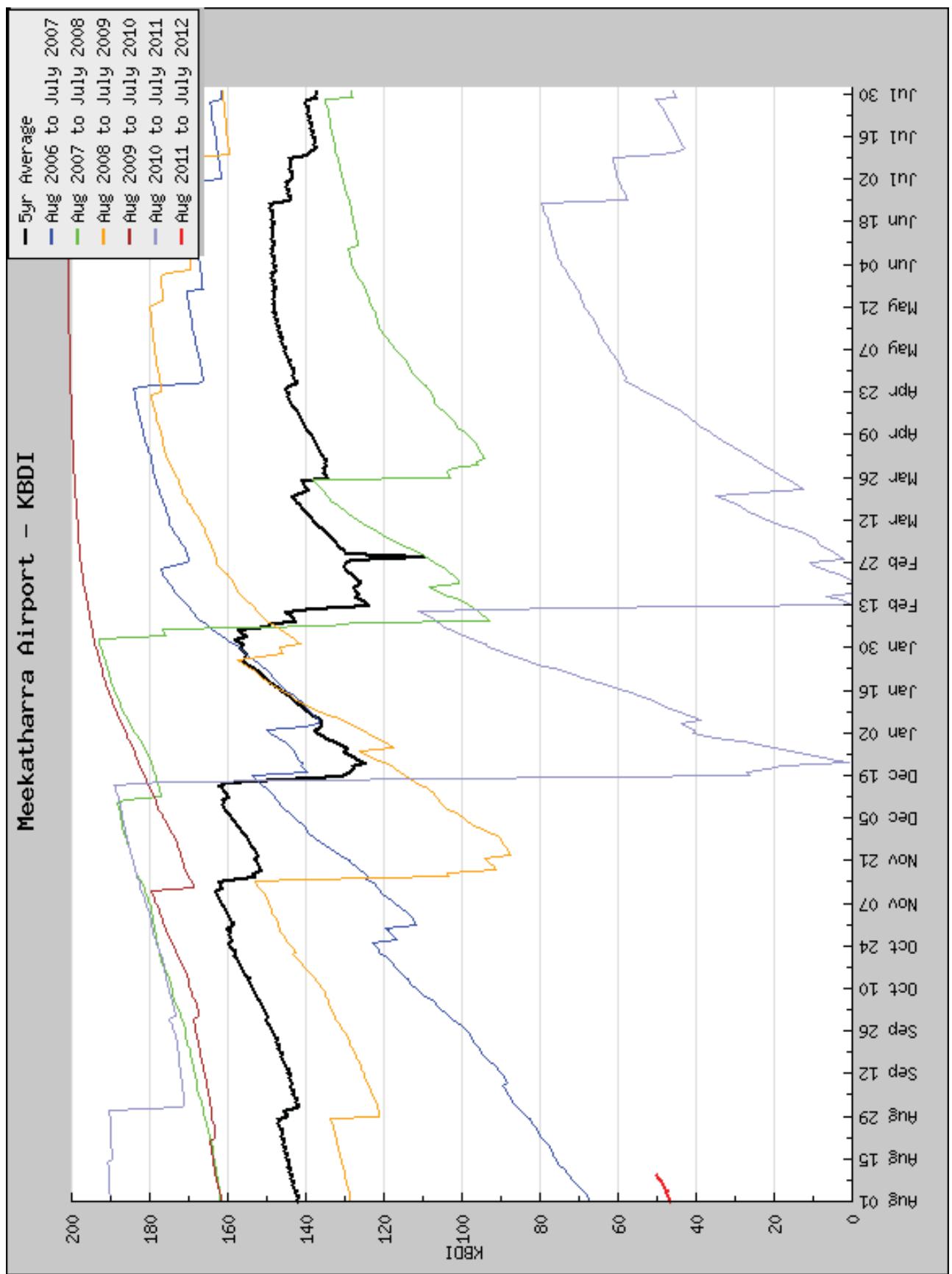


<http://www.bom.gov.au>

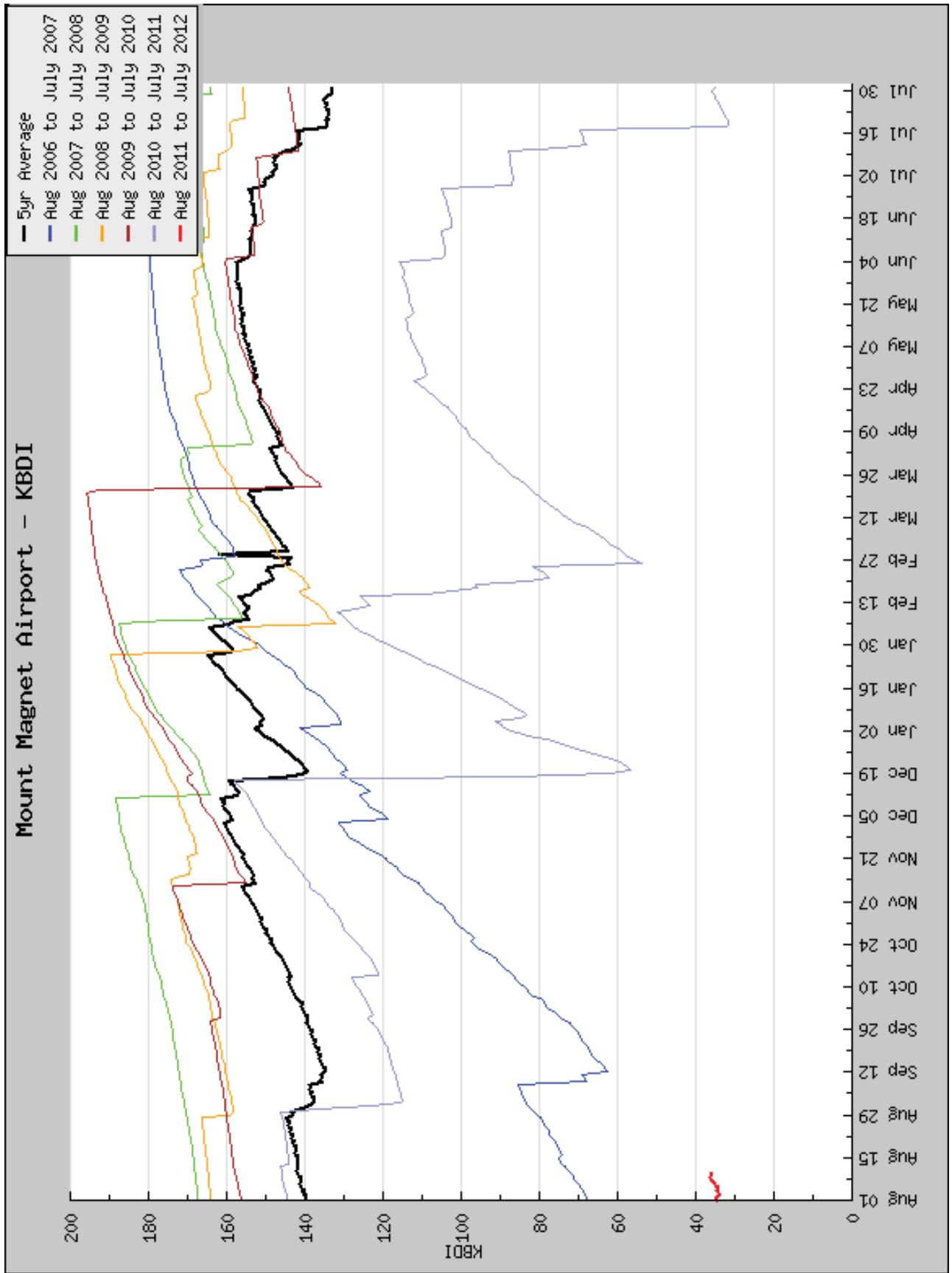
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Issued: 01/08/2011

