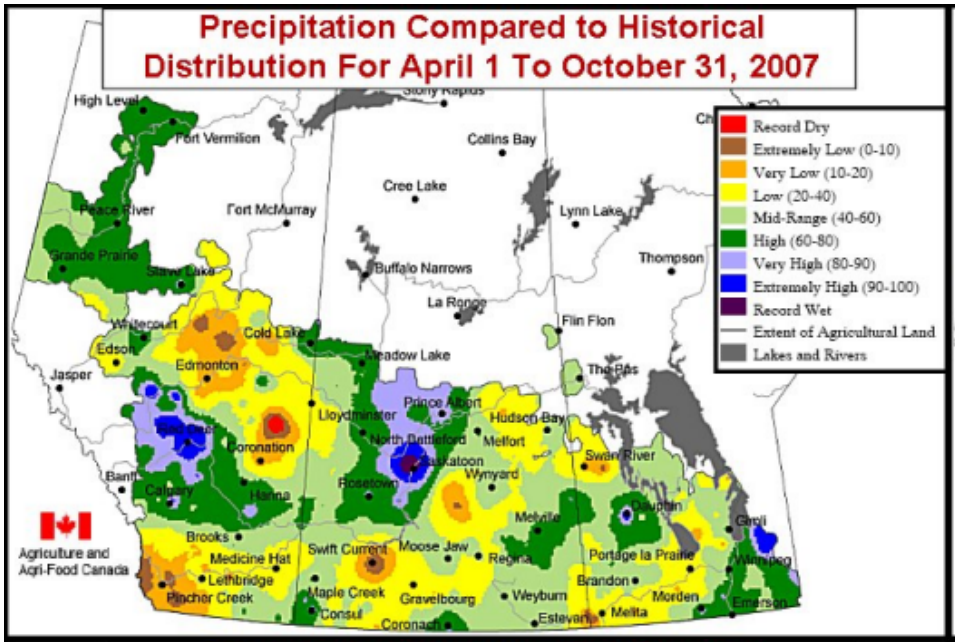
WEATHER OUTLOOK 2014-15

PRESENTED BY

World Weather, Inc.

WEBSITE -- http://www.worldweather.cc **Telephone: 913-383-1161**

EMAIL ------ worldweather@bizkc.rr.com **Fax Number: 913-383-1198**


Precipitation Compared to Historical Distribution For April 1 To October 31, 2007
Record Dry
Extremely Low (0-10)
Very Low (10-20)
Low (20-40)
Mid-Range (40-60)
High (60-80)
Very High (80-90)
Extremely High (90-100)
Record Wet
Extent of Agricultural Land
Lakes and Rivers
Agriculture and Agri-Food Canada
High Level
Fort Vermilion
Collins Bay
Cree Lake
Peace River
Fort McMurray
Lynn Lake
Grande Prairie
Buffalo Narrows
Thompson
La Ronge
Flin Flon
Whitecourt
Cold Lake
Edson
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Lloydminster
Prince Albert
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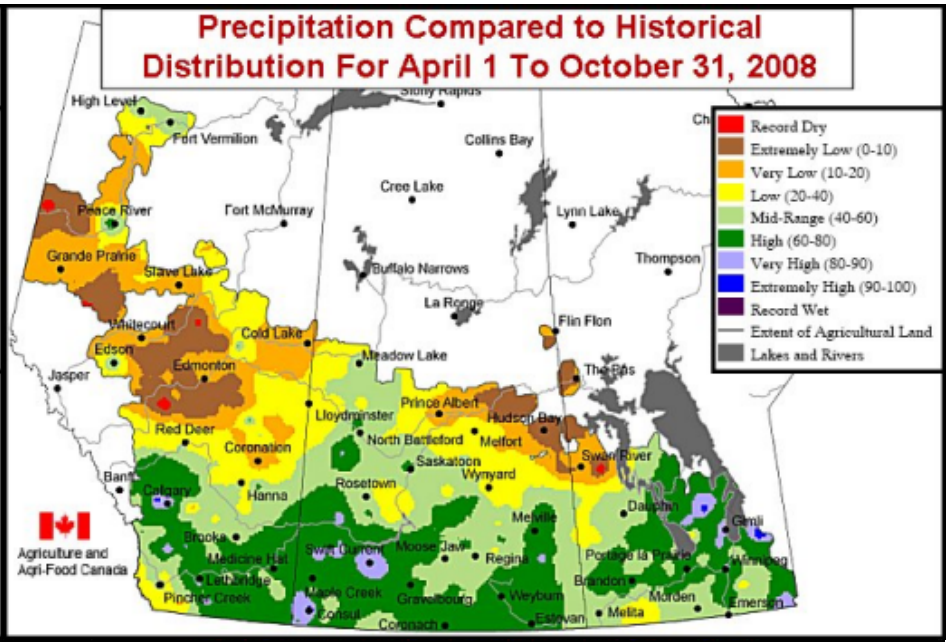
Gimli
Brooks
Medicine Hat
Swift Current
Moose Jaw
Regina
Portage la Prairie
Winnipeg
Lethbridge
Brandon
Pincher Creek
Maple Creek
Gravelbourg
Weyburn
Morden
Consul
Estevan
Melita
Emerson
Coronach


Precipitation Compared to Historical Distribution For April 1 To October 31, 2008
Record Dry
Extremely Low (0-10)
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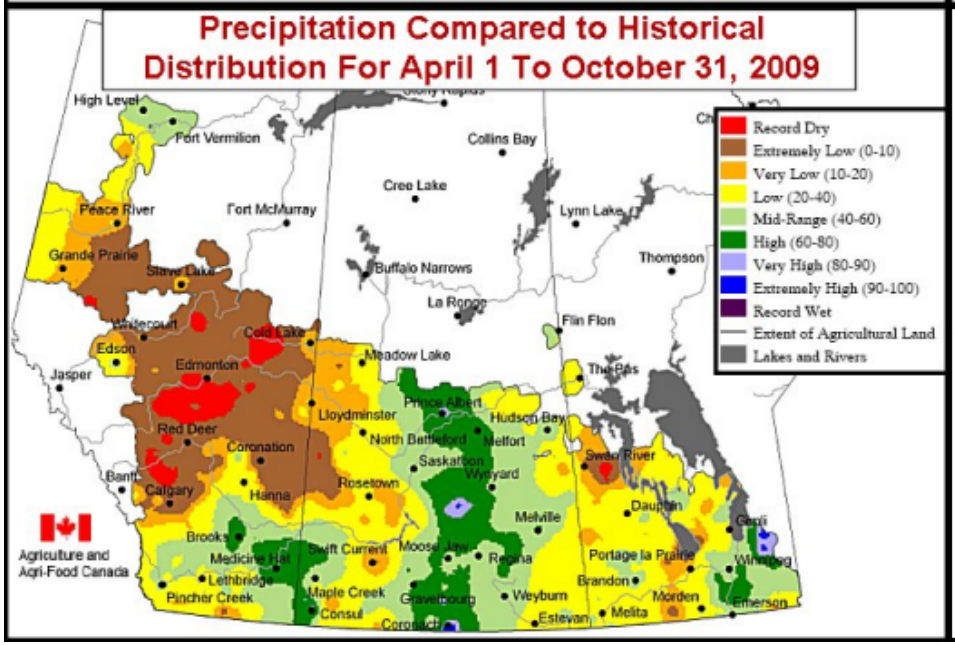
Precipitation Compared to Historical Distribution For April 1 To October 31, 2009
Record Dry
Extremely Low (0-10)
Very Low (10-20)
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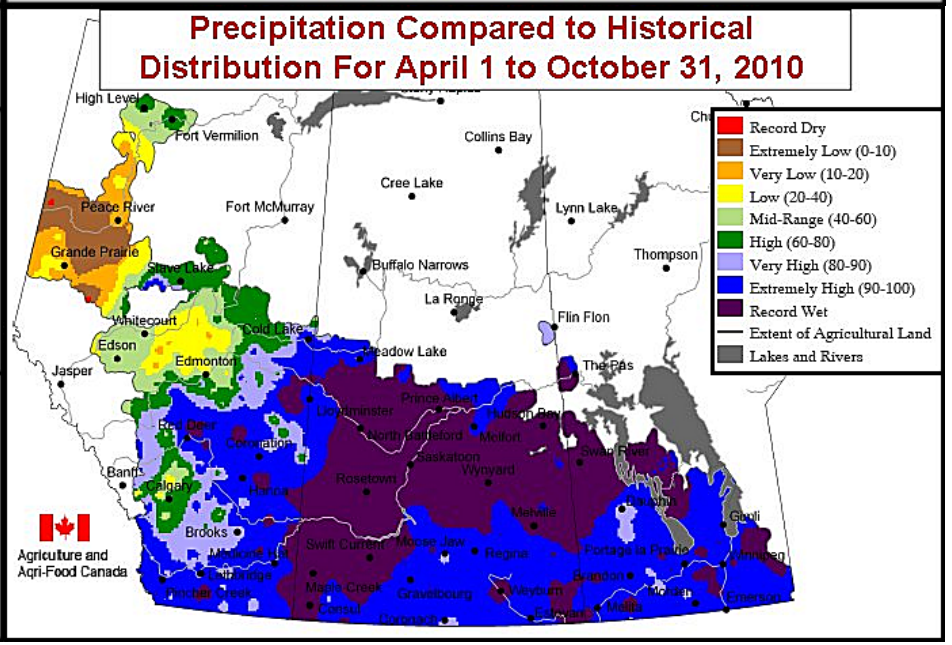
Precipitation Compared to Historical Distribution For April 1 to October 31, 2010
Record Dry
Extremely Low (0-10)
Very Low (10-20)
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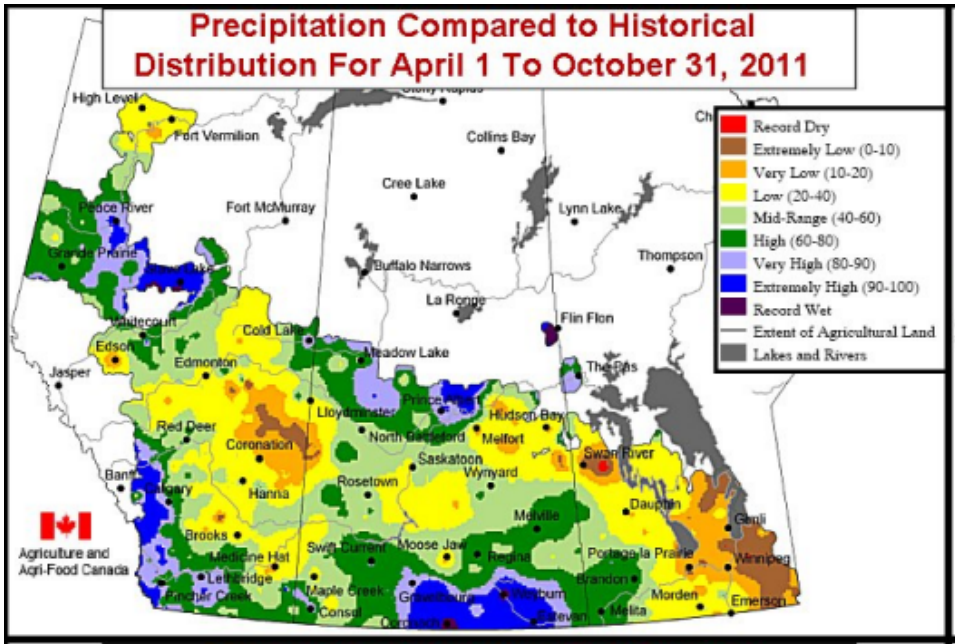
Precipitation Compared to Historical Distribution For April 1 To October 31, 2011
Record Dry
Extremely Low (0-10)
Very Low (10-20)
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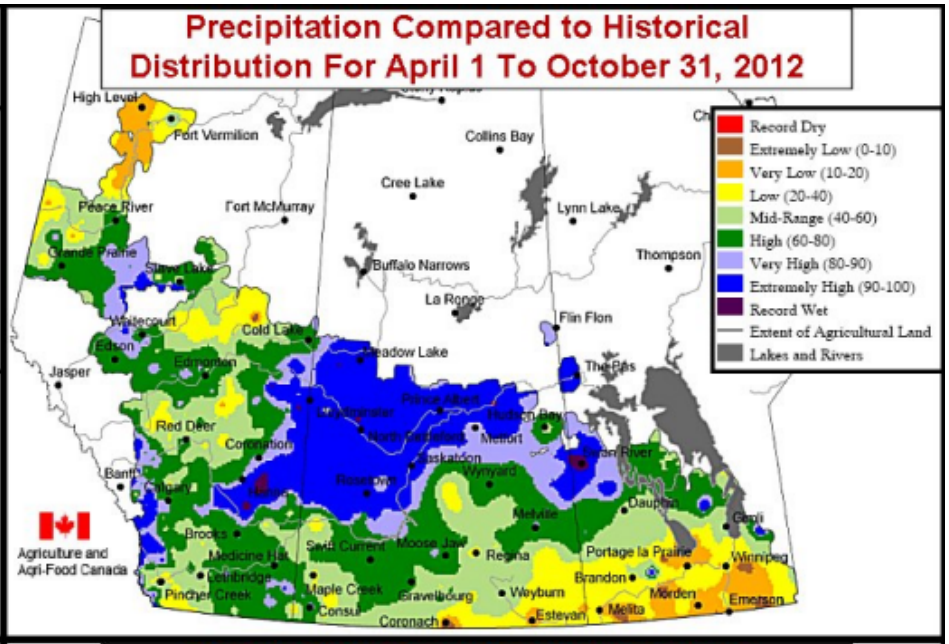
Precipitation Compared to Historical Distribution For April 1 To October 31, 2012
Record Dry
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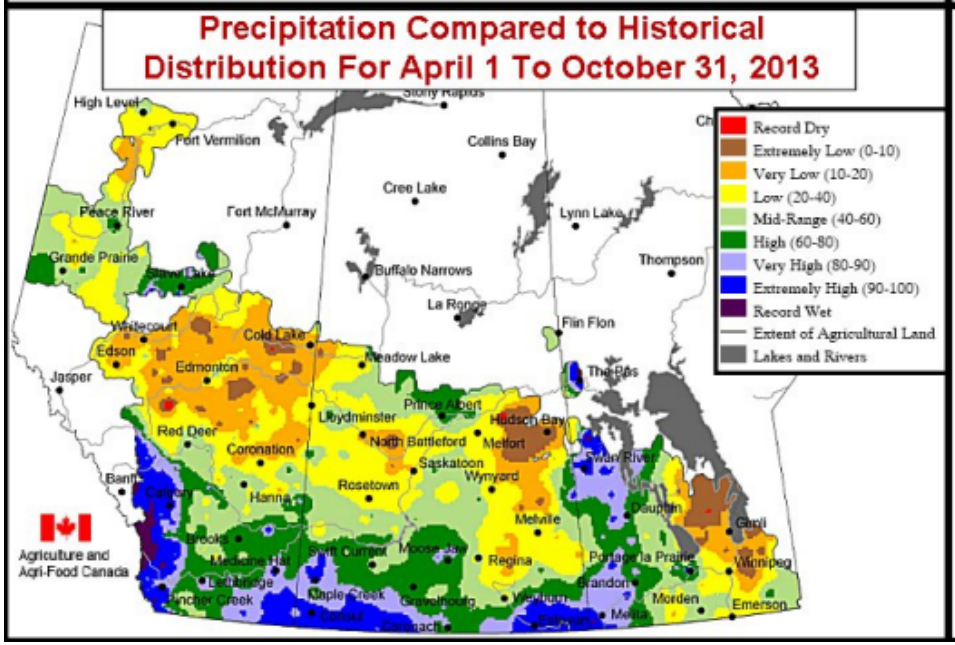
Precipitation Compared to Historical Distribution For April 1 To October 31, 2013
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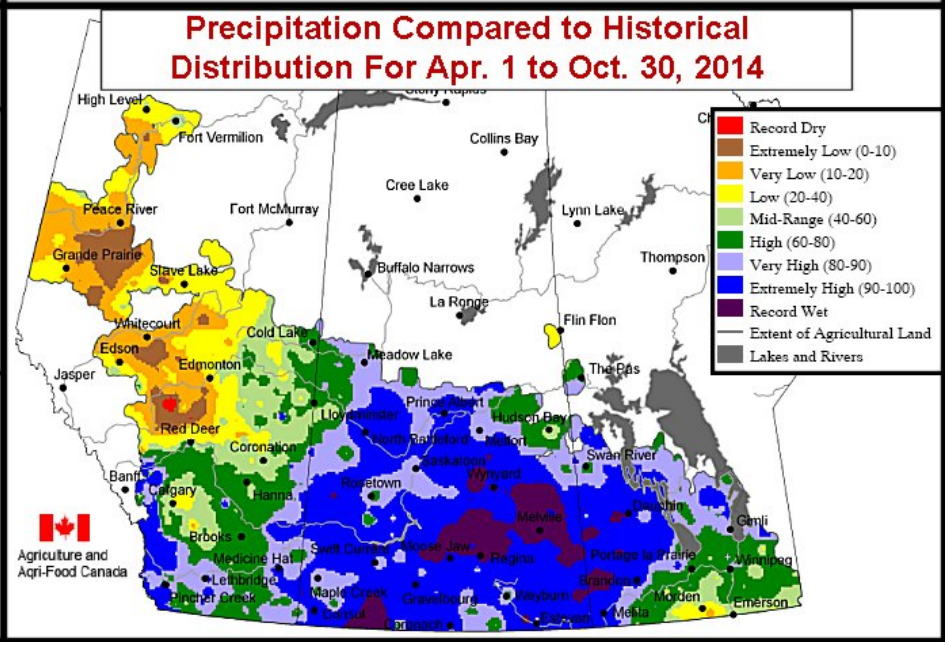
Precipitation Compared to Historical Distribution For Apr. 1 to Oct. 30, 2014
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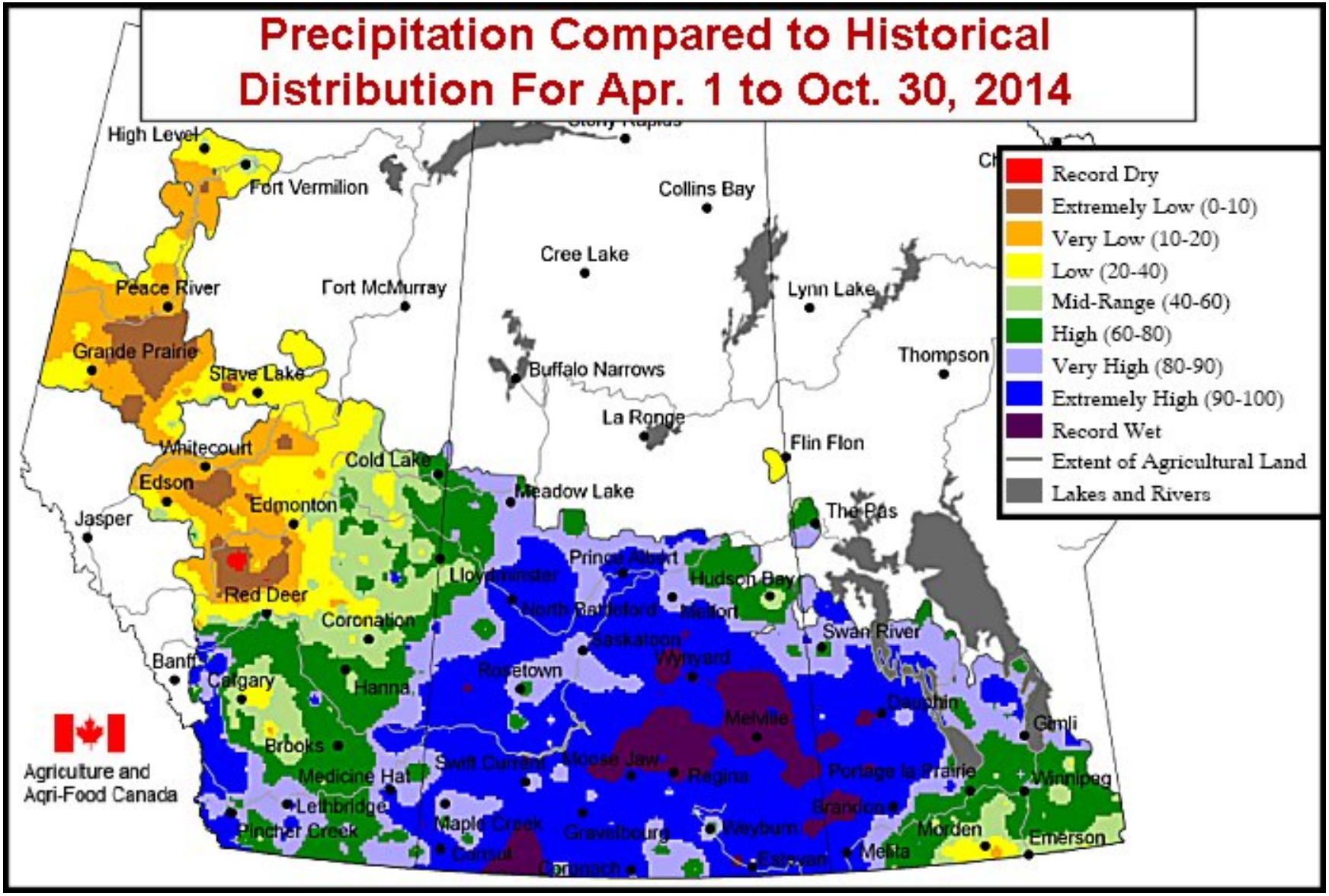
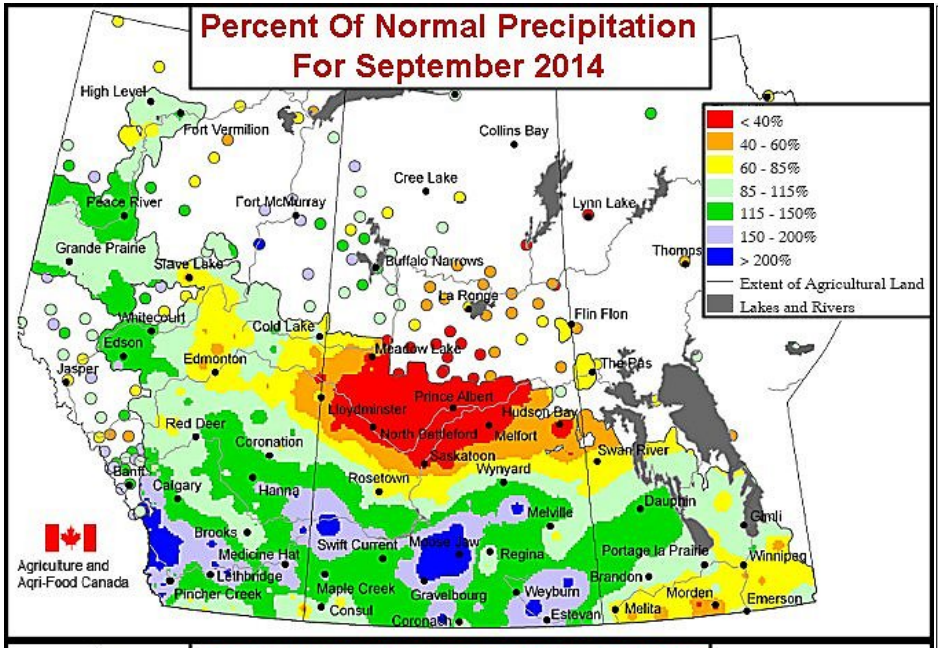
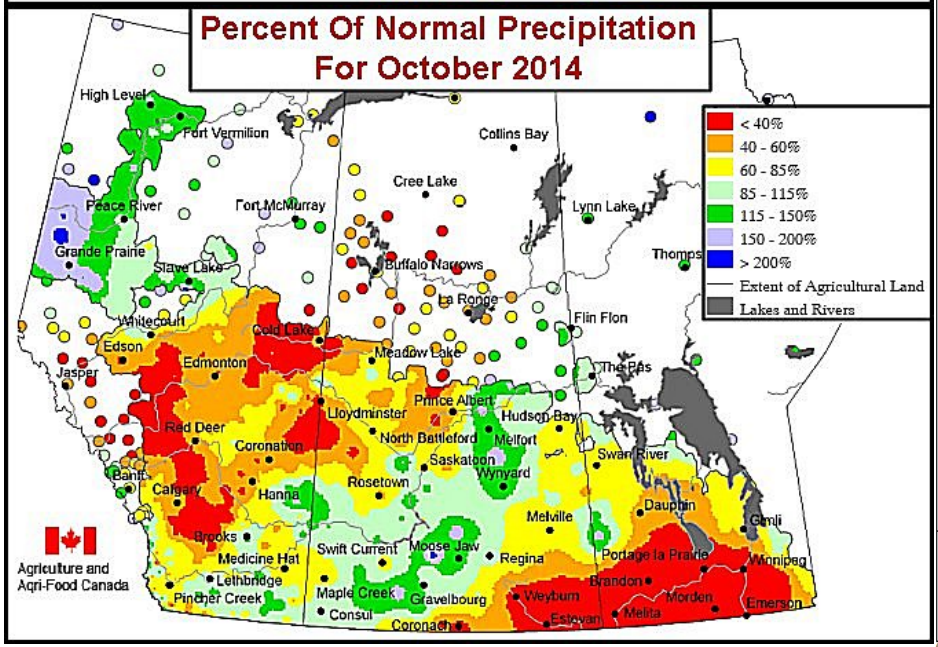
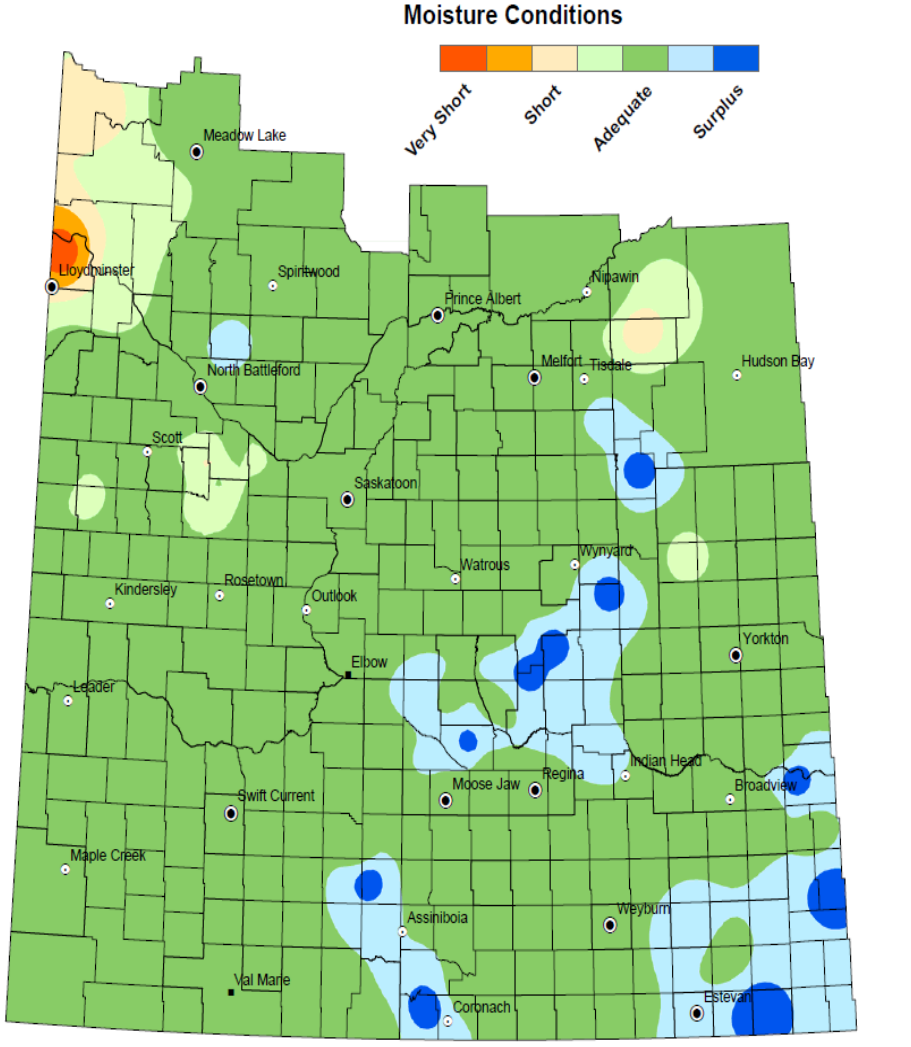


A Record Wet Summer In Saskatchewan And Parts Of Western Manitoba Will Be Remembered Along With Several Other Wet Years In This Current Decade. When Will It Stop Raining? What About Northern Alberta And The Peace River Region?







NOTE: Since techniques used to smooth the transition between zones can affect the values in localized areas, this map should be used for regional analysis only.

