2009 Late Winter Arizona Climate Update and Forecasts

Climate Web-Briefing

February 18, 2009

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Deputy Director for Science Translation and Outreach
Institute for Environment and Society
The University of Arizona

CLIMAS
Climate Assessment Project for the Southwest

ARIZONA COOPERATIVE EXTENSION

INSTITUTE FOR ENVIRONMENT AND SOCIETY

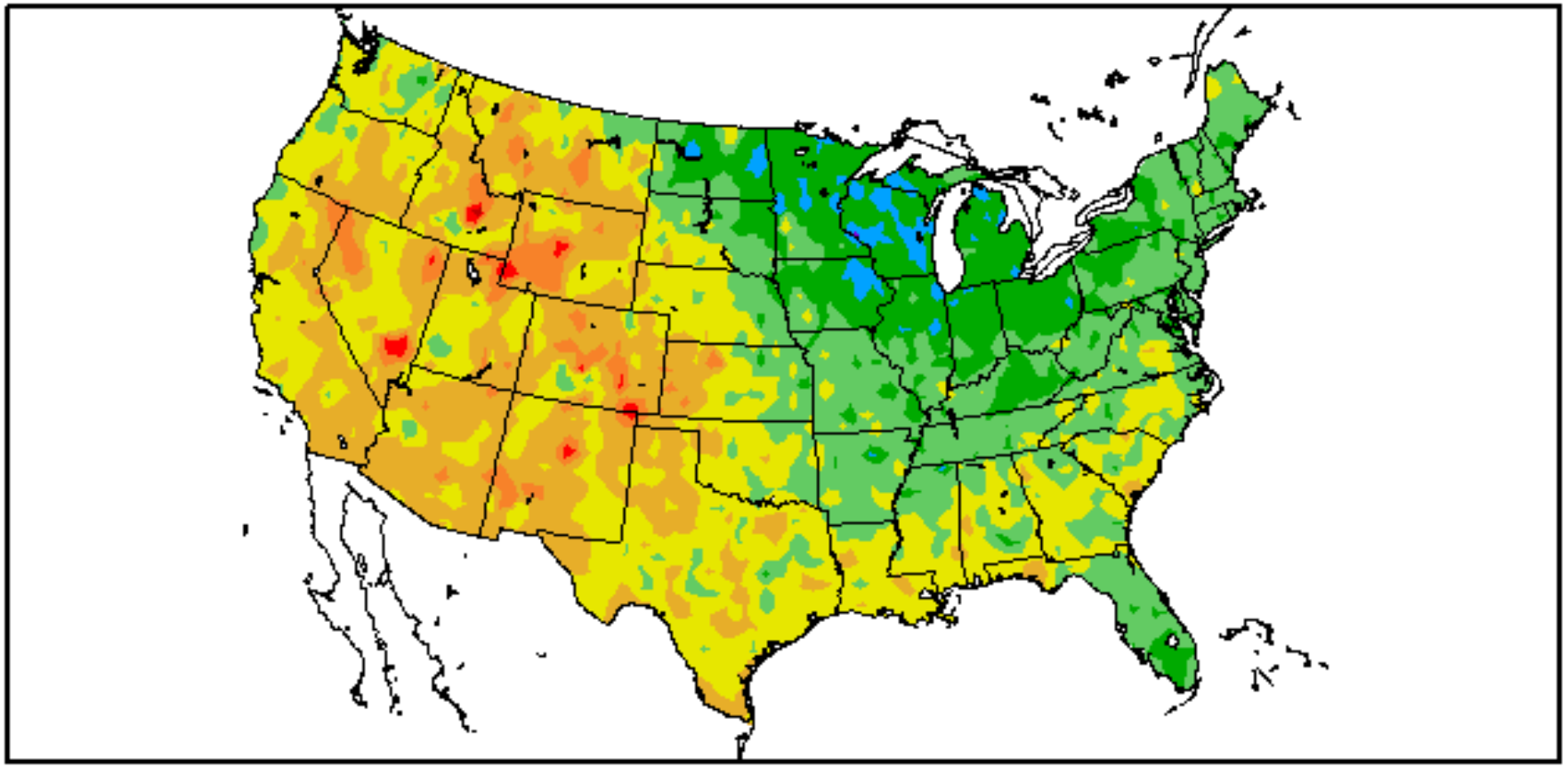
Guest presentation by:

NOAA
NATIONAL WEATHER SERVICE
Colorado Basin River Forecast Center

November 2008-January 2009

http://www.hprcc.unl.edu/maps

Departure from Normal Temperature (F)
11/1/2008 – 1/31/2009



Cooler than Avg. **Warmer than Avg.**

−10 −8 −6 −4 −2 0 2 4 6 8 10

Generated 2/11/2009 at HPRCC using provisional data.

NOAA Regional Climate Centers

November 2008

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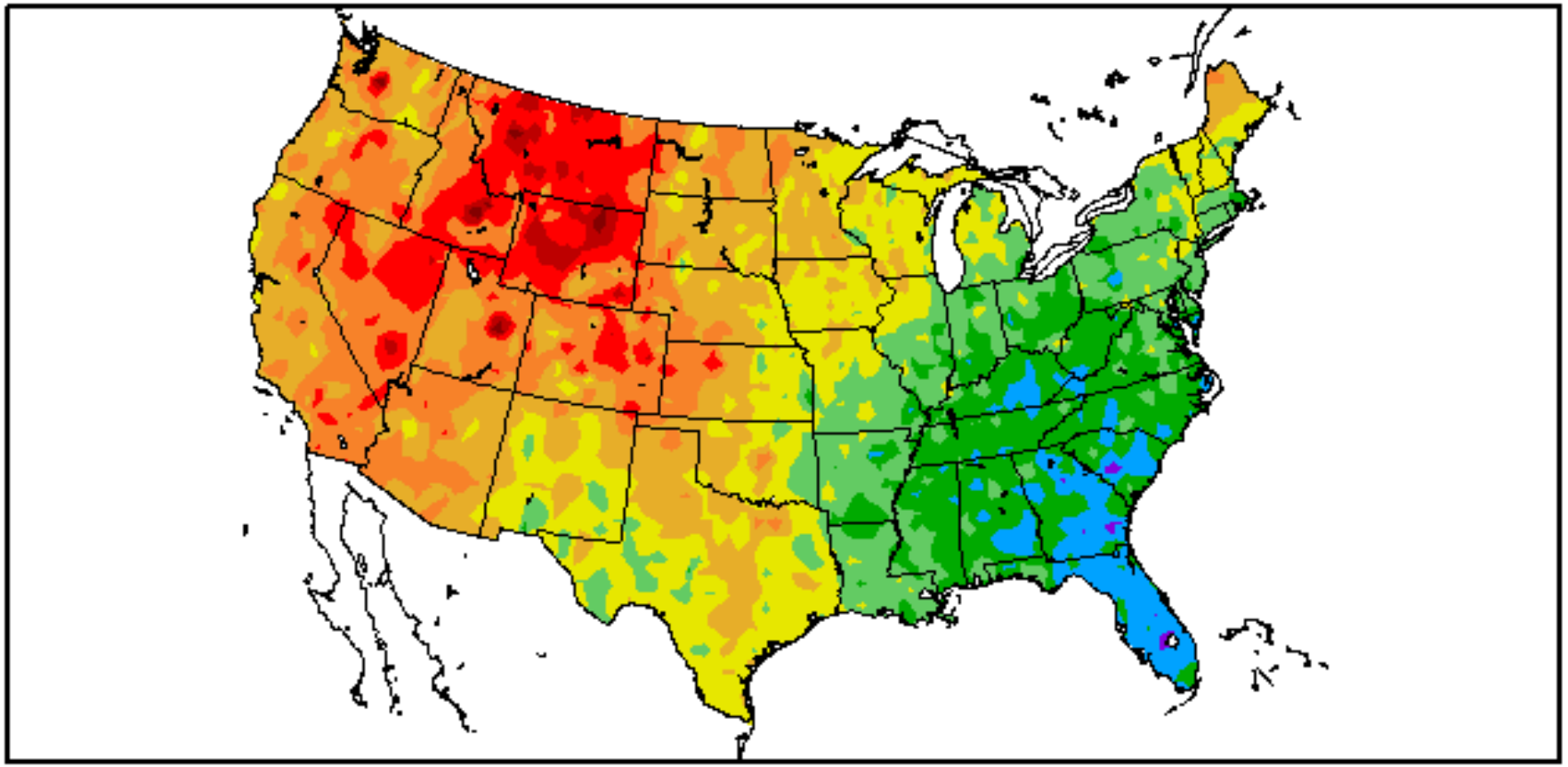

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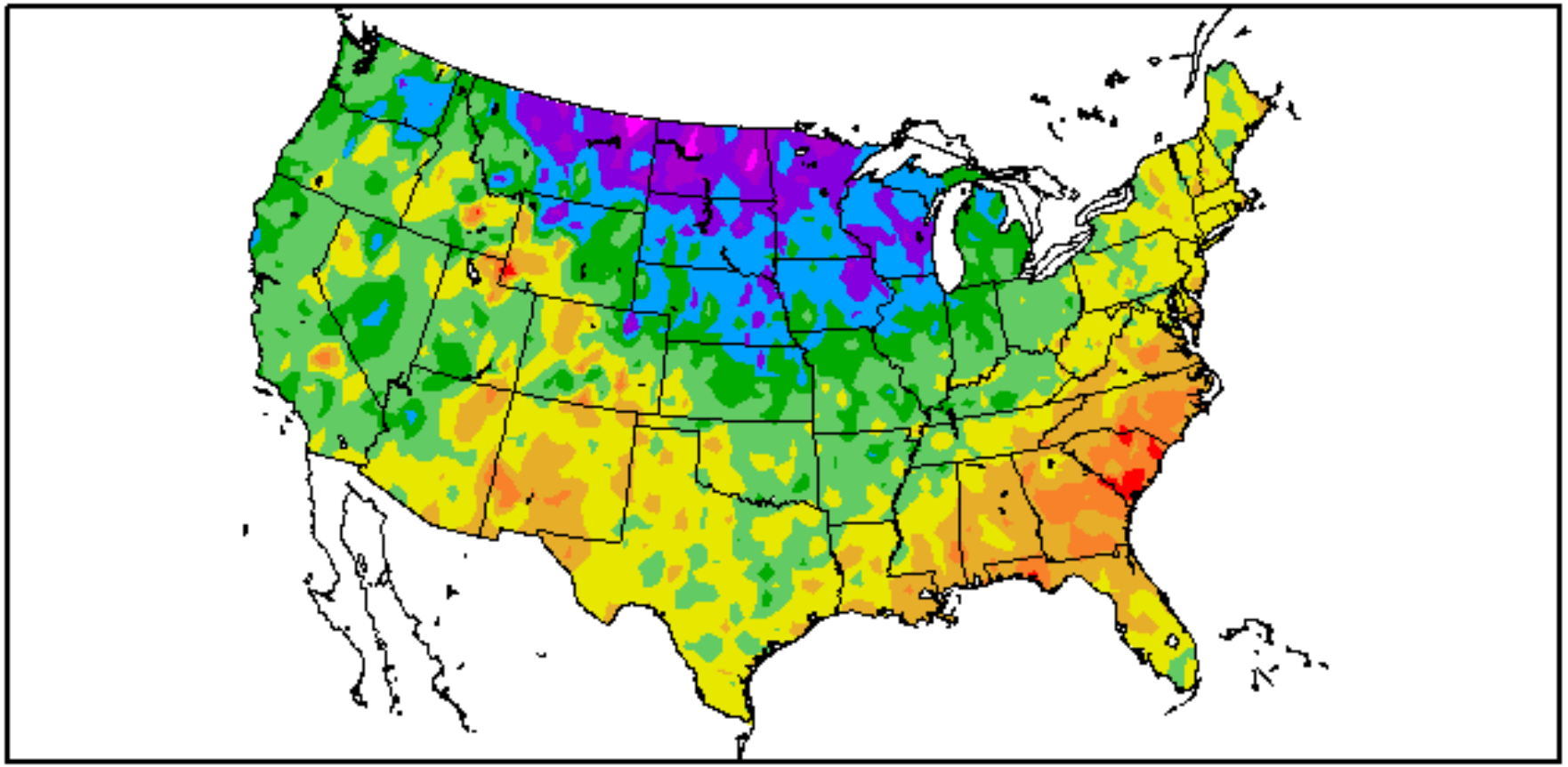

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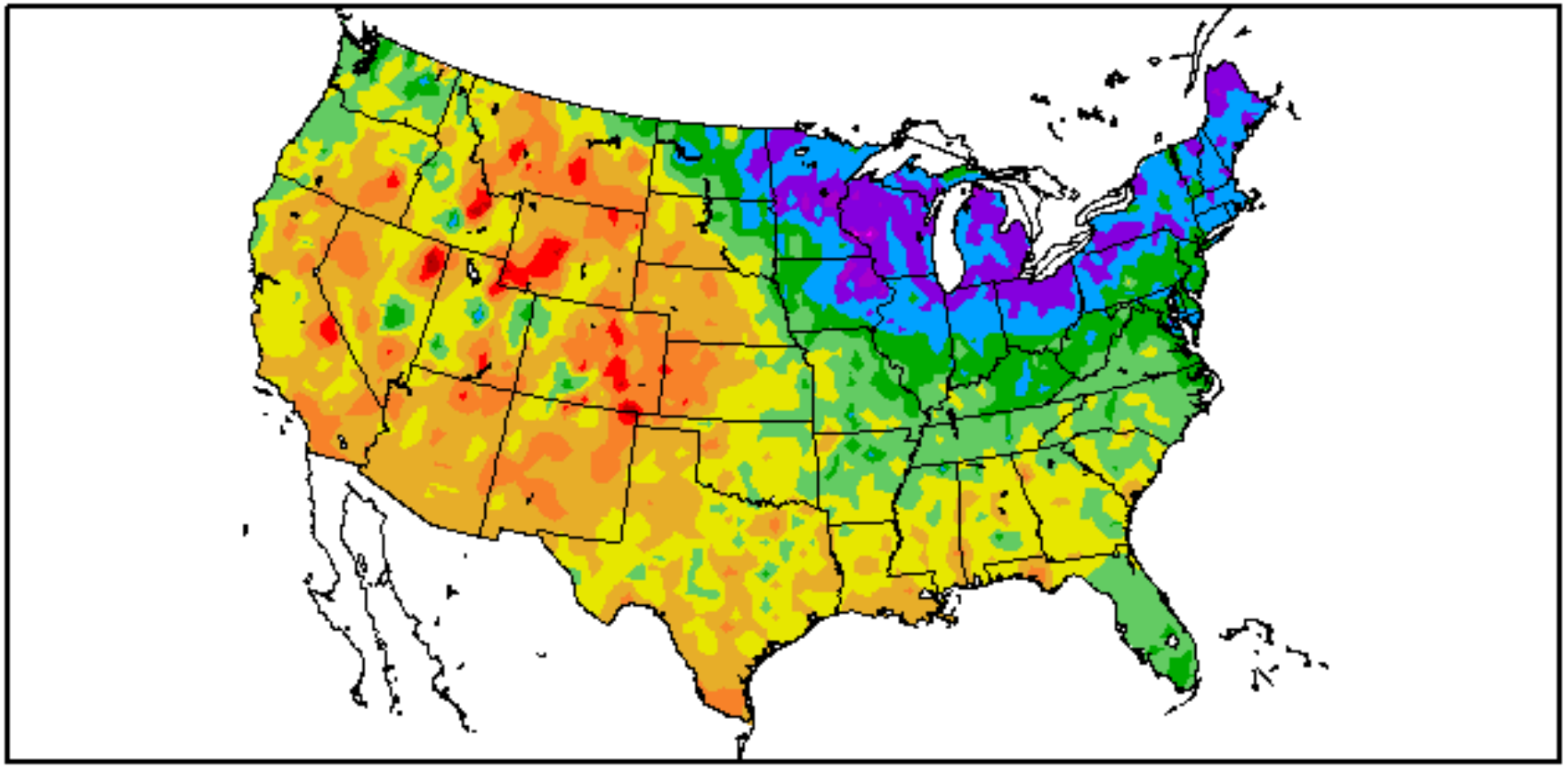

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November 2008-January 2009

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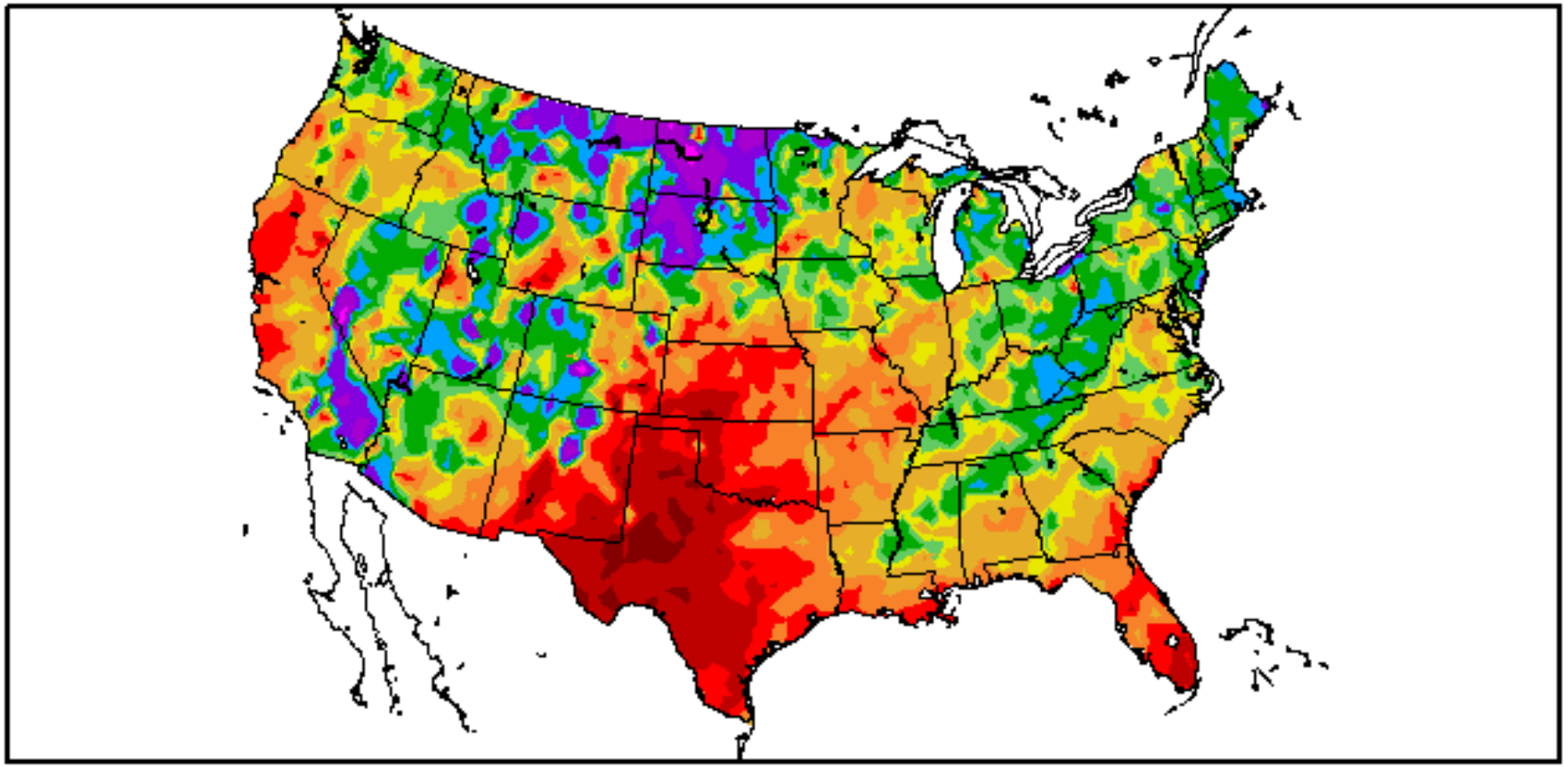
Percent of Normal Precipitation (%)
11/1/2008 – 1/31/2009



Drier than Avg. *Wetter than Avg.*

5 25 50 70 90 100 110 130 150 200 300

Generated 2/11/2009 at HPRCC using provisional data.

