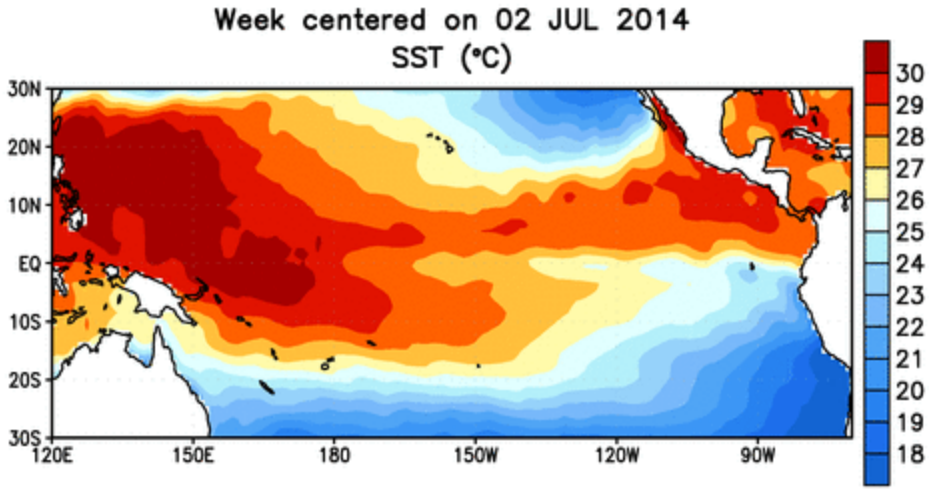
2014-15 Winter Weather Outlook



Seattle Public Utilities

2014-15 Winter Weather Outlook

<u>ENSO</u> (el niño): warm and dry

- Strongest signal exists December through February
- Splitting weather systems
- Atmospheric rivers still likely
- Windstorms, snowstorms less likely

<u>The Blob</u>: warm and … dry?

2014-15 Winter Weather Outlook

<u>Perihelion-Perigee (King) Tides</u>: 19-year maximum

- 2014-11-26: 12.36’/10.01’
- 2014-12-26: 13.05’/10.70’
- 2015-01-24: 13.21’/10.86’
- 2015-02-21: 12.93’/10.58’

2012-12-17: 12.11’/9.76’

2014-15 Winter Weather Outlook

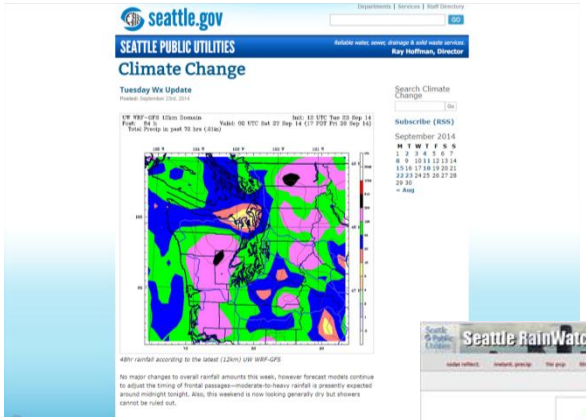
[SPU_WEATHER]: new messaging listserv

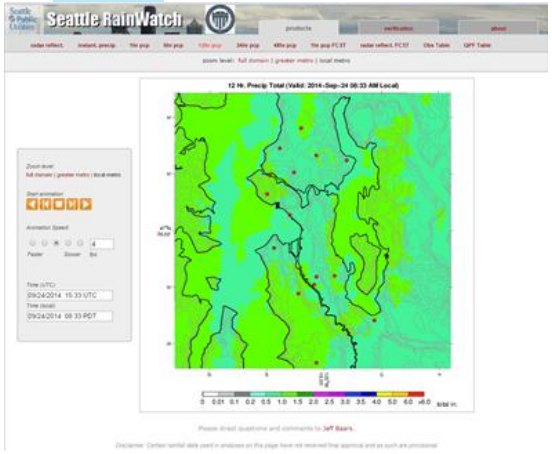
- Summary
- DWW
- Water
- Solid Waste
- Resources

[SPU_WX]: data, updates

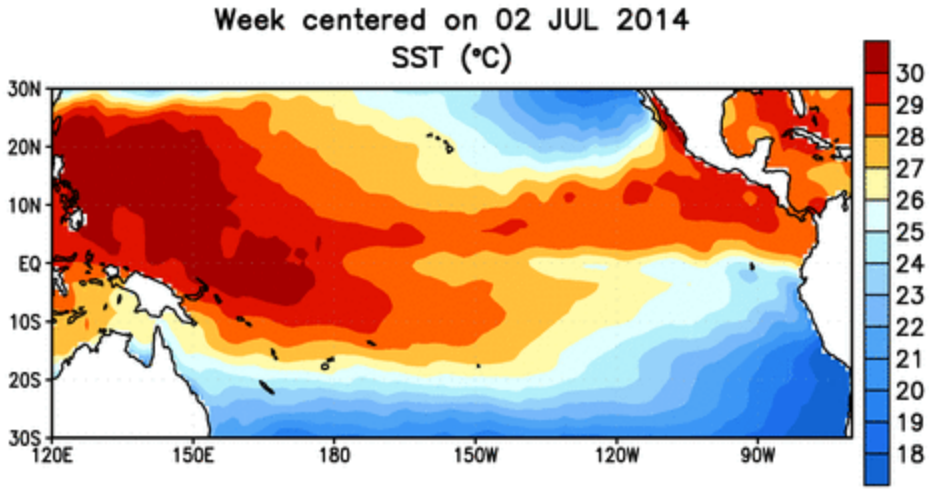
“The Convergence Zone”

