

Report of Precipitation and Long-Range Forecasts for Delaware



David R. Legates

Delaware State Climatologist

University of Delaware



Water Supply Coordinating Council Meeting – June 10, 2010

Departure from Normal

	March	April	May
Wilmington	1.40" (5.37")	-0.96" (2.43")	-1.83" (2.32")
Dover	1.28" (5.28")	-0.41" (2.87")	-1.88" (2.14")
Georgetown	1.97" (6.54")	-1.86" (1.58")	-2.18" (1.73")

Since June 1 (through June 9)

Wilmington = $-0.74''$ ($0.35''$)*

Dover = $-0.58''$ ($0.53''$)*

Georgetown = $-0.85''$ ($0.23''$)*



Rainfall for Selected DEOS Stations

	March	April	May	June*
Greenville/Winterthur	6.82"	2.87"	1.99"	
Hockessin	6.38"	2.68"	2.76"	
Mt. Cuba	6.92"	3.03"	2.56"	
Cherry Island	5.63"	2.22"	2.46"	
Newark	5.71"	2.72"	2.75"	
Glasgow	6.01"	2.91"	2.17"	
Blackbird	5.96"	2.92"	2.43"	
Townsend	6.88"	2.78"	1.91"	
Kenton	6.02"	2.25"	1.63"	
Dover FS	6.51"	2.50"	2.51"	
Viola	6.66"	2.05"	1.68"	
Harrington	6.95"	1.50"	1.87"	



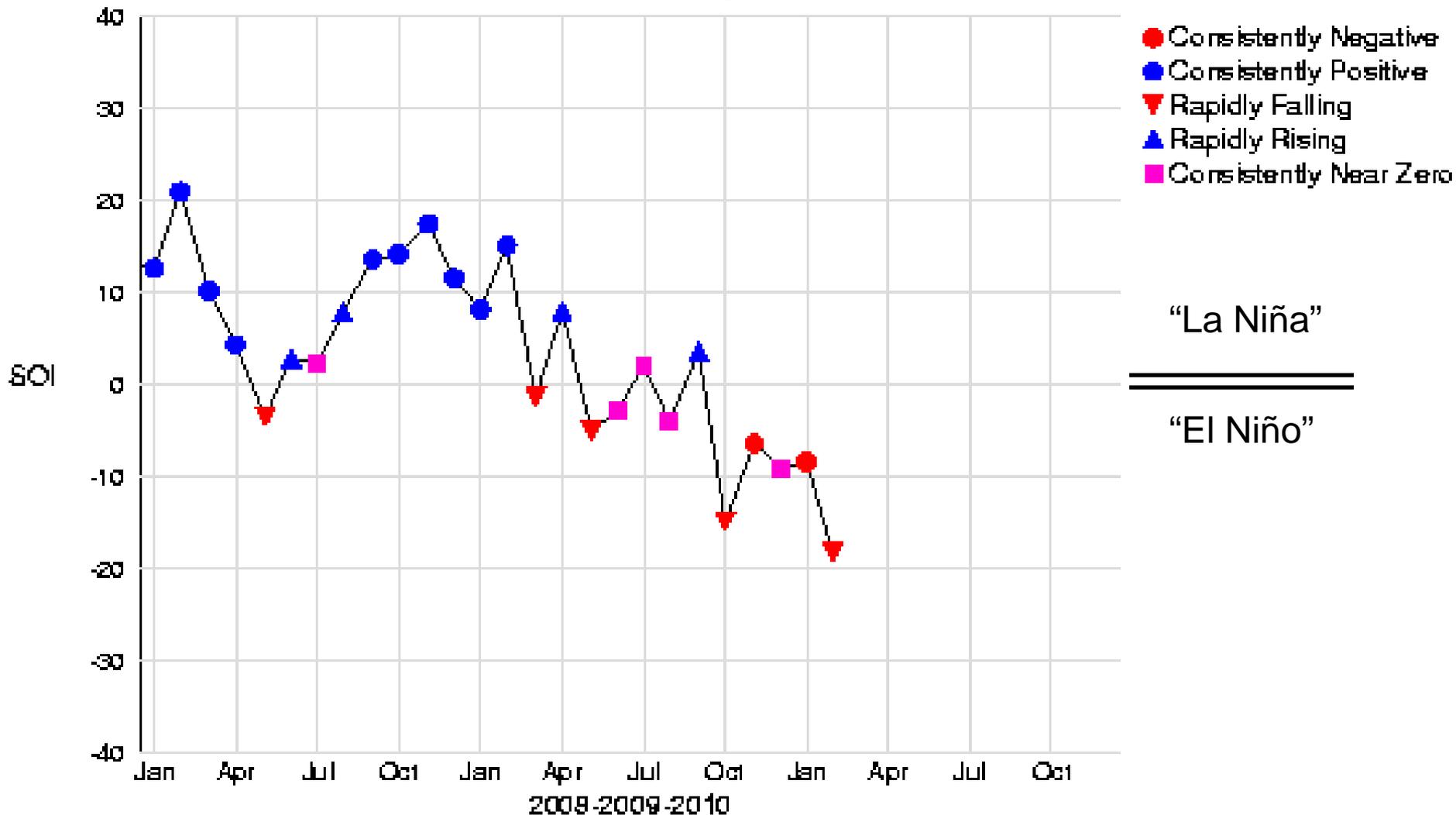
Rainfall for Selected DEOS Stations

	March	April	May	June*
Milford	6.50"	1.34"	1.92"	
Greenwood/Adamsville	6.66"	1.58"	M	
Ellendale	7.65"	1.21"	2.58"	
Bridgeville	6.40"	1.26"	M	
Rehoboth Beach	7.41"	1.76"	1.84"	
Harbeson	7.28"	1.48"	1.87"	
Seaford	6.65"	1.16"	1.50"	
Georgetown	5.98"	1.38"	1.70"	
Indian River	5.83"	1.22"	2.05"	
Jones Crossroads	5.19"	1.18"	1.72"	
Laurel	5.93"	1.51"	1.18"	
Bethany Beach	6.61"	1.69"	2.49"	
Selbyville	7.39"	1.37"	1.98"	
Delmar	6.85"	1.42"	2.23"	



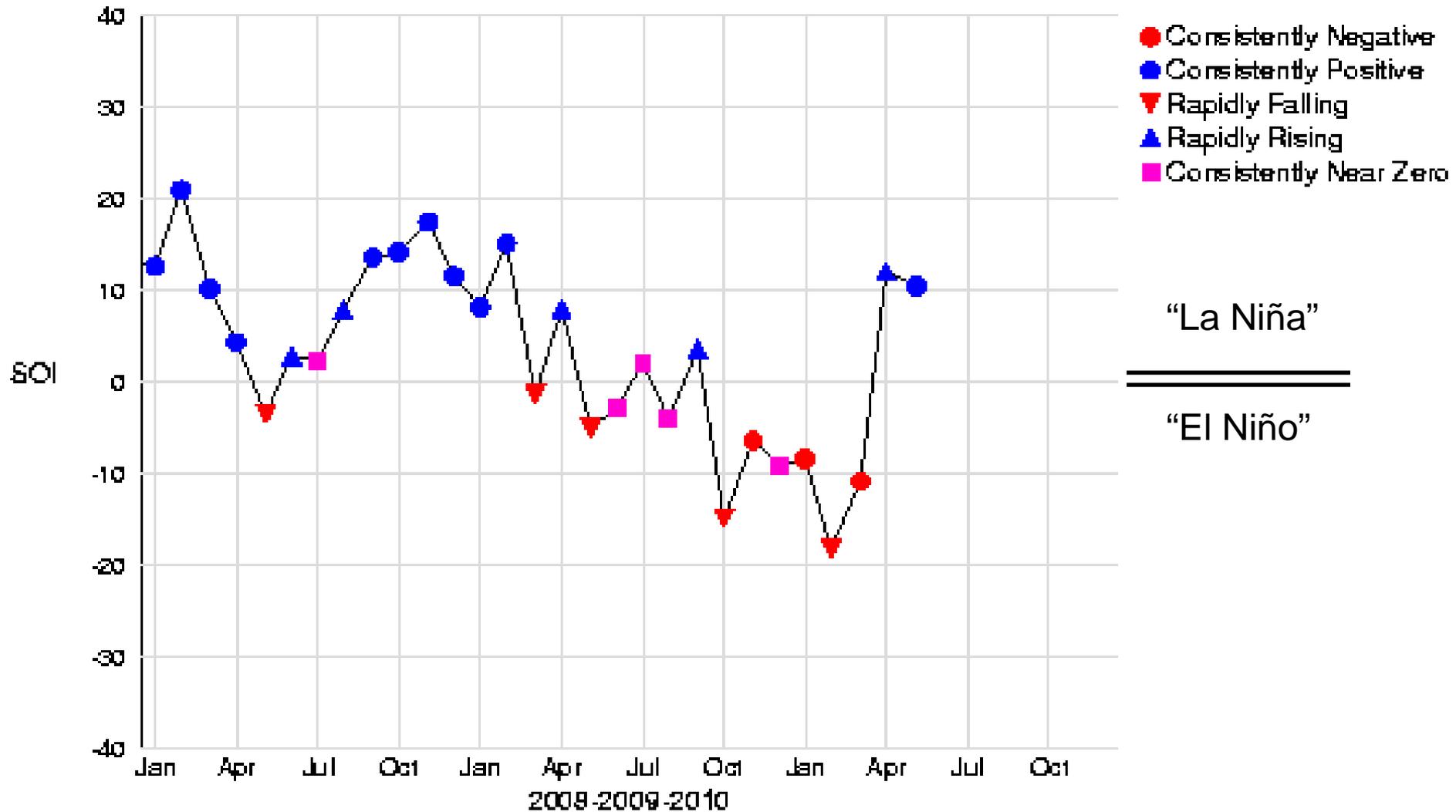
Southern Oscillation Index & 'SOI Phase'

data source: Queensland Climate Change Centre of Excellence.



Southern Oscillation Index & 'SOI Phase'

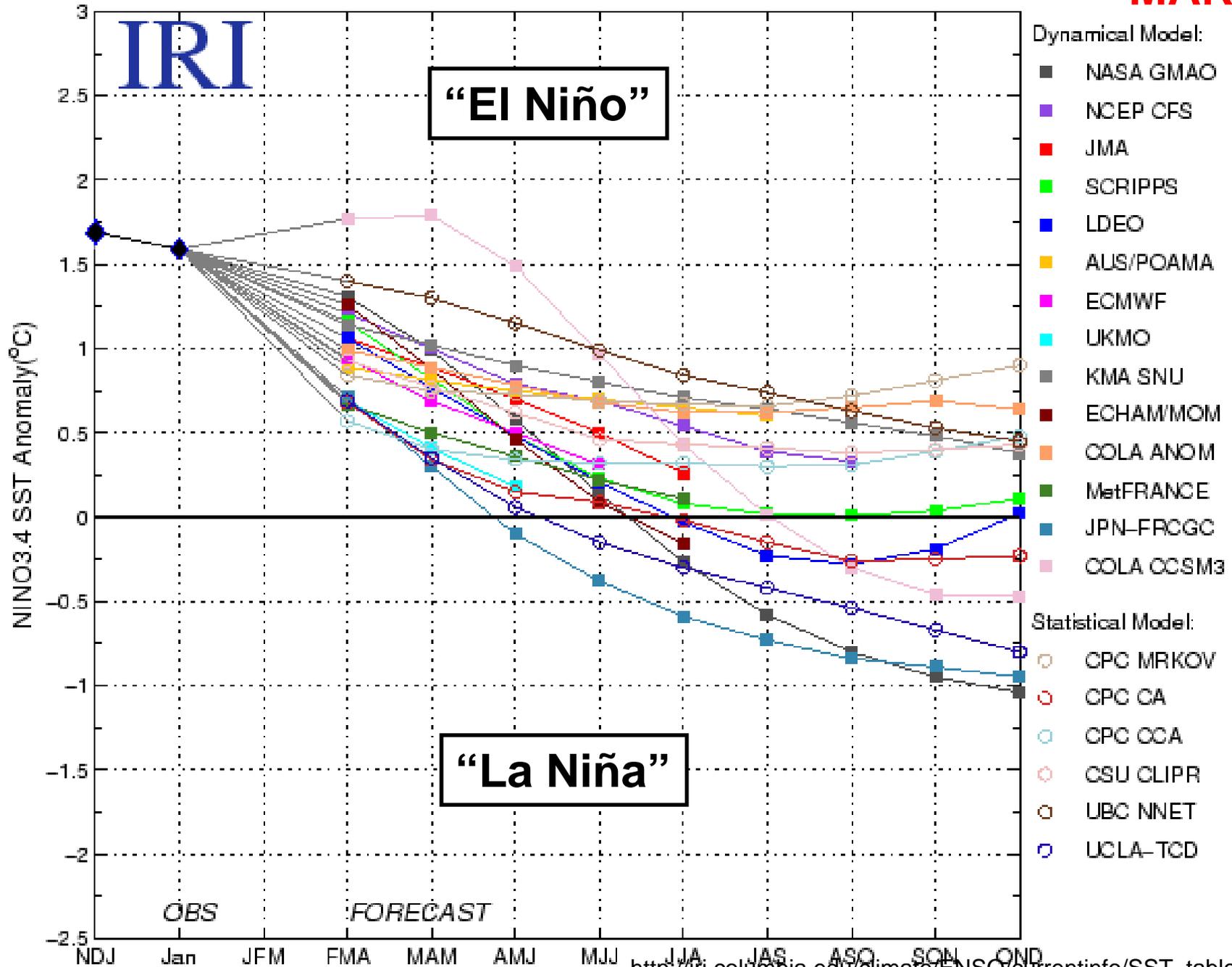
data source: Queensland Climate Change Centre of Excellence.