NOAA Regional Climate Centers

November 2008

http://www.hprcc.unl.edu/maps

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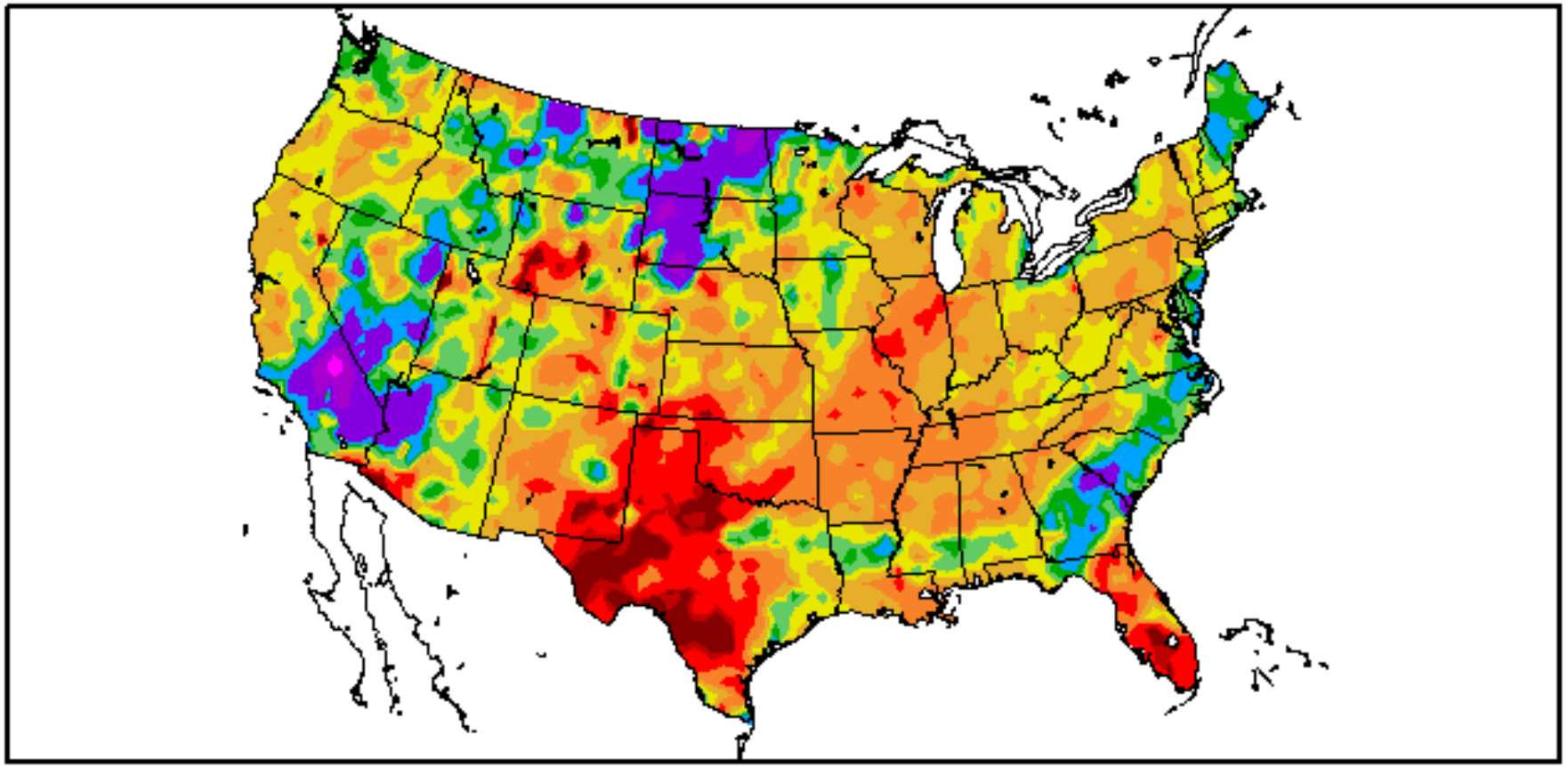
11/1/2008 – 11/30/2008



Drier than Avg. *Wetter than Avg.*

2 5 25 50 75 100 125 150 200 400 800

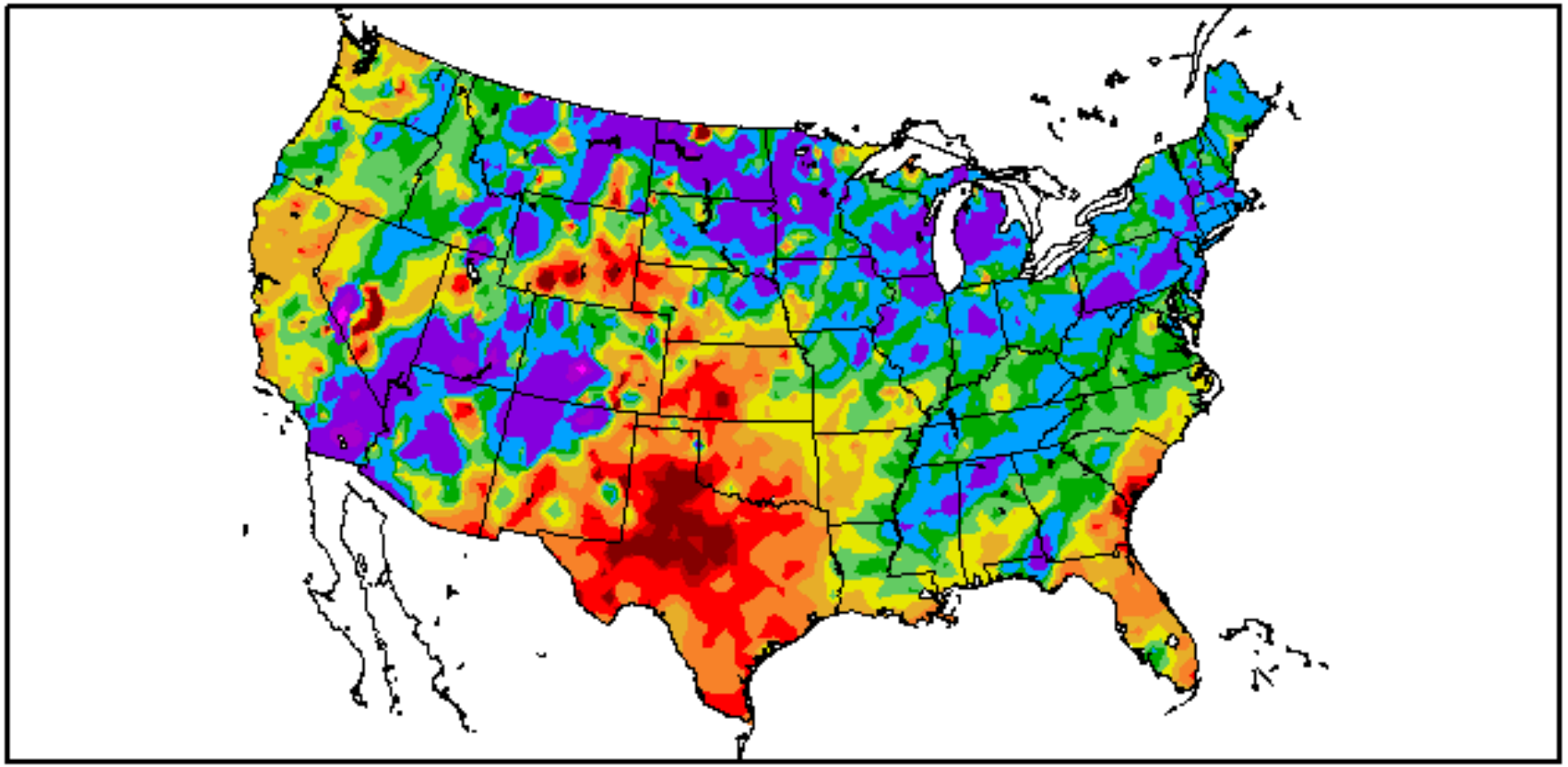
Generated 12/11/2008 at HPRCC using provisional data.

NOAA Regional Climate Centers

December 2008

http://www.hprcc.unl.edu/maps

Percent of Normal Precipitation (%)
12/1/2008 – 12/31/2008



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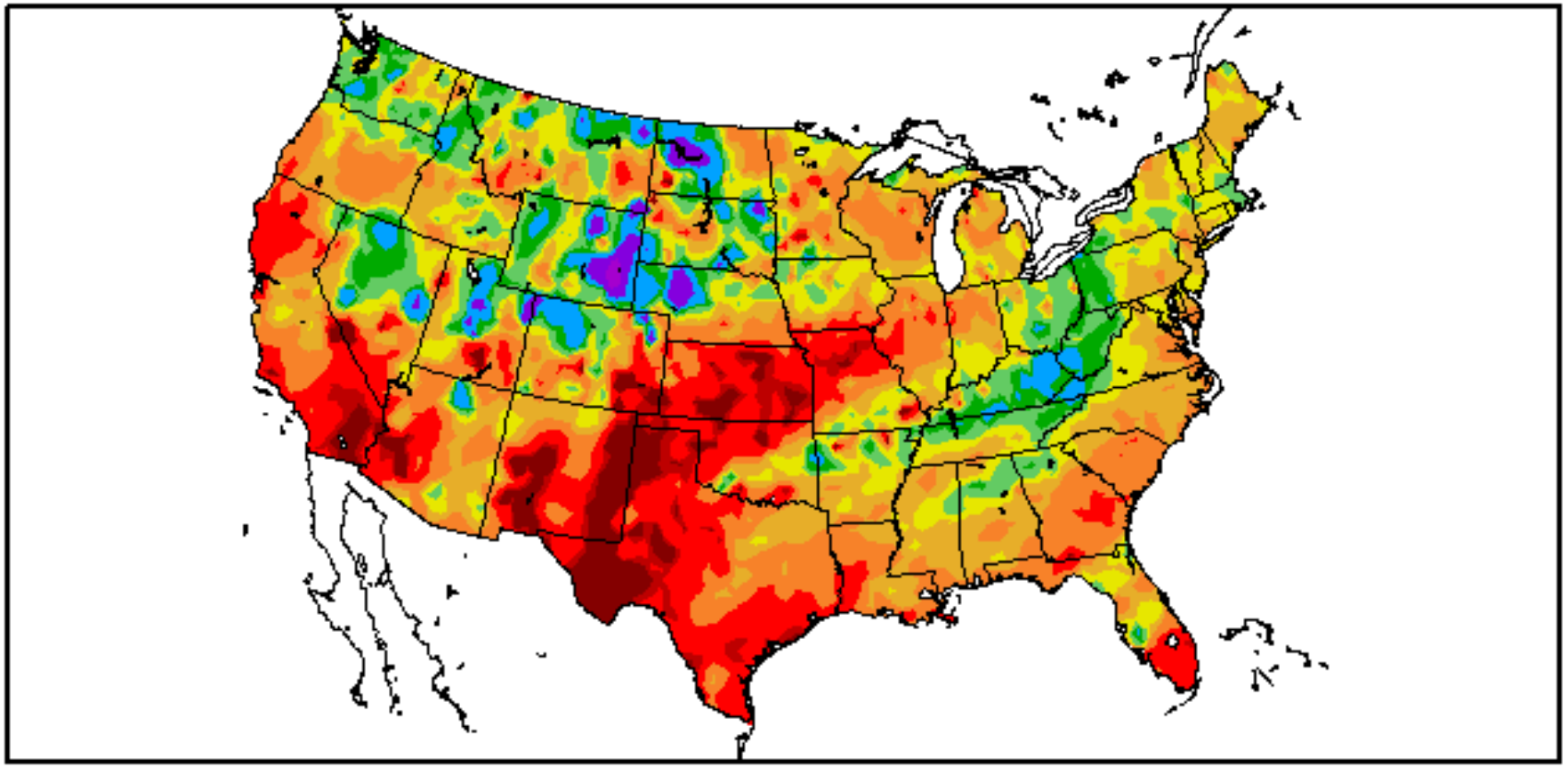

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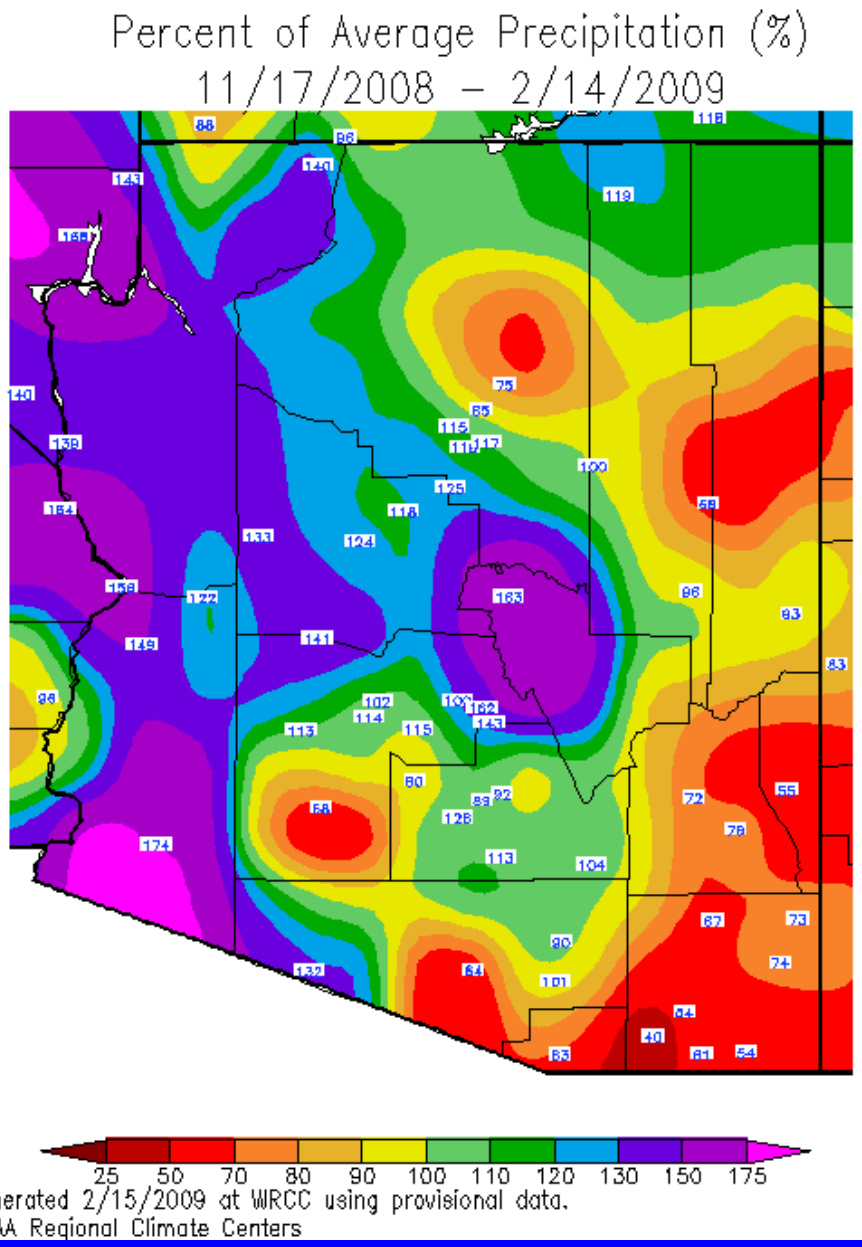
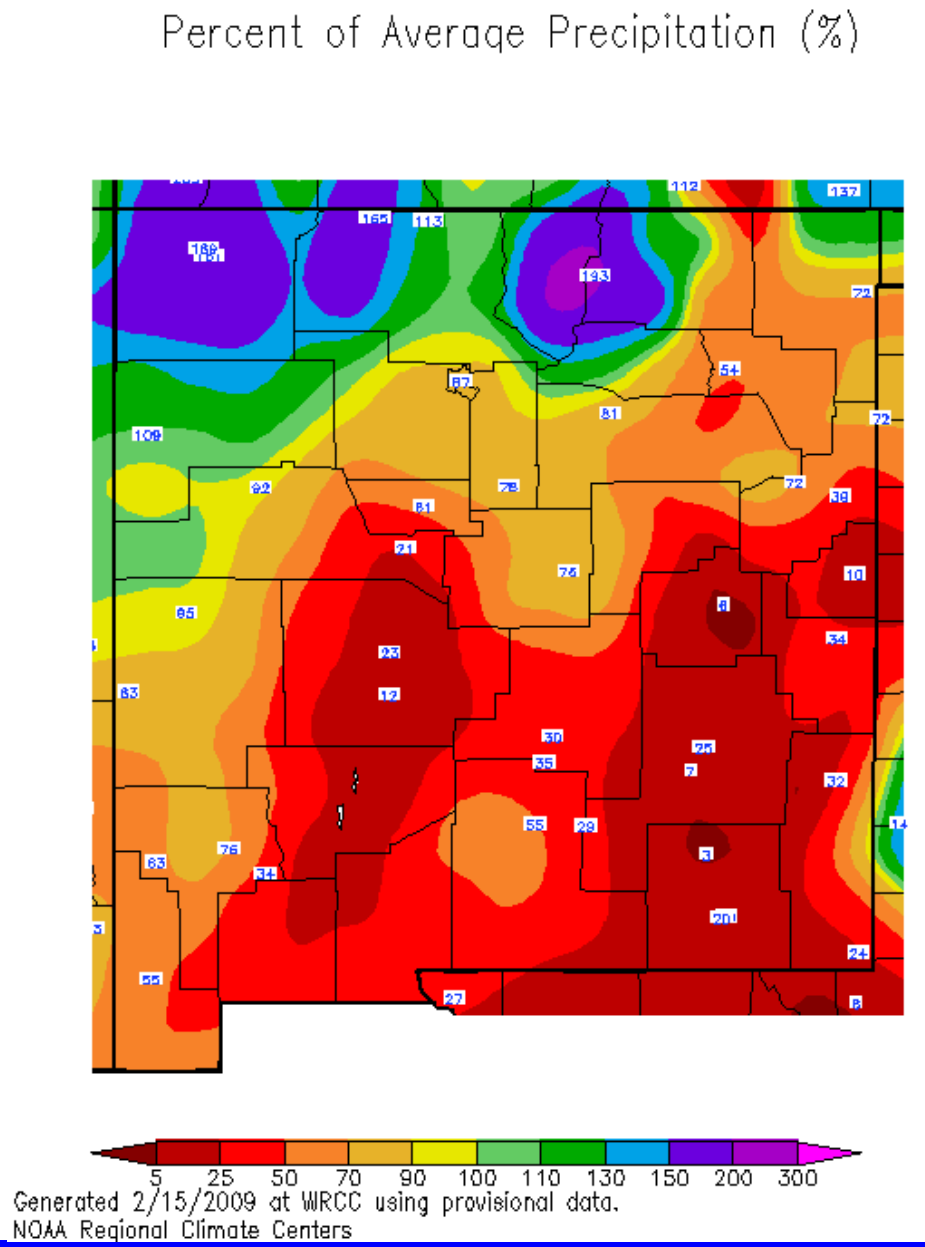
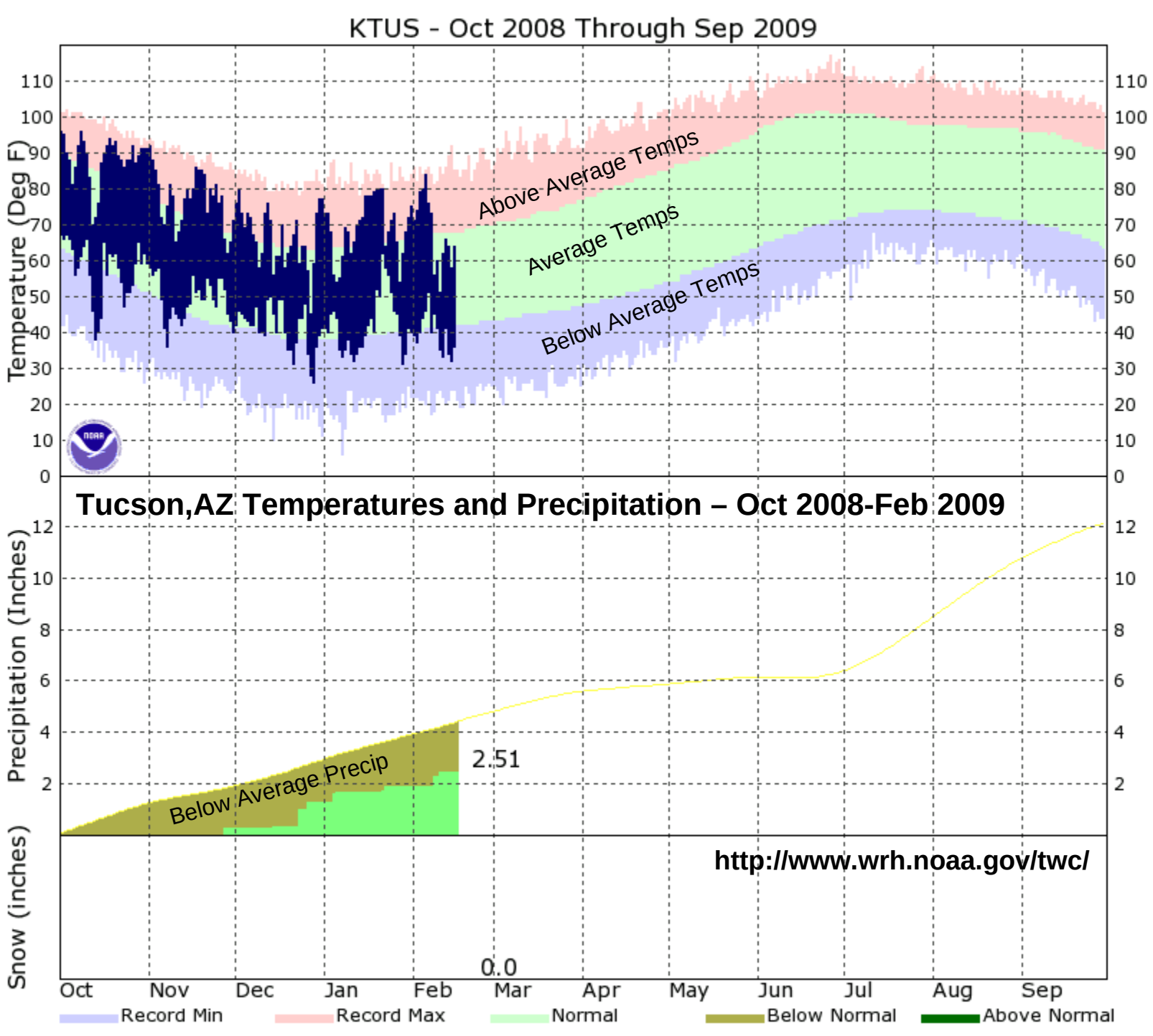


