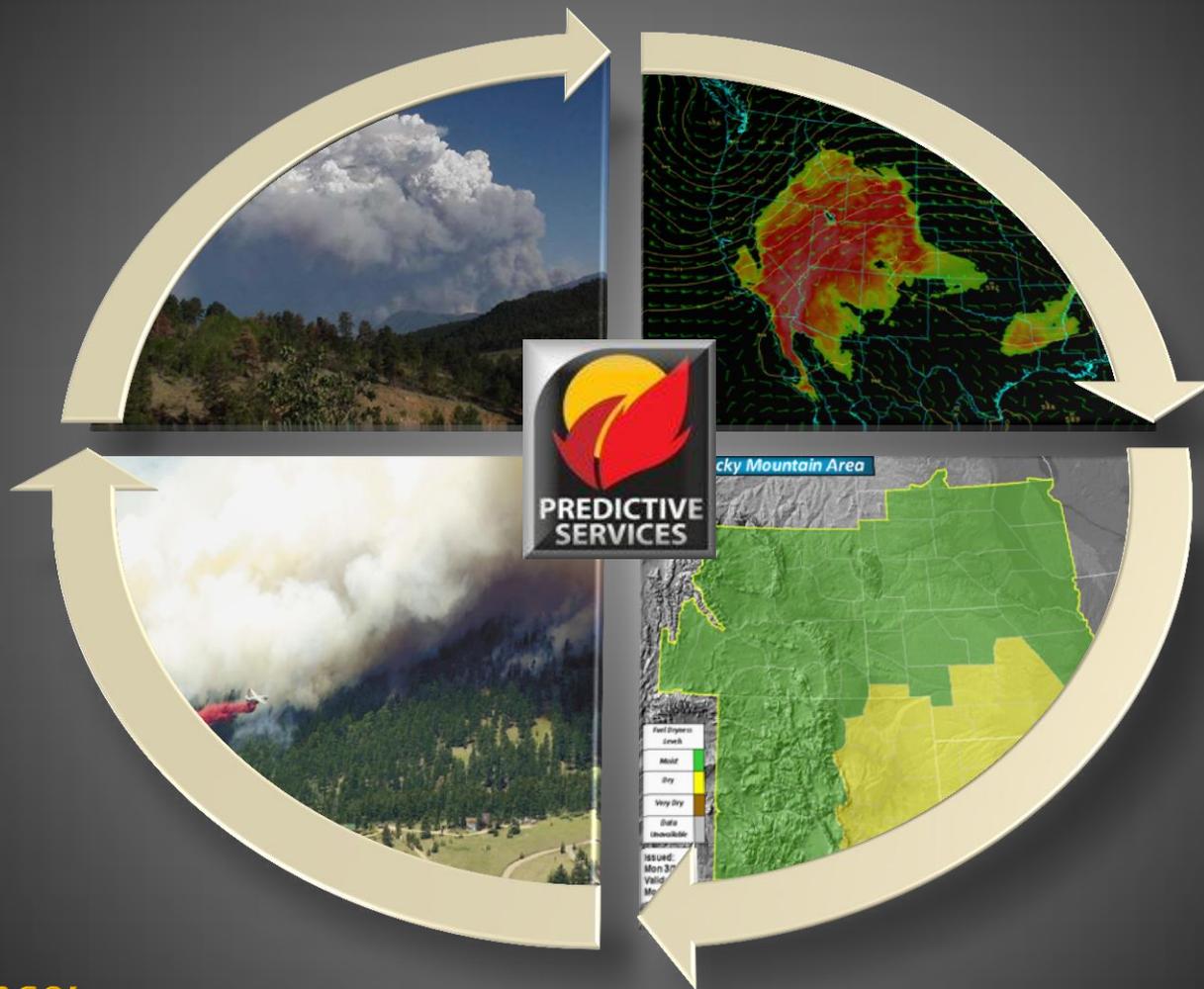




Predictive Services

2013 Rocky Mountain Area Seasonal Outlook - June 1, 2013



Correspondence:
Tim Mathewson-RMCC Meteorologist
t2mathew@blm.gov



2013 Seasonal Outlook

Considerations

Antecedent Conditions

- ❑ Overview of the 2012-2013 Fall, Winter, Spring Weather Patterns
- ❑ Temperature, RH and Wind Comparison (2012 vs. 2013)
- ❑ Precipitation Anomalies
- ❑ Drought (2012 vs. 2013)

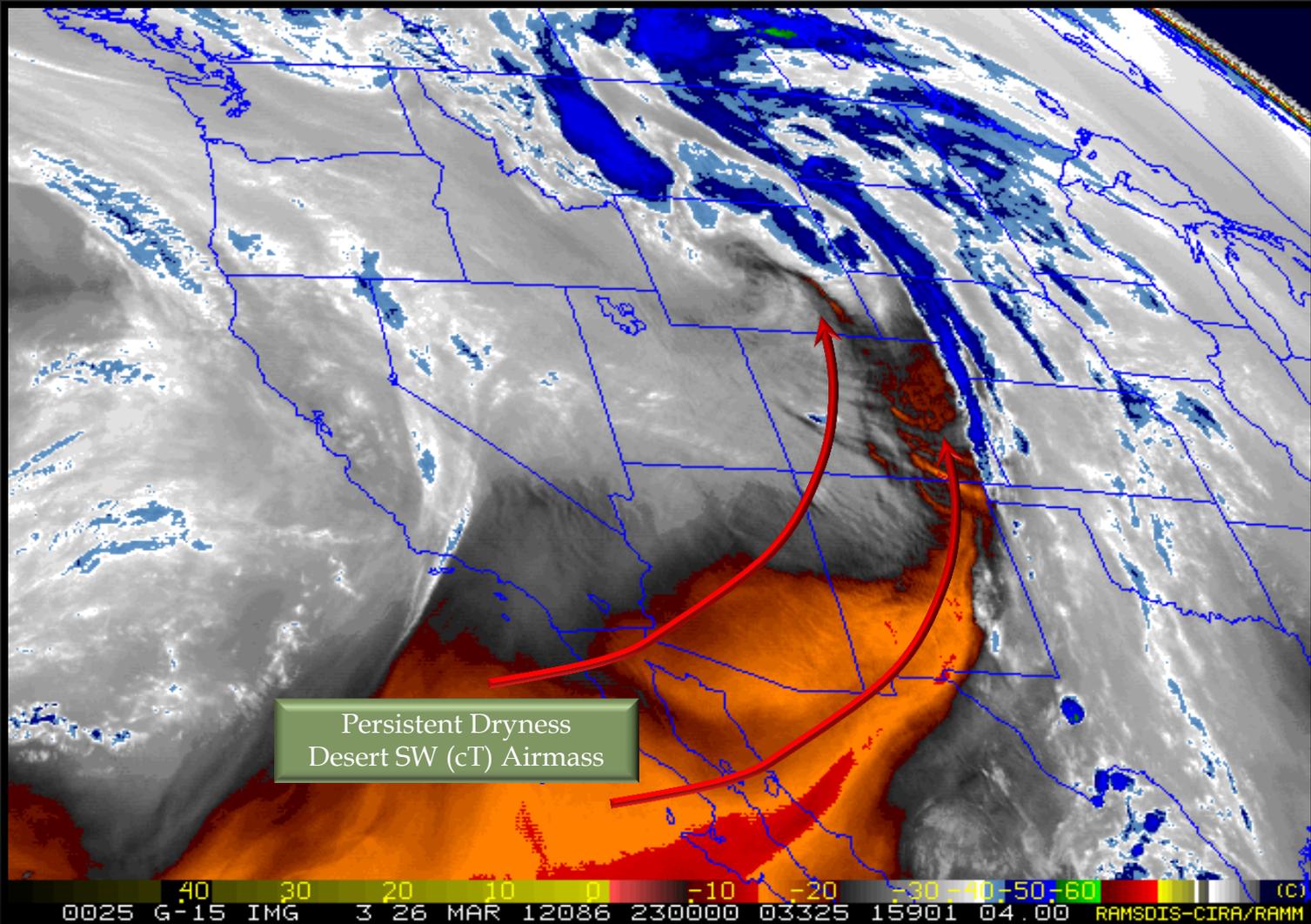
Prediction

- ❑ Predictors
 - ❑ General SST Anomalies
 - ❑ ENSO
 - ❑ PDO
 - ❑ MJO
- ❑ ENSO Forecast
- ❑ RMA Fire History
- ❑ Long Range Considerations/Conclusions for the 2013 Fire Season



Seasonal Outlook

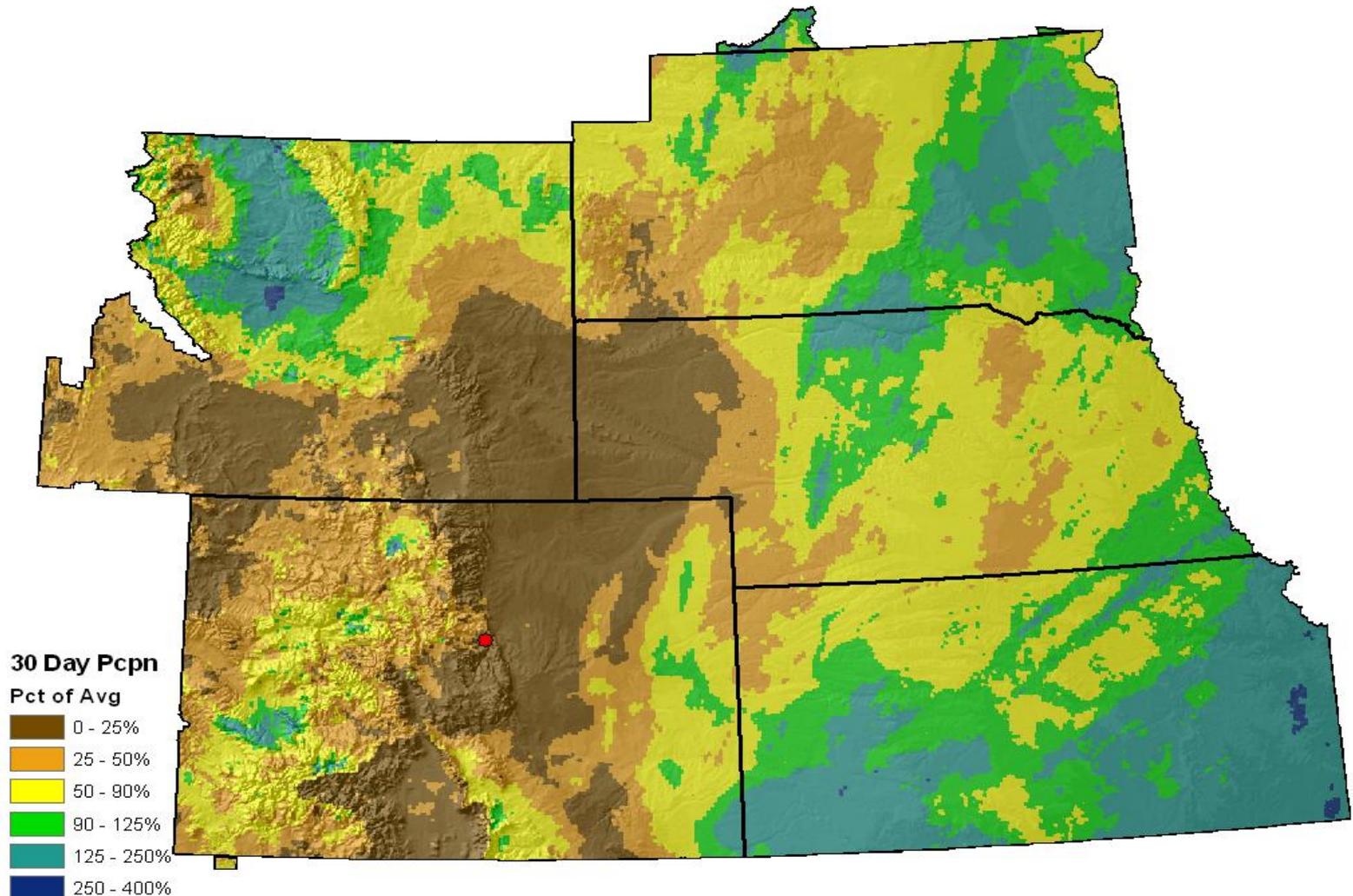
March 2012 (Spring 2012)

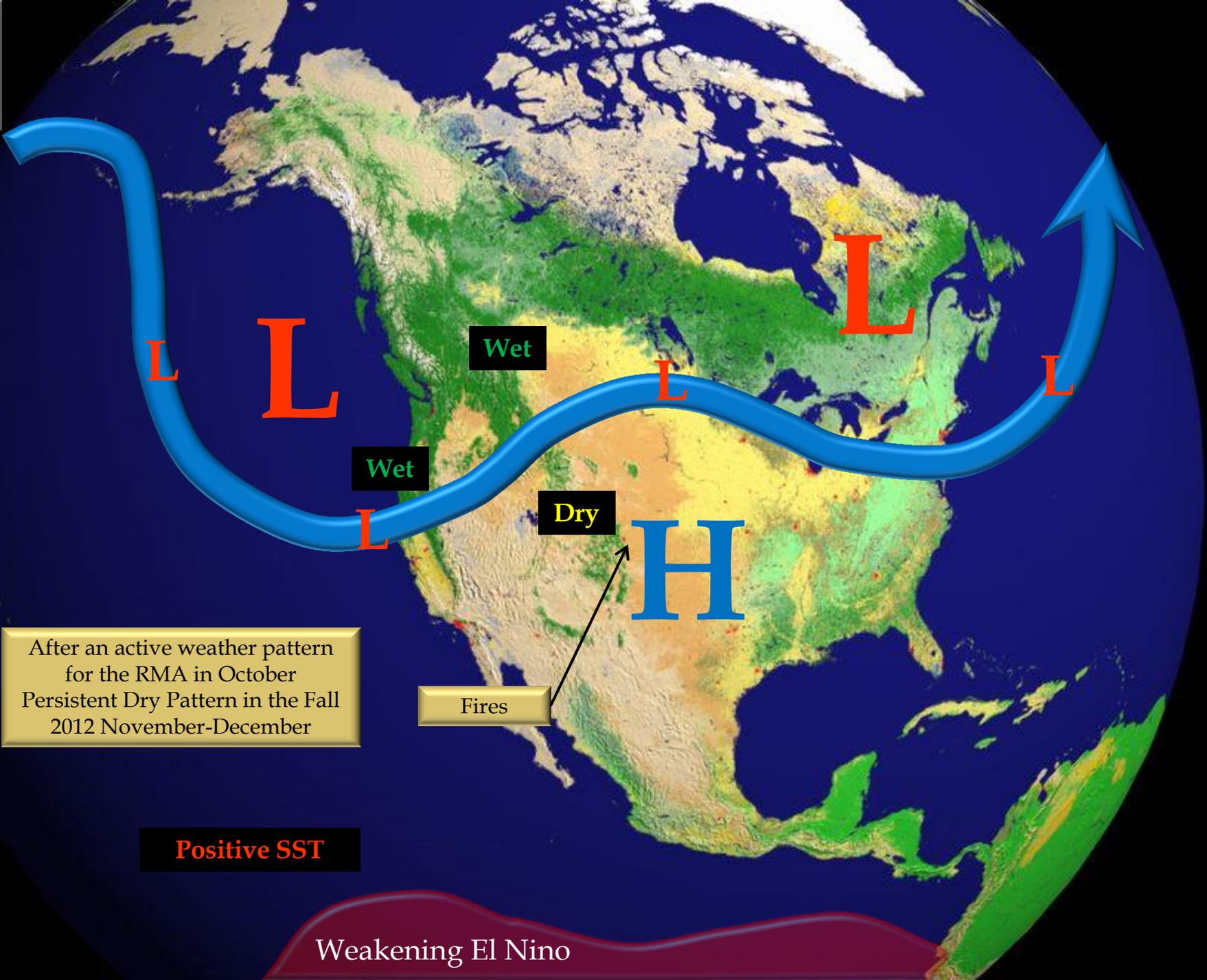




Seasonal Outlook

March 2012 (Spring 2012)





After an active weather pattern for the RMA in October
Persistent Dry Pattern in the Fall
2012 November-December

