

Communicating seasonal climate risk

Use both presentations and newsletter

Understand what drives the climate understand why or why not it might be raining

Discuss the physics rather than peoples beliefs

Communicate with Empathy – Non traditional style

Use anecdotes and demonstrate understand of how information may be used

Humour and seriousness intertwined

Initial results are suggesting we are increasing climate literacy
-DPI Climate Survey

The following highlight key areas we cover in our presentation

The Break

Providing seasonal climate and risk information to the Victorian & Southern NSW cropping region

Volume 4, Issue 7, September 2009 www.dpi.vic.gov.au/climaterisk



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Wishing for the lucky break!



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A Victorian
Government
initiative



State Round Up - In the paddock

www.pastoranie.com.au

Mallee: Annual Decile = 2-3, GSR Decile = 3-5

Crops are generally hanging on but yield potential still depends on rain during September. Crops are beginning to show signs of haying off in the north of the Mallee, where conditions have been drier. Reduction in yield potential is evident in areas that have not received good rainfall during August, particularly on heavier soils. There are still some crops with good growth and yield potential through the region.

Wimmera: Annual Decile = 1-5, GSR Decile = 3-8

Late August rain has meant many Wimmera locations have now had close to average rainfall for the month. Most Wimmera crops are positioned well. Recent rainfall has helped all crops but particularly those on heavy soils in the northern Wimmera that were showing signs of moisture stress. Most cereals are at Z30 or more. Over the last two weeks, the growth of pulses has increased considerably.

North East: Annual Decile = 1-2, GSR Decile = 2-5

Crop conditions are excellent, but there are areas where this is far from the case. The Murray River fringe from Yarrowonga to Cobram is experiencing crop stress which varies from almost crop senescence to minor leaf tipping. Most areas received sub-optimal rainfall in August. Canola is in full flower and early podding. Early sown cereals have an emerged flag leaf. There is high interest from dairy farmers for silage sold standing. Paddocks fungicide treated at sowing are yet to show signs of stripe rust; most untreated susceptible crops have been sprayed.

South West: Annual Decile = 2-4, GSR Decile 4-7

There is some evidence of water logging occurring around the region, with cereal crops turning yellow under water. Otherwise crops are growing as expected with no major issues.

Dam Capacity

www.gwmwater.org.au & www.g-mwater.com.au

Grampians Wimmera Mallee: 11.2%
Goulburn-Murray: Dartmouth 25%, Hume 25.5%, Eildon 22.6%, Eppalock 5.9%
NSW: Eucumbene 24.1%, Burrinjuck 38.4%, Menindee 12%

The DPI monthly Dry Seasonal Conditions report:

www.dpi.vic.gov.au/drought

The Break

Volume 4, Issue 9, November 2009 www.dpi.vic.gov.au/dmaterisk ISSN 1833-7198

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A broken record

When price, logistic, marketing and labour are topics of discussion in October and early November it's a good thing to have. For every previous October issue of The Break ever compiled, we've sounded like a broken record talking about cutting crops for hay and how to keep the straw up. Early sown wheat and four crops later, finally we have something a little different and more positive to write about - potential average yields in parts and a harvest with a purpose.

The Break team are giving in a fading candle light as some of Victoria has had a half decent season and the oceans gave south westerly through the year that can see heavy and possible. It's also interesting how we have transitioned from a winter that was with us until the end of September to a late October starting summer. Shouldn't having had longer than these weeks?

- When you're on the loader or driving the truck, fuel and forecast be careful as your mother would say and secondly, use your time wisely. A few think points to have in your head:
- Summer seed control, how can I do it cost effectively? (What paddocks do I prioritise?)
 - Variety choice in 2010, am I changing over any varieties? If so, where do I source my seed?
 - What is the best crop mix for next year and how do I manage risk and reward?
 - Do sheep have a role to play in my no till system? Is \$75,000 in the bank from sheep worth the effort and if I don't have sheep am I comfortable with the increased risk I face?
 - Finally, how am I going to sell all this grain and make sure I get a fair price for it?

So stop listening to Guy Sebastian and Jessica Mauboy on the commercial radio station and start planning for 2010. Bring it on!

State Round Up - In the paddock

www.pastoranie.com.au

Mallee: Annual Decile = 2-4, GSR Decile = 3-6
Harvest is underway. Early harvested barley of 1.1 to 1.3 t/ha has been reported and early wheat reports of 1.2 to 2.0 t/ha, all of good quality. There will be variability in yield across the Mallee from failed crops to excellent harvests.

Wimmera: Annual Decile = 1-5, GSR Decile = 3-8
Crop growth has been very good but hot weather is bringing on harvest stability. The barley, canola and lentil harvest is underway in the north. Crop topping of lentils in the central Wimmera is happening now. Barley yields of up to 3.0 t/ha have been reported.
North East: Annual Decile = 1-3, GSR Decile = 2-4
Canola and barley crops are now being harvested. Canola in the drier areas is averaging 0.3-1.8 t/ha with all at 30-40%. Some storm damage in a small area around Ruburgen has occurred, very little has been lost.

South West: Annual Decile = 2-3, GSR Decile 4-6
Hay making is occurring and harvesting of canola is likely to happen from next week. Most crops in the south west are on track for average yields or better. The hot dry spell that started in October has lowered the potential of crops, especially the later maturing ones such as winter wheat. Some long season winter wheat may still benefit from any rainfall over the next 7-10 days. Some crops to the south of Hamilton have been affected by water logging.

Dam Capacity www.gwmwater.org.au & www.g-mwater.com.au
Grampians Wimmera Mallee: 10%
Goulburn-Murray: Dartmouth 27.1%, Hume 28.8%, Eildon 23.5%, Eppalock 6.1%
NSW: Eucumbene 25%, Burrinjuck 42%, Menindee 12%

The DPI monthly Dry Seasonal Conditions report: www.dpi.vic.gov.au/drought

A Victorian
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initiative



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Deanne.price@dpi.vic.gov.au

www.dpi.vic.gov.au/climaterisk

Seasonal Outlook

Summary: El Niño slowly consolidating in the Pacific

Atmospheric indicators are increasingly showing patterns typical of a developing El Niño event. These indicators are driven by warm conditions in the tropical Pacific Ocean. If these warm conditions persist, as forecast by leading climate models, 2009 will be considered an El Niño year.