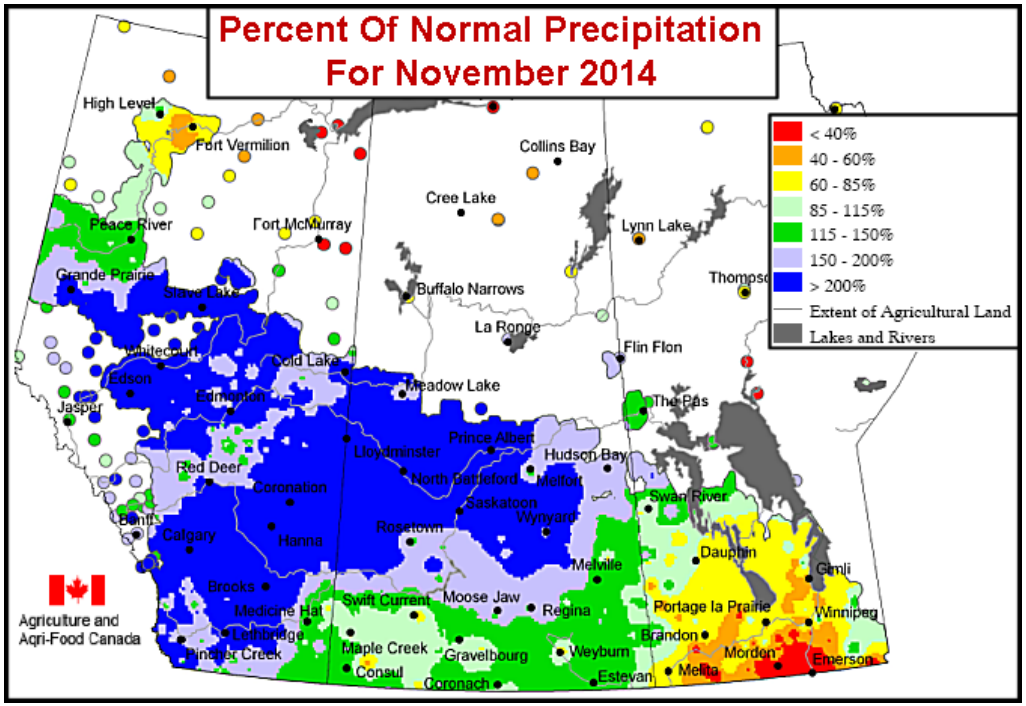
Government of Saskatchewan

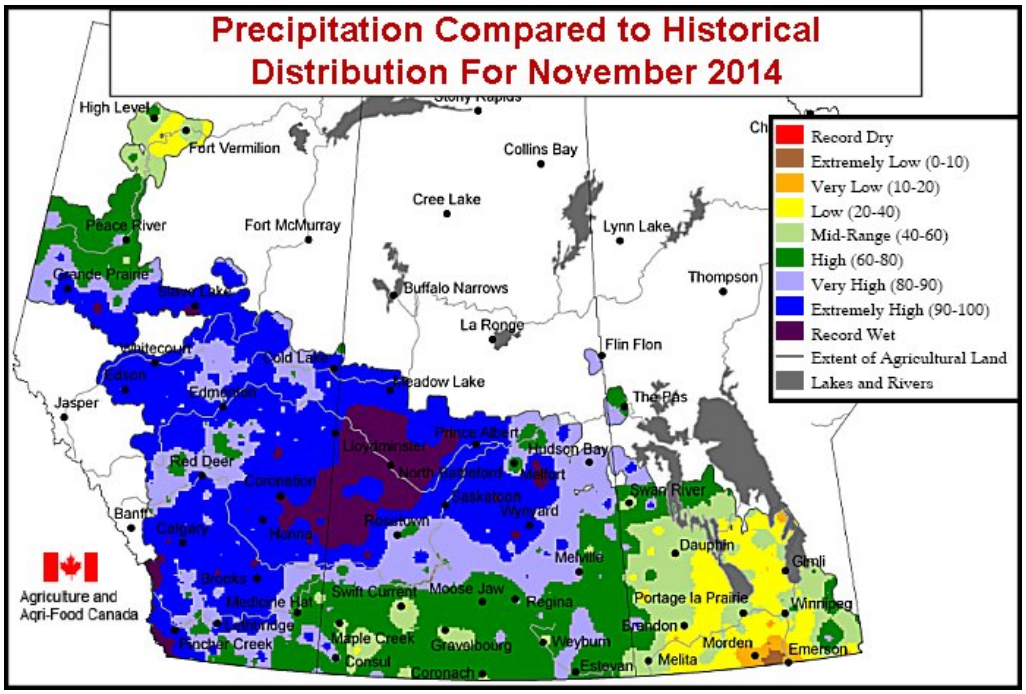
0 25 50 100 150 200
Kilometers
Projection: UTM Zone 13 Datum: NAD83

N

Data Source:
Moisture - Ministry of Agriculture, Crop Report Database
IDW interpolation (power 2.5, fixed radius 300 km)

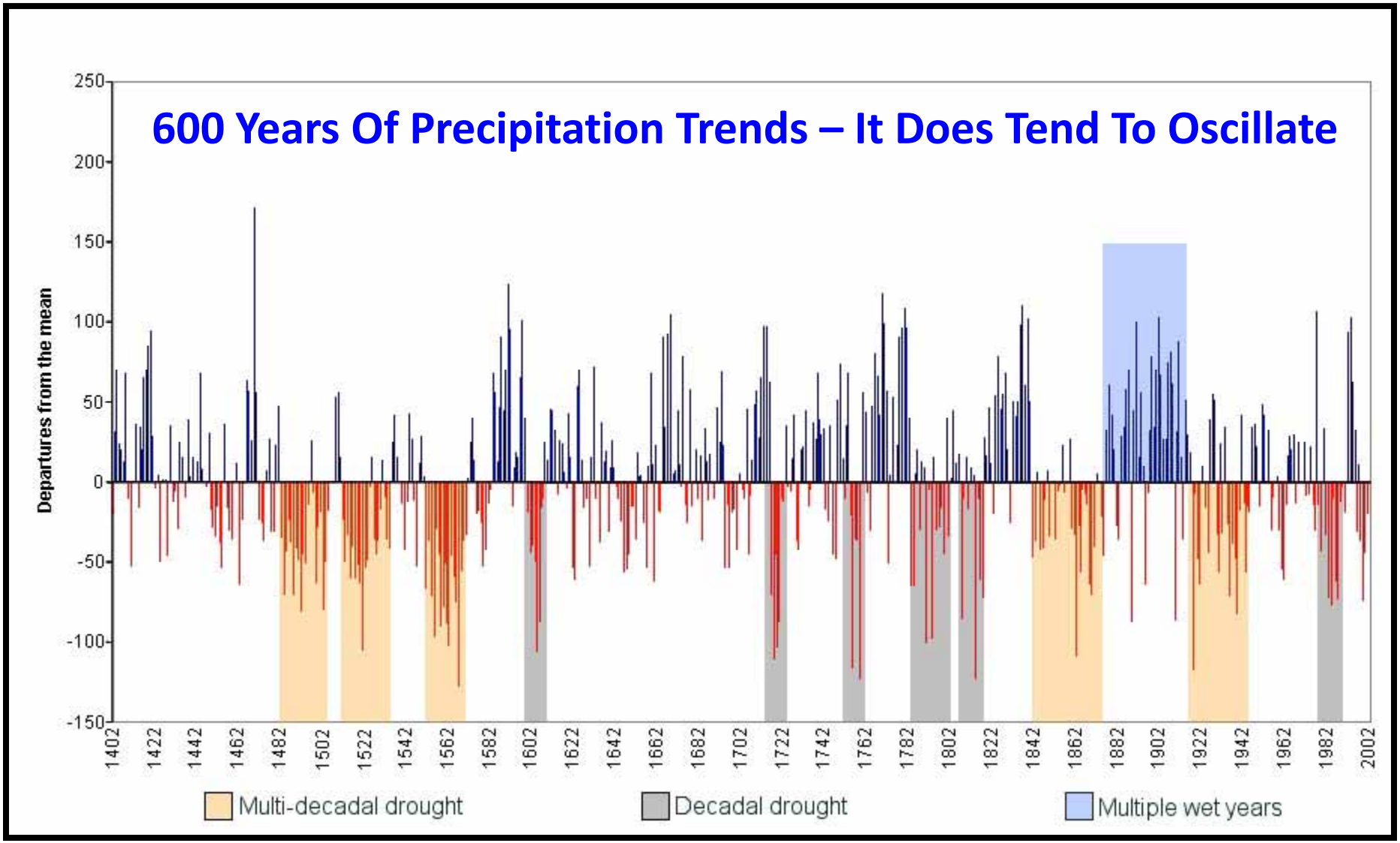
Geomatics Services, Ministry of Agriculture October 29, 2014



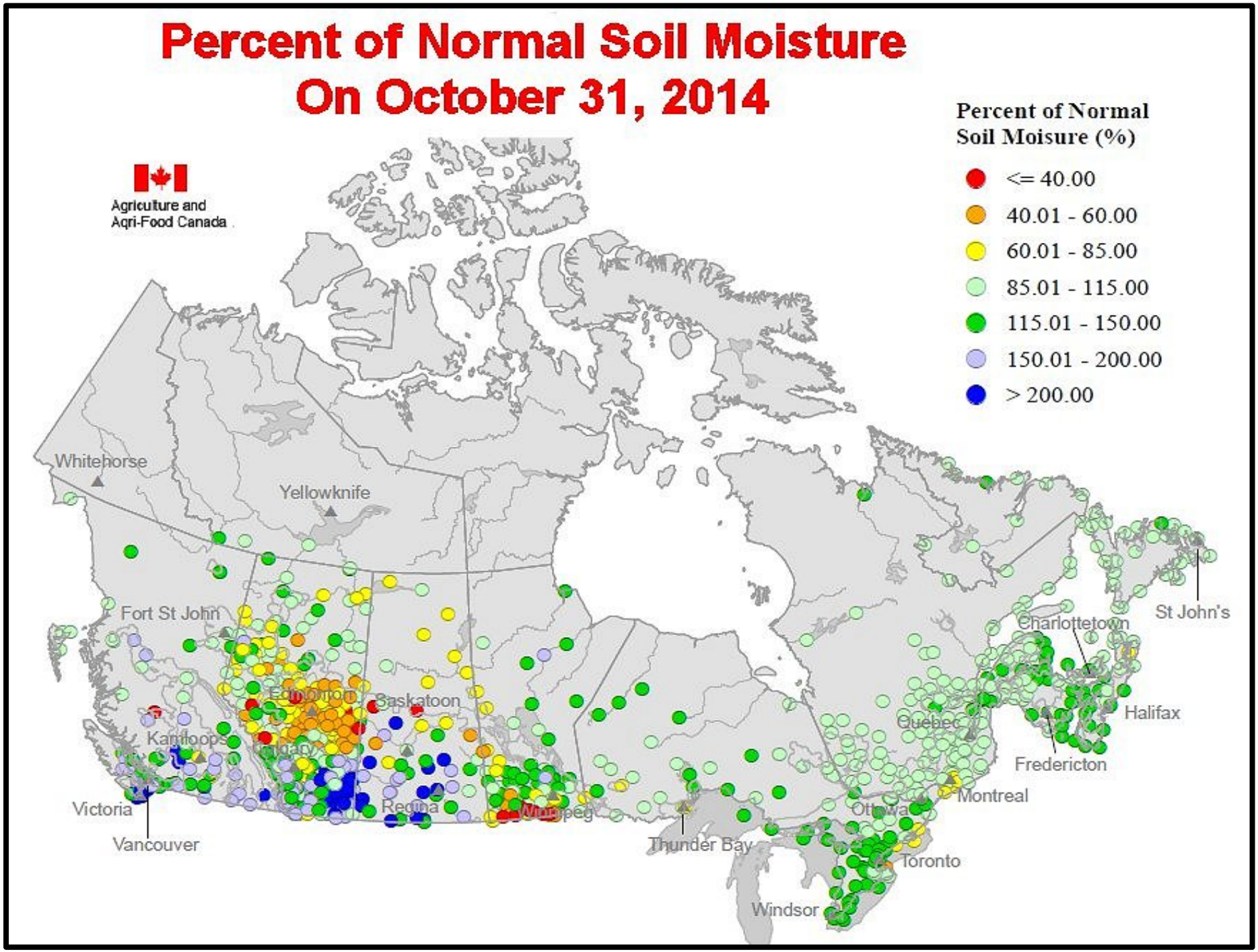


El Nino Was Certainly Not Influencing Canada During November With Precipitation Ranked Over 65 Years Reaching A Record In Northwestern Saskatchewan And East-central Alberta. There Were A Few Other Pockets Across Alberta And A Part Of West-central Saskatchewan That Also Reported Near Record Moisture For The Month. The Moisture Boost Came Mostly In The Form Of Snow And That Raises Some Concern That The Moisture When The Snow Melts May Not Reach Very Far Into The Ground Leaving Dryness Deep In The Soil Over Portions Of Central And Northern Alberta.

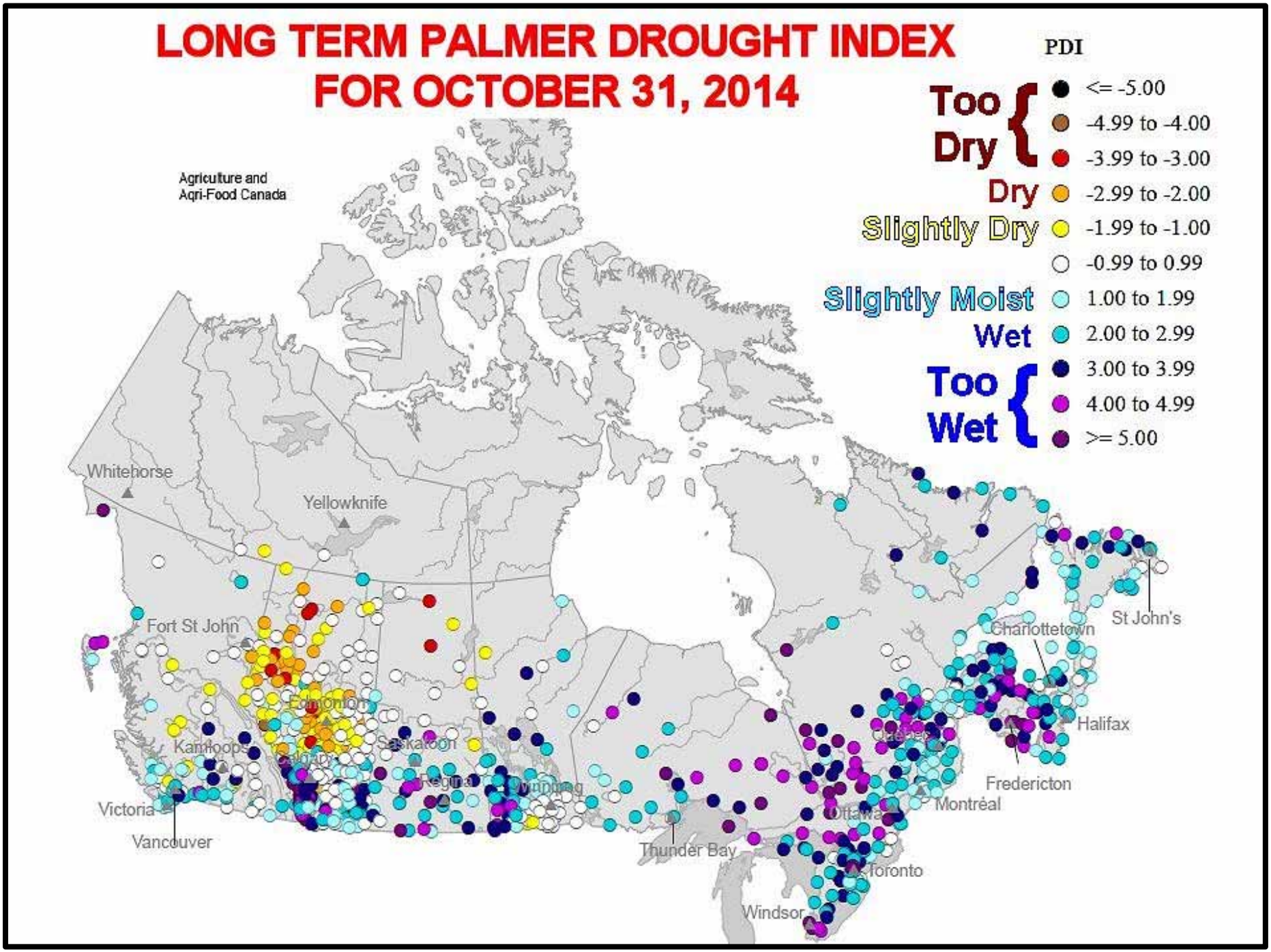
How Long Before The Drought Years Return?

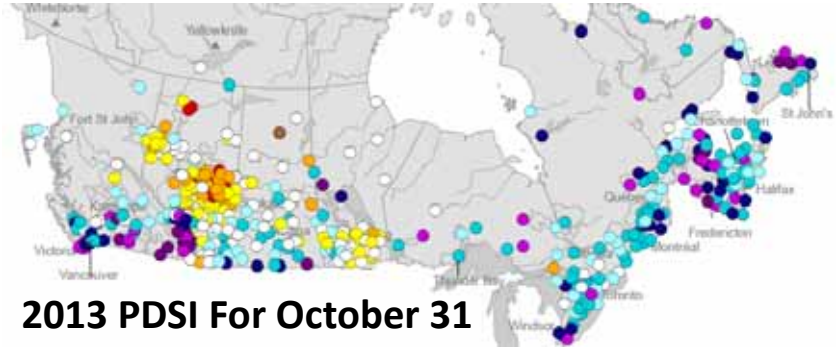


Percent of Normal Soil Moisture On October 31, 2014

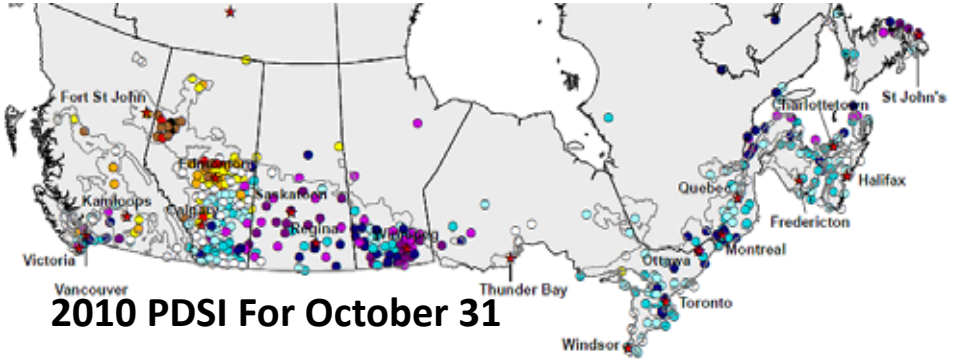


LONG TERM PALMER DROUGHT INDEX FOR OCTOBER 31, 2014

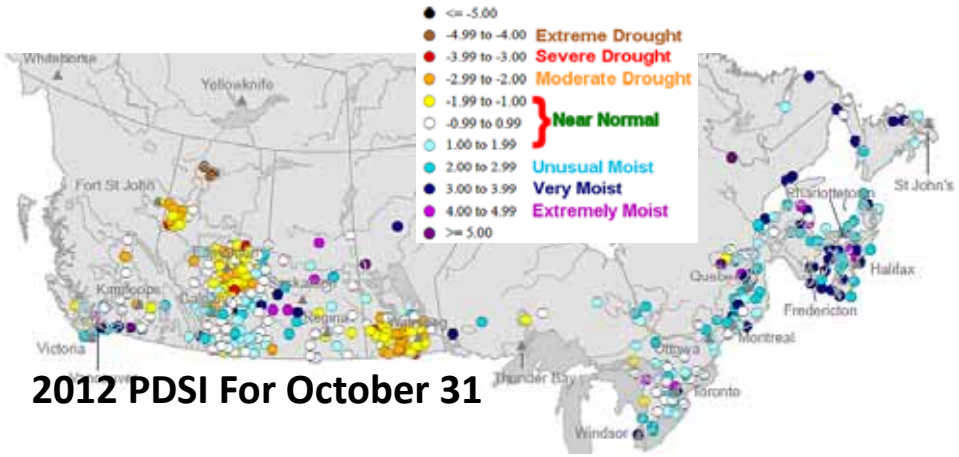




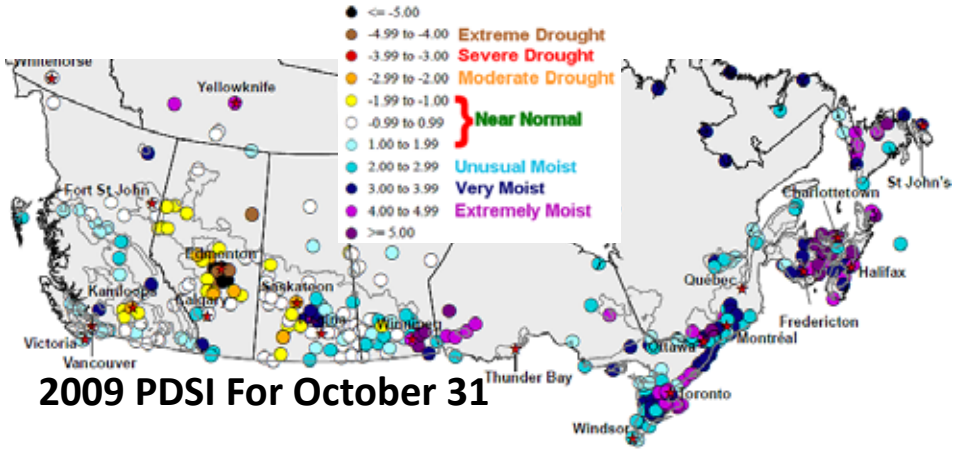
2013 PDSI For October 31



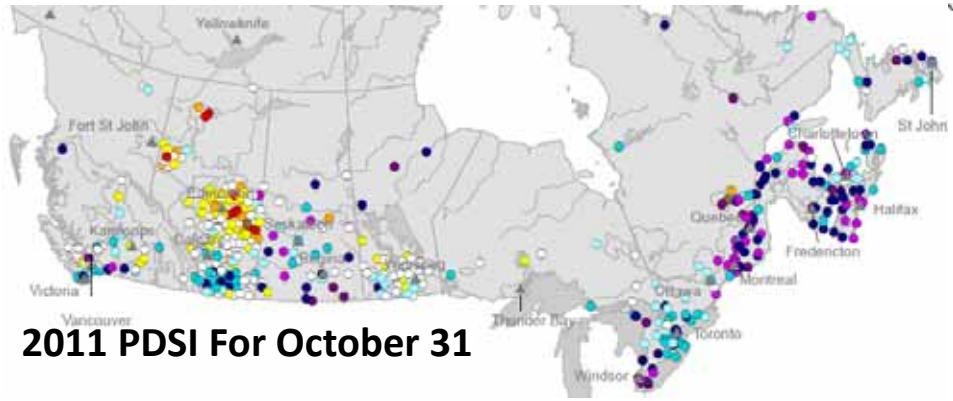
2010 PDSI For October 31



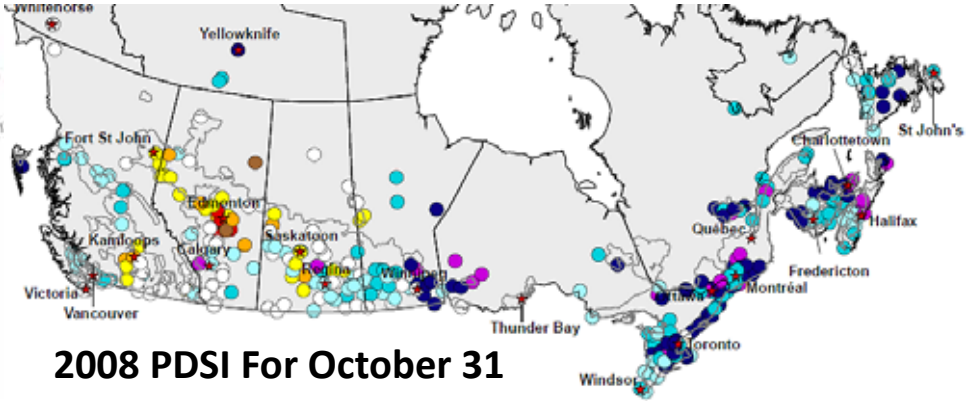
2012 PDSI For October 31



2009 PDSI For October 31



2011 PDSI For October 31



2008 PDSI For October 31

North American Drought Monitor

October 30, 2014

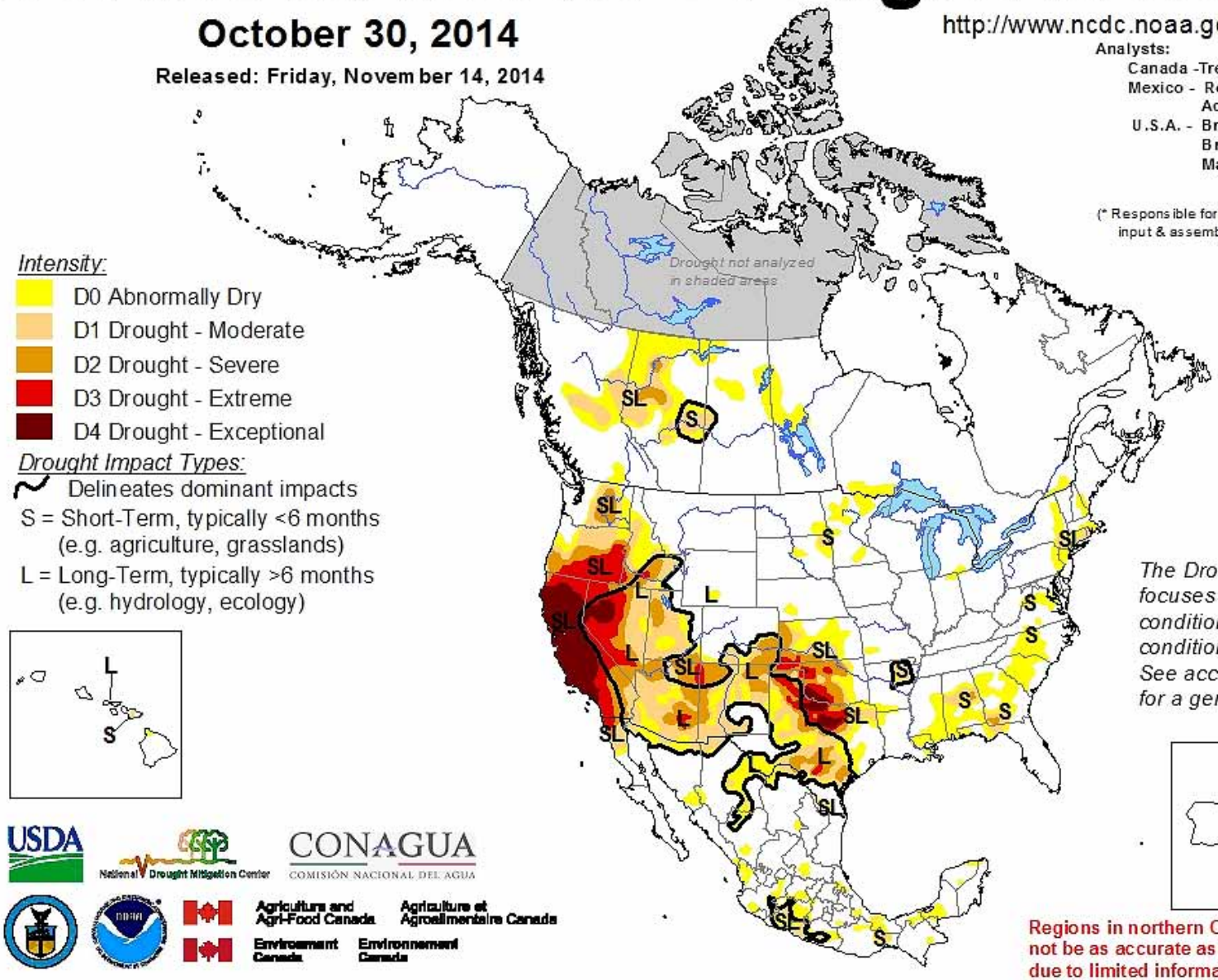
Released: Friday, November 14, 2014

http://www.ncdc.noaa.gov/nadm.html

Analysts:

Canada -Trevor Hadwen
Mexico - Reynaldo Pascual
Adelina Albanil
U.S.A. - Brian Fuchs
Brad Rippey
Mark Brusberg*

(* Responsible for collecting analysts' input & assembling the NADM map)



Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

Drought Impact Types:

Delineates dominant impacts

S = Short-Term, typically <6 months (e.g. agriculture, grasslands)

L = Long-Term, typically >6 months (e.g. hydrology, ecology)

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text for a general summary.

Regions in northern Canada may not be as accurate as other regions due to limited information.

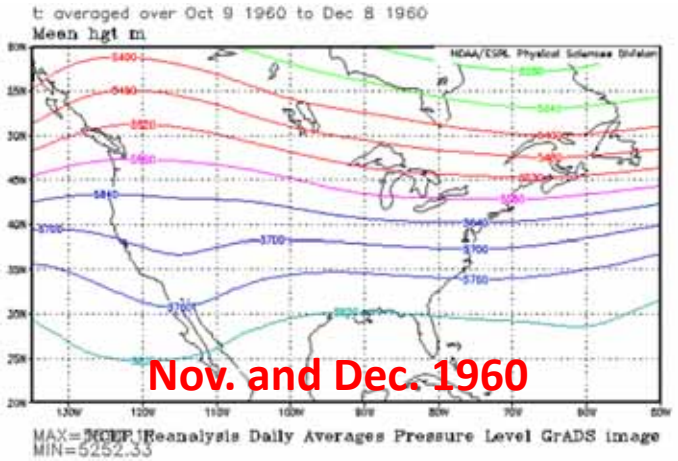
USDA

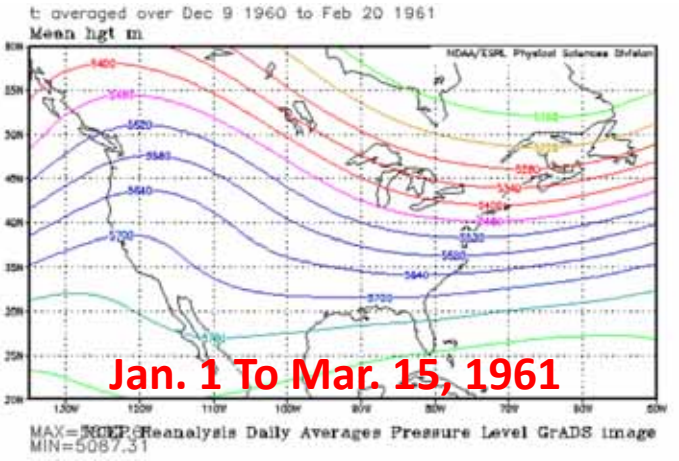
National Drought Mitigation Center

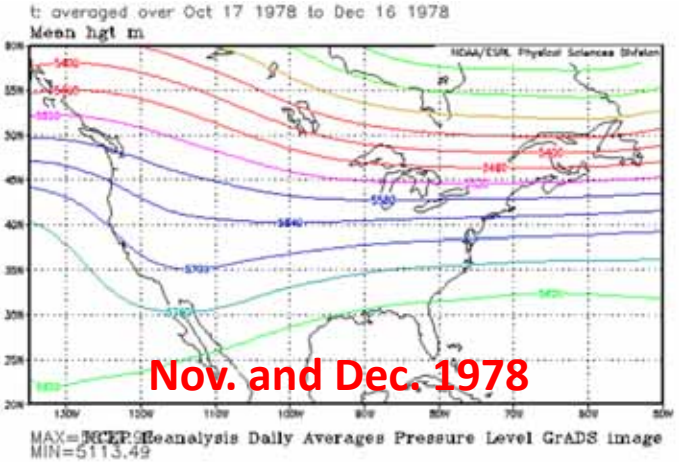
CONAGUA
COMISIÓN NACIONAL DEL AGUA

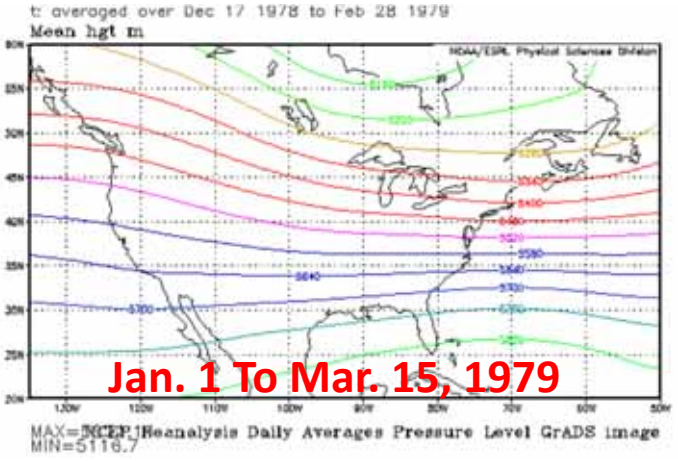
Agriculture and Agri-Food Canada / Agriculture et Agroalimentaire Canada

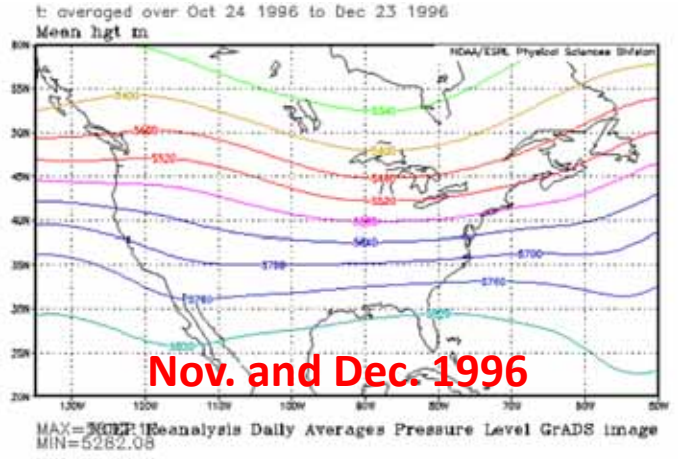
Environment Canada / Environnement Canada

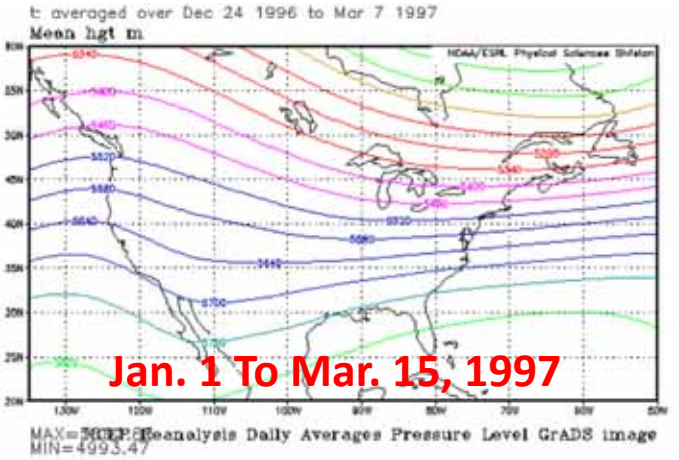

t: averaged over Oct 9 1960 to Dec 8 1960
Mean hgt m
Nov. and Dec. 1960
MAX=
MIN=5252.33


t: averaged over Dec 9 1960 to Feb 20 1961
Mean hgt m
Jan. 1 To Mar. 15, 1961
MAX=
MIN=5087.31