Wet

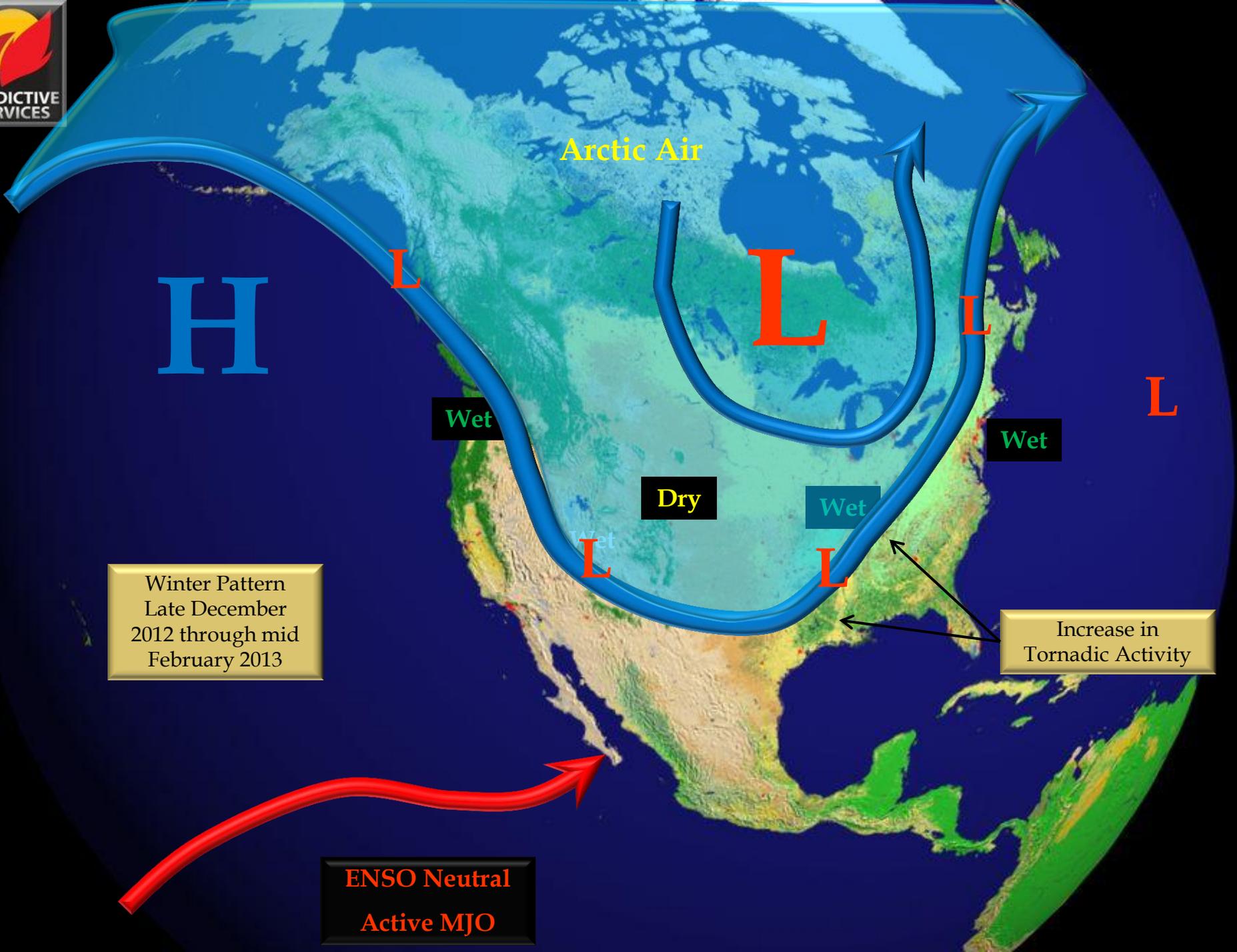
Wet

Dry

Fires

Positive SST

Weakening El Nino



Winter Pattern
Late December
2012 through mid
February 2013

ENSO Neutral
Active MJO

Increase in
Tornadic Activity

Arctic Air

H

L

L

L

L

Wet

Wet

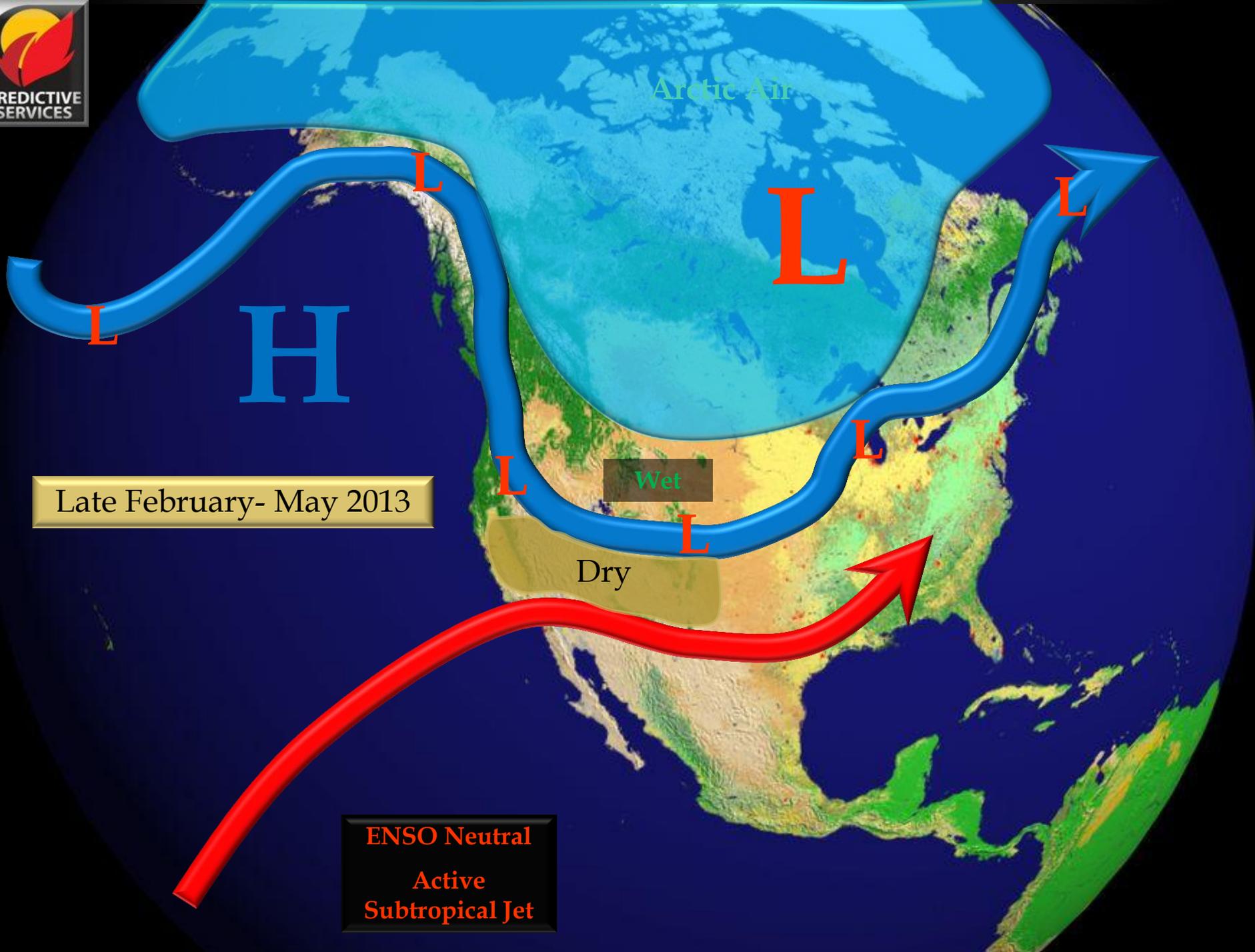
Dry

Wet

Wet

L

L



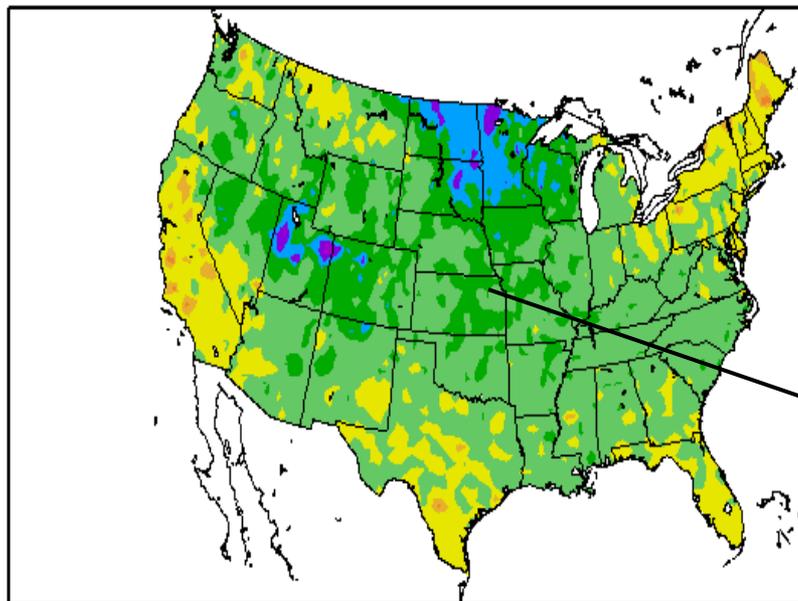


Seasonal Outlook

Temperature Departure from Normal Since Jan. 1, 2013

Departure from Normal Temperature (F)
1/1/2013 - 5/31/2013

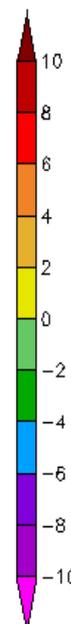
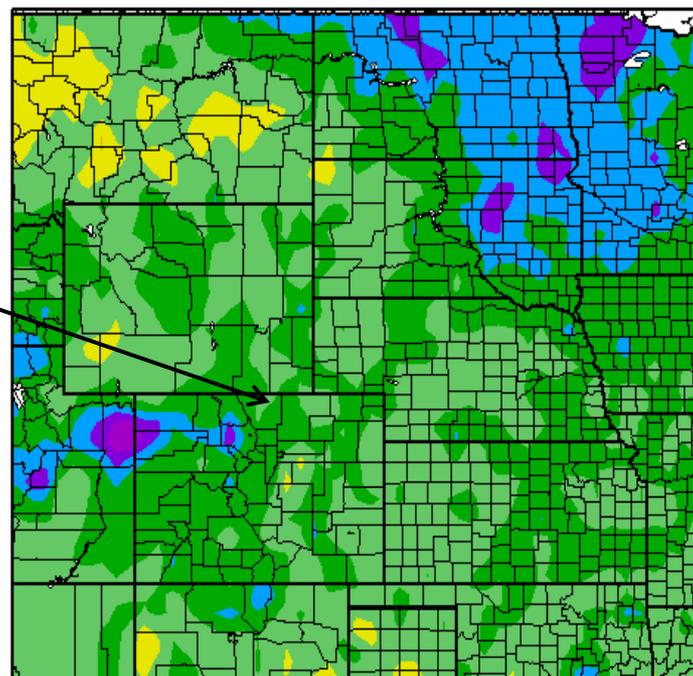
Below Average Temperatures
Noted Across the RMA Since
January 1, 2013



Generated 6/1/2013 at HPRCC using provisional data.

Reg

Departure from Normal Temperature (F)
1/1/2013 - 5/31/2013



Generated 6/1/2013 at HPRCC using provisional data.

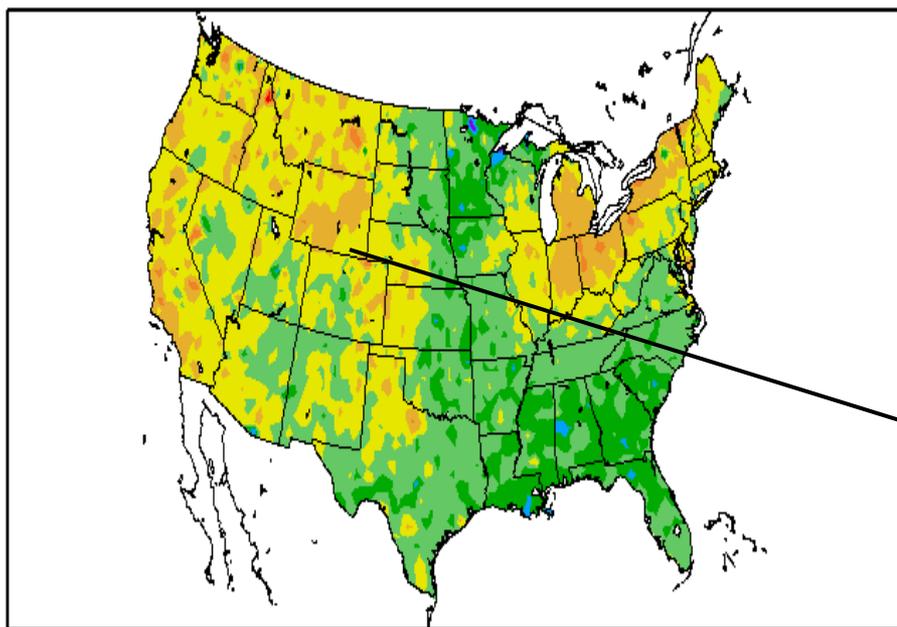
Regional Climate Centers



Seasonal Outlook

Temperature Departure from Normal Since Jan. 1, 2013

Departure from Normal Temperature (F)
5/2/2013 - 5/31/2013

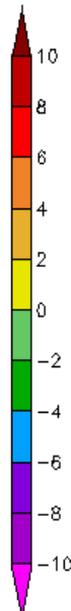
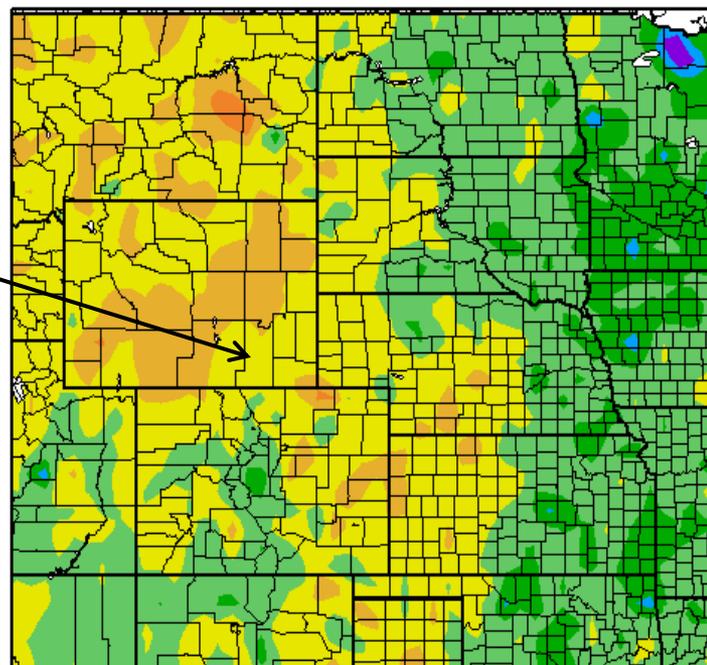


Generated 6/1/2013 at HPRCC using provisional data.

Regional Climate Centers

Below Average Temperatures
Noted Across the RMA Since
January 1, 2013

Departure from Normal Temperature (F)
5/2/2013 - 5/31/2013

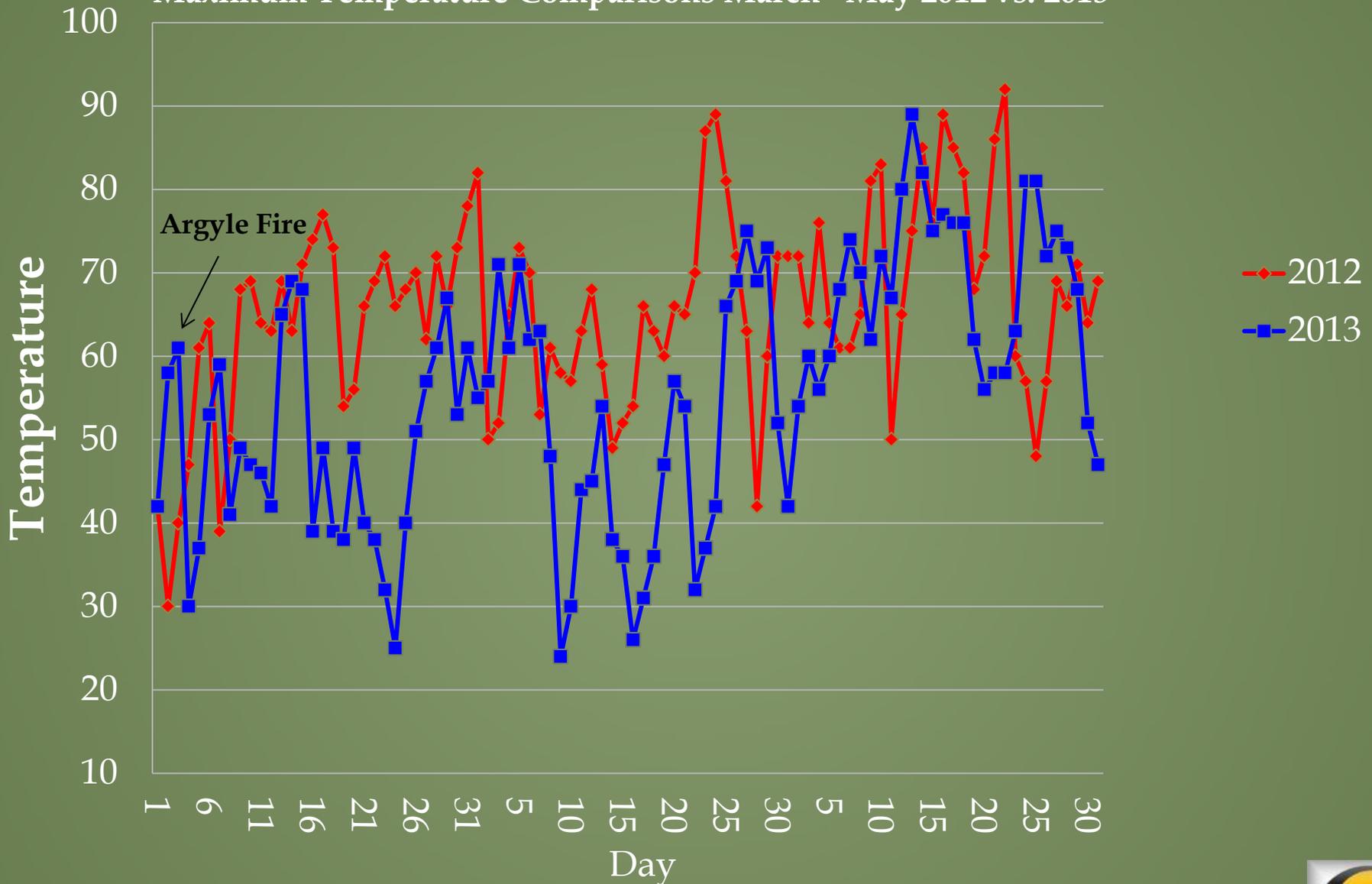


Generated 6/1/2013 at HPRCC using provisional data.