Pacific Ocean surface temperatures continue to exceed El Niño thresholds. As a result, cloud patterns, Trade winds and rainfall along the equator have all shown signs of responding to the warmer ocean conditions. The Southern Oscillation Index (SOI) has fallen over the past two weeks, and is now near zero; persistent negative values are a feature of El Niño events.

The last month has seen below average rainfall across much of eastern Australia with particularly dry conditions through Queensland. El Niño periods are usually (but not always) associated with below normal rainfall in the second half of the year across large parts of southern and inland eastern Australia.

The most recent value of the Indian Ocean Dipole (IOD), as measured by the Dipole Mode Index (DMI), is near zero. The Bureau POAMA model suggests the DMI may increase over the coming months, consistent with the developing El Niño event.

www.bom.gov.au/wat/

www.bom.gov.au/climate/enso/

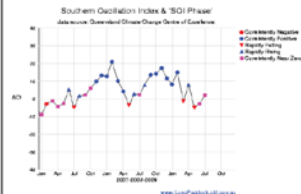
Southern Oscillation Index (SOI)

www.longpaddock.qld.gov.au

July ending SOI phase was Consistently Near Zero

Monthly Average SOI Values:

Apr 8.04; May -4.97; June -2.78; July 2.05



ENSO Forecast Models - World Wide

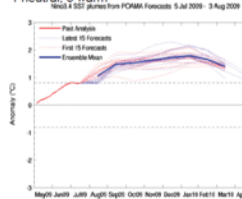
www.bom.gov.au/climate/ahead/ENSO-summary.shtml

2-4 Month Prediction SEP-NOV 2009 (7 Models)

1 neutral, 6 warm

5-7 Month Prediction DEC-FEB 2009/10 (5 Models)

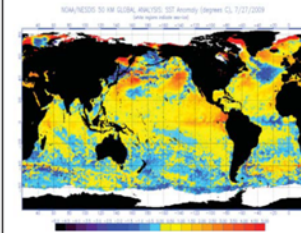
1 neutral, 5 warm



World Sea Surface Temperature Anomalies

<http://www.osdpd.noaa.gov/PSB/EPS/SST/climo.html>

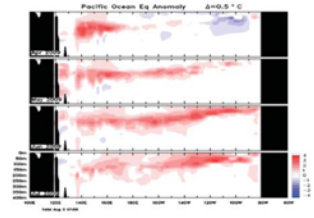
SST's along the equatorial Pacific are warming.



Sub-Surface Sea Temperatures

<http://www.bom.gov.au/bmrc/ocean/results/pastanal.htm>

Equatorial ocean at depth is warming.



Department of Agriculture and Food Western Australia (DAFWA): David Stephens

www.agric.wa.gov.au/content/LWE/CL/CLIMATE_INDEX.HTM www.agric.wa.gov.au/climate

Drivers of Victorian rainfall

By James Risbey (Centre for Australian Weather and Climate Research) and colleagues

Rainfall in Victoria is highly variable from month to month and year to year. A portion of this variability is driven by processes remote from the Australian continent.

These external drivers of our rainfall include the El Niño/Southern Oscillation (ENSO) and the Indian Ocean Dipole (IOD) in the tropical oceans, along with the Southern Annular Mode (SAM) and blocking high pressure systems in higher latitudes.

With ENSO and IOD, variations in ocean temperatures occur on slower timescales than the normal weather and can influence the mix of weather systems and rainfall that we experience.

Blocking influences Victorian rainfall via its association with intense cutoff low rainfall systems. The SAM influences the degree of prevailing westerly flow over the state.

One way to represent the relative influences of these remote drivers is to plot the driver with the strongest correlation to rainfall at each part of the continent (figure 1). For the Victorian region, all of the drivers are important during the wetter seasons. ENSO (dark blue) has an influence in all seasons, whereas blocking (red) and the IOD (light blue) are mainly important for Victorian rainfall in winter and spring. The influence of SAM (yellow) is strongest in coastal regions of Victoria where rainfall is influenced by westerly flows.

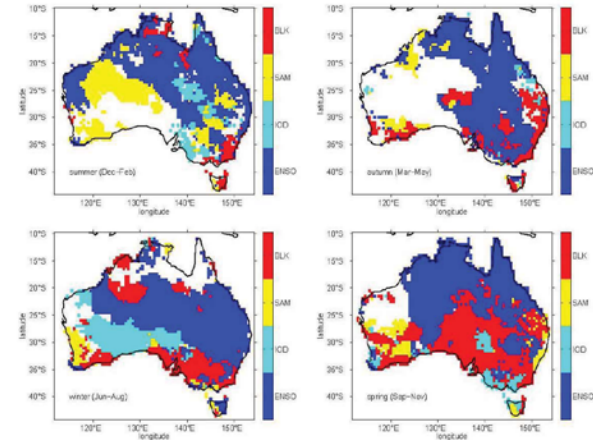


Figure 1. Each map shows the climate driver with the highest correlation to rainfall across the continent for each season. The drivers are blocking (BLK), the Southern Annular Mode (SAM), the Indian Ocean Dipole (IOD), and El Niño/Southern Oscillation (ENSO).

The fact that Victorian rainfall is influenced by remote drivers aids in making longer term (seasonal) forecasts of rainfall, since the drivers relate to a predictable component of rainfall.

Ongoing work through the Centre for Australian Weather and Climate Research and the Managing Climate Variability Program is aimed at improving the representation of these drivers in models and their connections to weather systems and rainfall.