Seattle RainWatch

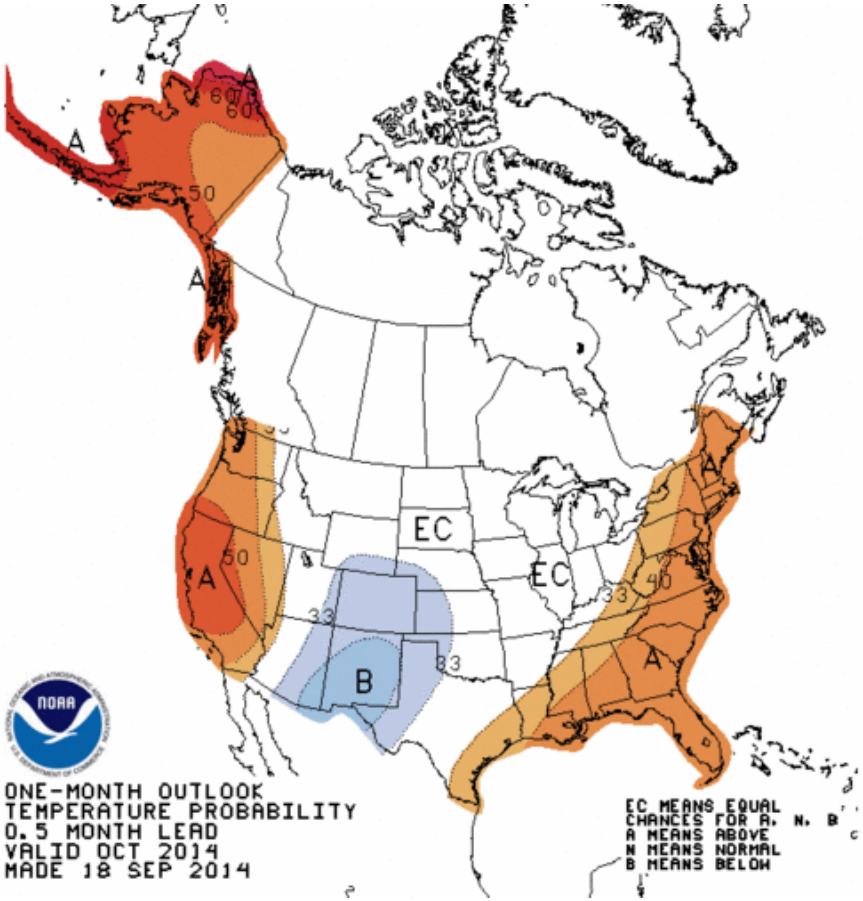


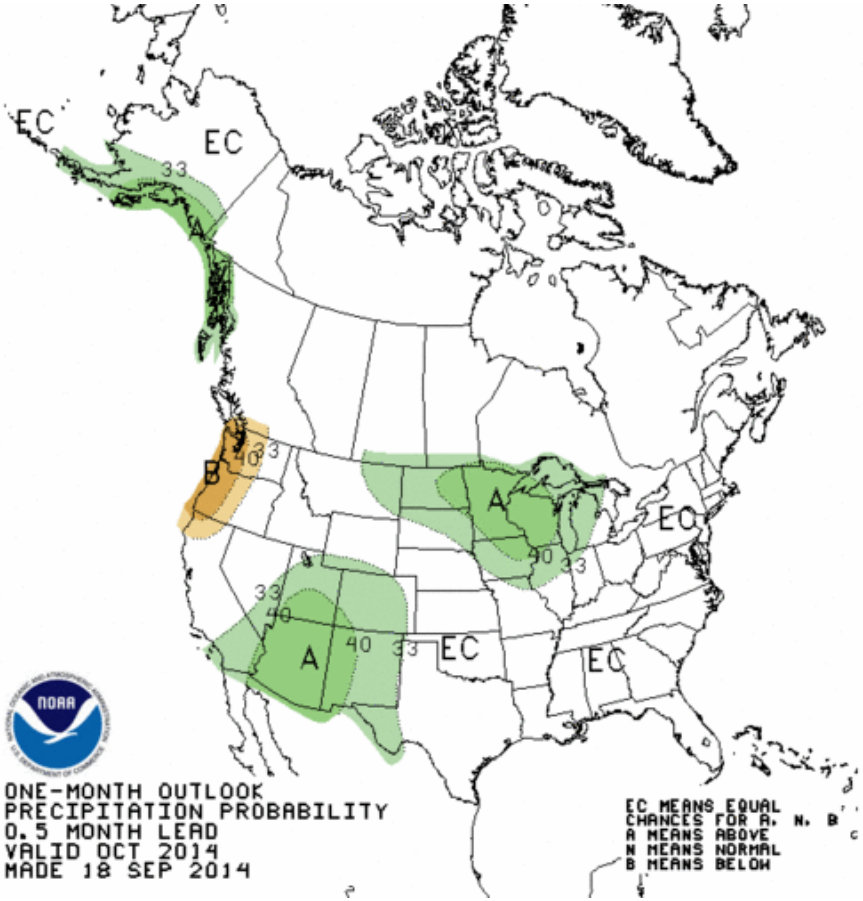


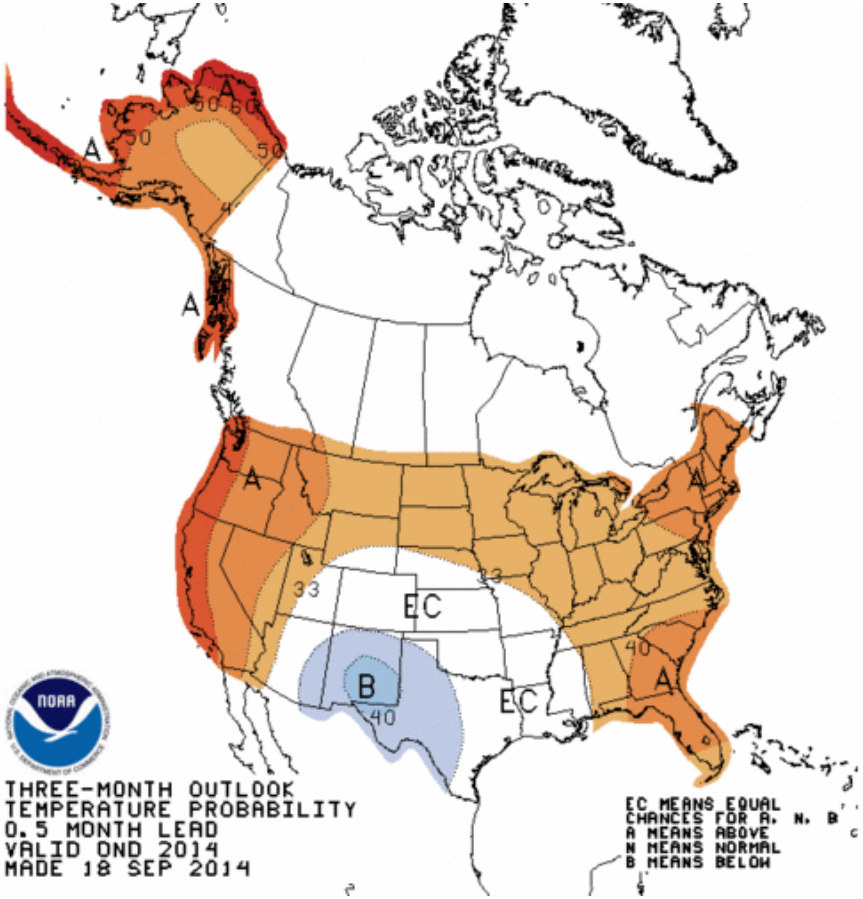
2014-15 Winter Weather Outlook

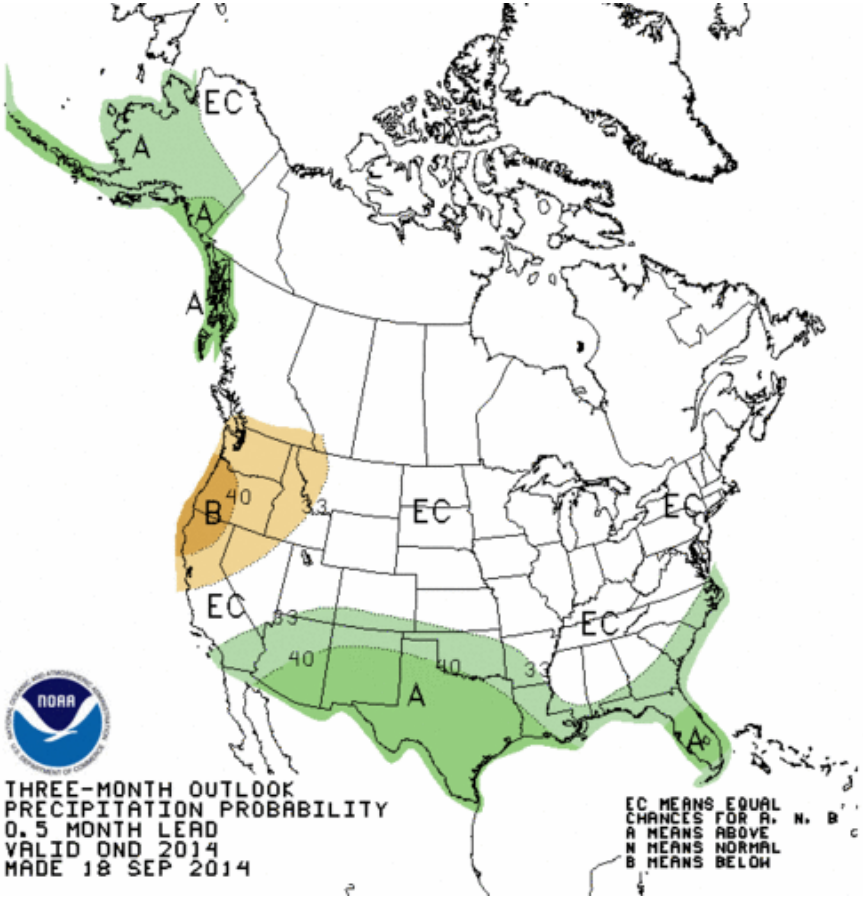


Seattle Public Utilities


ONE-MONTH OUTLOOK
TEMPERATURE PROBABILITY
0.5 MONTH LEAD
VALID OCT 2014
MADE 18 SEP 2014
EC MEANS EQUAL
CHANCES FOR A, N, B
A MEANS ABOVE
N MEANS NORMAL
B MEANS BELOW
A
B
EC
50
60
33
40


ONE-MONTH OUTLOOK
PRECIPITATION PROBABILITY
0.5 MONTH LEAD
VALID OCT 2014
MADE 18 SEP 2014
EC MEANS EQUAL
CHANCES FOR A, N, B
A MEANS ABOVE
N MEANS NORMAL
B MEANS BELOW
A
B
EC
33
40


THREE-MONTH OUTLOOK
TEMPERATURE PROBABILITY
0.5 MONTH LEAD
VALID OND 2014
MADE 18 SEP 2014
EC MEANS EQUAL CHANCES FOR A, N, B
A MEANS ABOVE
N MEANS NORMAL
B MEANS BELOW


THREE-MONTH OUTLOOK
PRECIPITATION PROBABILITY
0.5 MONTH LEAD
VALID OND 2014
MADE 18 SEP 2014
EC MEANS EQUAL CHANCES FOR A, N, B
A MEANS ABOVE
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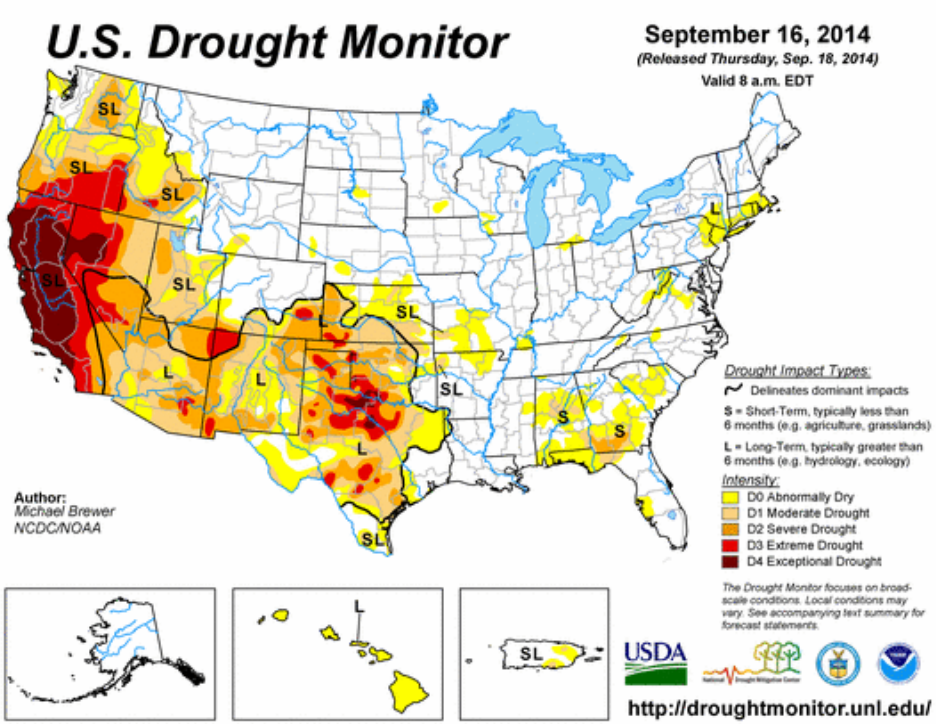

U.S. Drought Monitor
September 16, 2014
(Released Thursday, Sep. 18, 2014)
Valid 8 a.m. EDT
Author:
Michael Brewer
NCDC/NOAA
Drought Impact Types:
Delineates dominant impacts
S = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)
L = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)
Intensity:
D0 Abnormally Dry
D1 Moderate Drought
D2 Severe Drought
D3 Extreme Drought
D4 Exceptional Drought
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.
USDA
http://droughtmonitor.unl.edu/

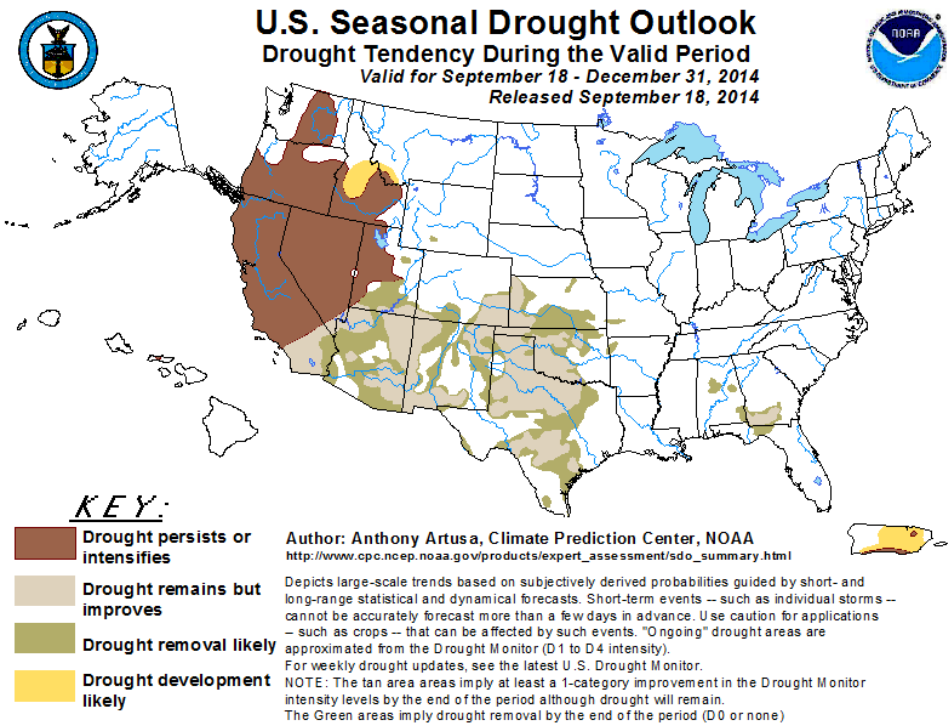
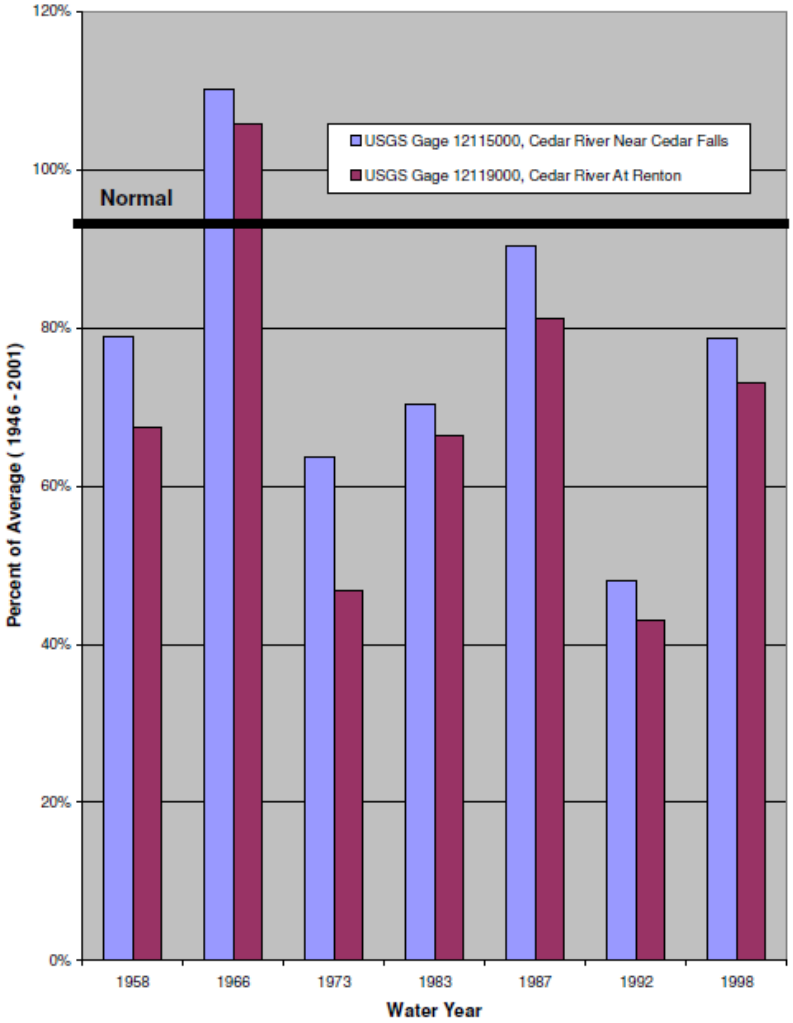
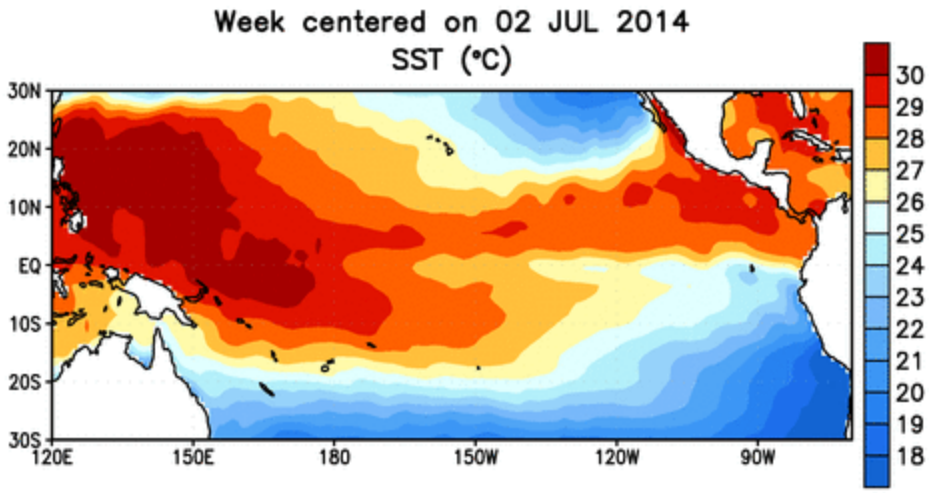