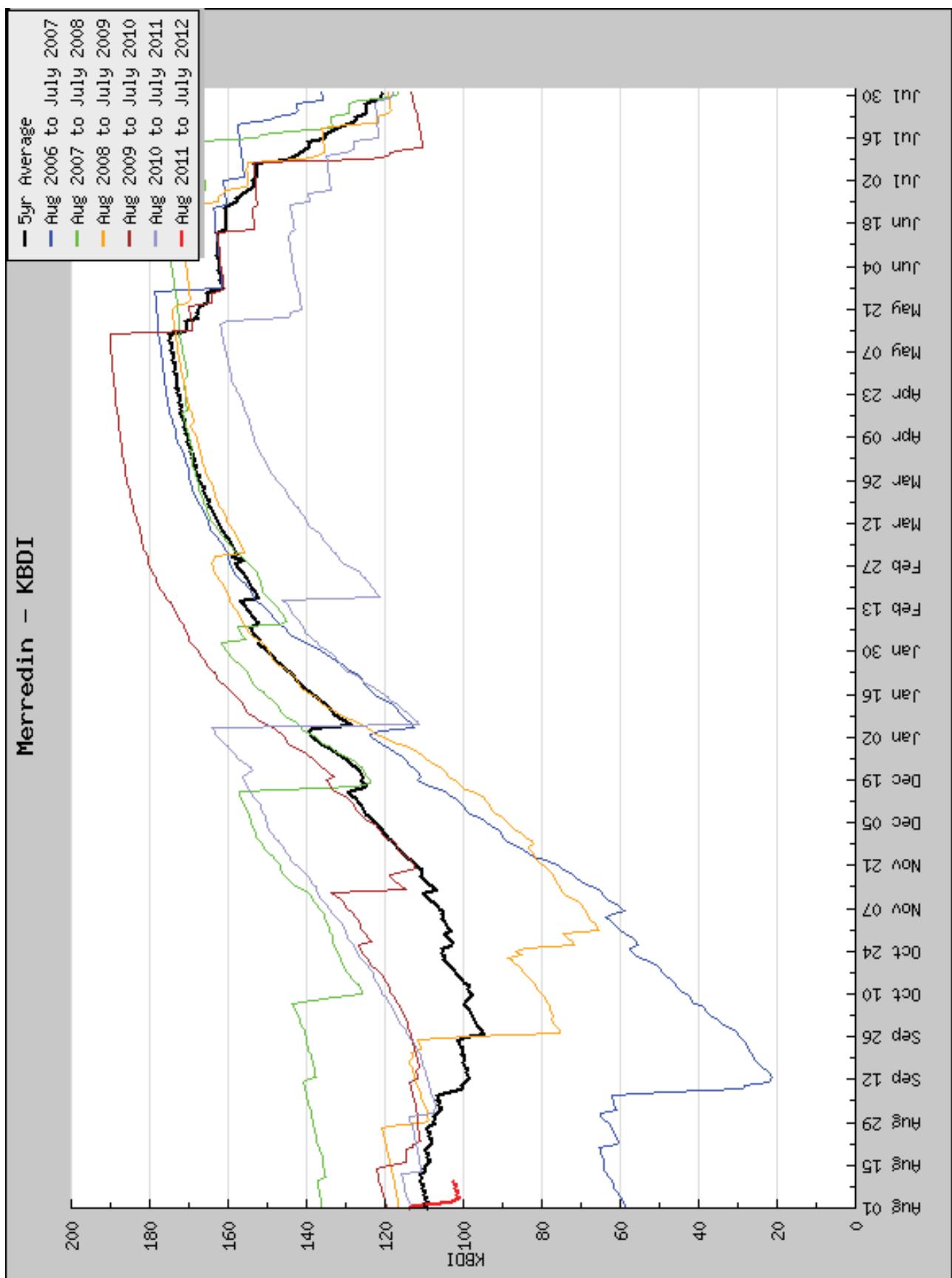
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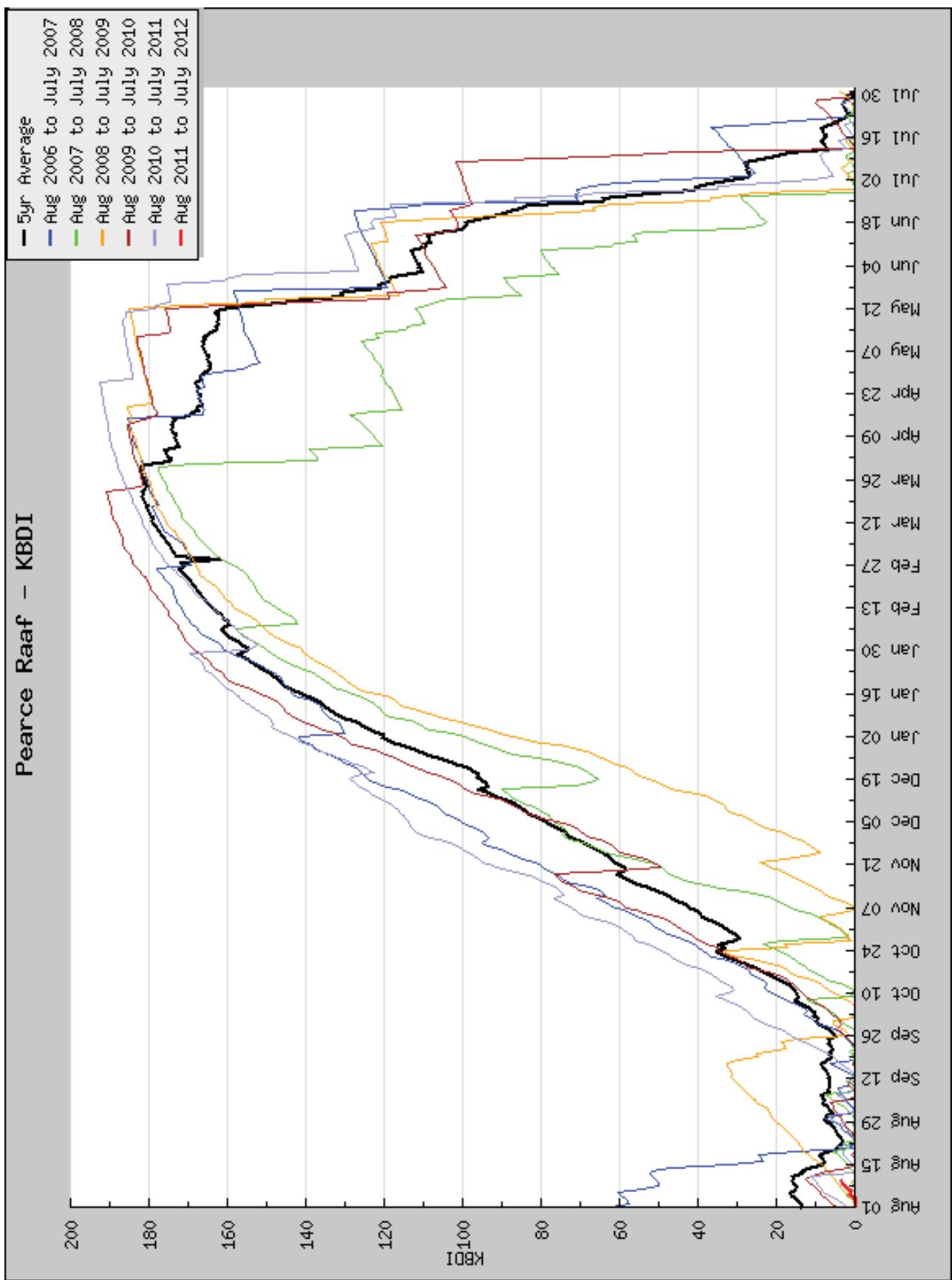
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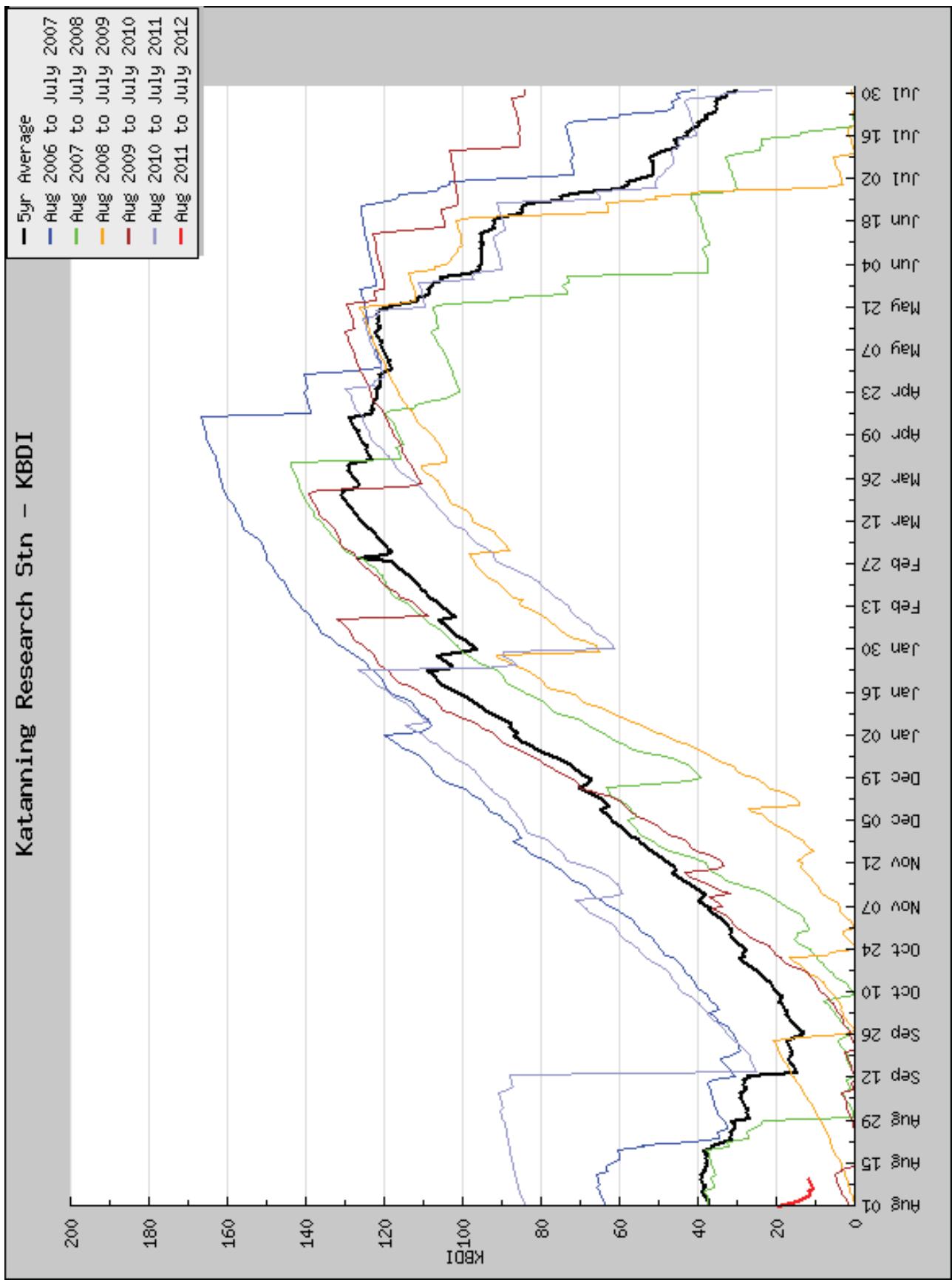
MERREDIN