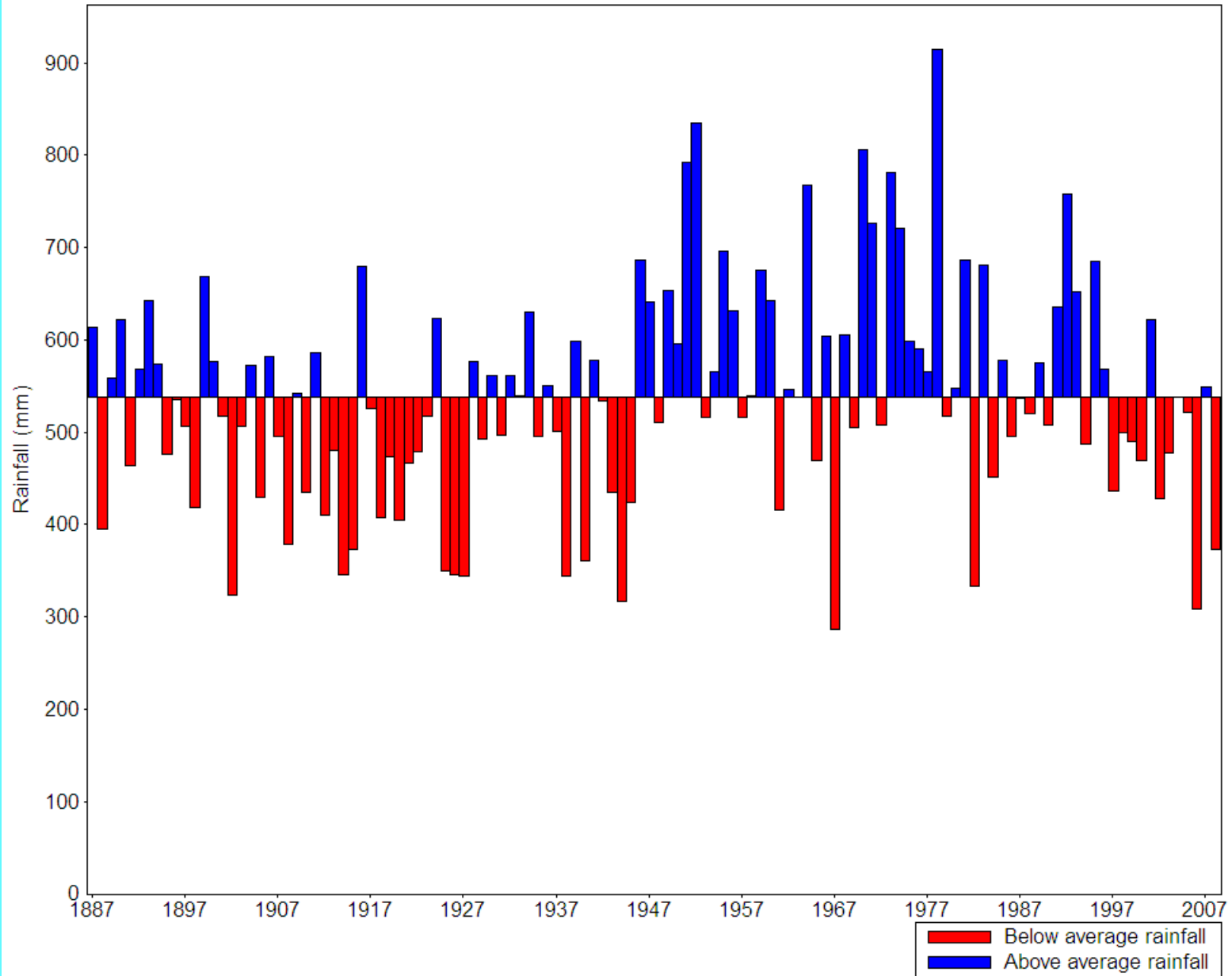
Reference:

Risbey, J., M. Pook, P. McIntosh, M. Wheeler, and H. Hendon 2009: On the remote drivers of rainfall variability in Australia. (Mon. Wea. Rev.), DOI: 10.1175/2009MWR2861.1

Historical record of seasonal rainfall (mm) at SHELFORD

Long-term average rainfall (Jan to Dec) is 538 mm

Rainfall period: Jan to Dec

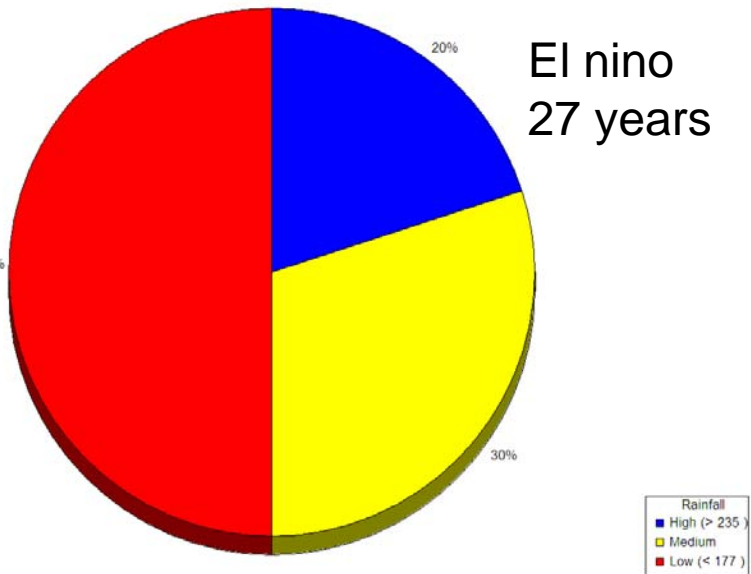


Starting year of rainfall period

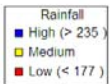
Source: Rainman StreamFlow

Chance of rainfall at SHELFORD

Analysis of historical data (1887 to 2009) using SOI Phases: Jun to Jul. Leadtime of 0 months. Rainfall period: Aug to Nov. The SOI phases/rainfall relationship for this season is not significant because KW test is below 0.9 and Skill Score (-0.8) is below 7.6 (p = 0.48).



