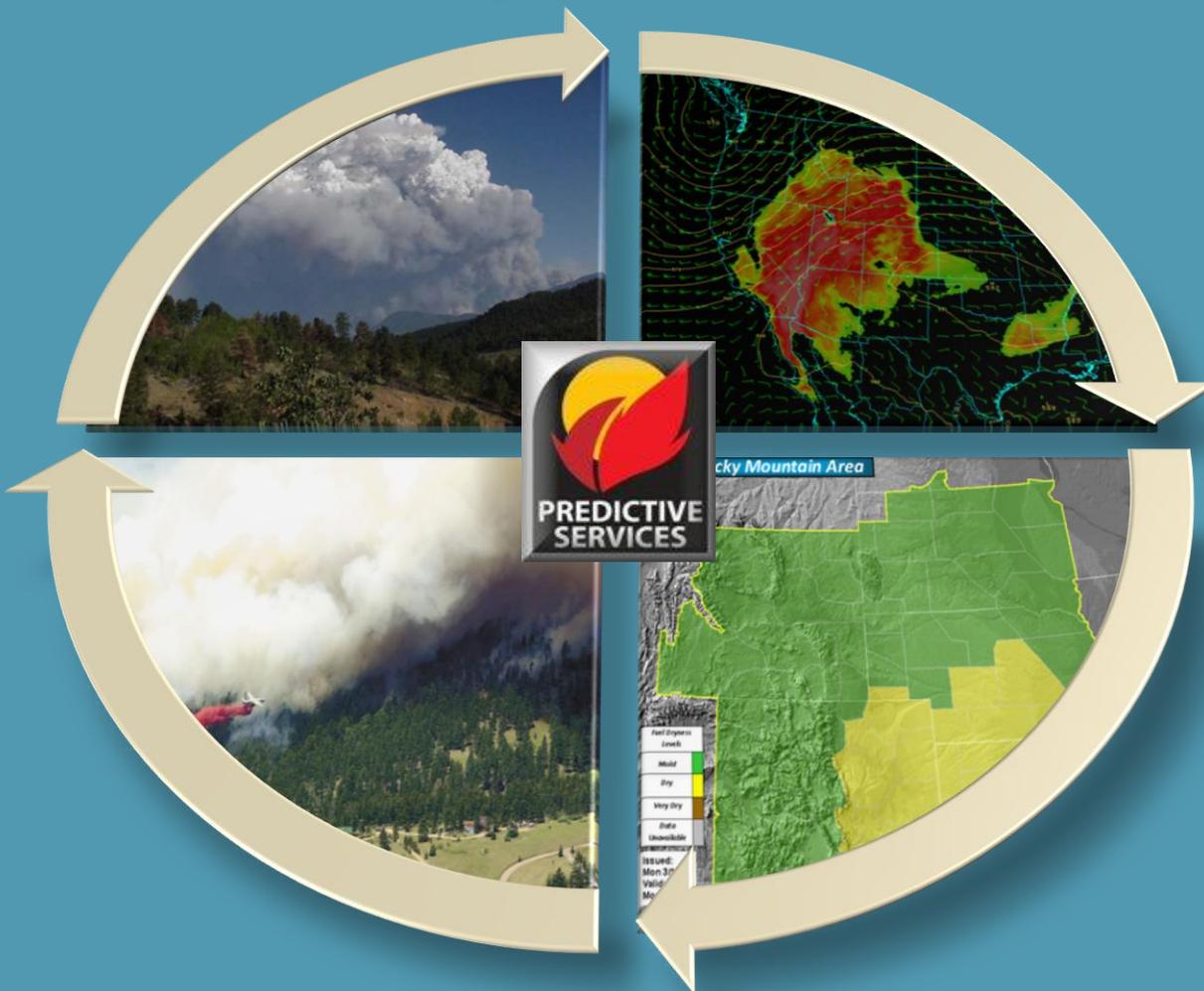




Rocky Mountain Area

2011 Seasonal Outlook-April 27, 2011



Tim Mathewson - Fire Meteorologist- RMACC
Russ Mann- Fire Meteorologist- RMACC
Marco Perea- Intelligence Coordinator- RMACC



Rocky Mountain Area

Considerations

- ❑ **Weather Rewind- Climatology Nationally/Regionally**
- ❑ **Current Snowpack**
- ❑ **Precipitation Anomalies**
- ❑ **2011 Spring Fire Activity**
- ❑ **Statistics and Comparisons**
- ❑ **2011 Seasonal Outlook**