Regional Climate Centers

Black Hills-Red Canyon RAWS (4644')

Maximum Temperature Comparisons March -May 2012 vs. 2013



March-May 31, 2012- 51 Days 65°F or greater and 12 days above 80°F

March -May 31, 2013- 24 Days 65°F or greater and 2 days above 80°F



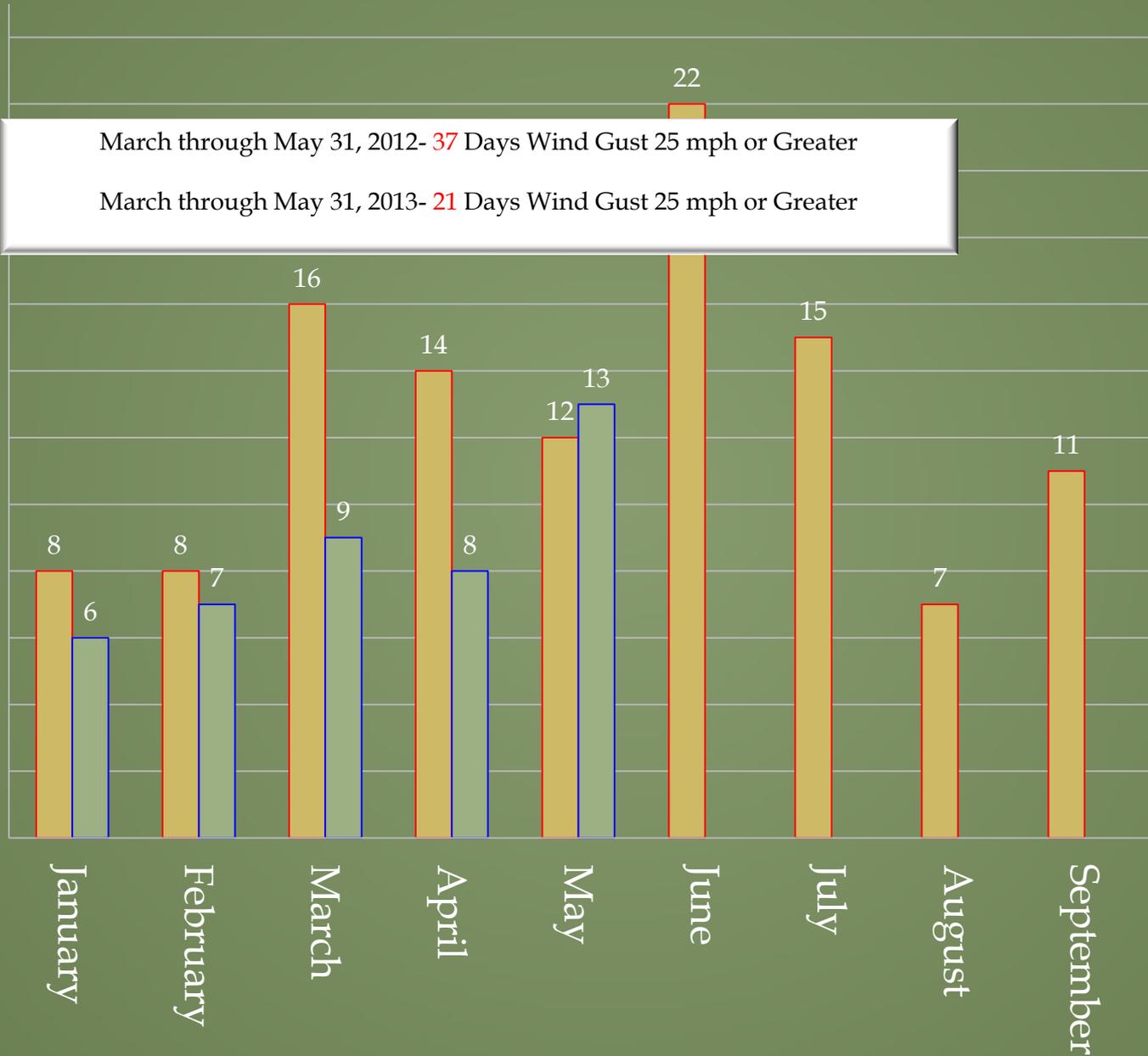
PREDICTIVE SERVICES

Black Hills- Red Canyon RAWS

(Wind Gusts 25 mph+) 2012 vs. 2013 Comparison through May 31, 2013

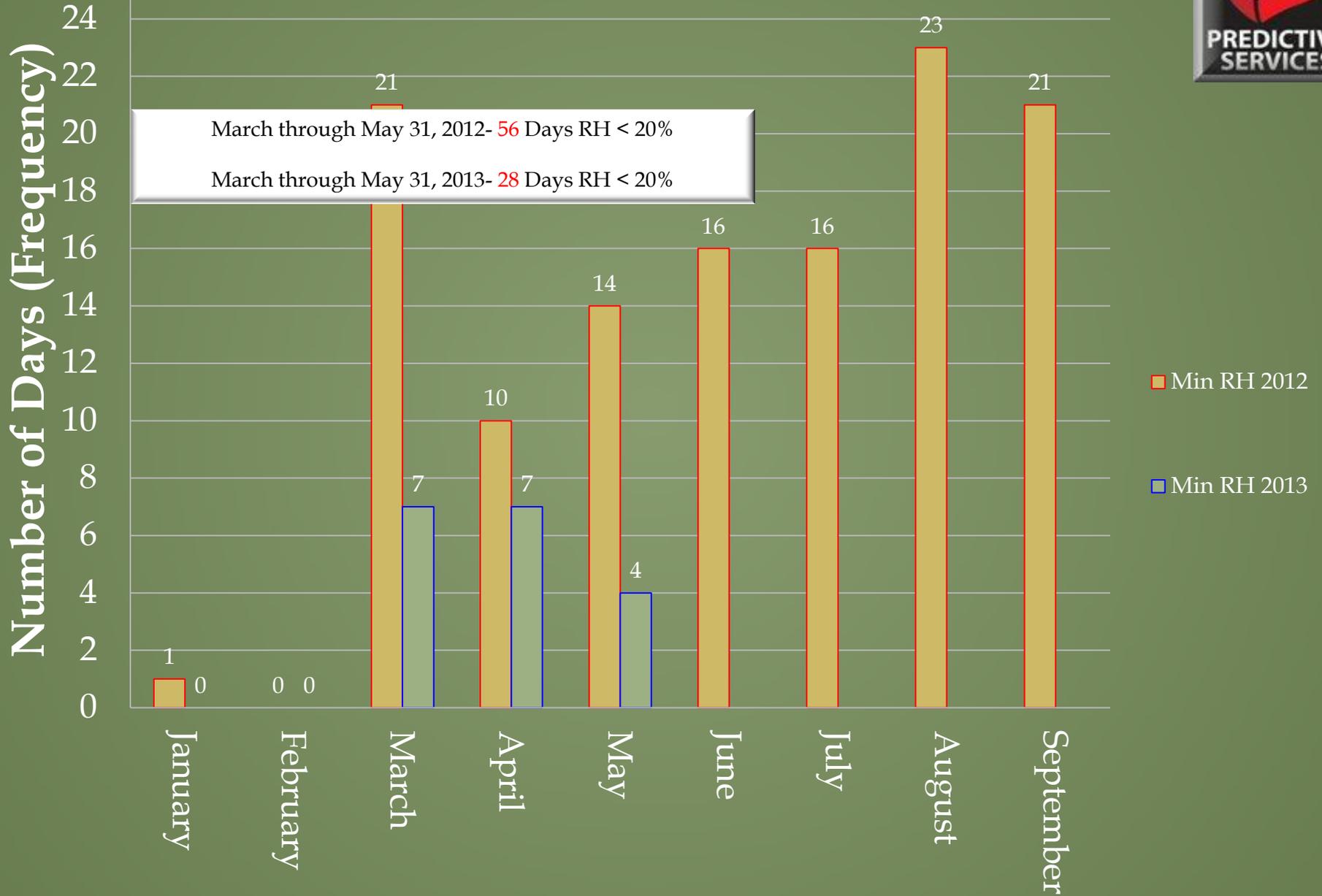


Number of Days (Frequency)



Red Canyon RAWS

(Min RH < 20%) 2012 vs. 2013 Comparison (Thru May 31)

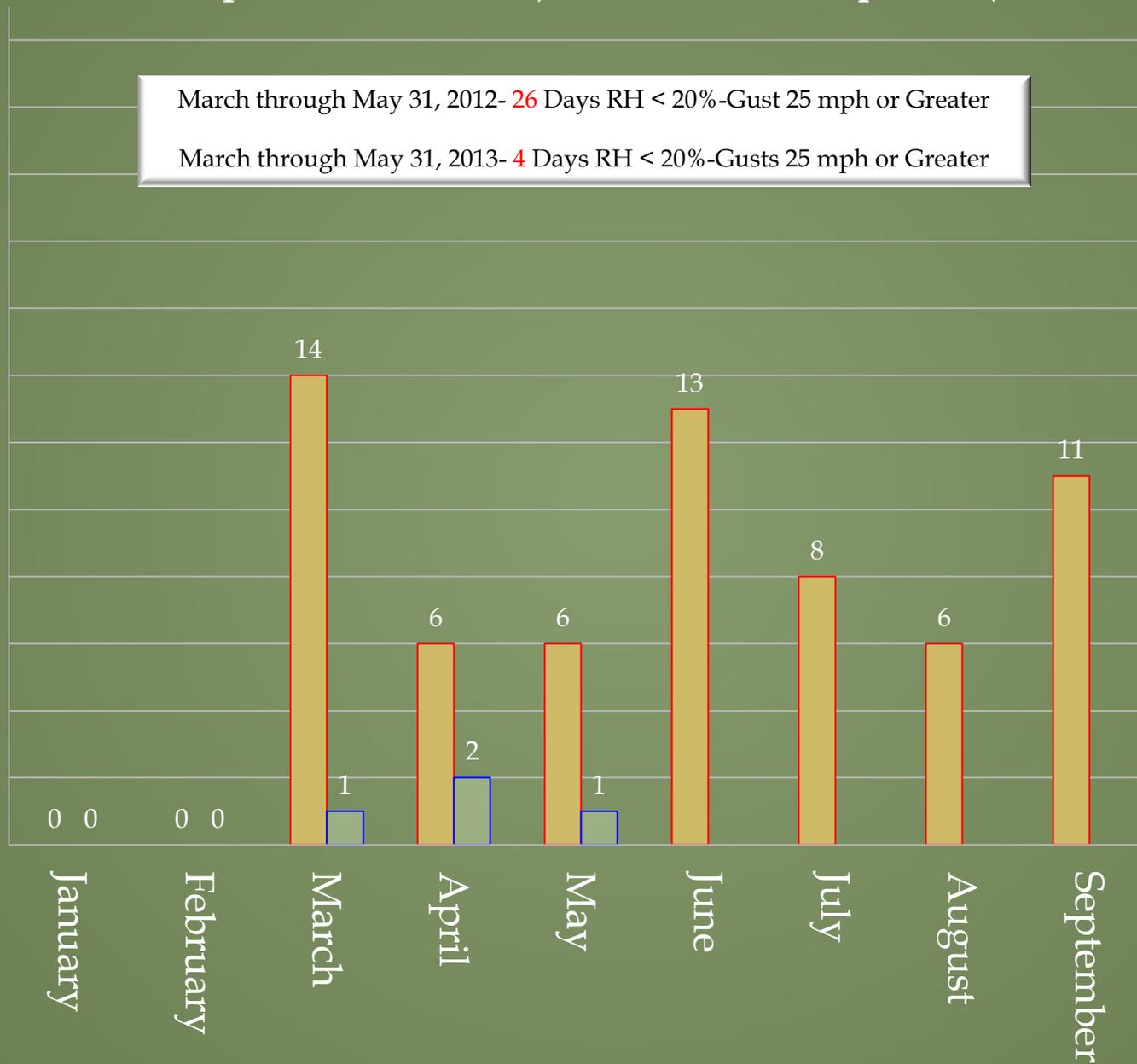


Black Hills-Red Canyon RAWS Wind-RH Index

(Wind Gusts 25 mph+ and RH < 20%) 2012 vs. 2013 Comparison(Thru May 31)



Number of Days (Frequency)



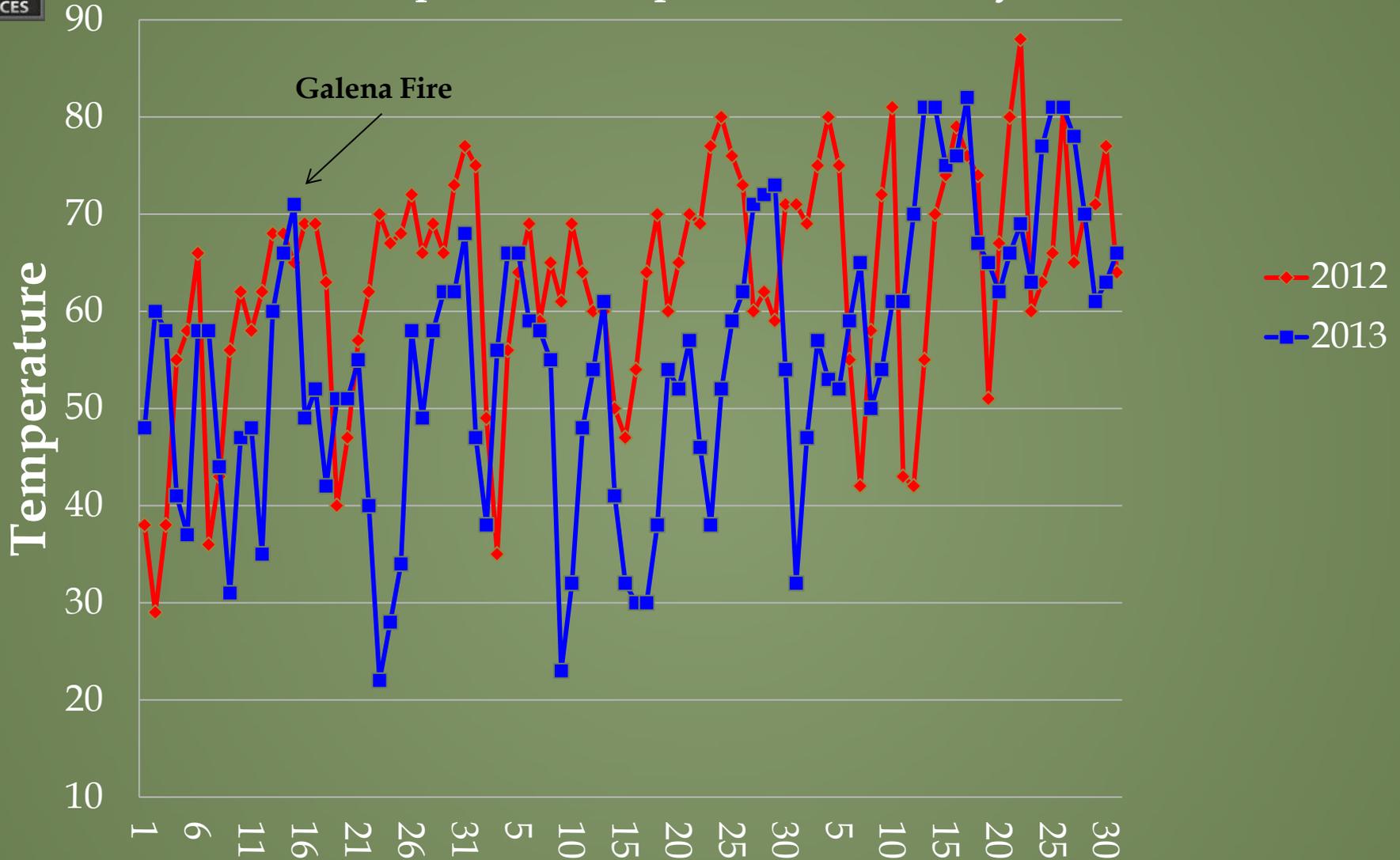
March through May 31, 2012- 26 Days RH < 20%-Gust 25 mph or Greater
March through May 31, 2013- 4 Days RH < 20%-Gusts 25 mph or Greater

Wind RH 2012
Wind RH 2013



Colorado-Sugar Loaf RAWS (6733')