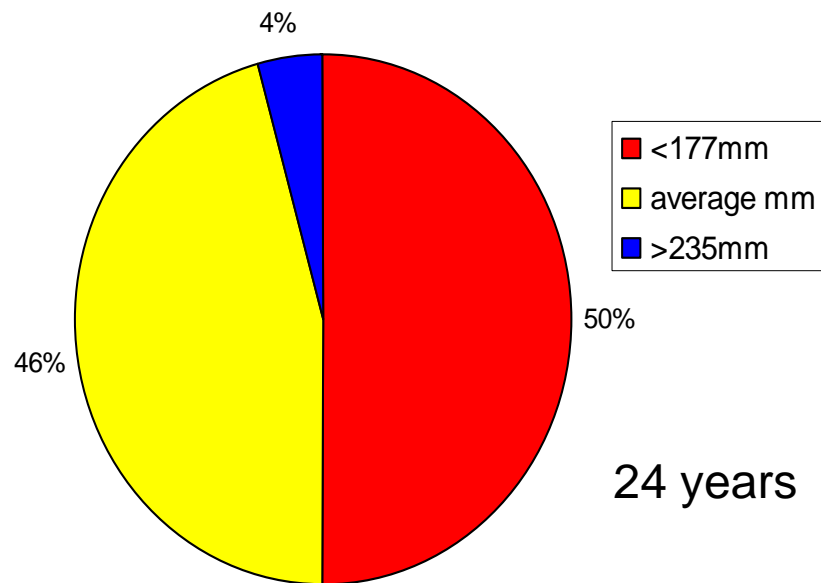
El Niño 27 years



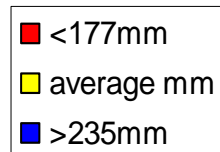
SOI negative

Source: Rainman StreamFlow

Rainfall distribution for IOD+ years Shelford

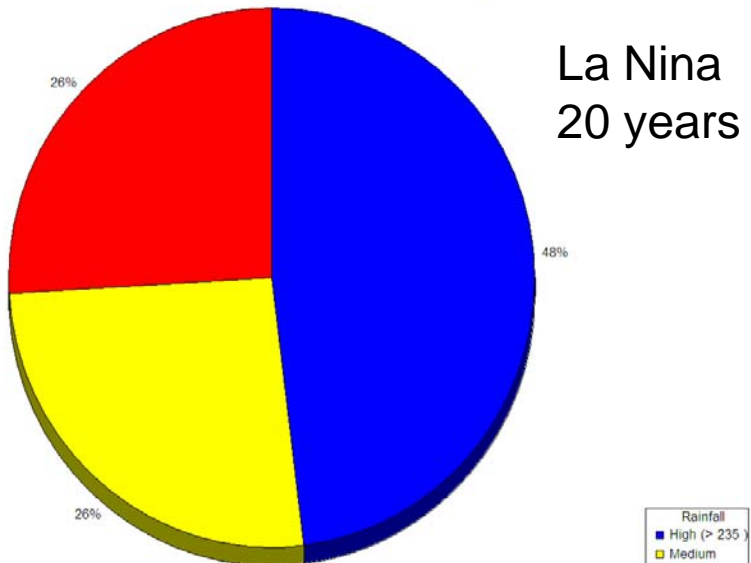


24 years

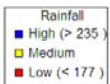


Chance of rainfall at SHELFORD

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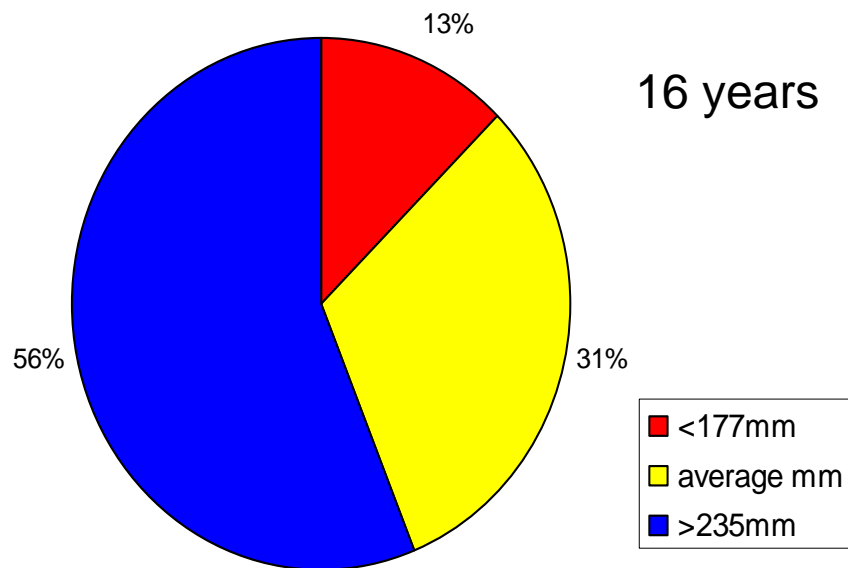
La Niña 20 years