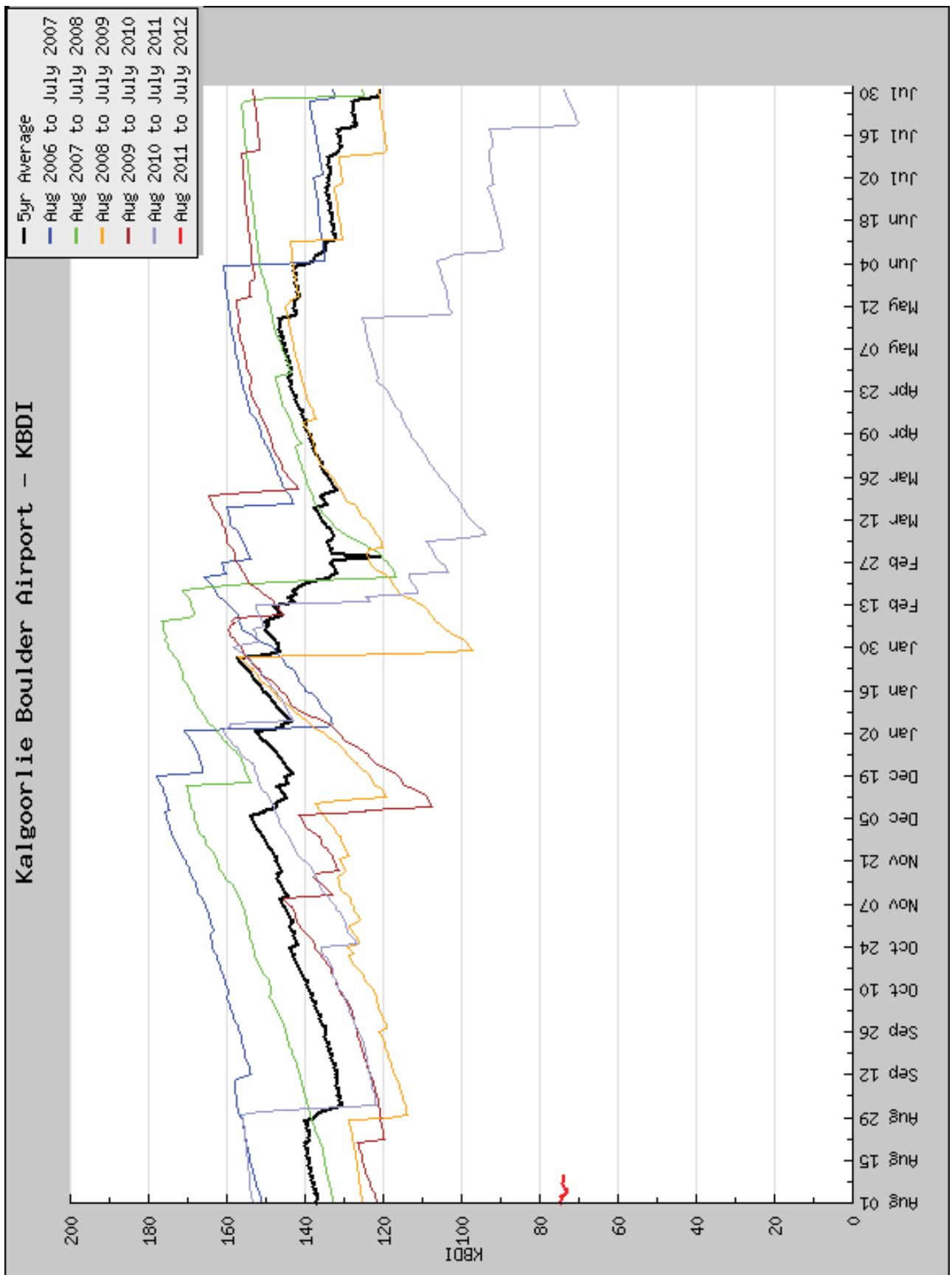
PEARCE



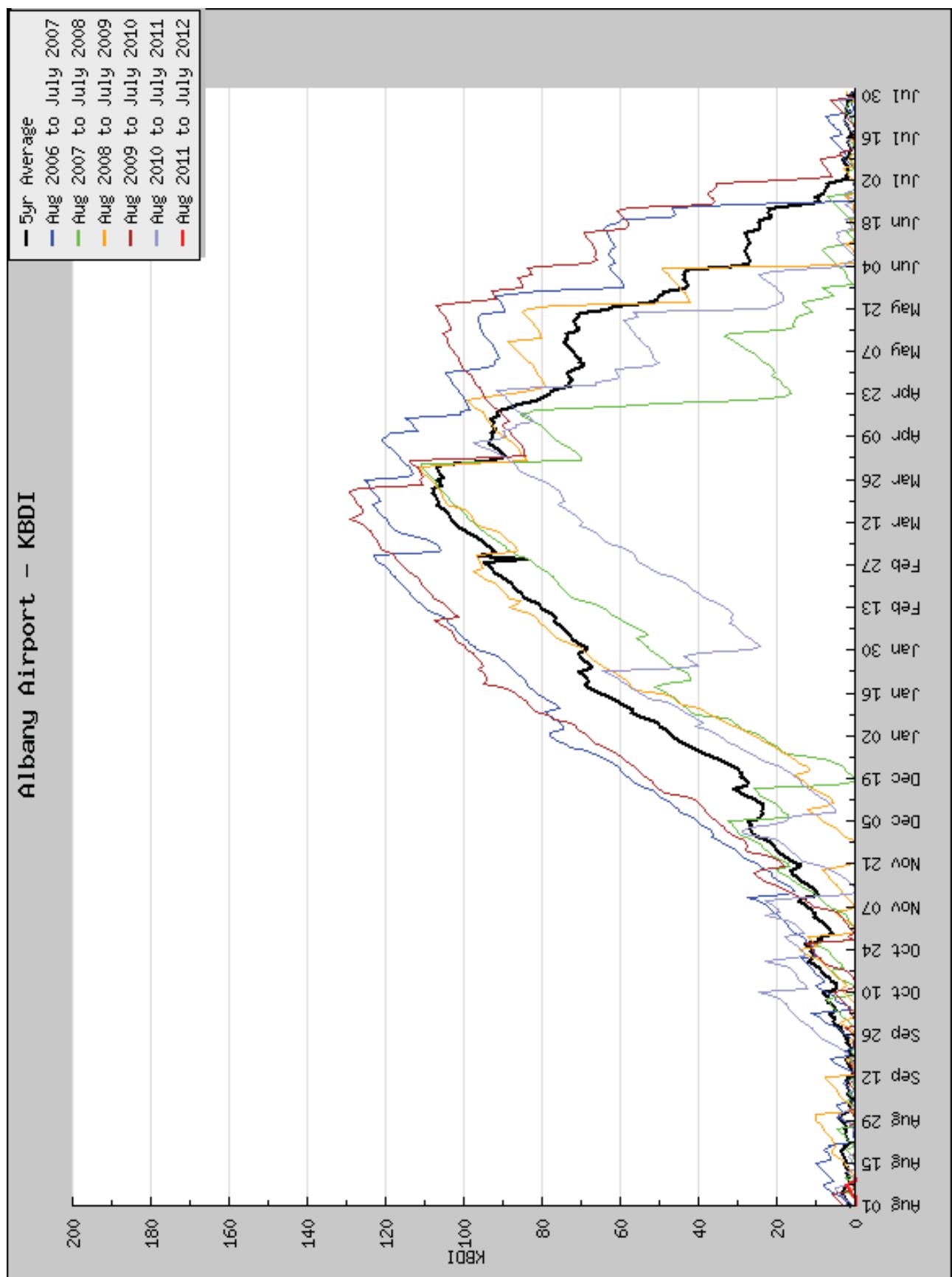
KATANNING RESEARCH STATION