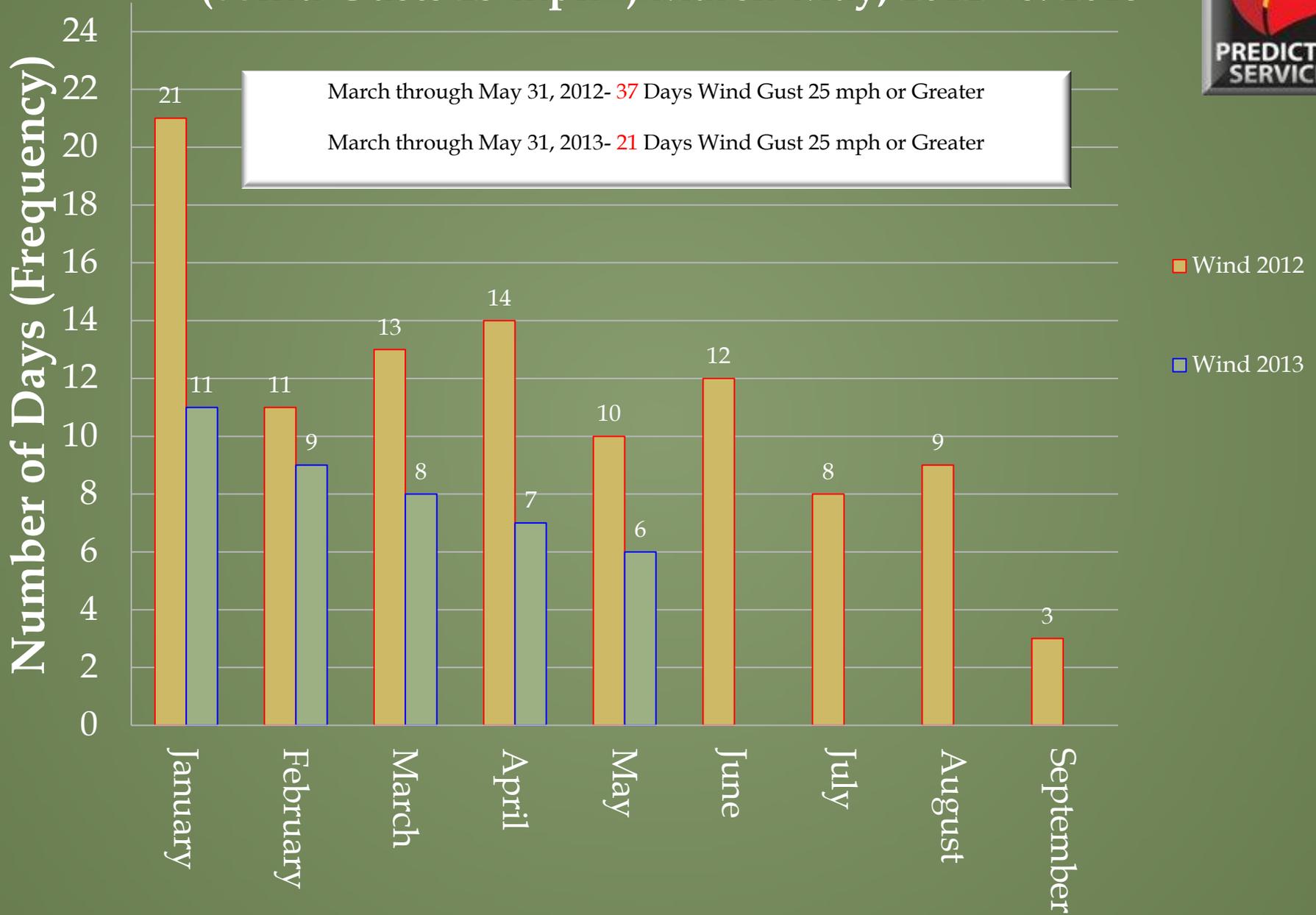
Maximum Temperature Comparisons March-May 2012 vs. 2013



2012
2013

March through May 31, 2012- 65 Days 60°F or greater and 28 Days Above 70°F
March through May 31, 2013- 40 Days 60°F or greater and 13 Days Above 70°F

Sugar Loaf RAWS (Wind Gusts 25 mph+) March-May, 2012 vs. 2013



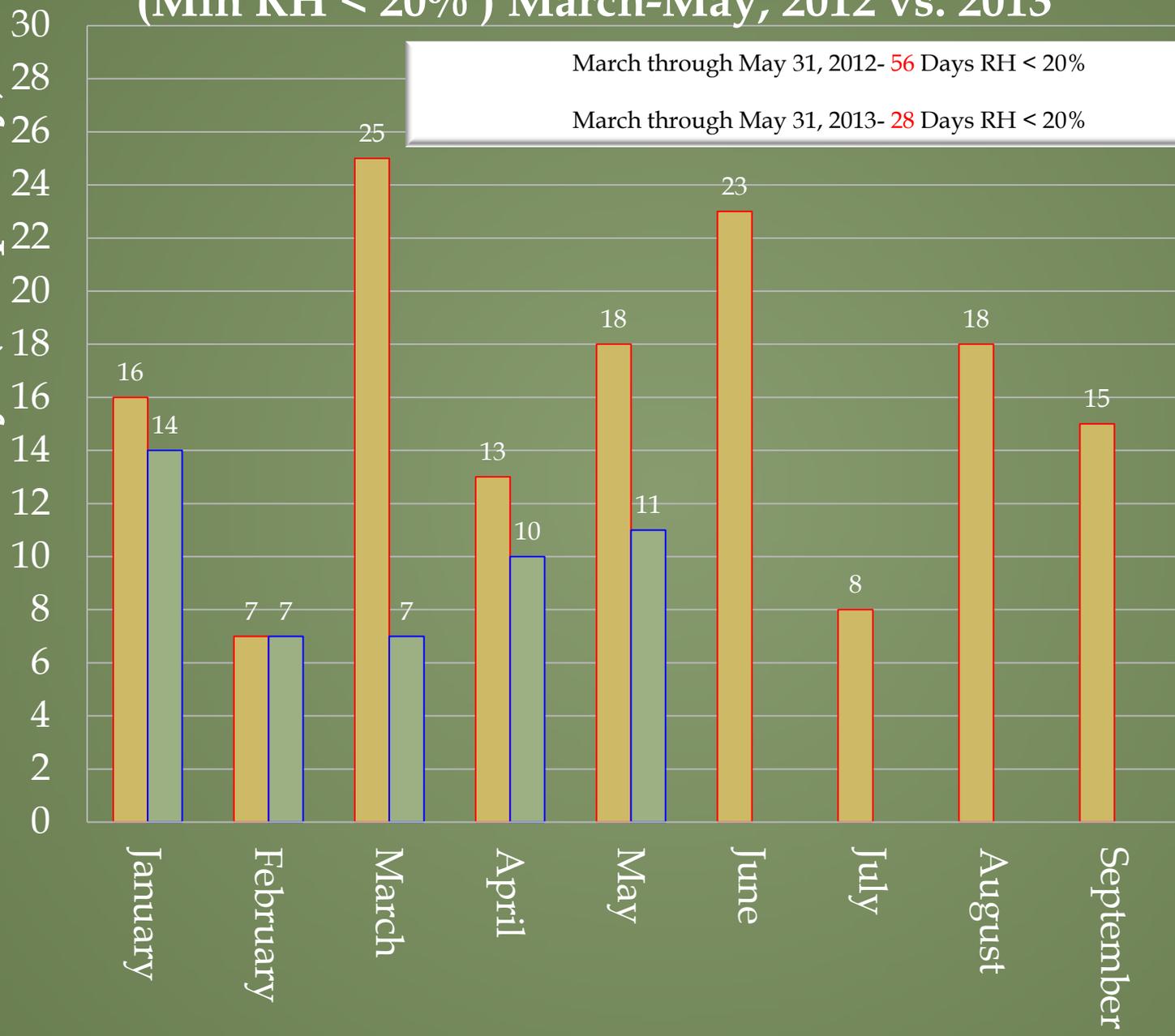
Sugar Loaf RAWs

(Min RH < 20%) March-May, 2012 vs. 2013



March through May 31, 2012- 56 Days RH < 20%
March through May 31, 2013- 28 Days RH < 20%

Number of Days (Frequency)



■ Min RH 2012
■ Min RH 2013

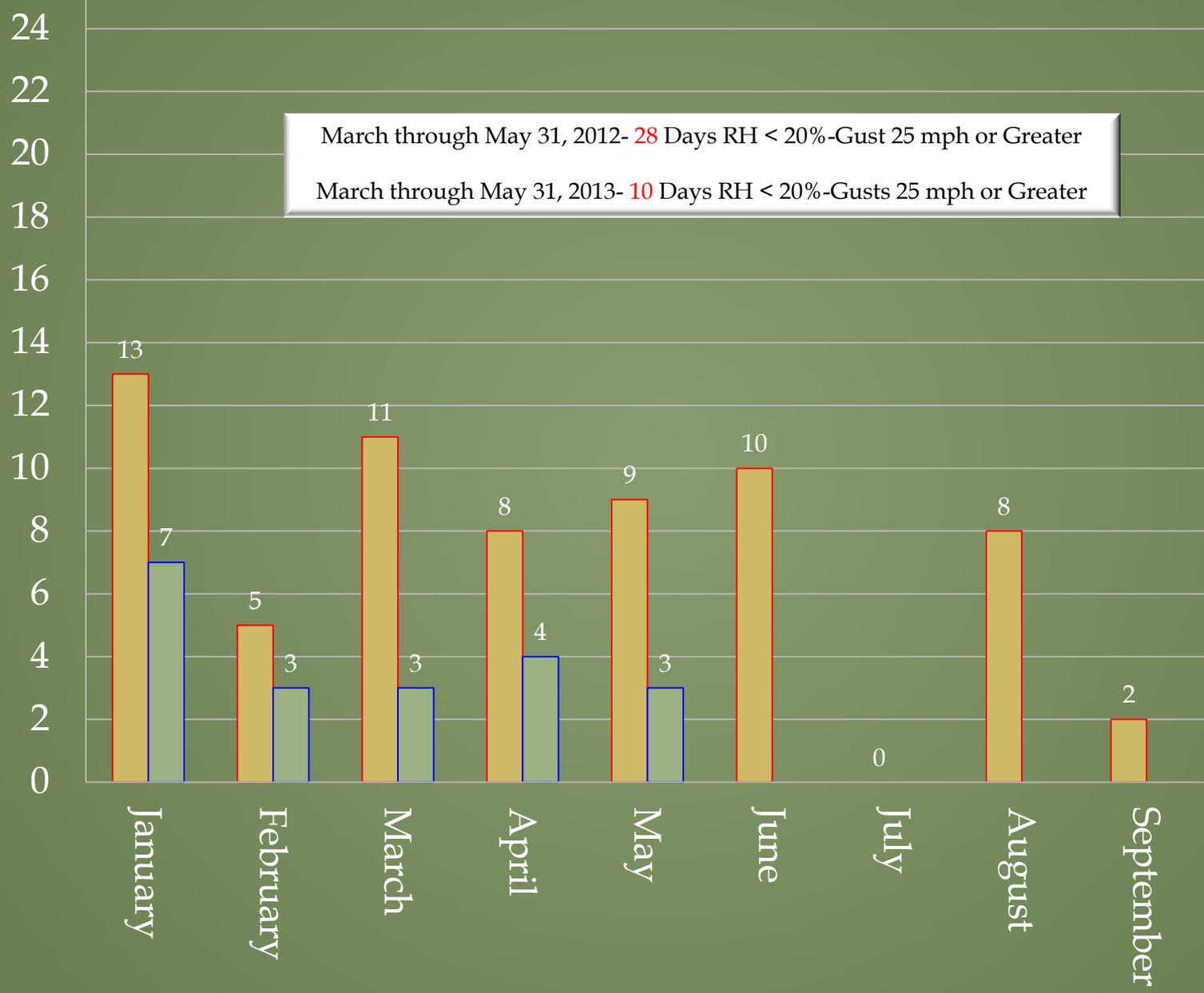
Sugar Loaf RAWS Wind/RH Index

(Wind Gusts 25 mph+ and RH <20%) March-May, 2012 vs. 2013



Number of Days (Frequency)

March through May 31, 2012- 28 Days RH < 20%-Gust 25 mph or Greater
March through May 31, 2013- 10 Days RH < 20%-Gusts 25 mph or Greater

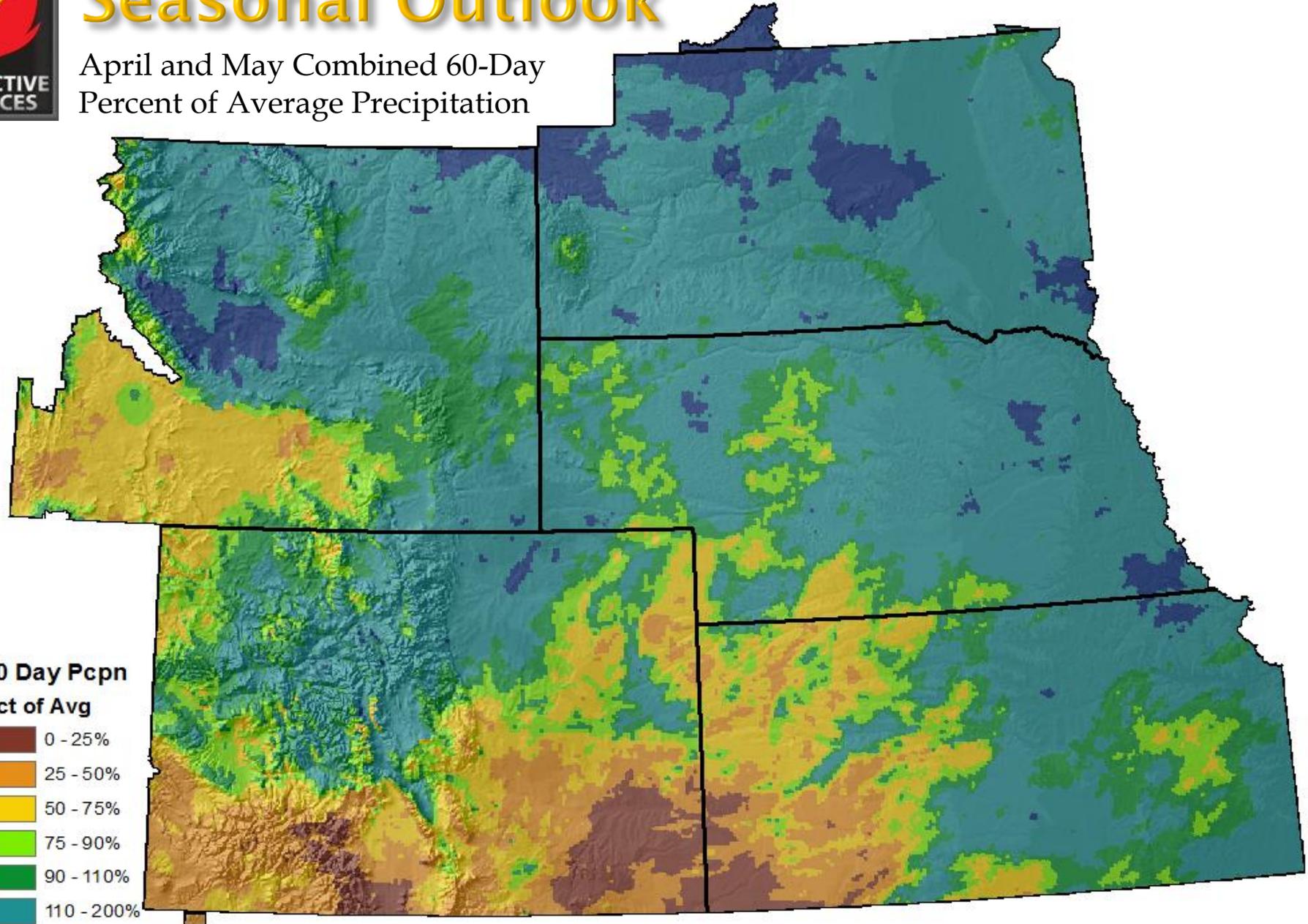


Wind RH 2012
Wind RH 2013



Seasonal Outlook

April and May Combined 60-Day
Percent of Average Precipitation

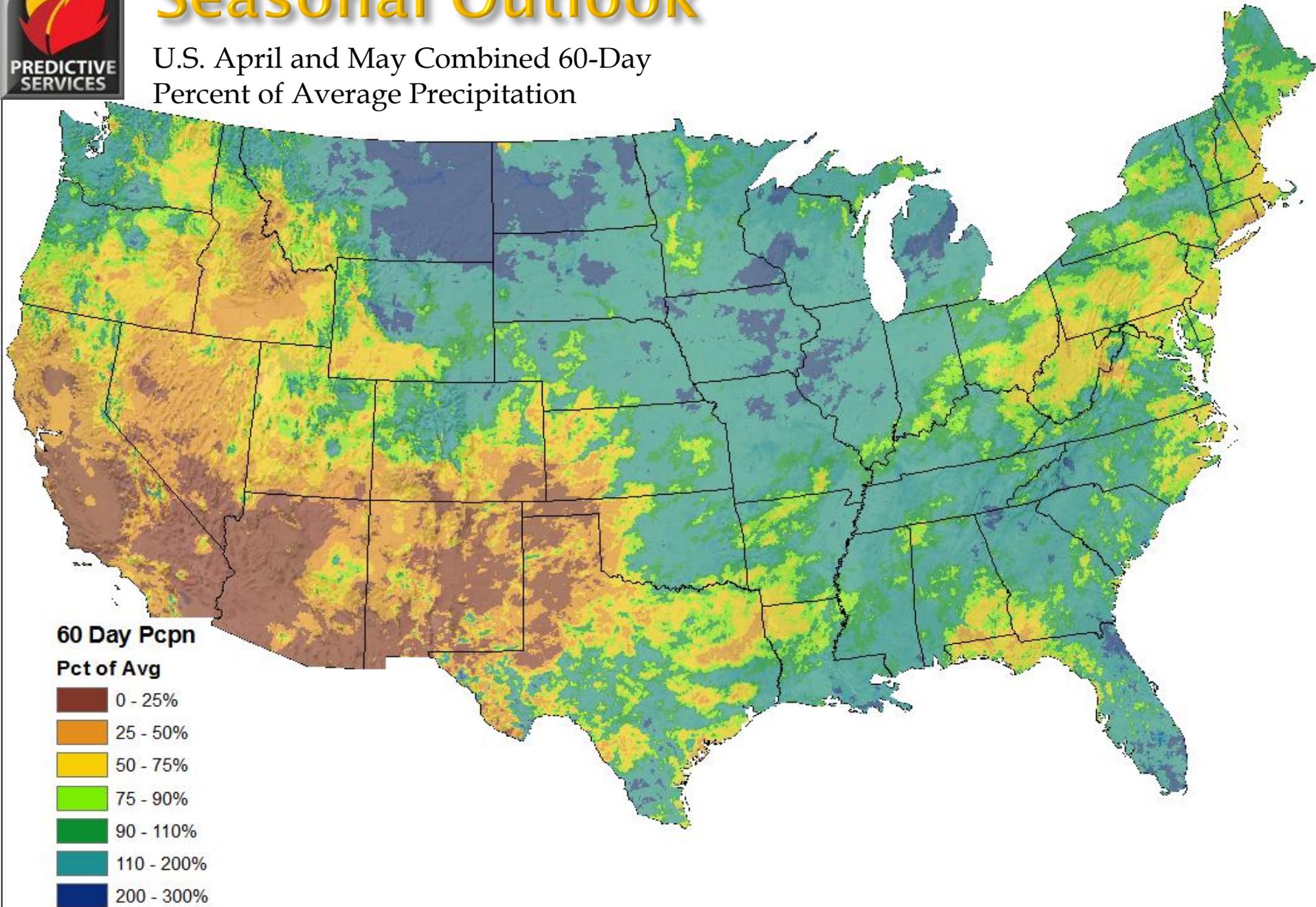


- 60 Day Pcpn
Pct of Avg**
- 0 - 25%
 - 25 - 50%
 - 50 - 75%
 - 75 - 90%
 - 90 - 110%
 - 110 - 200%
 - 200 - 300%