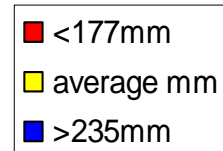
SOI positive

Source: Rainman StreamFlow

Rainfall distribution for IOD- years Shelford

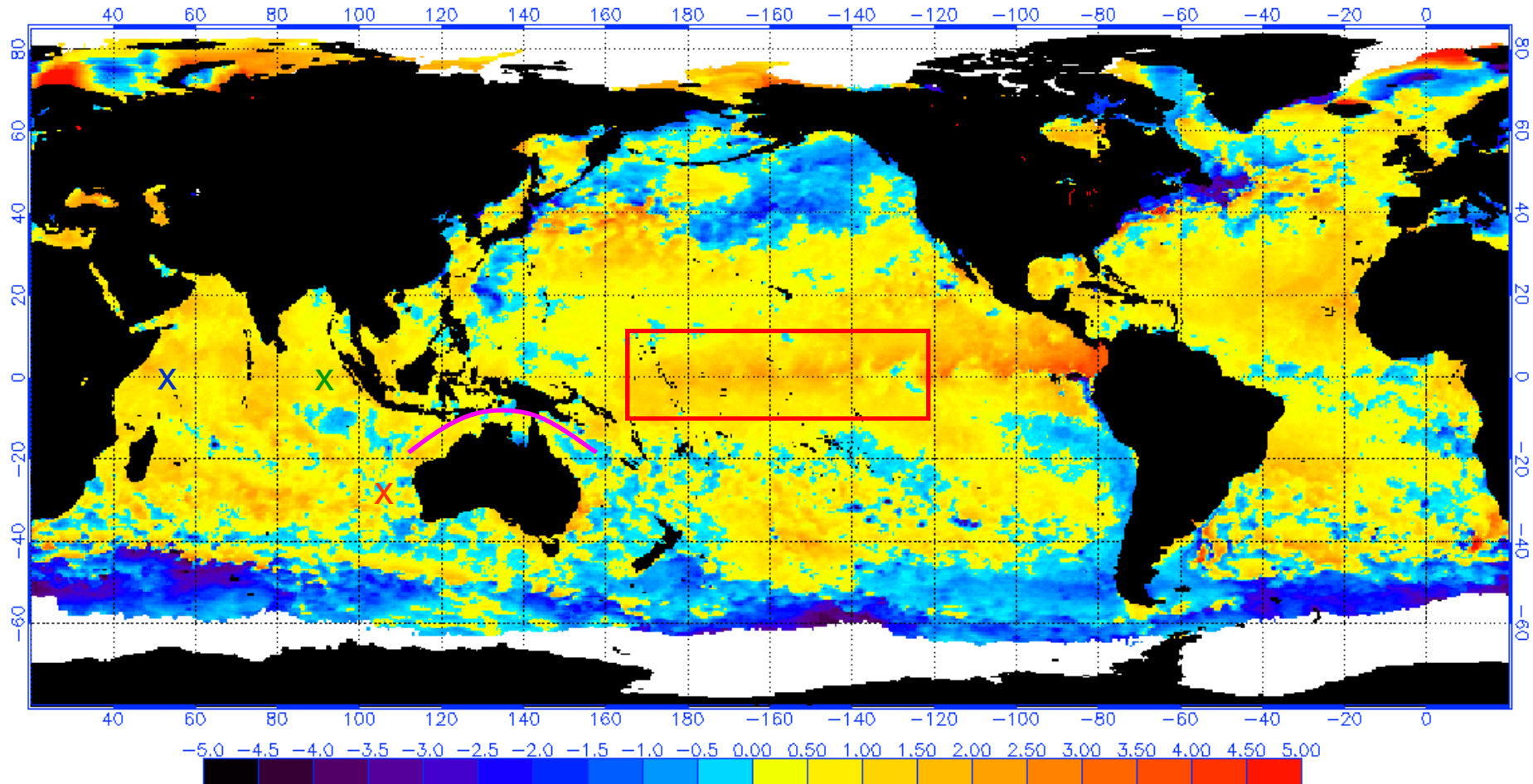


16 years



October 22nd 2009

NOAA/NESDIS 50 KM GLOBAL ANALYSIS: SST Anomaly (degrees C), 10/22/2009
(white regions indicate sea-ice)

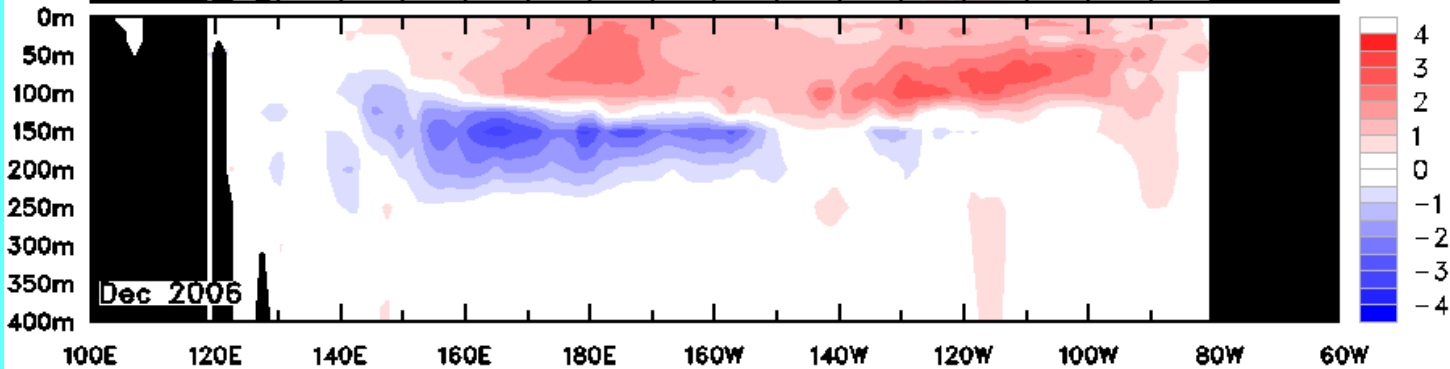
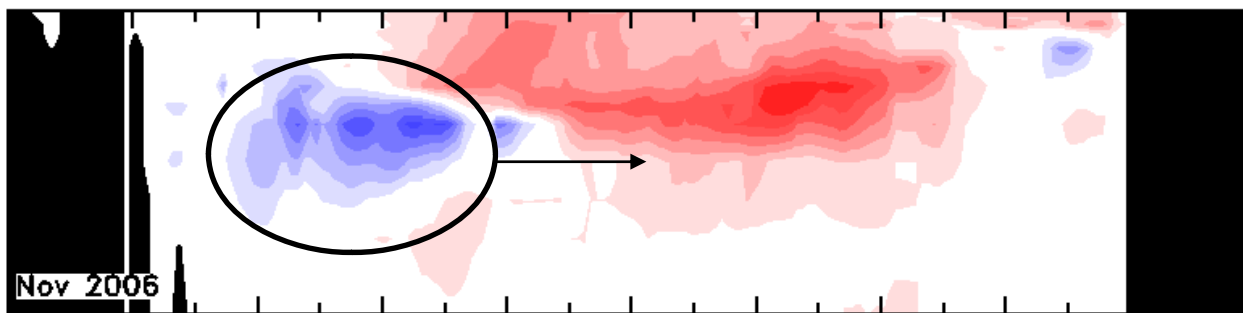
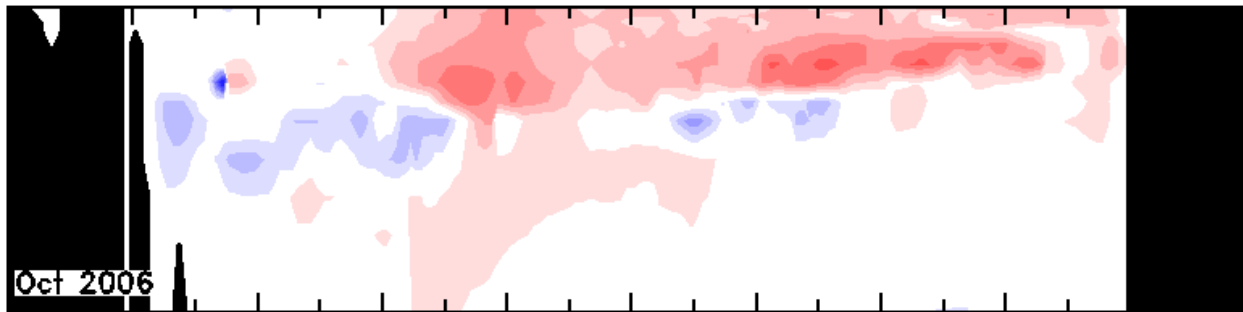
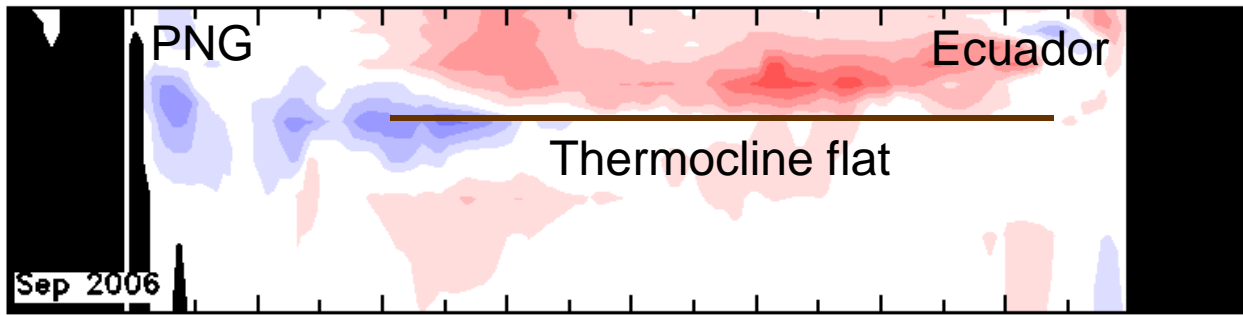