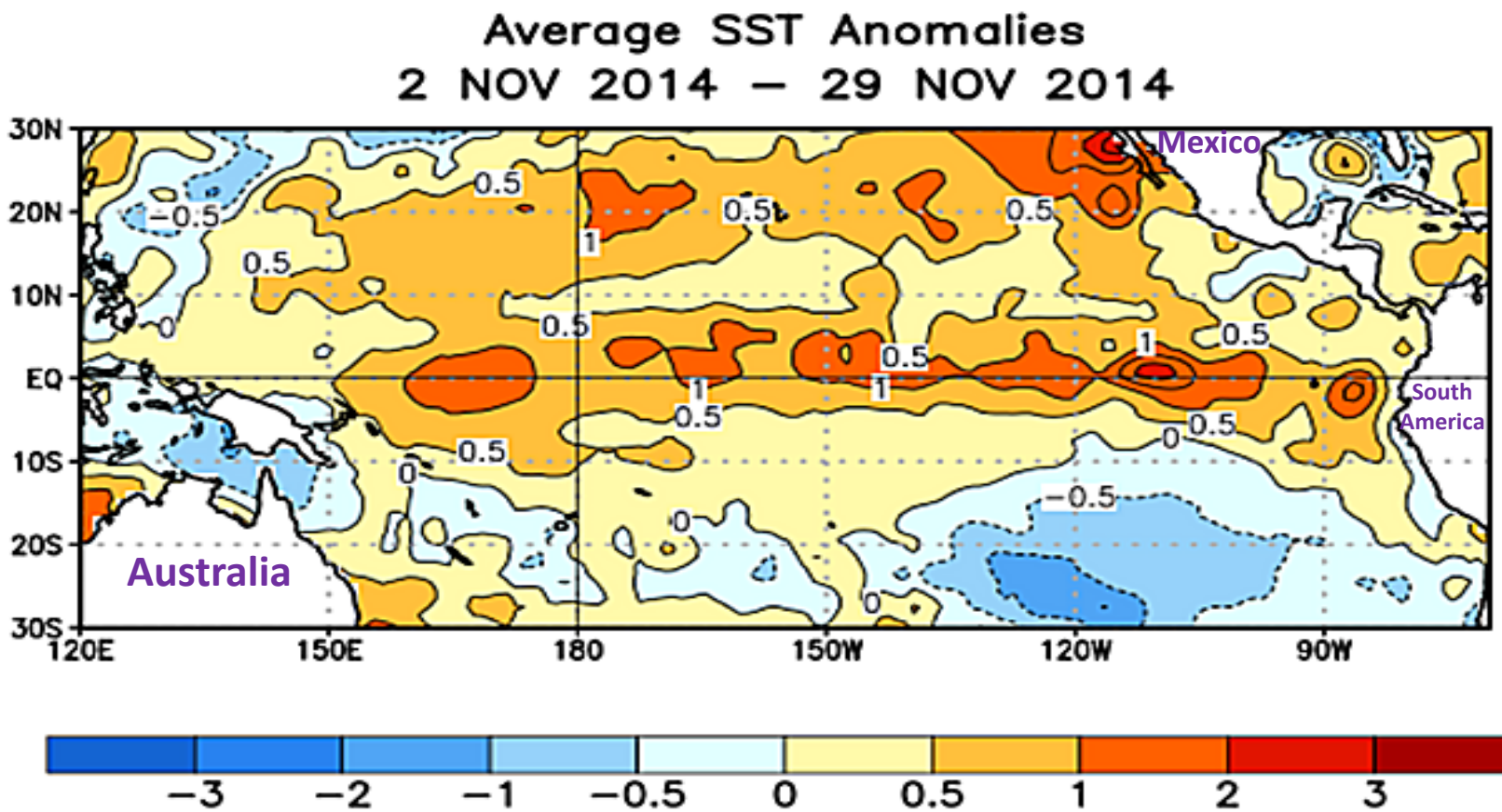

t: averaged over Oct 17 1978 to Dec 16 1978
Mean hgt m
Nov. and Dec. 1978
MAX=
MIN=5113.49


t: averaged over Dec 17 1978 to Feb 28 1979
Mean hgt m
Jan. 1 To Mar. 15, 1979
MAX=
MIN=5116.7


t: averaged over Oct 24 1996 to Dec 23 1996
Mean hgt m
Nov. and Dec. 1996
MAX=
MIN=5282.08


t: averaged over Dec 24 1996 to Mar 7 1997
Mean hgt m
Jan. 1 To Mar. 15, 1997
MAX=
MIN=4993.47

SEA SURFACE TEMPERATURE ANOMALIES



NOAA

7-Day Average Centered on November 26, 2014

NOAA

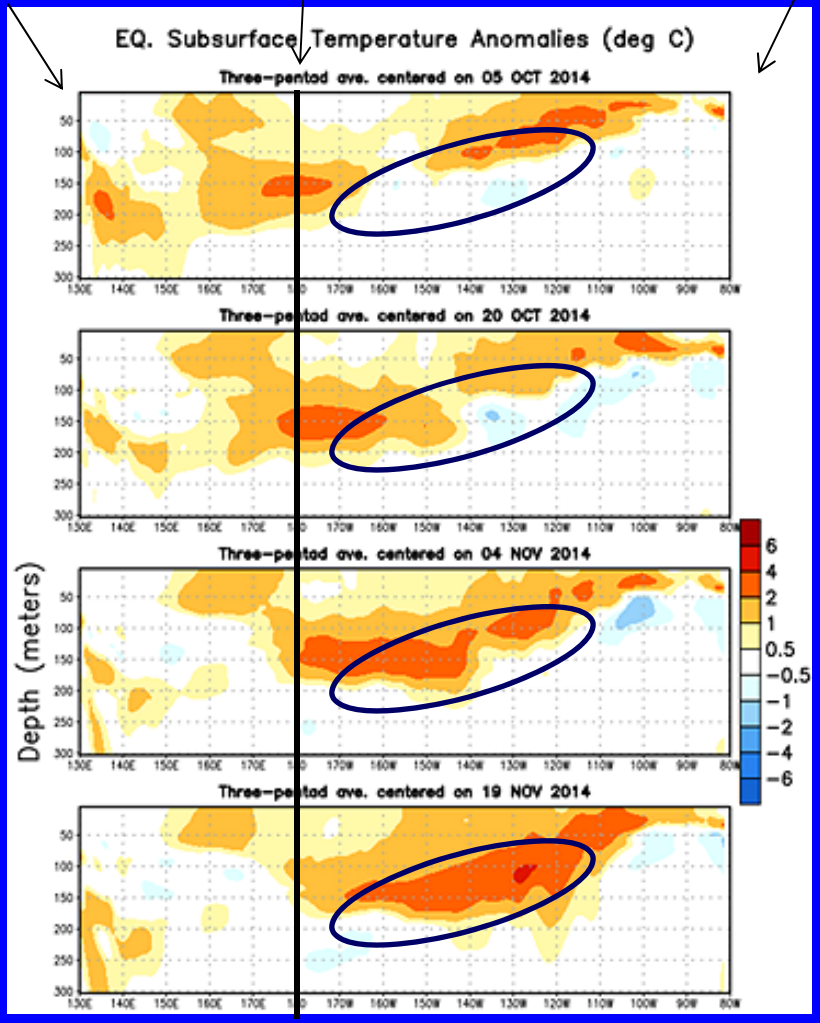
El Nino Conditions Are Evolving And Will Continue To Do So For The Next Few Weeks. Cooler Than Usual Ocean Water Needs To Evolve Better In The Western Pacific Ocean To Induce "Classic" El Nino Conditions.

Sub-Surface Temperature Departures (°C) in the Equatorial Pacific

Australia Coast

International Dateline

South America Coast

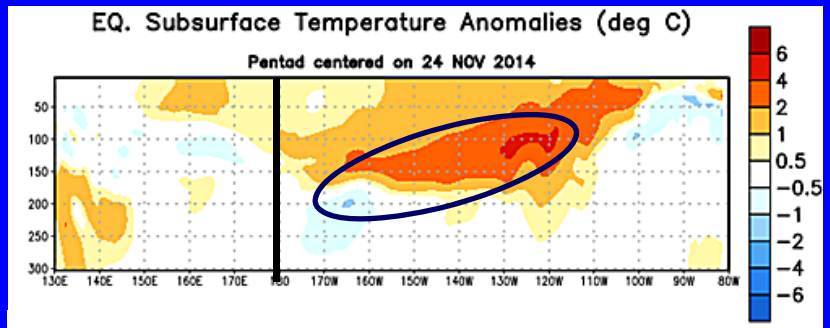


Time

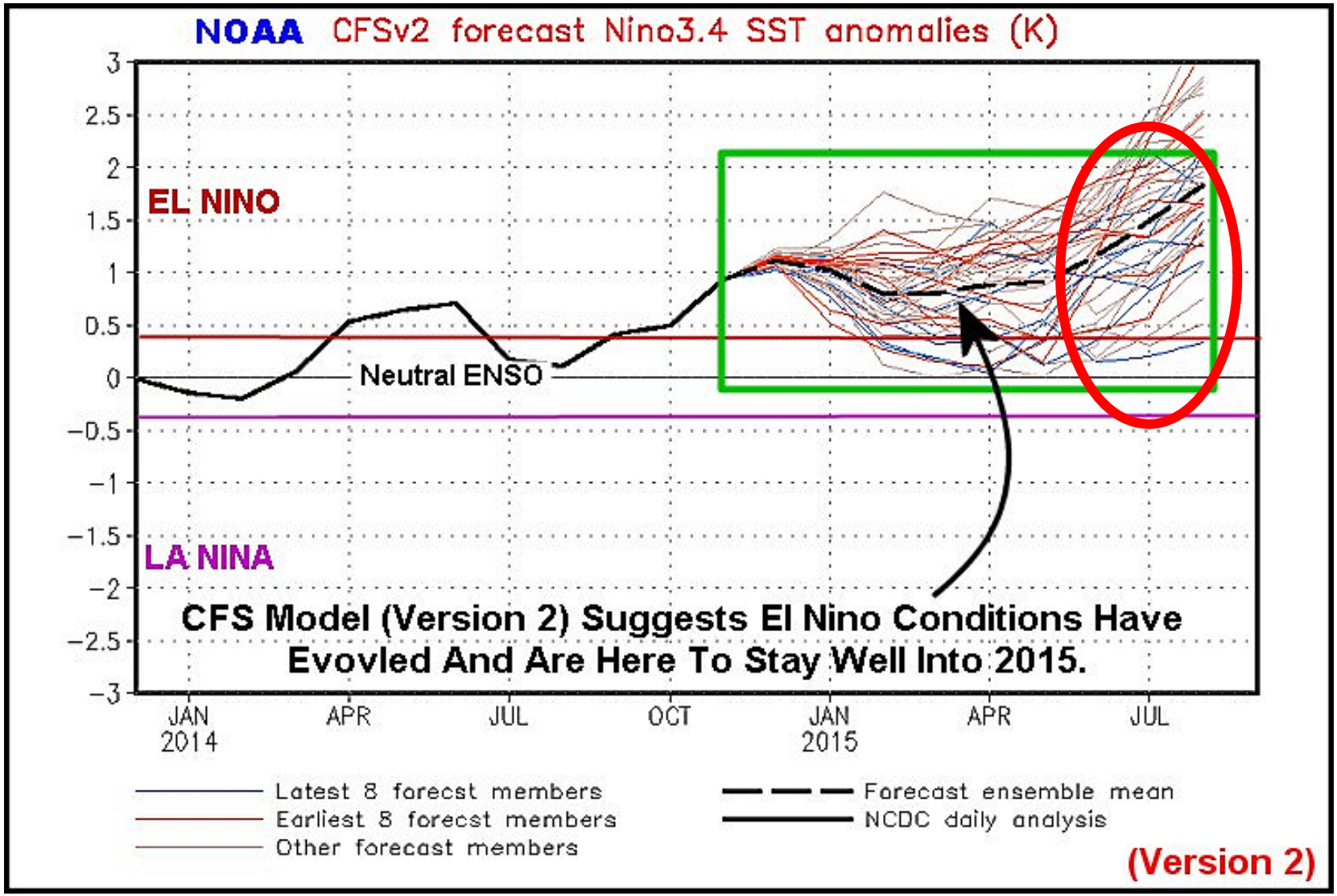
Longitude

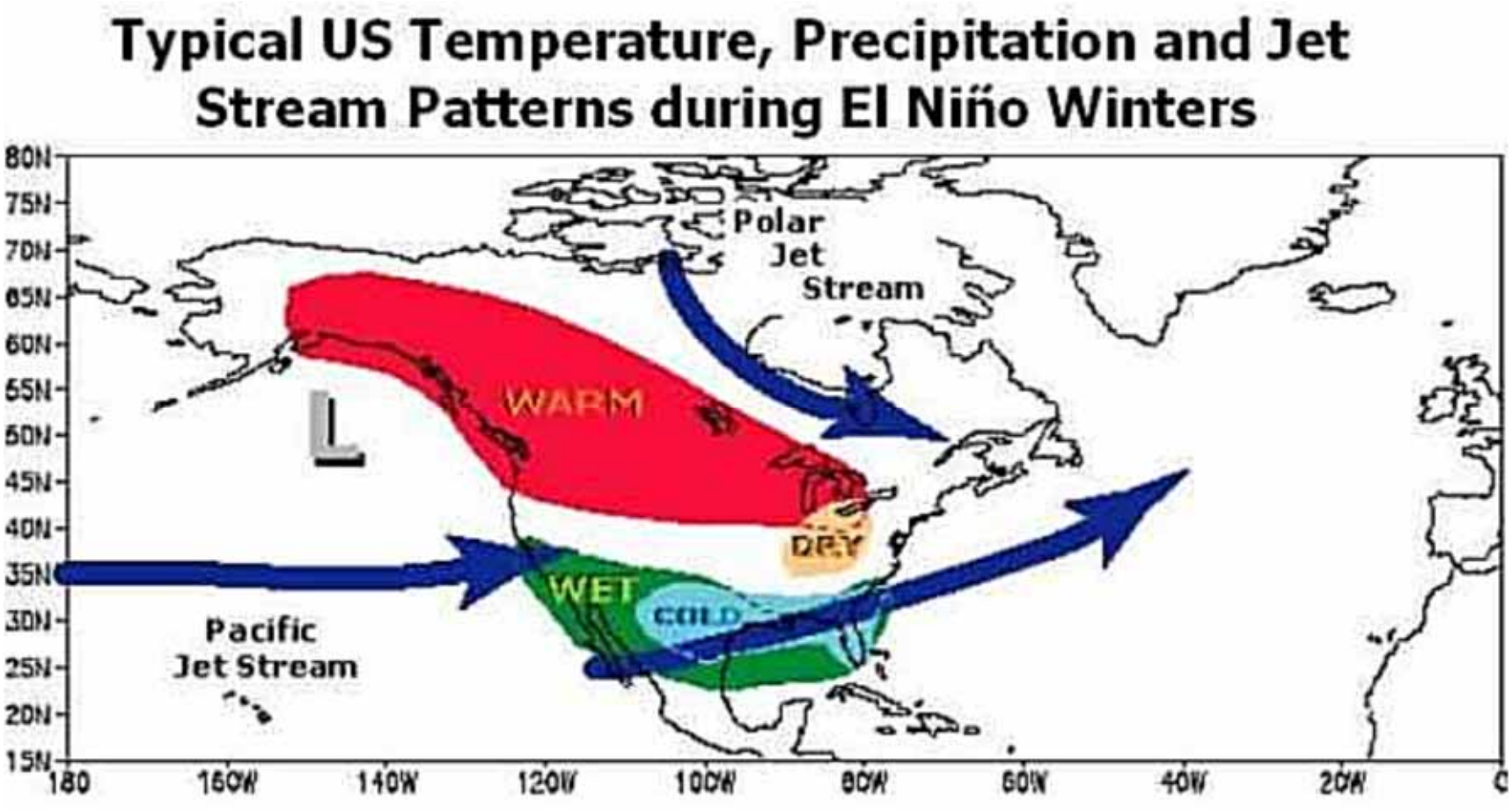
Since mid September, positive subsurface temperature anomalies have stretched across most of the equatorial Pacific. Recently, positive subsurface anomalies in the central Pacific are expanding eastward and strengthening.

Each Rectangle Box Is A Snapshot Of Eastern Equatorial Pacific Ocean Temperature Anomalies. The Top Of Each Box Is The Ocean Surface And The Bottom is 300m Down

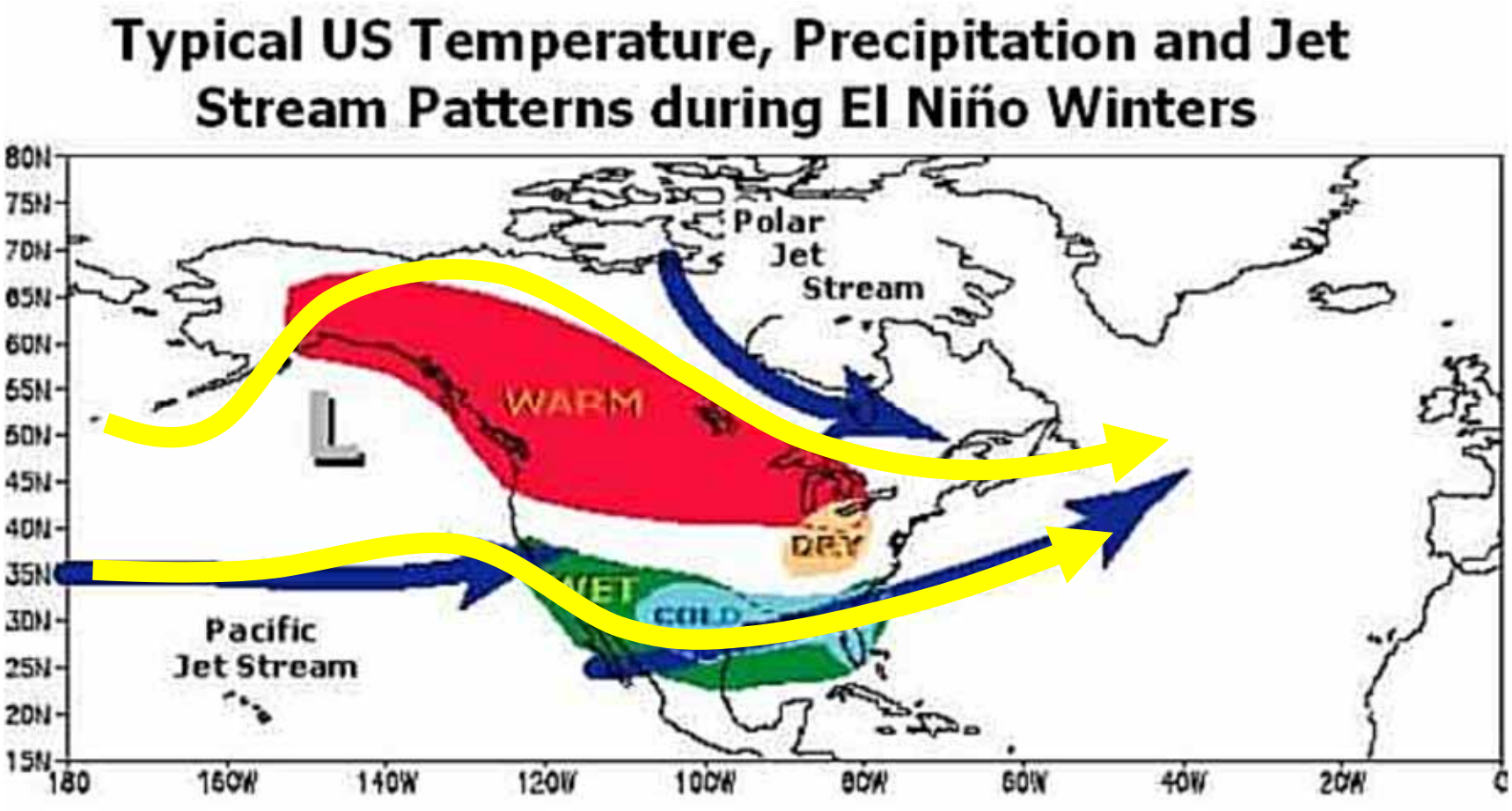


Most recent pentad analysis

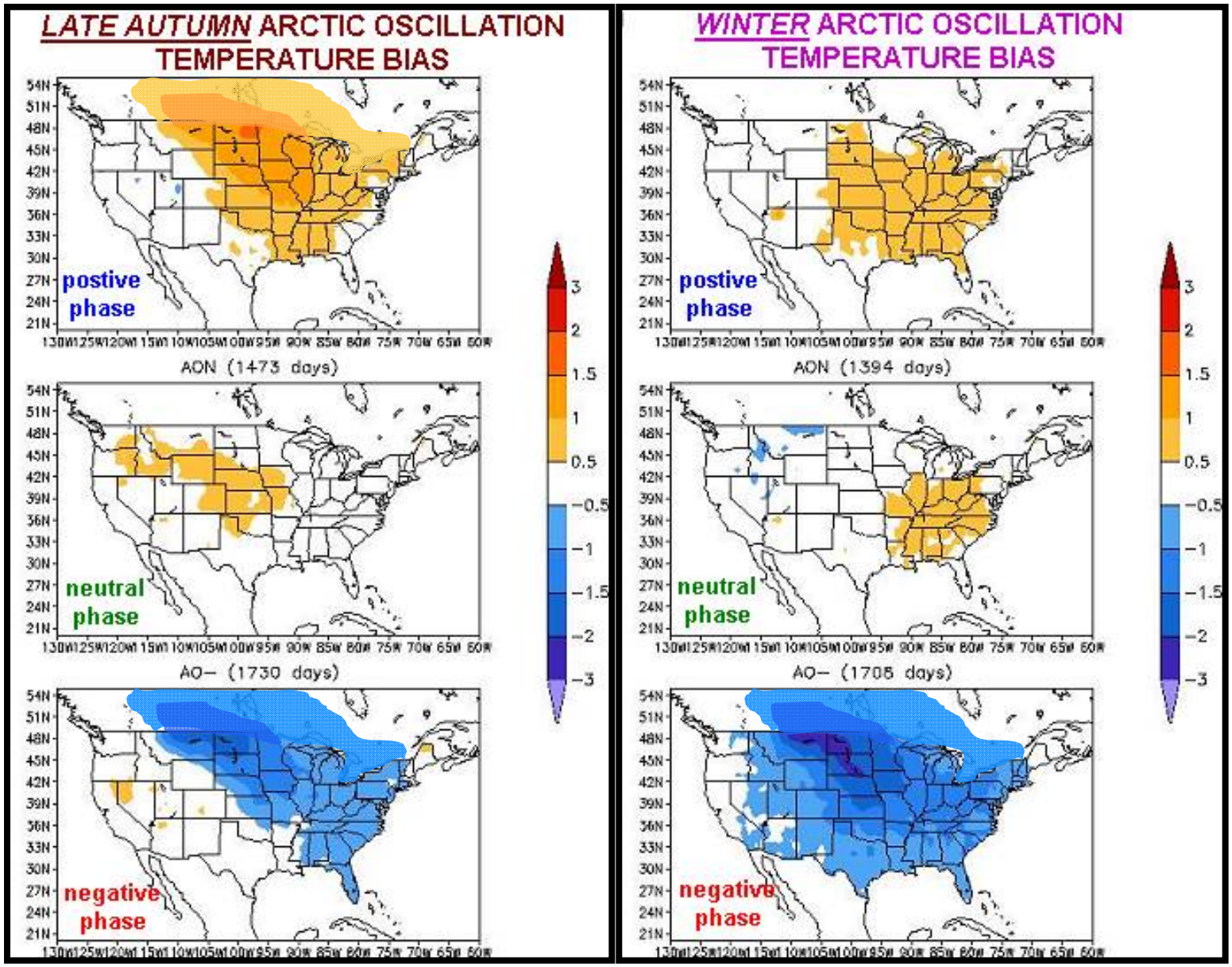

NOAA CFSv2 forecast Nino3.4 SST anomalies (K)
3
2.5
2
1.5
1
0.5
0
−0.5
−1
−1.5
−2
−2.5
−3
EL NINO
Neutral ENSO
LA NINA
CFS Model (Version 2) Suggests El Nino Conditions Have Evovled And Are Here To Stay Well Into 2015.
JAN 2014
APR
JUL
OCT
JAN 2015
APR
JUL
Latest 8 forecst members
Earliest 8 forecst members
Other forecast members
Forecast ensemble mean
NCDC daily analysis
(Version 2)



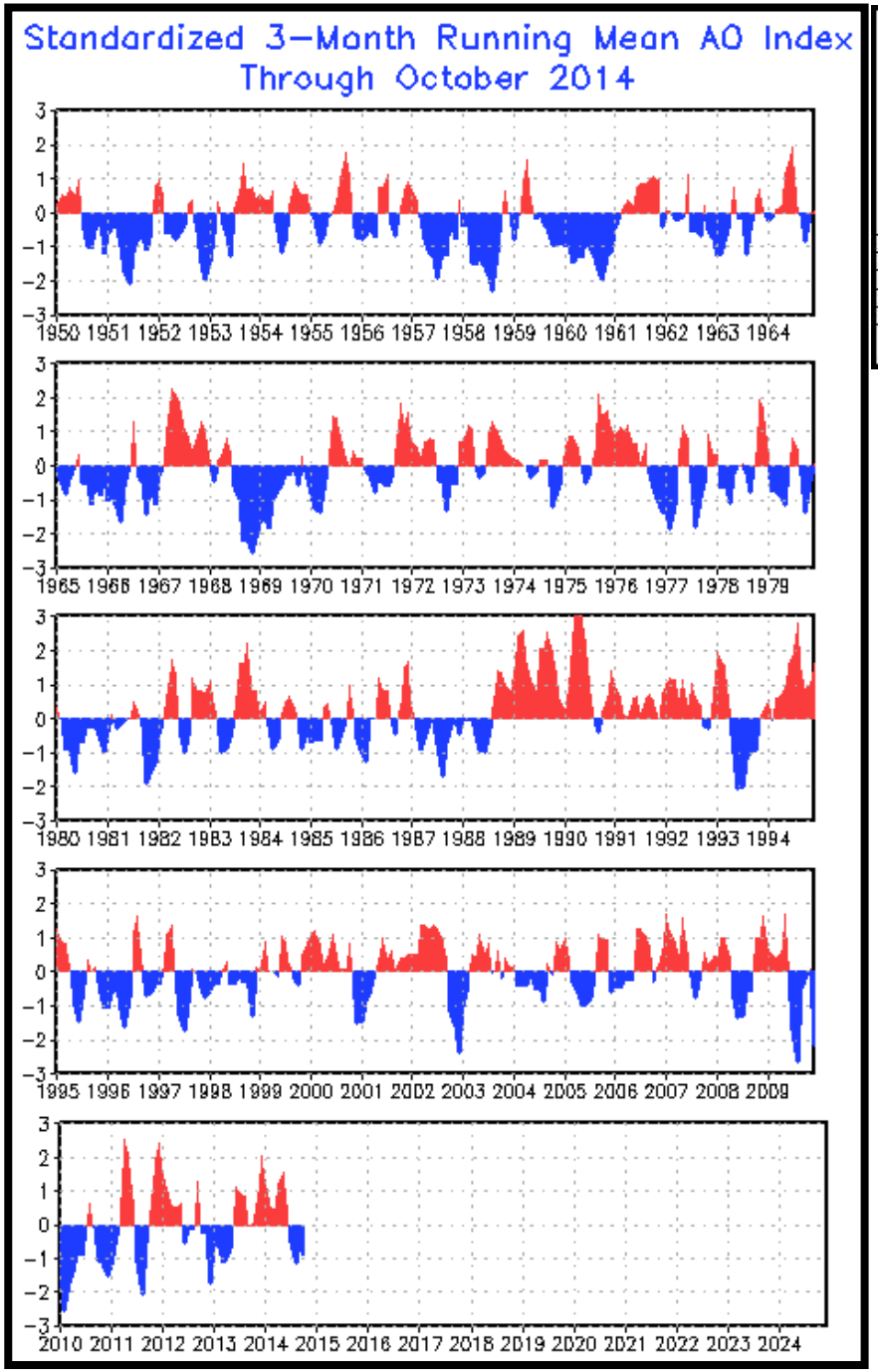
Does This Pattern Look Familiar? It Should. It Is The Same Pattern Shown On The Previous 18-Year Weather Pattern Chart. We Can Make This Easier To See By Adding The Isoheight Lines That We Typically Use For Upper Air Flow Patterns Aloft.

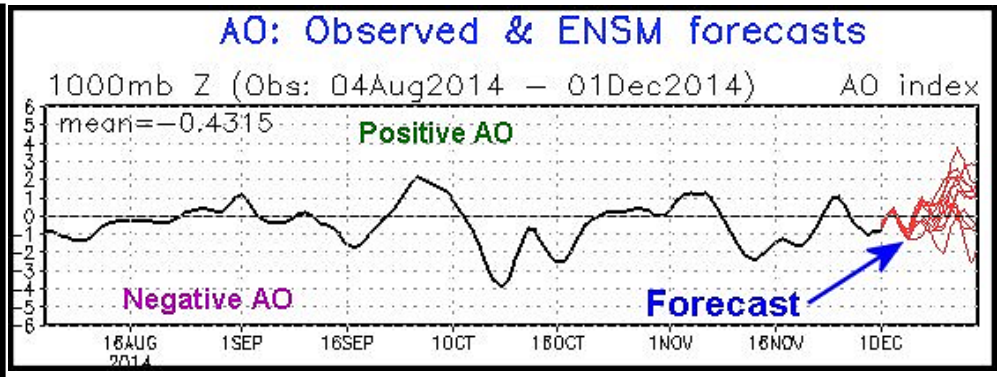


These Yellow Lines Suggest The Pattern El Nino Generates Is The Same Pattern That Is Being Advertised In The 18-year Cycle Charts. Having Both Of These Patterns Agree Results In A Strong Signal For Winter Weather And Confidence Will Be Above Average This Year For Winter Weather Because Of These Two Coincidental Patterns.