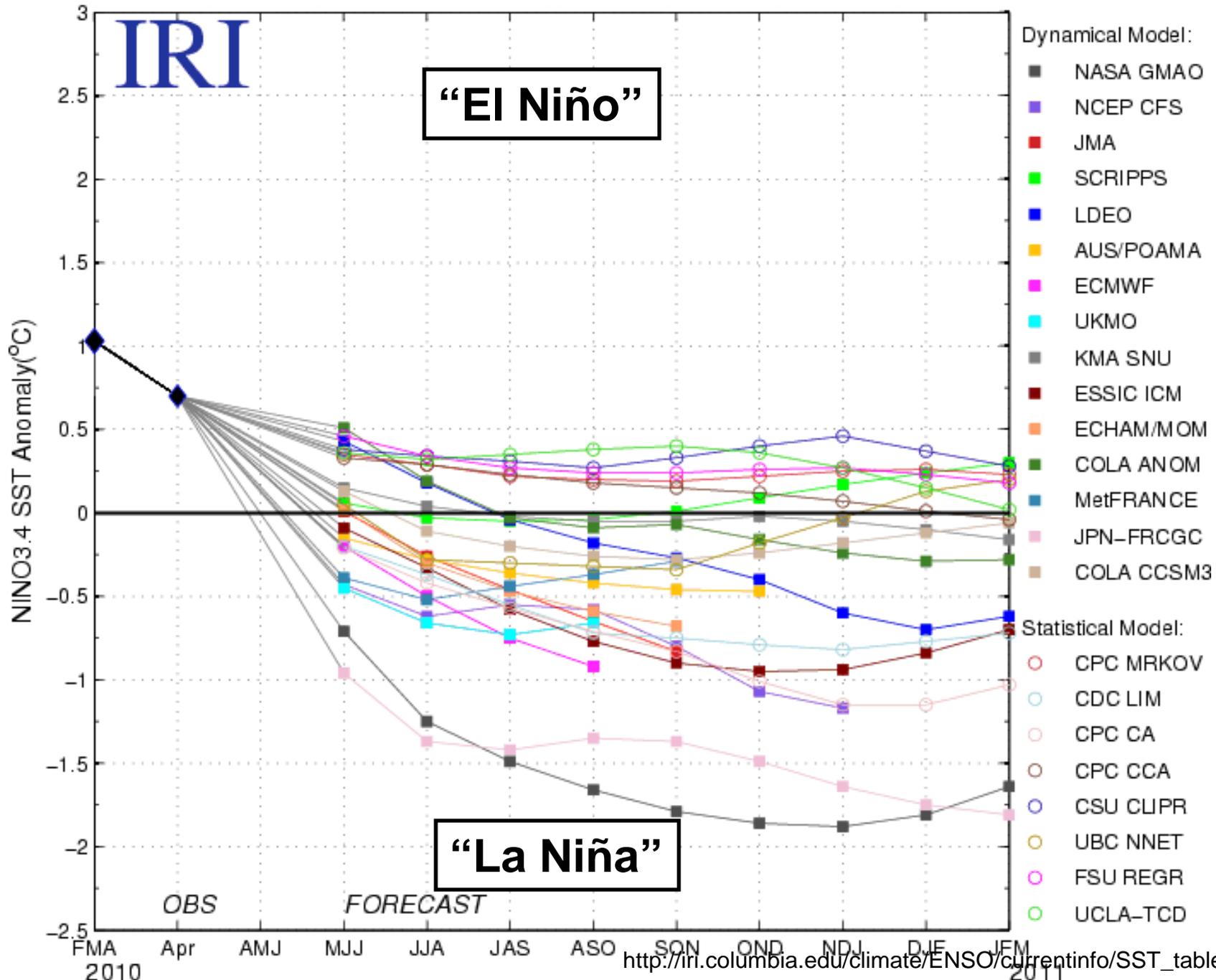
IRI

“El Niño”

“La Niña”

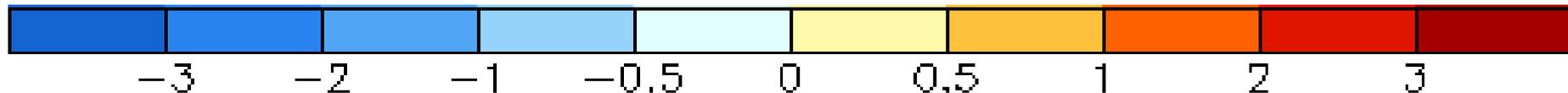
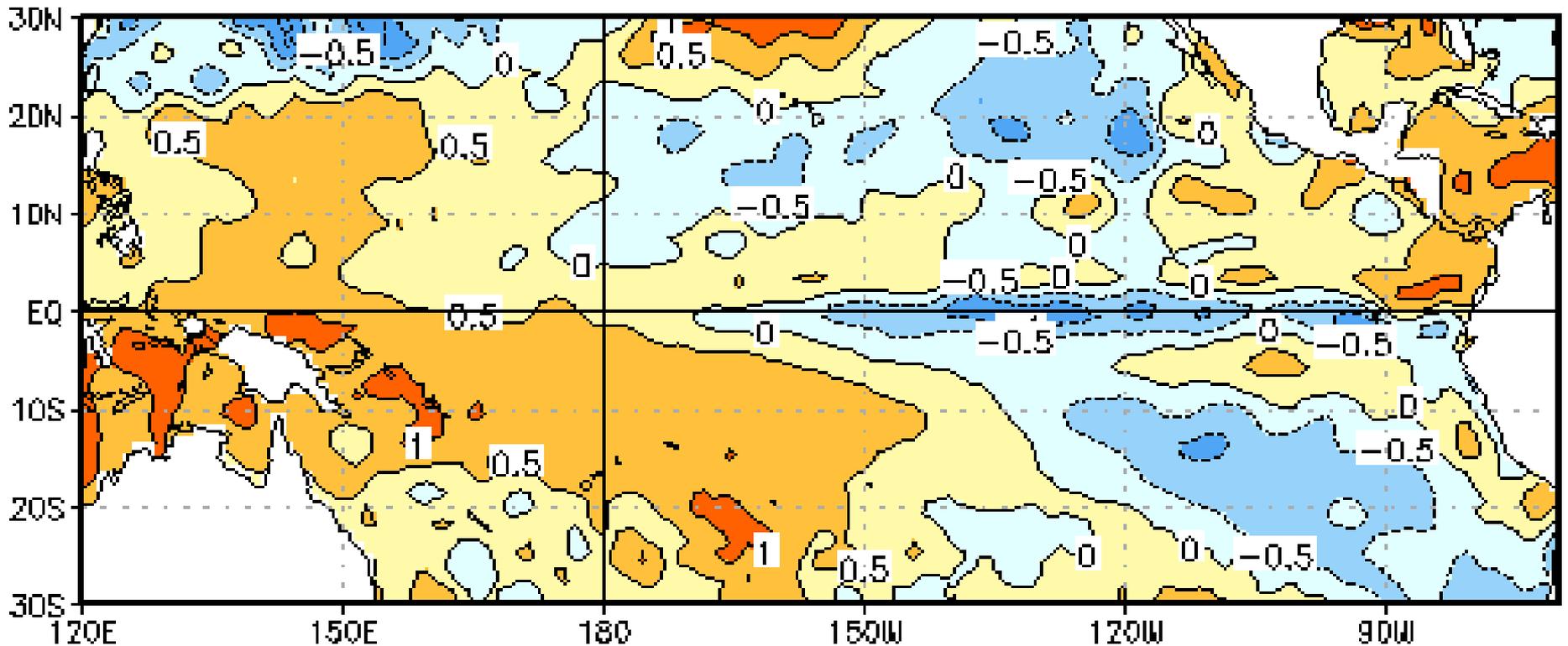


Model Forecasts of ENSO from May 2010

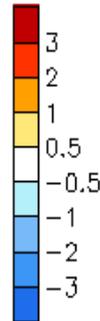
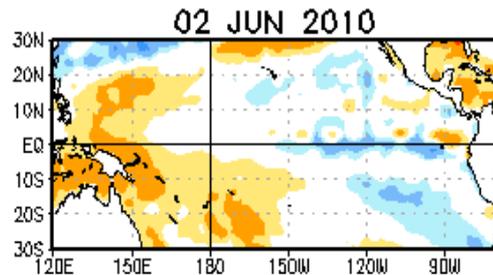
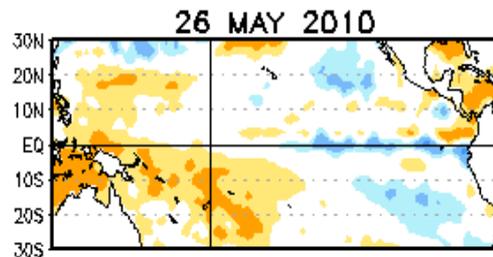
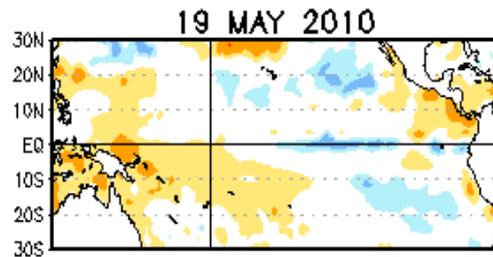
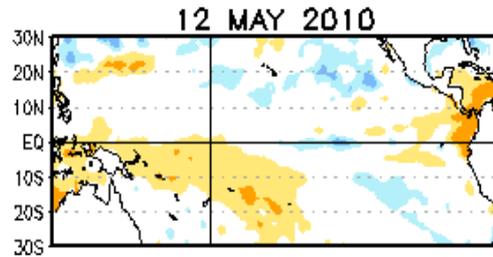


Sea Surface Temperature Anomalies

9 MAY 2010 – 5 JUN 2010



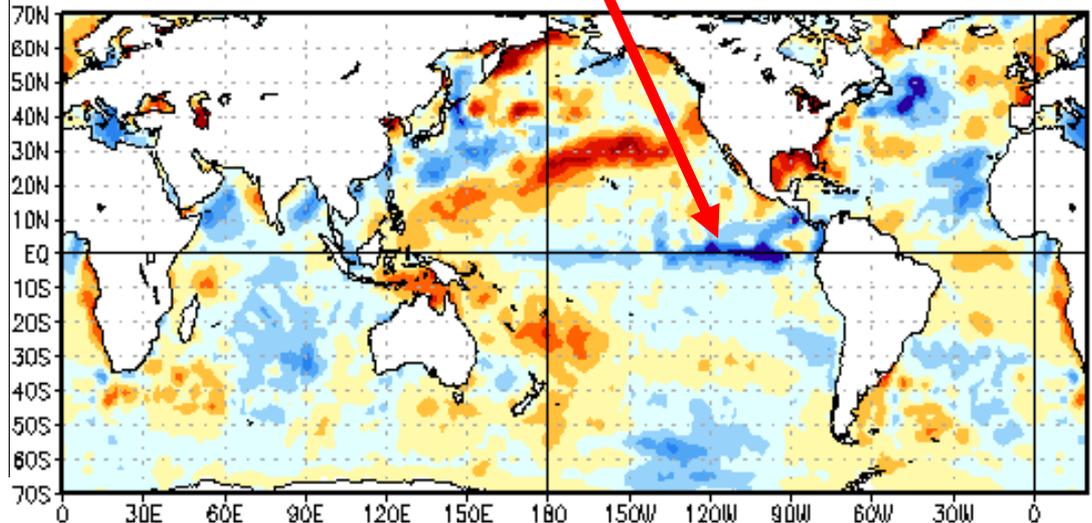
Weekly SST Anomalies (DEG C)



← During the last four weeks, equatorial SST anomalies have become increasingly negative in the eastern half of the Pacific.