Currently the Niño 3 and 3.4 areas of the Pacific are 0.8 and 0.95°C warmer
Much of the ocean to the north is warmer at the surface
There is a lack of gradient in the Indian Ocean

Pacific Ocean Eq Anomaly

$\Delta=0.5^\circ\text{C}$

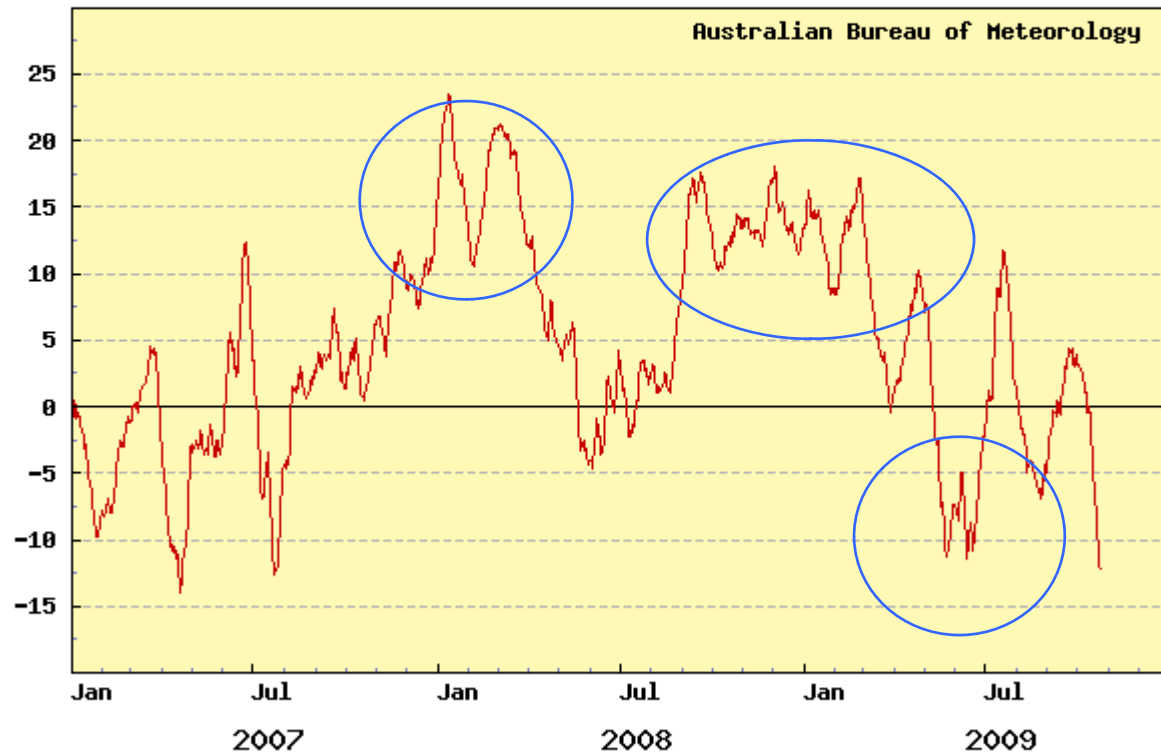
El Niño
Sub-surface



The SOI has ants in its pants



30-day moving SOI
(shown against end date)



Southern Oscillation Index = SOI = difference in air pressure (Tahiti – Darwin)

The Southern Annular Mode (AAO) more negative for this year

Negative SAM

Polar winds weaker

Westerlies closer to Southern Aus

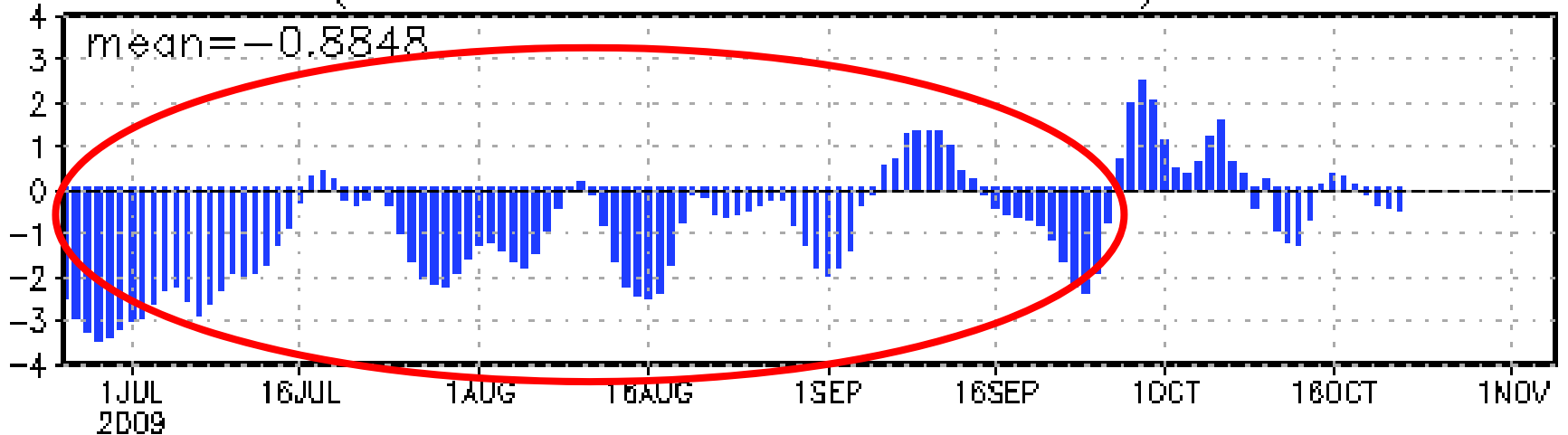
Pushes fronts more northward.