Seasonal Outlook

U.S. April and May Combined 60-Day
Percent of Average Precipitation



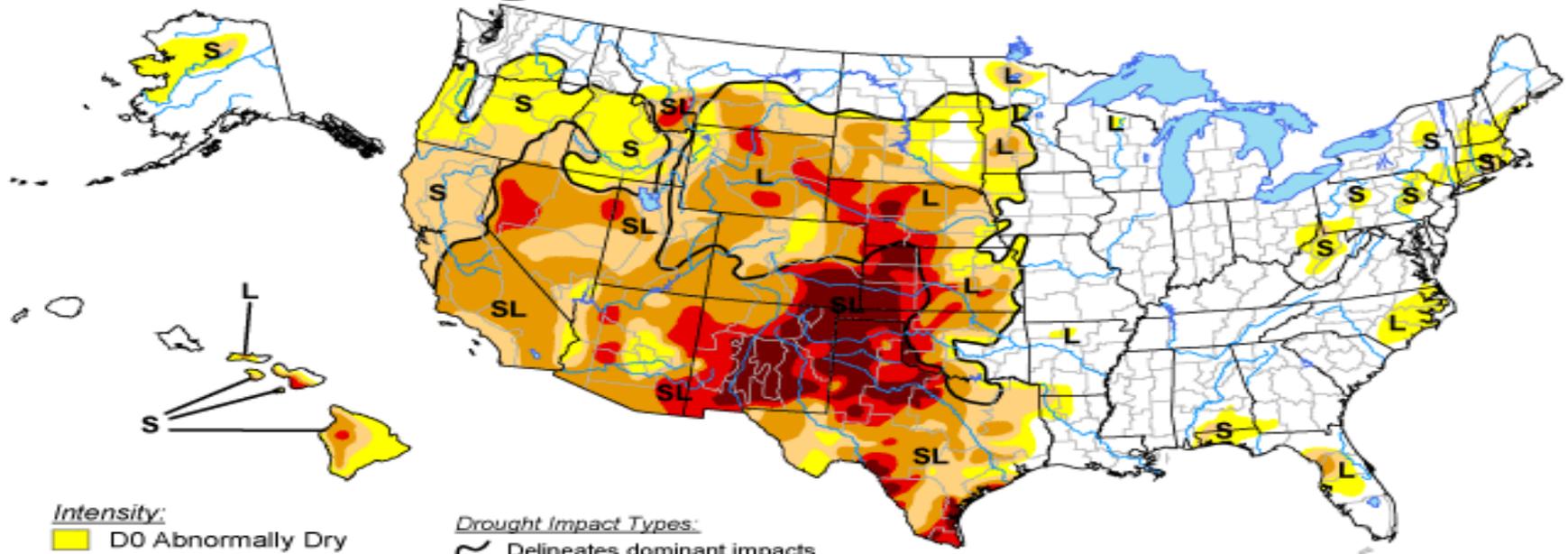


Seasonal Outlook

National Drought Monitor

U.S. Drought Monitor

May 28, 2013
Valid 7 a.m. EDT



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 summary for forecast statements.

<http://droughtmonitor.unl.edu/>



Released Thursday, May 30, 2013
Author: Brad Rippey, U.S. Department of Agriculture





Seasonal Outlook

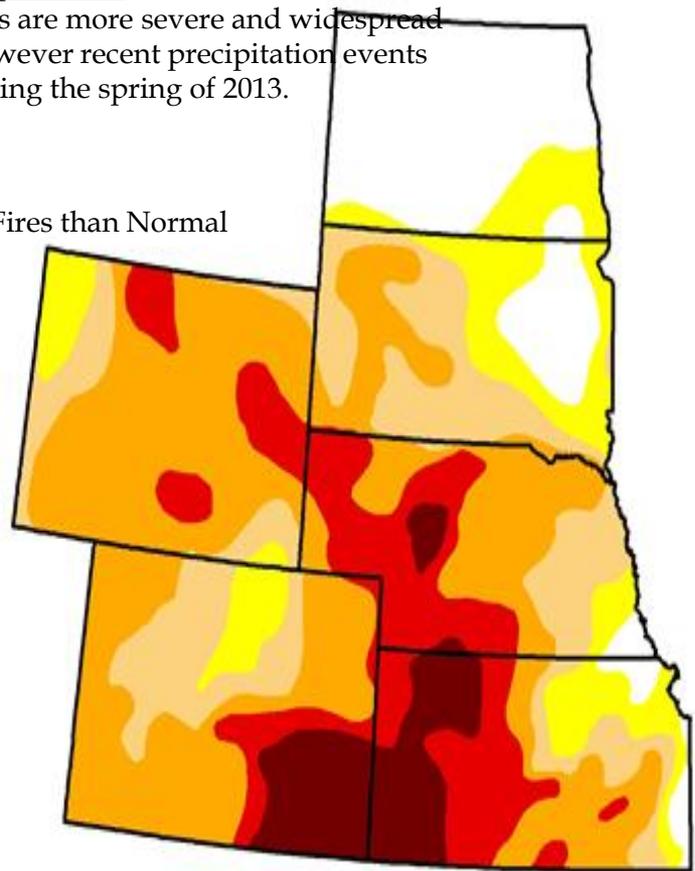
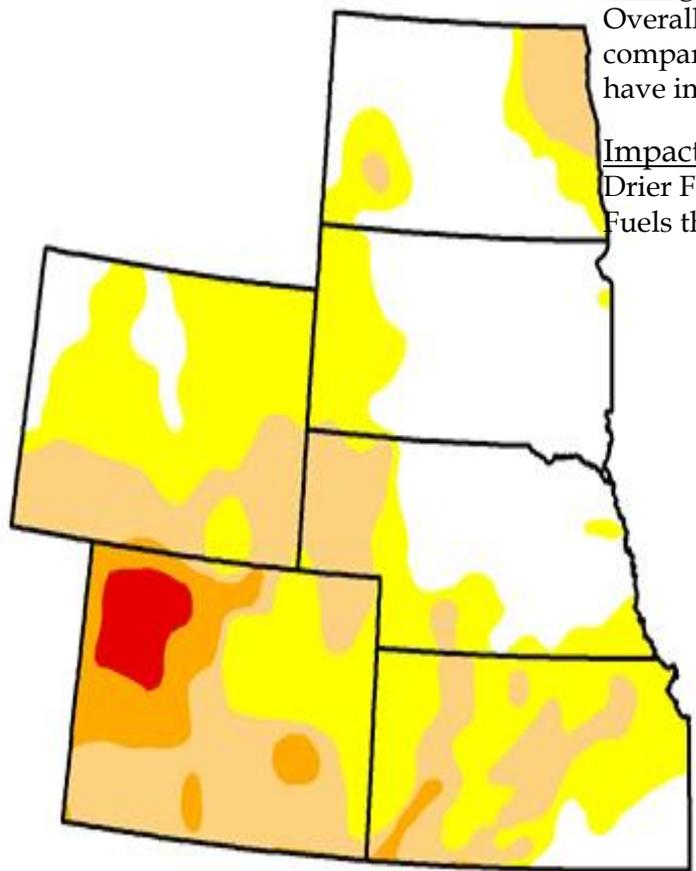
Regional Drought Monitor

Drought Condition Comparisons:

Overall, drought conditions are more severe and widespread compared to May 2012, however recent precipitation events have improved indices during the spring of 2013.

Impacts:

Drier Fuels than Normal
Fuels that Support Larger Fires than Normal



May 29, 2012



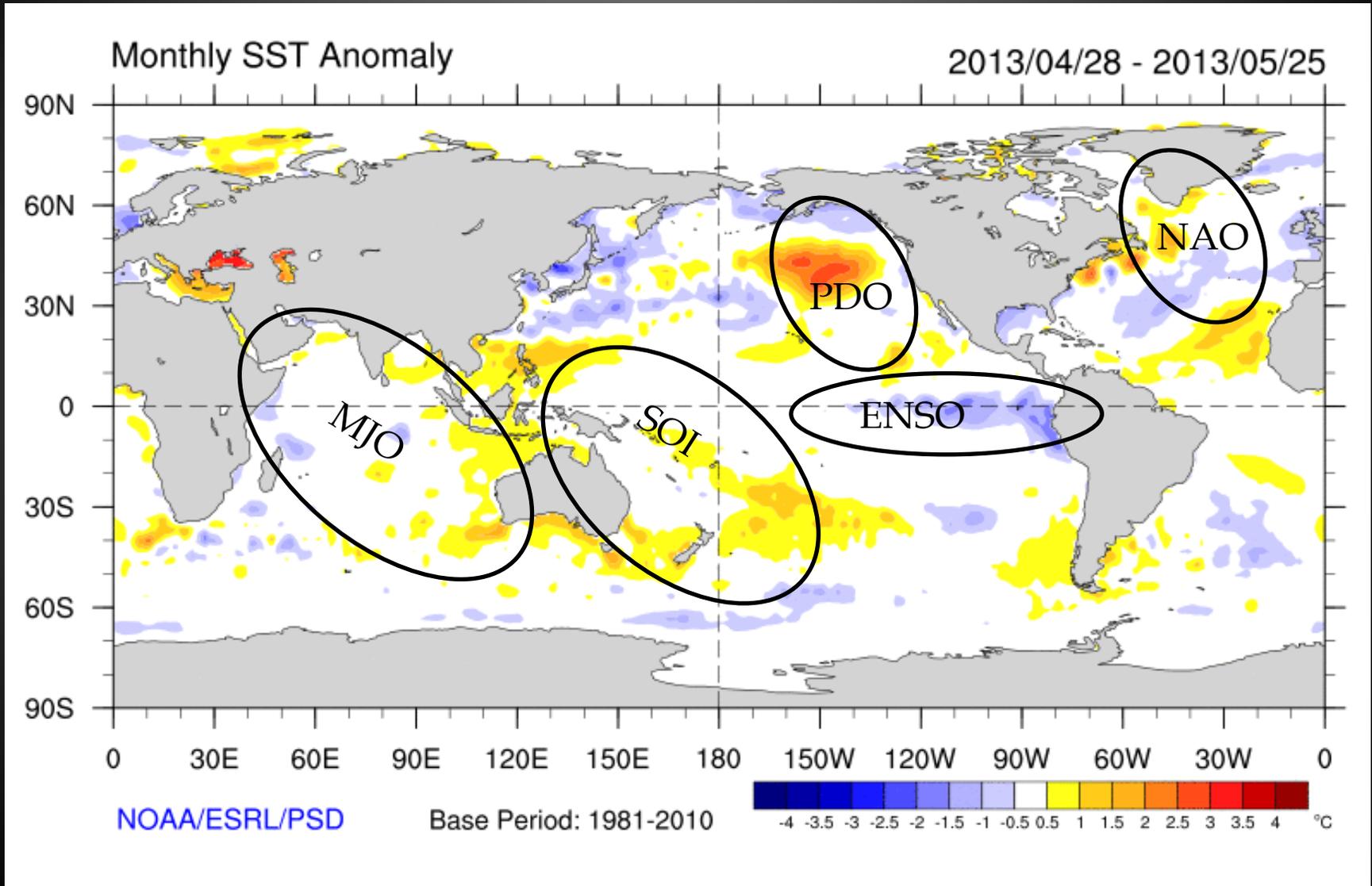
May 28, 2013





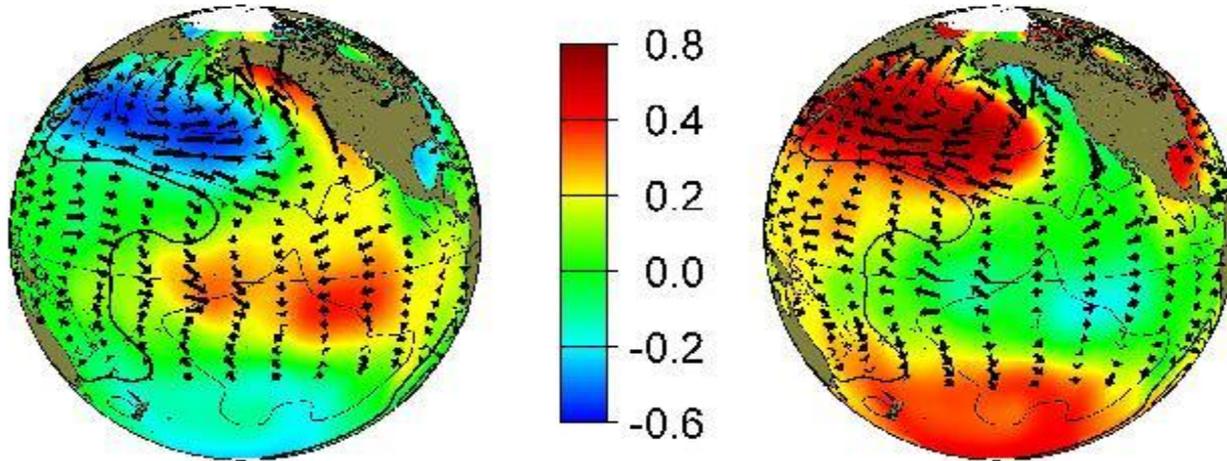
Seasonal Outlook

Sea Surface Temperature Anomalies



Seasonal Outlook

Pacific Decadal Oscillation (PDO)



Pacific Decadal Oscillation

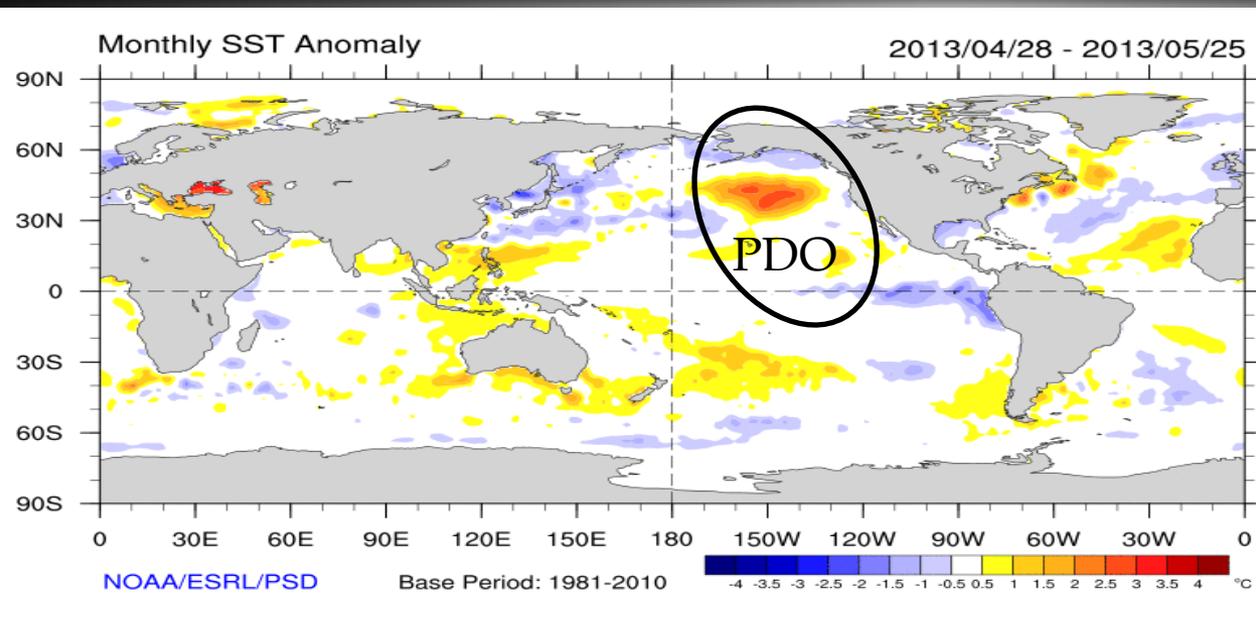
PDO 20-30 Year Cycle

Negative for 5 years (perhaps since 1999). Fluctuations in the anomalies are noted through the historical dataset.