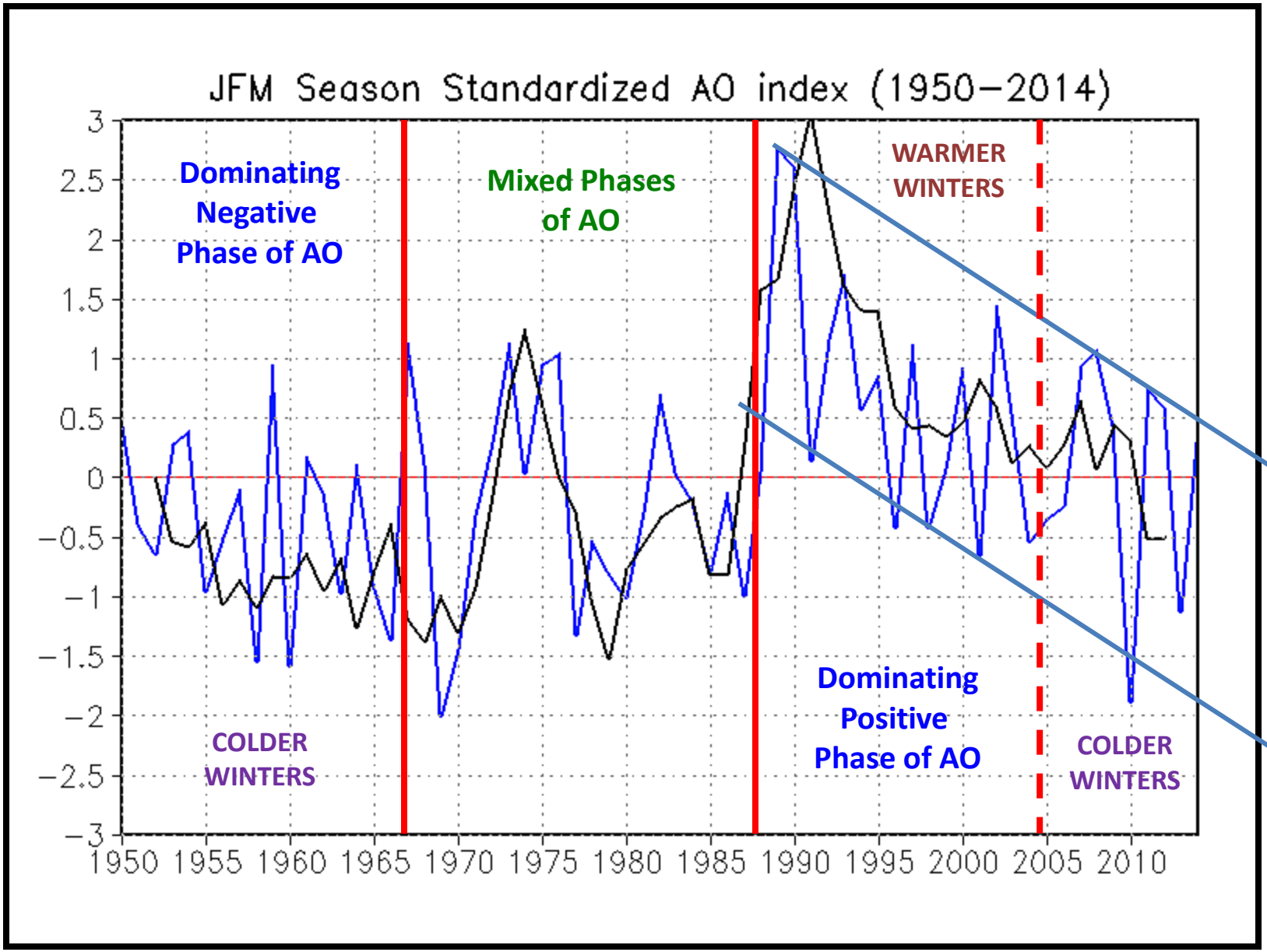


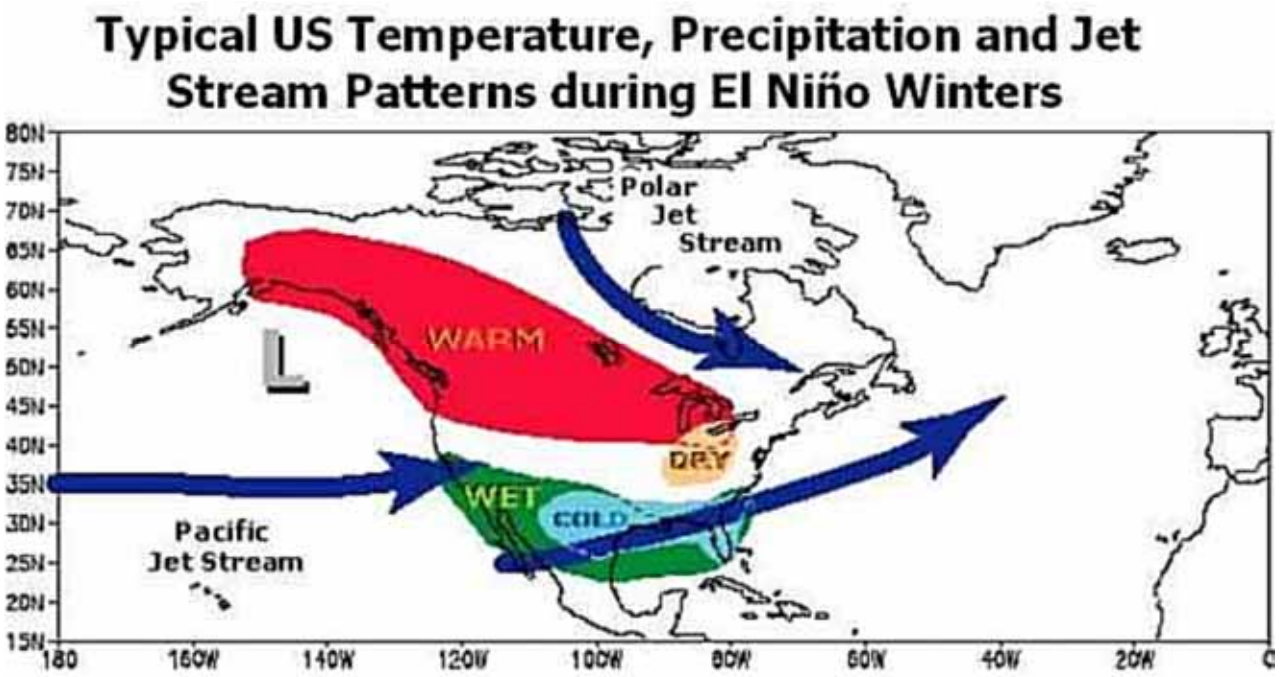
So….What About Arctic Oscillation?????





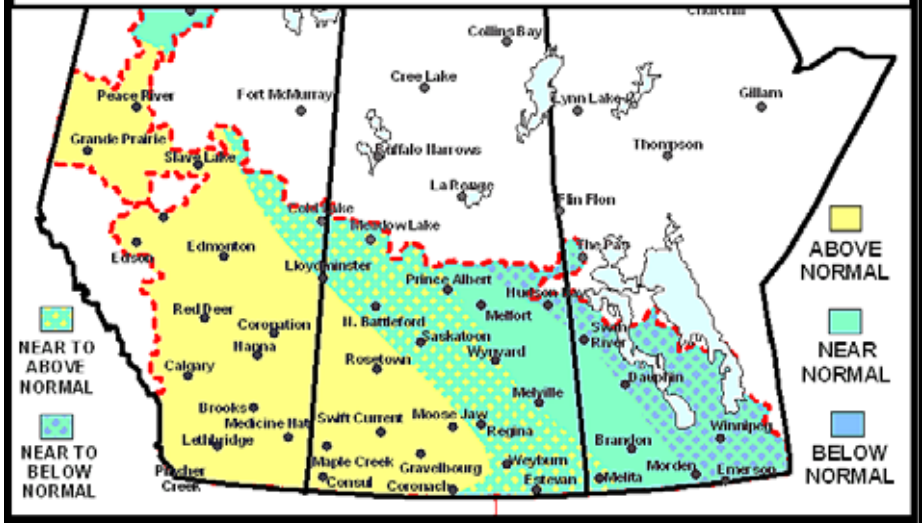
Arctic Oscillation (AO) Has Already Begun To Influence North America With Cooler Than Usual Temperatures In Early To Mid-October And Expected Again Soon In Early To Mid-November. The Negative AO Will Be Accompanied By Supporting Indices From The QBO, PDO And Nino Indices Raising The Potential For An Active November And December Across The Central And Southern U.S. And Some Gyrating Temperatures In The Eastern Prairies. Temperatures Will Be Warmer Biased In Western North America And Little Cooler Than Usual At Times In The East And South. January And February Weather May Suppress Precipitation In The Prairies, Northern U.S. Plains And Upper U.S. Midwest


JFM Season Standardized AO index (1950–2014)
Dominating Negative Phase of AO
Mixed Phases of AO
WARMER WINTERS
Dominating Positive Phase of AO
COLDER WINTERS
COLDER WINTERS
3
2.5
2
1.5
1
0.5
0
−0.5
−1
−1.5
−2
−2.5
−3
1950 1955 1960 1965 1970 1975 1980 1985 1990 1995 2000 2005 2010

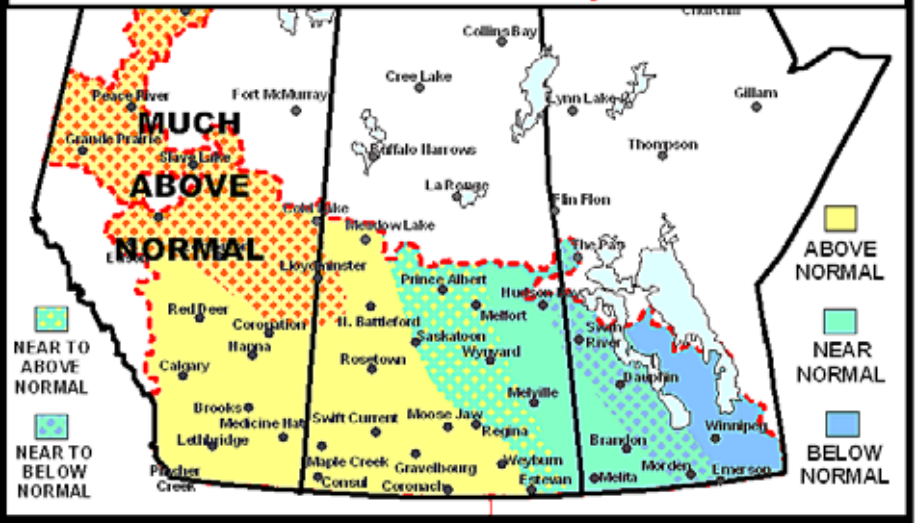


El Nino With Negative Phase of Arctic Oscillation

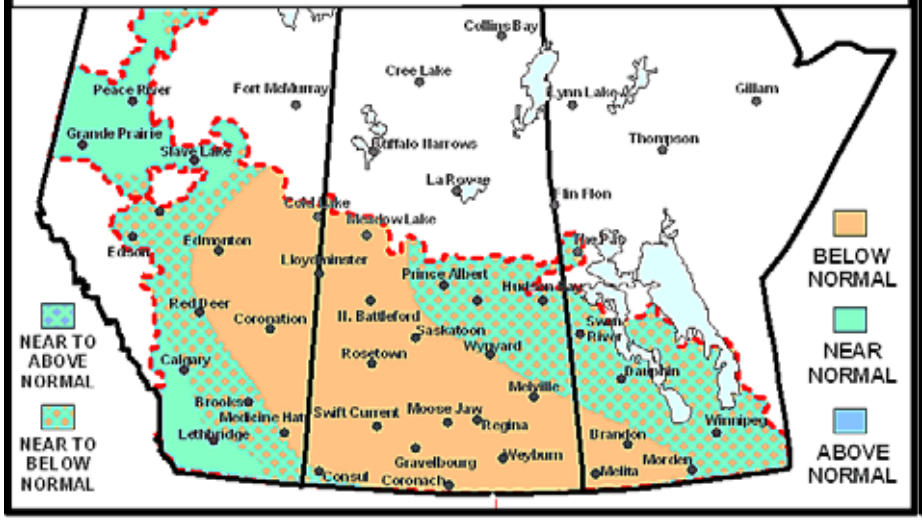
30-Day Temperature Anomaly
For December 2014



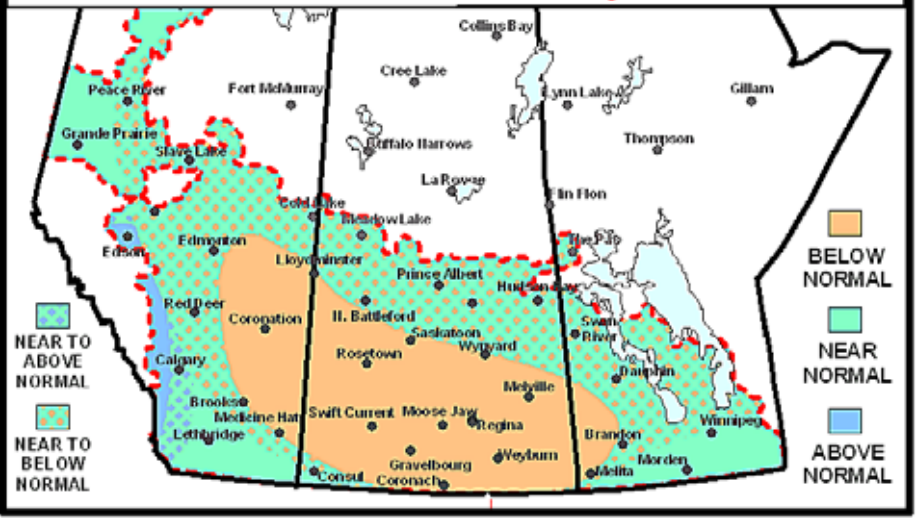
Winter Temperature Anomaly
For December - February 2015

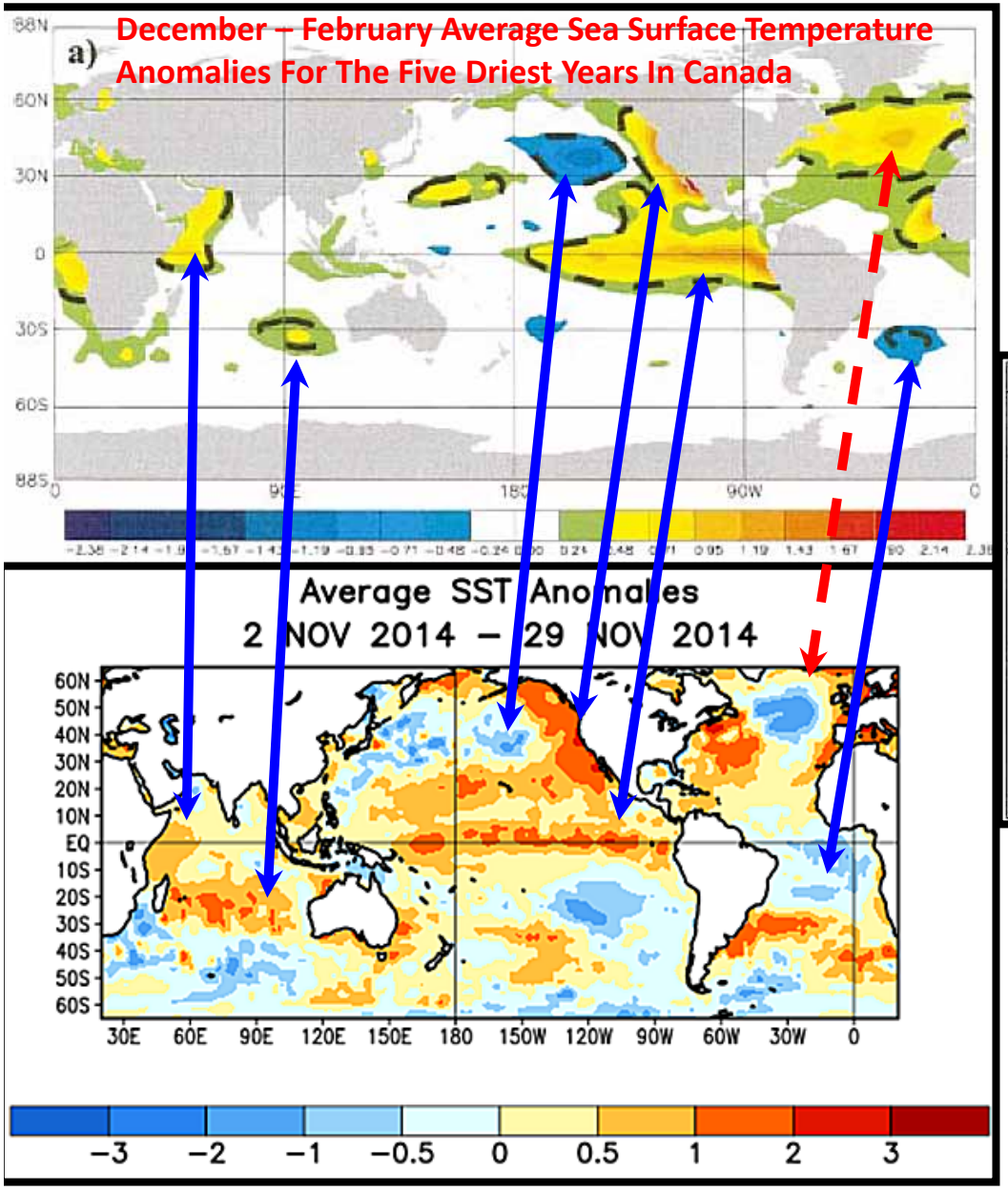


30-Day Precipitation Anomaly
For December 2014

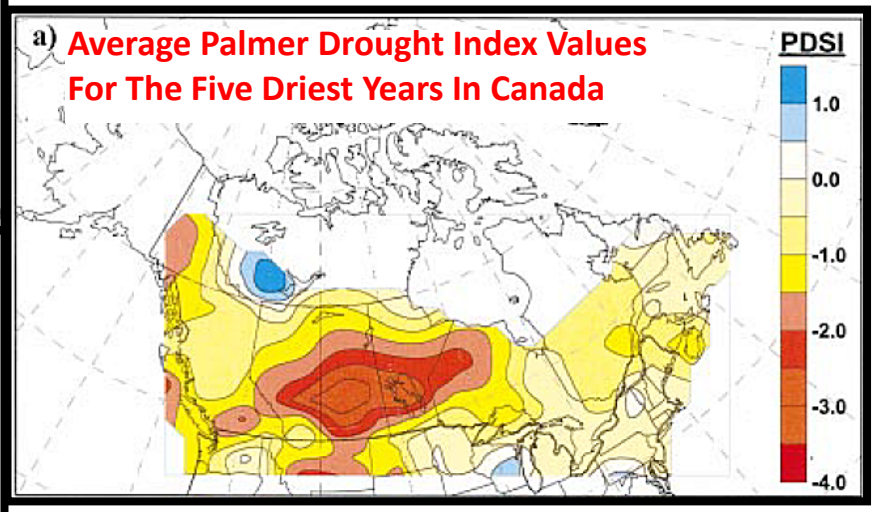


Winter Precipitation Anomaly
For December - February 2015



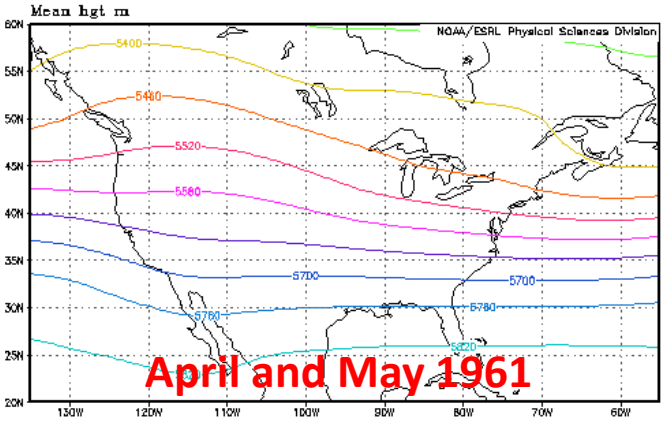


A Research Paper By Shabbar And Skinner In 2004 Entitled '*Summer Drought Patterns In Canada And The Relationship To Global Sea Surface Temperatures*' Suggests Sea Surface Temperatures In The December Through February Period Can Be Early Predictor Of Summer Drought



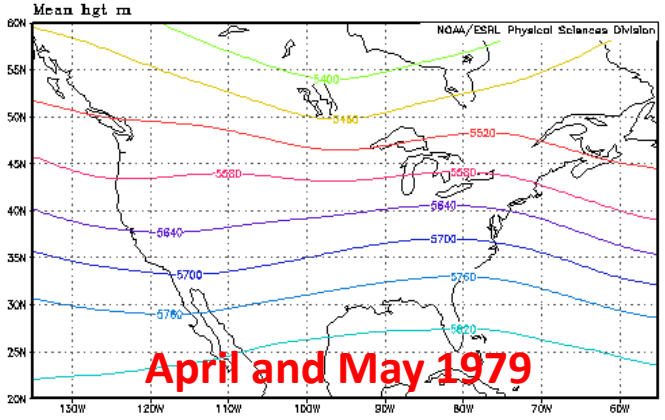
Excepting The North-Central Atlantic Ocean, Today's Global Sea Surface Temperature Anomalies Are A Very Close Match To Those Required For The Dry Summer Signal In Western Canada

t: averaged over Mar 9 1961 to May 8 1961



MAX=5863.11
MIN=5305.41

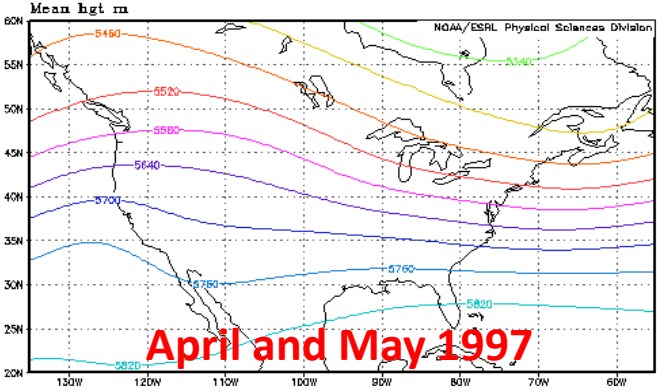
NCEP Reanalysis Daily Averages Pressure Level GrADS image



MAX=5866.31
MIN=5342.39

NCEP Reanalysis Daily Averages Pressure Level GrADS image

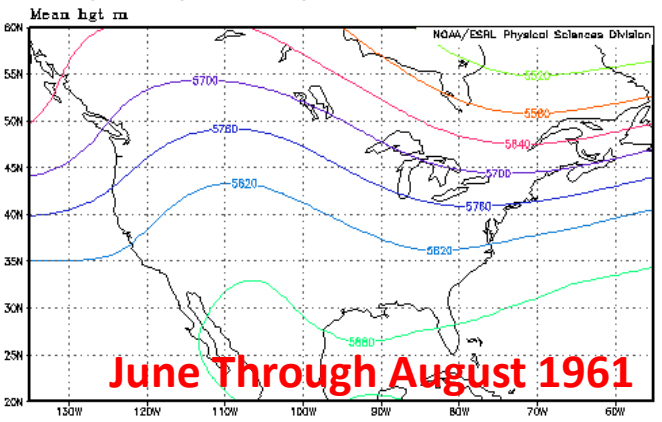
t: averaged over Mar 24 1997 to May 23 1997



MAX=5879.31
MIN=5297.28

NCEP Reanalysis Daily Averages Pressure Level GrADS image

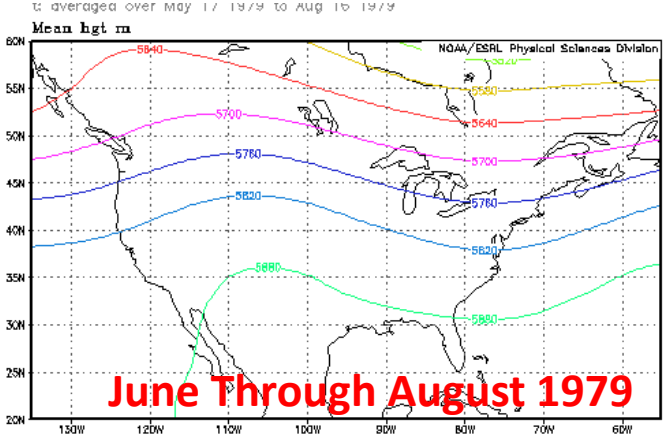
t: averaged over May 9 1961 to Aug 8 1961



MAX=5891.7
MIN=5471.76

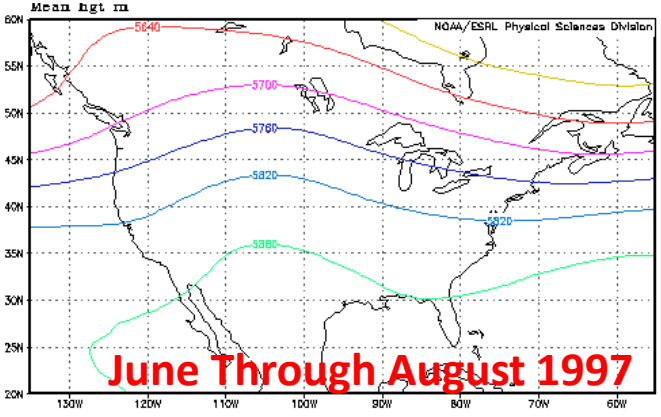
NCEP Reanalysis Daily Averages Pressure Level GrADS image

t: averaged over May 17 1979 to Aug 15 1979



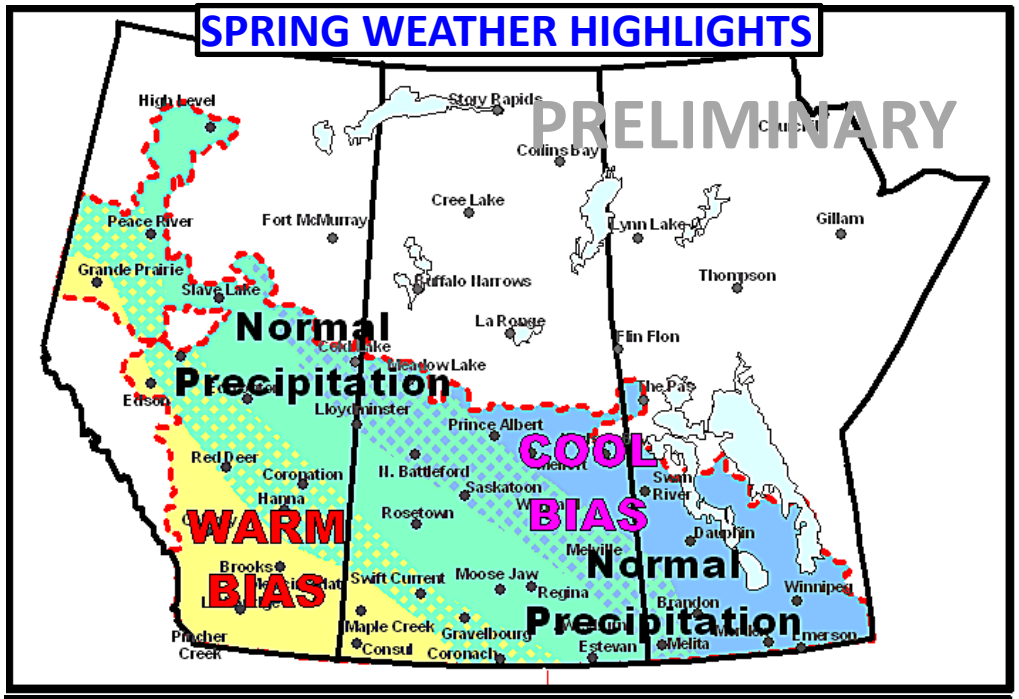
MAX=5902.37
MIN=5484.75

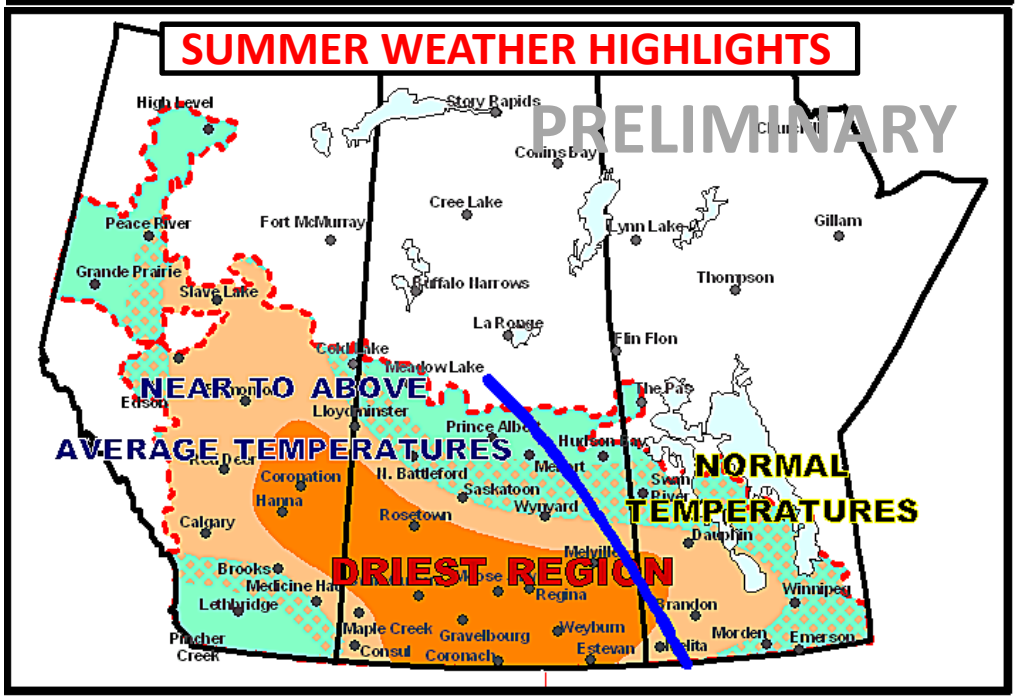
NCEP Reanalysis Daily Averages Pressure Level GrADS image



MAX=5908.89
MIN=5504.82

NCEP Reanalysis Daily Averages Pressure Level GrADS image





The Correlations With Ocean Surface Temperatures, El Nino And The 18-Year Cycle Are All Pointing To The "Potential" For Dryness This Summer. The Impact Of Dryness Will Vary Greatly Depending On Location In The Prairies, Soil Moisture Going Into The Dry And Warm Period And Just How Dry And Warm It Will Get.

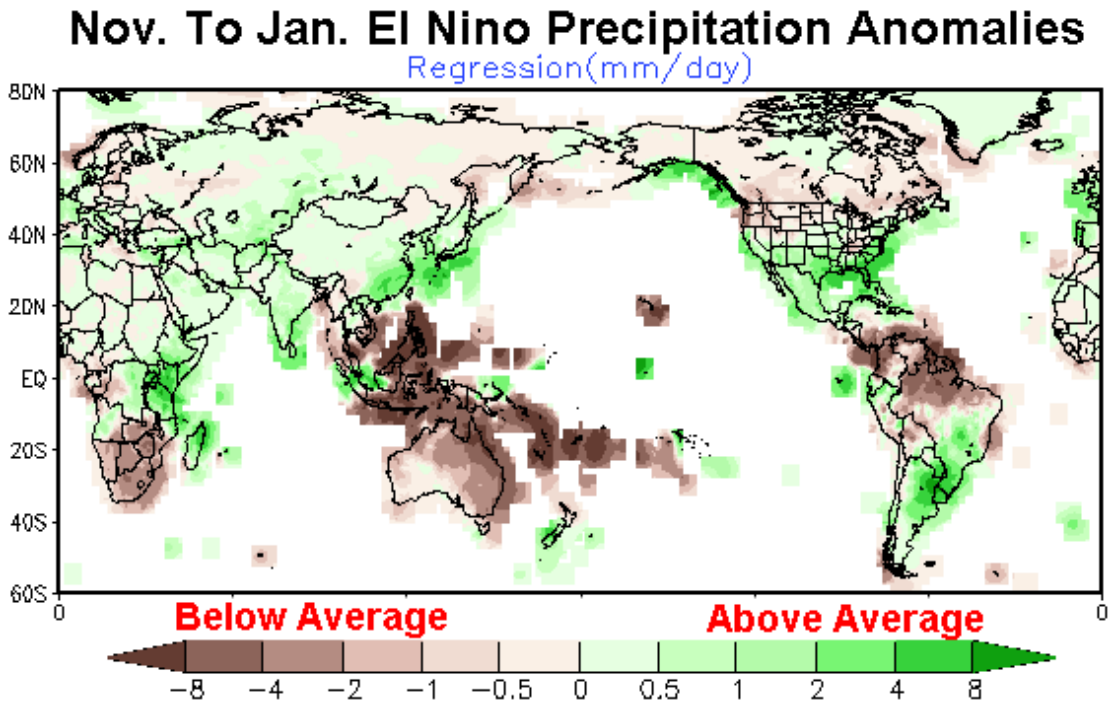
One Out Of The Three Analog Years Was Favorably Moist In The Spring, But All Three Years Had Drier Biases During The Summer And Two Out Of The Three Years Were A Little Drier Biased In The Spring, As Well. Alberta And Parts Of Western Saskatchewan Will Be High On The Watch List For Early Impacts Of Dryness, But Many Other Areas In The Prairies Will Coast On Abundant Subsoil Moisture For A While And Then Dry Down In Late Spring And Summer. A Few Bouts Of Timely Rain Will Be Needed.