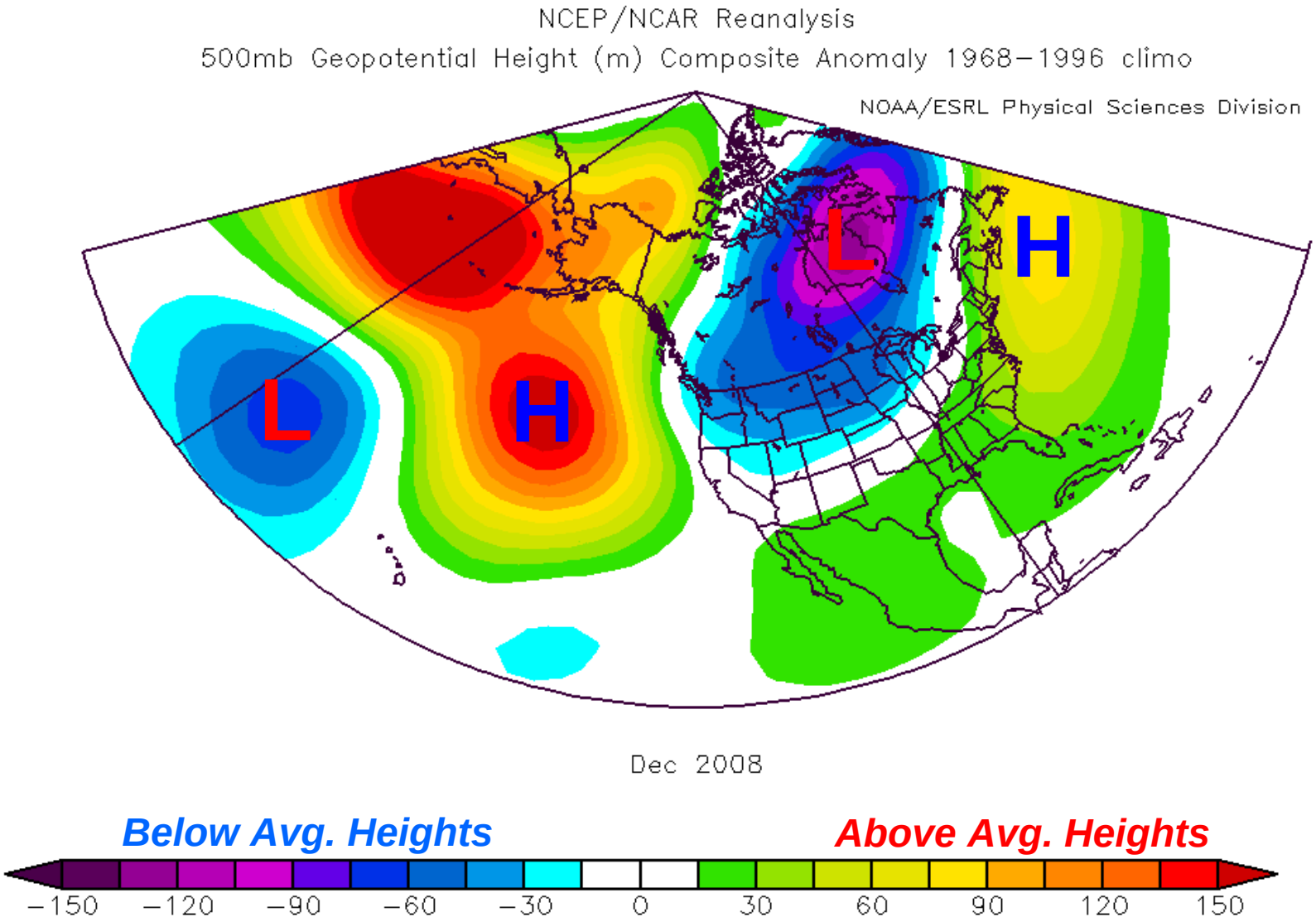


Percent of Avg. Precipitation (%) for AZ & NM – Last 90 days

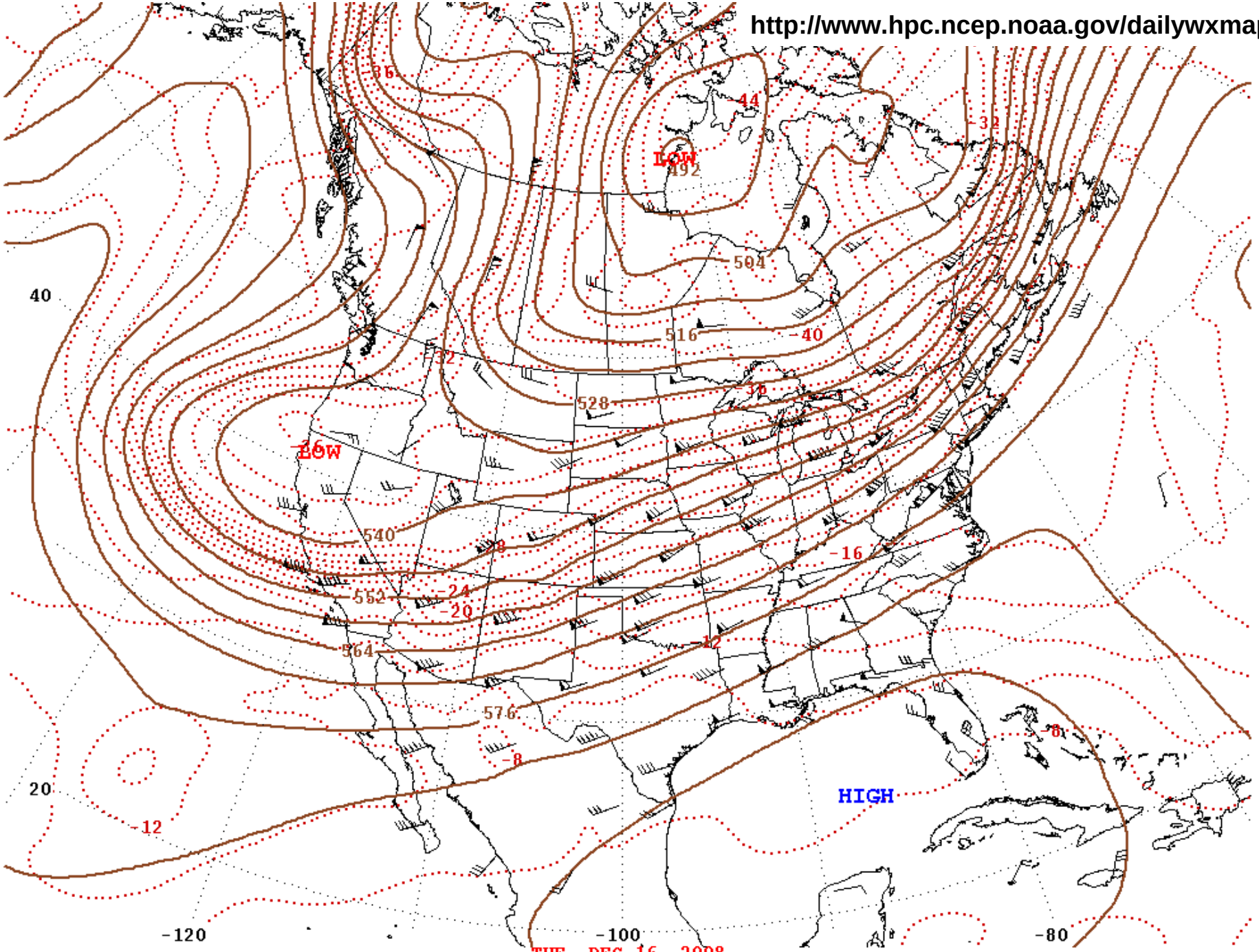
http://www.wrcc.dri.edu/anom/wrcc_anom.html


KTUS - Oct 2008 Through Sep 2009
Temperature (Deg F)
Above Average Temps
Average Temps
Below Average Temps
Tucson,AZ Temperatures and Precipitation – Oct 2008-Feb 2009
Precipitation (Inches)
Below Average Precip
2.51
Snow (inches)
0.0
http://www.wrh.noaa.gov/twc/
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Record Min
Record Max
Normal
Below Normal
Above Normal

http://www.cdc.noaa.gov/data/composites/



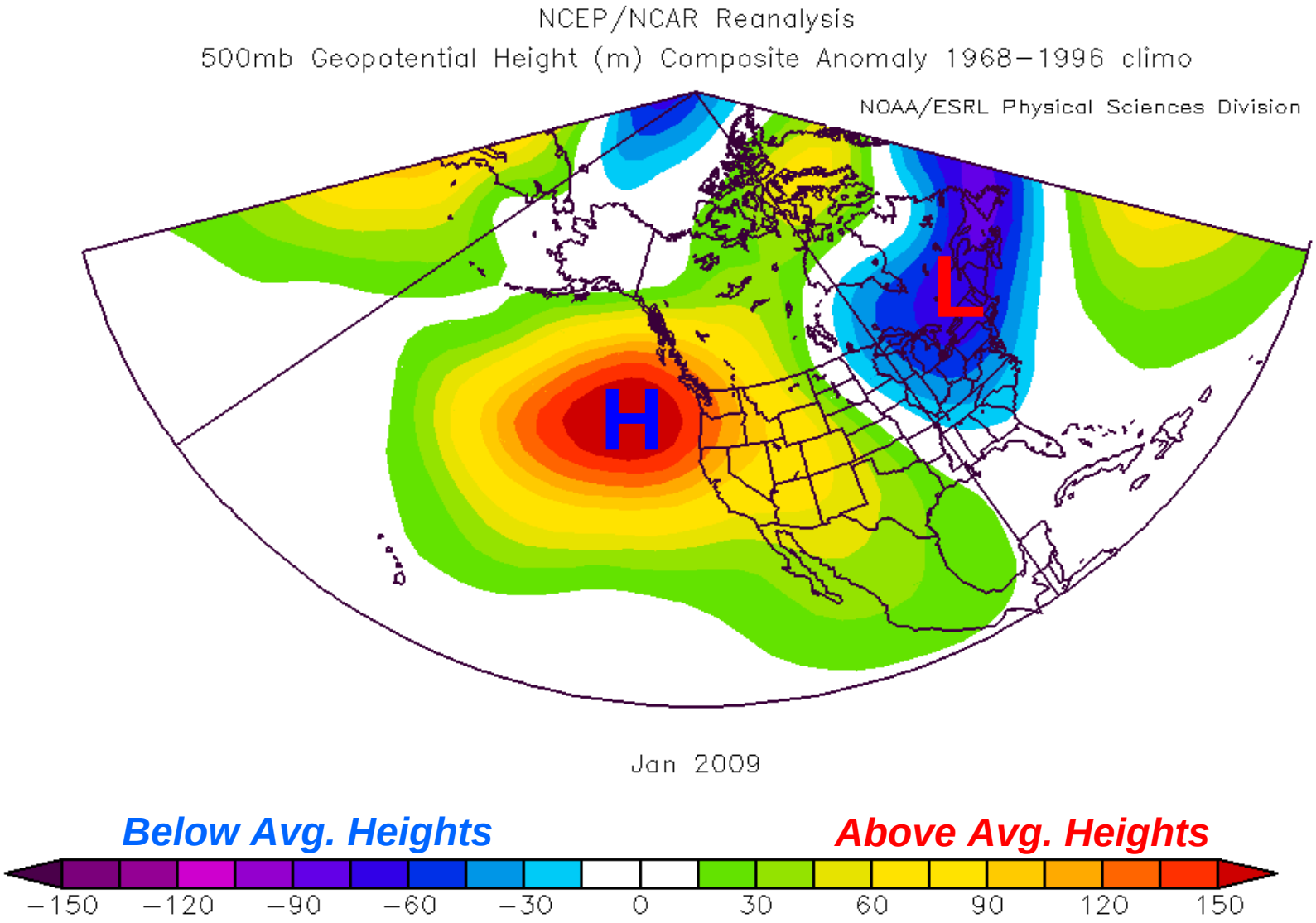
http://www.hpc.ncep.noaa.gov/dailywxmap/

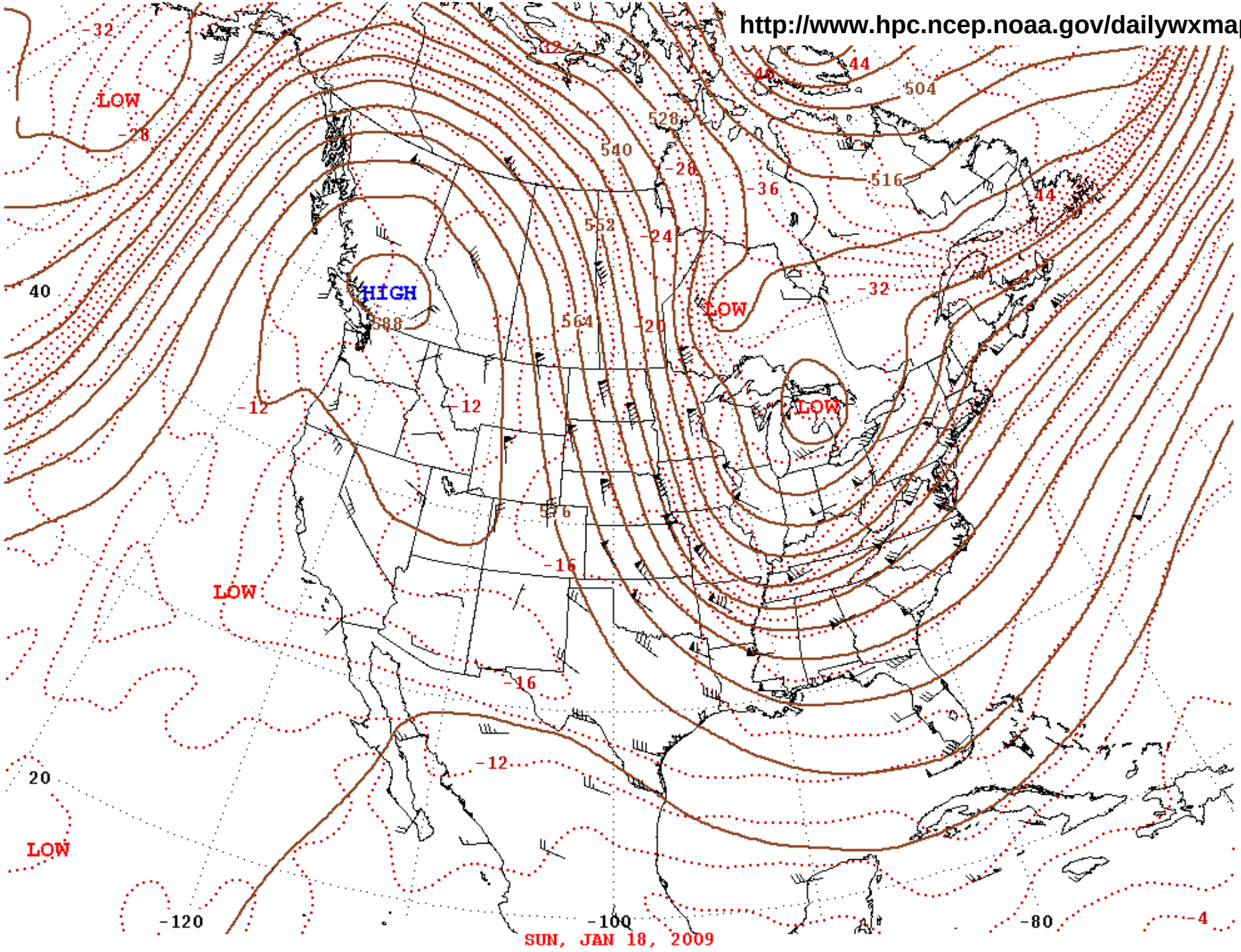


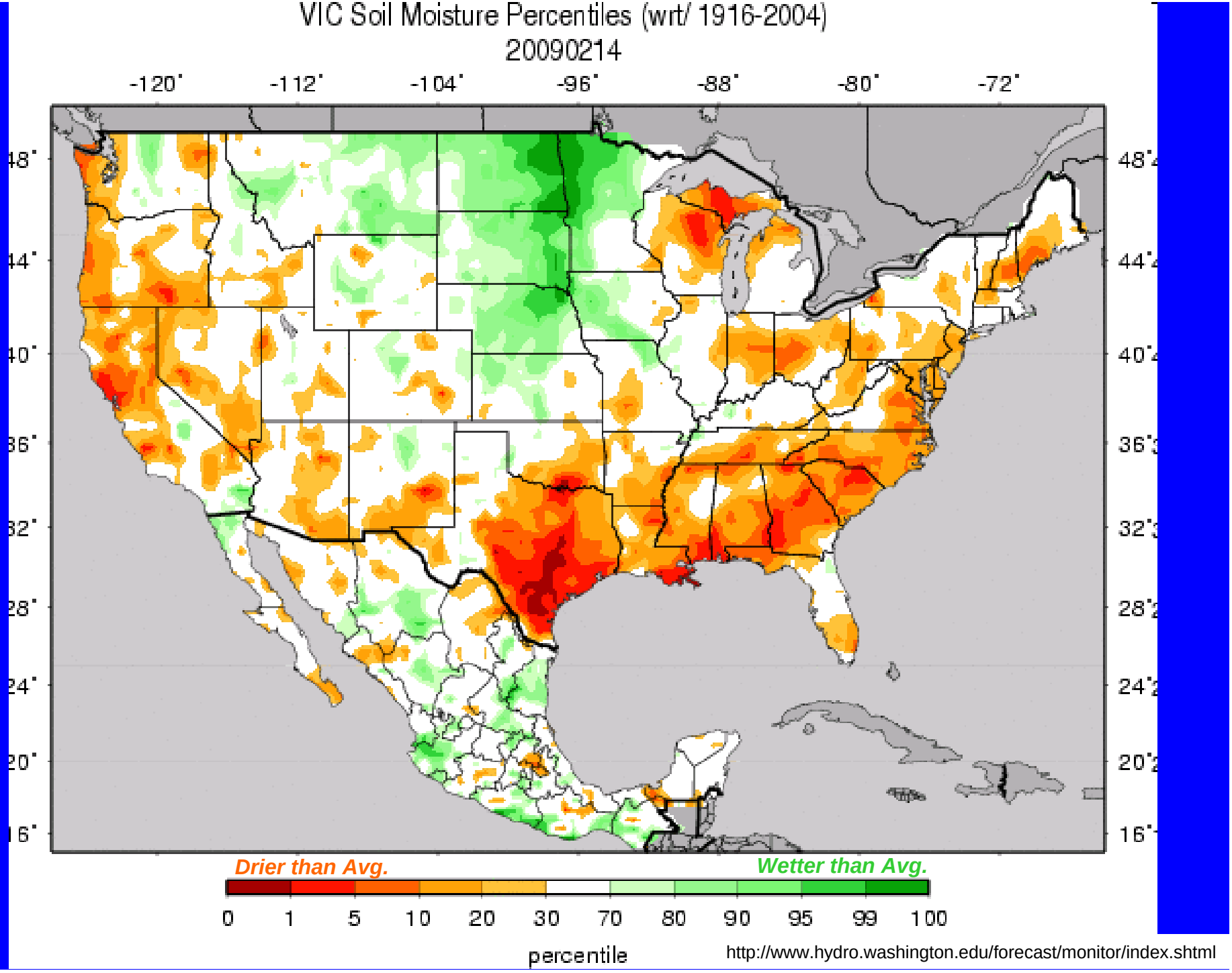
TUE, DEC 16, 2008

500-Millibar Height Contours at 7:00 A.M. E.S.T.