U.S. Seasonal Drought Outlook
Drought Tendency During the Valid Period
Valid for September 18 - December 31, 2014
Released September 18, 2014
KEY:
Drought persists or intensifies
Drought remains but improves
Drought removal likely
Drought development likely
Author: Anthony Artusa, Climate Prediction Center, NOAA
http://www.cpc.ncep.noaa.gov/products/expert_assessment/sdo_summary.html
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 tan area areas imply at least a 1-category improvement in the Drought Monitor intensity levels by the end of the period although drought will remain.
The Green areas imply drought removal by the end of the period (D0 or none)

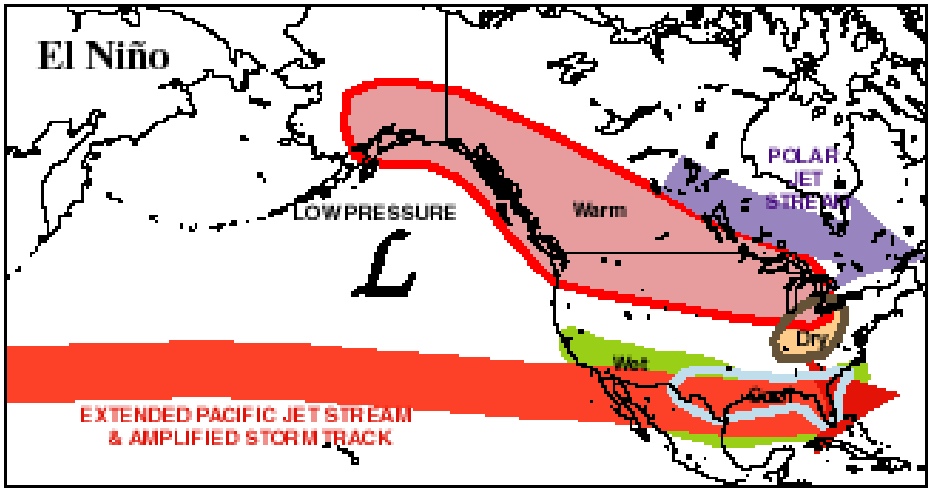
Figure 4. Refill Season Runoff Volume During Past El Niño Events (March through June)

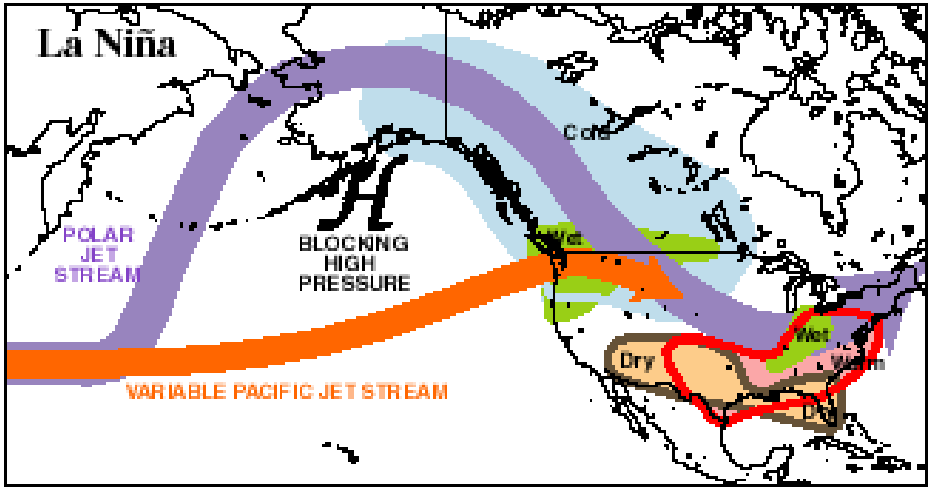


Normal is average for water years 1946 through 2001

ENSO

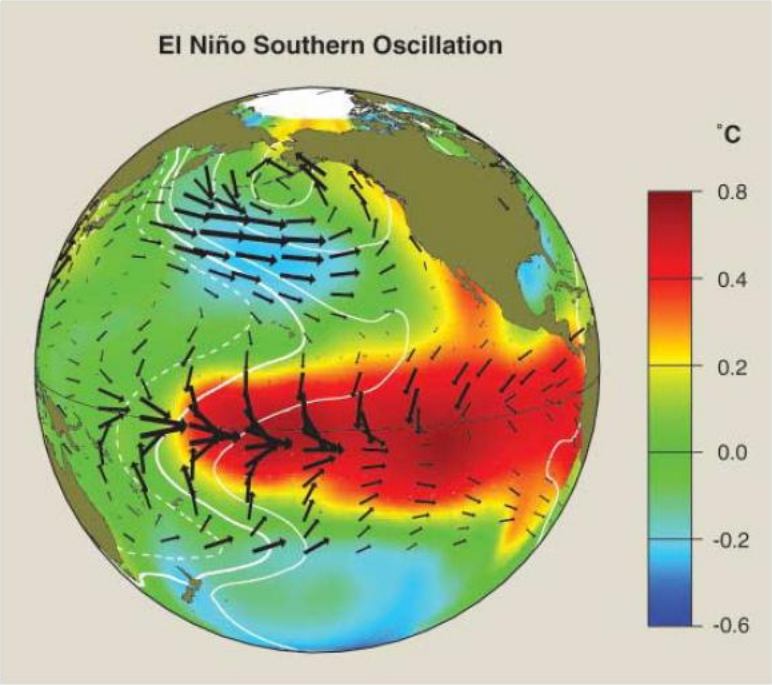

Week centered on 02 JUL 2014
SST (°C)
30N
20N
10N
EQ
10S
20S
30S
120E
150E
180
150W
120W
90W
30
29
28
27
26
25
24
23
22
21
20
19
18


El Niño
LOW PRESSURE
L
Warm
POLAR
JET
STREAM
Dry
Wet
Cold
EXTENDED PACIFIC JET STREAM
& AMPLIFIED STORM TRACK


La Niña
Cold
POLAR
JET
STREAM
H
BLOCKING
HIGH
PRESSURE
Wet
Dry
Wet
Warm
Dry
VARIABLE PACIFIC JET STREAM

A super El Niño on the way? Subtle signs emerging

BY JASON SAMENOW March 20 at 3:47 pm



Visualization of El Nino (NOAA)

Mashable's Andrew Freedman has penned an intriguing and important piece

Summary

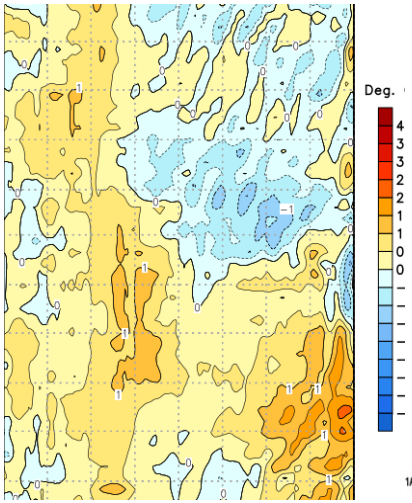
ENSO Alert System Status: El Niño Watch

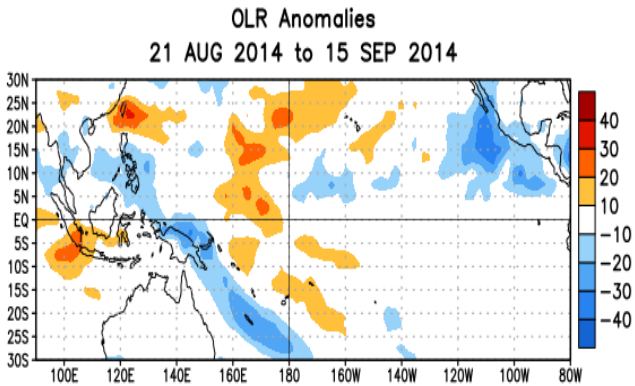
ENSO-neutral conditions continue.*

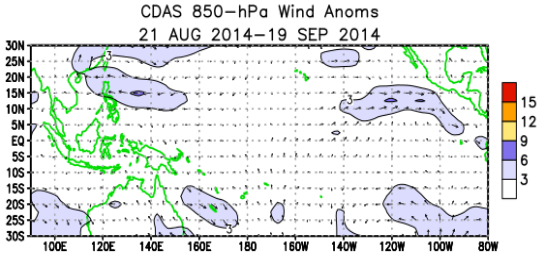
Positive equatorial sea surface temperature (SST) anomalies continue across most of the Pacific Ocean.

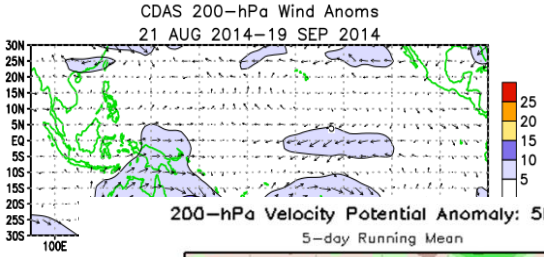
The chance of El Niño is at 60-65% during the Northern Hemisphere fall and winter.*

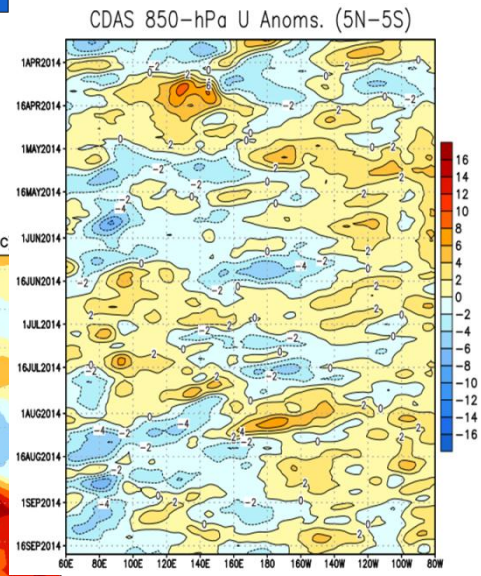
* Note: These statements are updated once a month in association with the ENSO Diagnostics Discussion, which can be found by clicking here.

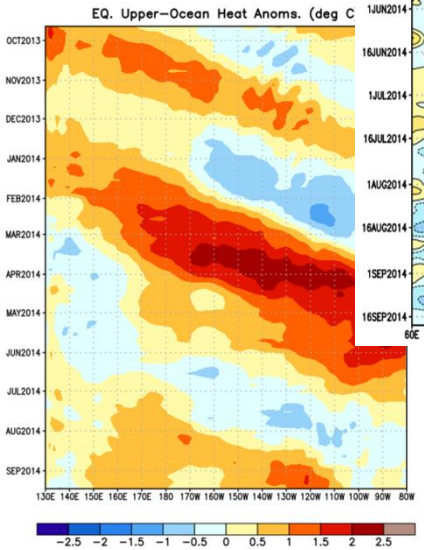

Deg.