During the last 30 days, equatorial SST anomalies decreased across the central and eastern Pacific.

Change in Weekly SST Anoma (°C)
02JUN2010 minus 05MAY2010



CPC Summary

The El Niño that was present across the equatorial Pacific Ocean in March has dissipated to an ENSO-neutral condition.

Sea surface temperatures are likely to continue to decrease across much of the Pacific Ocean, leading to conditions that are favorable for a transition to La Niña conditions during June- August 2010.

Temperature and Precipitation Outlook Probabilities

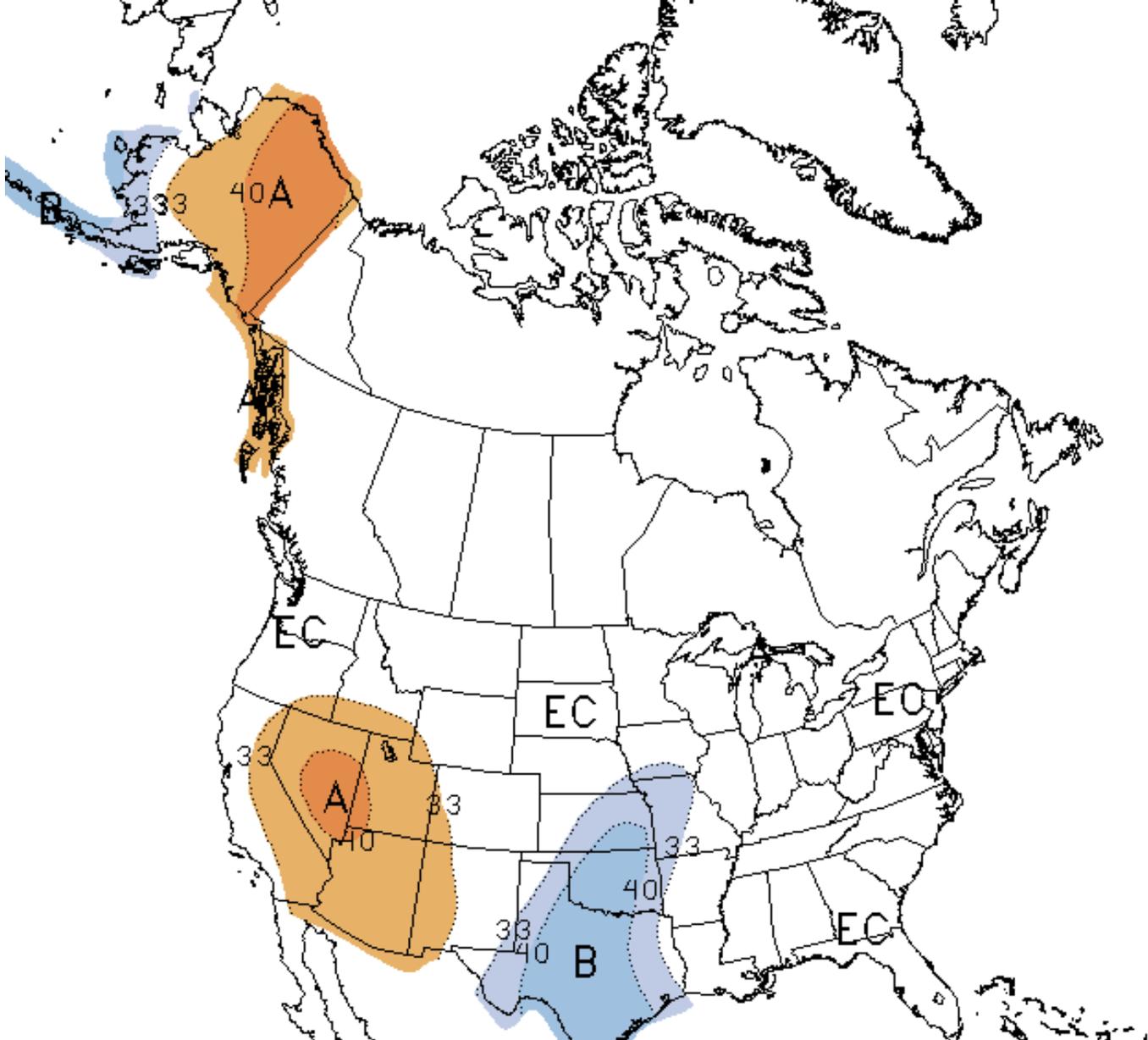
Four Possibilities

Above Normal

Near Normal

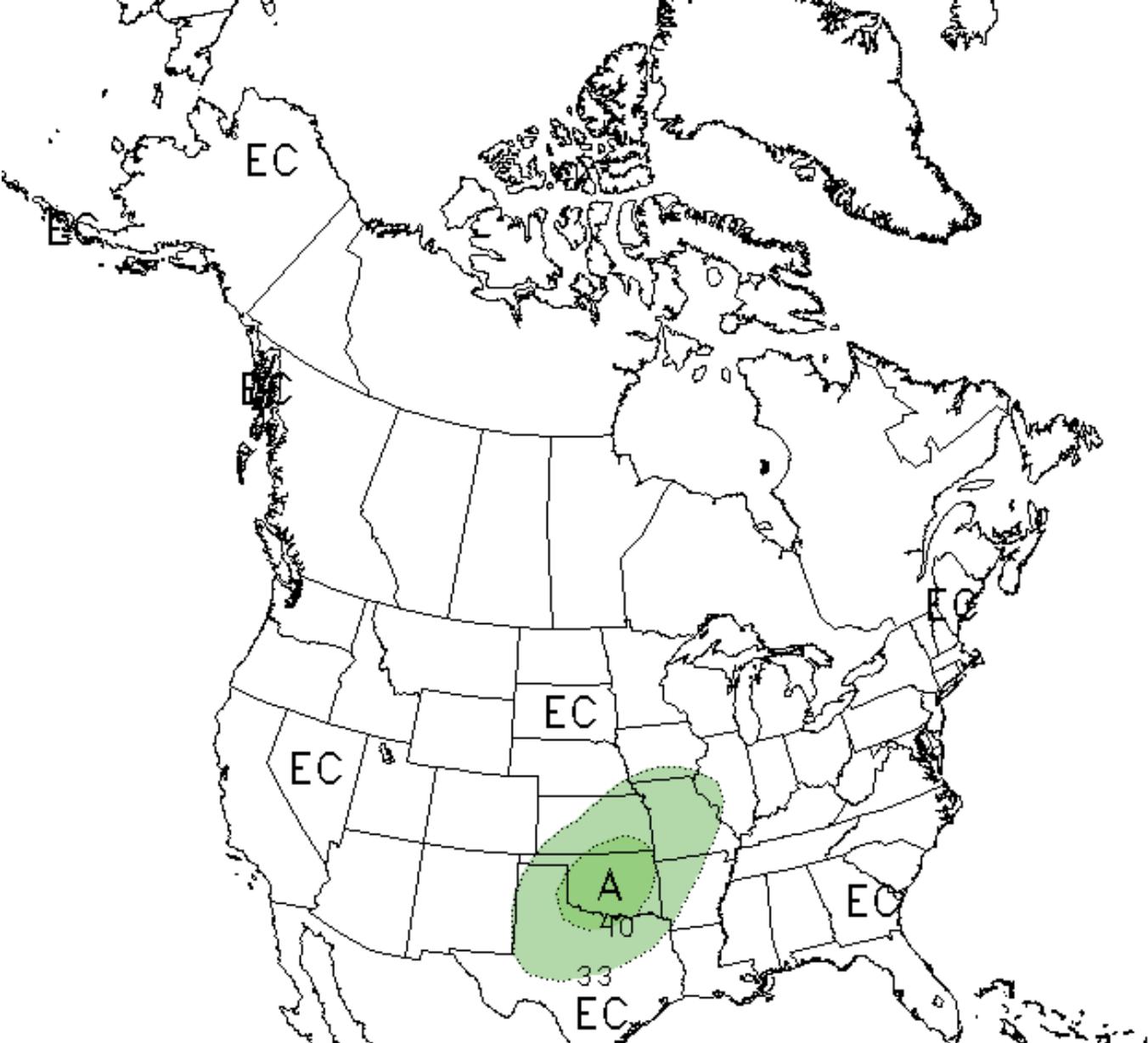
Below Normal

Equal Chances



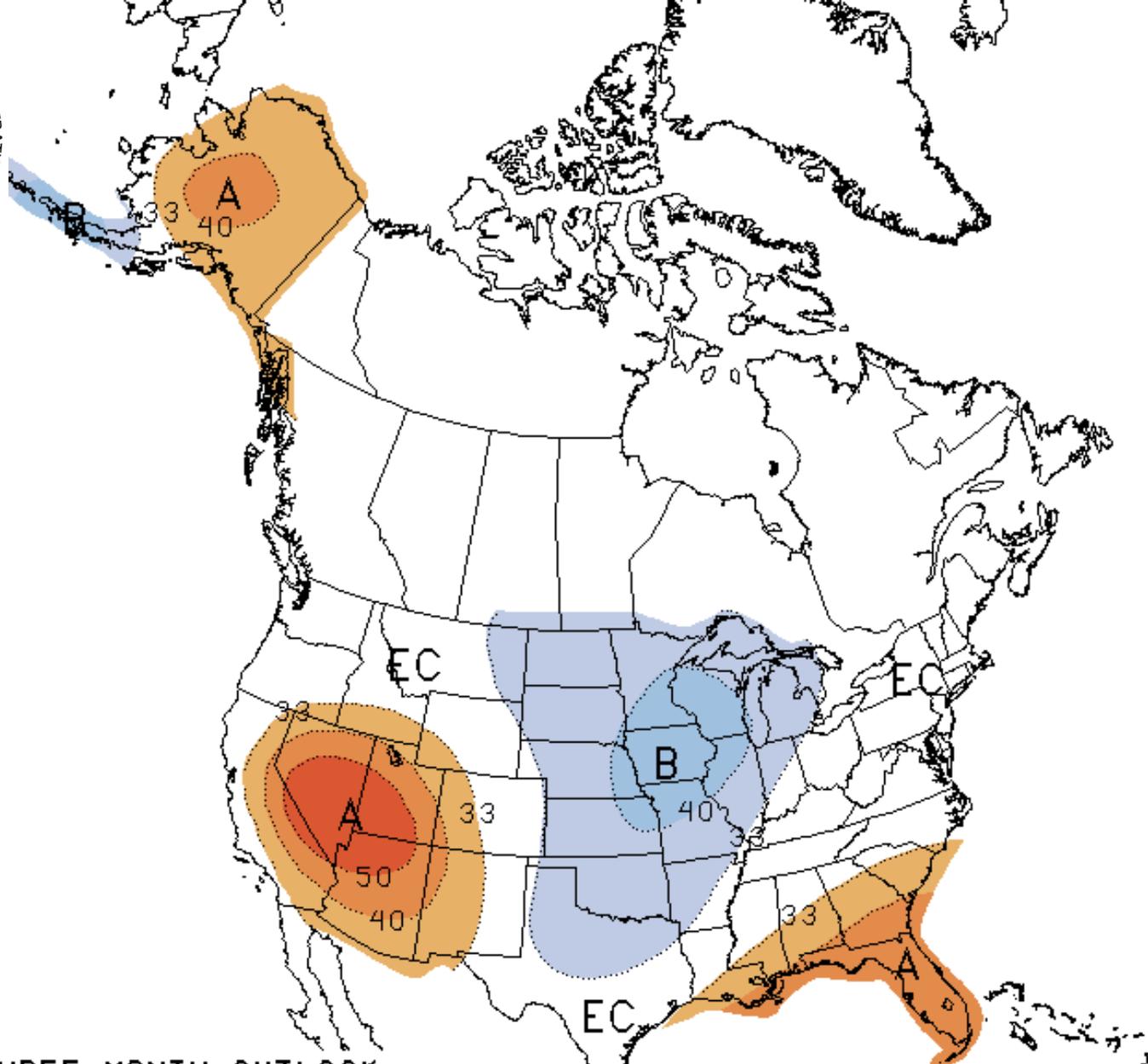
ONE-MONTH OUTLOOK
TEMPERATURE PROBABILITY
0.5 MONTH LEAD
VALID JUN 2010
MADE 20 MAY 2010