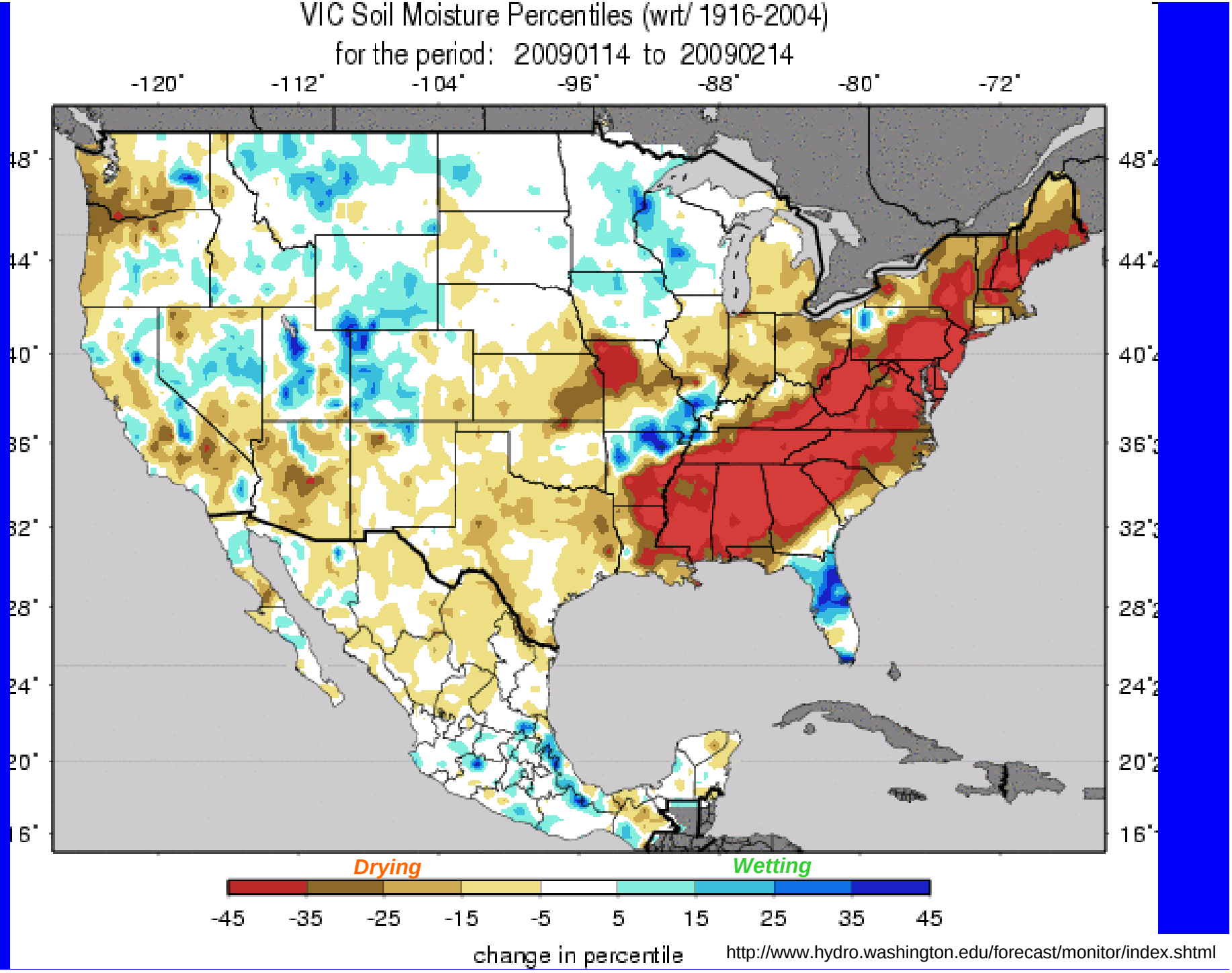
http://www.cdc.noaa.gov/data/composites/




http://www.hpc.ncep.noaa.gov/dailywxmap/
LOW
HIGH
LOW
LOW
LOW
LOW
-32
-28
-44
504
528
540
-28
-36
516
44
552
-24
564
-20
588
-32
-12
-12
576
-16
16
-12
40
20
-120
-100
-80
-4
SUN, JAN 18, 2009
500-Millibar Height Contours at 7:00 A.M. E.S.T.



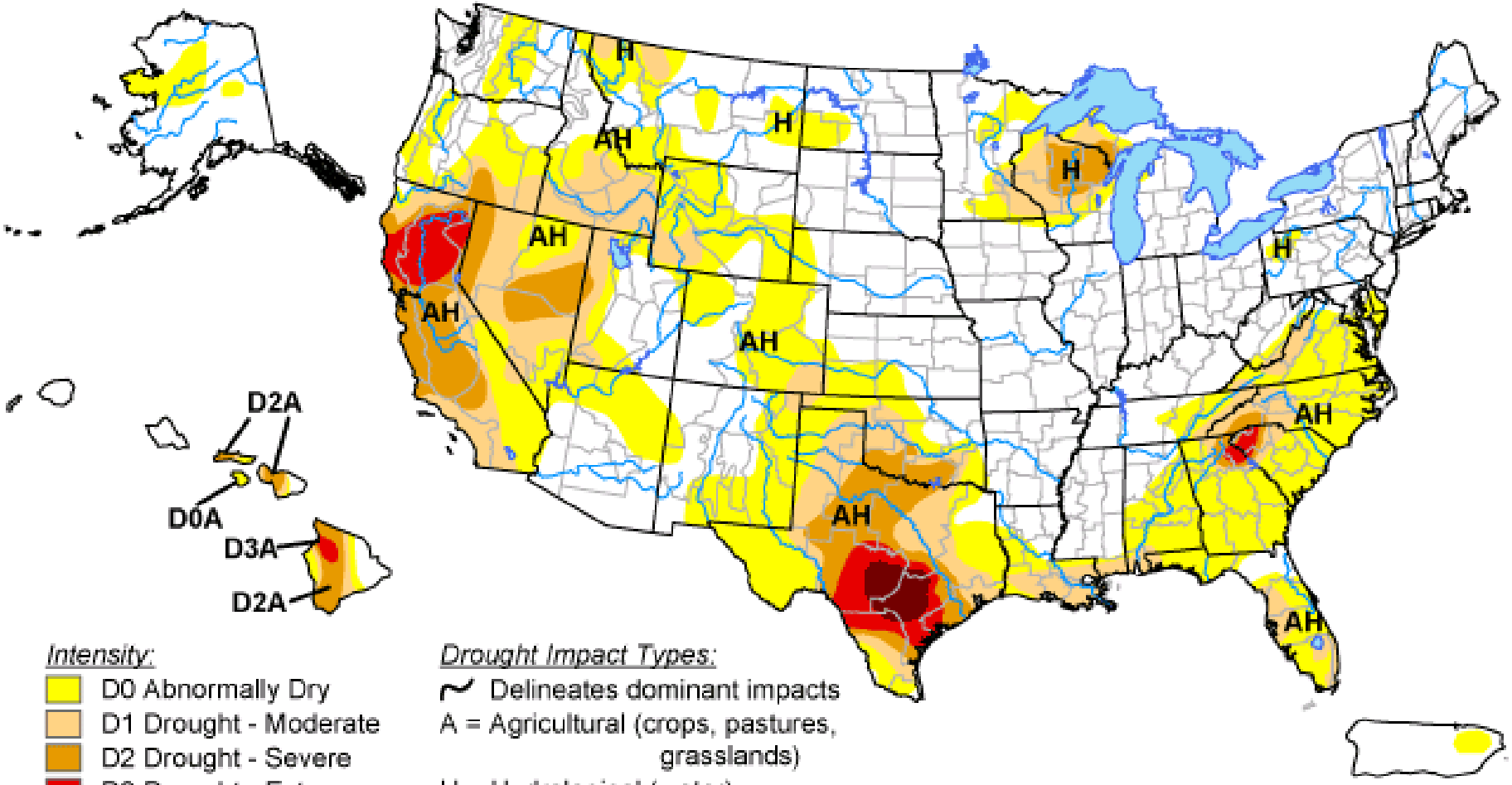
http://www.hydro.washington.edu/forecast/monitor/index.shtml



http://www.hydro.washington.edu/forecast/monitor/index.shtml

U.S. Drought Monitor

February 10, 2009
Valid 8 a.m. EST



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

Drought Impact Types:
- ~ Delineates dominant impacts
- A = Agricultural (crops, pastures, grasslands)
- H = Hydrological (water)

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

http://drought.unl.edu/dm

Released Thursday, February 12, 2009

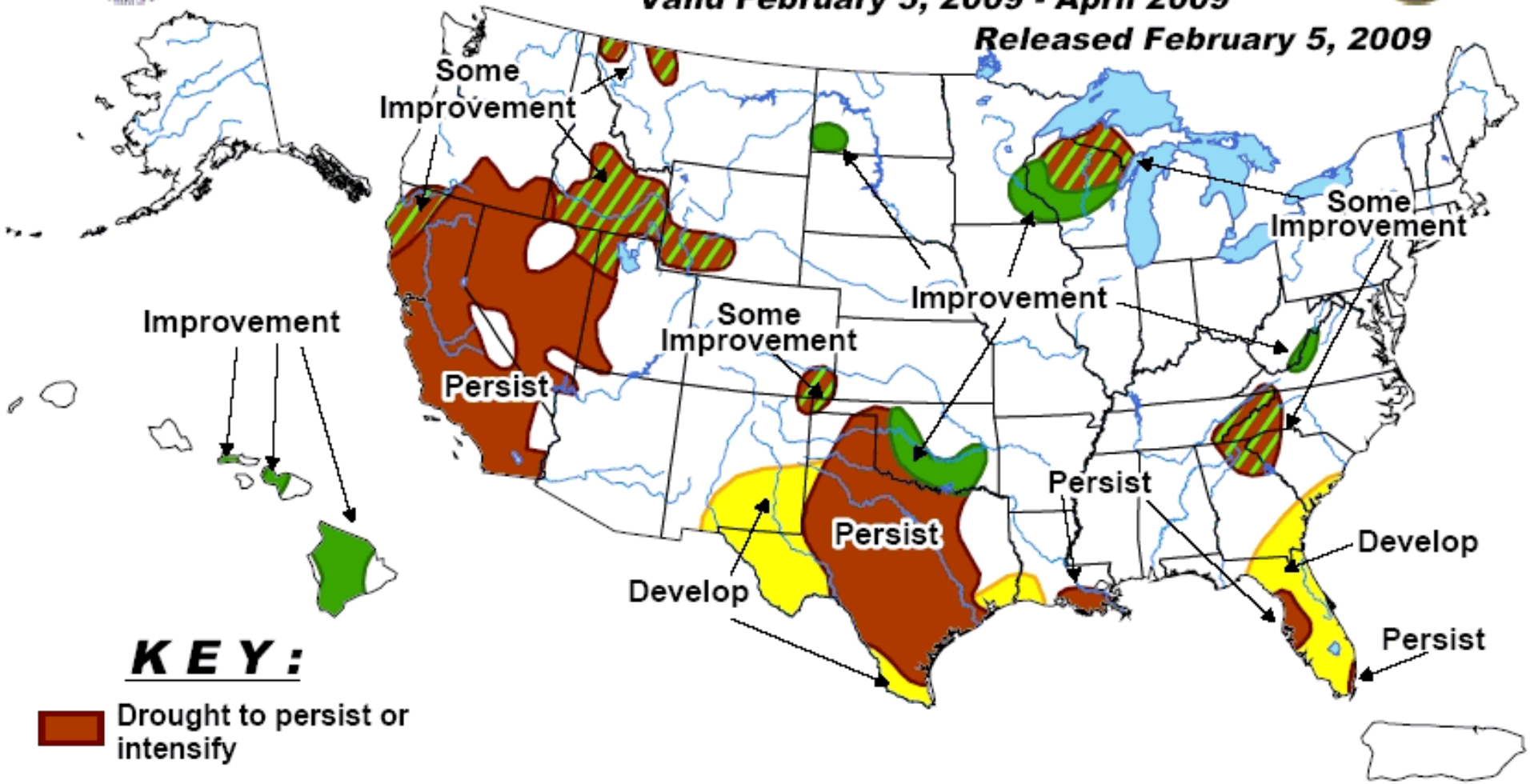
Author: Rich Tinker, Climate Prediction Center, NOAA

U.S. Seasonal Drought Outlook

Drought Tendency During the Valid Period

Valid February 5, 2009 - April 2009

Released February 5, 2009

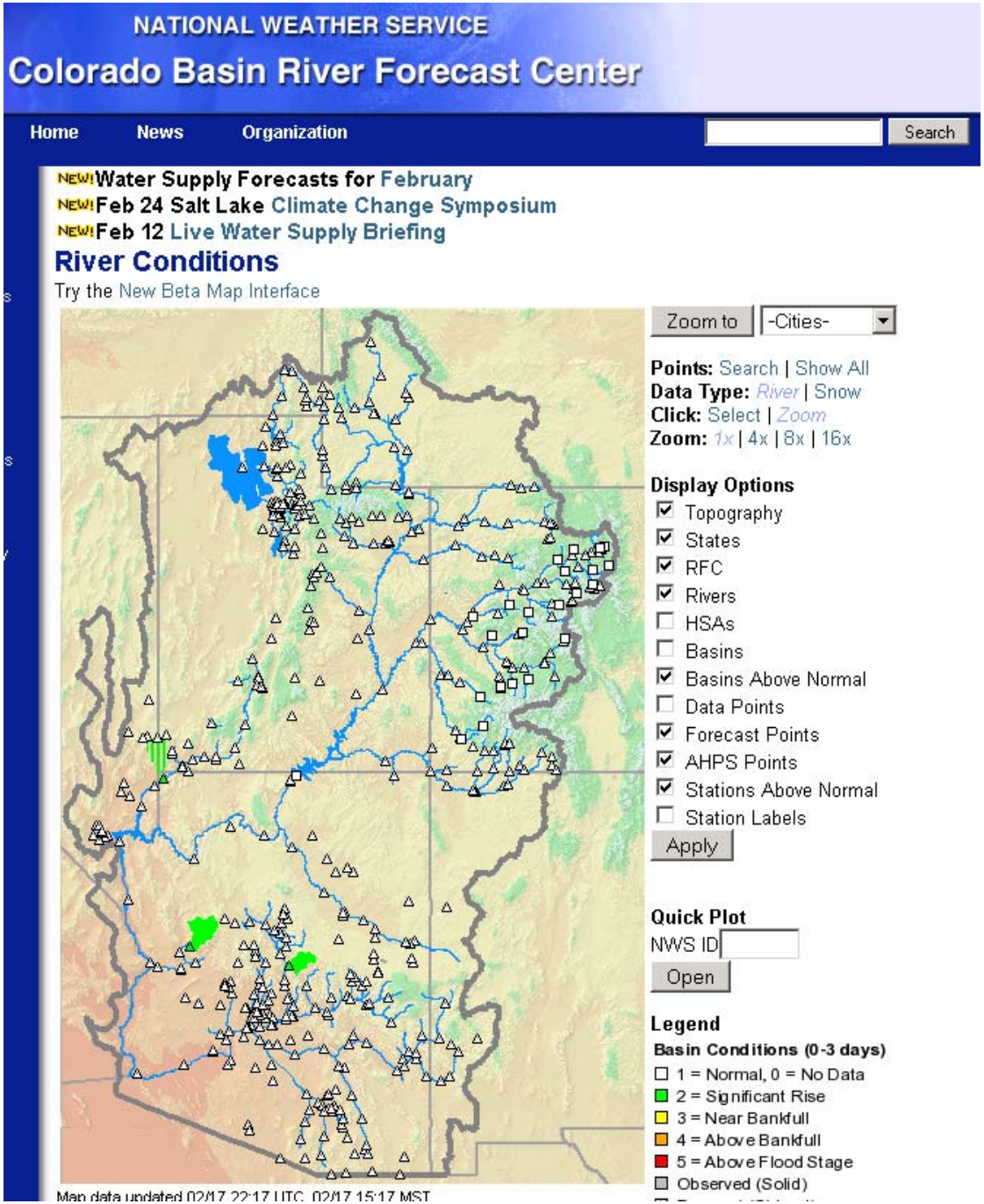


KEY:

- Drought to persist or intensify
- Drought ongoing, some improvement
- Drought likely to improve, impacts ease
- Drought development likely

Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Short-term events -- such as individual storms -- cannot be accurately forecast more than a few days in advance. Use caution for applications -- such as crops -- that can be affected by such events. "Ongoing" drought areas are approximated from the Drought Monitor (D1 to D4 intensity). For weekly drought updates, see the latest U.S. Drought Monitor. NOTE: the green improvement areas imply at least a 1-category improvement in the Drought Monitor intensity levels, but do not necessarily imply drought elimination.