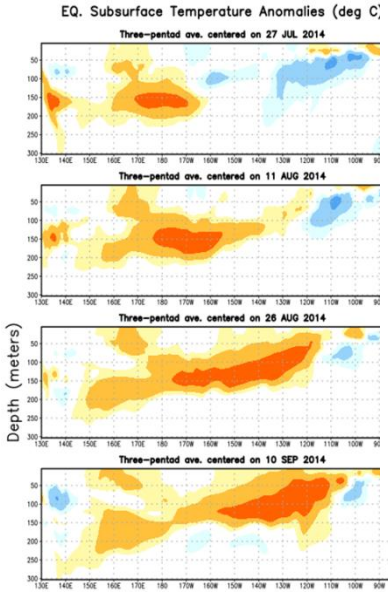

OLR Anomalies
21 AUG 2014 to 15 SEP 2014

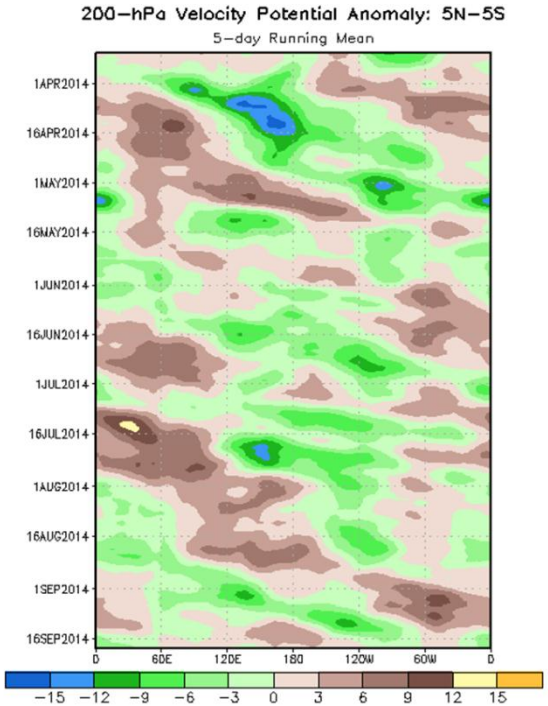

CDAS 850-hPa Wind Anoms
21 AUG 2014-19 SEP 2014


CDAS 200-hPa Wind Anoms
21 AUG 2014-19 SEP 2014


CDAS 850-hPa U Anoms. (5N-5S)


EQ. Upper-Ocean Heat Anoms. (deg C


EQ. Subsurface Temperature Anomalies (deg C)
Three-pentad ave. centered on 27 JUL 2014
Three-pentad ave. centered on 11 AUG 2014
Three-pentad ave. centered on 26 AUG 2014
Three-pentad ave. centered on 10 SEP 2014
Depth (meters)


200-hPa Velocity Potential Anomaly: 5N-5S
5-day Running Mean

Historical El Niño and La Niña Episodes Based on the ONI computed using ERSST.v3b

El Niño	Highest ONI Value
JJA 1951 - DJF 1951/52	1.2
DJF 1952/53 - JFM 1954	0.8
MAM 1957 - JJA 1958	1.8
OND 1958 - FMA 1959	0.6
MJJ 1963 - JFM 1964	1.4
AMJ 1965 - MAM 1966	1.9
JAS 1968 - DJF 1969/70	1.1
AMJ 1972 - FMA 1973	2.1
ASO 1976 - JFM 1977	0.8
ASO 1977 - JFM 1978	0.8
AMJ 1982 - MJJ 1983	2.2
JAS 1986 - JFM 1988	1.6
AMJ 1991 - MJJ 1992	1.6
ASO 1994 - FMA 1995	1.2
AMJ 1997 - MAM 1998	2.4
AMJ 2002 - JFM 2003	1.3
JJA 2004 - DJF 2004/05	0.7
ASO 2006 - DJF 2006/07	1.0
JJA 2009 - MAM 2010	1.6

La Niña	Lowest ONI Value
ASO 1949 - JAS 1950	-1.4
SON 1950 - JFM 1951	-0.8
AMJ 1954 – NDJ 1956/57	-1.7
AMJ 1964 - DJF 1964/65	-0.8
JJA 1970 - DJF 1971/72	-1.3
AMJ 1973 - JJA 1974	-2.0
SON 1974 - MAM 1976	-1.7
ASO 1983 - DJF 1983/84	-0.9
SON 1984 - ASO 1985	-1.1
AMJ 1988 - AMJ 1989	-1.9
ASO 1995 - FMA 1996	-0.9
JJA 1998 - FMA 2001	-1.7
OND 2005 - FMA 2006	-0.9
JAS 2007 - MJJ 2008	-1.5
OND 2008 - FMA 2009	-0.8
JJA 2010 - MAM 2011	-1.5
ASO 2011 - FMA 2012	-1.0

NOTE (Mar. 2012): The historical values of the ONI have slightly changed due to an update in the climatology. Please click here for more details on the methodology.

Historical El Niño and La Niña Episodes Based on the ONI computed using ERSST.v3b

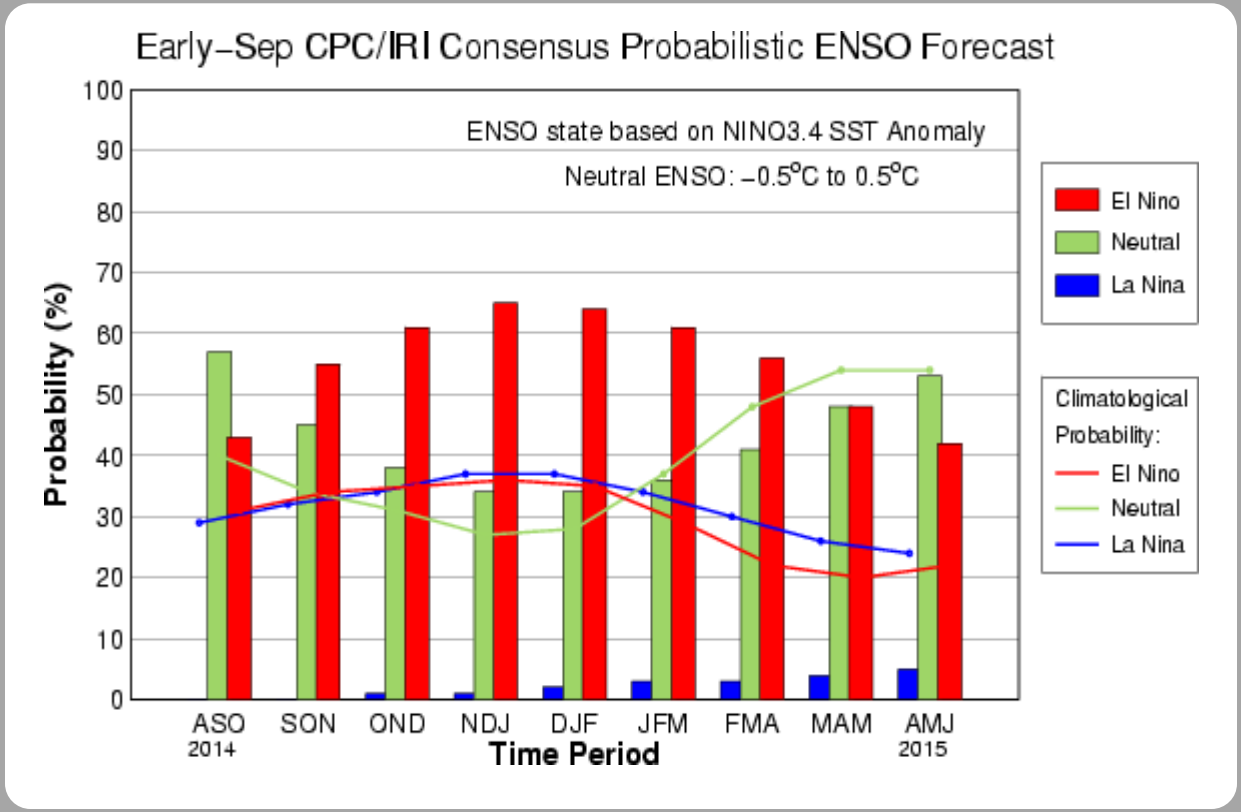
Recent Pacific warm (red) and cold (blue) episodes based on a threshold of +/- 0.5 °C for the Oceanic Nino Index (ONI) [3 month running mean of ERSST.v3b SST anomalies in the Nino 3.4 region (5N-5S, 120-170W)]. For historical purposes El Niño and La Niña episodes are defined when the threshold is met for a minimum of 5 consecutive over-lapping seasons. The complete table going back to DJF 1950 can be found here.

Year	DJF	JFM	FMA	MAM	AMJ	MJJ	JJA	JAS	ASO	SON	OND	NDJ
2002	-0.2	0.0	0.1	0.3	0.5	0.7	0.8	0.8	0.9	1.2	1.3	1.3
2003	1.1	0.8	0.4	0.0	-0.2	-0.1	0.2	0.4	0.4	0.4	0.4	0.3
2004	0.3	0.2	0.1	0.1	0.2	0.3	0.5	0.7	0.8	0.7	0.7	0.7
2005	0.6	0.4	0.3	0.3	0.3	0.3	0.2	0.1	0.0	-0.2	-0.5	-0.8
2006	-0.9	-0.7	-0.5	-0.3	0.0	0.1	0.2	0.3	0.5	0.8	1.0	1.0
2007	0.7	0.3	-0.1	-0.2	-0.3	-0.3	-0.4	-0.6	-0.8	-1.1	-1.2	-1.4
2008	-1.5	-1.5	-1.2	-0.9	-0.7	-0.5	-0.3	-0.2	-0.1	-0.2	-0.5	-0.7
2009	-0.8	-0.7	-0.5	-0.2	0.2	0.4	0.5	0.6	0.8	1.1	1.4	1.6
2010	1.6	1.3	1.0	0.6	0.1	-0.4	-0.9	-1.2	-1.4	-1.5	-1.5	-1.5
2011	-1.4	-1.2	-0.9	-0.6	-0.3	-0.2	-0.2	-0.4	-0.6	-0.8	-1.0	-1.0
2012	-0.9	-0.6	-0.5	-0.3	-0.2	0.0	0.1	0.4	0.5	0.6	0.2	-0.3
2013	-0.6	-0.6	-0.4	-0.2	-0.2	-0.3	-0.3	-0.3	-0.3	-0.2	-0.3	-0.4
2014	-0.6	-0.6	-0.5	-0.1	0.1	0.1	0.0					

CPC/IRI Probabilistic ENSO Outlook

Updated: 4 September 2014

The chance of El Niño is at 60-65% during the Northern Hemisphere fall and winter.



IRI/CPC Pacific Niño 3.4 SST Model Outlook

Most models favor El Niño (greater than or equal to +0.5°C) to develop during October-December 2014 and persist through Northern Hemisphere winter 2014-15.