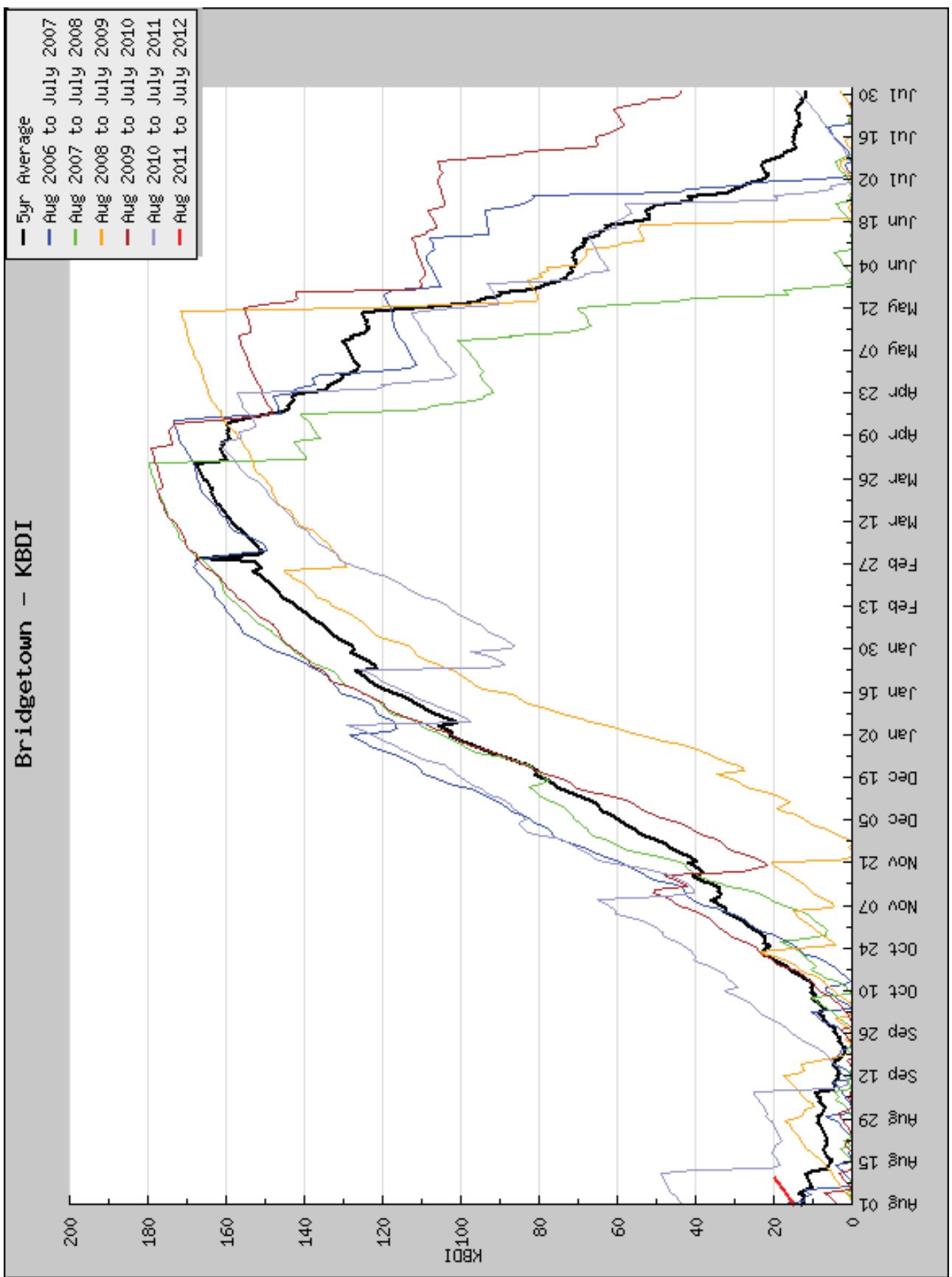
KALGOORLIE



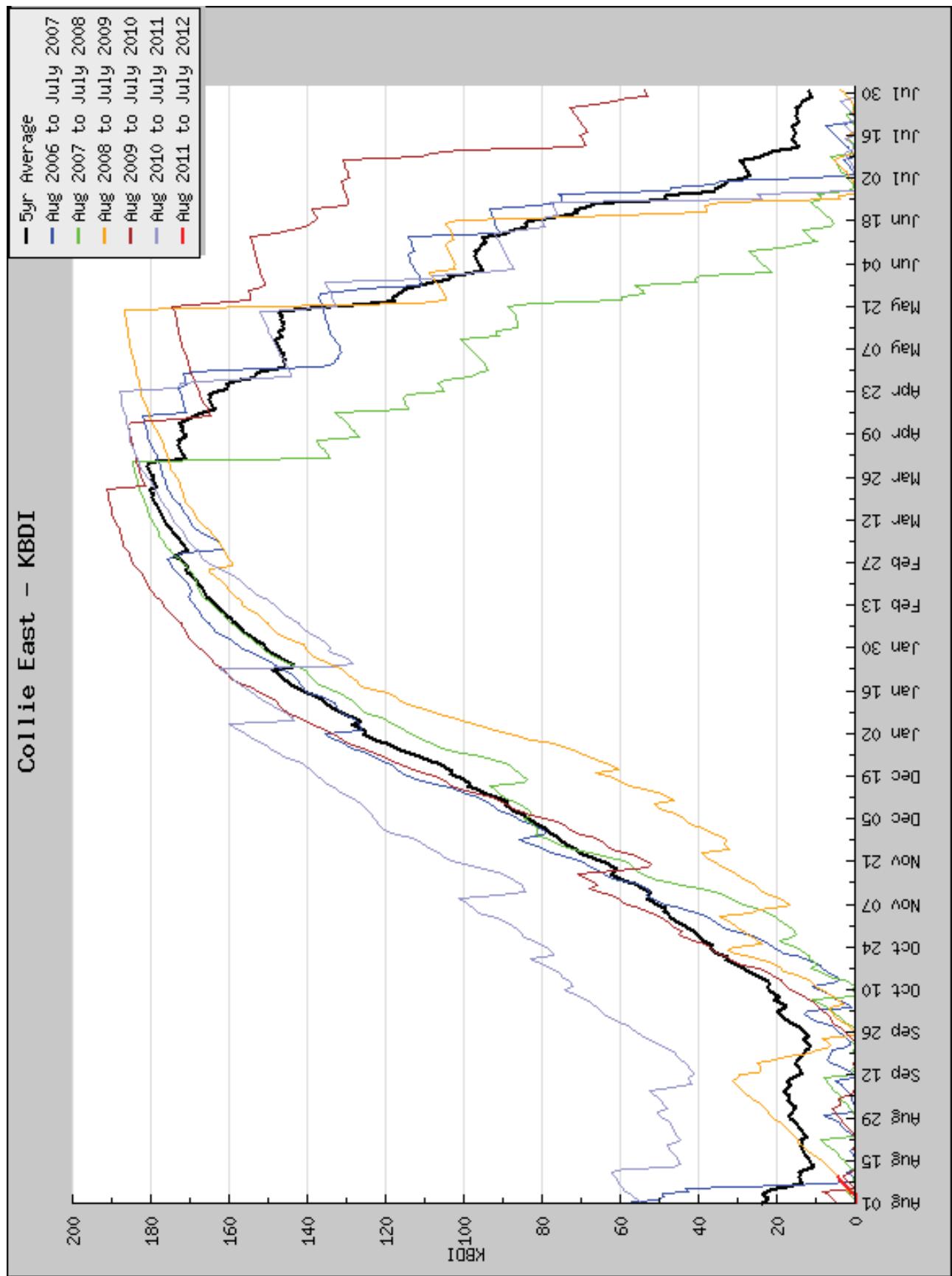
ALBANY AIRPORT