Snowpack and Streamflows



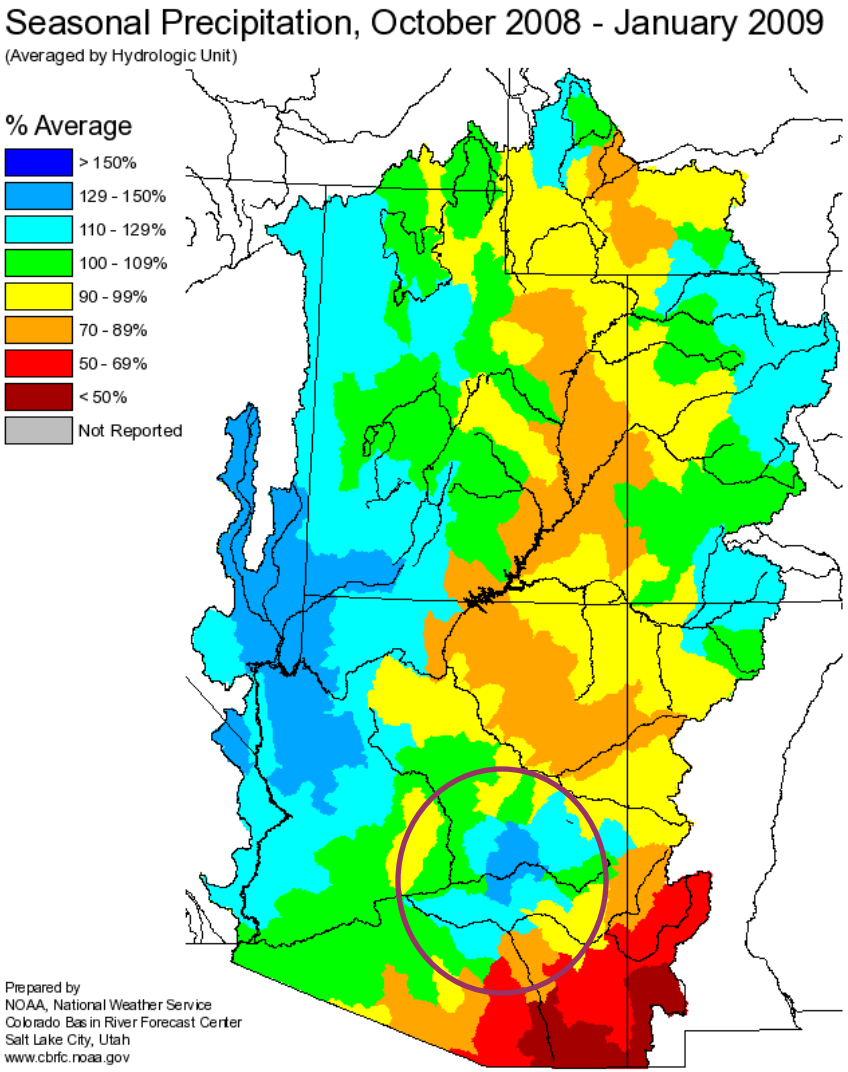
Greg Smith – Senior Hydrologist

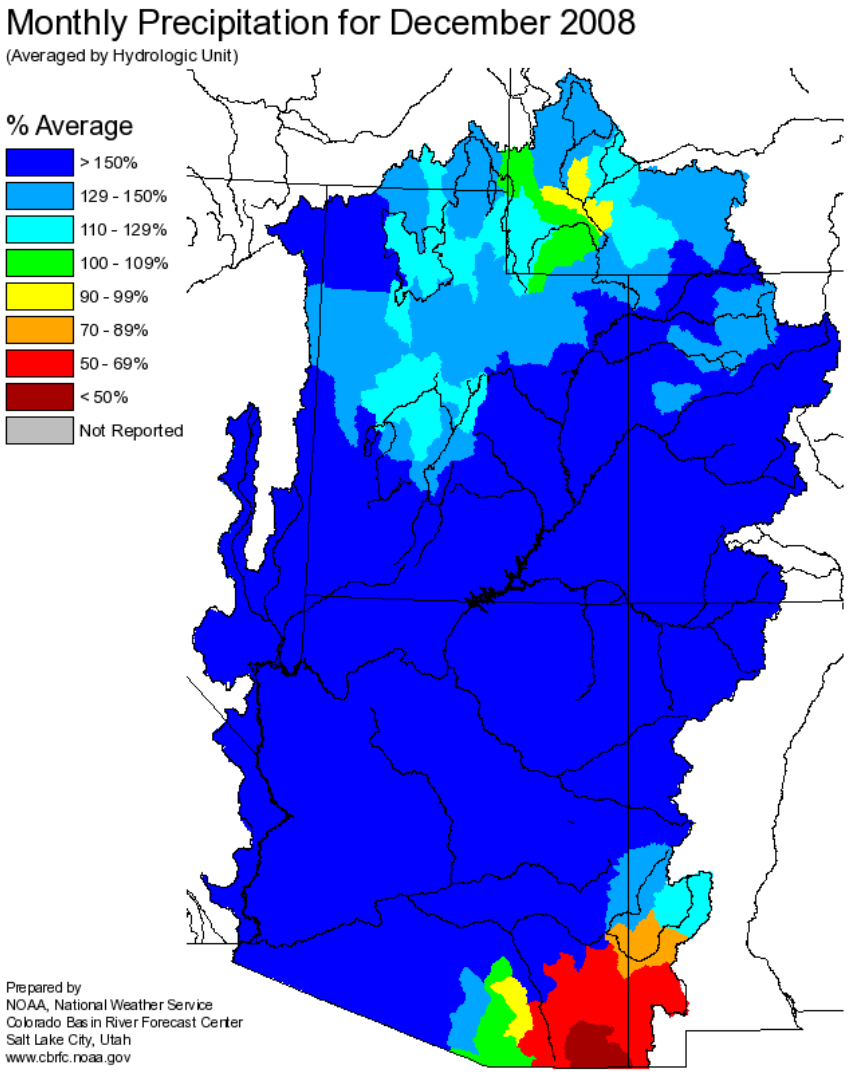
Colorado Basin RFC-NWS-NOAA

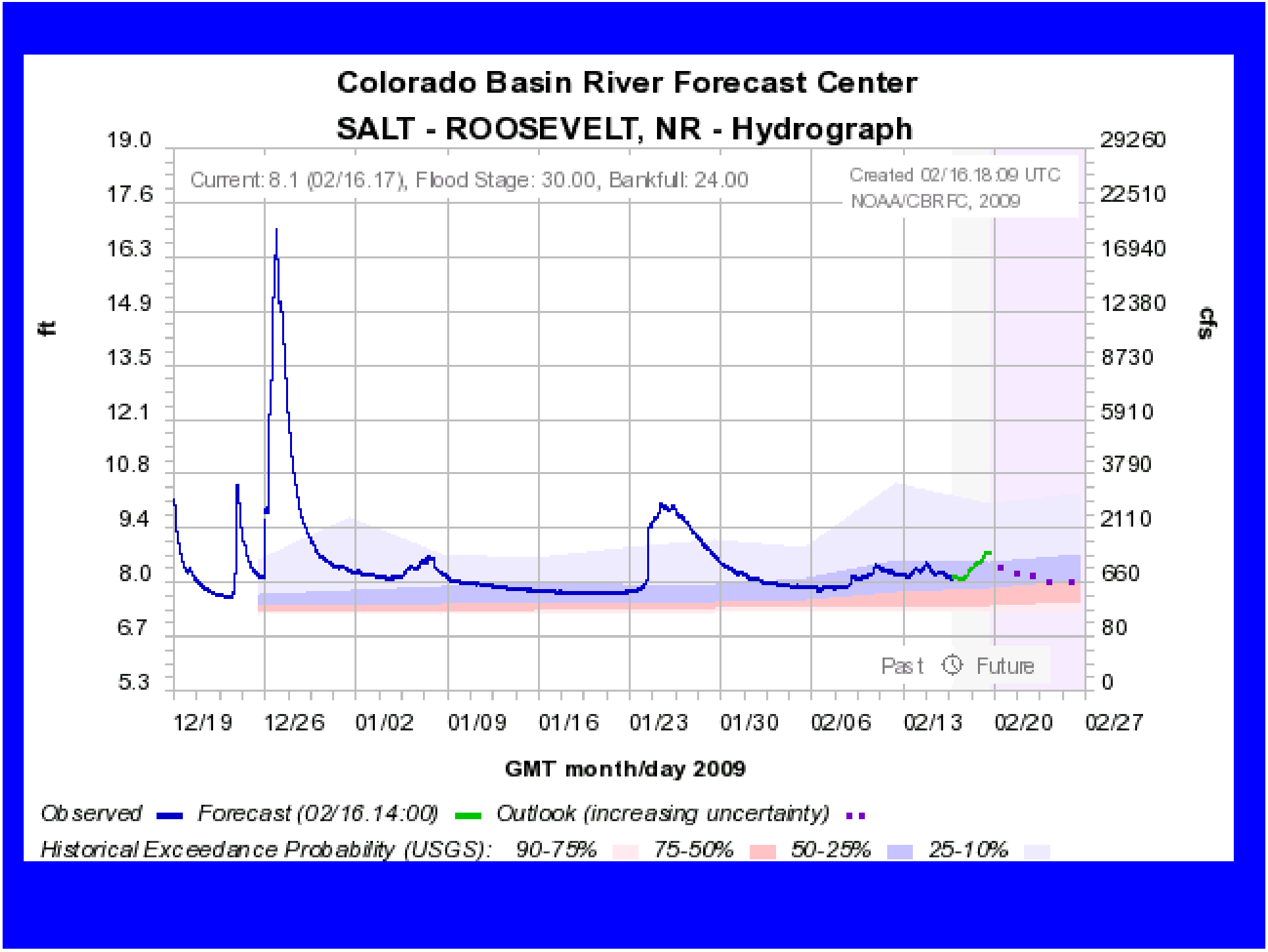
www.cbrfc.noaa.gov

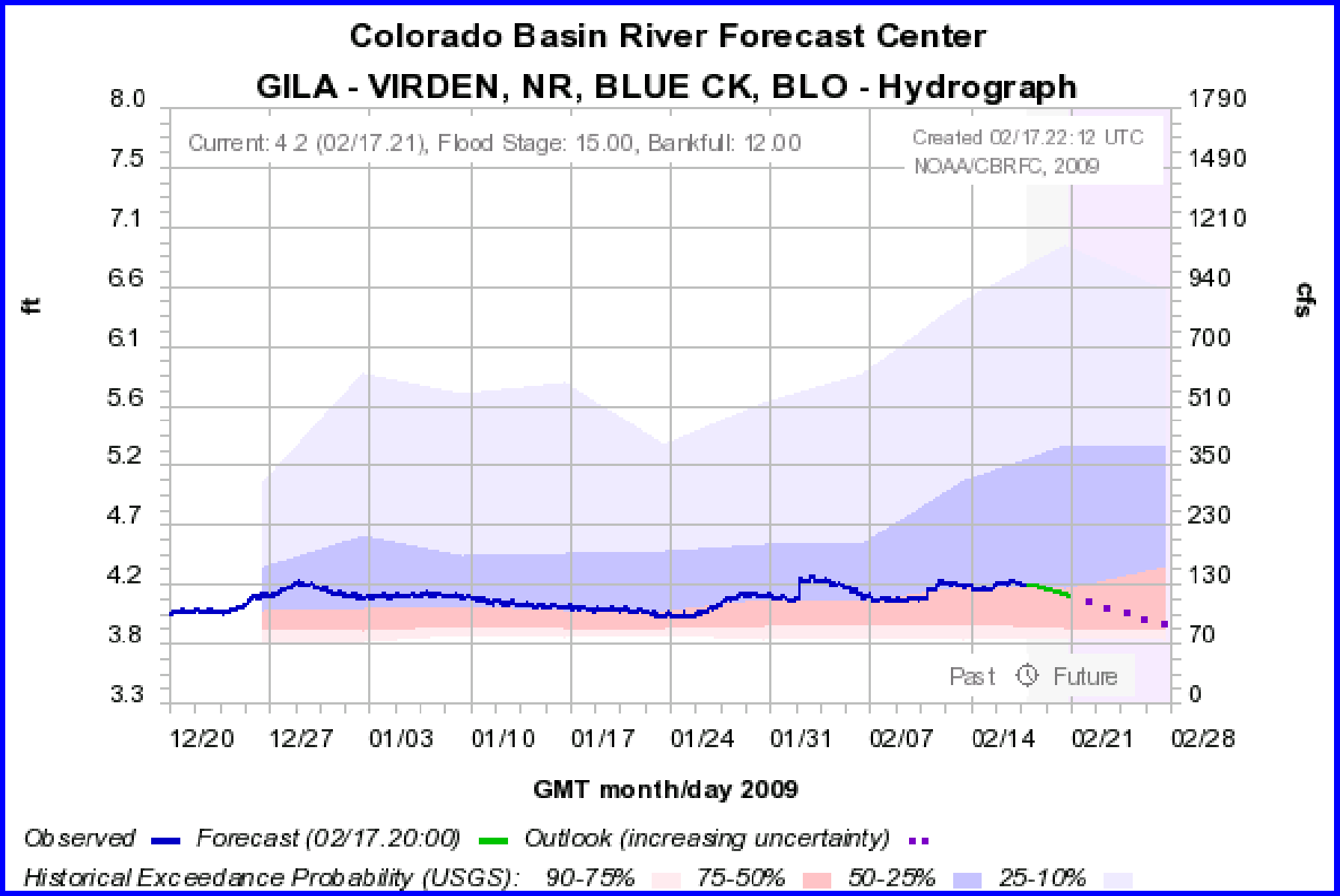
Precipitation (Seasonal and December)

http://www.cbrfc.noaa.gov/precip/precip.cgi






Colorado Basin River Forecast Center
SALT - ROOSEVELT, NR - Hydrograph
Current: 8.1 (02/16.17), Flood Stage: 30.00, Bankfull: 24.00
Created 02/16.18:09 UTC
NOAA/CBRFC, 2009
ft
cfs
19.0
17.6
16.3
14.9
13.5
12.1
10.8
9.4
8.0
6.7
5.3
29260
22510
16940
12380
8730
5910
3790
2110
660
80
0
Past
Future
12/19
12/26
01/02
01/09
01/16
01/23
01/30
02/06
02/13
02/20
02/27
GMT month/day 2009
Observed
Forecast (02/16.14:00)
Outlook (increasing uncertainty)
Historical Exceedance Probability (USGS):
90-75%
75-50%
50-25%
25-10%


Colorado Basin River Forecast Center
GILA - VIRDEN, NR, BLUE CK, BLO - Hydrograph
Current: 4.2 (02/17.21), Flood Stage: 15.00, Bankfull: 12.00
Created 02/17.22:12 UTC
NOAA/CBRFC, 2009
ft
cfs
8.0
7.5
7.1
6.6
6.1
5.6
5.2
4.7
4.2
3.8
3.3
1790
1490
1210
940
700
510
350
230
130
70
0
Past
Future
12/20
12/27
01/03
01/10
01/17
01/24
01/31
02/07
02/14
02/21
02/28
GMT month/day 2009
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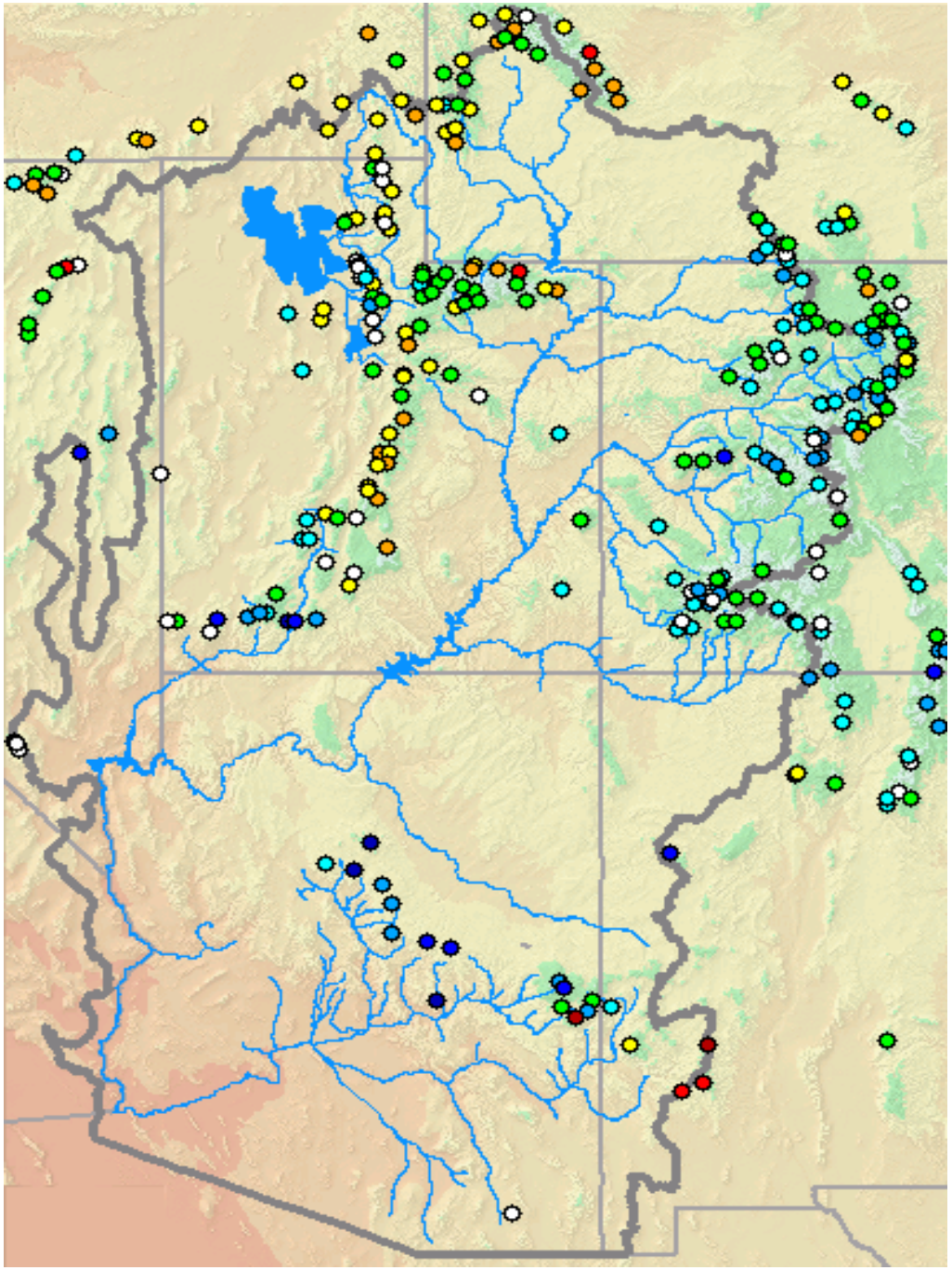


Current Snow Conditions (% average)

www.cbrfc.noaa.gov/snow/snow.cgi

Legend

SWE (% Avg)

- No data
- < 25
- 25-50
- 50-75
- 75-90
- 90-110
- 110-125
- 125-150
- 150-175
- > 175

Snow: current (2008)

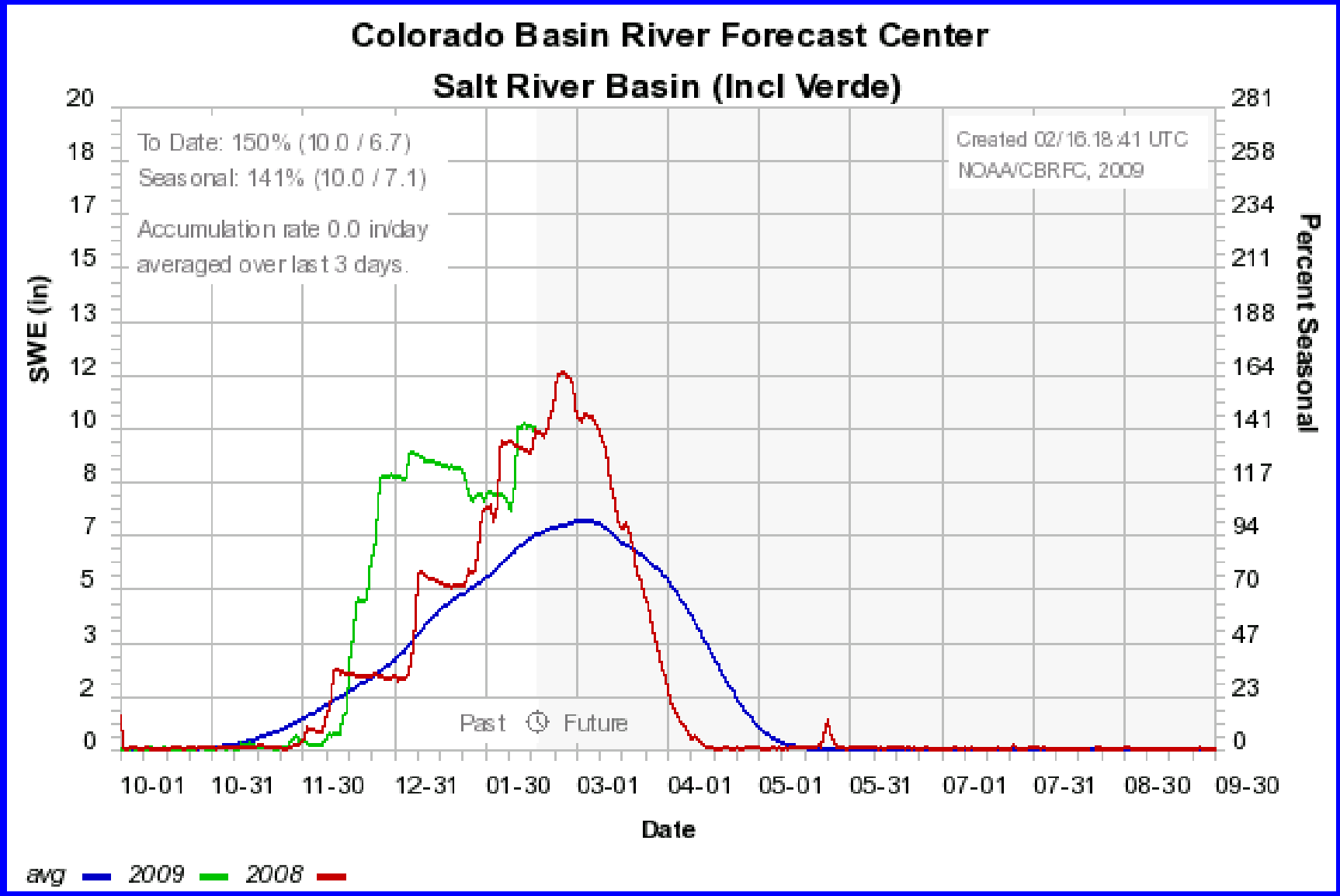
Verde Basin: 150% (165%)

Upper Salt Basin: 120% (160%)

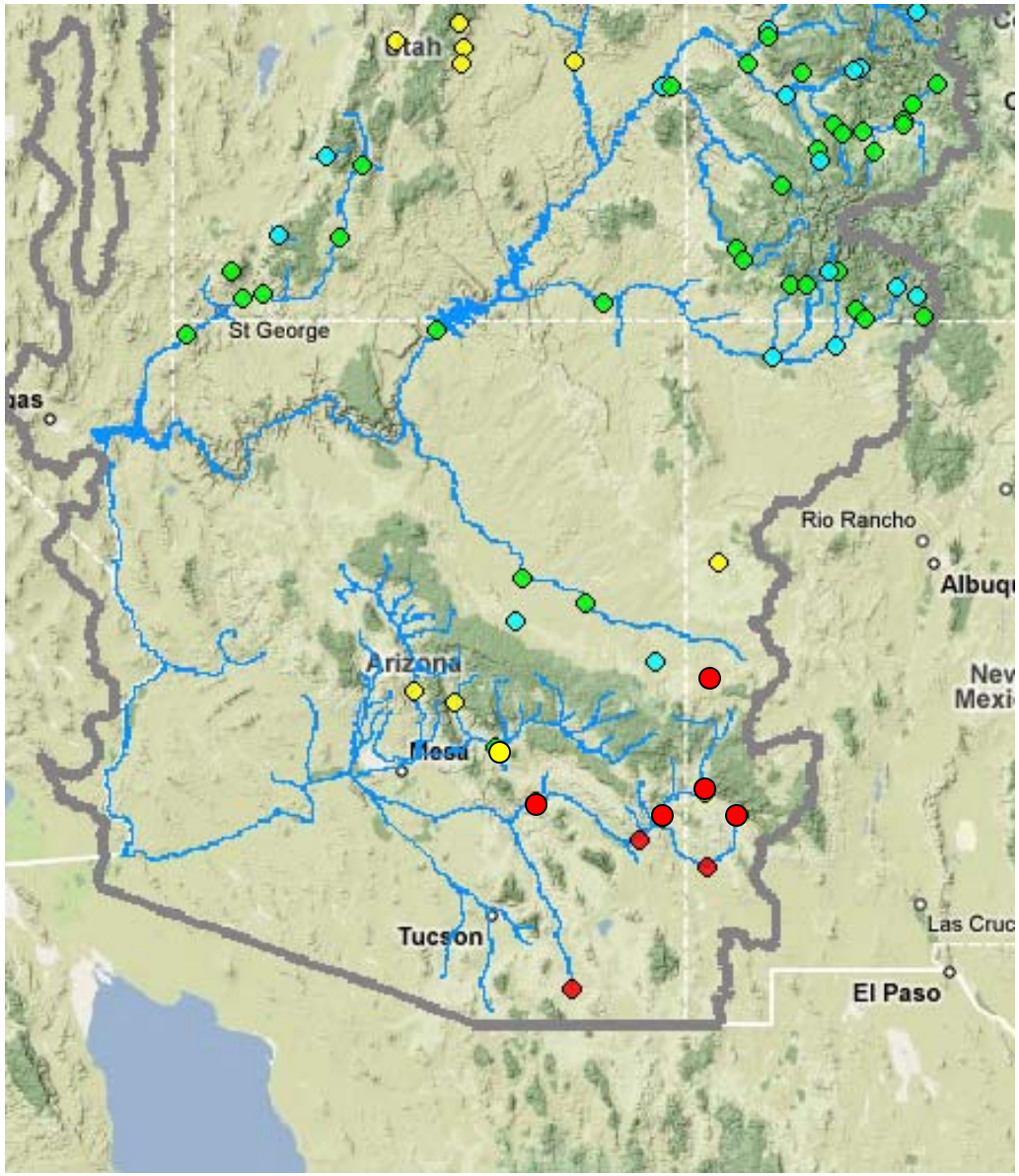
Gila/San Francisco Basin: 55-90% (70-140 %)

Little Colorado: 145% (165%)

Multi – Station Snow Plot:



Water Supply Outlook: (Runoff volumes through May 2009)



Lake Mead Local Inflow (Feb-July)

- **80% of average**

Little Colorado Tributaries

- **85-110% of Median**

Salt River (abv Roosevelt)