EC MEANS EQUAL
CHANCES FOR A, N, B
A MEANS ABOVE
N MEANS NORMAL
B MEANS BELOW



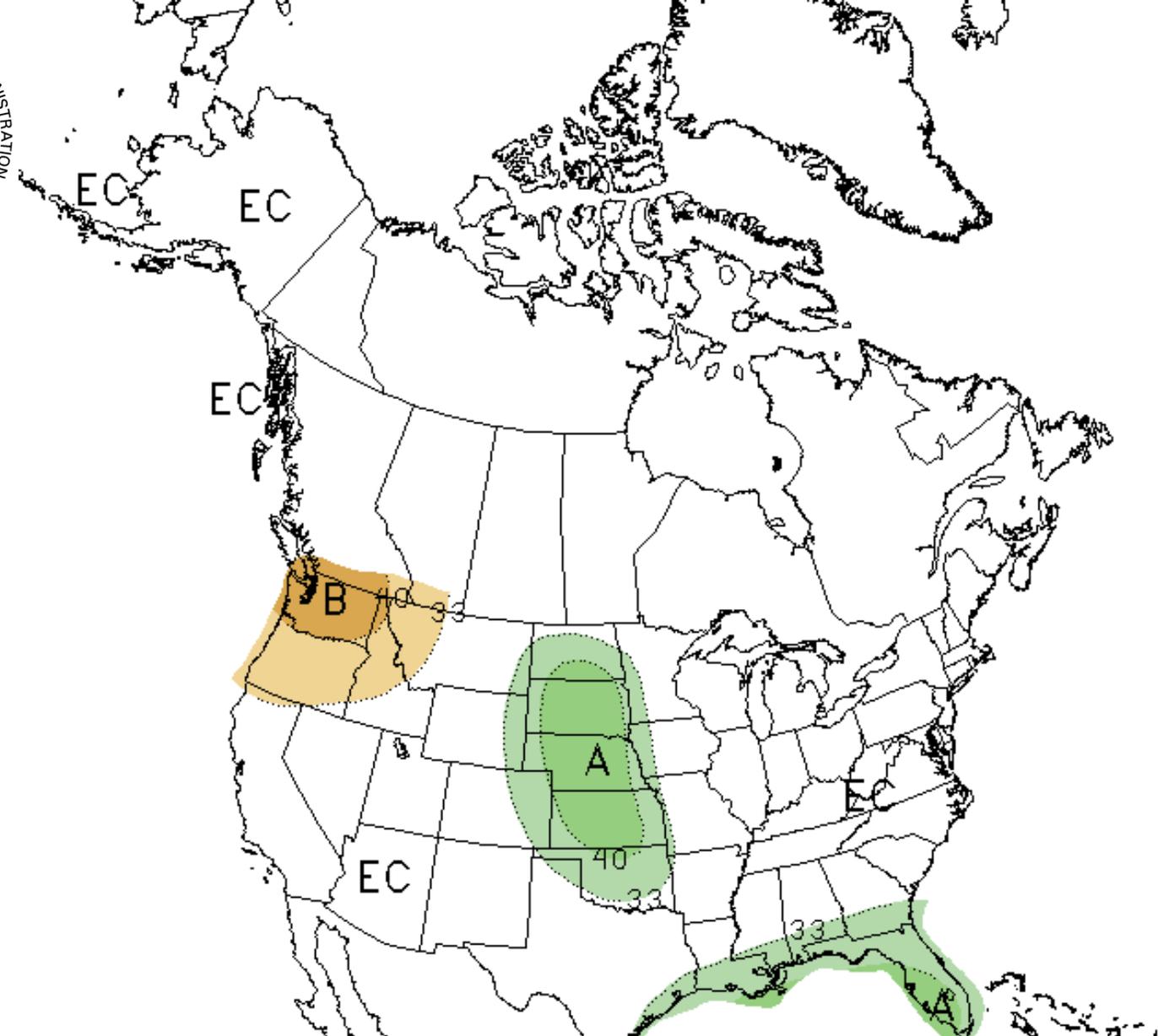
ONE-MONTH OUTLOOK
PRECIPITATION PROBABILITY
0.5 MONTH LEAD
VALID JUN 2010
MADE 20 MAY 2010

EC MEANS EQUAL
CHANCES FOR A, N, B
A MEANS ABOVE
N MEANS NORMAL
B MEANS BELOW



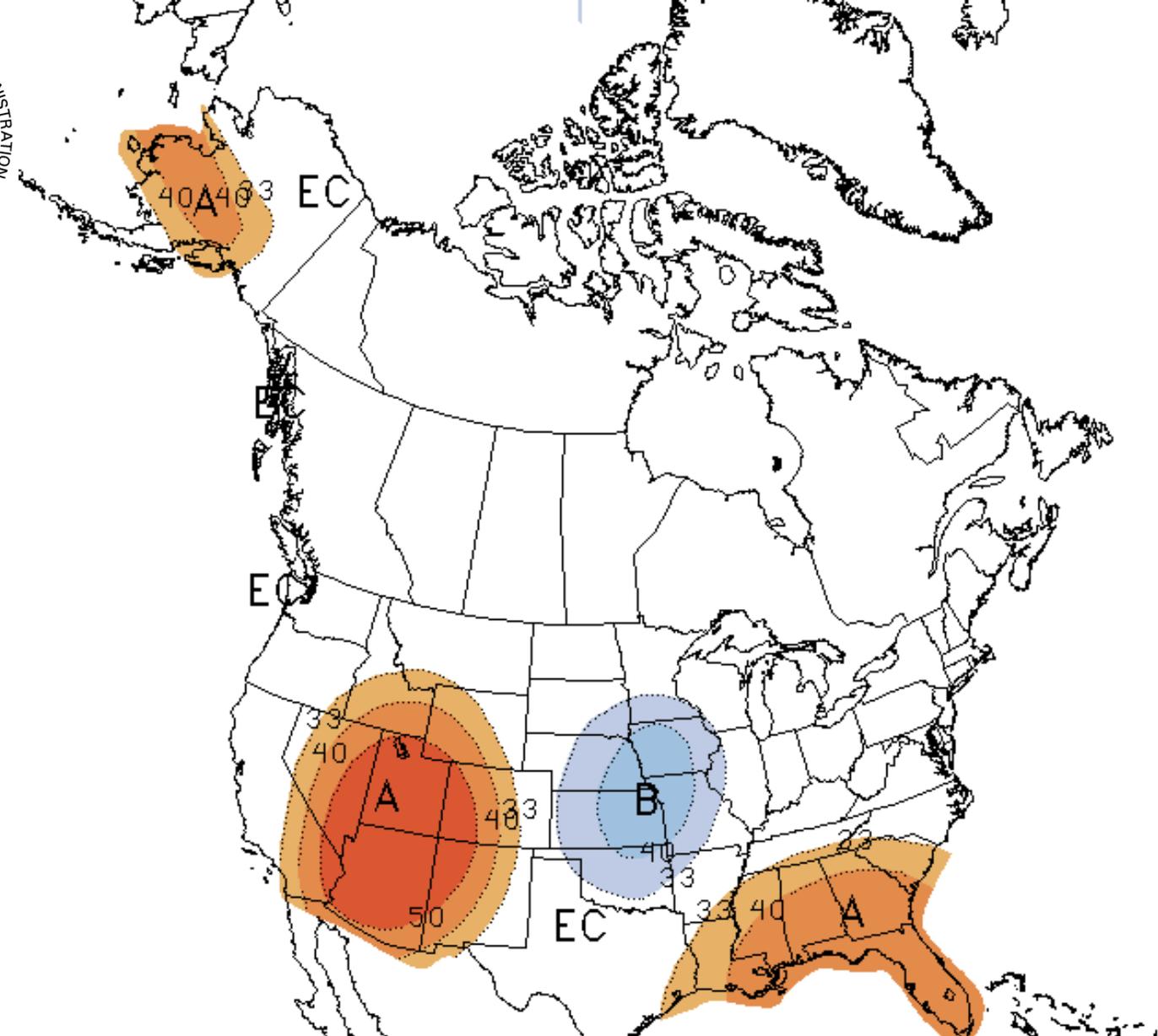
THREE-MONTH OUTLOOK
TEMPERATURE PROBABILITY
0.5 MONTH LEAD
VALID JJA 2010
MADE 20 MAY 2010

EC MEANS EQUAL
CHANCES FOR A, N, B
A MEANS ABOVE
N MEANS NORMAL
B MEANS BELOW



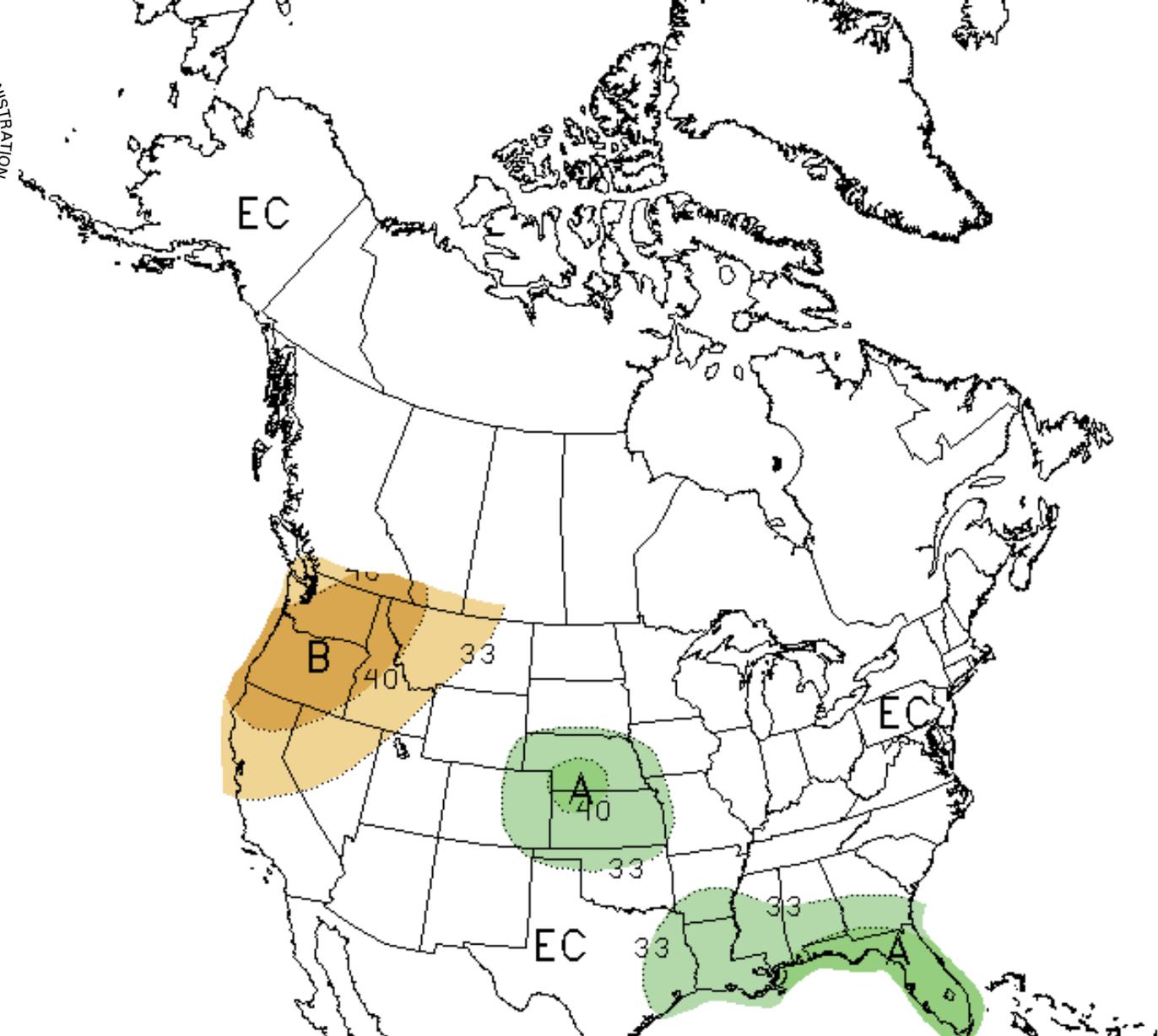
THREE-MONTH OUTLOOK
PRECIPITATION PROBABILITY
0.5 MONTH LEAD
VALID JJA 2010
MADE 20 MAY 2010