Anomalies of -1 to -2 were noted during the spring and summer of 2012. Weakening (neutral) of the negative anomalies are noted late 2012 through April 2013.

ENSO and PDO

-PDO=75% ENSO Neutral or La Nina

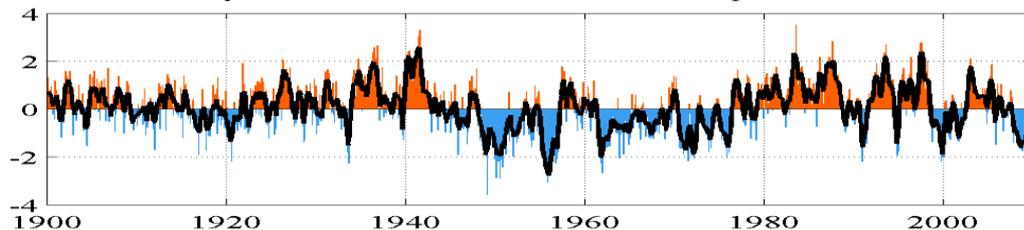




Seasonal Outlook

Pacific Decadal Oscillation (PDO)

monthly values for the PDO index: 1900-September 2009



Pacific Decadal Oscillation

20-30 Year Cycle

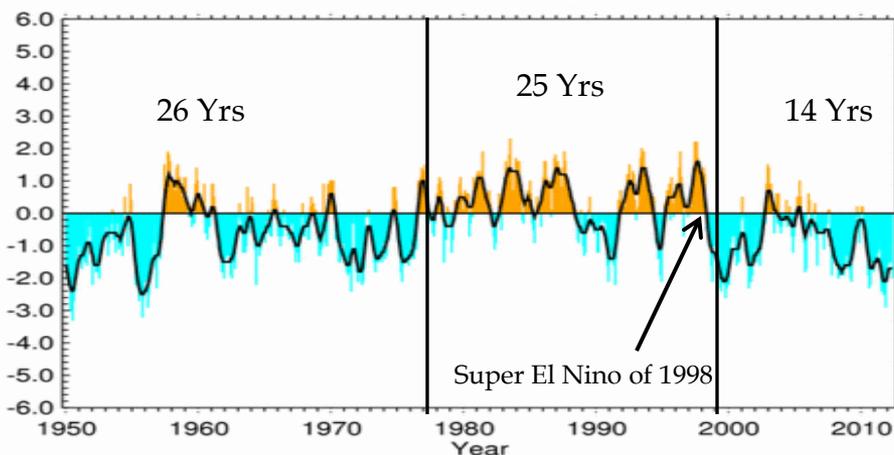
Negative for 5 years (perhaps since 1999)

Research supports precipitation deficits across the west during the winter season with no impact on the southwest monsoon

PDO and ENSO-

Negative PDO and Negative ENSO (La Nina)

Pacific Decadal Oscillation (PDO)



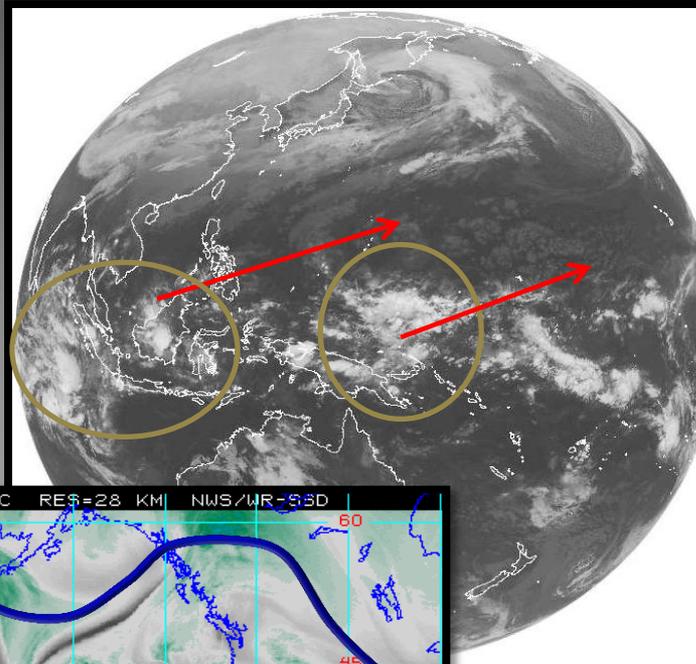
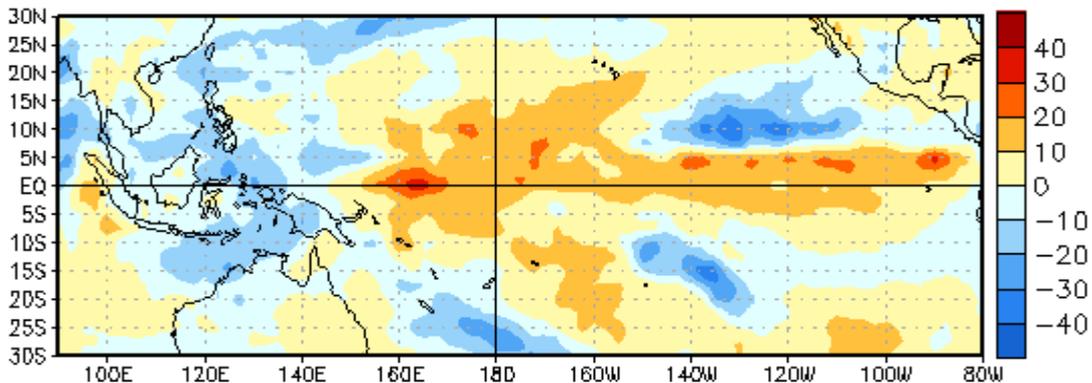
National Climatic Data Center / NESDIS / NOAA



Seasonal Outlook

Active Tropics

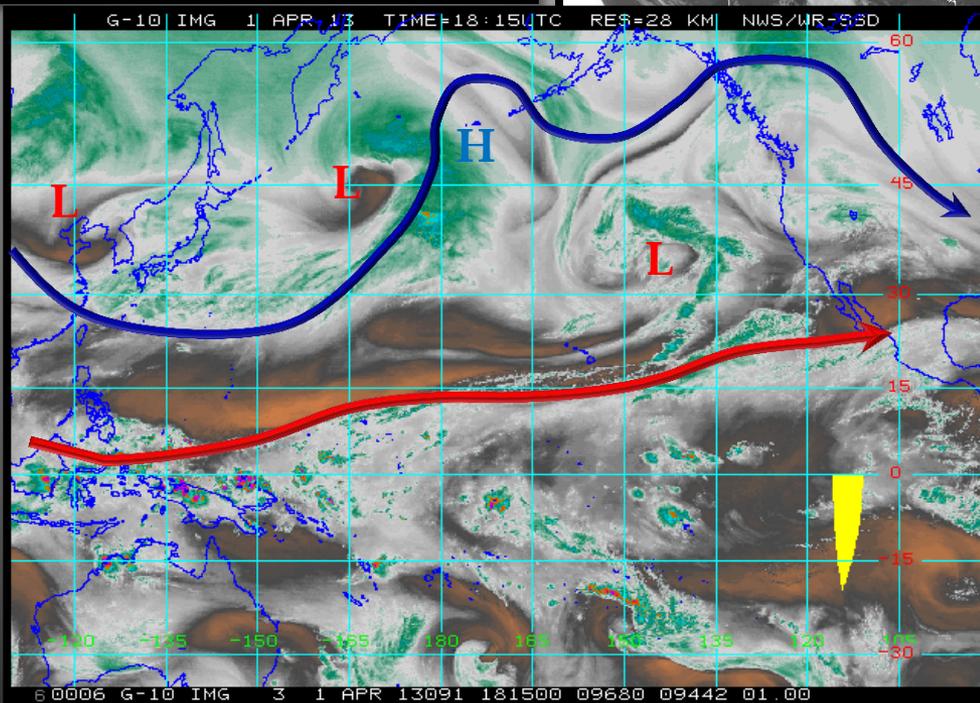
OLR Anomalies
28 APR 2013 to 23 MAY 2013



Outgoing Longwave Radiation OLR

The OLR Anomalies (Above Graphic) indicates an active (convective) western Tropical Pacific. Additionally, convection was noted over the eastern Pacific (10N).

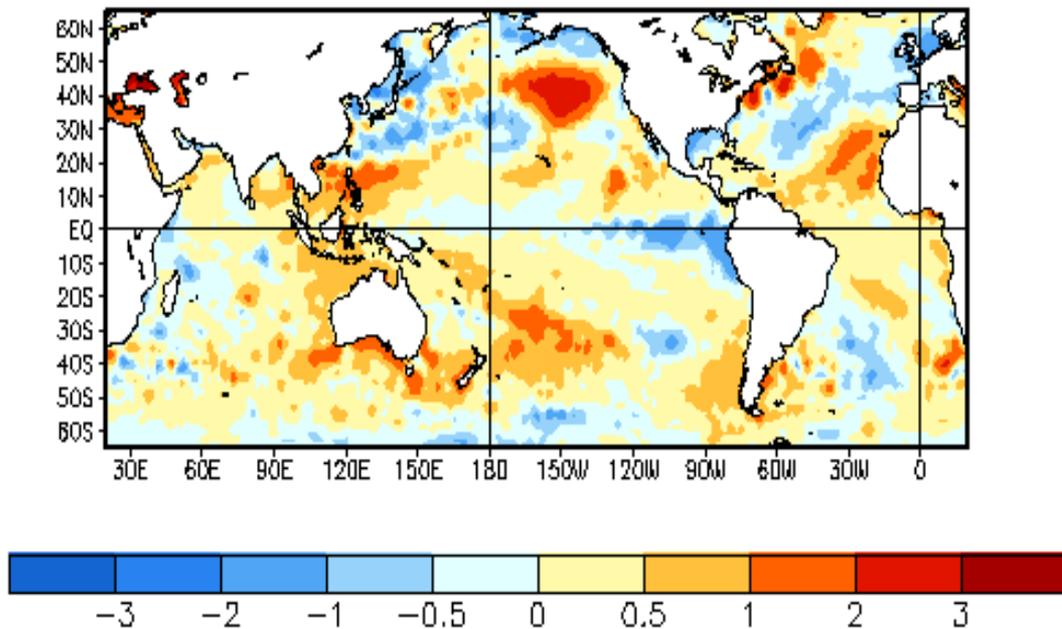
Source-Climate Prediction Center



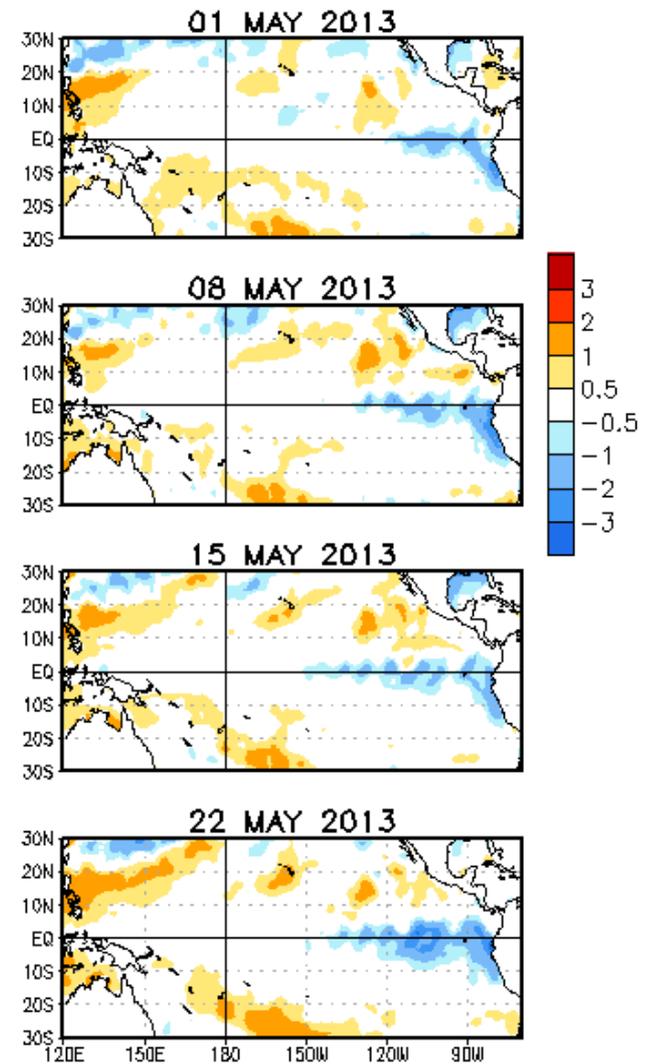
Seasonal Outlook

El Nino Southern Oscillation (ENSO)

Average SST Anomalies
28 APR 2013 – 25 MAY 2013



Weekly SST Anomalies (DEG C)



Outgoing Longwave Radiation (OLR)

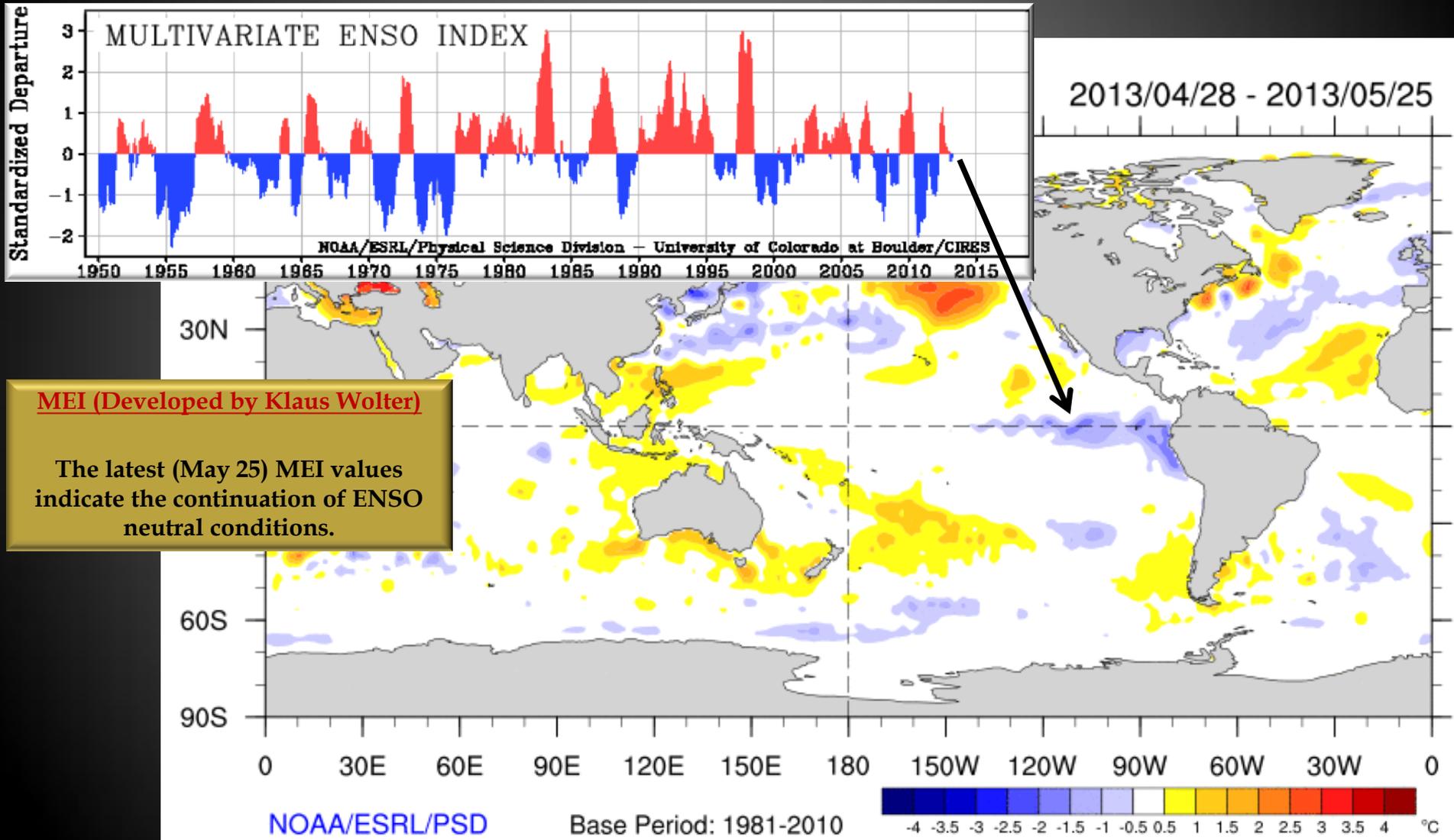
The OLR Anomalies (Above Graphic) indicates an active (convective) western Tropical Pacific. Additionally, convection was noted over the eastern Pacific (10N).