Arctic Air

L

Strong Polar Jet

L

Wet

Wet

Wet

L

Fall 2010

Late Winter/Early Spring 2011

Flooding

L

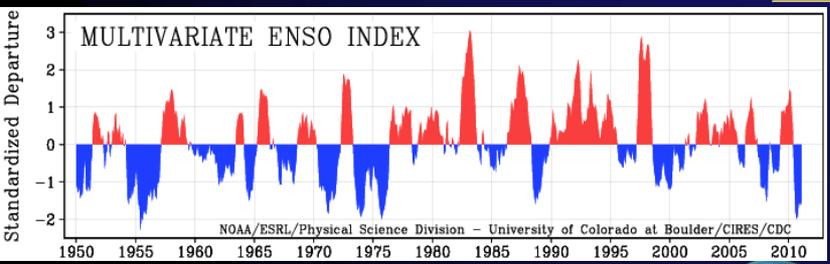
Dry

L

L

Increase in Tornado Activity

Fires



Strong La Nina

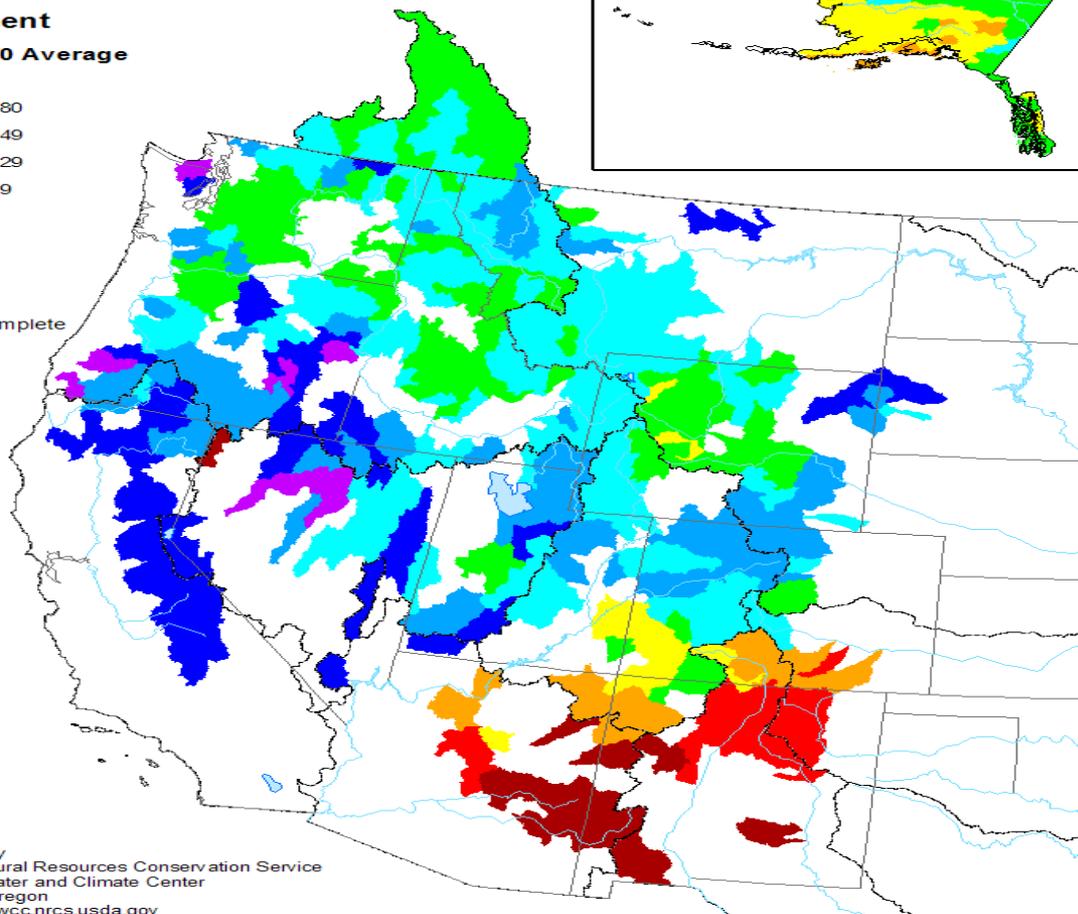


Rocky Mountain Area

Western U.S. Snowpack

Mountain Snowpack as of April 1, 2011

Percent
1971 to 2000 Average



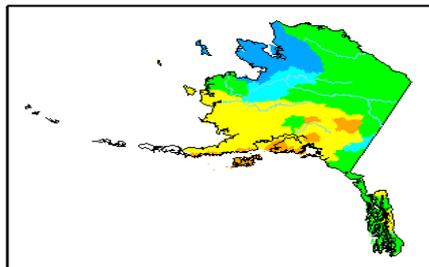
Prepared by
USDA, Natural Resources Conservation Service
National Water and Climate Center
Portland, Oregon
<http://www.wcc.nrcs.usda.gov>