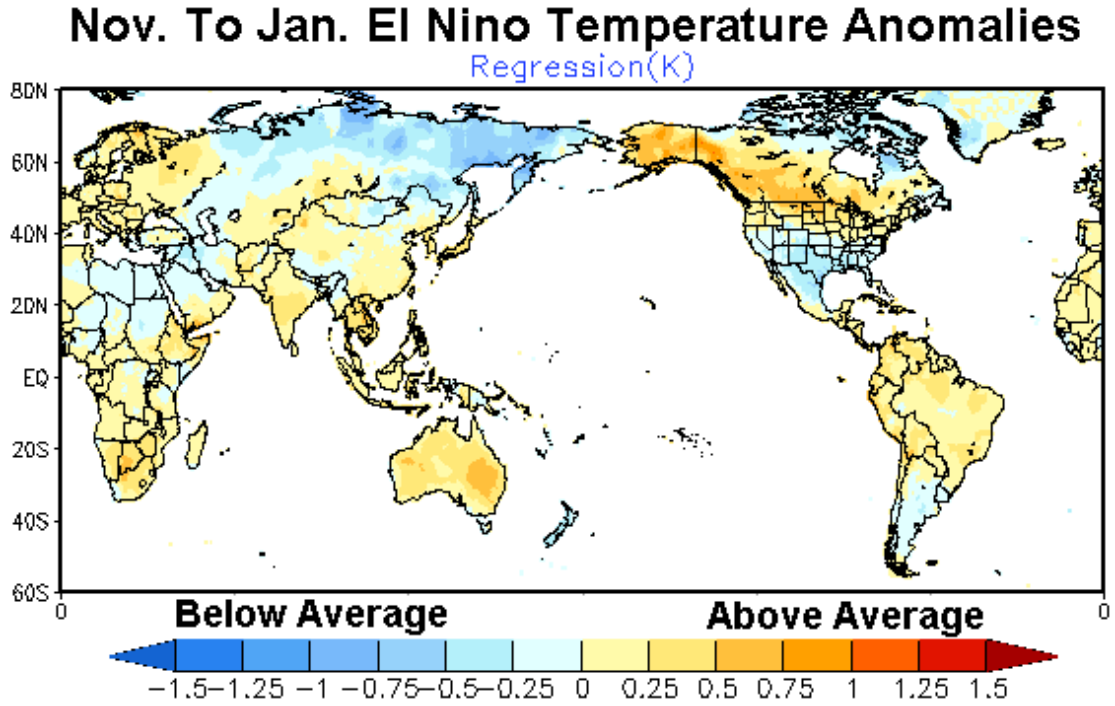
1961 Ranked 14th Driest Spring ::: Ranked 33rd Warmest Spring Out of 65 Yrs
1979 Ranked 18th Wettest Spring ::: Ranked 10th Coolest Spring Out of 65 Yrs
*1997 Ranked 28th Wettest Spring ::: Ranked 17th Coolest Spring Out of 65 Yrs

1961 Ranked 1st Driest Summer ::: Ranked 1st Hottest Summer Out of 65 Yrs
1979 Ranked 4th Driest Summer ::: Ranked 24th Hottest Summer Out of 65 Yrs
***1997 Ranked 17th Driest Summer ::: Ranked 14th Hottest Summer Out of 65 Yrs**

1961 Ranked 37th Wettest Autumn ::: **Ranked 15th Warmest Autumn out of 64 Yrs**
1979 Ranked 12th Driest Autumn ::: **Ranked 21st Warmest Autumn out of 64 Yrs**
*1997 Ranked 10th Driest Autumn ::: **Ranked 20th Warmest Autumn out of 64 Yrs**

* Neutral ENSO Conditions Until May 1997 when El Nino Developed
All Other Years Were Neutral ENSO All Year Long

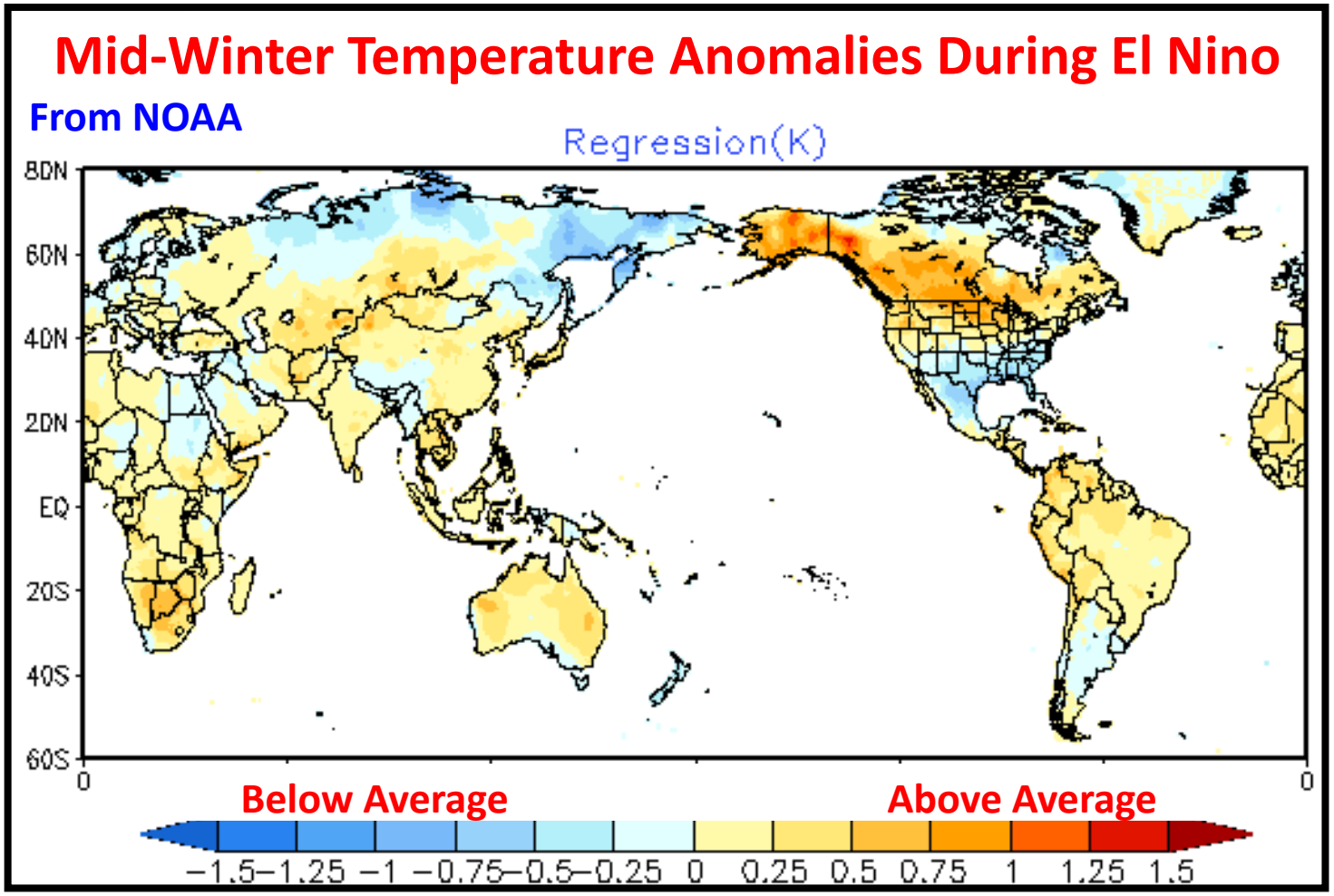




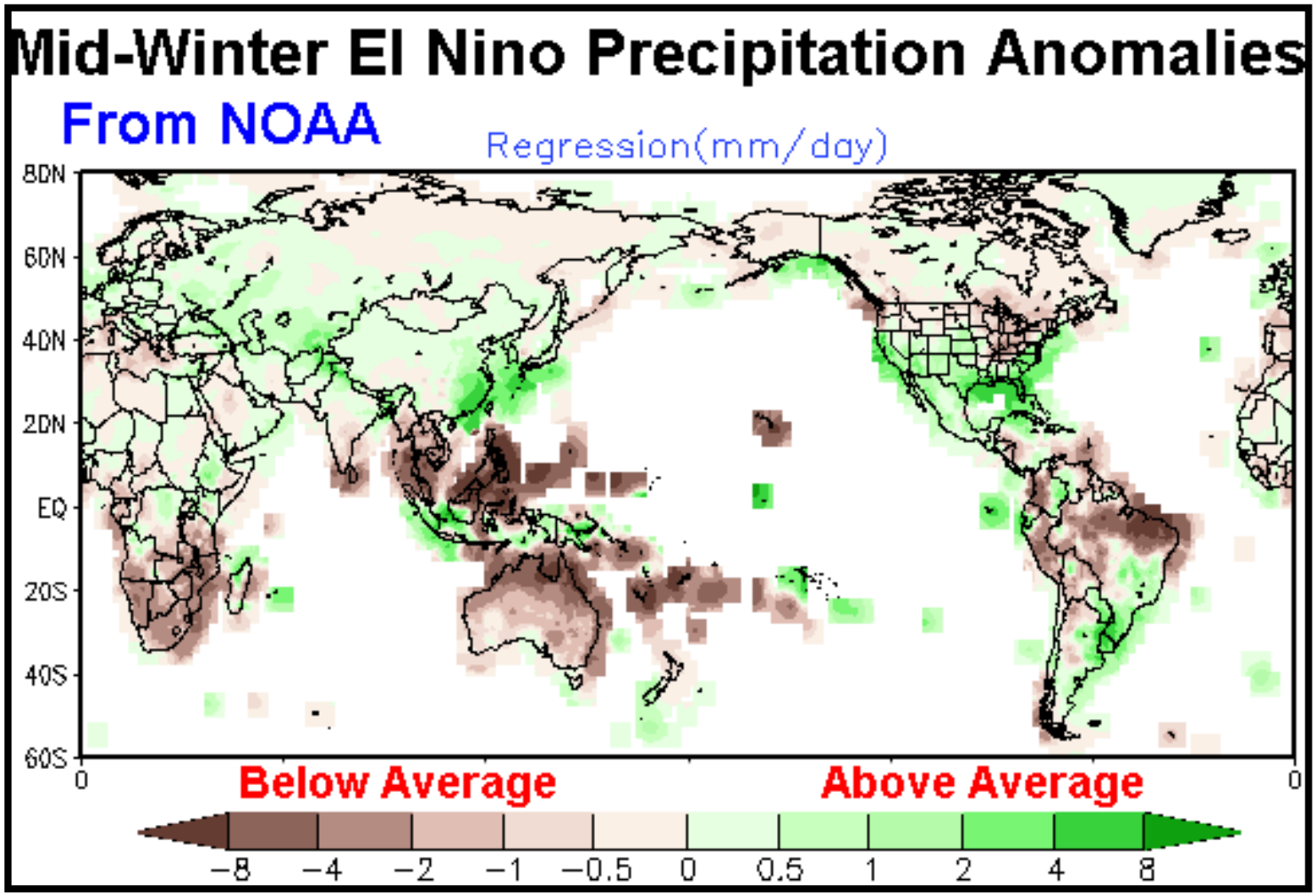
Late Autumn And Early Winter Weather Trends Wetter In The Southern United States While Canada And The Northern U.S. Plains Trend Drier And Warmer Than Usual. Temperatures Are Also Cooler Than Usual In The Southern U.S. And The Combination Of Wet And Cool Conditions May Offer Some Relief To Drought In 2014-15. Much Depends On The Intensity And Persistence Of El Nino. There Is No Assurance The Event Can Hold Together That Long, But The Situation Will Need To Be Closely Monitored. Drought Usually Impacts Australia And South Africa Cotton Areas At That Same Time.

Mid-Winter Temperature Anomalies During El Nino

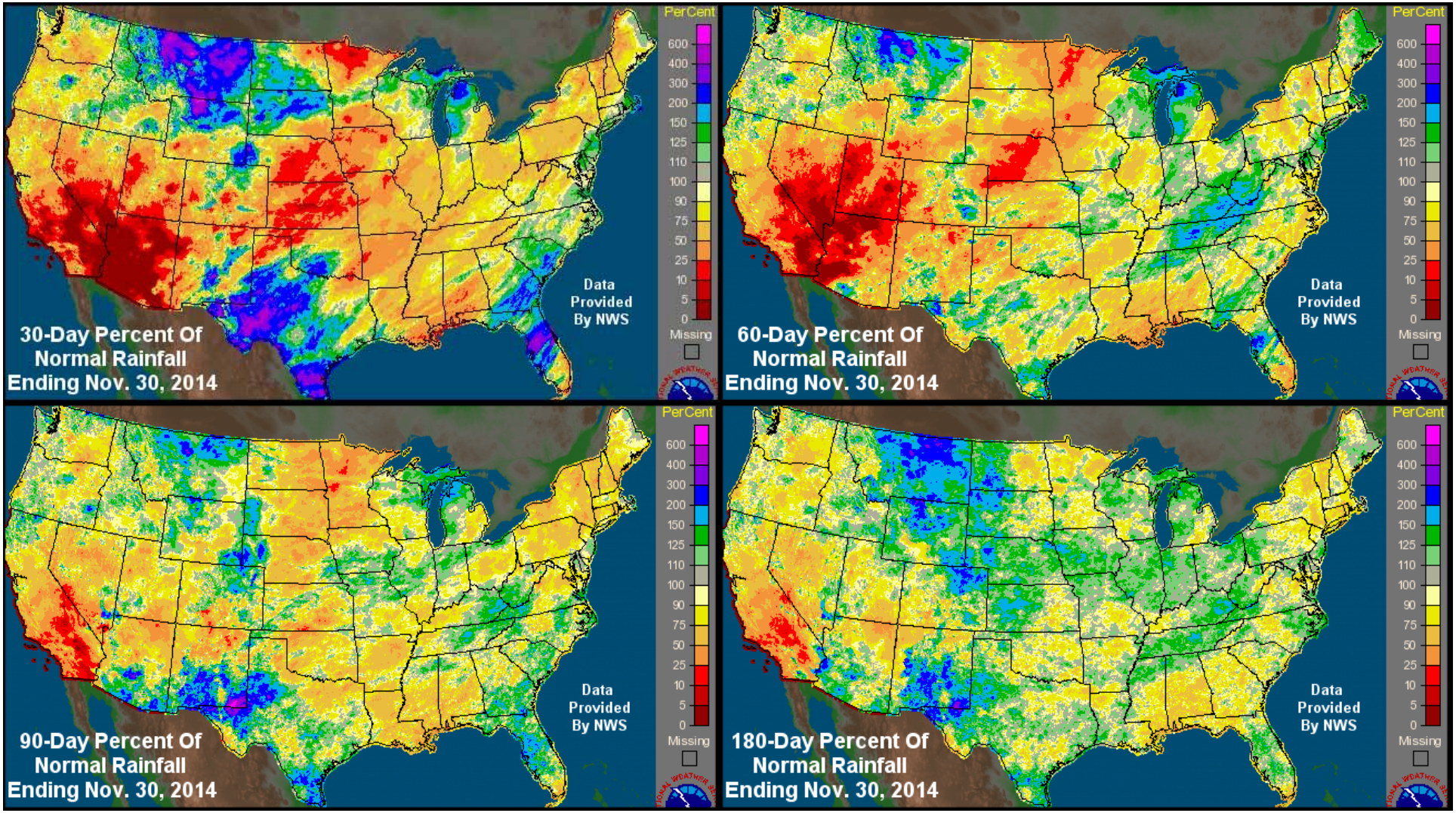
From NOAA



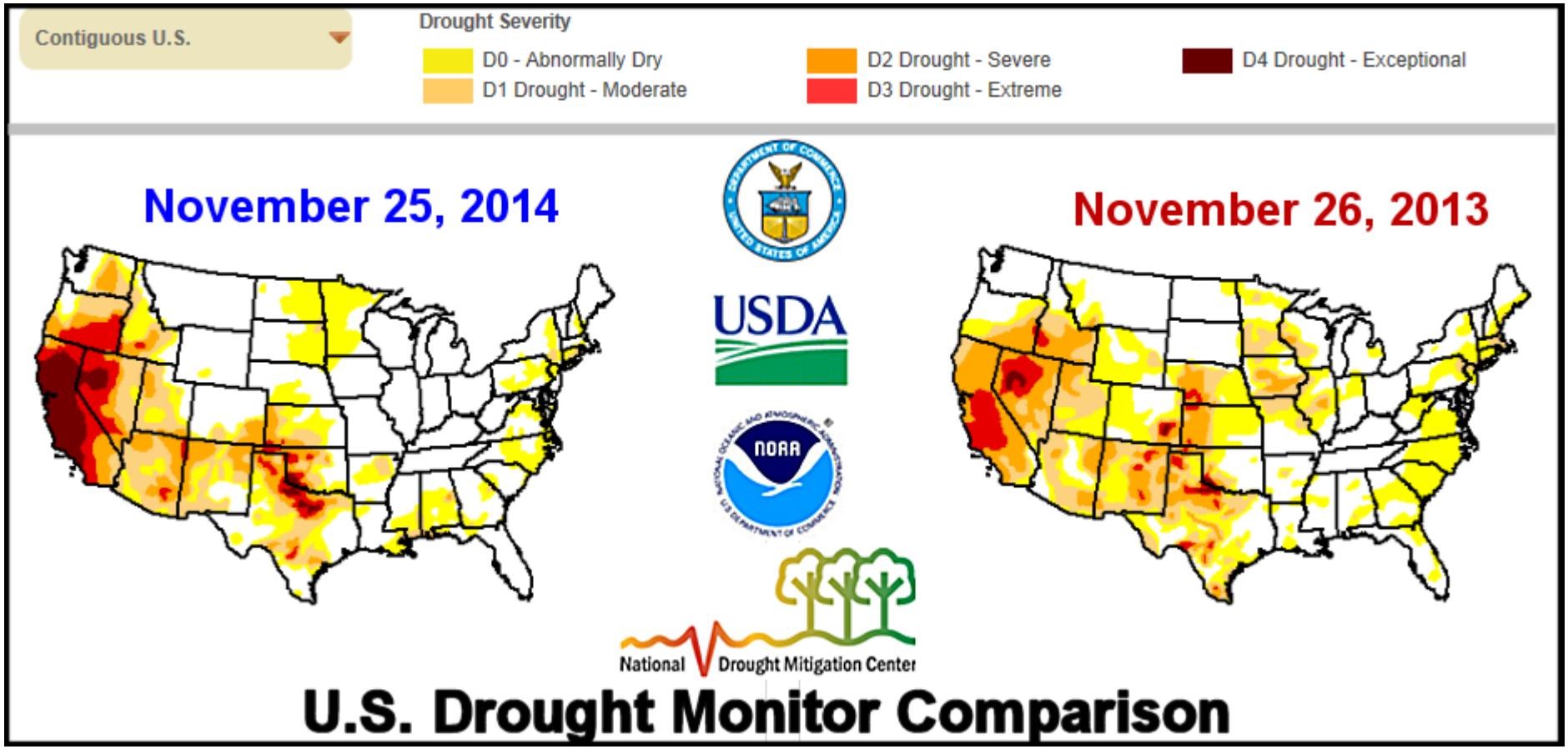
Traditionally El Nino Events In The Northern Hemisphere Winter Season Usually Produce Warmer Than Usual Weather In Northern Portions Of North America And In Many Other Areas Around The World Experience A Less Anomalously Warm Temperature Bias. Cool Weather Tends To Occur In Northern Asia And In The Southern Portions Of North America. This Year May Prove A Little Different



Traditionally El Nino Events During The Northern Hemisphere Winter Season Usually Produce a wetter bias in the southern United States, northern Mexico, southeastern China, southern Brazil, eastern Argentina and in a part of southern Asia. Less than usual rain occurs in the tropics from the Amazon River Basin into Australia and portions of Southeast Asia, as well as South Africa.

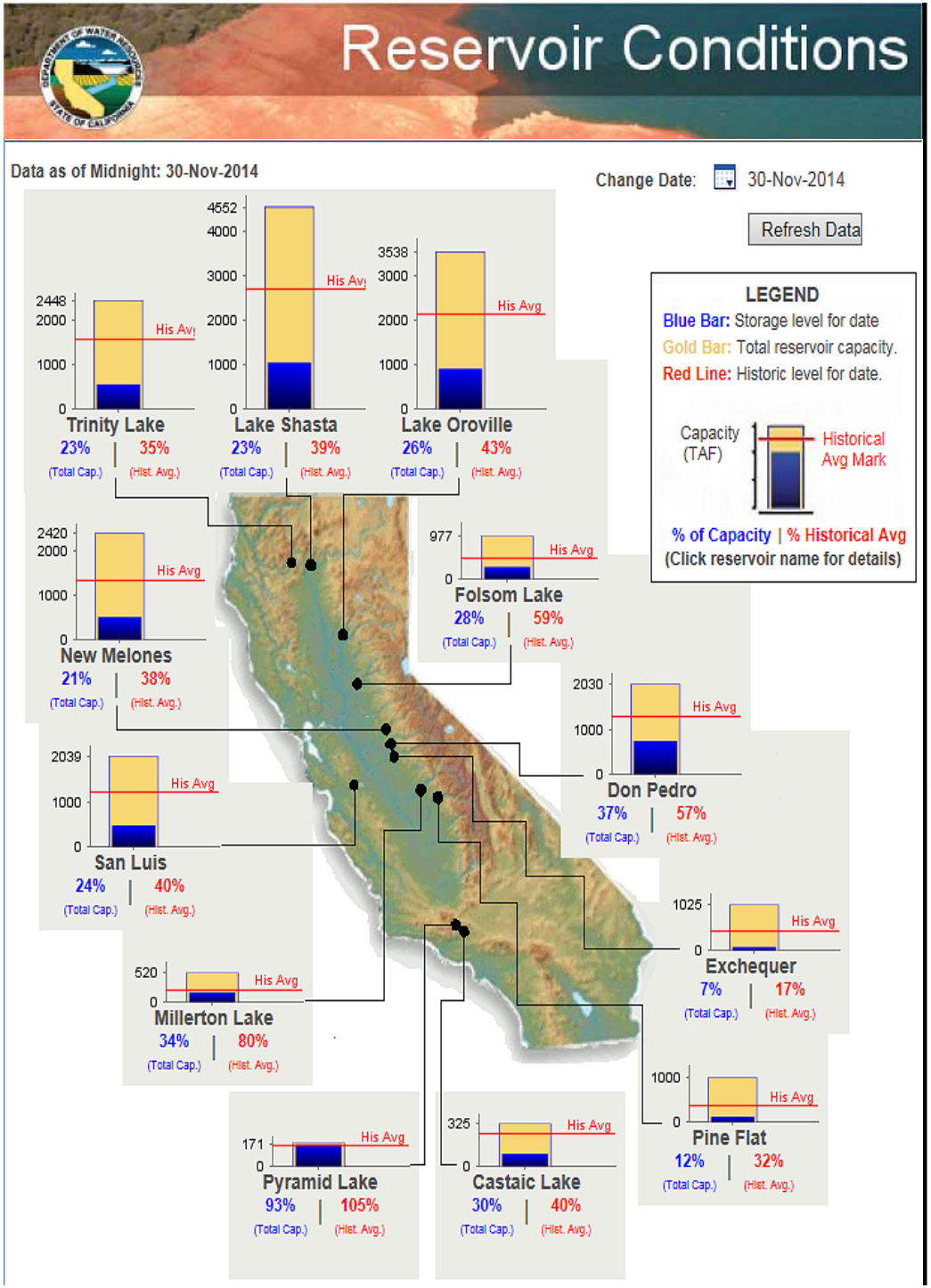


After A Wet Summer In Portions Of The Northern Plains And Upper, Midwest Conditions More Recently Have Been Trending Drier. This Drier Bias Extends Into Southeastern Canada's Prairies And Will Be Of Interest In The Spring When It Will Be Determined How Much Standing Water Will Be Present In The Region Causing Delays To Planting. El Nino And The 18-year Cycle Suggest Less Than Usual Winter Precipitation And That May Help Quite A Bit.

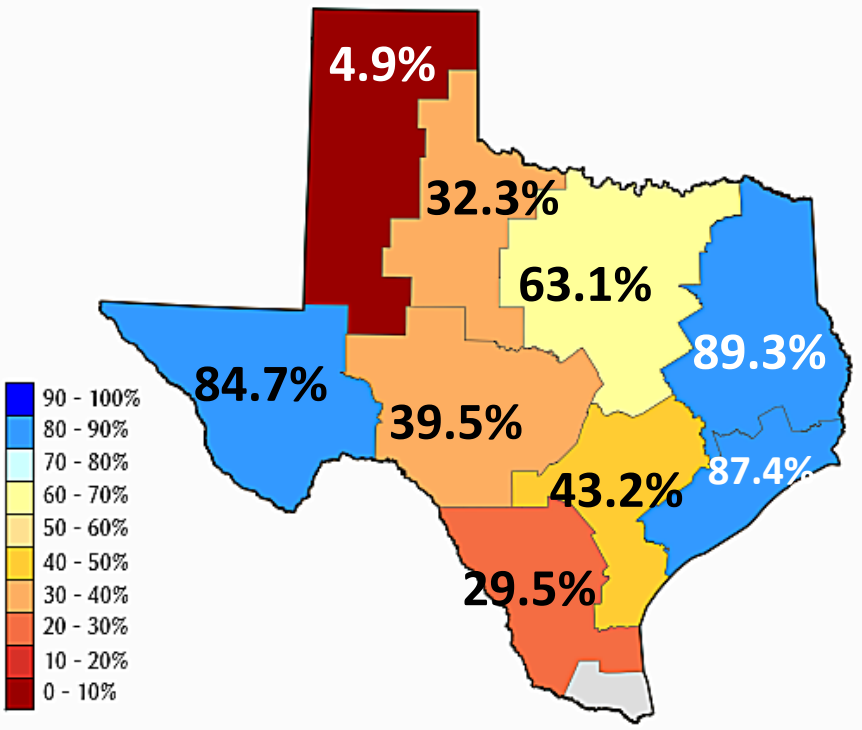


Percentage Of Nation Enduring Various Stages Of Drought

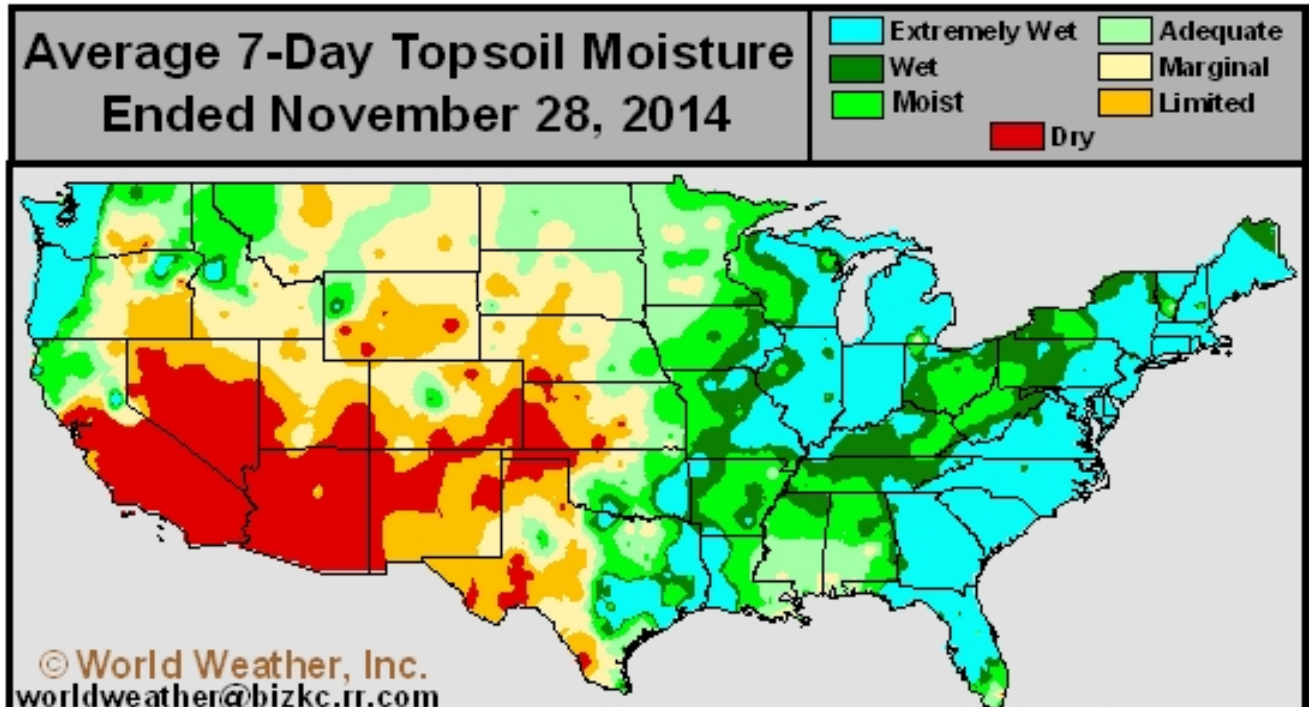
Week	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
2014-11-25	52.73	47.27	28.91	16.81	8.72	3.68
2013-11-26	43.82	56.18	30.57	16.49	3.8	0.39

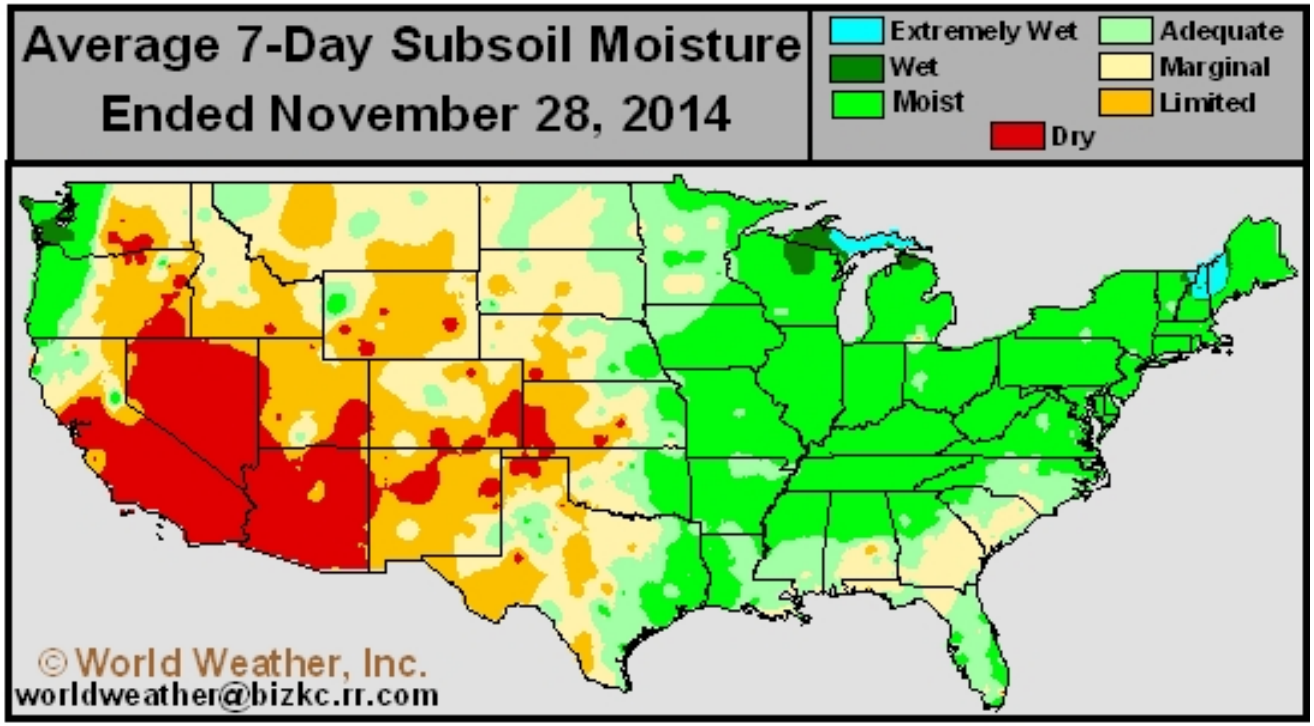


Texas Water Reservoir Levels As A Percent Of Capacity On Dec. 1, 2014



Despite Big Improvements In Texas Rainfall This Year Water Storage Is Still Very Low Keeping Concern Running High That Dryness Might Return. California's Water Supply Is Not Much Better, But Rain This Week Begin To Ease Some Of The Dryness


Average 7-Day Topsoil Moisture
Ended November 28, 2014
Extremely Wet
Wet
Moist
Adequate
Marginal
Limited
Dry
© World Weather, Inc.
worldweather@bizkc.rr.com