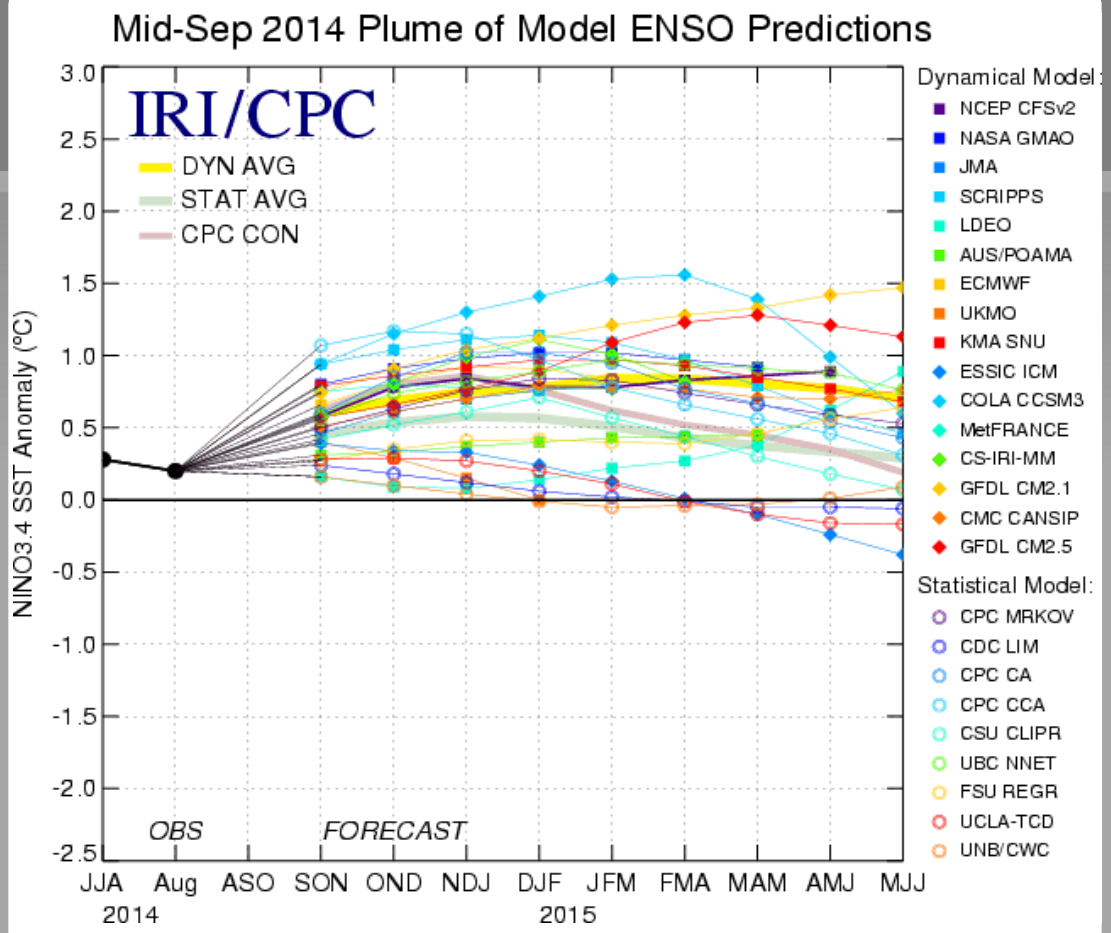
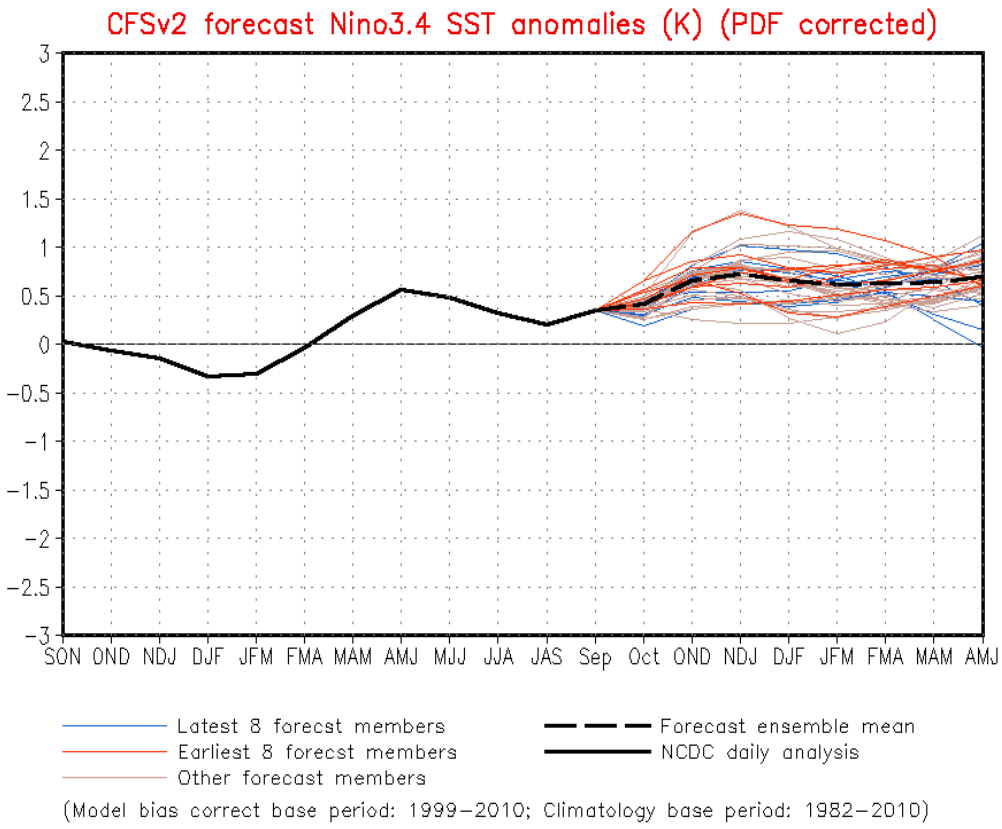


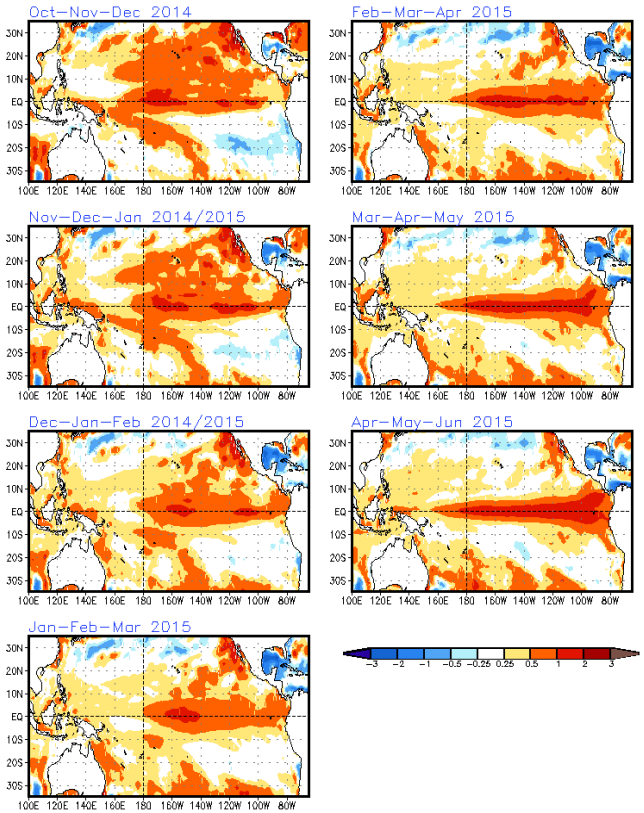
Figure provided by the International Research Institute (IRI) for Climate and Society (updated 16 September 2014).

SST Outlook: NCEP CFS.v2 Forecast (PDF corrected)

Issued: 22 September 2014

The CFS.v2 ensemble mean (black dashed line) predicts El Niño starting around October-December 2014 and lasting through early 2015.



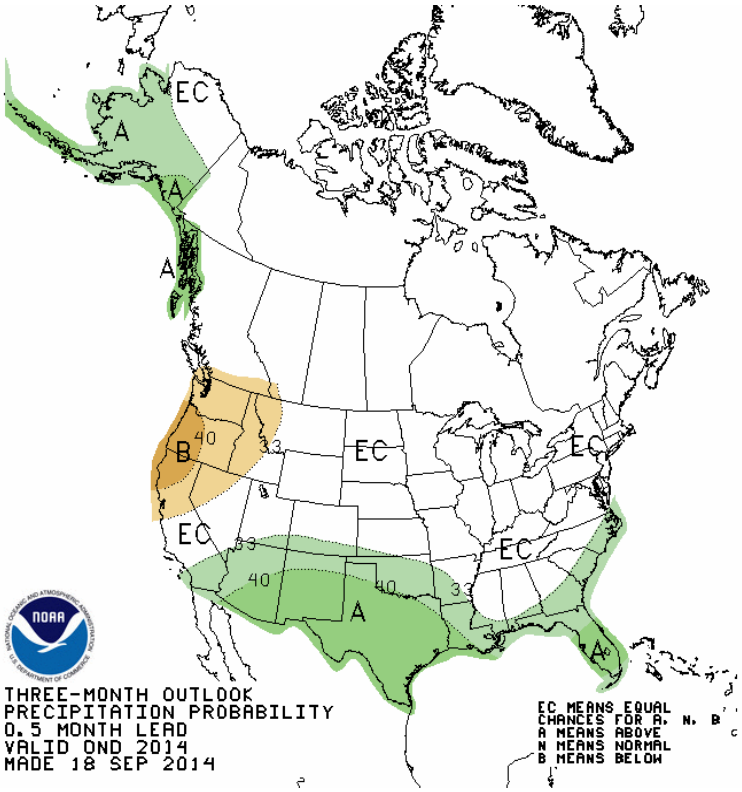


U. S. Seasonal Outlooks

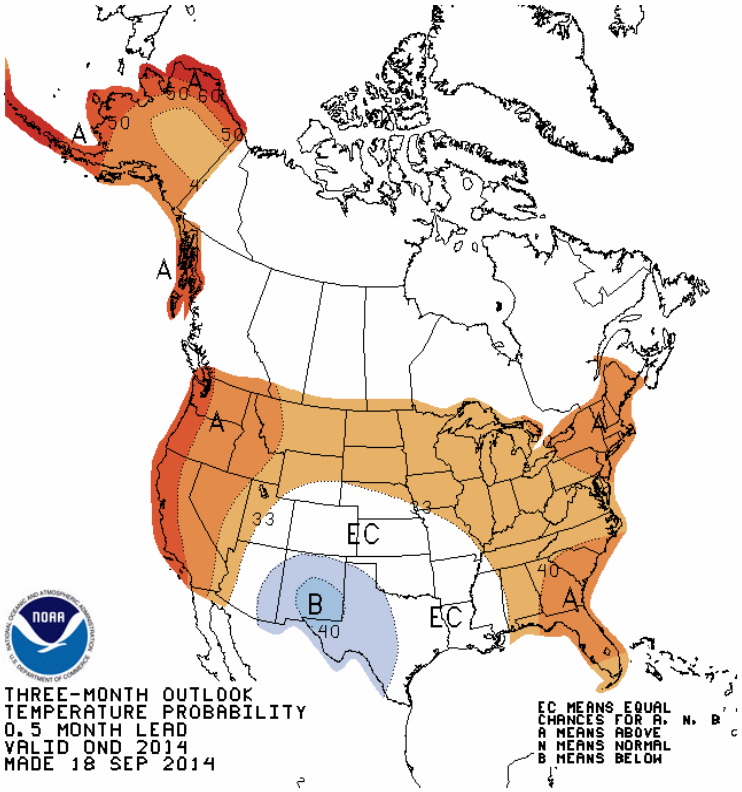
October - December 2014

The seasonal outlooks combine the effects of long-term trends, soil moisture, and, when appropriate, ENSO.