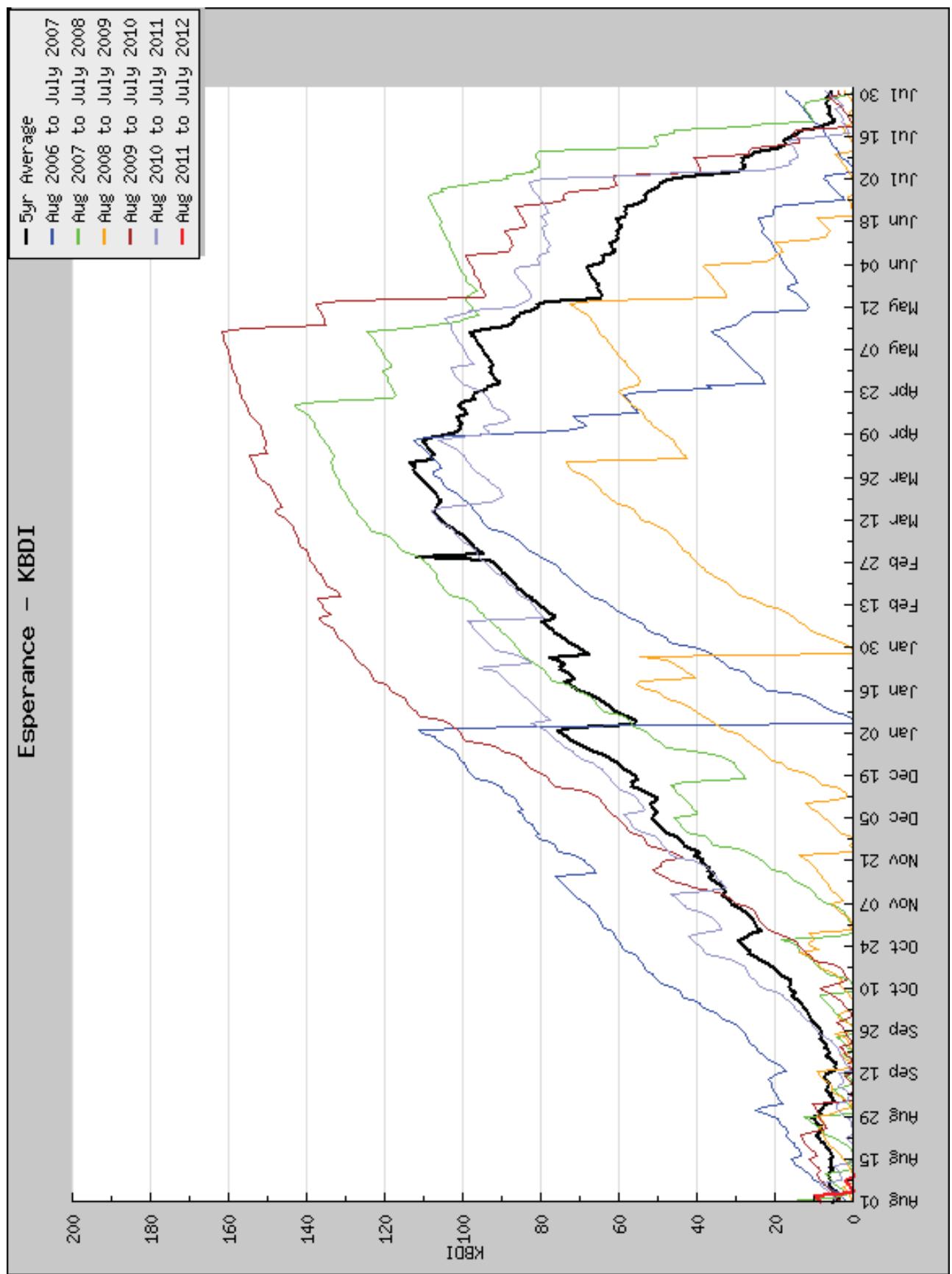
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