Average 7-Day Subsoil Moisture
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Wet
Moist
Adequate
Marginal
Limited
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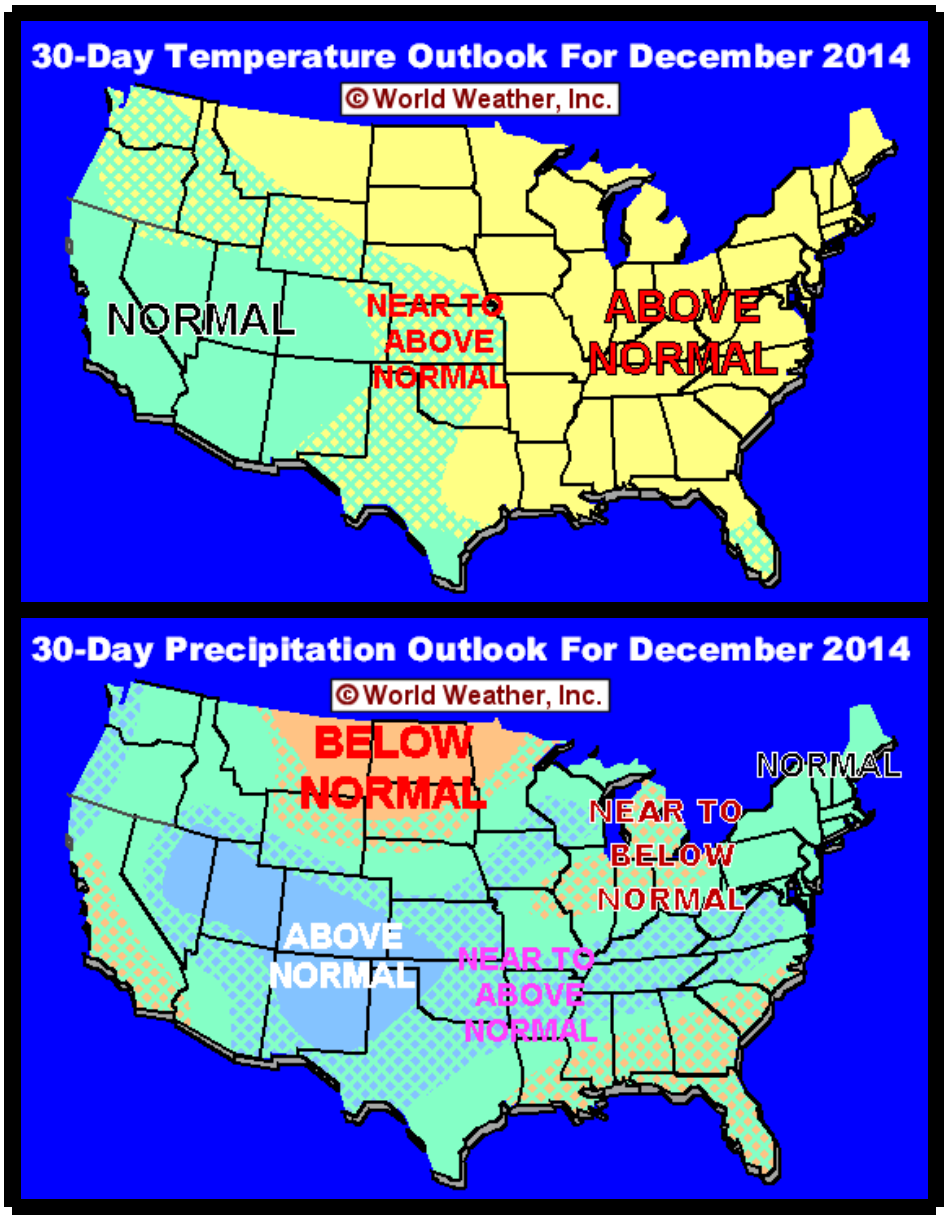
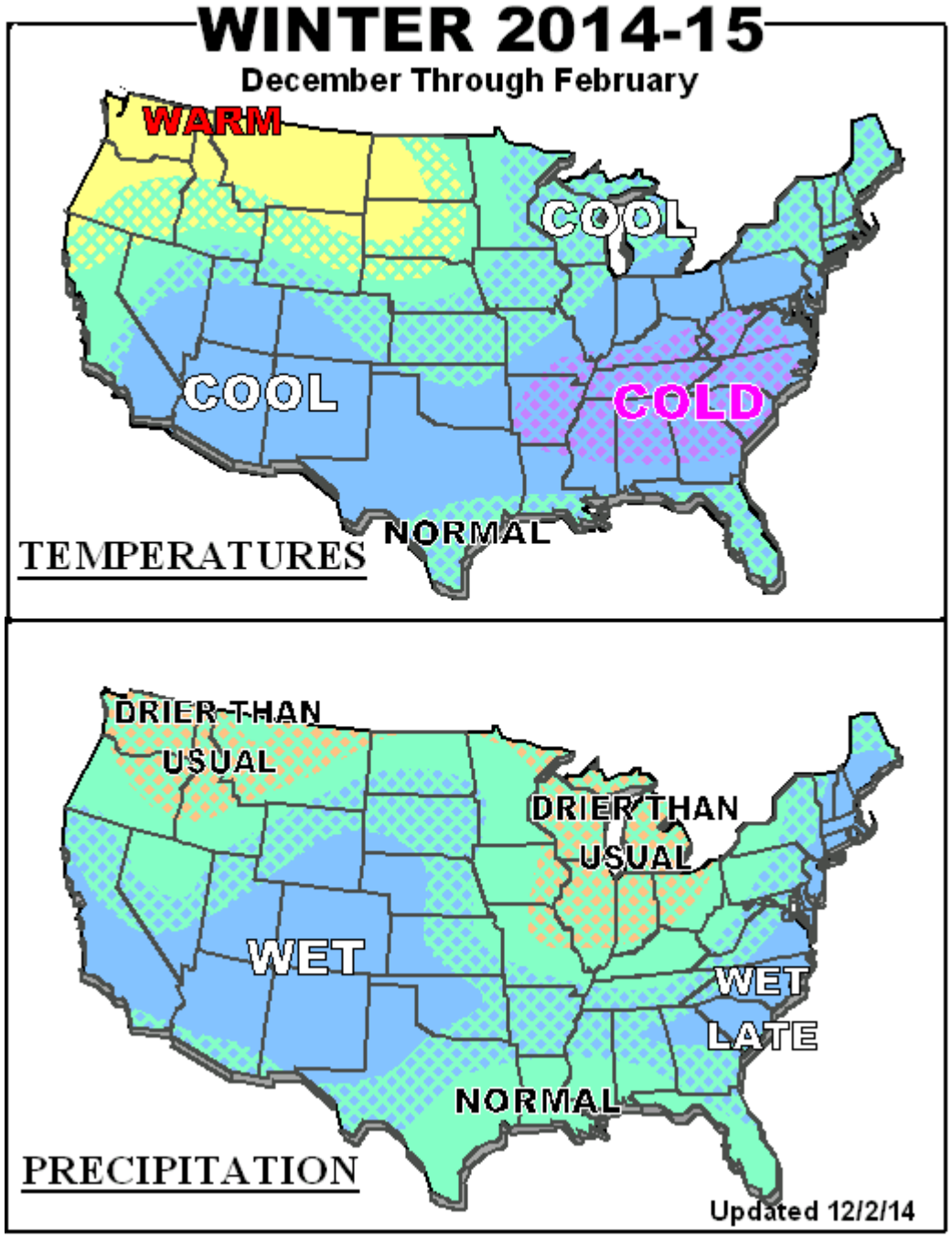
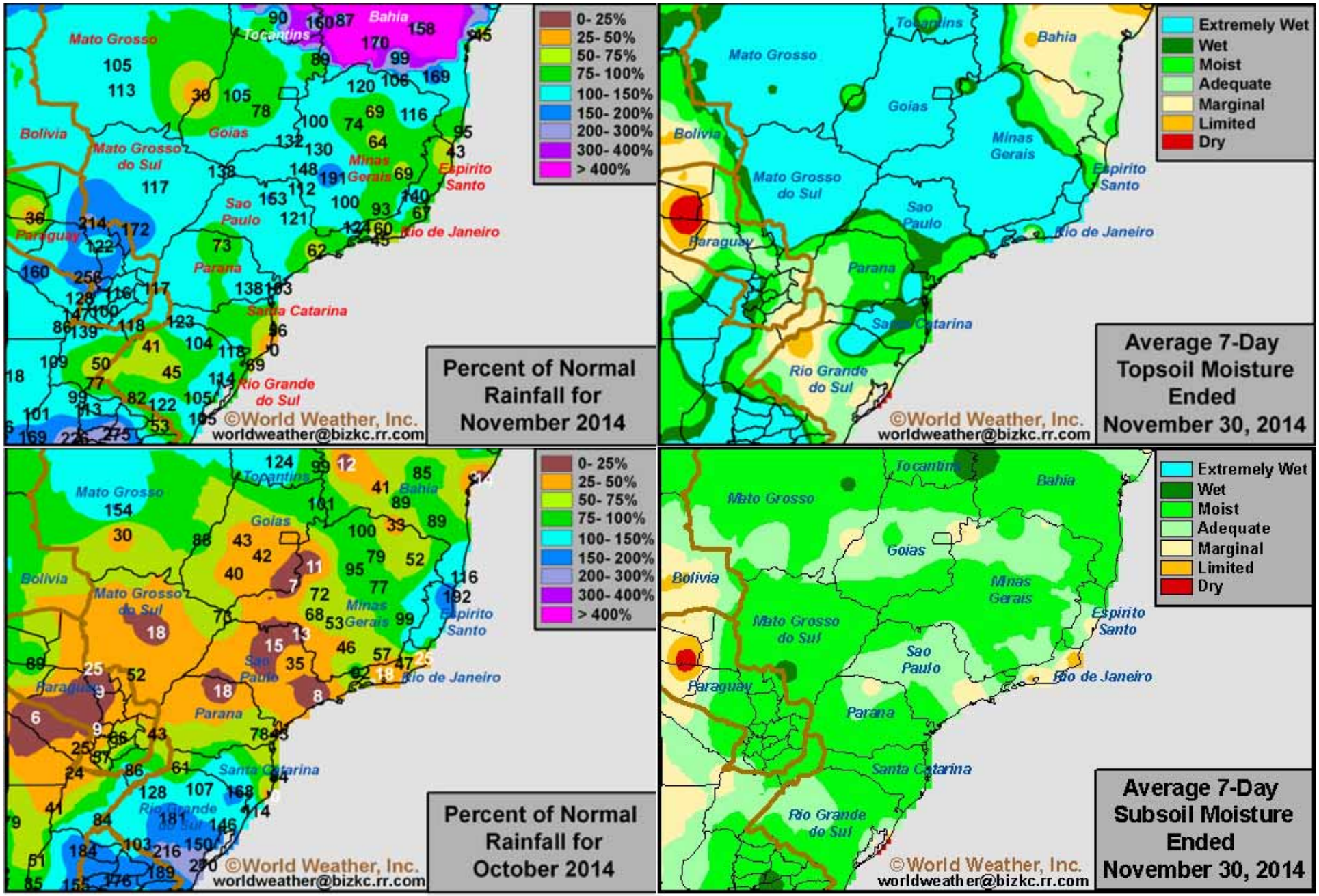
© World Weather, Inc.
worldweather@bizkc.rr.com



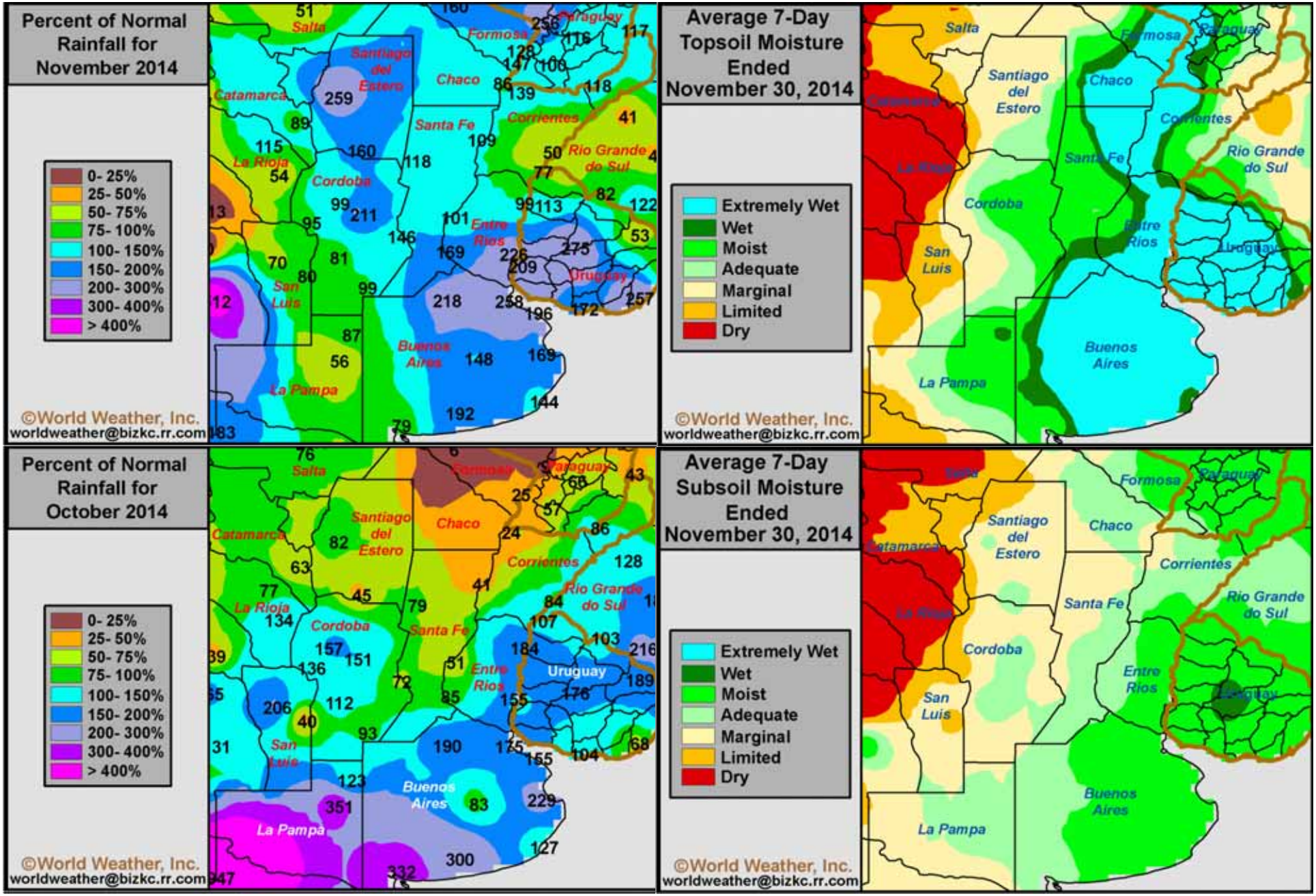
December In The U.S., Like That Of Canada Will Be Warmer Than Usual In A Big Part Of The U.S. Midwest And Northern Plains. The Warmer Bias In The Southeastern States Should Begin To Abate In The Second Half Of December, But A Warmer Than Usual Bias Will Prevail. A Couple Of Larger Storms In The Southwestern U.S. Late This Month Will Not Only Improve Rainfall Potentials In California And The Southwestern States, But In Texas And A Part Of The Central Plains, As Well. Temperatures In The Southwest Will Trend Cooler Than Usual During Late Month. Precipitation Will Be Less Than Usual In The Northern Plains (Associated With Canada's El Nino Based Dry And Warm Bias) And In Portions Of The Northern Midwest And Southeastern States, As Well.



Winter Will Be Influenced By Many Different Weather Features. The Weak El Nino, 18-Year Cycle And Arctic Oscillation Will Have The Greatest Influence. However, Pacific Decadal Oscillation And The Quasi-Biennial Oscillation Will Have Some Influence. Each Of These Seem To Agree That The Southeastern U.S. Will Be Colder Than And Wetter Than Usual This Winter. There Is Much Agreement About The Southwestern States Being Cool, As Well, And The Central And Southern Plains Wetter Than Usual. El Nino Will Help The Pacific Northwest And Midwest Have Some Below Average Precipitation Biases At Times During The Heart Of Winter, But Arctic Oscillation, El Nino And The 18-year Cycle Will Combine To Produce Some Infrequent, But Quite Potent Cold Surges Into The Eastern Half Of The Nation.

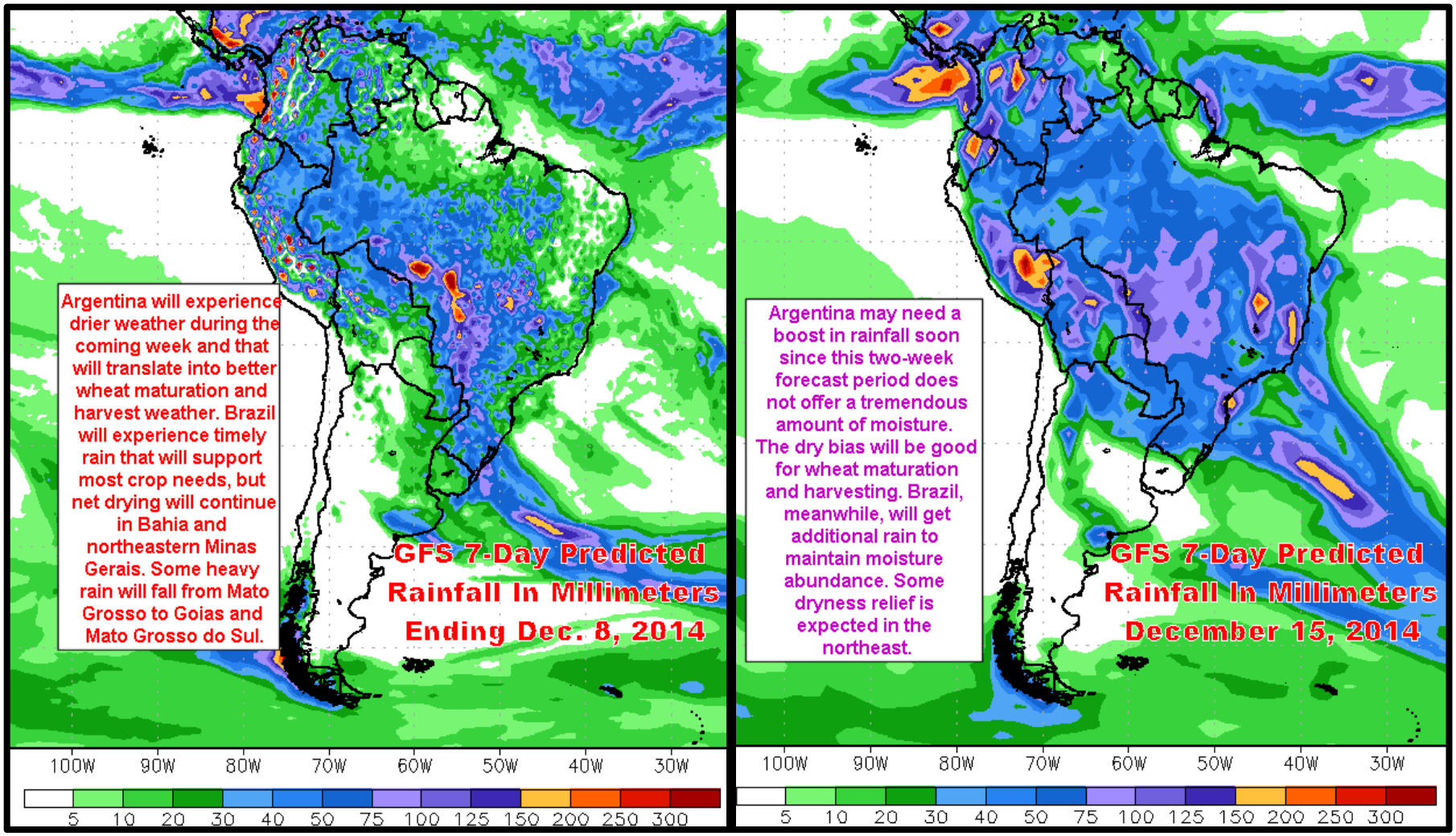


Brazil Rainfall Improved Greatly During The Second Half Of November

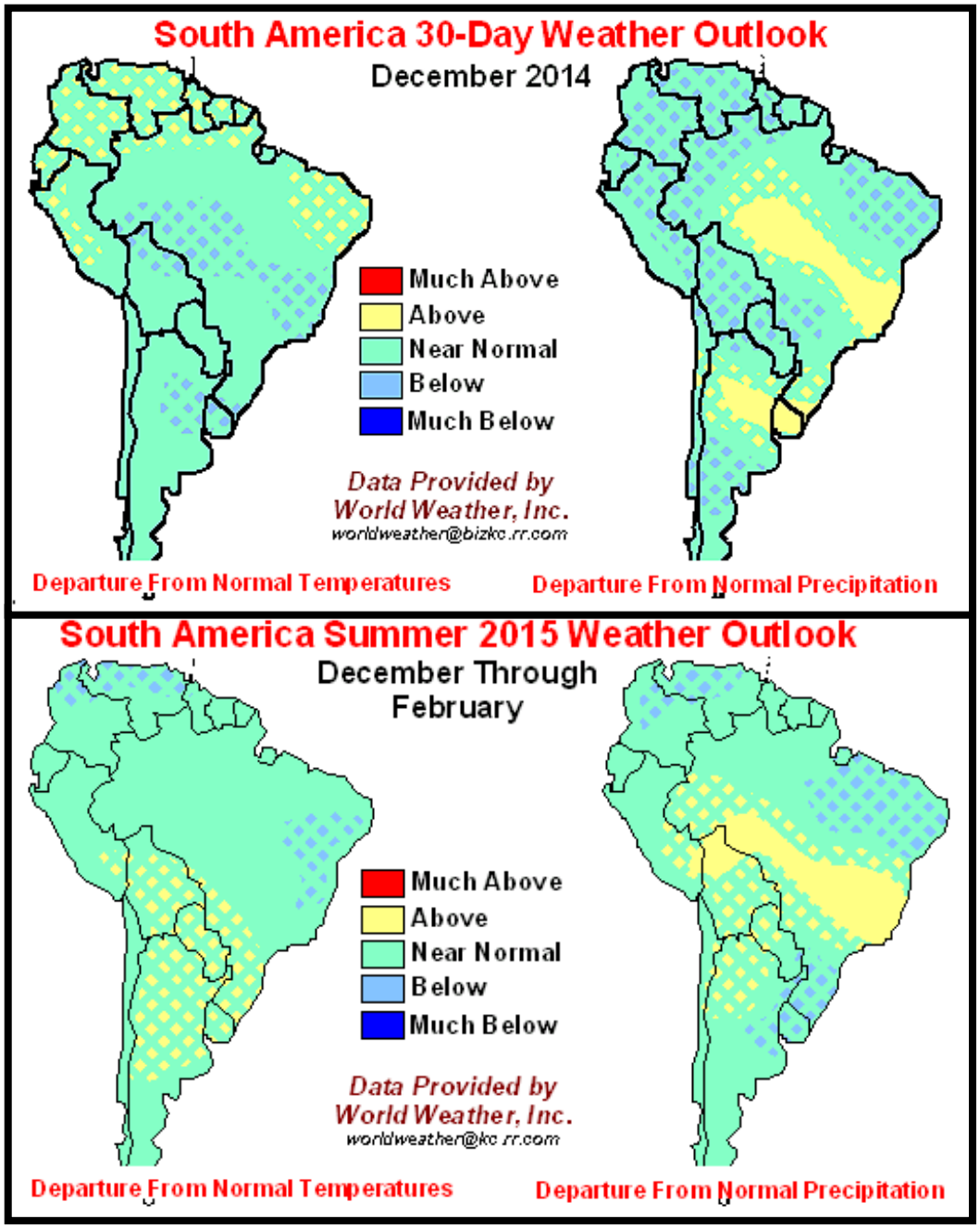


Argentina's Weather Turned A Little Wet For Winter Wheat Harvesting, But Summer Crops Are Doing Well. Greater Rain May Be Needed In The West Soon

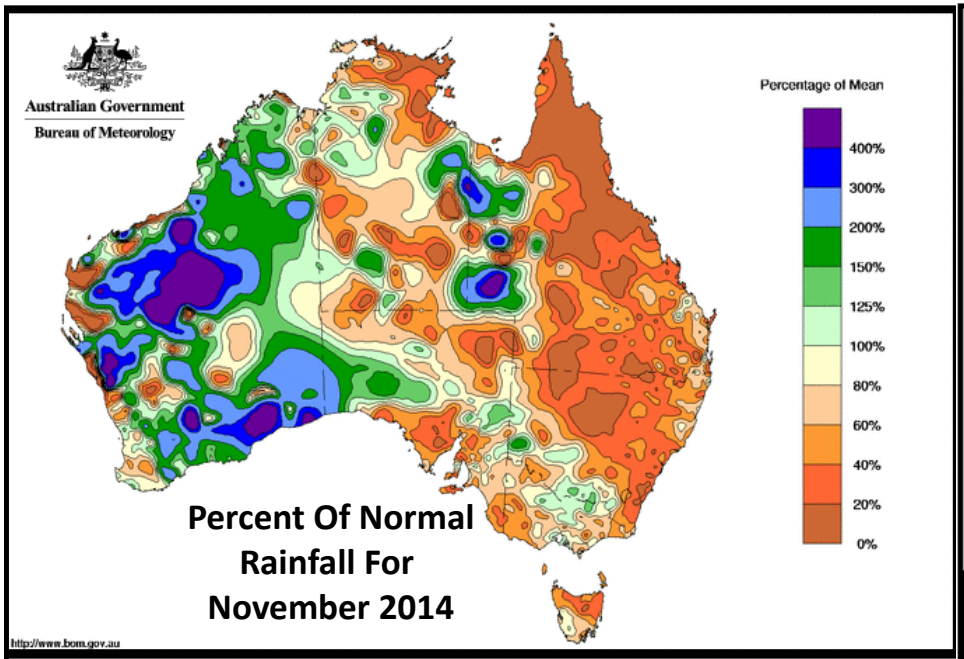
Two-Week Weather Outlook For South America

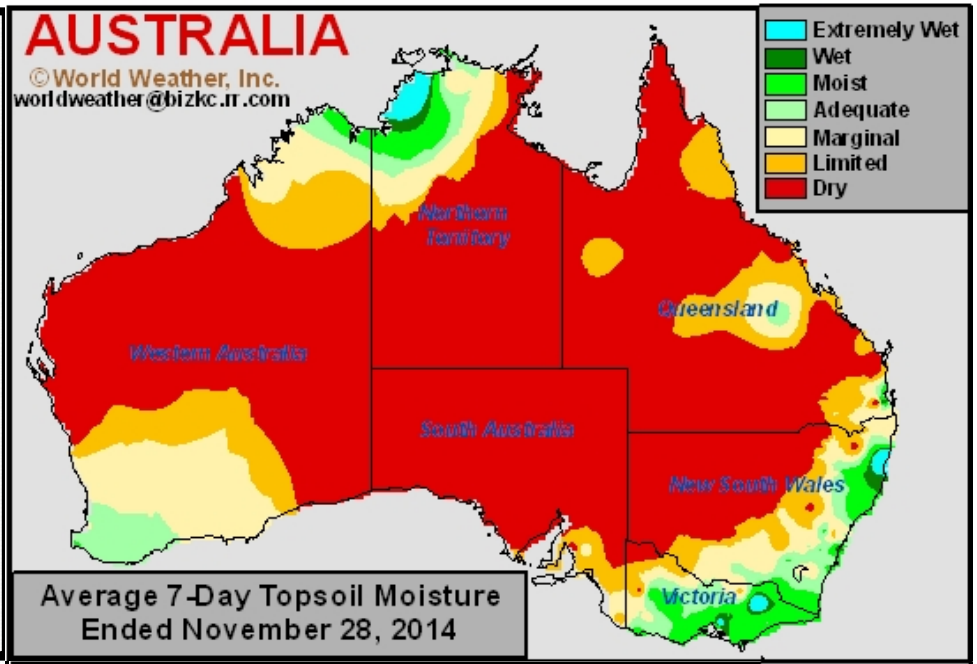


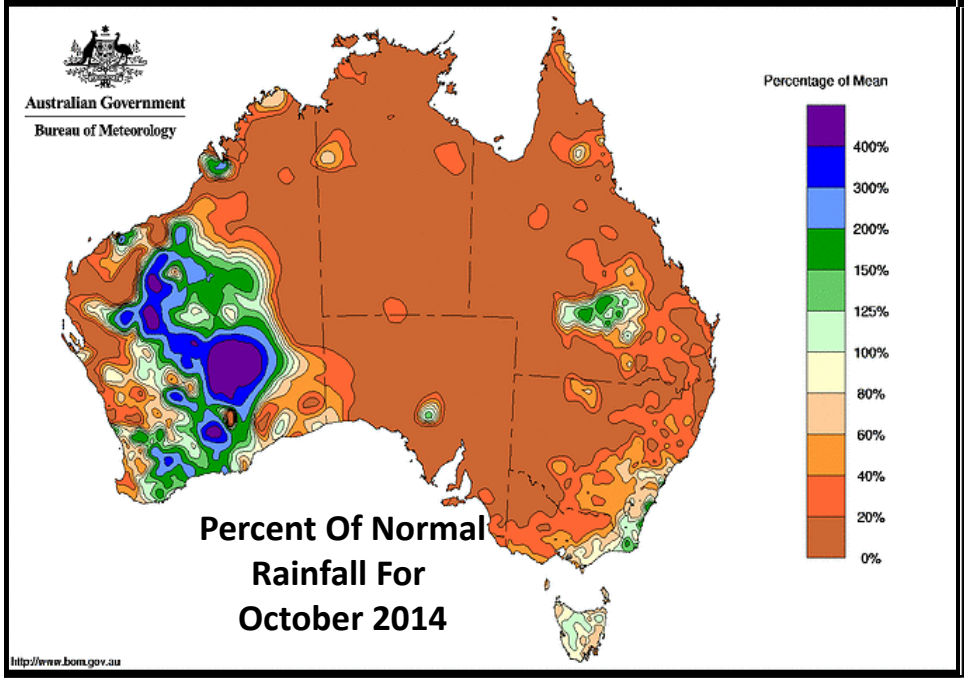
Seasonal Rains Finally Arrived In Brazil And The Outlook Is For An Abundance Of Moisture Over The Next Two Weeks Maintaining A Fine Outlook For 2015 Production. Dryness Earlier In The Season Will Reduce The Second Season Corn Crop. Argentina Will Need Greater Rainfall To Assure The Best Summer Crop Production – Especially In The West

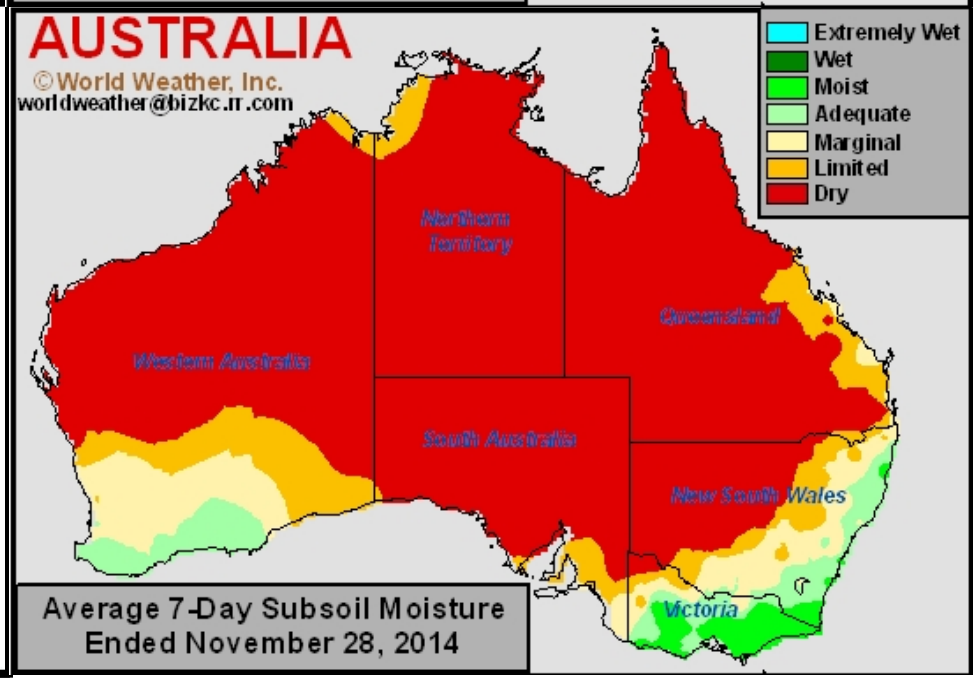


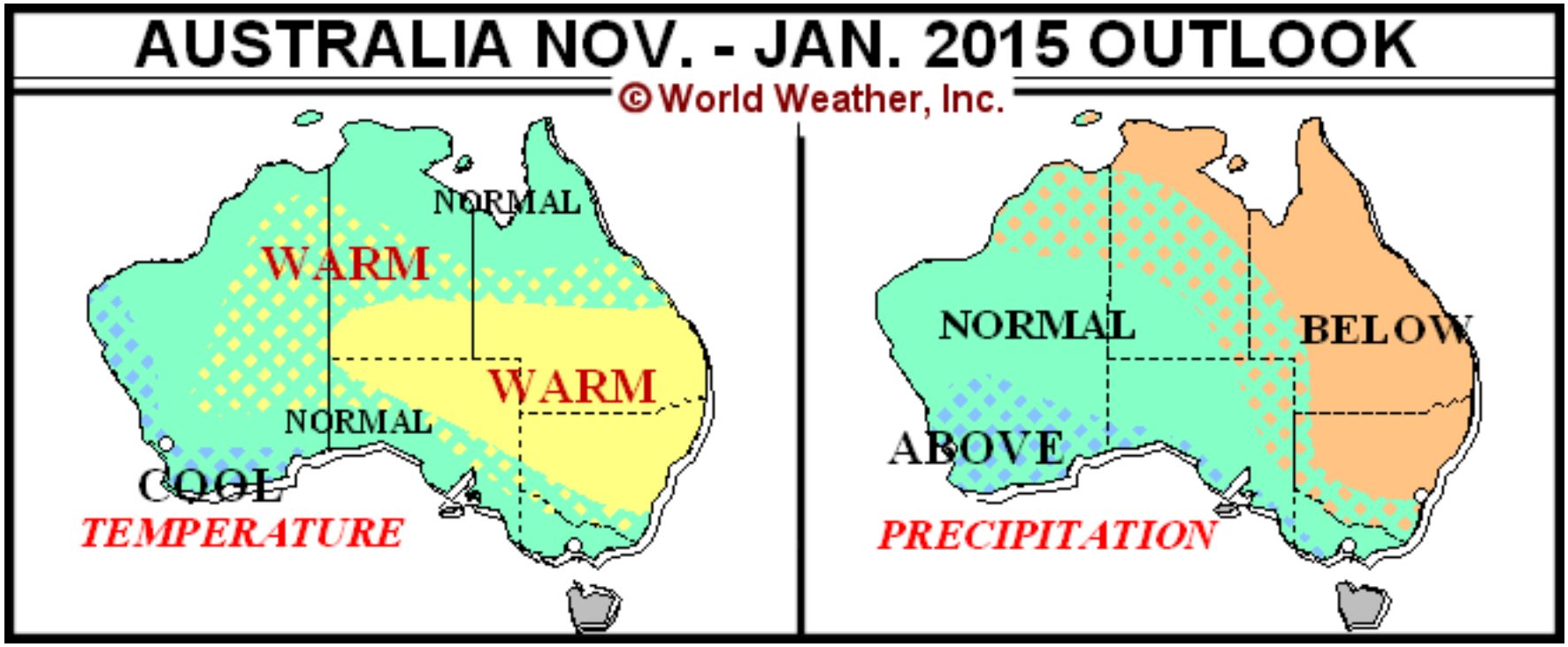
Weather In December And Through Much Of The Summer Season Will Include Greater Than Usual Rainfall In A Portion Of Center West And Center South Brazil And – At Least For December – In A Part Of Central And Eastern Argentina And Uruguay. Temperatures Will Be A Little Warmer Bias This Summer In Argentina Where There Will Be Some Need For Timely Rainfall Throughout The Season. December Temperatures, However, In Most Of South America's Grain And Oilseed Areas Will Be Near To Below Average. Net Drying May Become Of Interest In A Part Of Southern Brazil In January And February And Some Drier Biased Conditions Will Prevail In Northeastern Brazil Most Of The Summer.