Precipitation



Temperature



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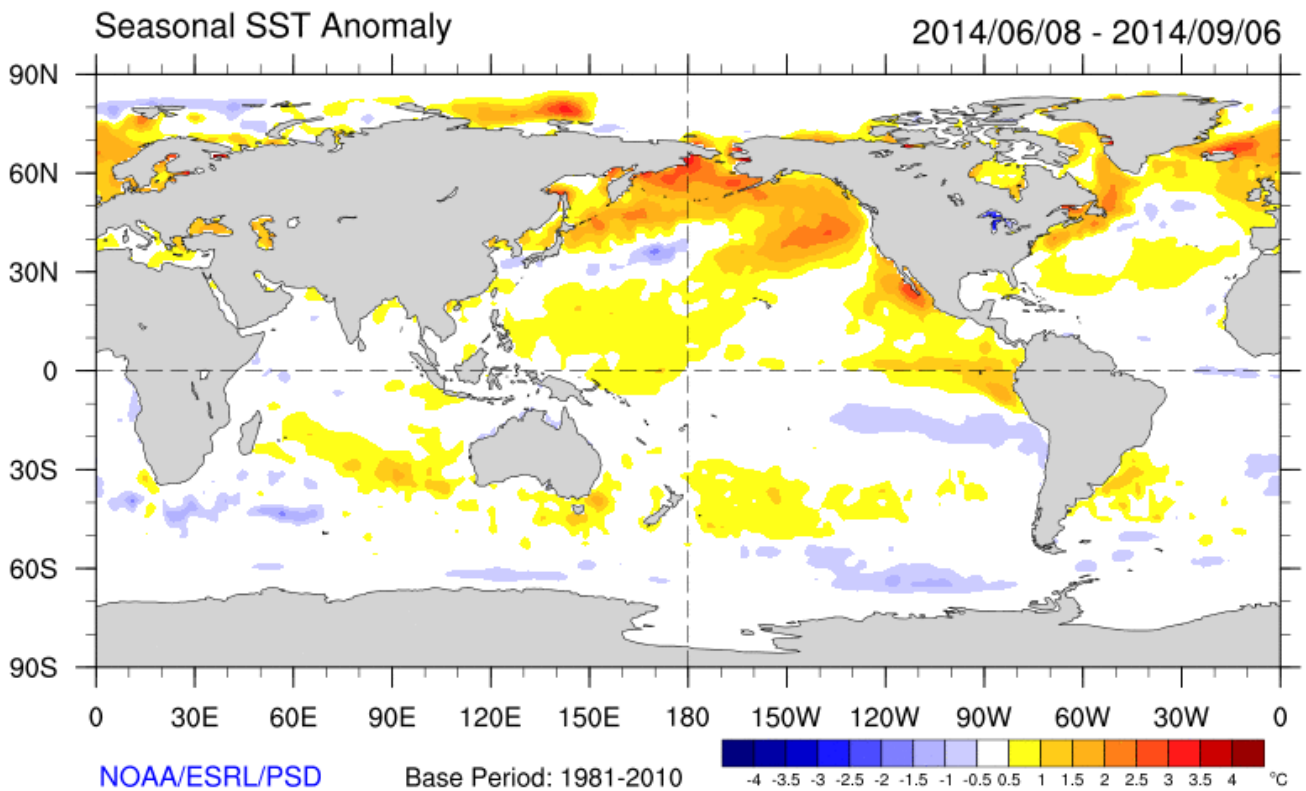
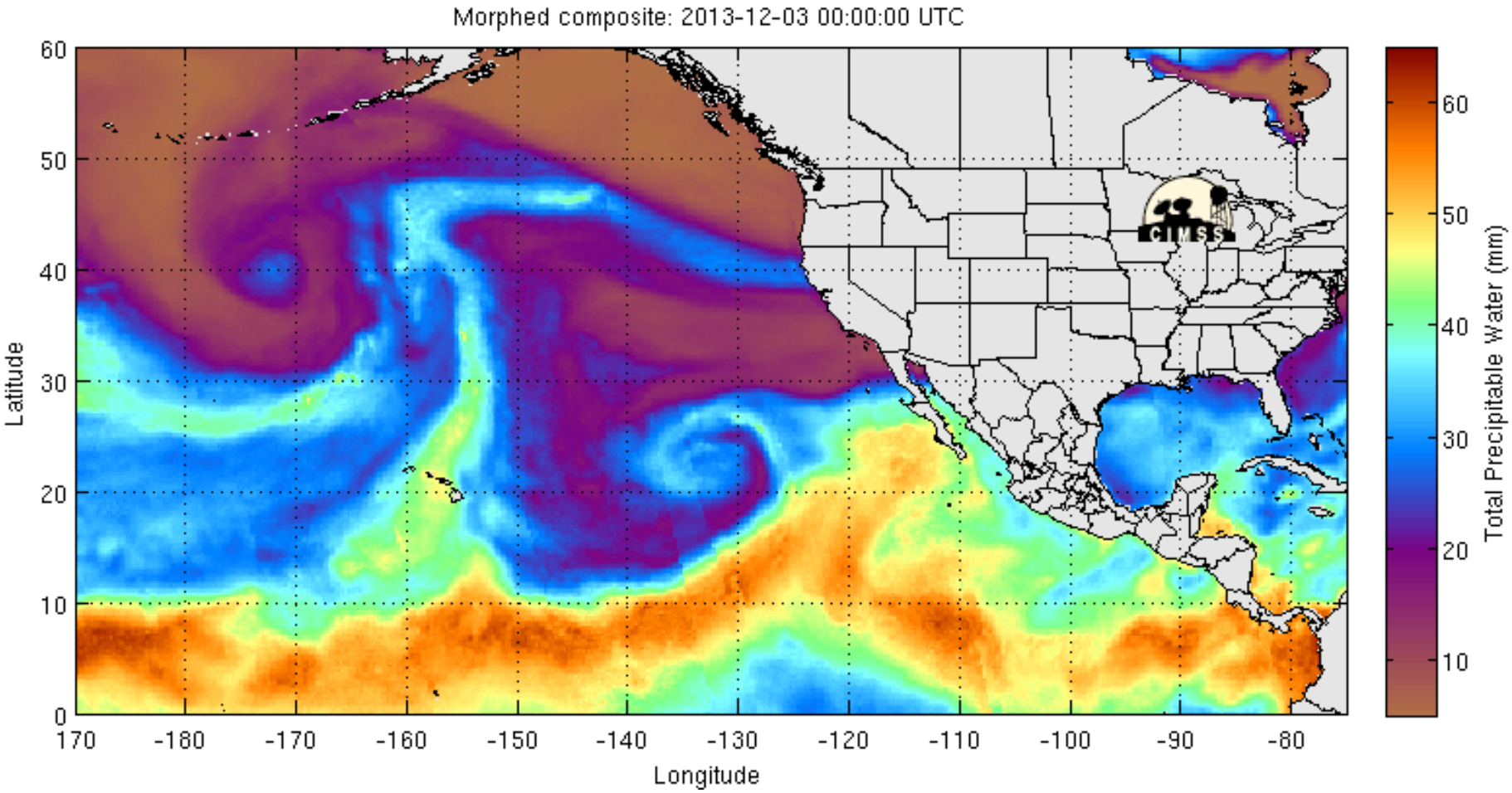
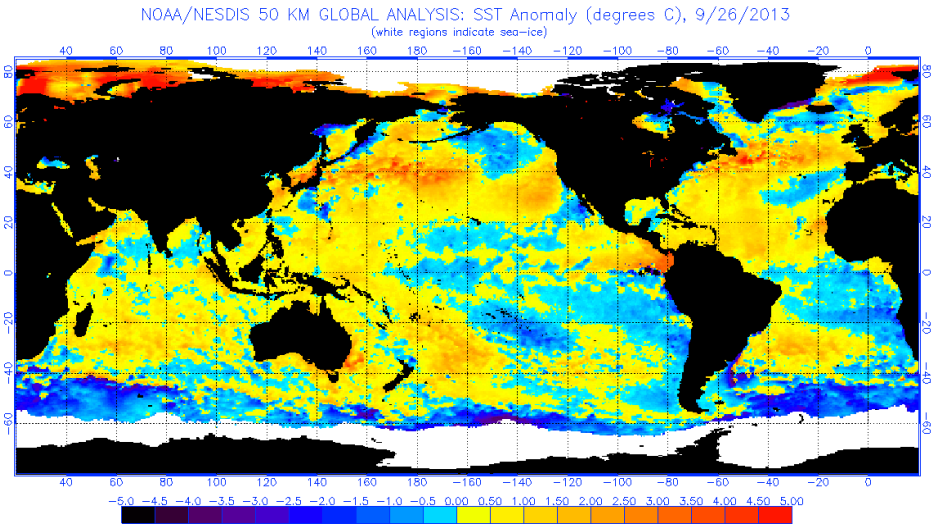
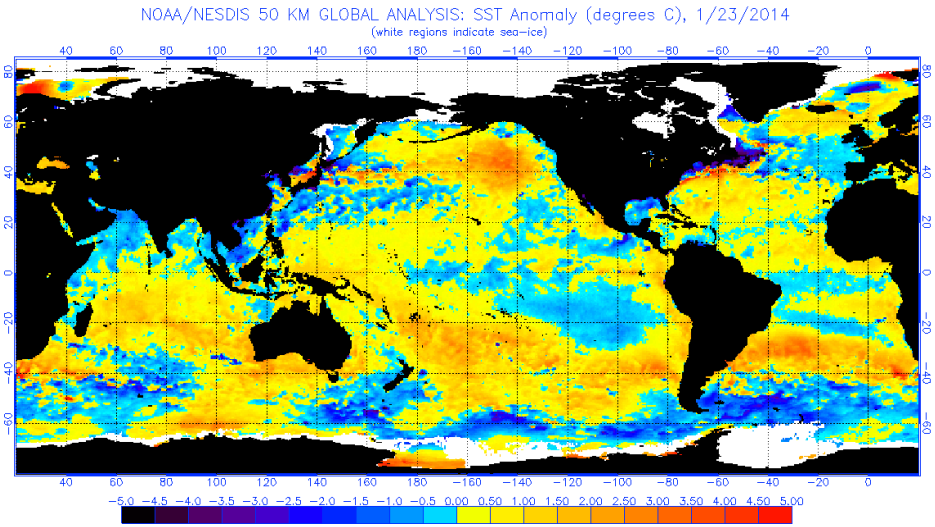
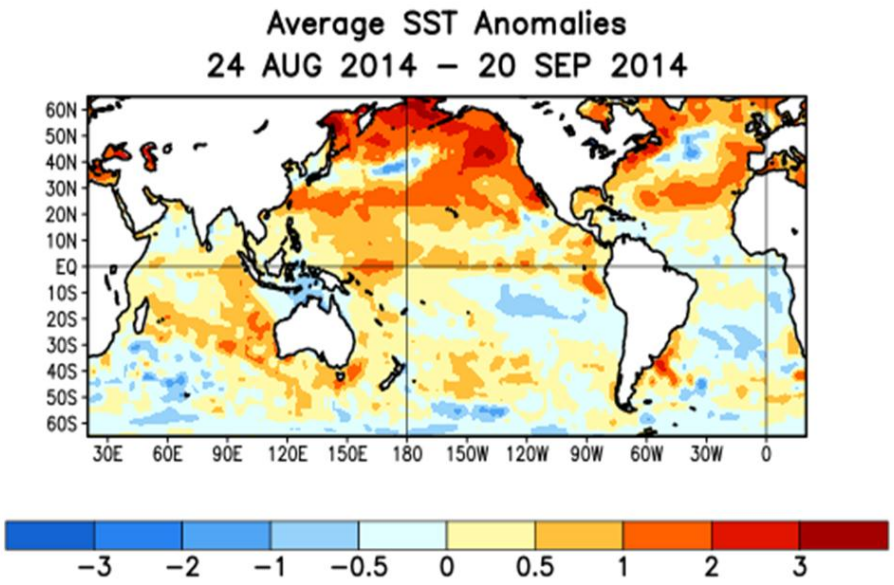
The Blob

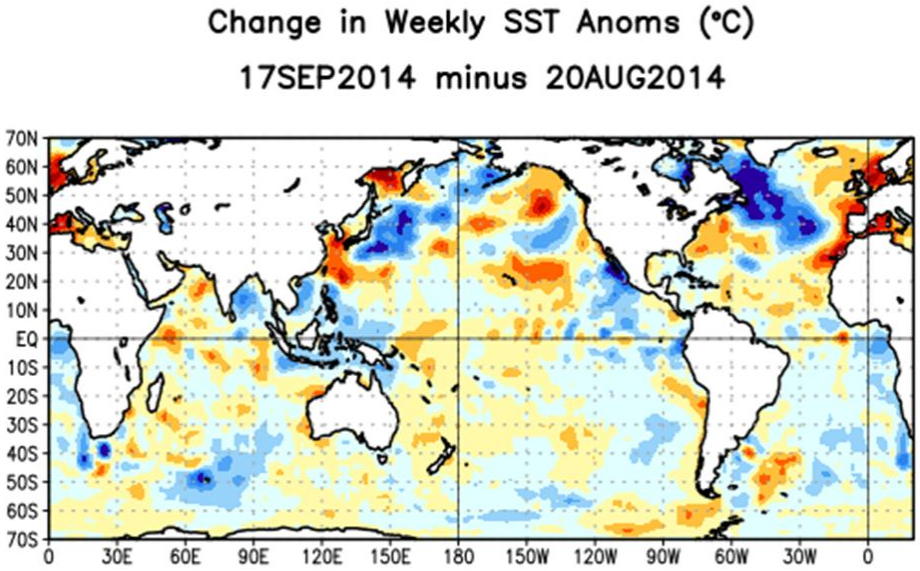

Seasonal SST Anomaly
2014/06/08 - 2014/09/06
90N
60N
30N
0
30S
60S
90S
0
30E
60E
90E
120E
150E
180
150W
120W
90W
60W
30W
0
NOAA/ESRL/PSD
Base Period: 1981-2010
-4 -3.5 -3 -2.5 -2 -1.5 -1 -0.5 0.5 1 1.5 2 2.5 3 3.5 4
°C