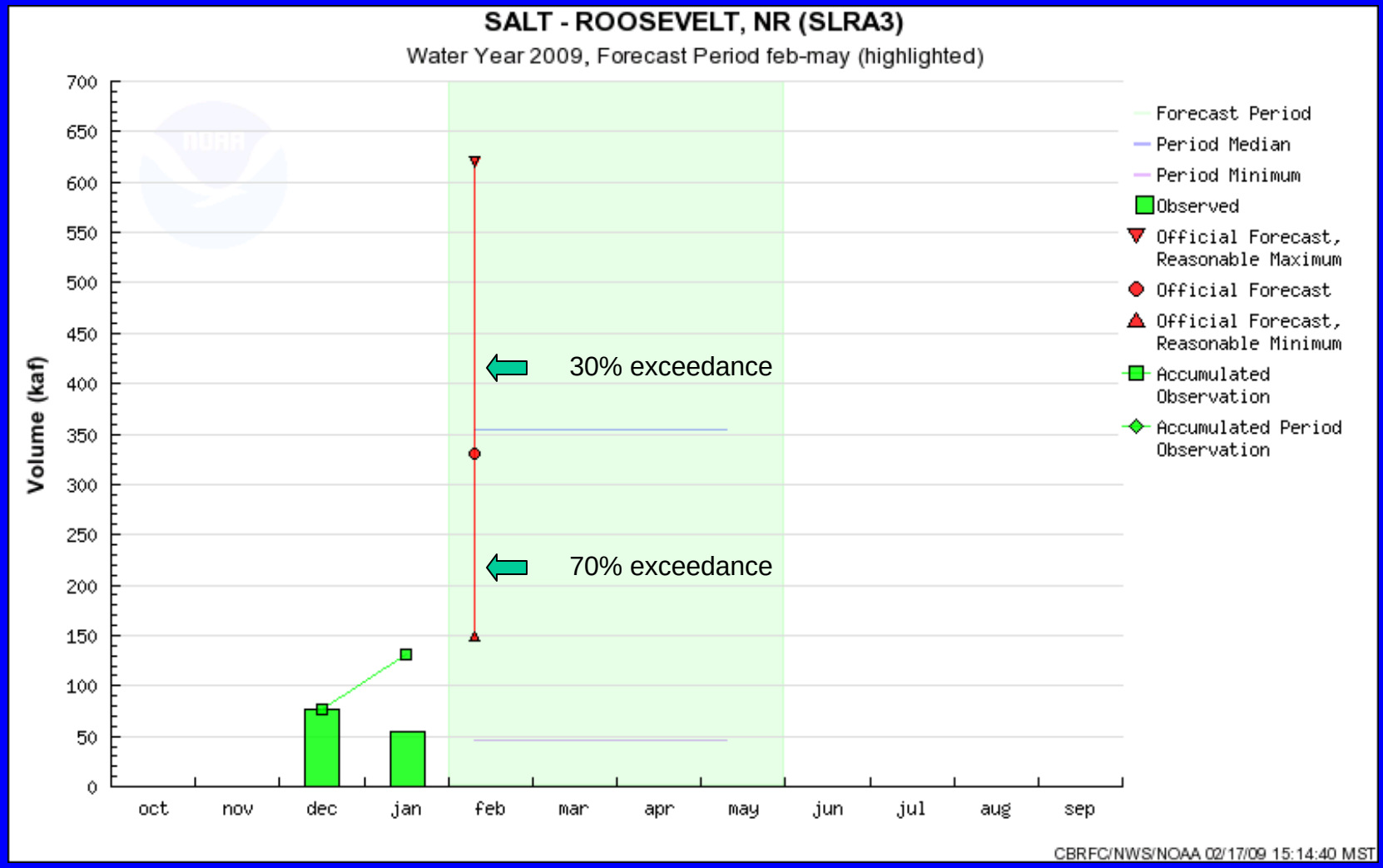
- **75-85% of Median**

Upper Gila Basin

- **50-65% of Median**

Colorado Basin River Forecast Center-NWS-NOAA

www.cbrfc.noaa.gov


SALT - ROOSEVELT, NR (SLRA3)
Water Year 2009, Forecast Period feb-may (highlighted)
Volume (kaf)
700
650
600
550
500
450
400
350
300
250
200
150
100
50
0
oct
nov
dec
jan
feb
mar
apr
may
jun
jul
aug
sep
30% exceedance
70% exceedance
Forecast Period
Period Median
Period Minimum
Observed
Official Forecast, Reasonable Maximum
Official Forecast
Official Forecast, Reasonable Minimum
Accumulated Observation
Accumulated Period Observation
CBRFC/NWS/NOAA 02/17/09 15:14:40 MST

Online Water Supply Outlook Information: **http://www.cbrfc.noaa.gov/wsup/wsup.cgi**

Lower Colorado Water Supply Outlook, February 1, 2009

Prepared by G. Smith
NOAA, National Weather Service
Colorado Basin River Forecast Center
Salt Lake City, Utah
www.cbrfc.noaa.gov

Contents

- Lower Colorado Summary
- Salt Basin Conditions
- Gila Basin Conditions
- Little Colorado Basin Conditions
- Salt Specific Site Forecasts
- Gila Specific Site Forecasts
- Little Colorado Specific Site Forecasts
- Reservoir Contents
- Monthly Streamflows
- Precipitation Maps
- Definitions
- Additional Information

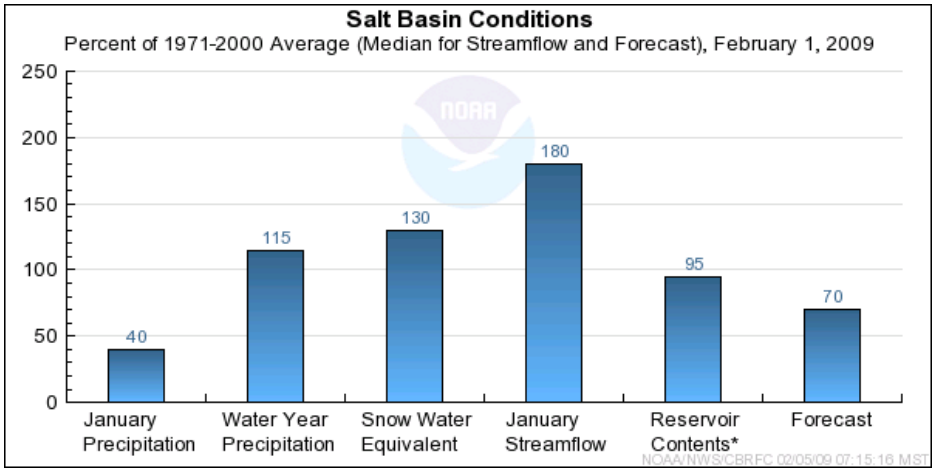
Lower Colorado Summary

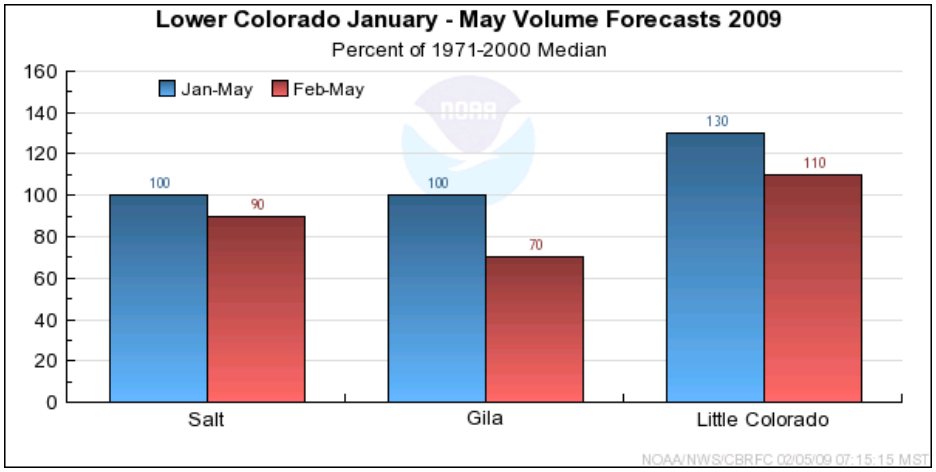
Online Water Supply Outlook Information: **http://www.cbrfc.noaa.gov/wsup/wsup.cgi**

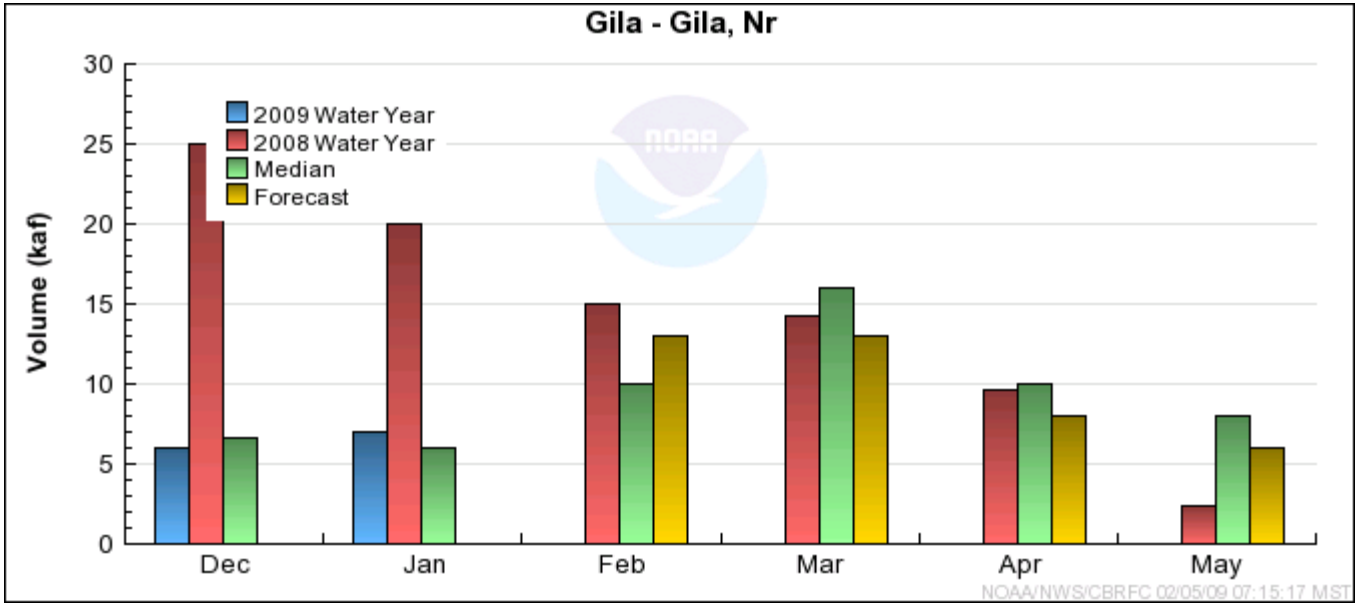
Lower Colorado Reservoir Contents (kaf)

	Usable Capacity	EOM Contents	Percent Usable Capacity	Last Year EOM	Last Year %Capacity
Salt					
Roosevelt	1653.0	1642.5	99	1248.4	76
Horse Mesa	245.0	238.9	98	231.3	94
Mormon Flat	58.0	55.6	96	56.1	97
Stewart Mountain	70.0	64.5	92	68.5	98
Horseshoe	109.2	30.2	28	104.2	95
Bartlett	178.0	118.4	66	176.9	99
TOTAL	**2313.2**	**2150.1**	**93**	**1885.4**	**82**
Little Colorado					
Lyman Lake	31.0	14.4	46	9.0	29
Bill Williams					
Alamo	1045.0	154.8	15	148.7	14
Agua Fria					
Lake Pleasant	1145.0	613.0	54	680.8	59
Gila					
San Carlos	885.0	227.5	26	248.7	28
Painted Rock	2476.0	0.0	0	0.0	0
Colorado					
Lake Powell	24322.0	13154.6	54	10880.4	45
Lake Mead	27380.0	12573.0	46	13005.0	47
Lake Mohave	1810.0	1647.4	91	1671.0	92
Lake Havasu	619.0	559.3	90	556.0	90
TOTAL	**59713.0**	**28944.0**	**48**	**27199.5**	**46**

Online Water Supply Outlook Information: **http://www.cbrfc.noaa.gov/wsup/wsup.cgi**

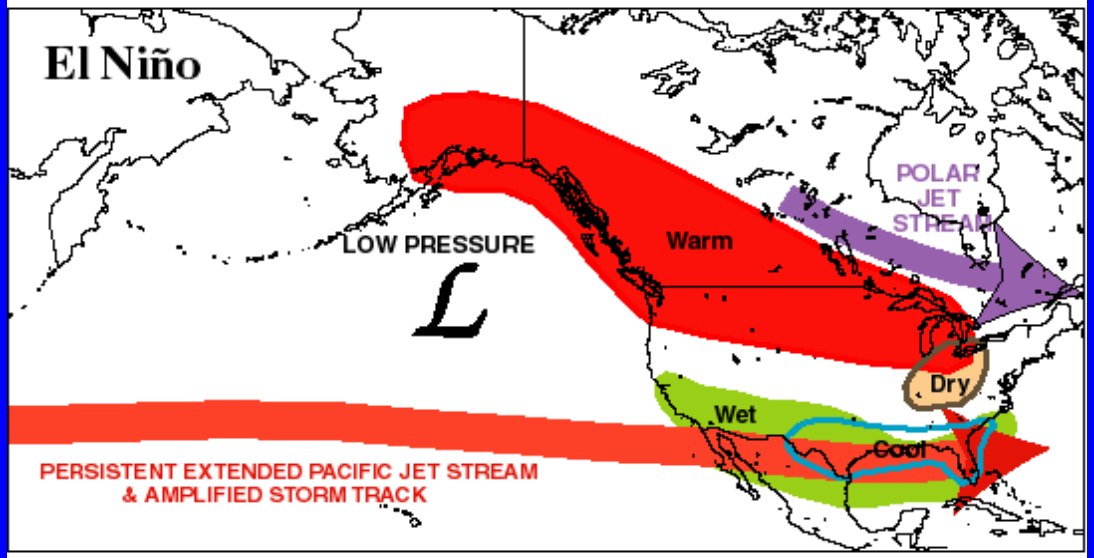


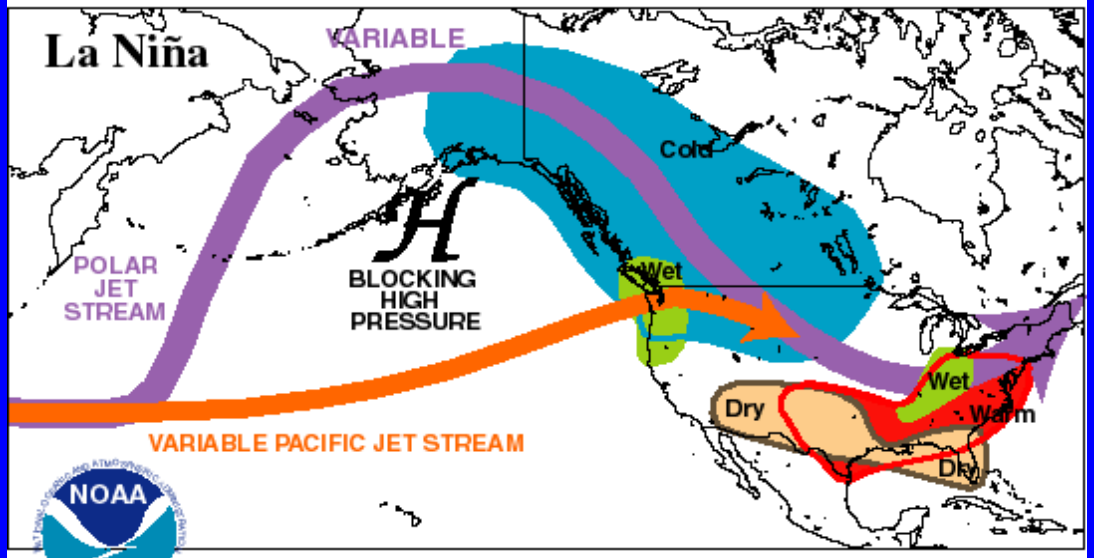




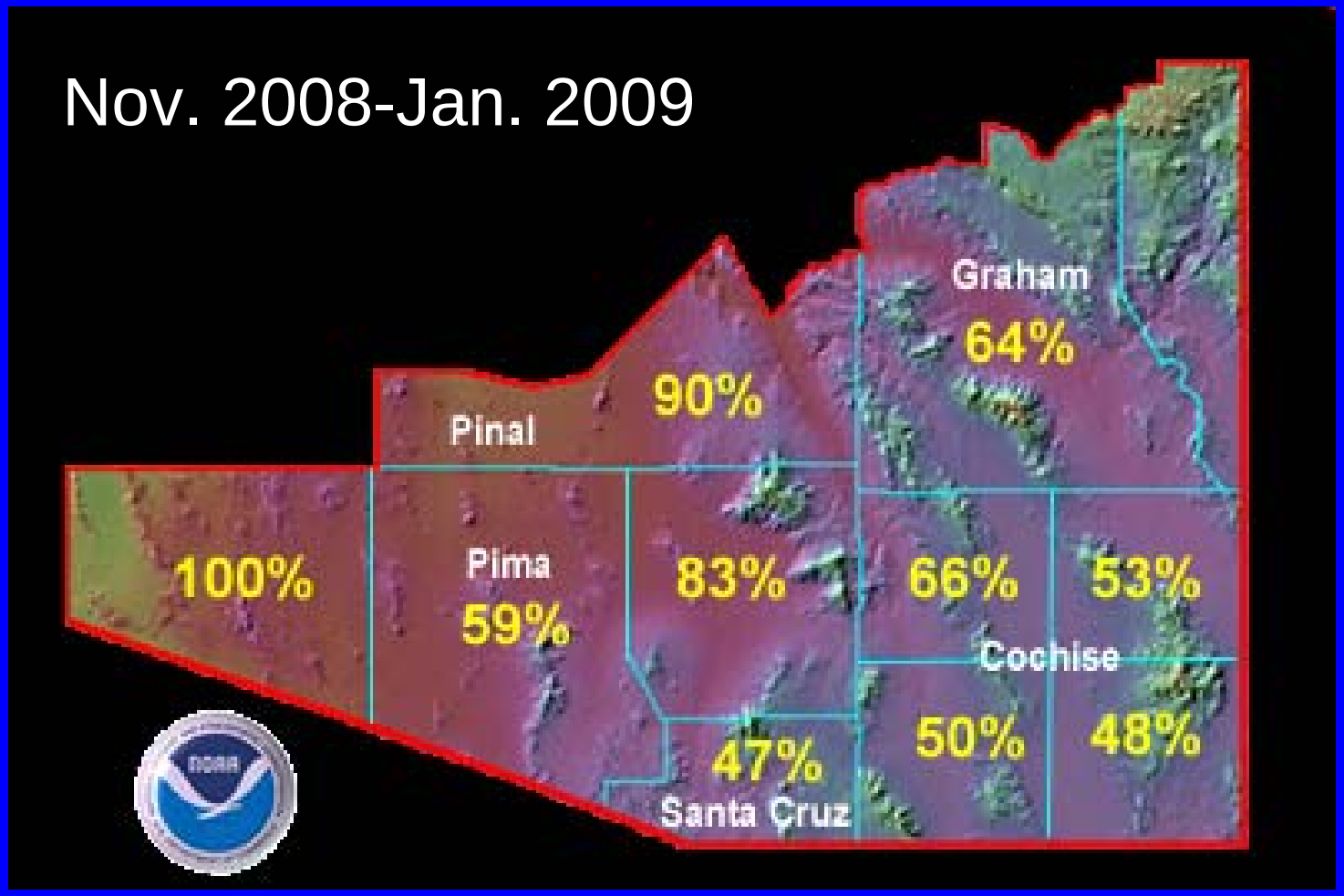
Forecasts

TYPICAL JANUARY-MARCH WEATHER ANOMALIES AND ATMOSPHERIC CIRCULATION DURING MODERATE TO STRONG EL NIÑO & LA NIÑA





Climate Prediction Center/NCEP/NWS

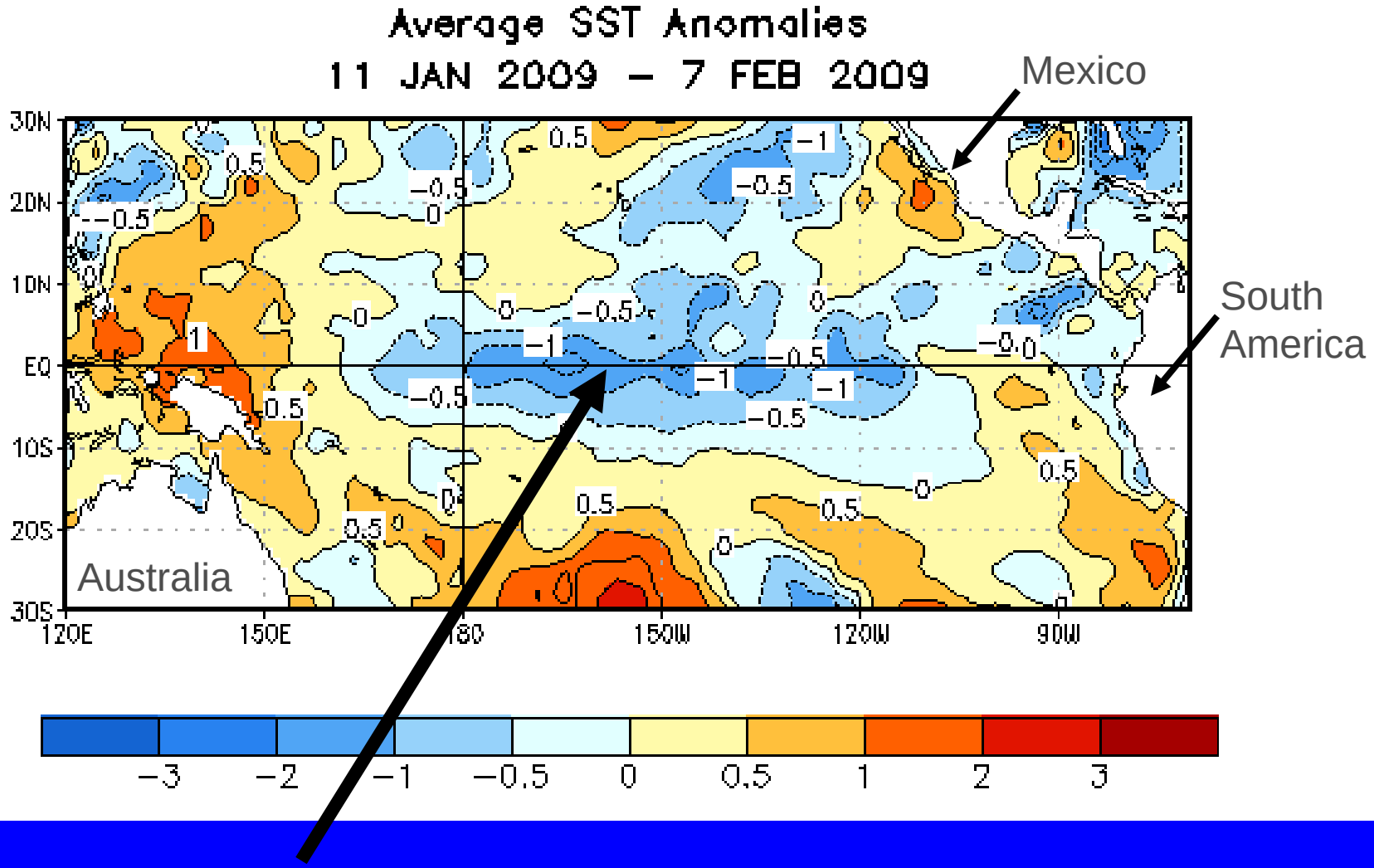


http://www.wrh.noaa.gov/twc/climate/seazDM/cwa_percent.php

	3-Month PPT Total (in.)	Deficit (in.)
Tucumcari 4NE	0.31	1.28
Fort Sumner	0.09	1.52
Roswell	0.24	1.29
Carlsbad	0.17	1.22
Hobbs	0.01	1.58
Ruidoso	1.44	2.22