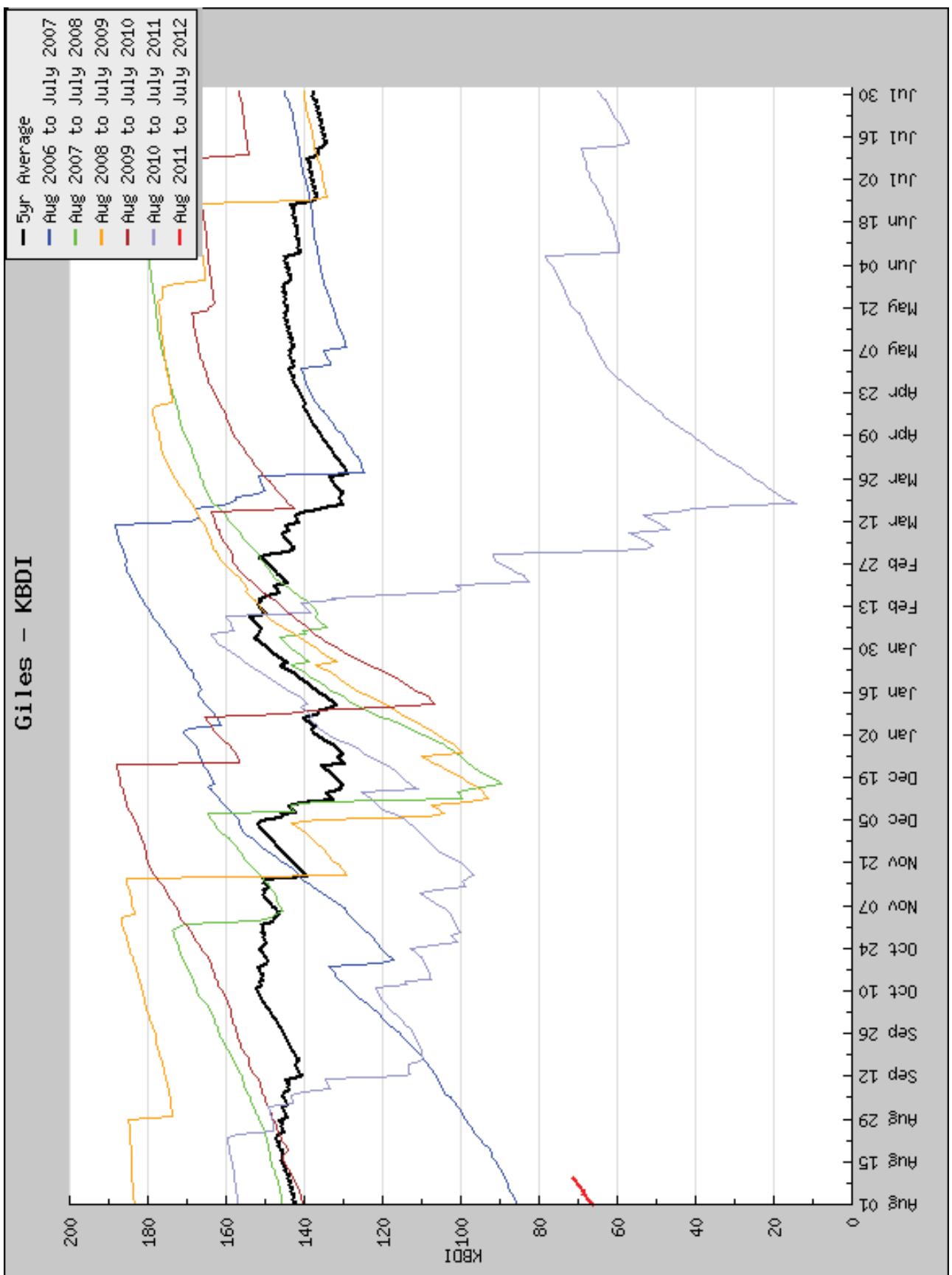
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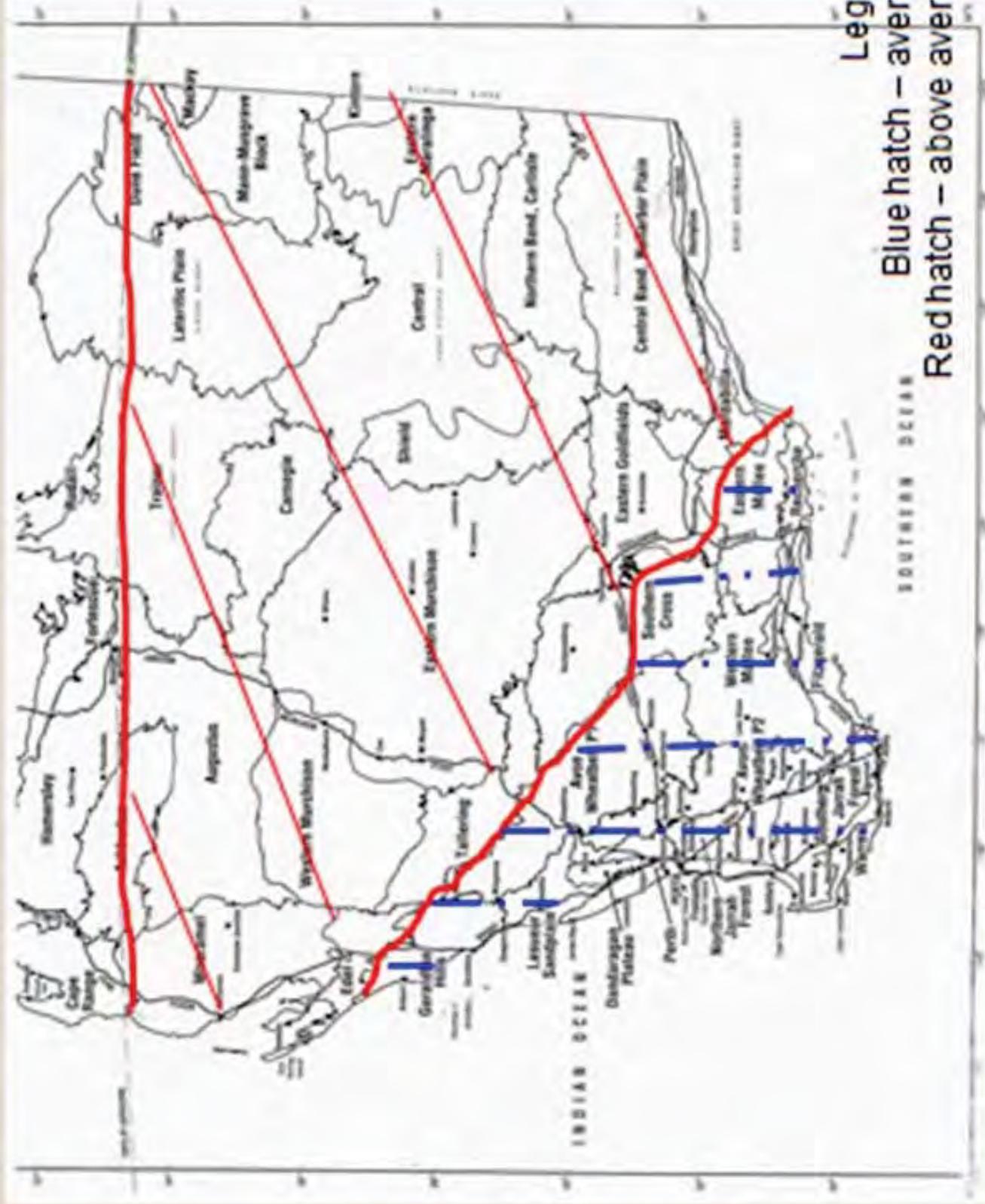