Rocky Mountain Area

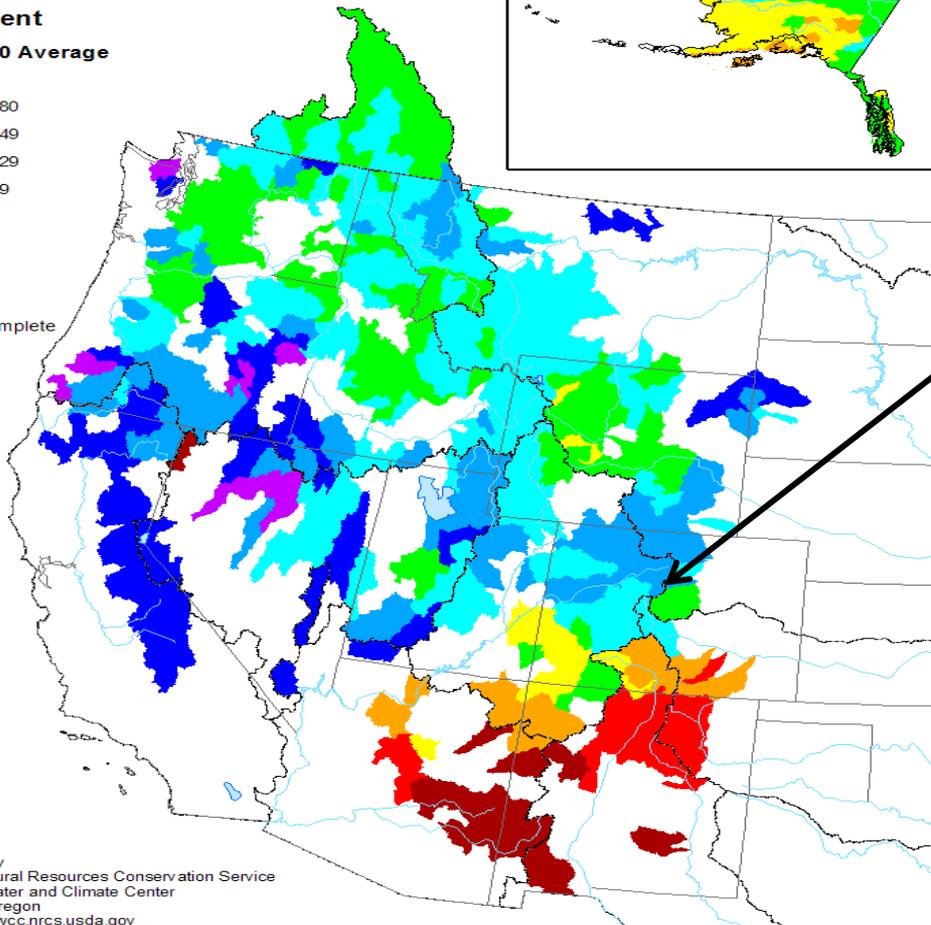
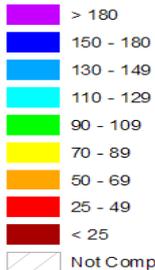
Western U.S. Snowpack