Source-Climate Prediction Center



Seasonal Outlook

El Nino Southern Oscillation (ENSO)

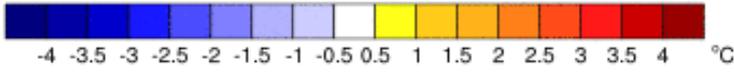


MEI (Developed by Klaus Wolter)

The latest (May 25) MEI values indicate the continuation of ENSO neutral conditions.

NOAA/ESRL/PSD

Base Period: 1981-2010

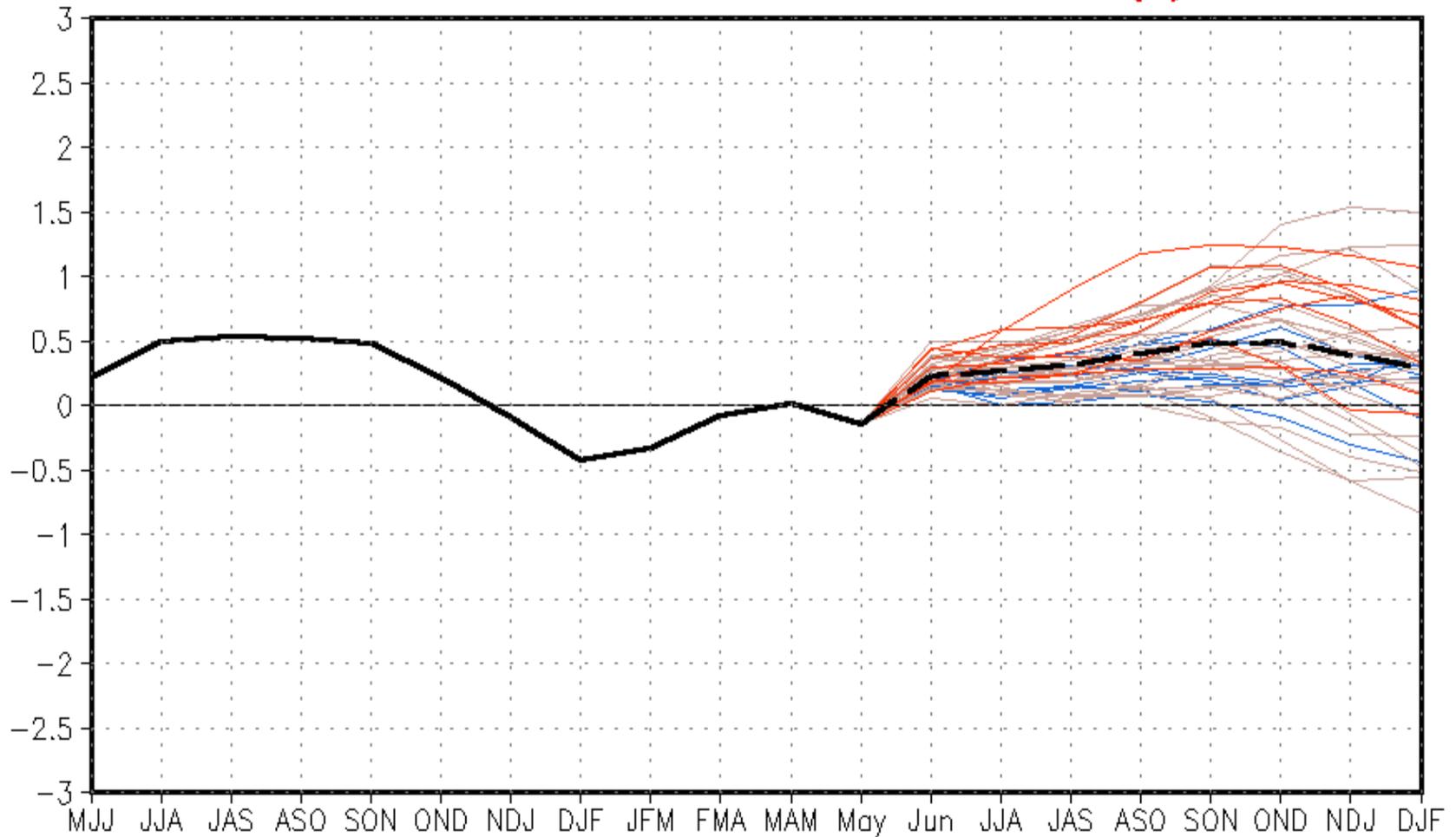




Seasonal Outlook

El Nino Southern Oscillation (ENSO) Forecast

CFSv2 forecast Nino3.4 SST anomalies (K)

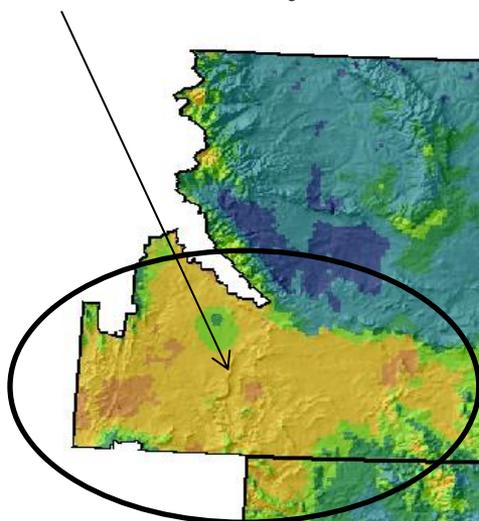




Seasonal Outlook

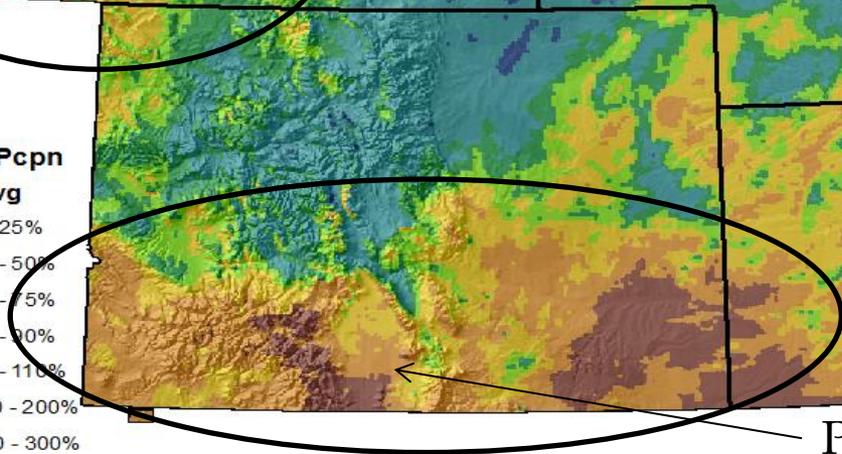
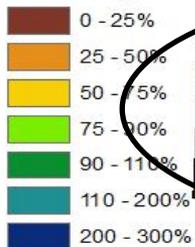
2013 RMA Fire Season Outlook

Persistent Dryness



60 Day Pcpn

Pct of Avg

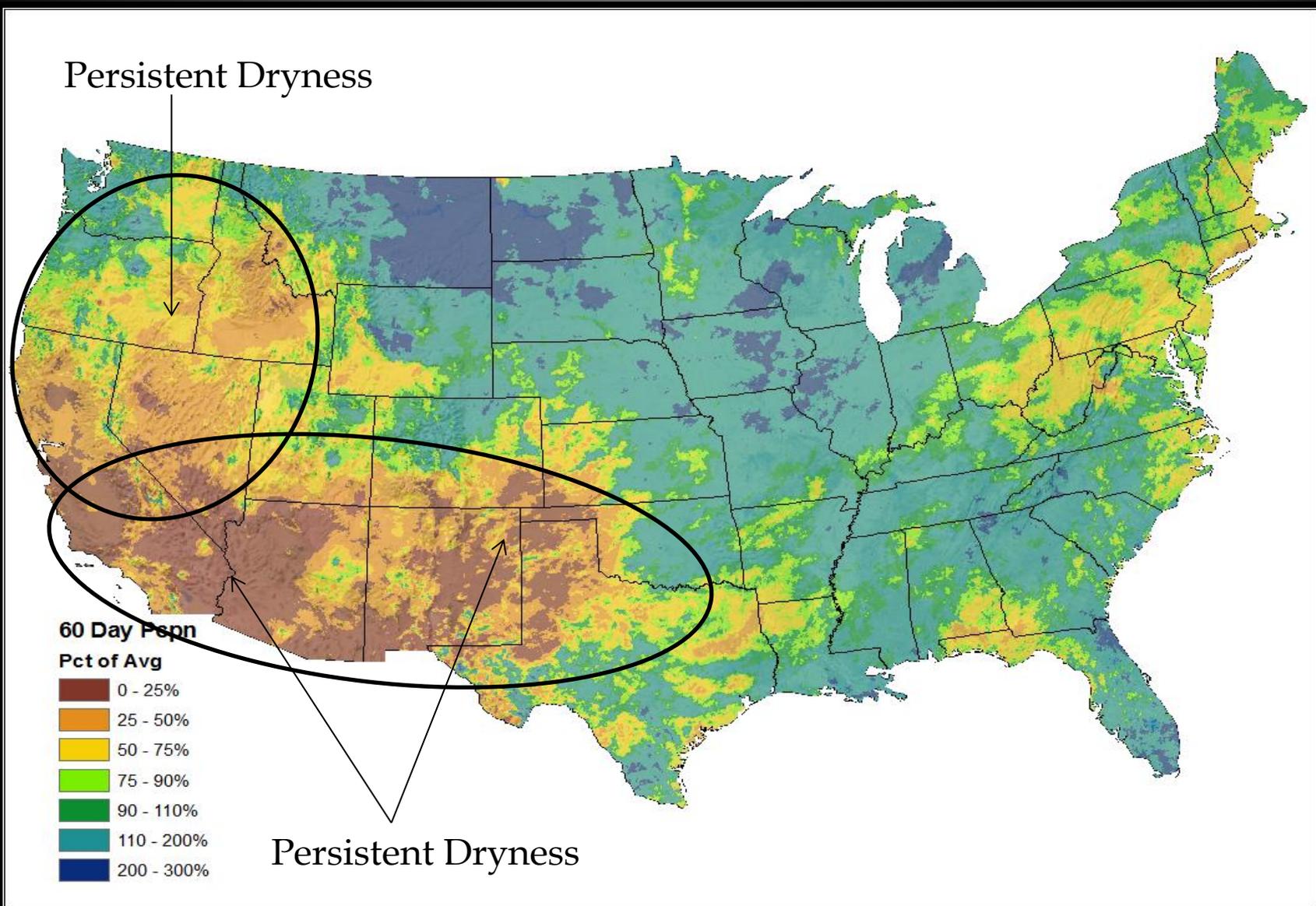


Persistent Dryness

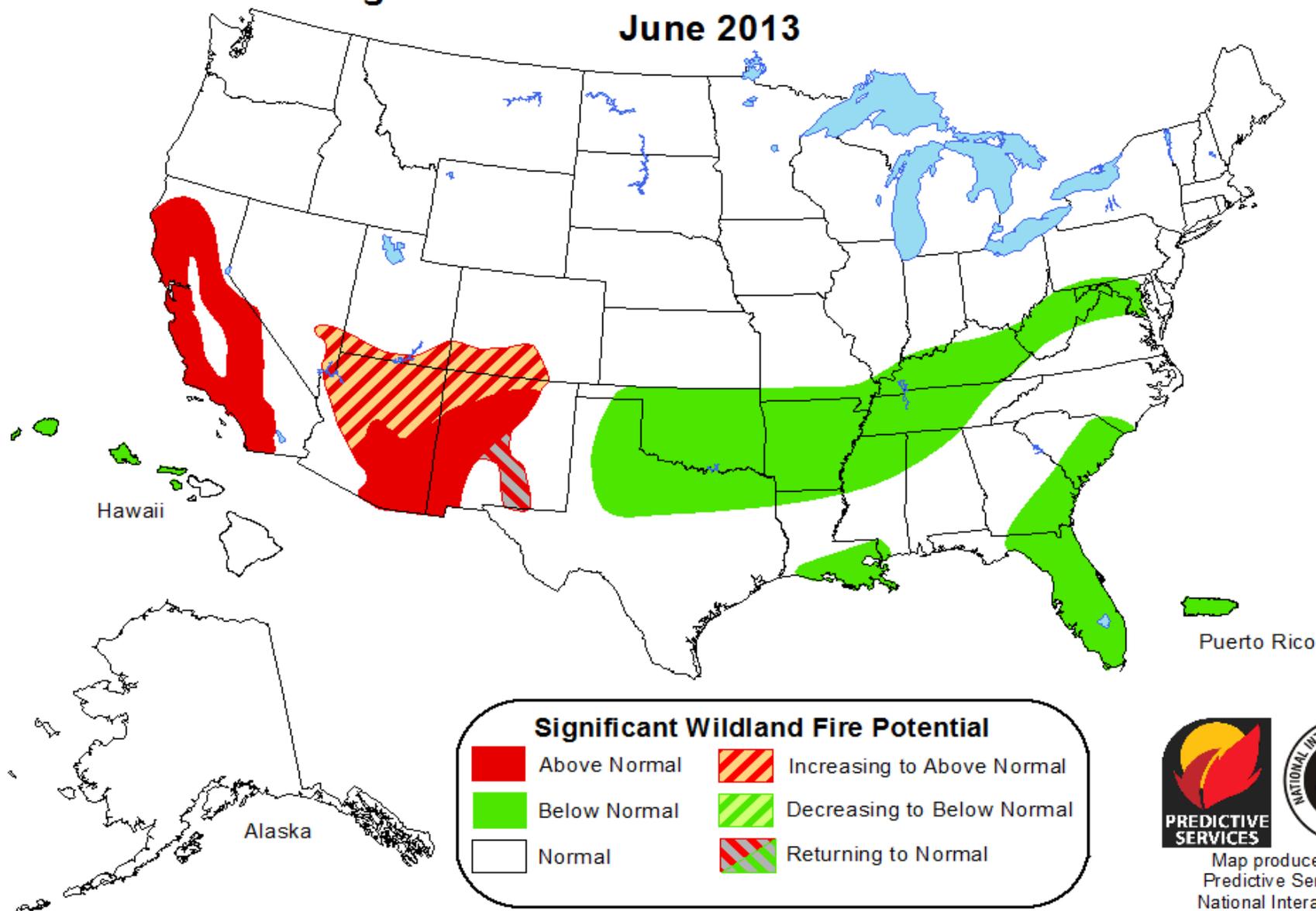


Seasonal Outlook

Conus 60-Day Percent of Normal Precipitation



Significant Wildland Fire Potential Outlook June 2013



Significant Wildland Fire Potential

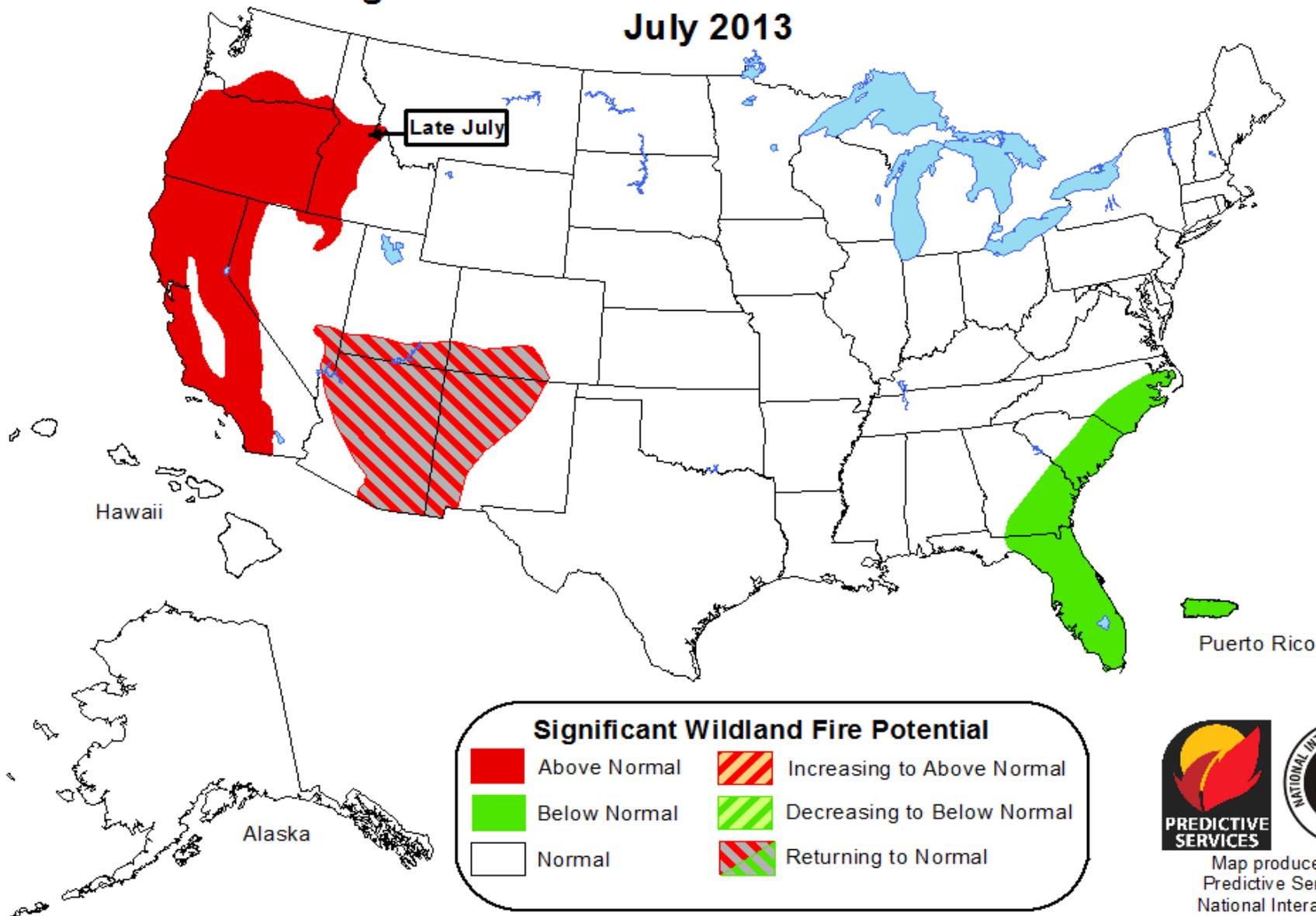
 Above Normal	 Increasing to Above Normal
 Below Normal	 Decreasing to Below Normal
 Normal	 Returning to Normal



Map produced by
 Predictive Services,
 National Interagency
 Coordination Center
 Boise, Idaho
 Issued June 1, 2013
 Next issuance July 1, 2013

Above normal significant wildland fire potential indicates a higher than usual likelihood that wildland fires will occur and/or become significant events. Wildland fires are still expected to occur during forecasted normal conditions as would usually be expected during the outlook period. Significant wildland fires are still possible but less likely than usual during forecasted below normal periods.