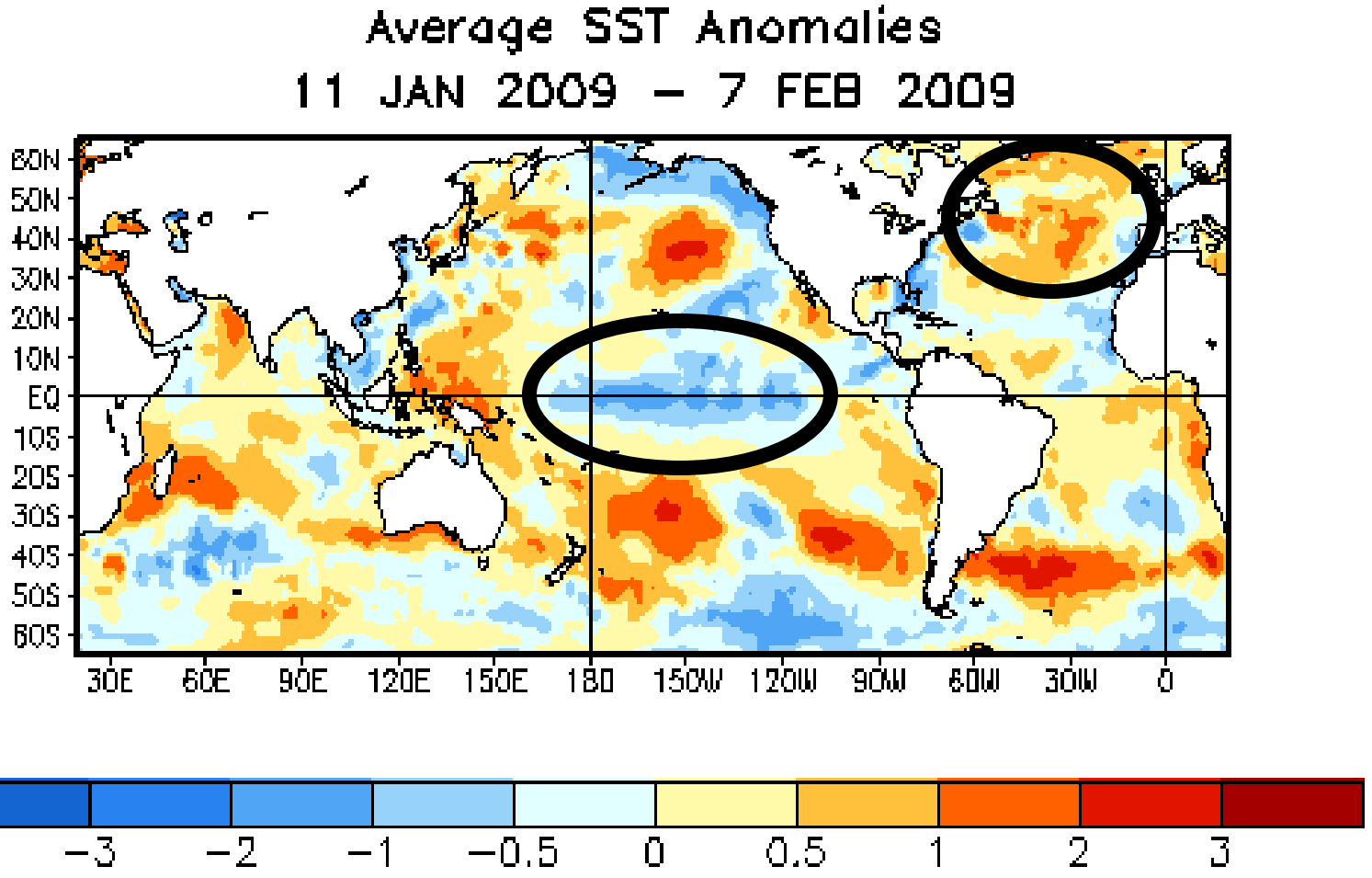
http://www.srh.noaa.gov/abq/climate/precipReports/January/2009/pcpn2009Jan.php

SST Departures (C) in the Tropical Pacific During Jan. 2009-Feb. 2008



Below average SSTs, strong easterly winds

Global SST Departures (°C) During the Last 4 Weeks



Pacific Niño 3.4 SST Outlook

Majority of ENSO forecasts: La Niña conditions through spring 2009.

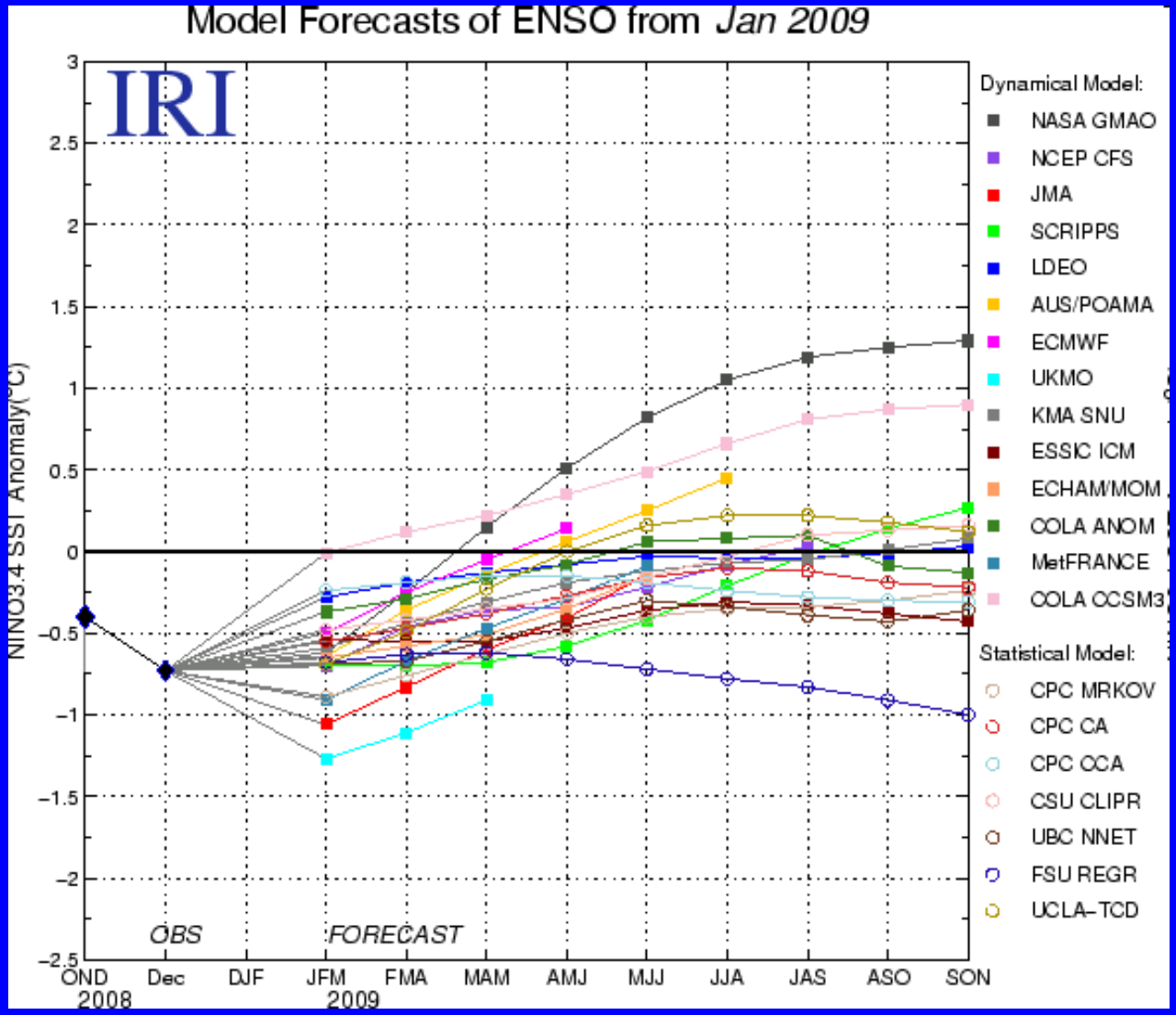
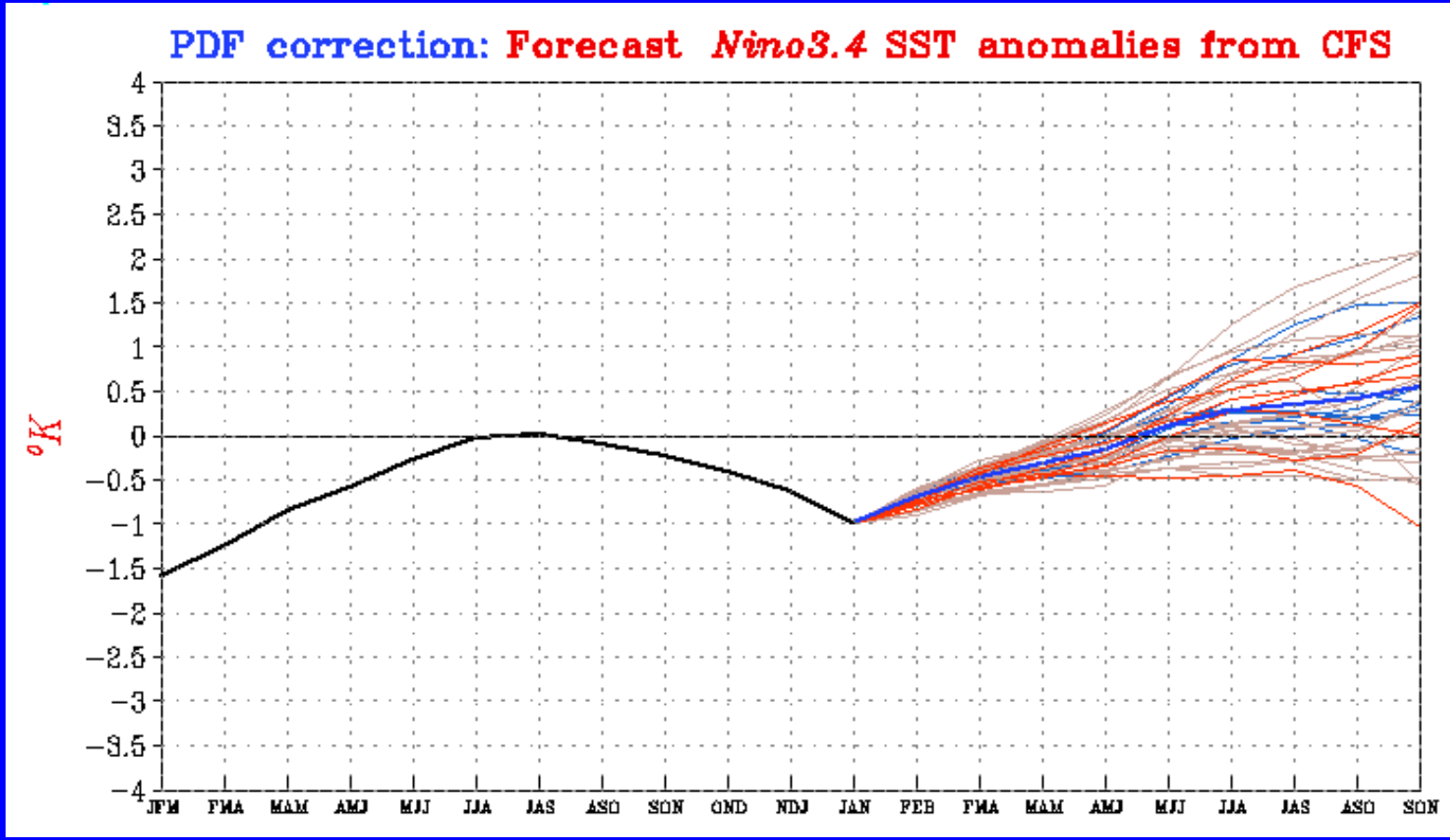


Figure provided by the International Research Institute (IRI) for Climate and Society (updated 17 January 2009).

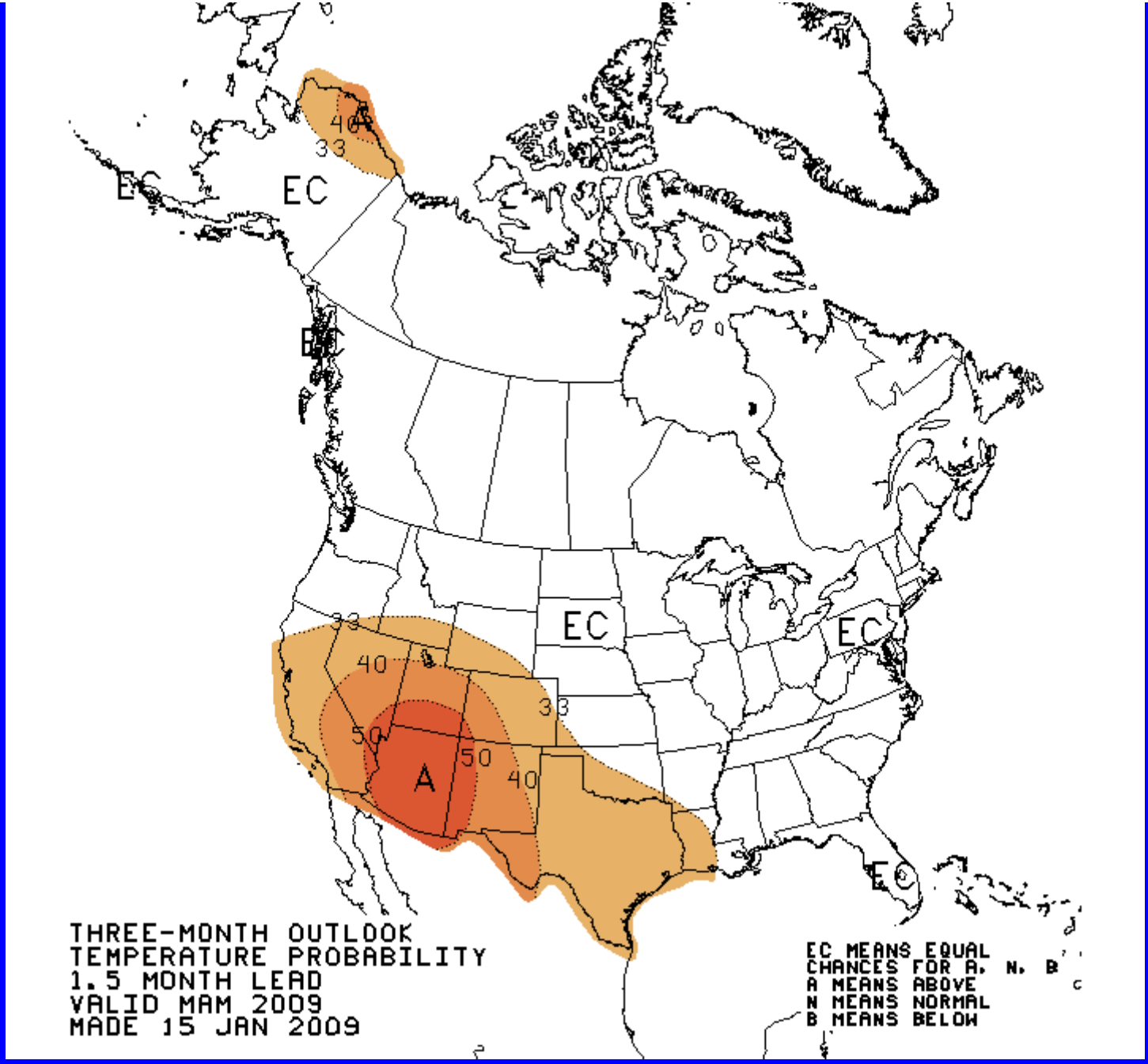
SST Outlook:
NCEP CFS: 8 February 2009



The CFS ensemble mean (heavy blue line) indicates La Niña conditions into Spring 2009.

“A RETURN TO NEUTRAL CONDITIONS COULD HAPPEN AS EARLY AS FMA 2009”