Mountain Snowpack as of April 1, 2011



Percent

1971 to 2000 Average

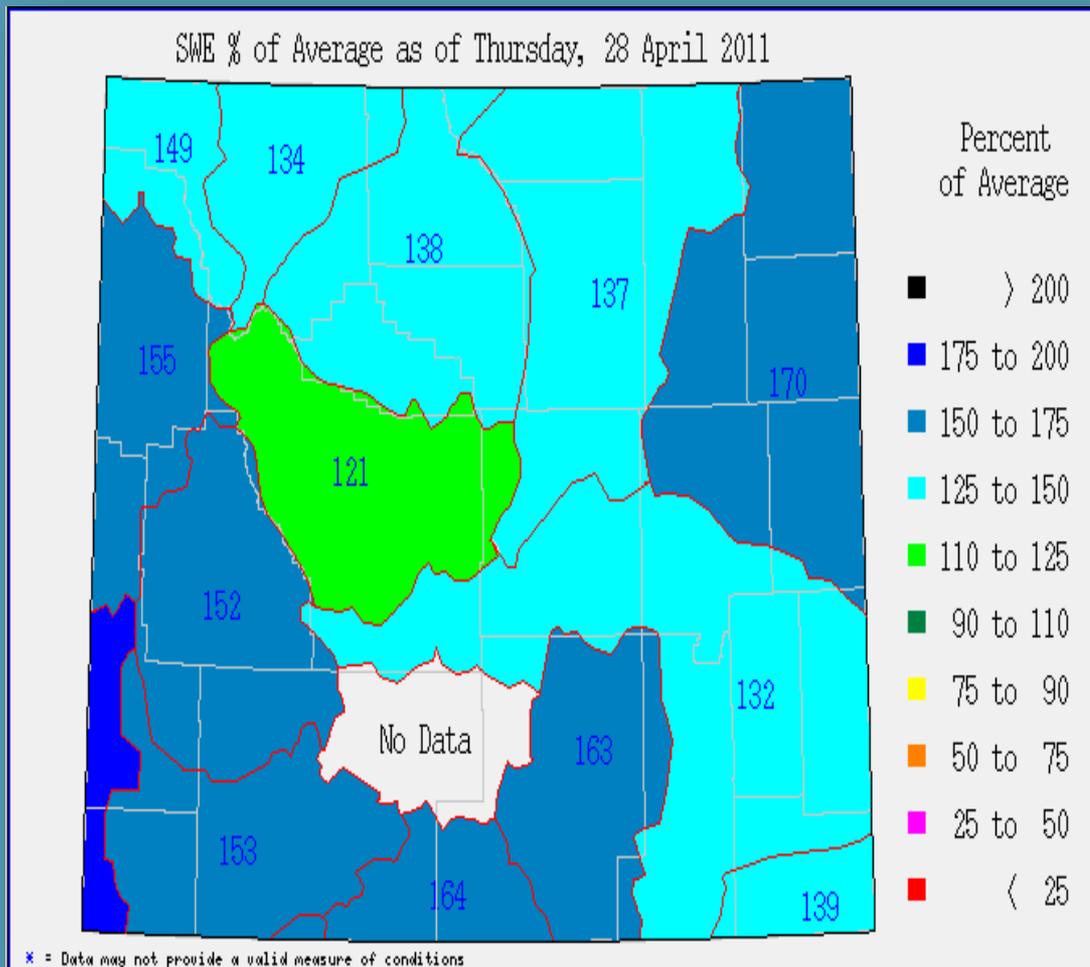


Prepared by
USDA, Natural Resources Conservation Service
National Water and Climate Center
Portland, Oregon
<http://www.wcc.nrcs.usda.gov>



Rocky Mountain Area

Wyoming Snowpack



Wyoming Snowpack

Standouts:

Western and Southern Mountains

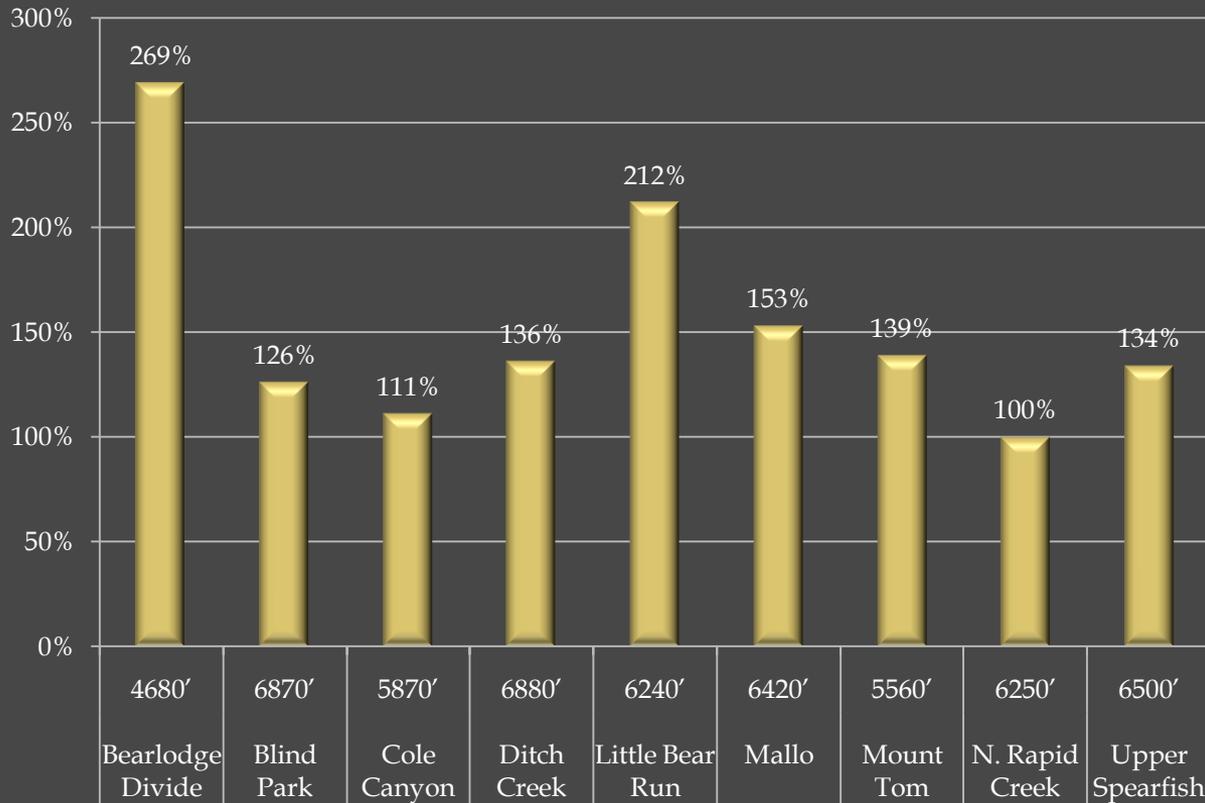
Some dryness exists in the lower basin of central Wyoming