Australian Government
Bureau of Meteorology
Percentage of Mean
400%
300%
200%
150%
125%
100%
80%
60%
40%
20%
0%
Percent Of Normal
Rainfall For
November 2014
http://www.bom.gov.au

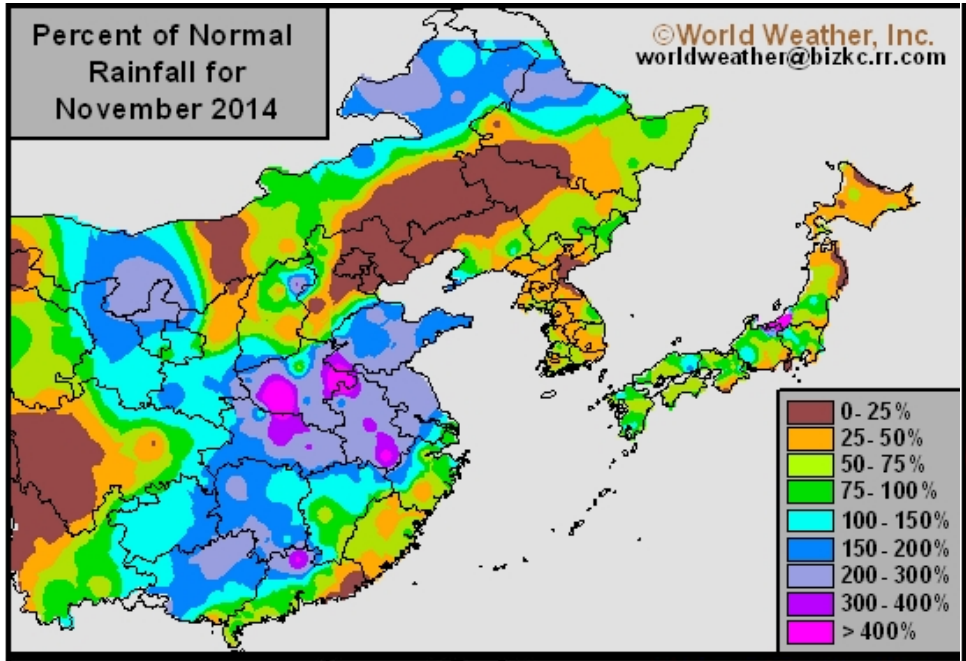

AUSTRALIA
©World Weather, Inc.
worldweather@bizkc.rr.com
Extremely Wet
Wet
Moist
Adequate
Marginal
Limited
Dry
Northern Territory
Queensland
Western Australia
South Australia
New South Wales
Victoria
Average 7-Day Topsoil Moisture
Ended November 28, 2014

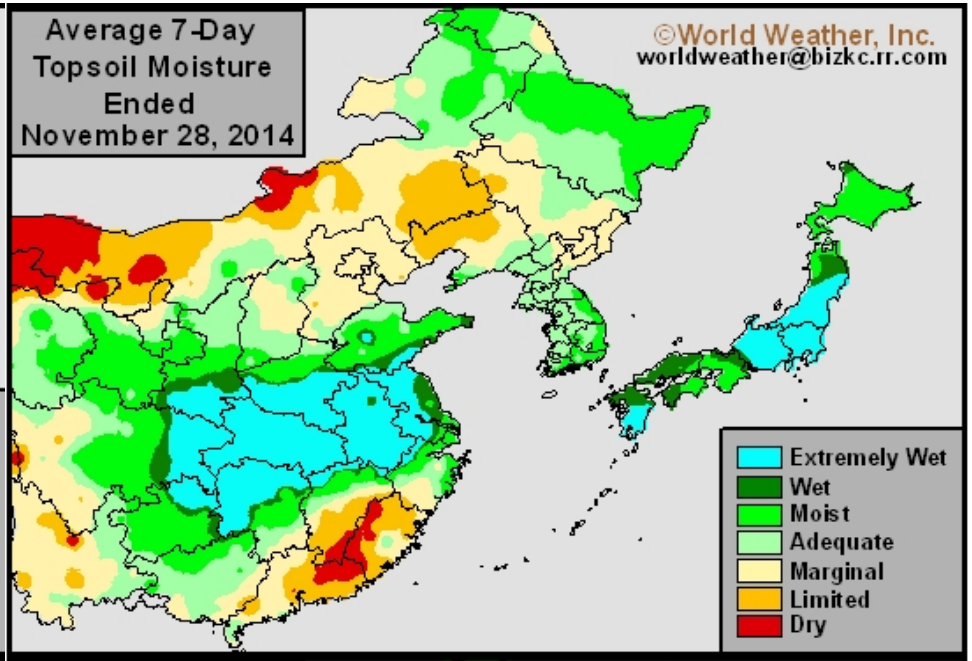

Australian Government
Bureau of Meteorology
Percentage of Mean
400%
300%
200%
150%
125%
100%
80%
60%
40%
20%
0%
Percent Of Normal
Rainfall For
October 2014
http://www.bom.gov.au

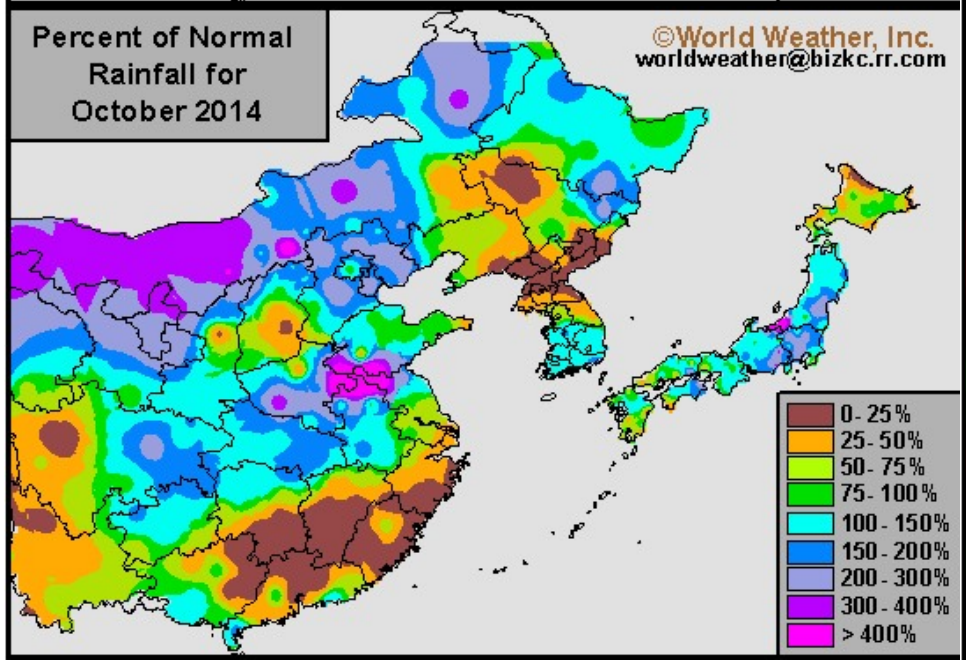

AUSTRALIA
©World Weather, Inc.
worldweather@bizkc.rr.com
Extremely Wet
Wet
Moist
Adequate
Marginal
Limited
Dry
Northern Territory
Queensland
Western Australia
South Australia
New South Wales
Victoria
Average 7-Day Subsoil Moisture
Ended November 28, 2014

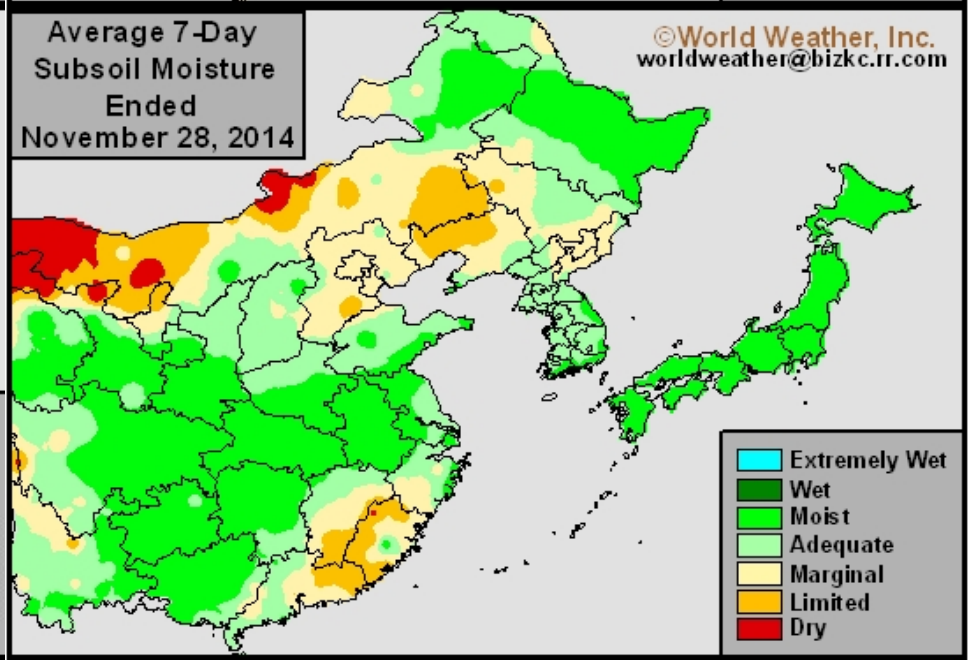


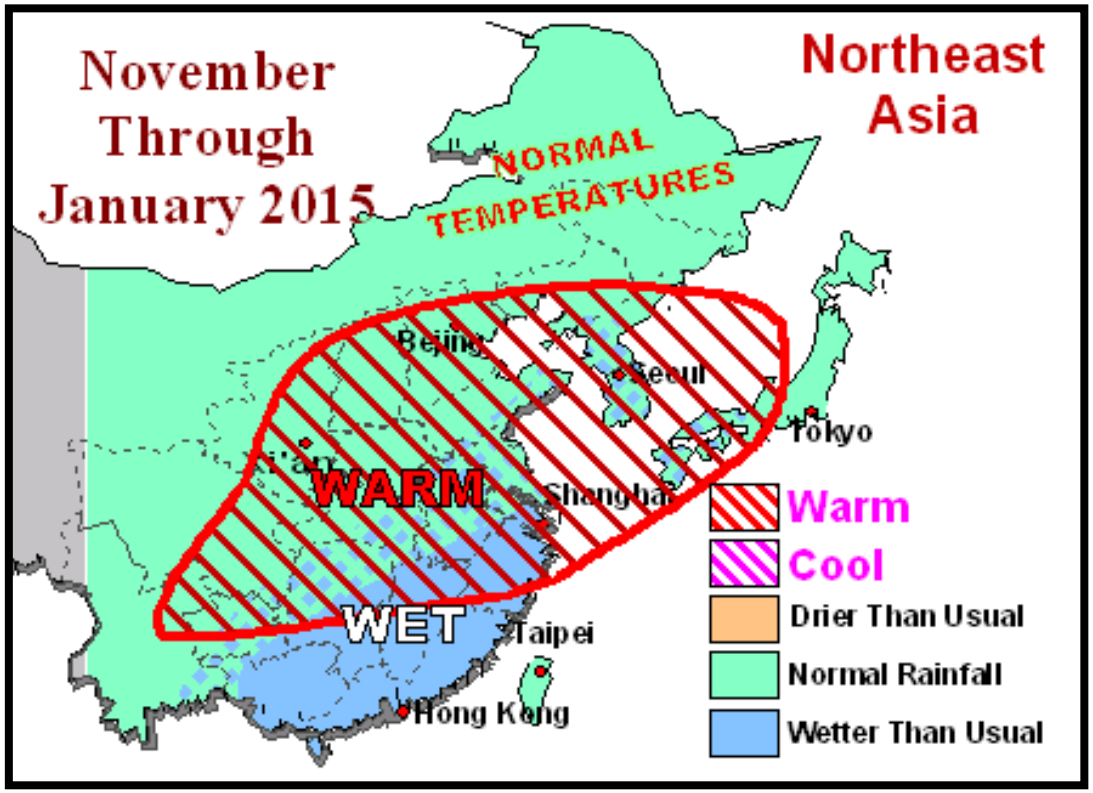
El Nino Will Control The Summer Weather Pattern In Australia With Most Of The East And Northern Parts Of The Nation Expected To Be Drier And Warmer Than Usual. Wetter Biased Conditions May Evolve In Western Australia While All Other Areas Will See Near To Below Average Precipitation. The Environment Will Be Stressful For Cotton, Corn, Soybeans, Sunseed And Sorghum In The East While Winter Crops Should Finish Up In The South In A Relatively Good Environment. Grain Quality Concerns For Southern Winter Crops in Australia Are Not Likely To Become Much Of An Issue, Despite Some Showers Over The Next Few Weeks.


Percent of Normal
Rainfall for
November 2014
©World Weather, Inc.
worldweather@bizkc.rr.com
0-25%
25-50%
50-75%
75-100%
100-150%
150-200%
200-300%
300-400%
>400%


Average 7-Day
Topsoil Moisture
Ended
November 28, 2014
©World Weather, Inc.
worldweather@bizkc.rr.com
Extremely Wet
Wet
Moist
Adequate
Marginal
Limited
Dry


Percent of Normal
Rainfall for
October 2014
©World Weather, Inc.
worldweather@bizkc.rr.com
0-25%
25-50%
50-75%
75-100%
100-150%
150-200%
200-300%
300-400%
>400%


Average 7-Day
Subsoil Moisture
Ended
November 28, 2014
©World Weather, Inc.
worldweather@bizkc.rr.com
Extremely Wet
Wet
Moist
Adequate
Marginal
Limited
Dry



El Nino Will Help Make It Rain This Winter In The Southeast Of China. That Region Is Too Dry Today And There Will Be Need For Moisture By Spring To Protect 2015 Production Potentials. Most Other Areas Will Have A Warmer Tendency With Precipitation Mostly Near Normal.

Planting Of Wheat Has Concluded While Rapeseed Planting Will Continue Into Mid-December. The Prospects For Both Crops Remains Just Fine. Dryness In Liaoning And Neighboring Areas Of Hebei, North Korea And Inner Mongolia Will Not Change Until Spring And There Will Be Some Worry Over The Region's Ongoing Dryness For A While In The Early Spring. El Nino May Induce Some Lighter Than Usual Summer Rainfall In The North China Plain Similar To That Of Last Summer.

WEATHER OUTLOOK 2014-15

PRESENTED BY

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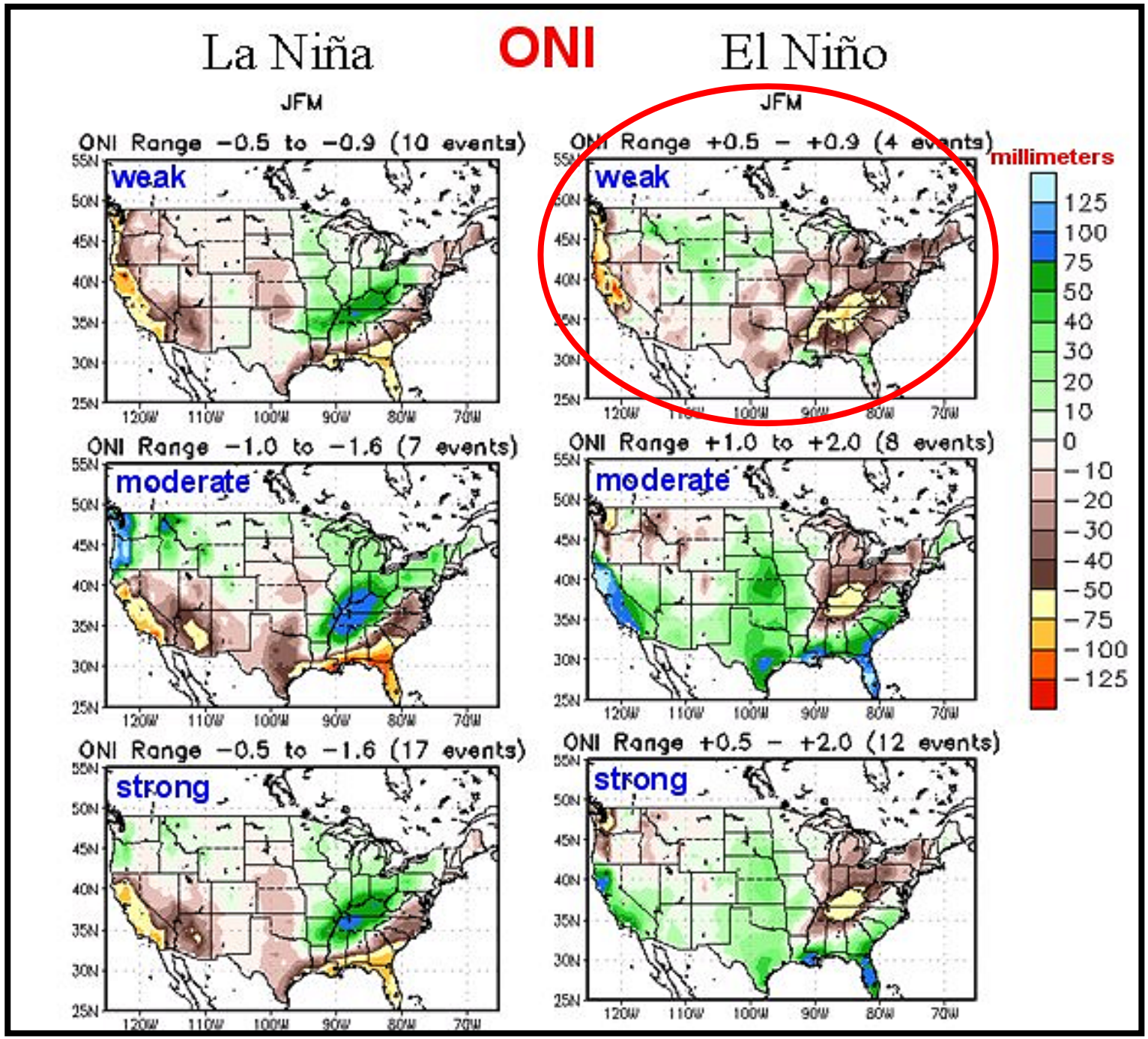
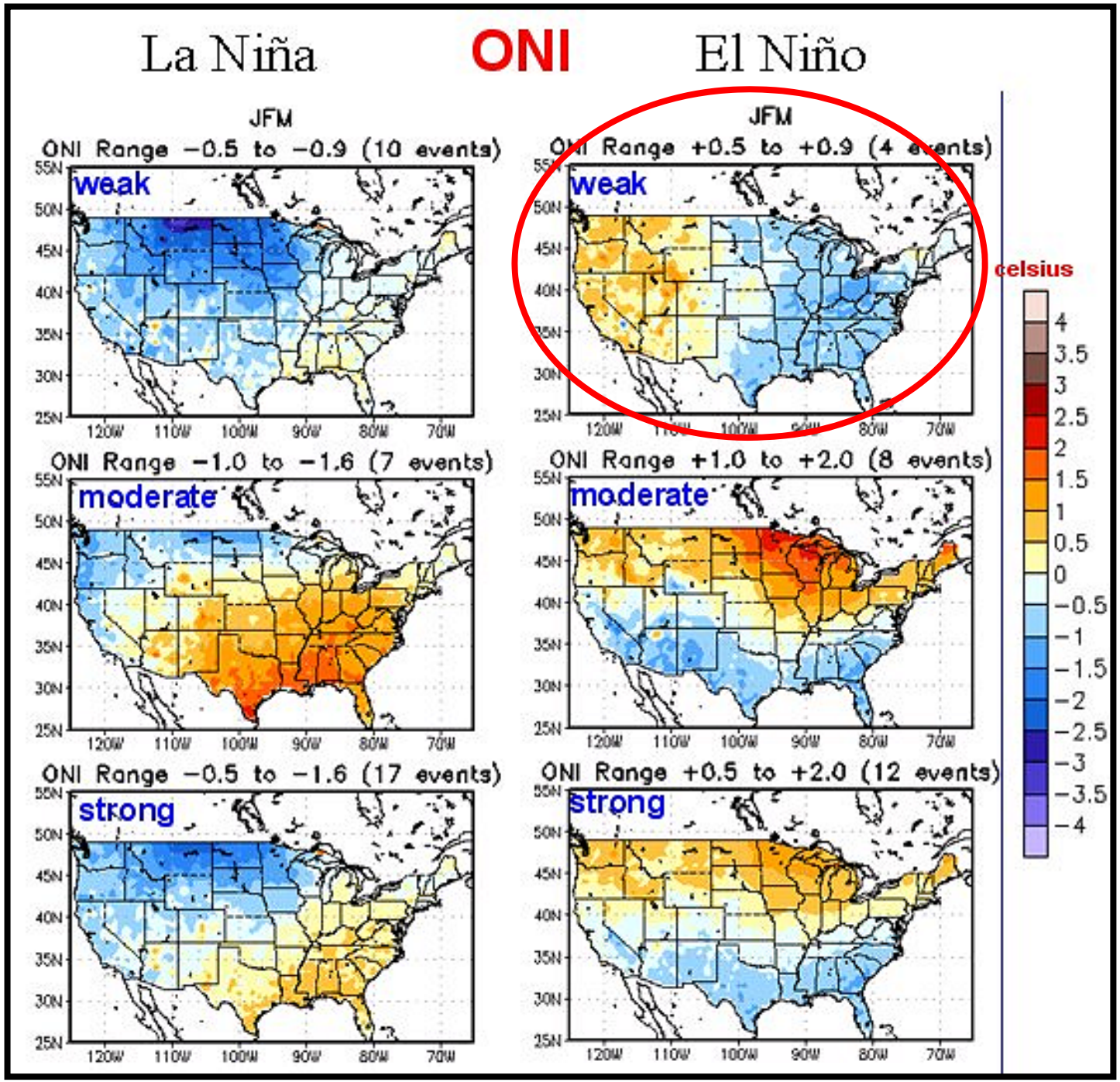
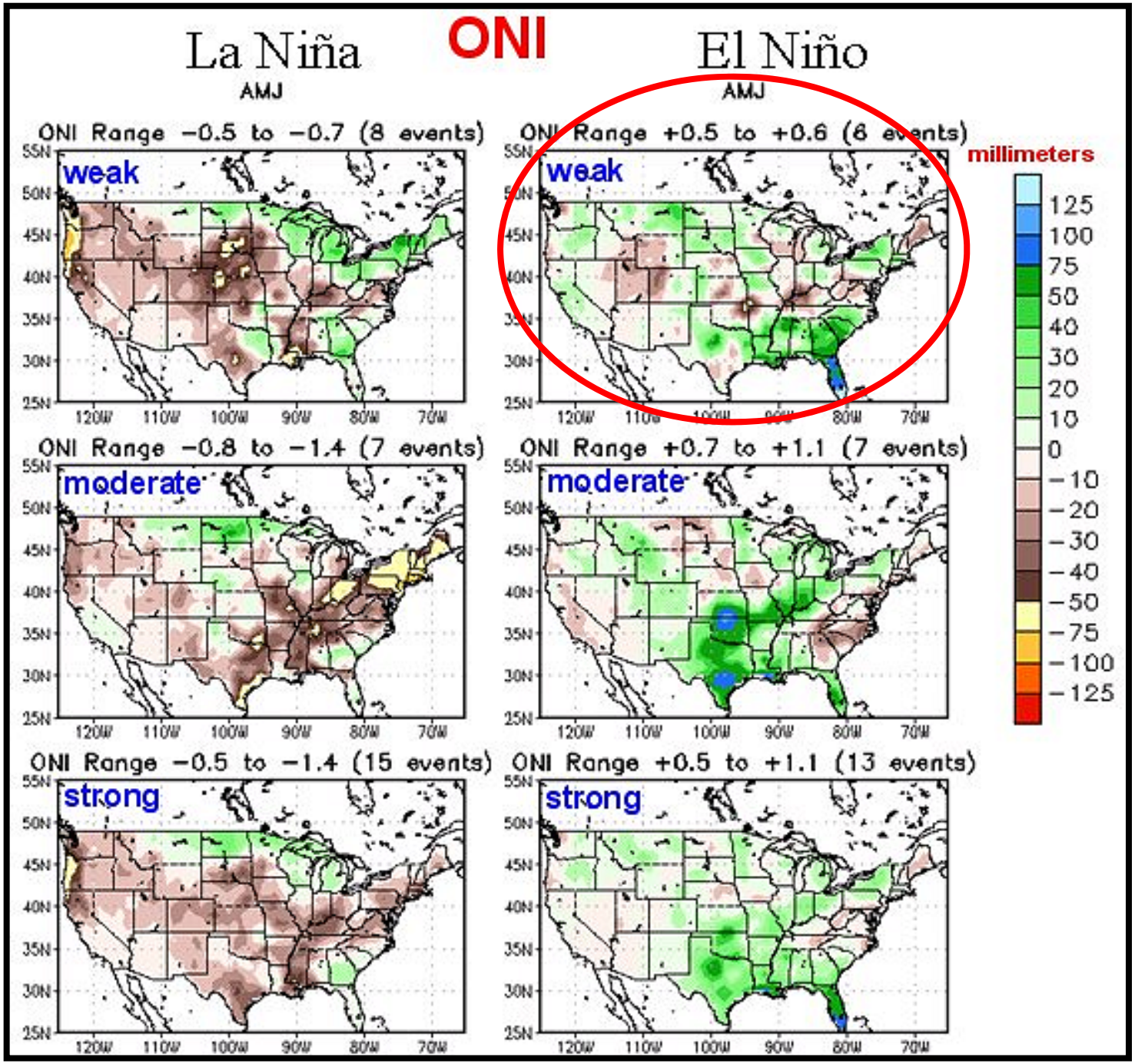
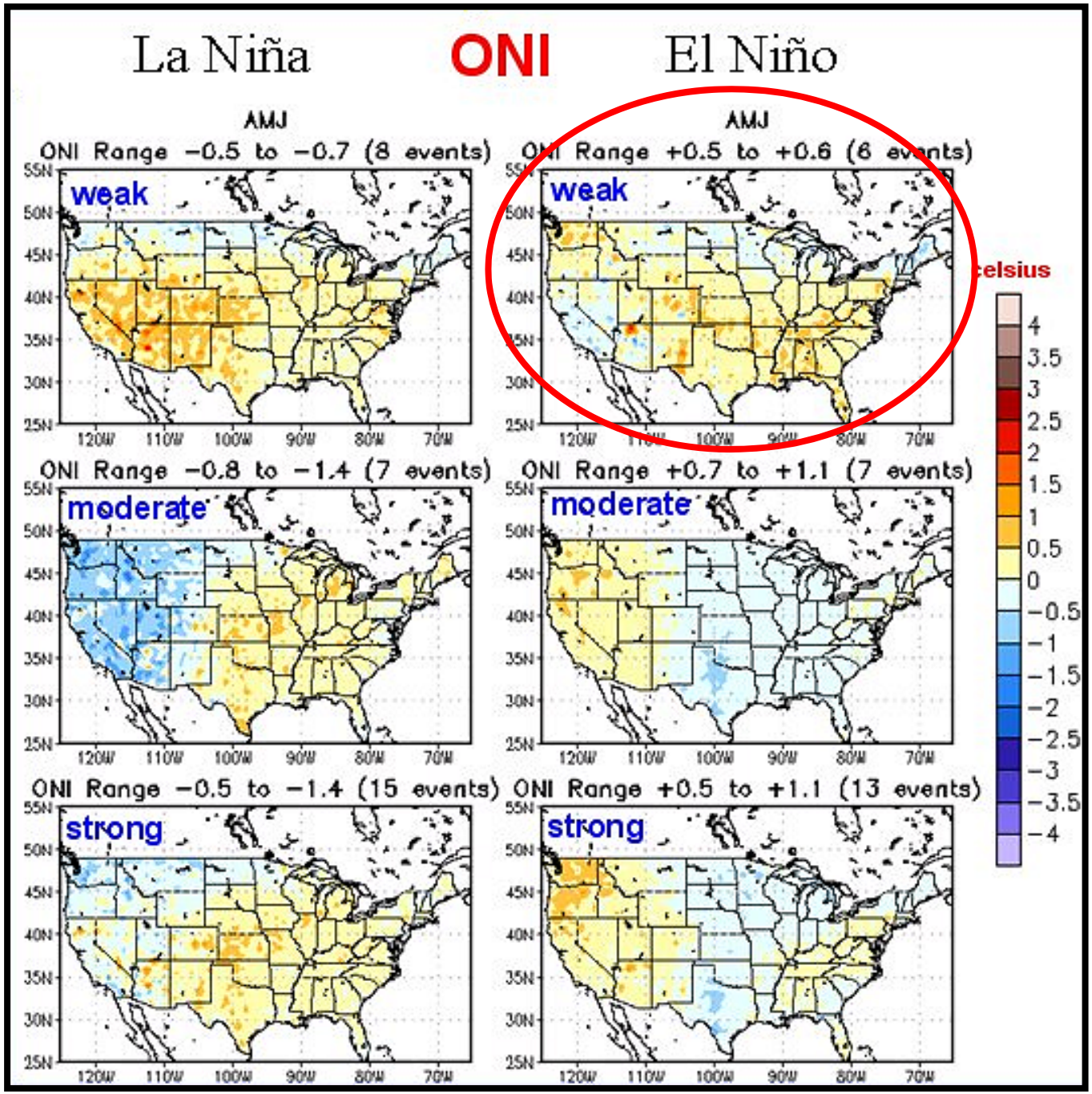
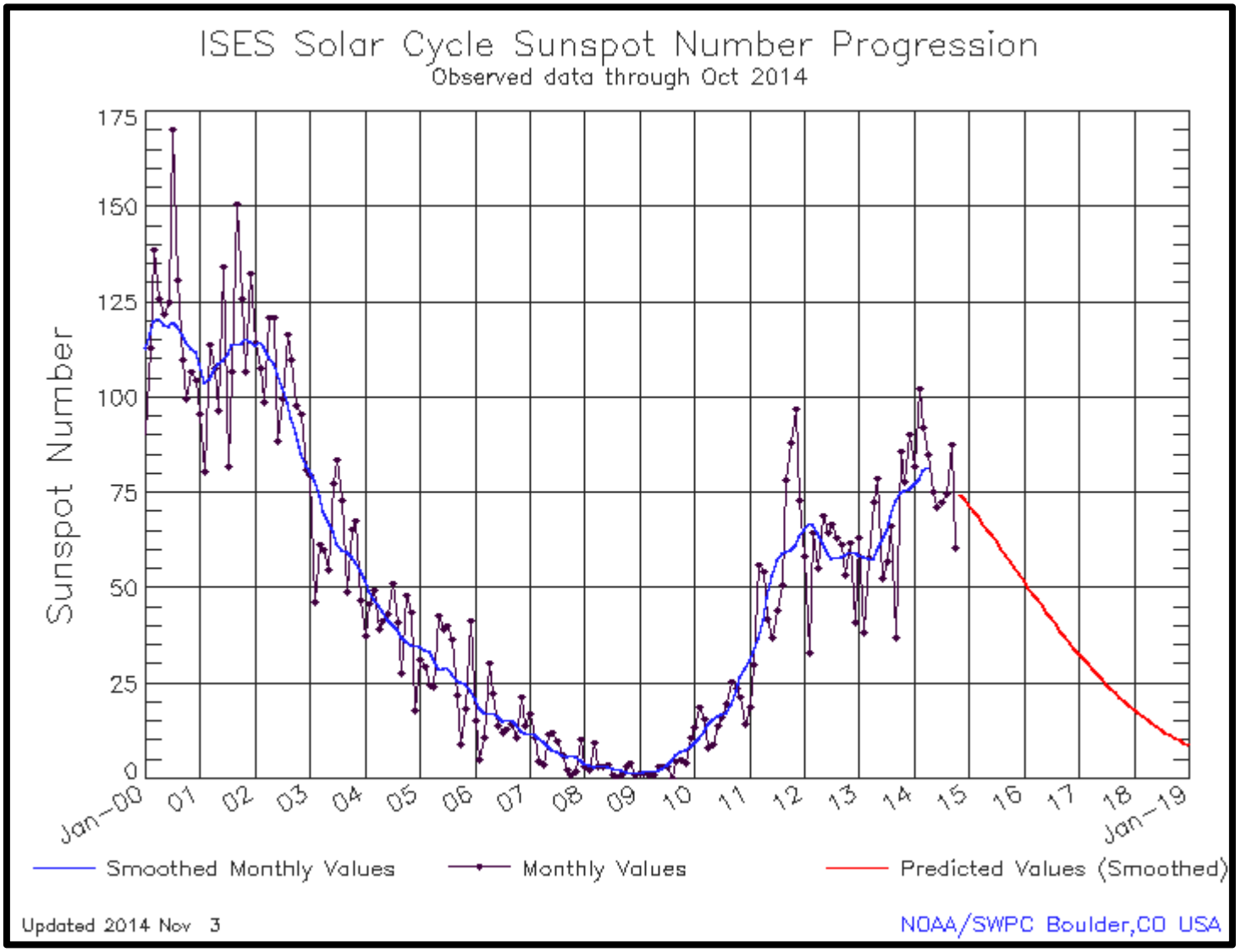
EMAIL ------ worldweather@bizkc.rr.com **Fax Number: 913-383-1198**