EC MEANS EQUAL
CHANCES FOR A, N, B
A MEANS ABOVE
N MEANS NORMAL
B MEANS BELOW



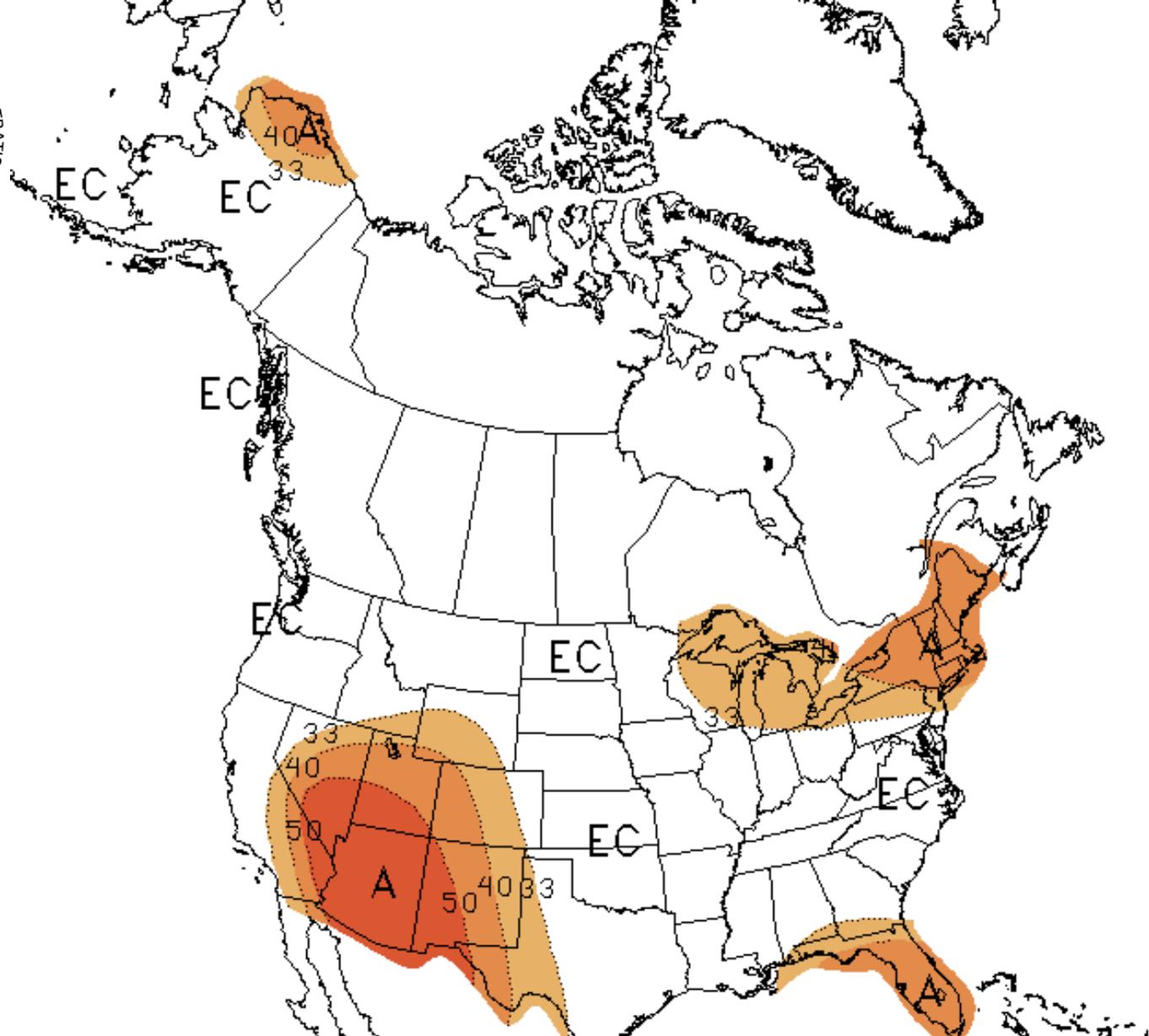
THREE-MONTH OUTLOOK
TEMPERATURE PROBABILITY
1.5 MONTH LEAD
VALID JAS 2010
MADE 20 MAY 2010

EC MEANS EQUAL
CHANCES FOR A, N, B
A MEANS ABOVE
N MEANS NORMAL
B MEANS BELOW



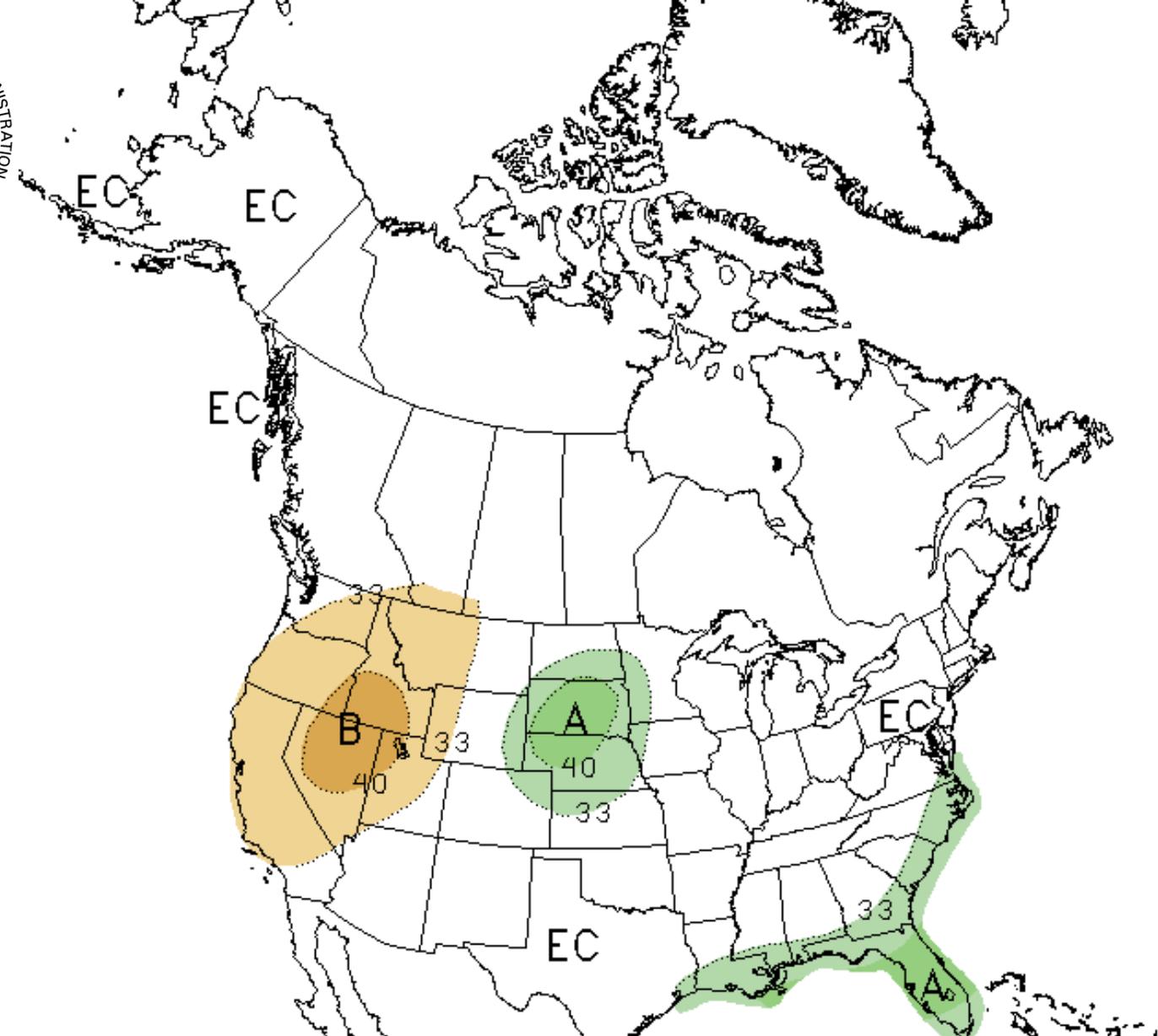
THREE-MONTH OUTLOOK
PRECIPITATION PROBABILITY
1.5 MONTH LEAD
VALID JAS 2010
MADE 20 MAY 2010

EC MEANS EQUAL
CHANCES FOR A, N, B
A MEANS ABOVE
N MEANS NORMAL
B MEANS BELOW



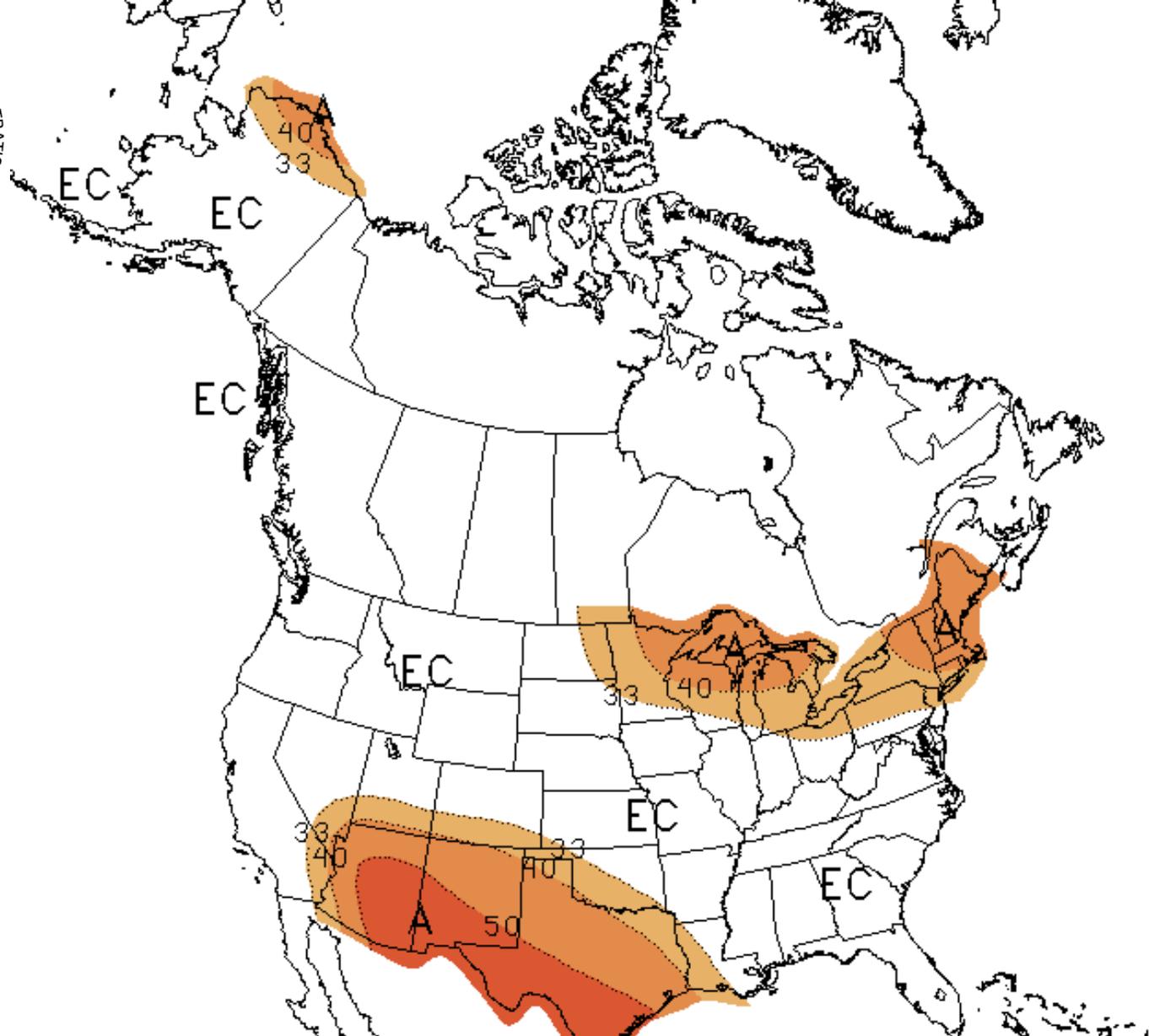
THREE-MONTH OUTLOOK
TEMPERATURE PROBABILITY
2.5 MONTH LEAD
VALID ASO 2010
MADE 20 MAY 2010