Significant Wildland Fire Potential Outlook July 2013

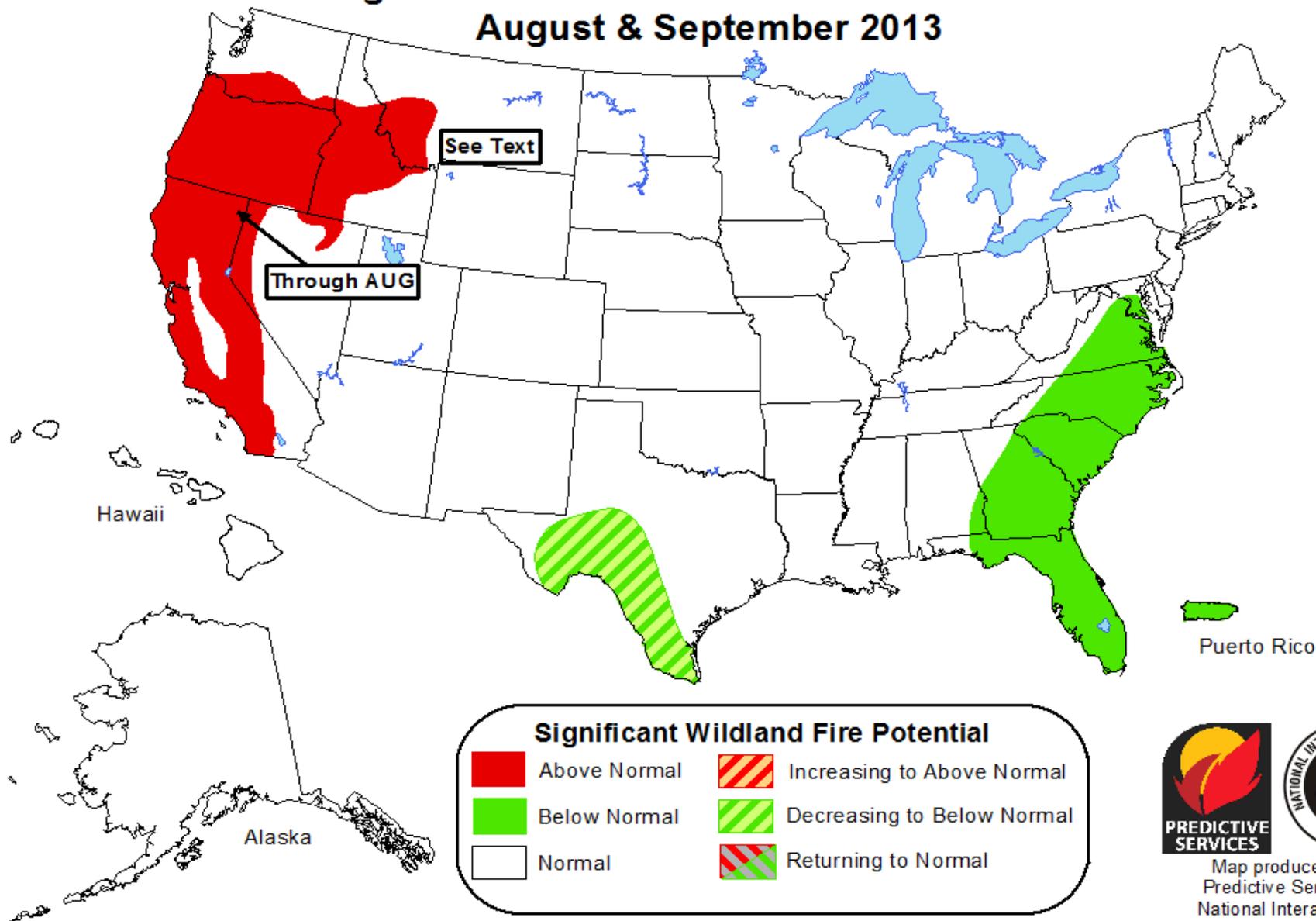


Above normal significant wildland fire potential indicates a higher than usual likelihood that wildland fires will occur and/or become significant events. Wildland fires are still expected to occur during forecasted normal conditions as would usually be expected during the outlook period. Significant wildland fires are still possible but less likely than usual during forecasted below normal periods.



Map produced by
Predictive Services,
National Interagency
Coordination Center
Boise, Idaho
Issued June 1, 2013
Next issuance July 1, 2013

Significant Wildland Fire Potential Outlook August & September 2013



Above normal significant wildland fire potential indicates a higher than usual likelihood that wildland fires will occur and/or become significant events. Wildland fires are still expected to occur during forecasted normal conditions as would usually be expected during the outlook period. Significant wildland fires are still possible but less likely than usual during forecasted below normal periods.



Map produced by
Predictive Services,
National Interagency
Coordination Center
Boise, Idaho

Issued June 1, 2013
Next issuance July 1, 2013



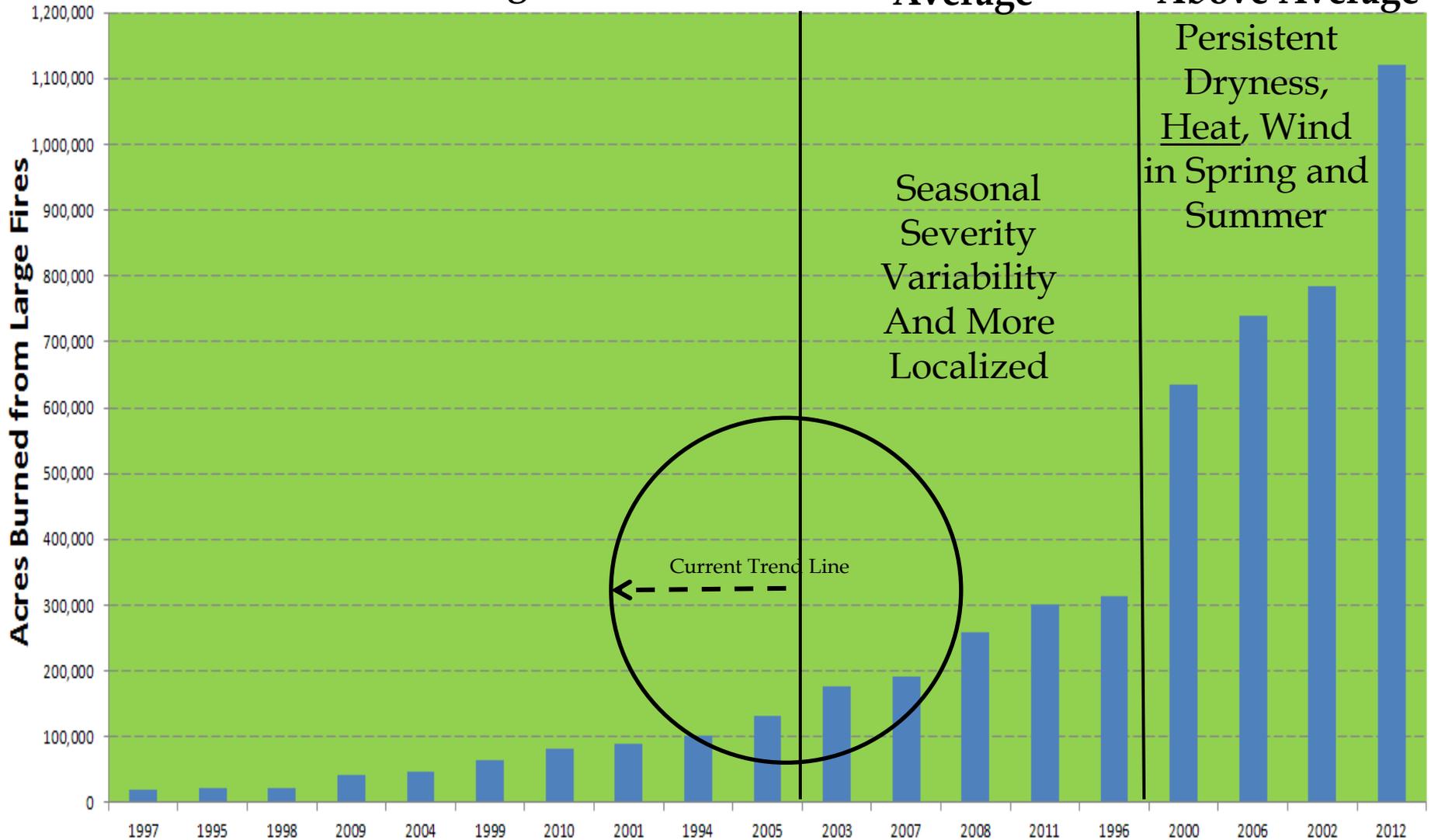
2013 RMA Fire Season Forecast

Below Average

RMA 1994-2012

Average

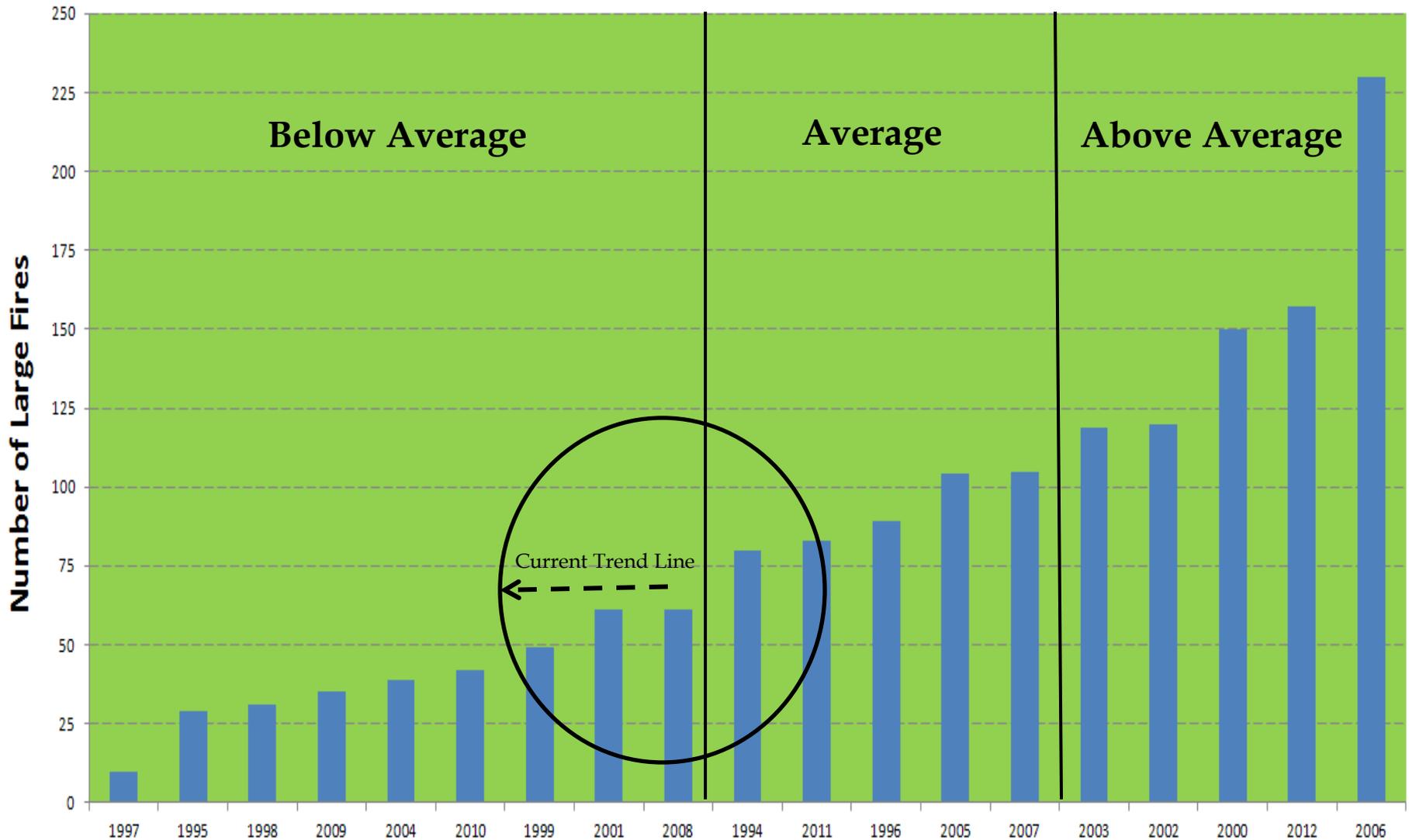
Above Average





2013 RMA Fire Season Forecast

RMA 1994-2012





Seasonal Outlook

RMA Summary and Conclusions

Summer Fire Season Outlook and Considerations:

1. Though not as progressive as March and April, the weather pattern has remained active during the month of May. Heat over the Southwest has pushed the jet further northern, resulting in beneficial rainfall over Northern Wyoming and South Dakota the second half of May, which is typical for this time of year. Despite some moisture during the last 30 days, southern Colorado remains the driest part of the RMA with 30-Day Percent of Average Precipitation values in the 25%-50% range. Similar values are noted over southwest Wyoming.
2. Persistent and extreme heat events have been almost none existent this year, especially compared to 2012. Heat waves this spring have been less frequent, less extreme and short-lived. Below average temperature readings have been more common since the first of the year, however a string of warm days during second half of May has put last month closer to average.
3. Low RH, and the combination of High Wind-Low RH episodes have been significantly less (generally less than 30% of last year) in 2013 than 2012 .
4. Green-up was delayed across much of the RMA due to below average temperatures readings this spring. These trends have continued over the higher elevations with recent snowfall. However, there is a significant transition into a much drier fuel regime over the southern third of Colorado, generally along and south of a line from Colorado Springs to Northwood.
5. ENSO neutral conditions are forecast to continue through the 2013 warm season.
6. The weather pattern remains active through the first 10 days of June. The focus for precipitation events will continue to be over northern and eastern sections of the RMA, with temperatures near seasonal averages. The typical summer-time ridge is expected to build over the western U.S. by mid June, allowing more heat to build north into the RMA. The Southwest Monsoon typically begins the first week of July, with moisture usually reaching the RMA by the second week of July. Early onset (late June) of the Southwest Monsoon has occurred in 60% of the ENSO neutral year cases, with 33% of the cases starting around the average start date, and 7% in mid July (or later than normal).



Seasonal Outlook

RMA Summary and Conclusions

Conclusions:

1. The overall large fire potential has shifted to the “high-end” below average to “low-end” average range (in terms of acres and number of large fires forecast) for the upcoming Rocky Mountain Area core fire season (June-September). However, above average risk is predicted June through early July (pre-monsoon) for southern Colorado. Importantly, all variables considered DO NOT eliminate having a fire season and large fires.
2. A repeat of the 2012 fire season is not in the cards this year. Wet trends, cooler temperatures, less frequent Wind/RH events have decreased the overall severity. However, increased thunderstorm activity this year may increase IA compared to last.
3. By the end of May 2012, over 1,070 fire had occurred with over 85,000 acres burned. Through May 2013 554 fire have been reported for just over 7,000 acres.
4. Green-up is more extensive this year and in some cases has been delayed due to very cold temperatures, which may close the window for large fire risk as we draw closer the onset of the Southwest Monsoon.

The Next Update Will Be Around June 20, 2013

A More Detailed Seasonal Outlook Can Be Found On The Predictive Services Web Page Under Outlooks



Seasonal Outlook

Questions

Correspondence

Tim Mathewson- RMCC Meteorologist

t2mathew@blm.gov

Next Update: June 20, 2013