NOAA Climate Prediction Center
January 15, 2009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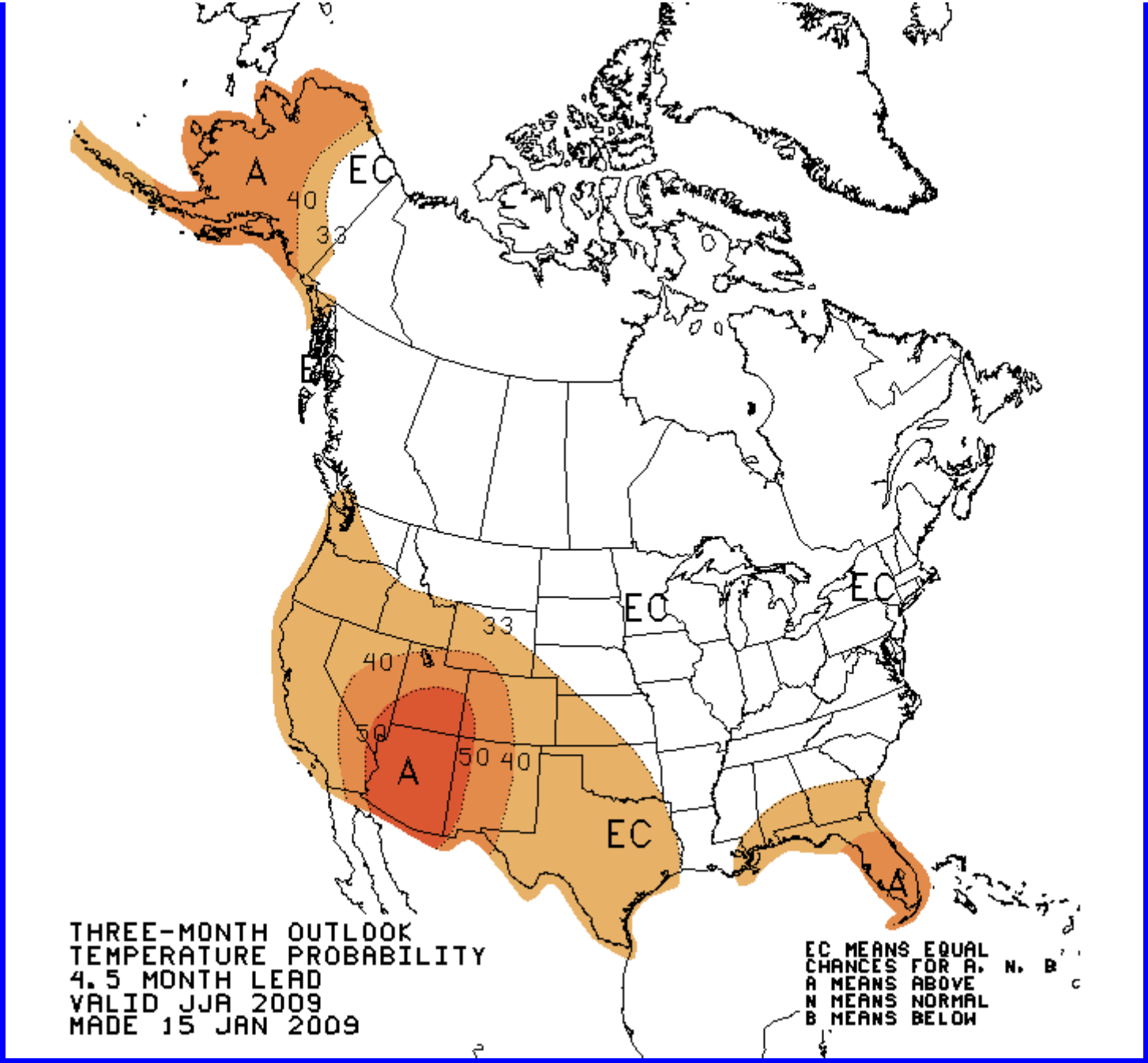
THREE-MONTH OUTLOOK
TEMPERATURE PROBABILITY
1.5 MONTH LEAD
VALID MAM 2009
MADE 15 JAN 2009
EC MEANS EQUAL
CHANCES FOR A, N, B
A MEANS ABOVE
N MEANS NORMAL
B MEANS BELOW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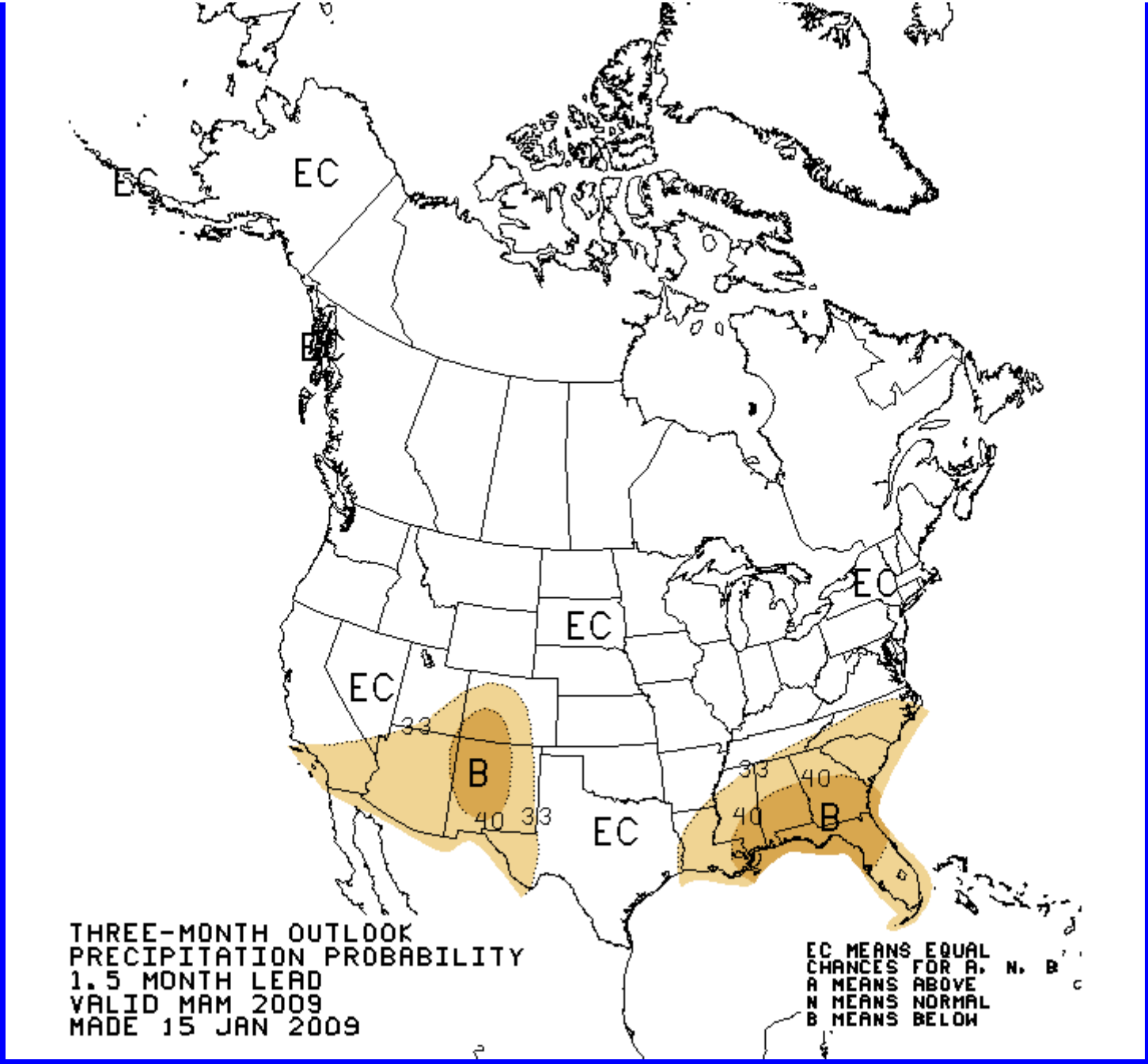
THREE-MONTH OUTLOOK
TEMPERATURE PROBABILITY
4.5 MONTH LEAD
VALID JJA 2009
MADE 15 JAN 2009
EC MEANS EQUAL CHANCES FOR A, N, B
A MEANS ABOVE
N MEANS NORMAL
B MEANS BELOW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PRECIPITATION PROBABILITY
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VALID MAM 2009
MADE 15 JAN 2009
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CHANCES FOR A, N, B
A MEANS ABOVE
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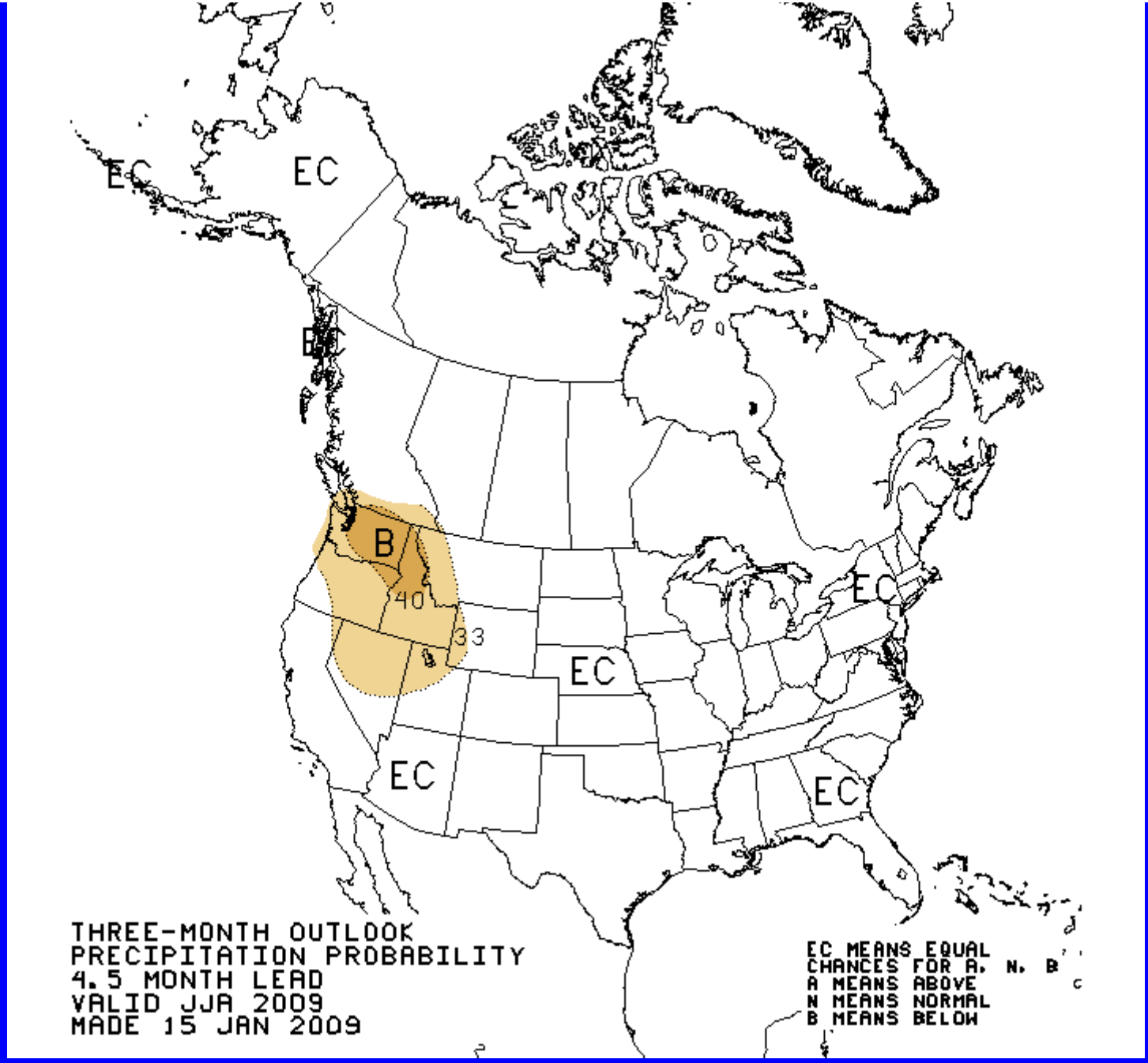
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THREE-MONTH OUTLOOK
PRECIPITATION PROBABILITY
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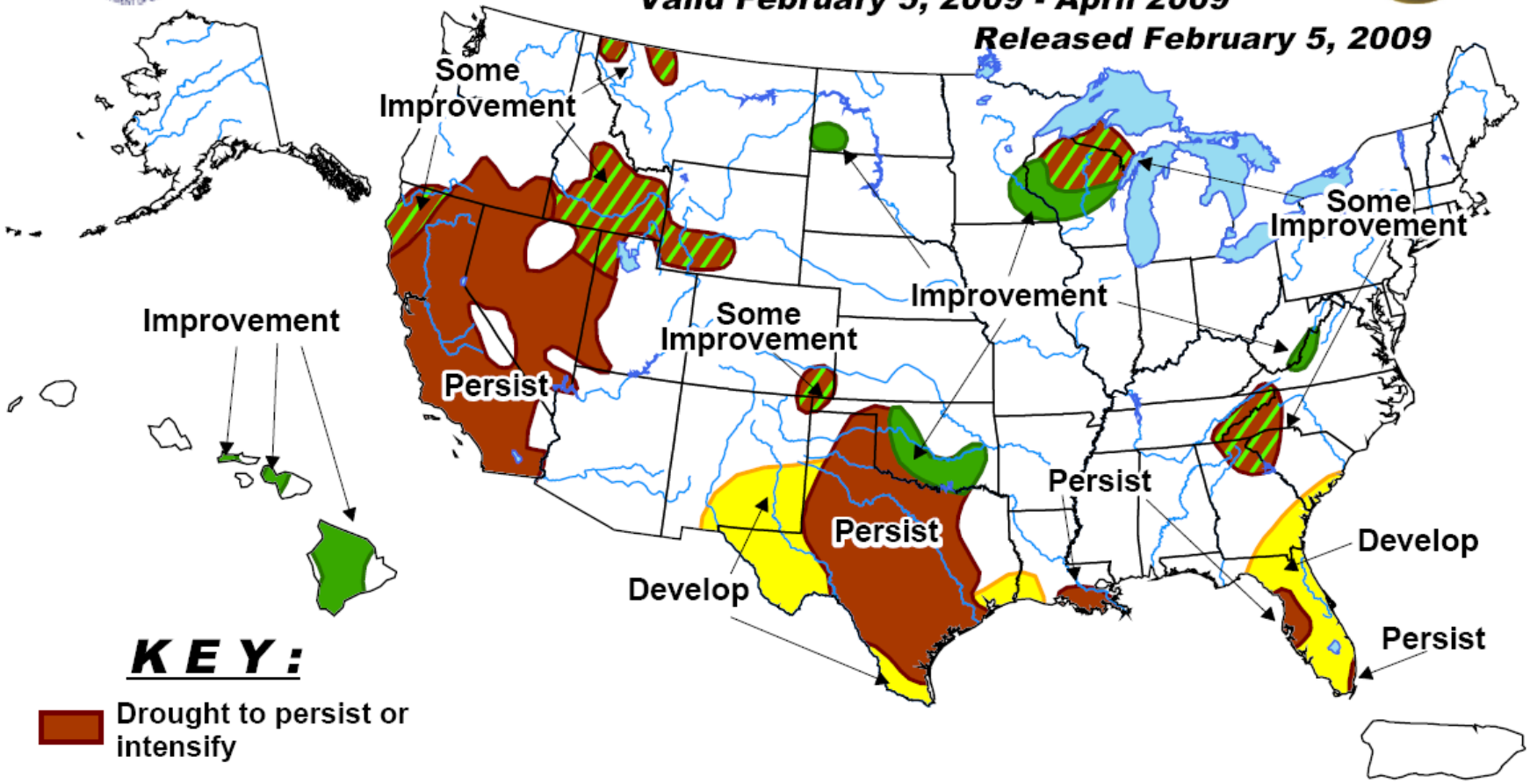
U.S. Seasonal Drought Outlook

Drought Tendency During the Valid Period

Valid February 5, 2009 - April 2009

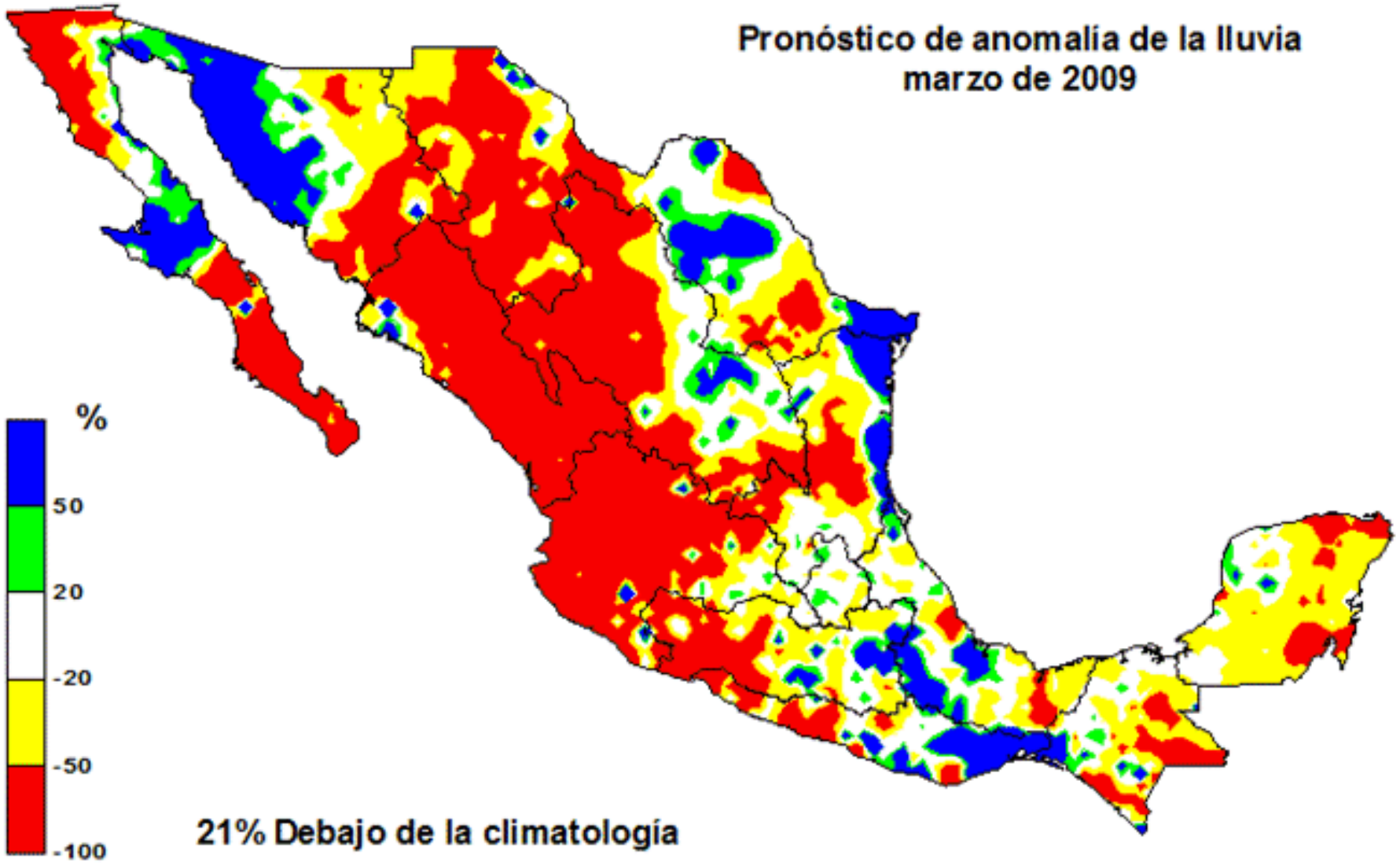
Released February 5, 2009



KEY:

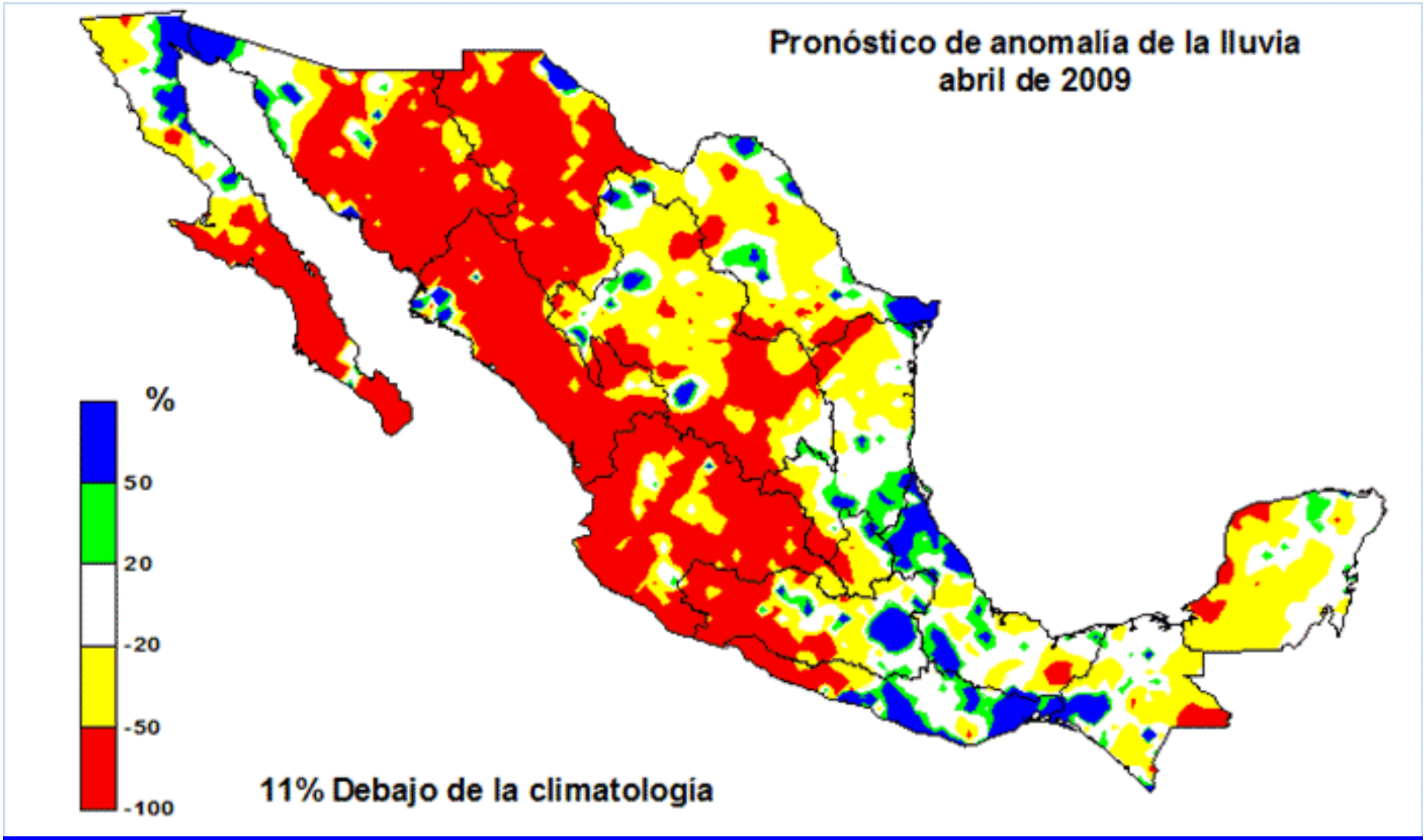
- Drought to persist or intensify
- Drought ongoing, some improvement
- Drought likely to improve, impacts ease
- Drought development likely

Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Short-term events -- such as individual storms -- cannot be accurately forecast more than a few days in advance. Use caution for applications -- such as crops -- that can be affected by such events. "Ongoing" drought areas are approximated from the Drought Monitor (D1 to D4 intensity). For weekly drought updates, see the latest U.S. Drought Monitor. NOTE: the green improvement areas imply at least a 1-category improvement in the Drought Monitor intensity levels, but do not necessarily imply drought elimination.



http://smn.cna.gob.mx/

Con base a los años análogos:
1971, 1976, 1989 y 2000



Servicio Meteorologico Nacional – Analogue forecast years: 1971, 1976, 1989, 2000

http://smn.cna.gob.mx/

Next Briefing:
Monsoon Season Forecasts
Mid-May…stay tuned.

Please fill out the feedback survey at
http://cals.arizona.edu/climate/survey.htm