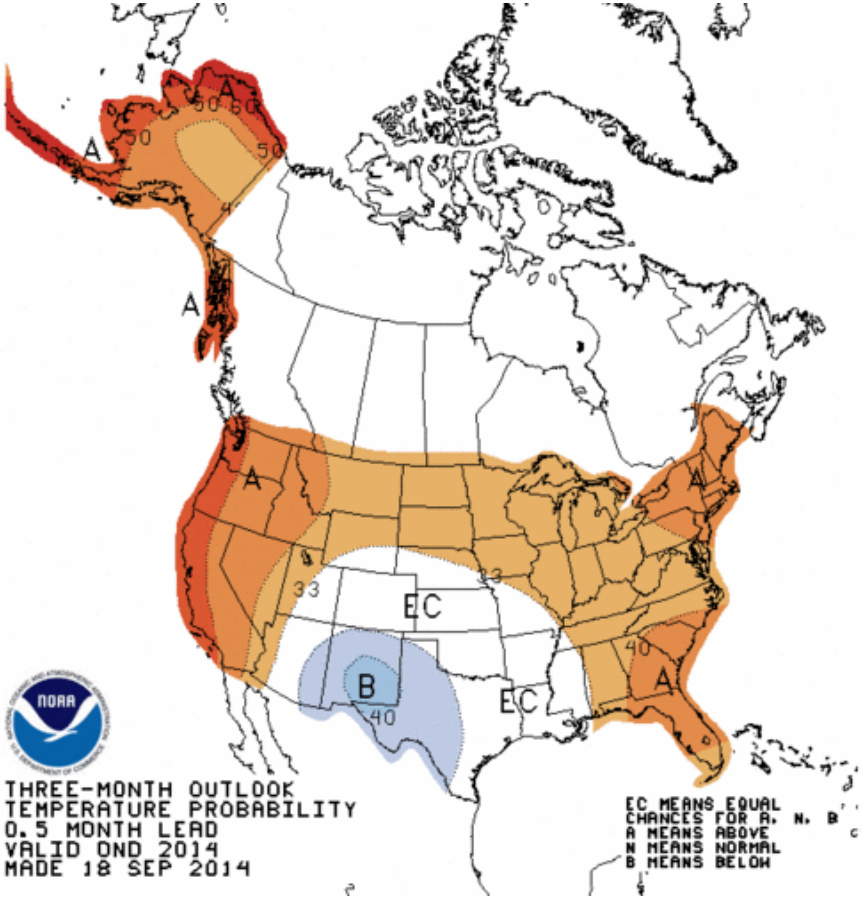

Morphed composite: 2013-12-03 00:00:00 UTC
Latitude
Longitude
Total Precipitable Water (mm)
60
50
40
30
20
10
0
170
-180
-170
-160
-150
-140
-130
-120
-110
-100
-90
-80
CIMSS

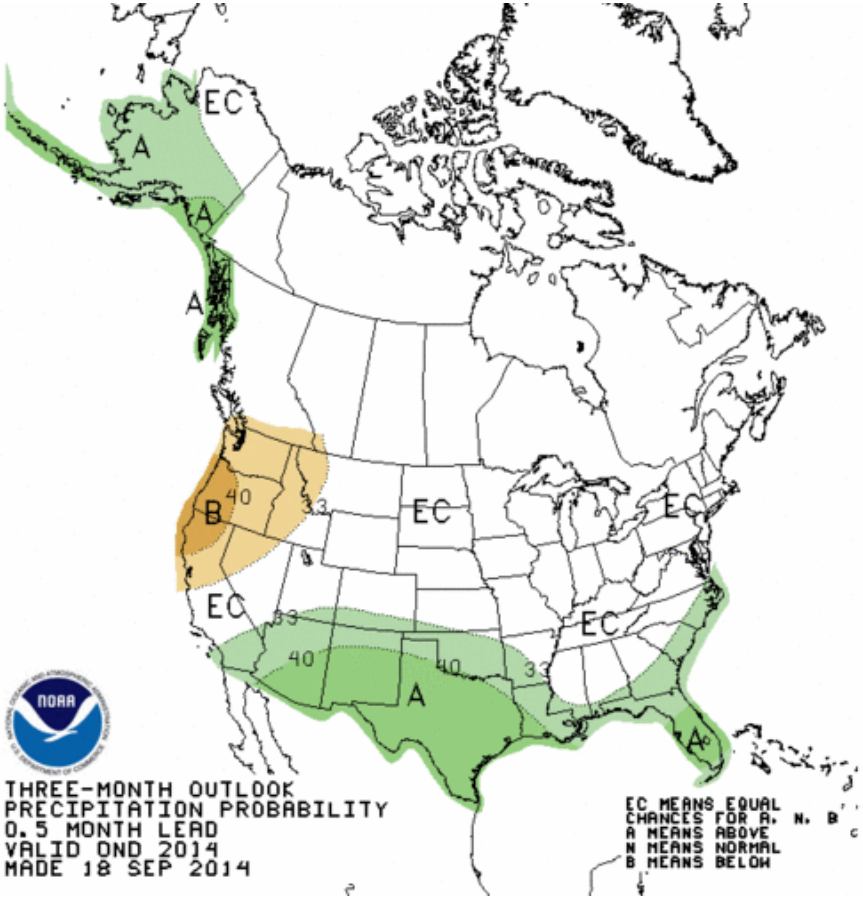

NOAA/NESDIS 50 KM GLOBAL ANALYSIS: SST Anomaly (degrees C), 9/26/2013
(white regions indicate sea-ice)
40 60 80 100 120 140 160 180 −160 −140 −120 −100 −80 −60 −40 −20 0
80 60 40 20 0 −20 −40 −60
−5.0 −4.5 −4.0 −3.5 −3.0 −2.5 −2.0 −1.5 −1.0 −0.5 0.00 0.50 1.00 1.50 2.00 2.50 3.00 3.50 4.00 4.50 5.00


NOAA/NESDIS 50 KM GLOBAL ANALYSIS: SST Anomaly (degrees C), 1/23/2014
(white regions indicate sea-ice)
40 60 80 100 120 140 160 180 −160 −140 −120 −100 −80 −60 −40 −20 0
80 60 40 20 0 −20 −40 −60
−5.0 −4.5 −4.0 −3.5 −3.0 −2.5 −2.0 −1.5 −1.0 −0.5 0.00 0.50 1.00 1.50 2.00 2.50 3.00 3.50 4.00 4.50 5.00


Average SST Anomalies
24 AUG 2014 – 20 SEP 2014
60N
50N
40N
30N
20N
10N
EQ
10S
20S
30S
40S
50S
60S
30E 60E 90E 120E 150E 180 150W 120W 90W 60W 30W 0
−3 −2 −1 −0.5 0 0.5 1 2 3


Change in Weekly SST Anoms (°C)
17SEP2014 minus 20AUG2014
70N
60N
50N
40N
30N
20N
10N
EQ
10S
20S
30S
40S
50S
60S
70S
0 30E 60E 90E 120E 150E 180 150W 120W 90W 60W 30W 0

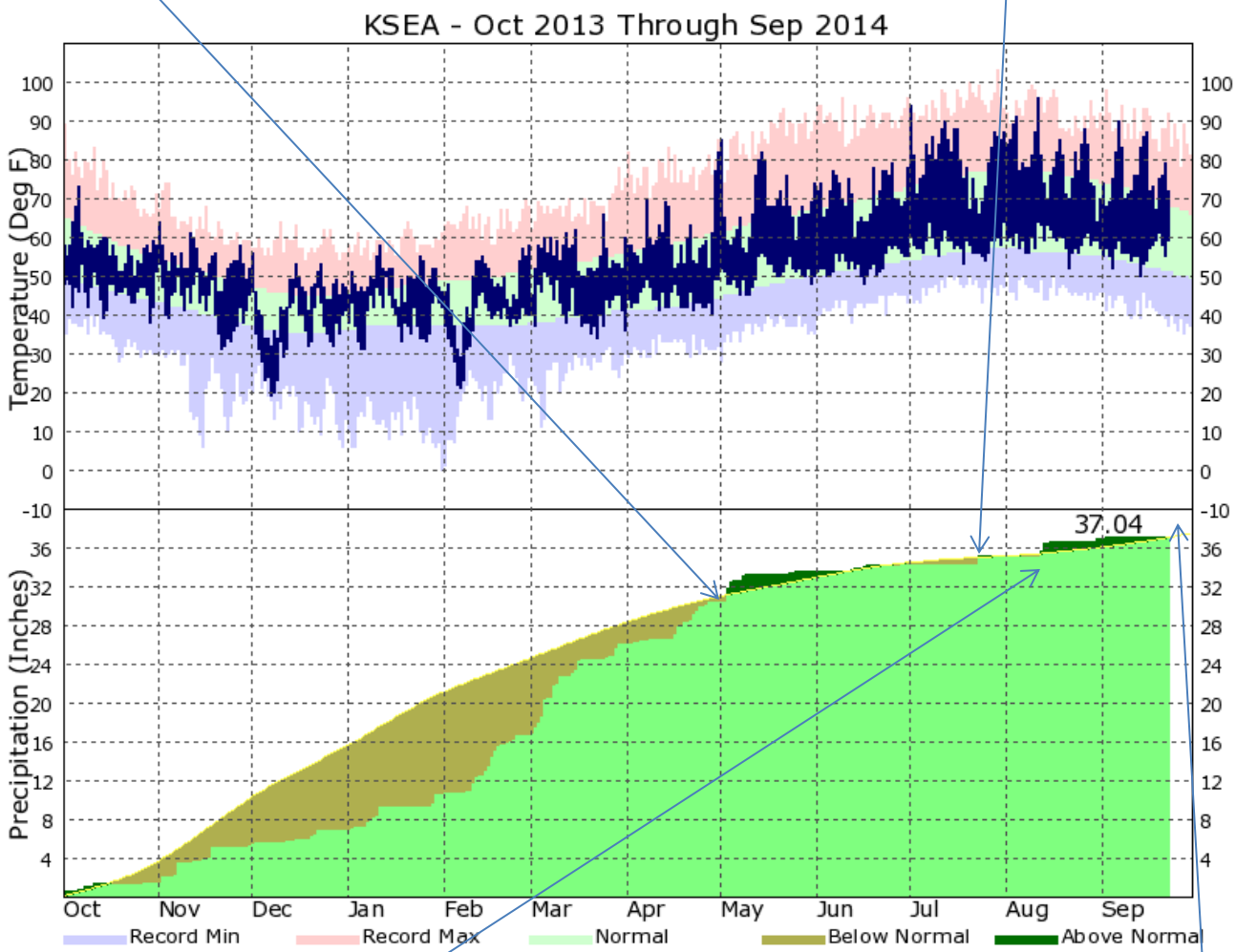

THREE-MONTH OUTLOOK
TEMPERATURE PROBABILITY
0.5 MONTH LEAD
VALID OND 2014
MADE 18 SEP 2014
EC MEANS EQUAL
CHANCES FOR A, N, B
A MEANS ABOVE
N MEANS NORMAL
B MEANS BELOW


THREE-MONTH OUTLOOK
PRECIPITATION PROBABILITY
0.5 MONTH LEAD
VALID OND 2014
MADE 18 SEP 2014
EC MEANS EQUAL
CHANCES FOR A, N, B
A MEANS ABOVE
N MEANS NORMAL
B MEANS BELOW