EC MEANS EQUAL
CHANCES FOR A, N, B
A MEANS ABOVE
N MEANS NORMAL
B MEANS BELOW



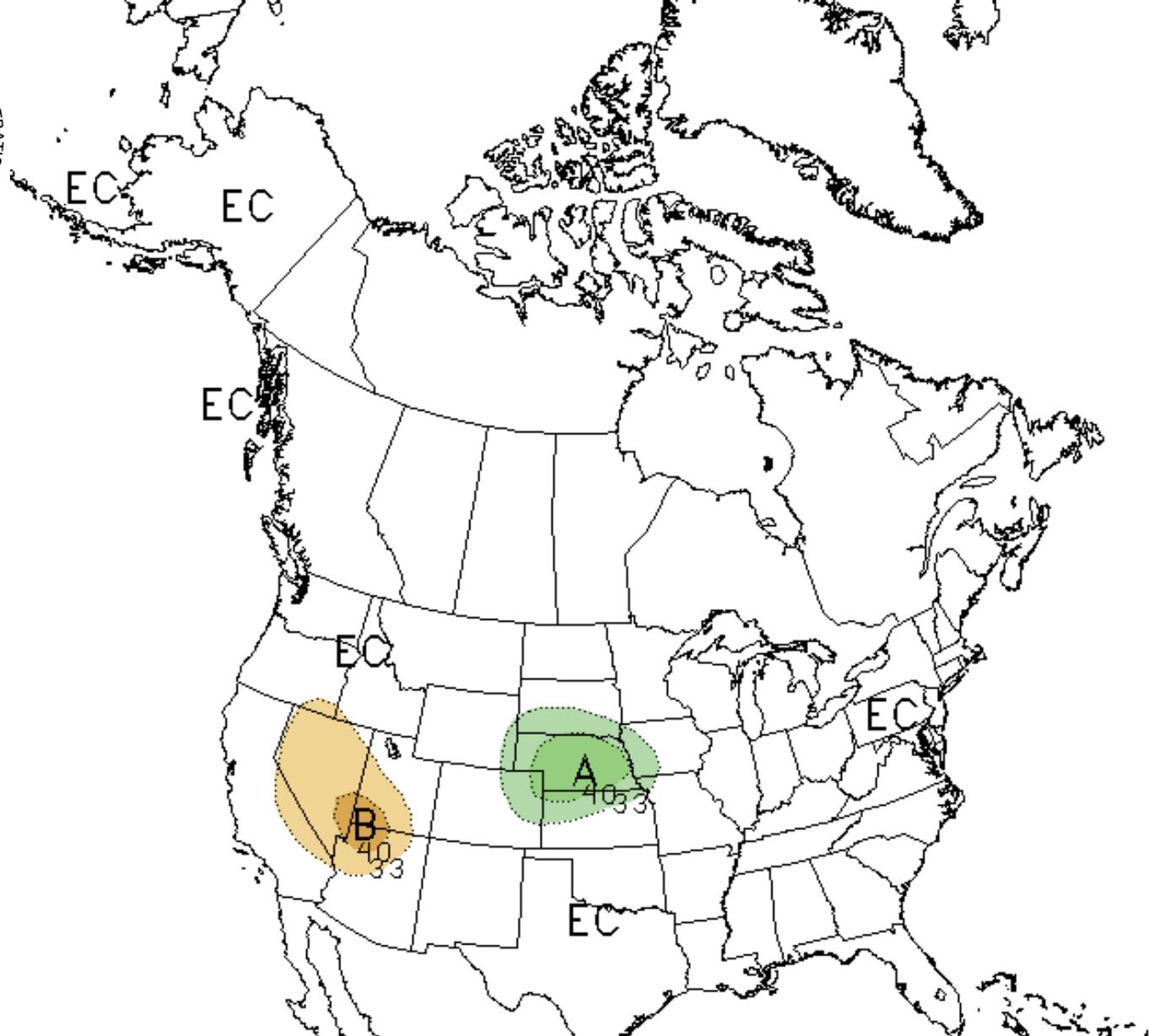
THREE-MONTH OUTLOOK
PRECIPITATION PROBABILITY
2.5 MONTH LEAD
VALID ASO 2010
MADE 20 MAY 2010

EC MEANS EQUAL
CHANCES FOR A, N, B
A MEANS ABOVE
N MEANS NORMAL
B MEANS BELOW



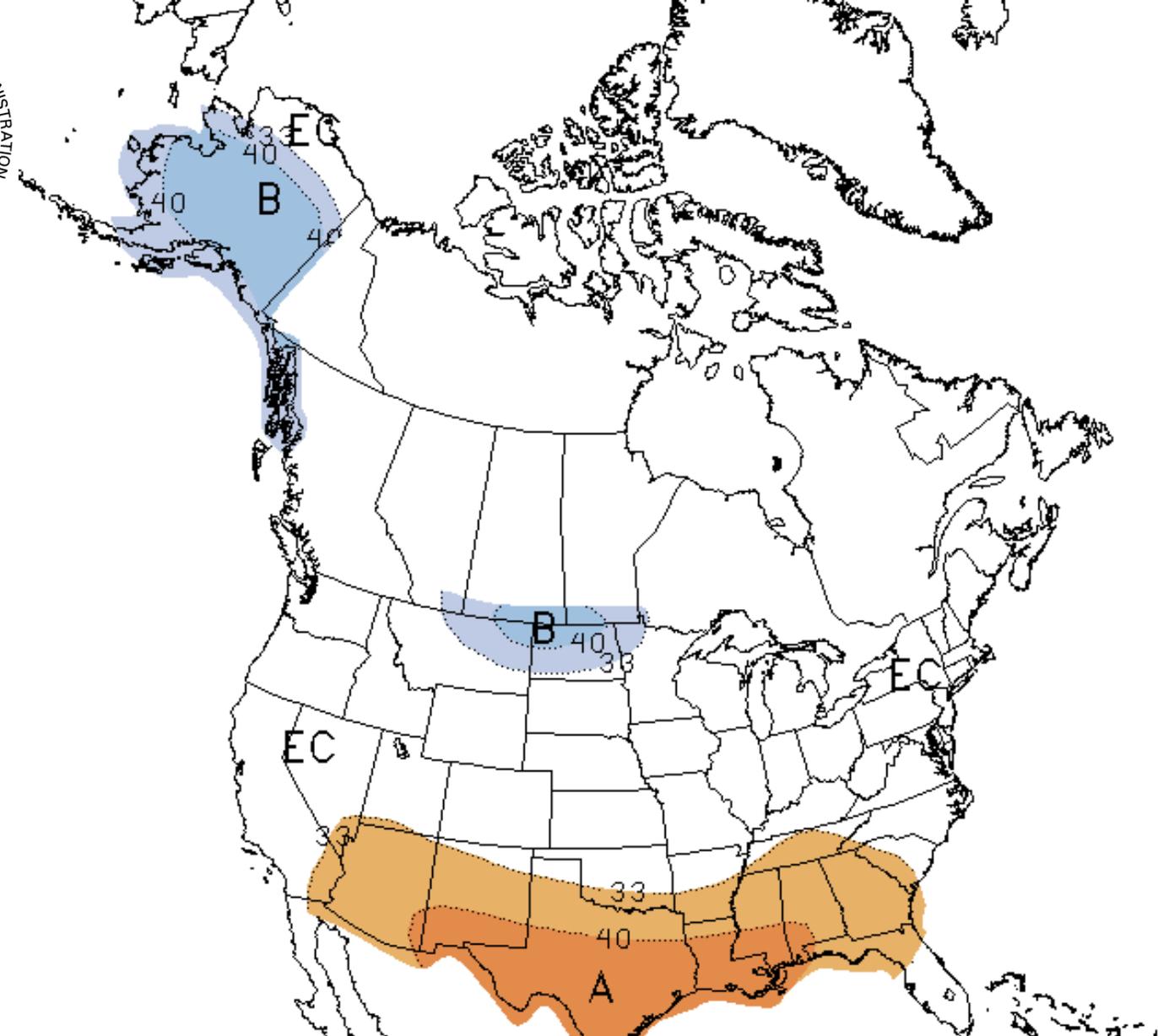
THREE-MONTH OUTLOOK
TEMPERATURE PROBABILITY
3.5 MONTH LEAD
VALID SON 2010
MADE 20 MAY 2010

EC MEANS EQUAL
CHANCES FOR A, N, B
A MEANS ABOVE
N MEANS NORMAL
B MEANS BELOW



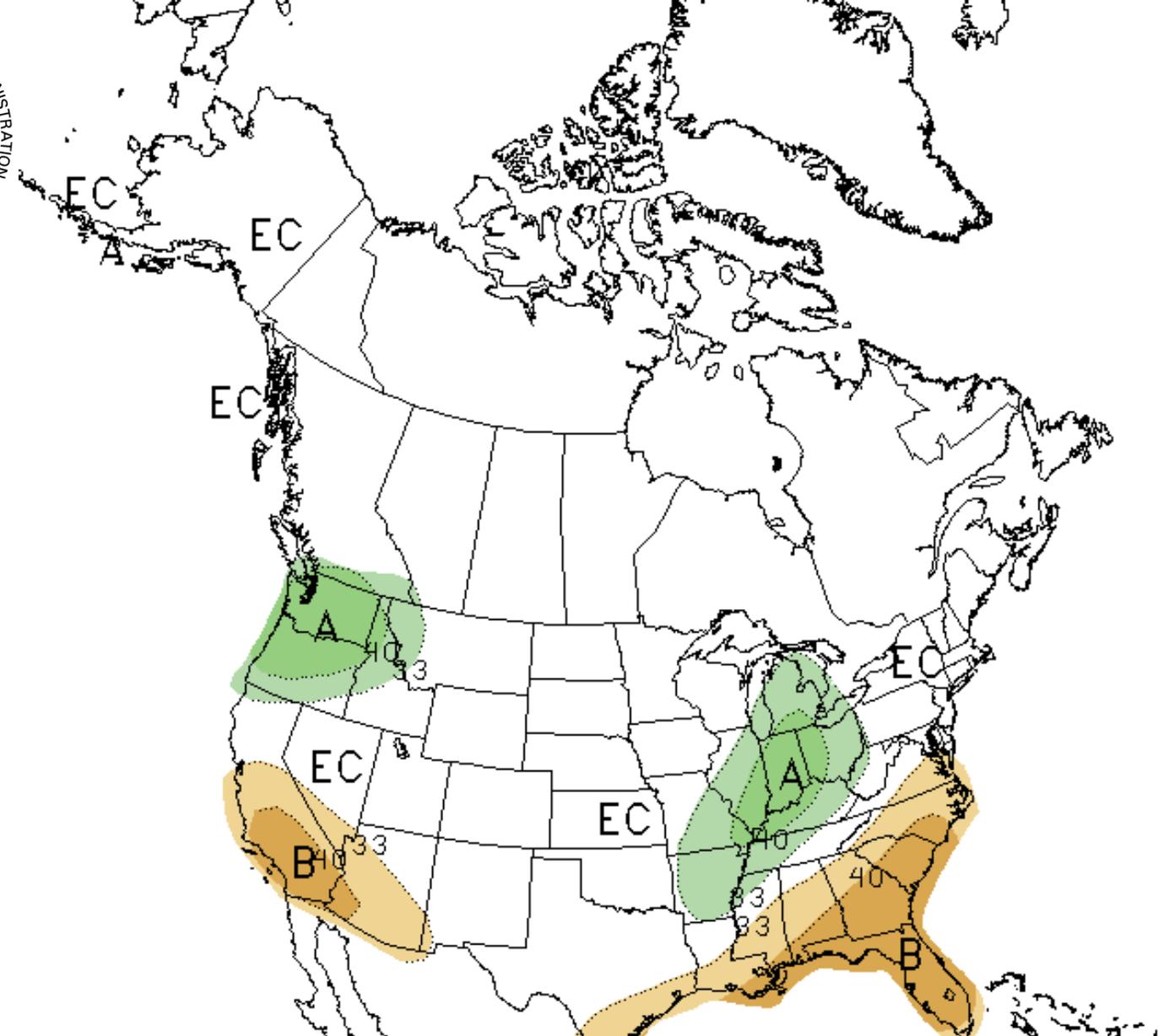
THREE-MONTH OUTLOOK
PRECIPITATION PROBABILITY
3.5 MONTH LEAD
VALID SON 2010
MADE 20 MAY 2010