ESPERANCE



GILES





Rationale:

- **Forest regions** – high fuel loads from restricted burning and now subject to an average winter = Average potential
- **Wheatbelt** – high fuel loads from almost average rainfall and annual grass growth = Average potential
- **Mid-west, Desert & Nullabor** – high fuel loads as a consequence of extensive rainfall resulting in very high annual grass growth = Above average

Southern 2011/12 draft IBRA

BoM Forecast Areas	IBRA Region	Winter Rainfall ↑ or ↓ or -	Fuel W/F/T/S	Fuel Grass	Relative Aug KBDI	Summer Season Outlook
Eucla	Central Band, Nullabor Plain (Forrest)	↑		Y	Wetter	Above Average
Eucla	Hampton (Eucla)	↑	Y		Wetter	Above Average
Gascoyne	Wooramel (Carnarvon)	↑	Y		Wetter	Above Average
Gascoyne	Augustus	-	Y		Average	Above Average
Gacoyne	Tallerong (Paynes Find)	-	Y		Average	Above Average
Gascoyne	Western Murchison (Meekathara)	↑		Y	Wetter	Above Average
Gacoyne	Edel (Shark Bay)	↑	Y		Wetter	Above Average
SE Gascoyne / N Goldfields	Eastern Murchison (Leonora)	↑		Y	Wetter	Above Average