2014 Water Year and Dry Season Review

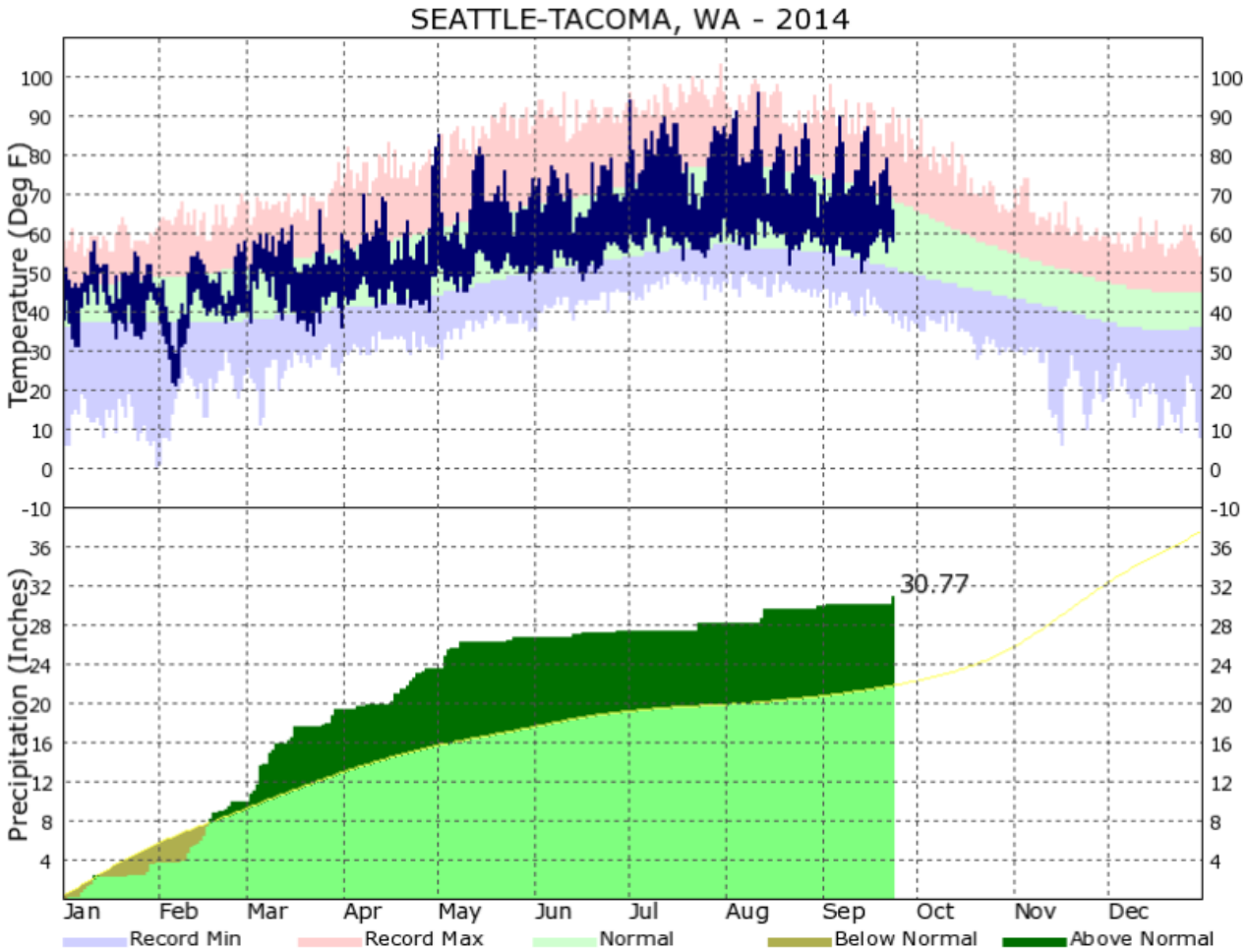
2014-05-03: 1.31“

2014-07-23: 0.76”



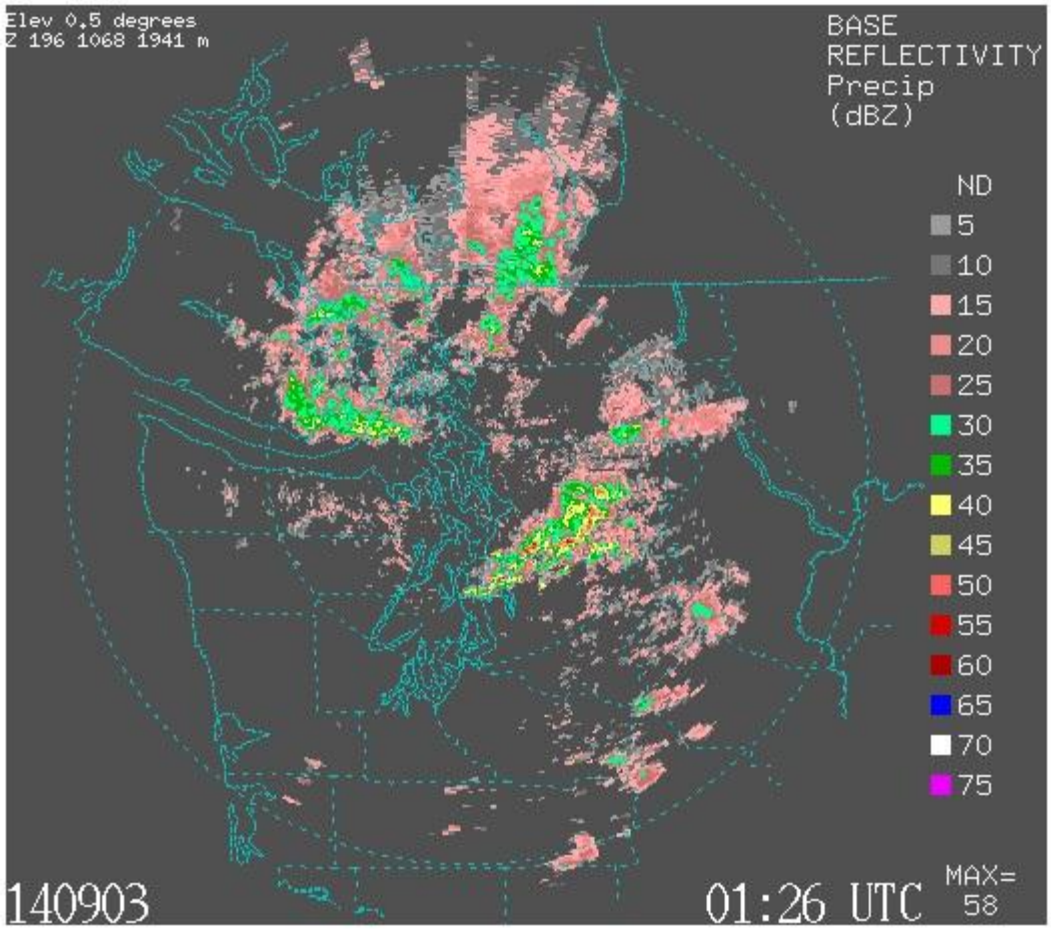
2014-08-13: 0.85”

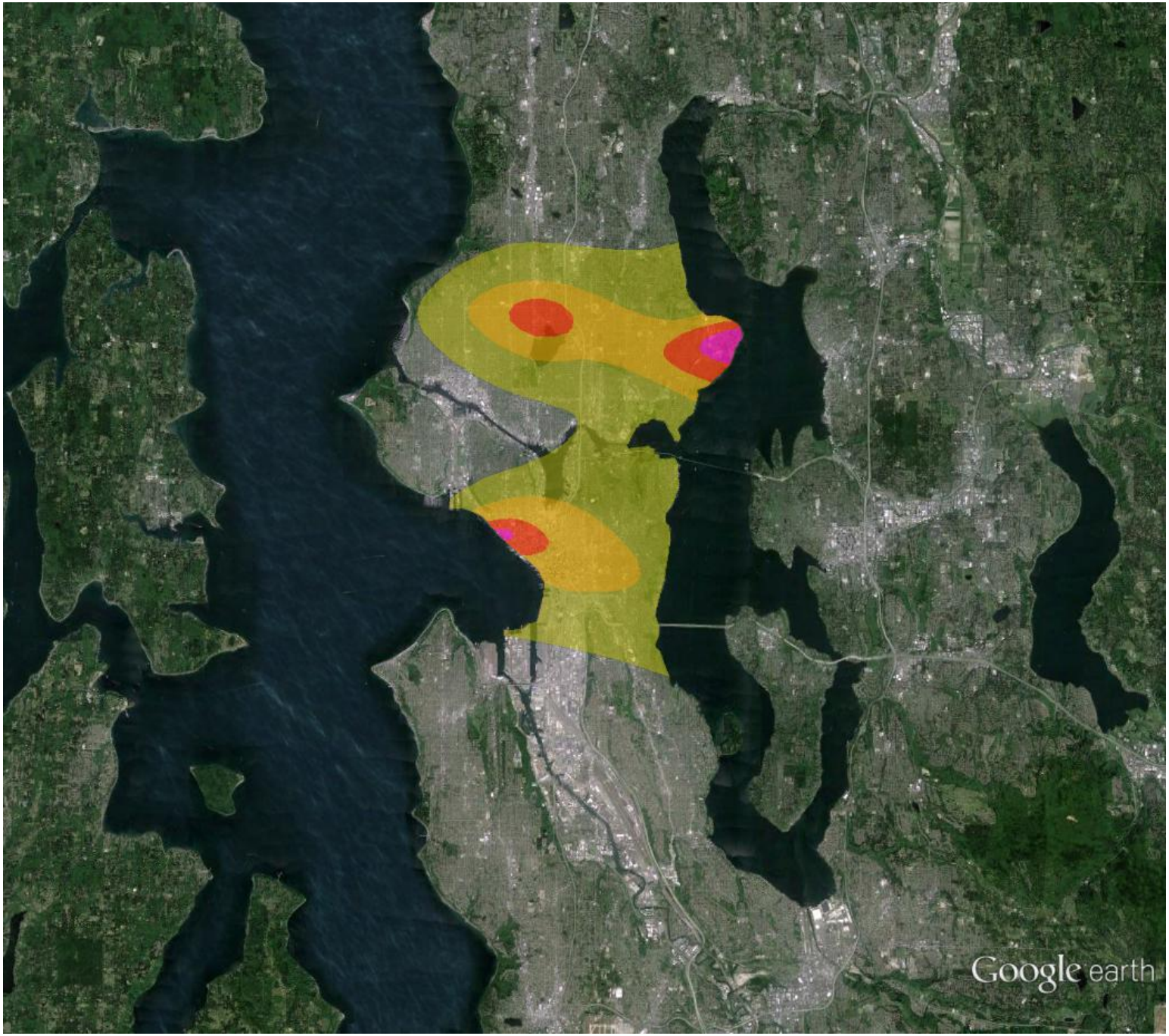
2014-09-23: 0.72”



Return to Climate Charts Web page.

2014-07-23


Elev 0.5 degrees
Z 196 1068 1941 m
BASE
REFLECTIVITY
Precip
(dBZ)
ND
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
140903
01:26 UTC
MAX=
58


Google earth

2014-15 Winter Weather Outlook

ENSO (el niño): warm and dry

The Blob: warm and … dry?

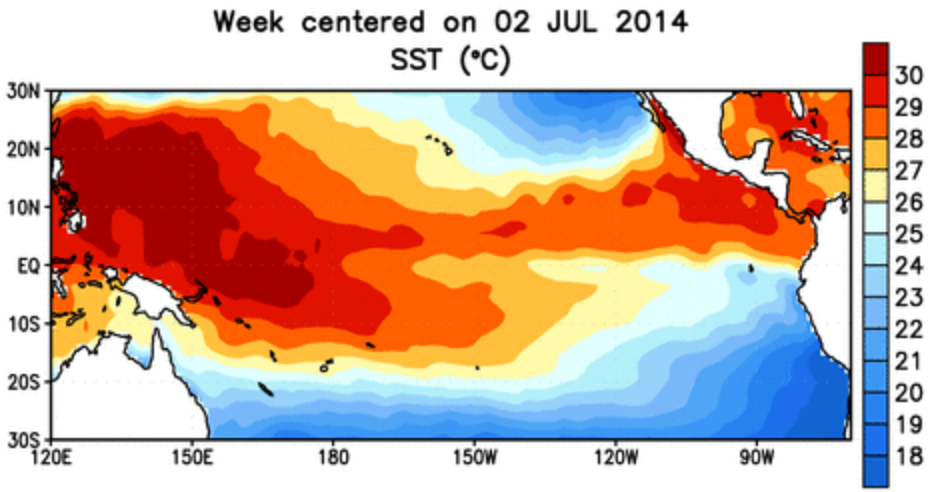
Perihelion-Perigee (King) Tides: 19-year maximum

[SPU_WEATHER]: new messaging listserv

The Convergence Zone: blog

Seattle RainWatch: updates

2014-15 Winter Weather Outlook



Seattle Public Utilities