La Niña
ONI
El Niño
JFM
JFM
ONI Range −0.5 to −0.9 (10 events)
weak
ONI Range +0.5 – +0.9 (4 events)
weak
millimeters
125
100
75
50
40
30
20
10
0
−10
−20
−30
−40
−50
−75
−100
−125
ONI Range −1.0 to −1.6 (7 events)
moderate
ONI Range +1.0 to +2.0 (8 events)
moderate
ONI Range −0.5 to −1.6 (17 events)
strong
ONI Range +0.5 – +2.0 (12 events)
strong
55N
50N
45N
40N
35N
30N
25N
120W
110W
100W
90W
80W
70W


La Niña
ONI
El Niño
JFM
ONI Range −0.5 to −0.9 (10 events)
weak
JFM
ONI Range +0.5 to +0.9 (4 events)
weak
ONI Range −1.0 to −1.6 (7 events)
moderate
ONI Range +1.0 to +2.0 (8 events)
moderate
ONI Range −0.5 to −1.6 (17 events)
strong
ONI Range +0.5 to +2.0 (12 events)
strong
celsius
4
3.5
3
2.5
2
1.5
1
0.5
0
−0.5
−1
−1.5
−2
−2.5
−3
−3.5
−4
55N
50N
45N
40N
35N
30N
25N
120W
110W
100W
90W
80W
70W

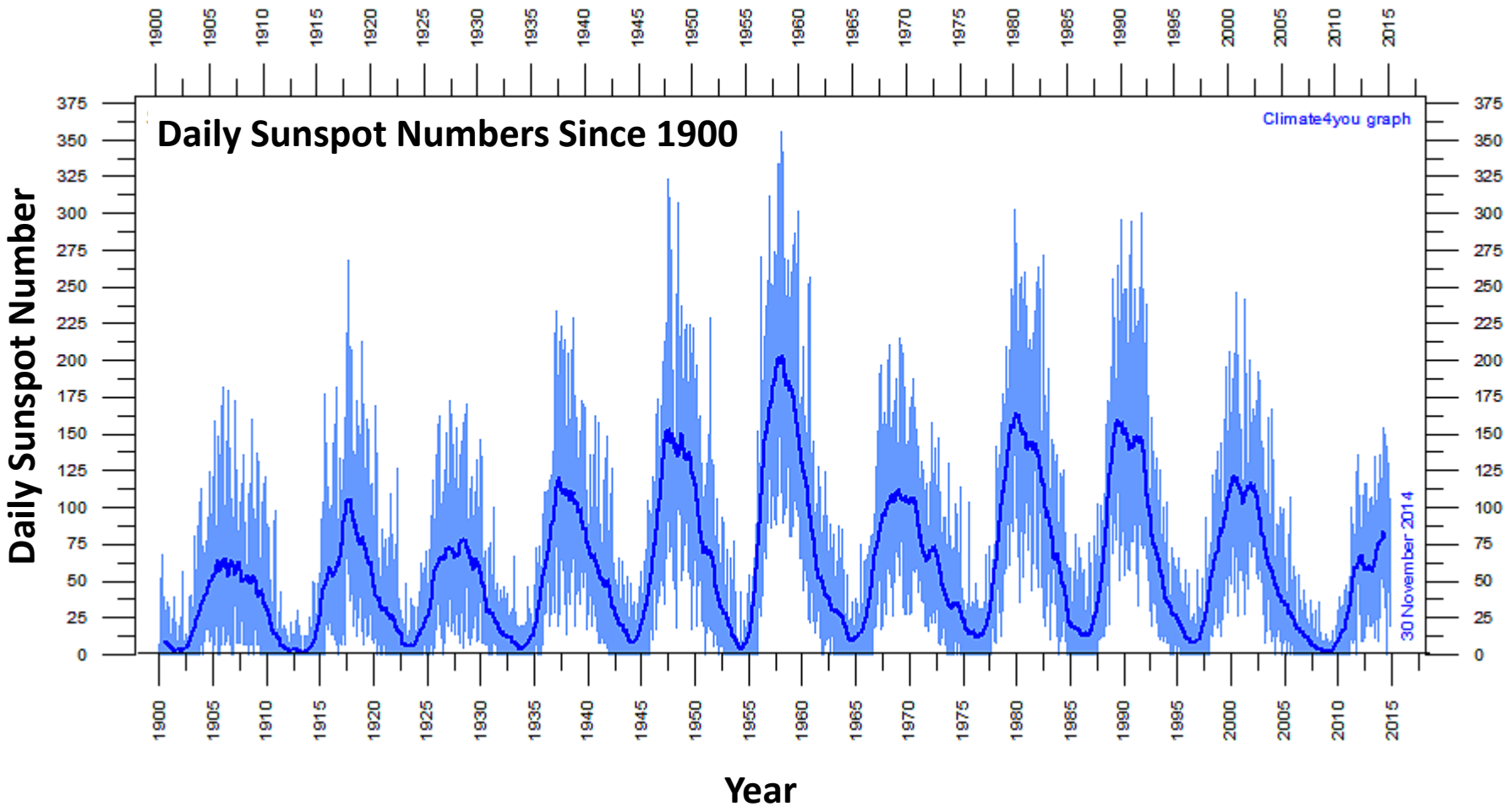

La Niña
AMJ
ONI
El Niño
AMJ
ONI Range −0.5 to −0.7 (8 events)
weak
ONI Range +0.5 to +0.6 (6 events)
weak
millimeters
125
100
75
50
40
30
20
10
0
−10
−20
−30
−40
−50
−75
−100
−125
ONI Range −0.8 to −1.4 (7 events)
moderate
ONI Range +0.7 to +1.1 (7 events)
moderate
ONI Range −0.5 to −1.4 (15 events)
strong
ONI Range +0.5 to +1.1 (13 events)
strong
55N
50N
45N
40N
35N
30N
25N
120W
110W
100W
90W
80W
70W


La Niña
ONI
El Niño
AMJ
ONI Range −0.5 to −0.7 (8 events)
weak
AMJ
ONI Range +0.5 to +0.6 (6 events)
weak
ONI Range −0.8 to −1.4 (7 events)
moderate
ONI Range +0.7 to +1.1 (7 events)
moderate
ONI Range −0.5 to −1.4 (15 events)
strong
ONI Range +0.5 to +1.1 (13 events)
strong
celsius
4
3.5
3
2.5
2
1.5
1
0.5
0
−0.5
−1
−1.5
−2
−2.5
−3
−3.5
−4
55N
50N
45N
40N
35N
30N
25N
120W
110W
100W
90W
80W
70W

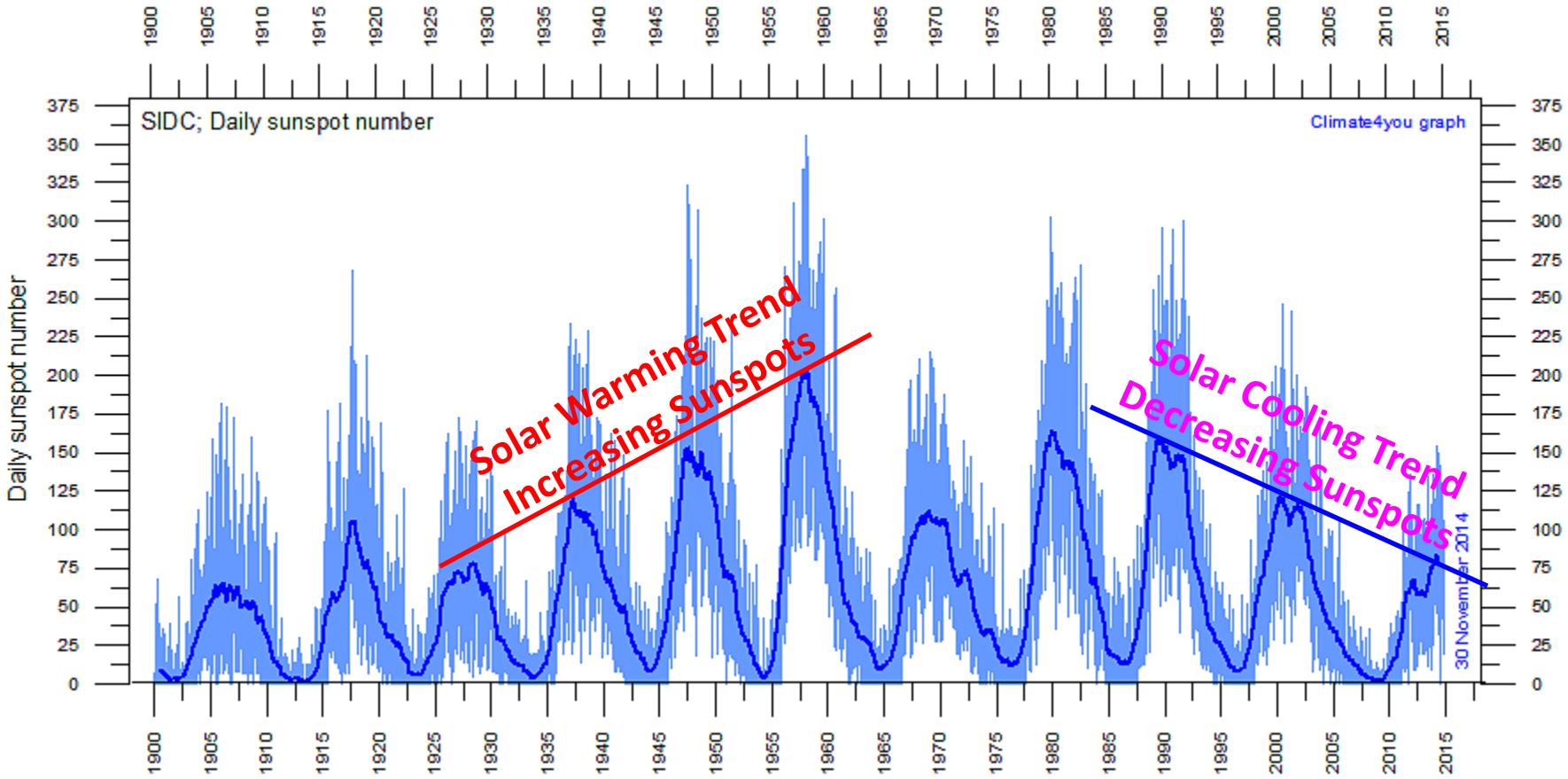


January 2014 Was The Solar Maximum For this 10-12 Year Solar Cycle For Sunspots. There Are A Few Correlations To Associate With That Trend, But These Associations Must Be Played Off Other Dominating Weather Patterns.

SOLAR MAXIMUM OCCURRED FEB. 2014
HOW WILL IT IMPACT THE 18-YEAR CYCLE?

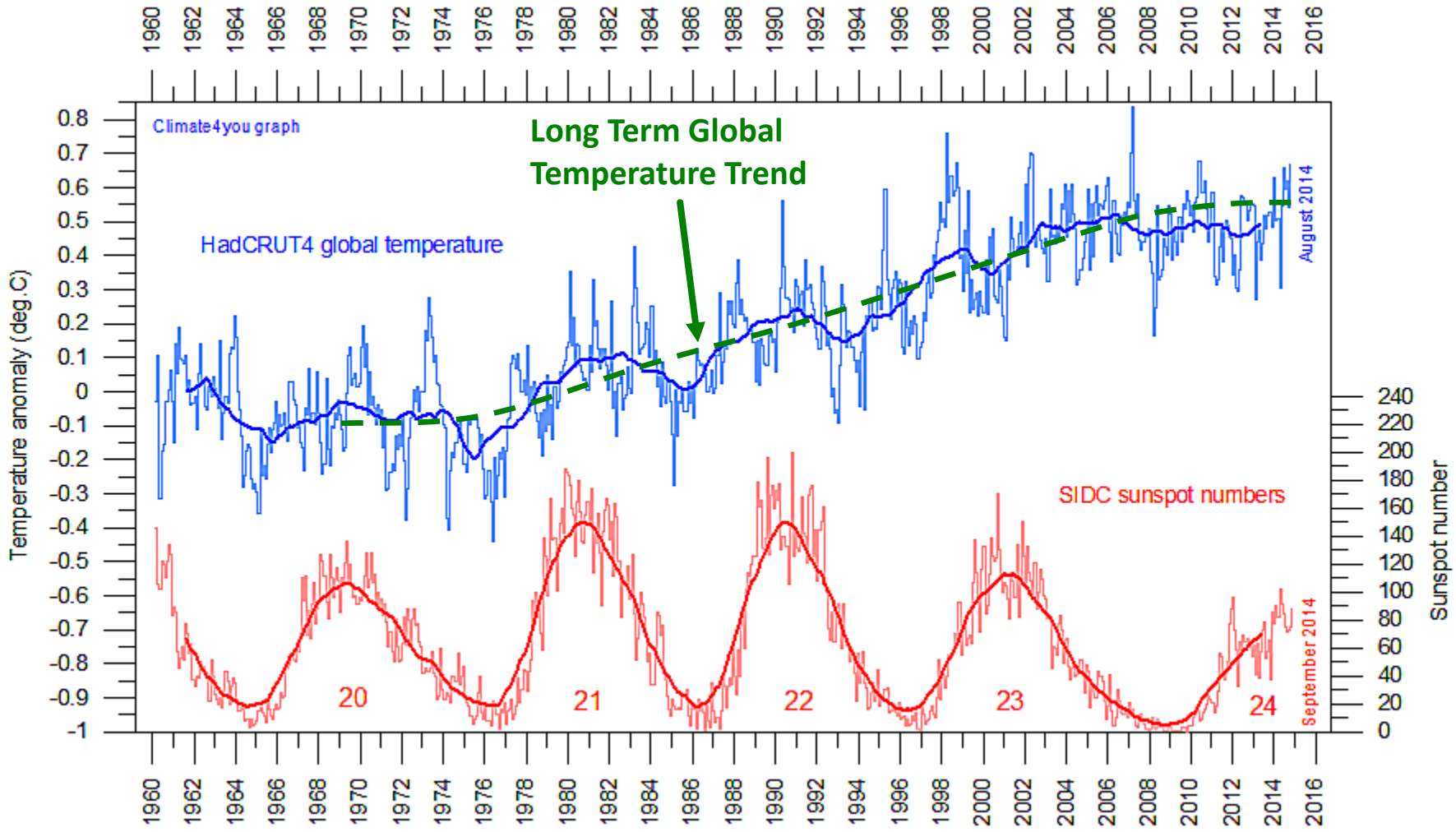


SUNSPOTS SINCE 1900

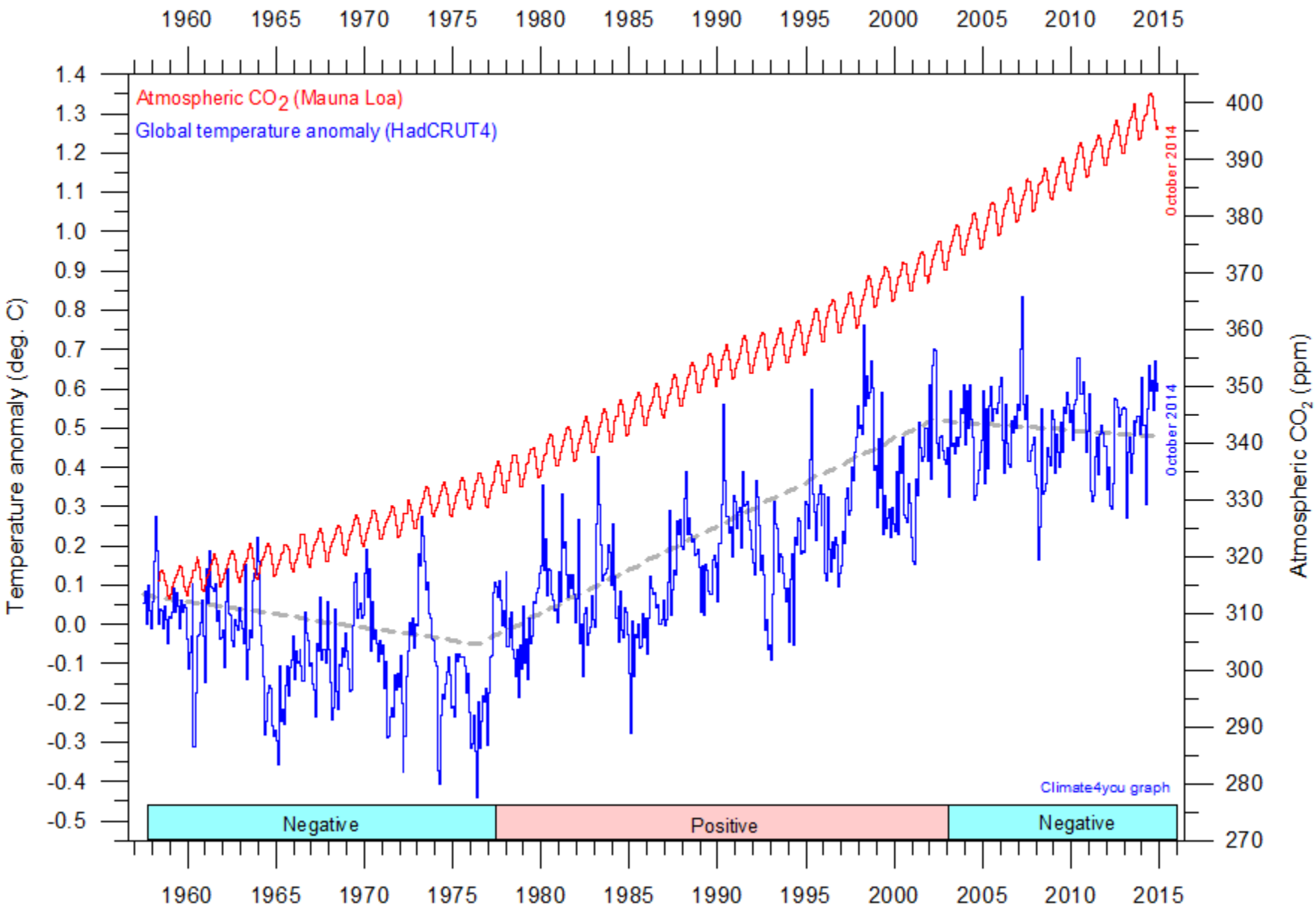


Sunspots Peak Out In 10 To 12-year Periods And The Same Is True For Their Minimums. Sometimes Weather Patterns On Earth Can Be Correlated With The Changes In Sunspot Cycles. There Is A Tendency For Global Temperatures To Rise And Fall In Association With The Solar Cycles As You Might Imagine. As The Sun Becomes Warmer The Sunspot Count In Each 10 To 12 Year Cycle Rises And As The Sun Trends Cooler There Are The Fewer Sunspots In The Same Cycles.

SUNSPOTS AND GLOBAL TEMPERATURES



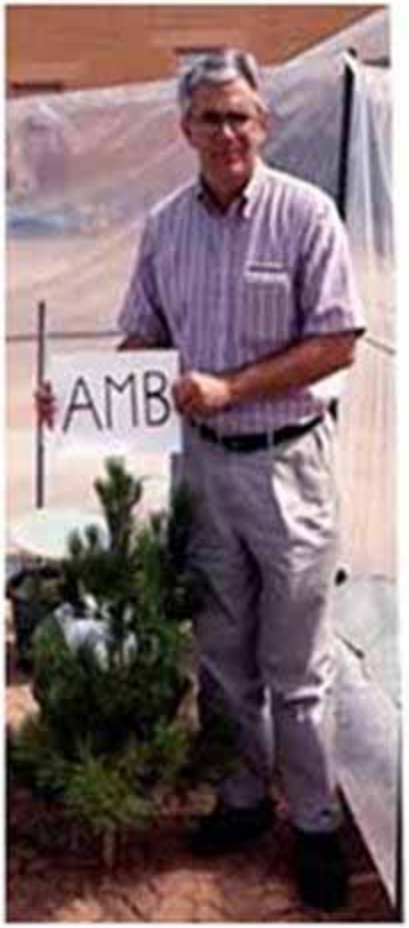
There Seems To Be A 25-30 Year Lag Between Long Term Trend Changes In The Solar Cycle And Earth's Global Temperature Trend, But It Does Look As Though The Earth Is Not Warming As It Was And There May Be A Short Period Of Cooling In The Next 20 Years. No Ice Age, However!



CO2 Concentrations Continue To Rise, But Notice The Parallel With Global Temperatures Has Ended Suggesting CO2 Is Not The Dominant Gas Responsible For Global Warming.

Is CO2 Plant Food?

Here is what happens with more CO2

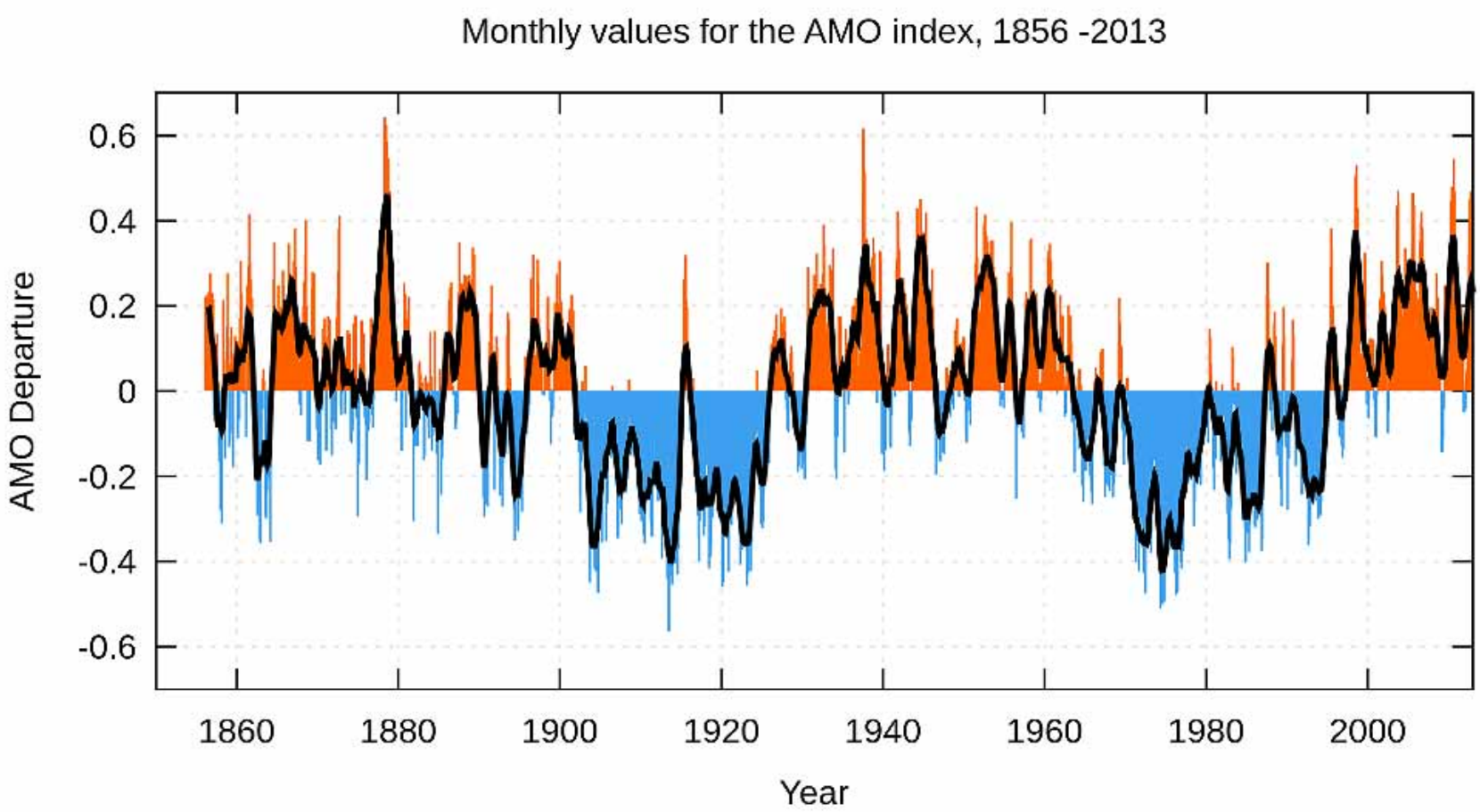


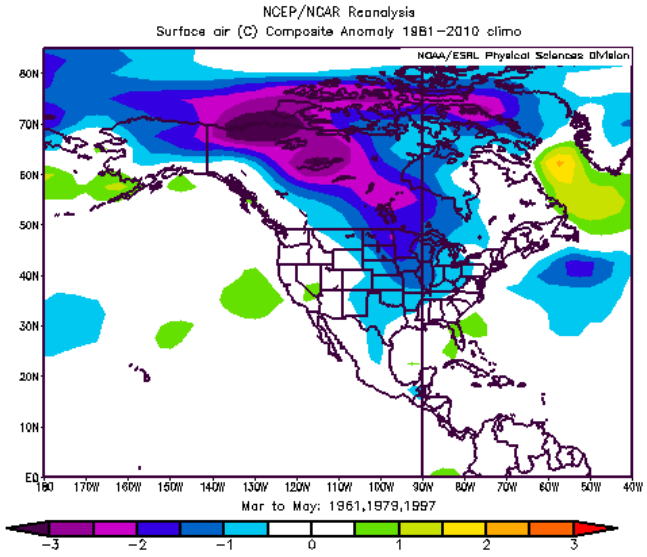
385 ppm

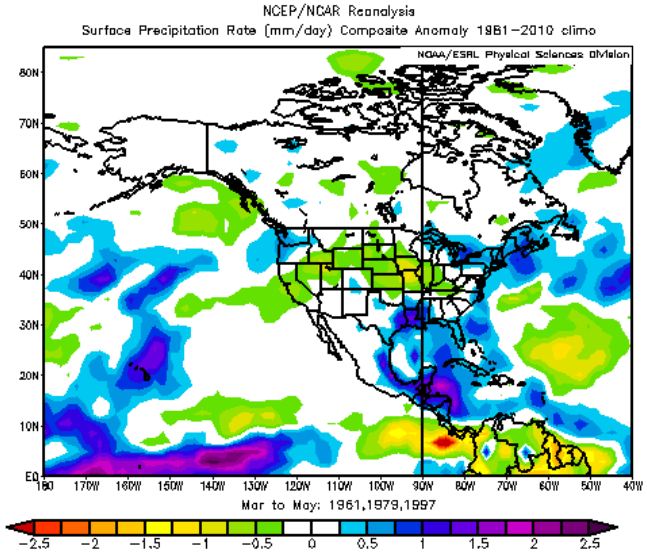
535 ppm

685 ppm

835 ppm


Monthly values for the AMO index, 1856 -2013
AMO Departure
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
1860
1880
1900
1920
1940
1960
1980
2000
Year


NCEP/NCAR Reanalysis
Surface air (C) Composite Anomaly 1981-2010 climo
NOAA/ESRL Physical Sciences Division
80N
70N
60N
50N
40N
30N
20N
10N
EQ
180 170W 160W 150W 140W 130W 120W 110W 100W 90W 80W 70W 60W 50W 40W
Mar to May: 1961,1979,1997
-3 -2 -1 0 1 2 3


NCEP/NCAR Reanalysis
Surface Precipitation Rate (mm/day) Composite Anomaly 1981-2010 climo
NOAA/ESRL Physical Sciences Division
80N
70N
60N
50N
40N
30N
20N
10N
EQ
180 170W 160W 150W 140W 130W 120W 110W 100W 90W 80W 70W 60W 50W 40W
Mar to May: 1961,1979,1997
-2.5 -2 -1.5 -1 -0.5 0 0.5 1 1.5 2 2.5