EC MEANS EQUAL
CHANCES FOR A, N, B
A MEANS ABOVE
N MEANS NORMAL
B MEANS BELOW



THREE-MONTH OUTLOOK
TEMPERATURE PROBABILITY
6.5 MONTH LEAD
VALID DJF 2010
MADE 20 MAY 2010

EC MEANS EQUAL
CHANCES FOR A, N, B
A MEANS ABOVE
N MEANS NORMAL
B MEANS BELOW



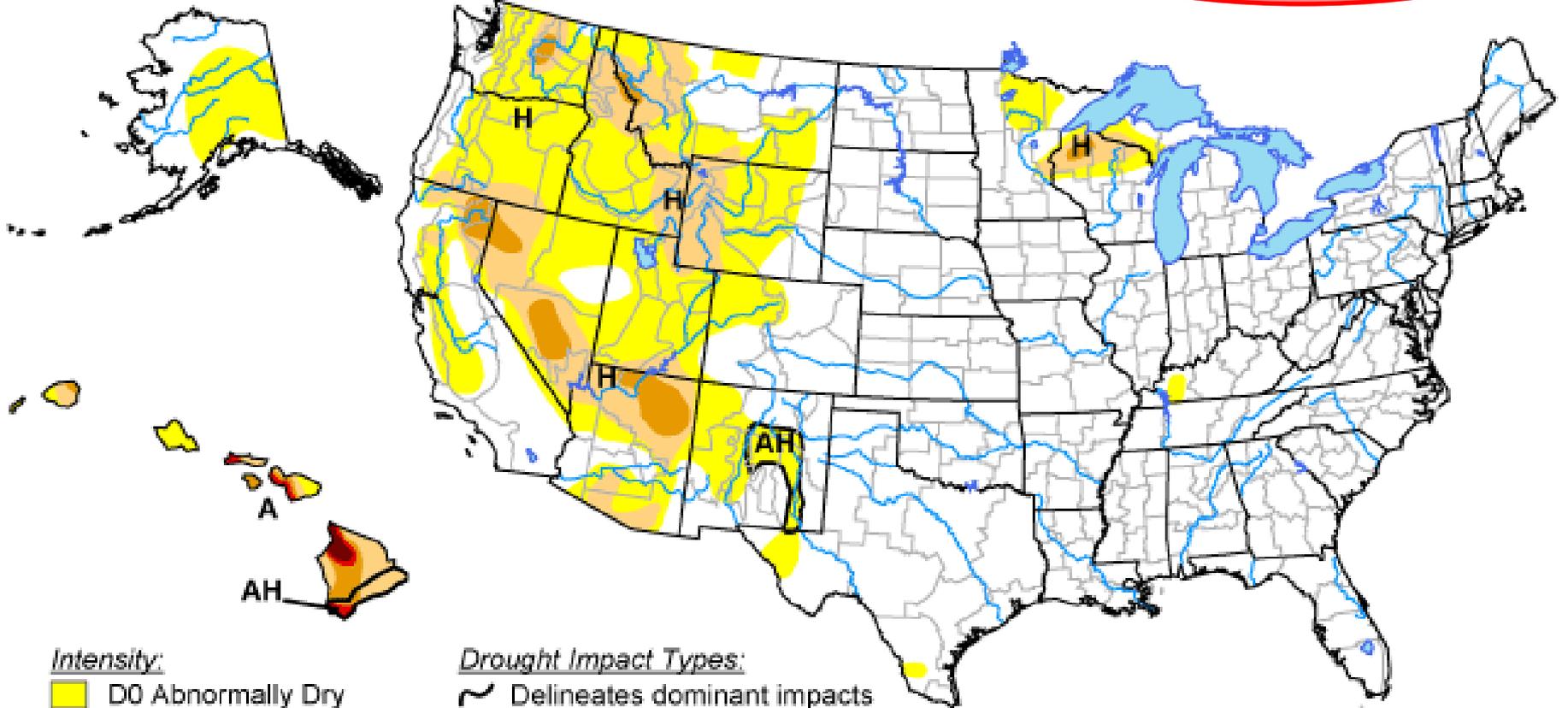
THREE-MONTH OUTLOOK
PRECIPITATION PROBABILITY
6.5 MONTH LEAD
VALID DJF 2010
MADE 20 MAY 2010

EC MEANS EQUAL CHANCES FOR A, N, B
A MEANS ABOVE
N MEANS NORMAL
B MEANS BELOW

U.S. Drought Monitor

March 2, 2010

Valid 7 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>

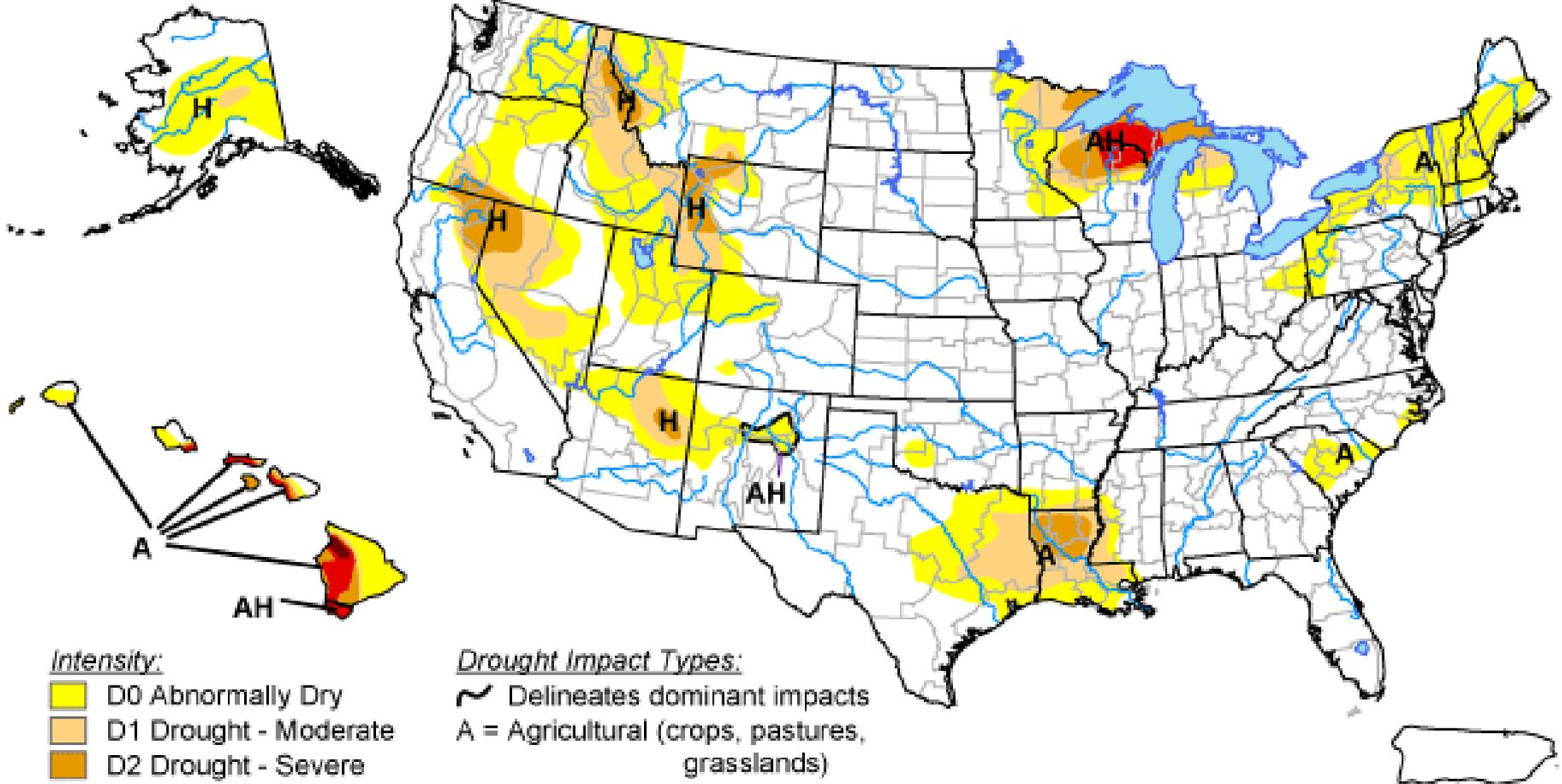


Released Thursday, March 4, 2010
Author: Rich Tinker, NOAA/NWS/NCEP/CPC

U.S. Drought Monitor

June 1, 2010

Valid 8 a.m. EDT



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, June 3, 2010

Author: Brian Fuchs, National Drought Mitigation Center

U.S. Drought Monitor

Delaware

March 2, 2010

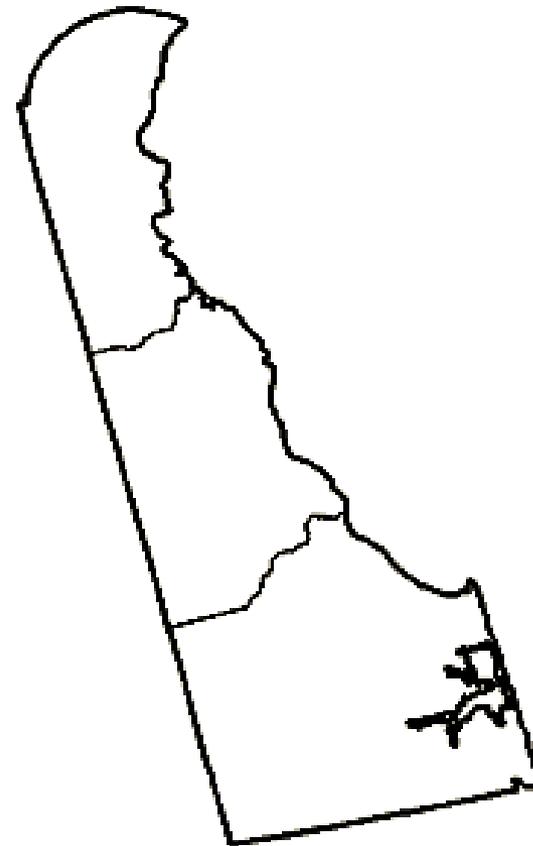
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	100.0	0.0	0.0	0.0	0.0	0.0
Last Week (02/23/2010 map)	100.0	0.0	0.0	0.0	0.0	0.0
3 Months Ago (12/08/2009 map)	100.0	0.0	0.0	0.0	0.0	0.0
Start of Calendar Year (01/05/2010 map)	100.0	0.0	0.0	0.0	0.0	0.0
Start of Water Year (10/06/2009 map)	100.0	0.0	0.0	0.0	0.0	0.0
One Year Ago (03/03/2009 map)	17.9	82.1	0.0	0.0	0.0	0.0

Intensity:

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



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, March 4, 2010

Author: R. Tinker, CPC/NOAA

U.S. Drought Monitor

Delaware

June 1, 2010

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	100.0	0.0	0.0	0.0	0.0	0.0
Last Week (05/25/2010 map)	100.0	0.0	0.0	0.0	0.0	0.0
3 Months Ago (03/09/2010 map)	100.0	0.0	0.0	0.0	0.0	0.0
Start of Calendar Year (01/05/2010 map)	100.0	0.0	0.0	0.0	0.0	0.0
Start of Water Year (10/06/2009 map)	100.0	0.0	0.0	0.0	0.0	0.0
One Year Ago (06/02/2009 map)	100.0	0.0	0.0	0.0	0.0	0.0



Intensity:

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

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, June 3, 2010

Author: Brian Fuchs, National Drought Mitigation Center



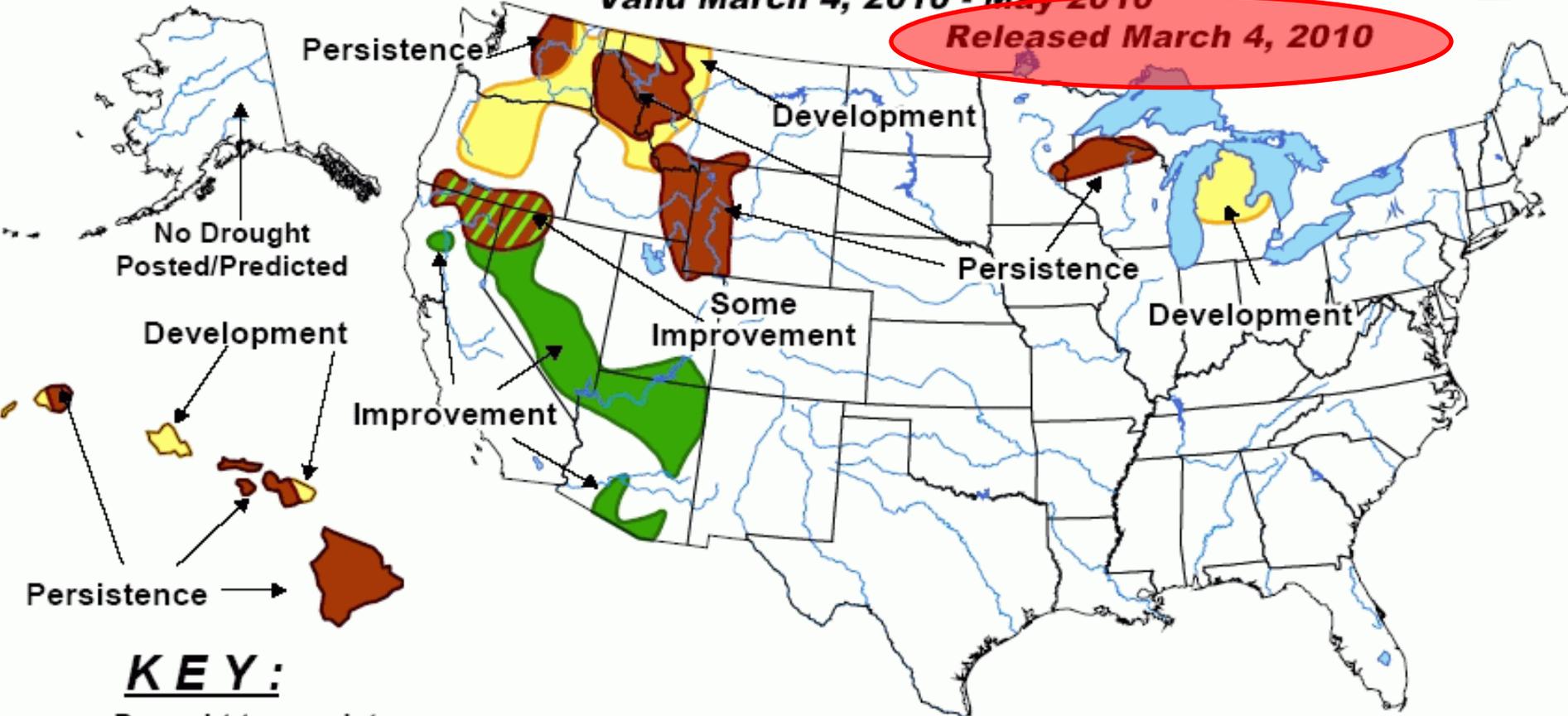
U.S. Seasonal Drought Outlook

Drought Tendency During the Valid Period



Valid March 4, 2010 - May 2010

Released March 4, 2010



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

No Drought Posted/Predicted 

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.

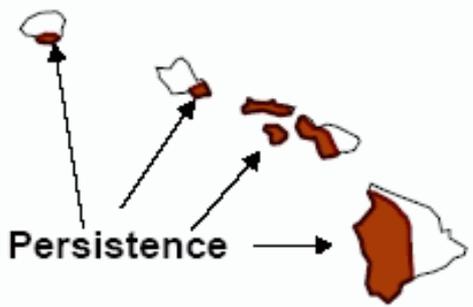
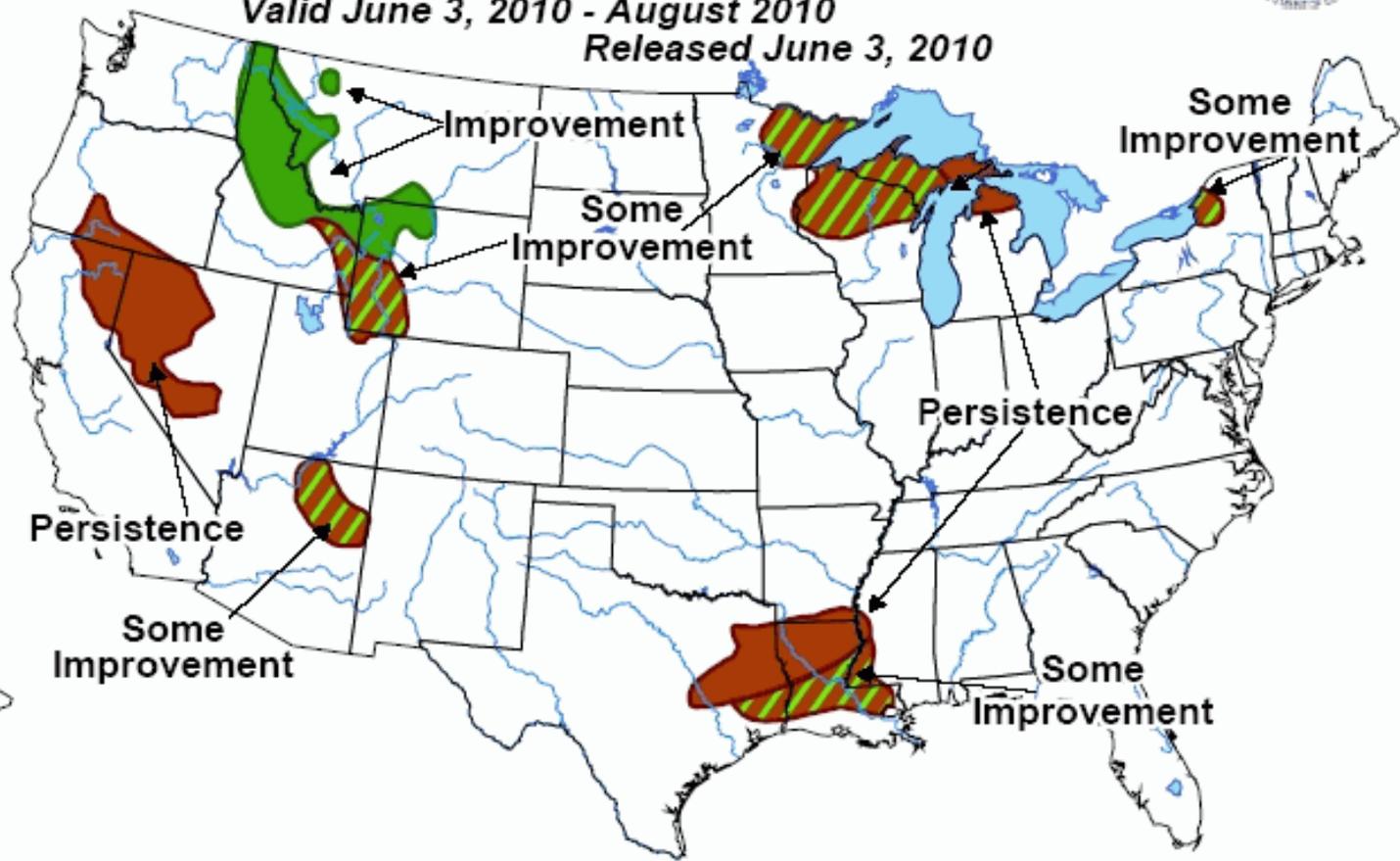


U.S. Seasonal Drought Outlook

Drought Tendency During the Valid Period



Valid June 3, 2010 - August 2010
Released June 3, 2010



KEY:

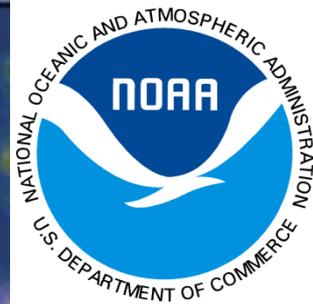
-  Drought to persist or intensify
-  Drought ongoing, some improvement
-  Drought likely to improve, impacts ease
-  Drought development likely

No Drought Posted/Predicted 

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.

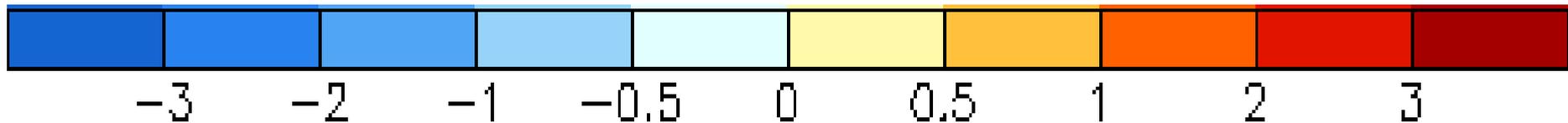
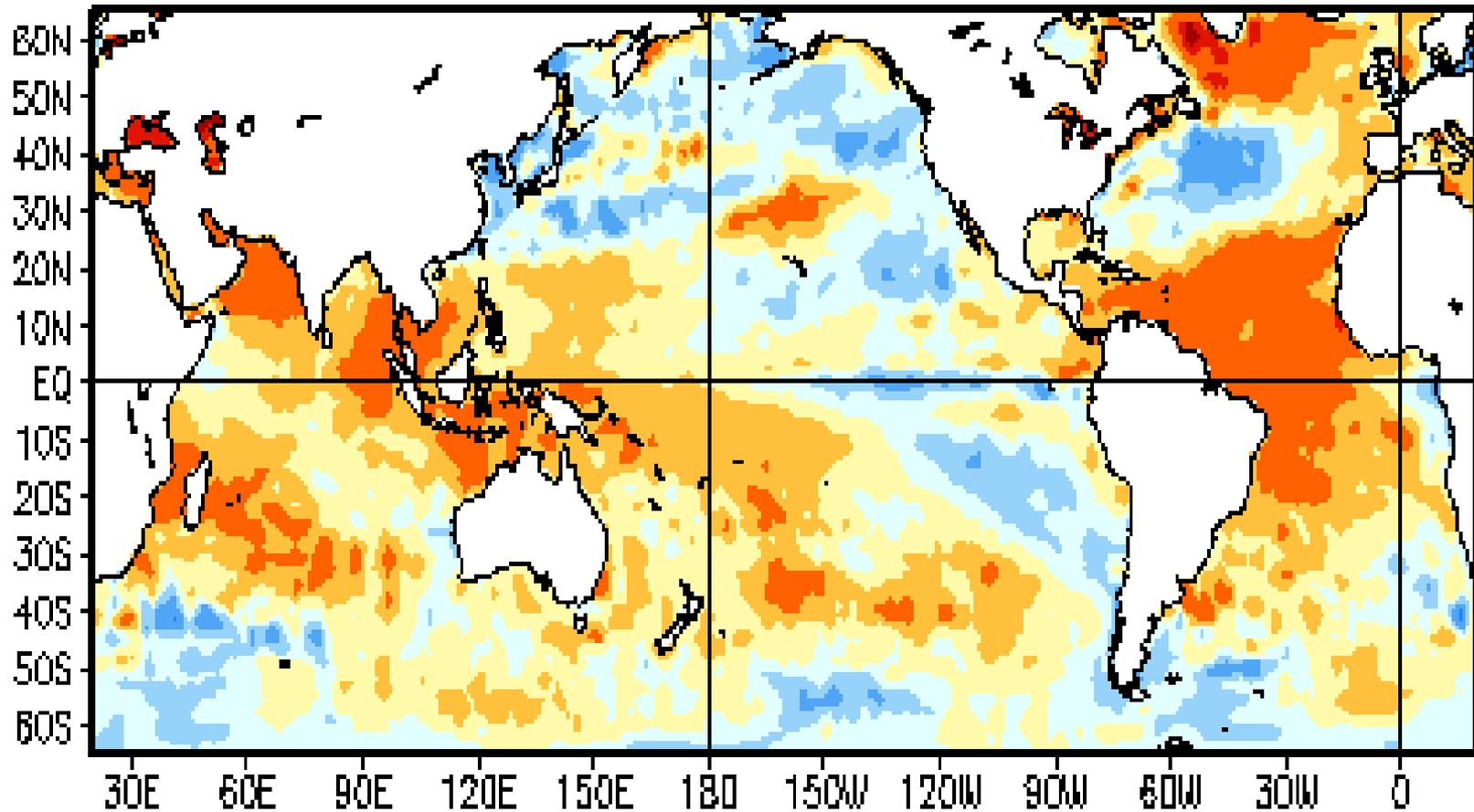
Atlantic Hurricane Forecast

- ***Expected continuation of tropical multi-decadal signal that began in 1995***
- ***Above average SSTs in the Main Development Region***
- ***ENSO-Neutral or La Niña Conditions***



Average SST Anomalies

9 MAY 2010 – 5 JUN 2010



NOAA Hurricane Forecast

NOAA estimates a 70% probability for each of the following ranges of activity this season:

- 14 to 23 Named Storms (11)
- 8 to 14 Hurricanes (6)
- 3 to 7 Major Hurricanes (2)

85% Chance of Above Normal; 5% Chance of Below Normal

20th Century average in parenthesis

Bill Gray's Hurricane Forecast

- 18 Named Storms (9.6)
- 90 Named Storm Days (49.1)
- 10 Hurricanes (5.9)
- 40 Hurricane Days (24.5)
- 5 Major Hurricanes (2.3)
- 13 Major Hurricane Days (5.0)

1950-2000 average in parenthesis

Bill Gray's Hurricane Forecast

Probabilities for at least one major (Category 3-4-5) hurricane landfall on each of the following coastal areas:

- Entire U.S. coastline - 76%
(average for last century is 52%)
- U.S. East Coast & Peninsula Florida - 51%
(average for last century is 31%)
- Gulf Coast west of the Florida Panhandle - 50%
(average for last century is 30%)