Rocky Mountain Area

Black Hills Snowpack

**Black Hills Snow Water Equivalent
Percent of 30 Year Average (April 1, 2011)**



Black Hills Snowpack

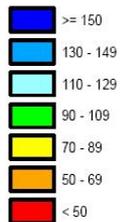
Above Average:



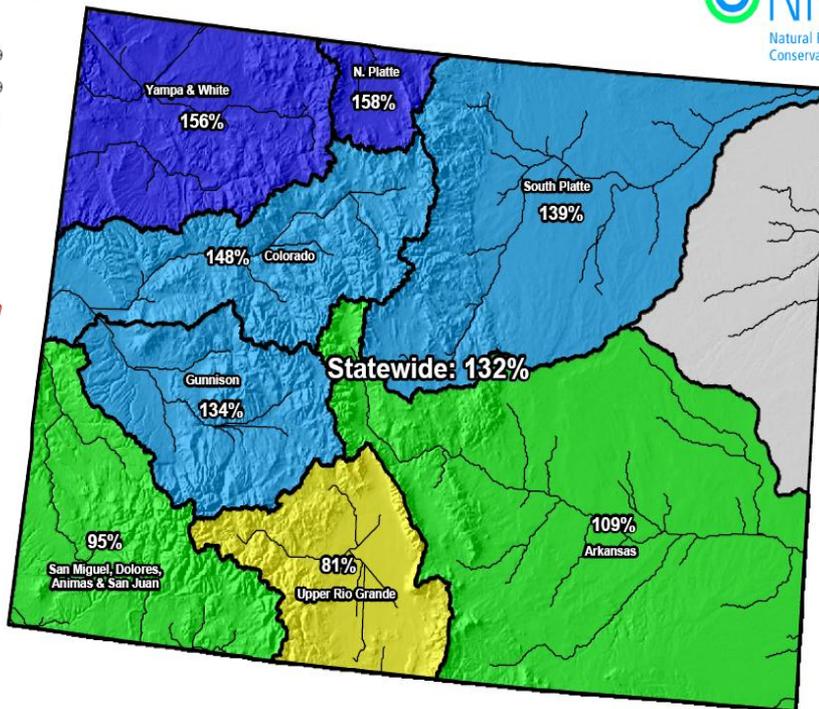
Rocky Mountain Area Colorado Snowpack

Colorado SNOTEL Snowpack Update Map

Percent of Average



Provisional Data
Subject to Revision



Current as of Apr 28, 2011

*Data may not provide a valid measure of conditions

Colorado Snowpack

Statewide: 132% Ave.

Standouts:

Central and Northern Mountains

Below Average Southern
Mountains

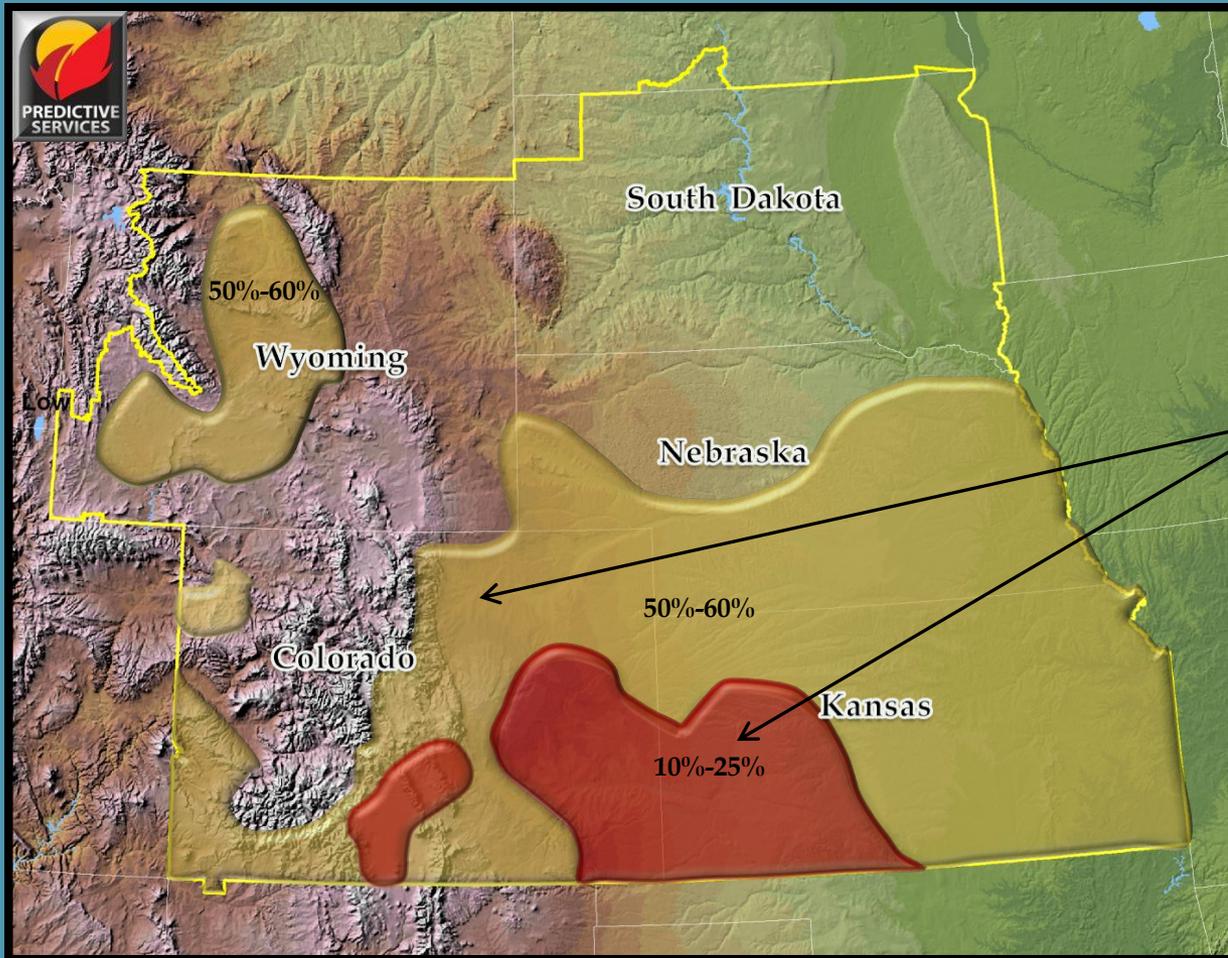
Conclusions:

Snowpack Map is Misleading and
Represents Drainage Averages



Rocky Mountain Area

9-Month Percent of Average Precipitation



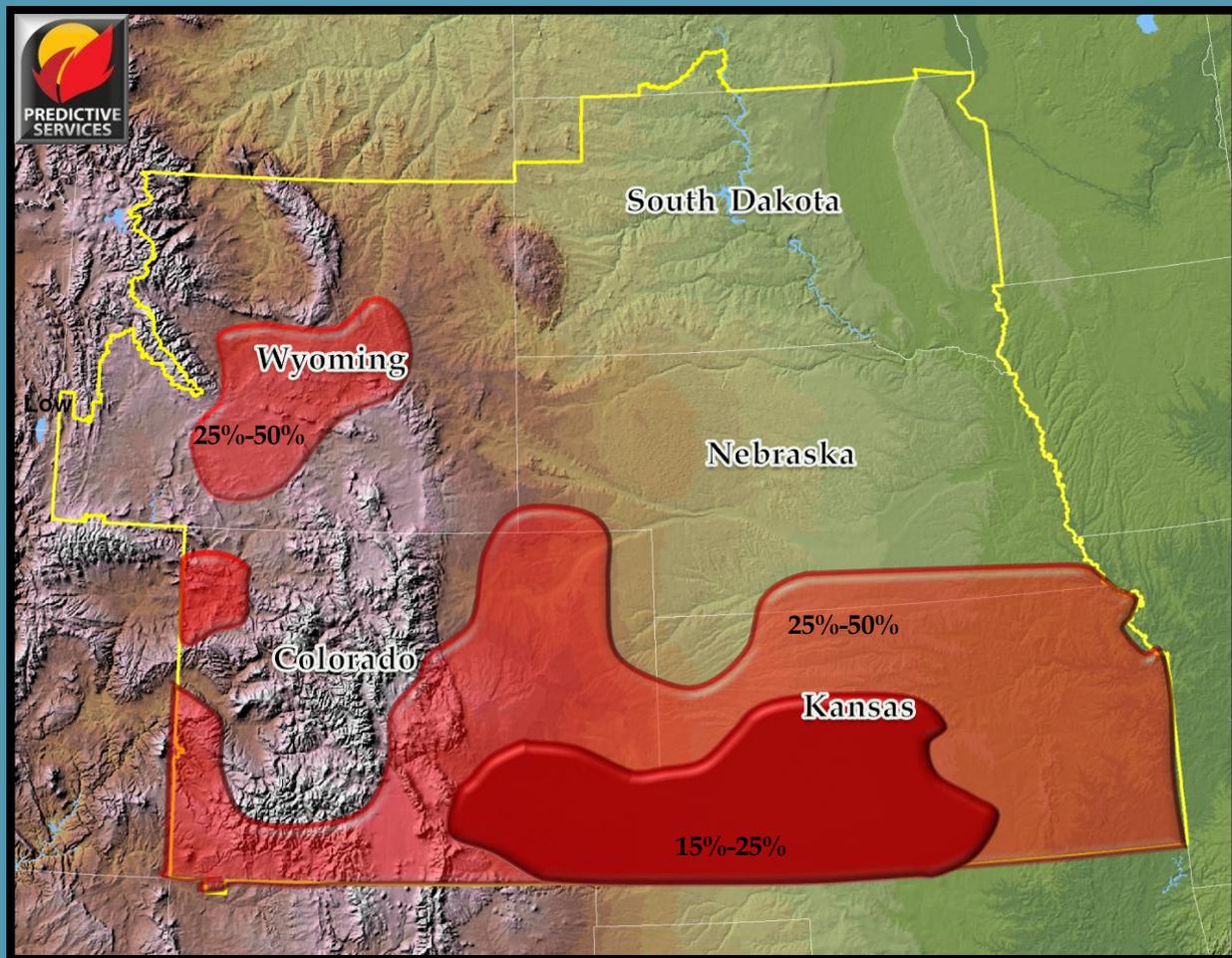
**Dry Period
Began Late
Summer 2010**





Rocky Mountain Area

60-Day Percent of Average Precipitation



The Last 60-Days



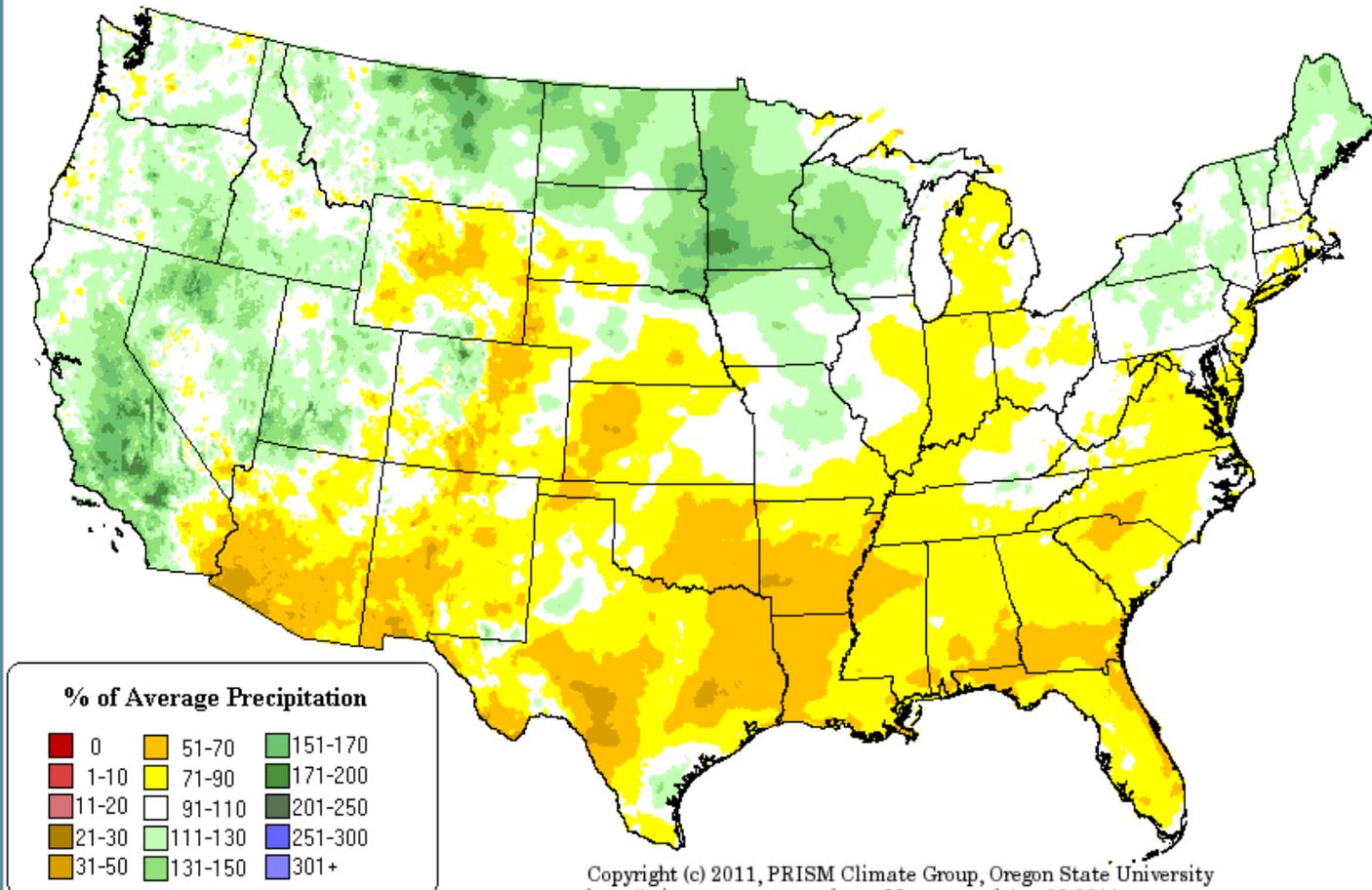
5%-25% Average



25%-50% Average

Rocky Mountain Area Precipitation

9-month Percent of Average Precipitation: Mar 2011