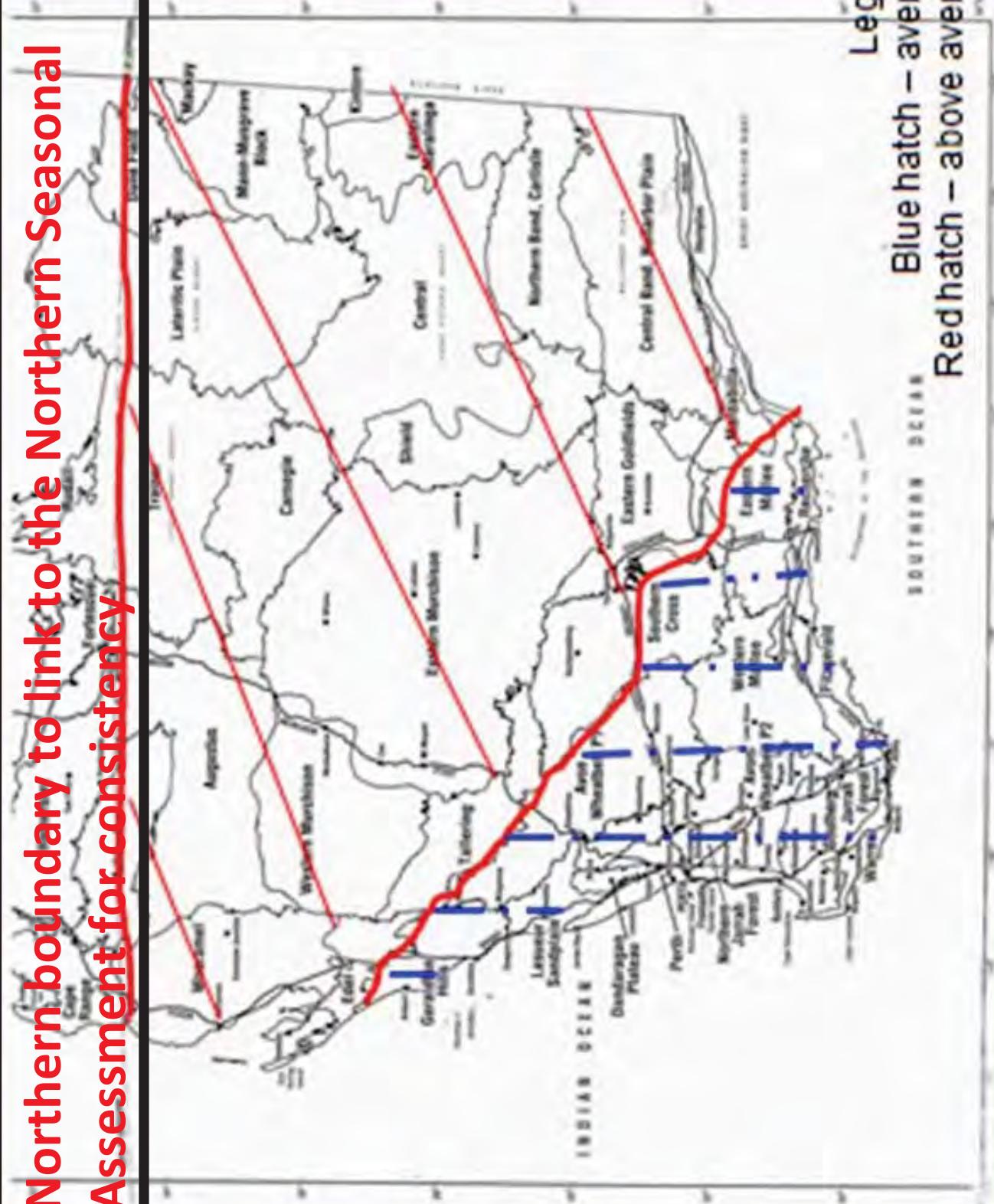
Interior	Northern Band, Carlisle*	↑	Y		Wetter	Above Average
Interior	Trainor*	↑		Y	Average	Above Average
Interior	Lateritic Plain*	↑		Y	Wetter	Above Average
Interior	Dune Field*	↑		Y	Wetter	Above Average
Interior	Mackay*	↑		Y	Wetter	Above Average
Interior	Carnegie*	↑		Y	Wetter	Above Average
Interior	Mann-Musgrove Block (Giles)*	↑		Y	Wetter	Above Average
Interior	Kintore*	↑		Y	Wetter	Above Average
Interior	Eastern Maralinga*	↑		Y	Wetter	Above Average
Interior	Central*	↑		Y	Wetter	Above Average

	Shield (Leinster)	↑		Y		Wetter	Above Average
Goldfields	Eastern Goldfields (Kalgoorlie)	↑	Y		Wetter	Above Average	
Central West	Geraldton Hills (Geraldton)	-	Y		Average	Average	
Central West	Lesueur Sandplain (Eneabba)	↑	Y		Wetter	Average	
Sth Central West / Nth Lower West	Dandaragan Plateau (Badgingara)	↑	Y		Wetter	Average	
Lower West	Perth (Pearce)	-	Y		Wetter	Average	
Lower West	Northern Jarrah Forest (Collie East)	-	Y		Wetter	Average	
Southwest / West South Coastal	Southern Jarrah Forest (Bridgetown)	-	Y		Wetter	Average	
Southwest / West South Coastal	Warren (Pemberton)	-	Y		Wetter	Average	
South Coastal / West Southeast Coastal	Fitzgerald (Jacup)	↓	Y		Drier	Average	

Southeast Coastal	Eastern Mallee (Lake Grace)	↓	Y	Drier	Average
Southeast Coastal	Recherche (Esperance)	-	Y	Average	Average
E Great Southern / NW Southwest Coastal	Western Mallee (Lake Grace)	↓	Y	Drier	Average
Central Wheatbelt / Great Southern	Avon Wheatbelt P2	↓	Y	Drier	Average
SE Central West / Central Wheat Belt	Avon Wheatbelt P1	↓	Y	Drier	Average

Western Australian Summary 2011 / 12

Northern boundary to link to the Northern Seasonal Assessment for consistency



- **Mid-west, Desert & Nullabor** – There are extensive areas high fuel loads as a consequence of the very prolific rainfall, in some areas among the highest on record, which has resulted in very high, consistent and widespread grass growth. This has resulted in ‘above average fire potential’.
- Southwest (including the Wheatbelt) – The spring and winter rainfall is approaching average in most areas. In the Wheatbelt this has resulted in widespread areas of reasonable crops. In the southwest there is a legacy of deep soil moisture deficiency and if the rainfall does not continue to be average or above average, this region may move ‘average fire potential’ to ‘above average fire potential’