But changes weekly

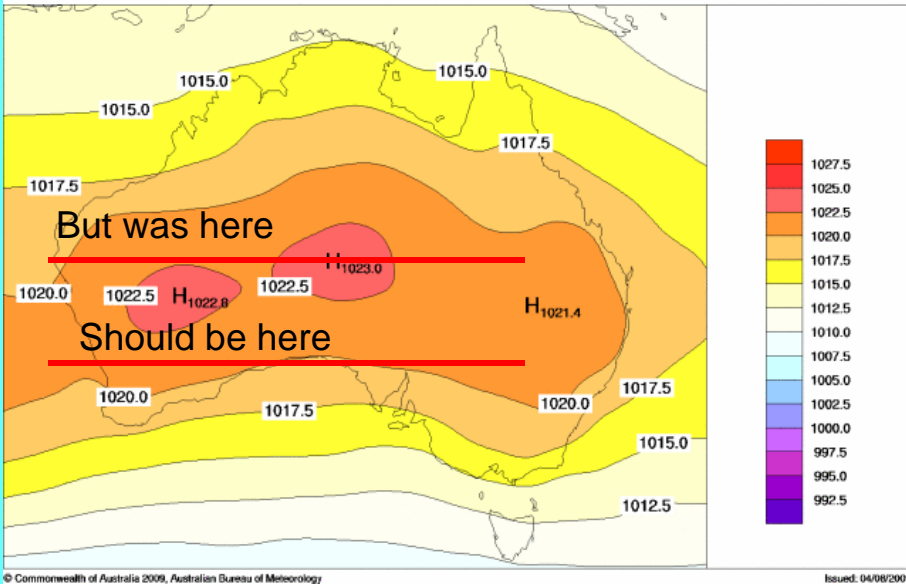
AAO: Observed & GFS forecasts

700mb Z (Obs: 25Jun2009 – 22Oct2009)

AAO index



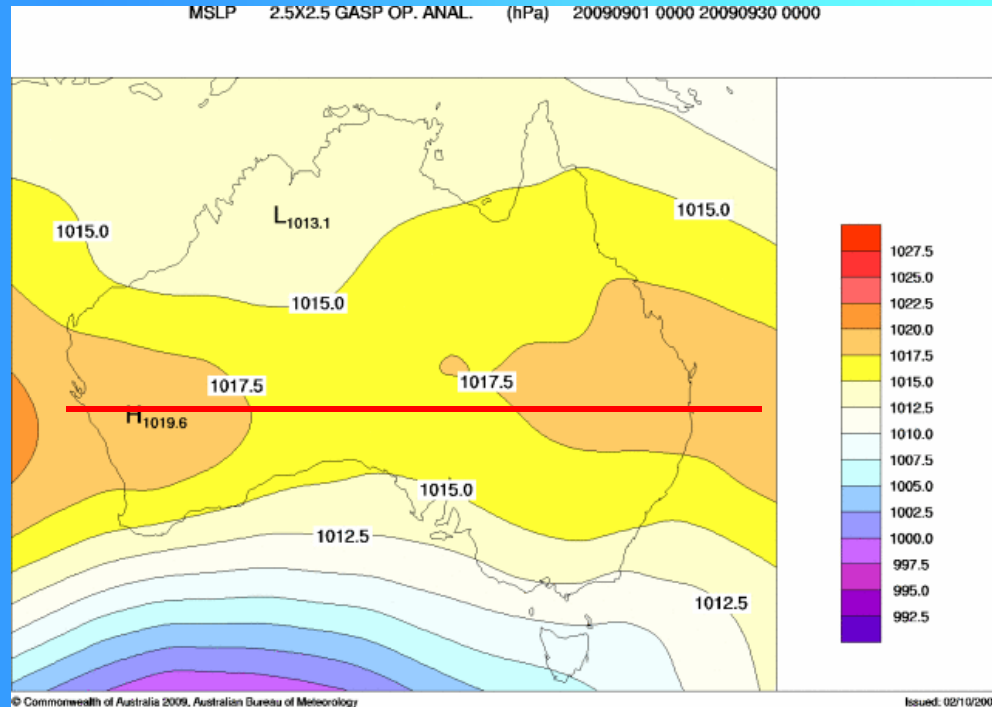
July



September

Sub Tropical Ridge

Much lower than normal pressure
a good sign for frontal activity. More
northward position for fronts hitting
us June-Sept



Modelled Climate and Ocean Predictions October 26th 2009

	Coupled GCM's					Ensemble			Statistical		
	System 3 ECMWF Europe	POAMA BoM Australia	SINTEX JMA Japan	CFS03 NCEP USA	ECPC USA	UKMO UK	IRI USA	APCC Korea	BoM Seasonal forecast	QDNRM Qld Australia	ESS DAF WA
Month of Run	Sep	Oct	Oct	Oct	Oct	Sep	Oct	Sep	Oct	Oct	Sep
Forecast Months	NDJ	NDJ	DJF	DJF	DJF	OND	NDJ	OND	NDJ	NDJ	NDJ
Spring/Summer NINO3.4	Warm	Warm	Warm	Warm		Warm	Warm				Slightly warmer
Spring/Summer Eastern Indian Ocean	Warm/ Neutral	Neutral	Slightly warmer	Neutral/ Warm		Neutral/ Warm west	Neutral				
Spring/Summer Rainfall	Slightly drier?	Neutral	Slightly drier	Neutral	Slightly wetter	Slightly drier	Neutral	Neutral	Slightly drier	Neutral/ Slightly drier south west	
Spring/Summer Temperature	Warmer?	Neutral	Neutral	Slightly warmer	Neutral	Neutral	Slightly warmer	Neutral	Warmer		

The latest “Fast Break” analysis

No strong signals either way

slightly drier

slightly warmer

but the consensus is neutral

Preparing Victorian farmers for the Climate change challenge

DPI Commissioned WIDCORP to do survey
1500 landholders across all farm segments

Climate change

Seasonal climate variability

Emmissions trading

Report released by WIDCORP in Dec (All goes well)

WIDCORP website

Plenty of collaborative opportunities – we are keen for others to utilise the data.

Methodology

1,503 farmers surveyed (1,381 by phone, 122 online) from June 28th to August 13th, 2009.

Participants sourced by DPI's client database

Quotas representative of Victorian farming population across industry sectors and segments.

Degree of accuracy of $\pm 6.5\%$. (95% confident that the results in the population will be the same as in the sample plus or minus 6.5%)

Data analyzed using SPSS

Ethical clearance for the survey design and implementation was granted to University of Ballarat in April 2009

The Break!

17% have recently receive climate information from DPI

12.9% have heard of '*The Break*' (194)

37.1% of respondents who have heard of '*The Break*' currently subscribe to '*The Break*' (72)

724 would like to receive a copy of the break!

Correlation of climate drivers to *'The Break!'*

There is a significant correlation between those who have heard of *'The Break'* and those who have:

a knowledge of Indian Ocean Dipole and believe it affects rainfall in their district.

a knowledge of Southern Annular Mode

a knowledge of Sub Tropical Ridge

And significant correlation between those who have **not** heard of the *'The Break'* and not heard of

the Indian Ocean Dipole and do not know if it affects the rainfall in their district

the Southern Annular Mode

Correlation of use of climate related information and heard of '*The Break*'

There is a significant correlation between those who have heard of '*The Break*' and those who use

- Historical climate information
- BOM seasonal climate outlooks
- Long Range forecasts
- Computer climate programs
- Sea surface temperature maps

Five
BIG
Questions????

The change choices

Part of my journey

Realised most change rural landholders are encouraged to undertake is incremental (productivity improvement) rather than transformational change

It is a far harder discussion to look at all choices

Many involved in extension are scared to have the discussion – It is a no go zone

The 5 Big Questions

- **Are you enjoying what you are doing?**
- **Can you sustain the effort?**
- **Is your family supporting what you are doing?**
- **Are you living a lifestyle that you are happy with?**
- **Have you enough to retire on?**

Doing something differently

Masochistic tendencies

Or do something differently

The options choices on offer have always been the same when involved in farming

There are five options

- each one is an excellent choice
- at least one will be right for you

But which choices are you going to make if doing more of the same is not an option?

The 5 Big Options

Improve profitability

Change the business structure

Change enterprise

Change the capital base

Exit

Thank you

Seven Ages of Farming

Based on Shakespeare's

'All the Worlds a stage

The seven ages of man

The seven ages of Farming

The Child as a Farmer – The Wonder years

Everything Dad does is great

Have the best and biggest Toys (Real Farm trucks)

School gets in the way of doing jobs with Dad

Sitting on the tractor is the greatest feeling

The Teenager as a Farmer – All hope

Dad is still the hero but he can clip your ear hard

Utes do amazing things in reverse and motor bikes provide the ultimate thrill (Sheep work in the paddock)

School gets in the way of sheep work

Driving the tractor is the best feeling

The 20's something Farmer - Bullet proof

Dad just doesn't understand

Utes do amazing things late at night

Sheep suck

All my school friends off the farm earn more

Girls - is it quantity of or number acres she is due to inherit the best measure, Mind you there are none left in the district

30 something - King of the Castle (Sand)

Does it get any better – Freedom from Dad

Idealism on plans on how you and you're your wife will run the farm over the coming years

A Station wagon is more practical than a ute

The wife is paranoid about the parents accepting her

Farming interferes with the school council and footy club presidency

Dad has promised to let me implement some of the changes we need to make

Late 40's The Hard Yards

Realise Just a worker for Dad

Parents still own all the ground

Maybe my wife was onto something with her paranoia

Cropping is the only way to make money

The kitchen can get renovated just after the next good year
and we have replaced the header

The wife is always crappy

The kids think the farm is boring

The parents look too damn healthy

60 plus Been there Done That

My son is a lazy so and so and I have to make all the decisions

That daughter in law is flighty and getting nothing

Sheep make money regardless of the season

While living in town would be good for bowls and golf my wife could not bear the Daughter in law ever being in charge of our home that we built.

Looks like talent has skipped a generation - those grand kids are very talented

70 plus - Almost Under

The least my son could of done was bought me a better farm Ute than a Suburu Brumby to drive out to the farm in.

Didn't trust that grandsons wife and now she's gone and taken the windmill block with her

Am not sure of the reason why we only run a hundred ewes

Don't feel welcome any more in my home that I built

The son is spending too much too fast and will come undone

He doesn't know tough times

The original Verse

"All the world's a stage,
And all the men and women merely players;
They have their exits and their entrances;
And one man in his time plays many parts,
His acts being seven ages. At first the infant,
Mewling(crying)and puking in the nurse's arms;
And then the whining school-boy, with his satchel
And shining morning face, creeping like snail
Unwillingly to school. And then the lover,
Sighing like furnace, with a woeful ballad
Made to his mistress' brow. Then a soldier,
Full of strange oaths, and bearded like the pard,
Jealous in honour, sudden and quick in quarrel,
Seeking the bubble reputation
Even in the cannon's mouth. And then the justice,
In fair round belly with good capon lin'd,
With eyes severe and beard of formal cut,
Full of wise saws and modern instances;
And so he plays his part. The sixth age shifts
Into the lean and slipper'd pantaloon,
With spectacles on nose and pouch on side;
His youthful hose, well sav'd, a world too wide
For his shrunk shank; and his big manly voice,
Turning again toward childish treble, pipes
And whistles in his sound. Last scene of all,
That ends this strange eventful history,
Is second childishness and mere oblivion;
Sans teeth, sans eyes, sans taste, sans everything."

— Jaques (Act II, Scene VII, lines 139-166)

Improve profitability

- Refine the management system/s
- lower cost structures
- Adopt and adapt new technology

Change the business structure

- Set up family trust
- Buy out family partner
- Create company

Change enterprise

- Either change enterprise mix ie increase livestock decrease cropping
- Start new enterprise to compliment existing enterprise ie feedlot
- Exit current enterprise and start new business based on land

Change the capital base

- By more land in a current climatic region
- Buy land in a new climatic region
- Move to a new climatic region
- Sell/lease a parcel of land to free labour
- Off-farm income through labour

Exit

- But maintain the land (Lease) Playing a growing and vital role in allowing agricultural to undertake to respond to the challenges
- Leave the industry

Farmers are likely to do well if:

they have a vision for their future

they have already made changes to their business

they understand their financial situation

they review their situation in a few years time.