Provisional Data



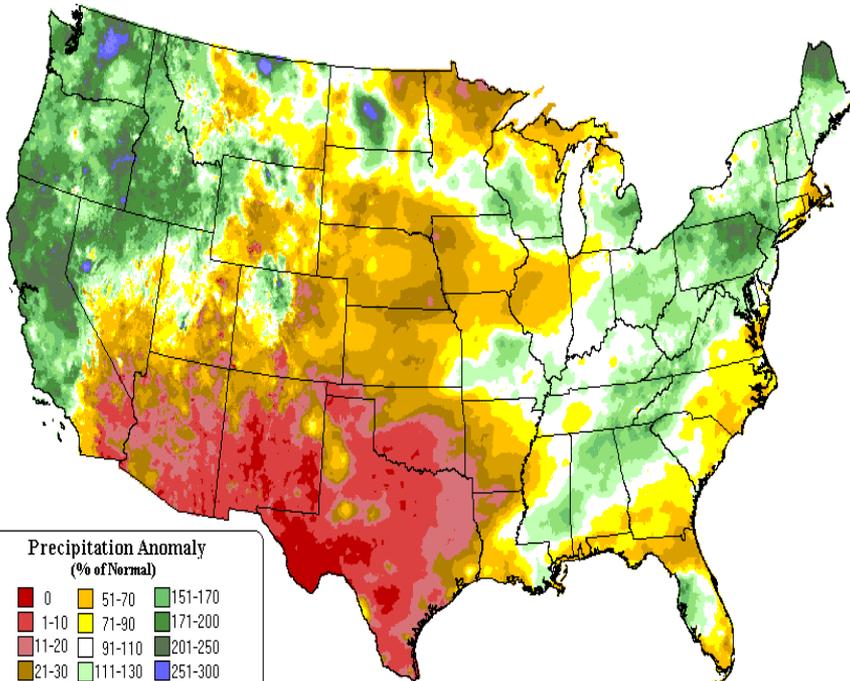
Copyright (c) 2011, PRISM Climate Group, Oregon State University
<http://prism.oregonstate.edu> - Map created Apr 08 2011



Rocky Mountain Area

March 2011 Temperature-Precipitation

Precipitation Anomaly: Mar 2011
Provisional Data

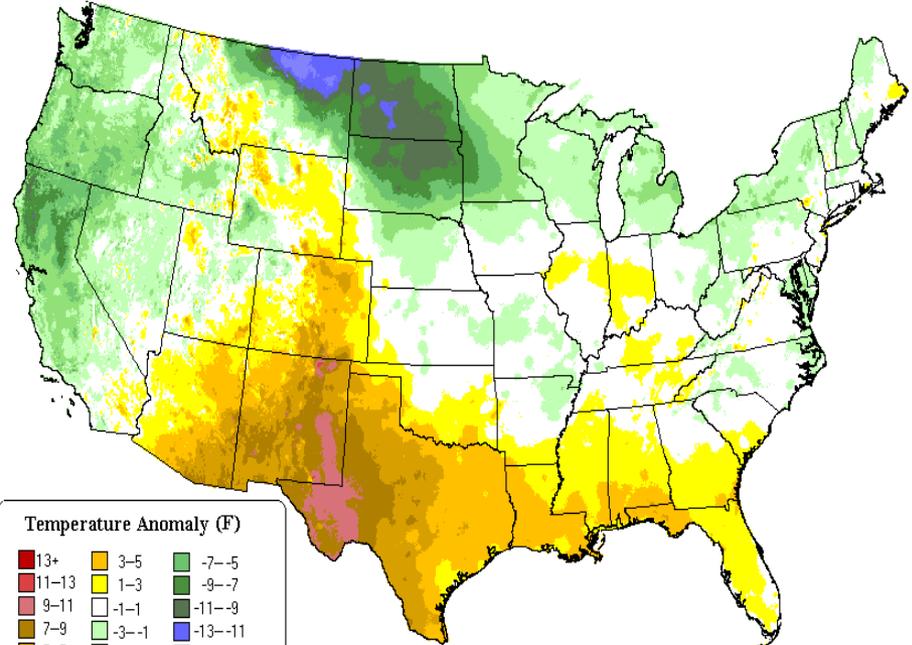


Precipitation Anomaly
(% of Normal)

0	51-70	151-170
1-10	71-90	171-200
11-20	91-110	201-250
21-30	111-130	251-300
31-50	131-150	301+

Copyright (c) 2011, PRISM Climate Group, Oregon State University
<http://prism.oregonstate.edu> - Map created Apr 07 2011

Maximum Temperature Anomaly: Mar 2011
Provisional Data



Temperature Anomaly (F)

13+	3-5	-7-5
11-13	1-3	-9-7
9-11	-1-1	-11-9
7-9	-3-1	-13-11
5-7	-5-3	<-13

Copyright (c) 2011, PRISM Climate Group, Oregon State University
<http://prism.oregonstate.edu> - Map created Apr 07 2011

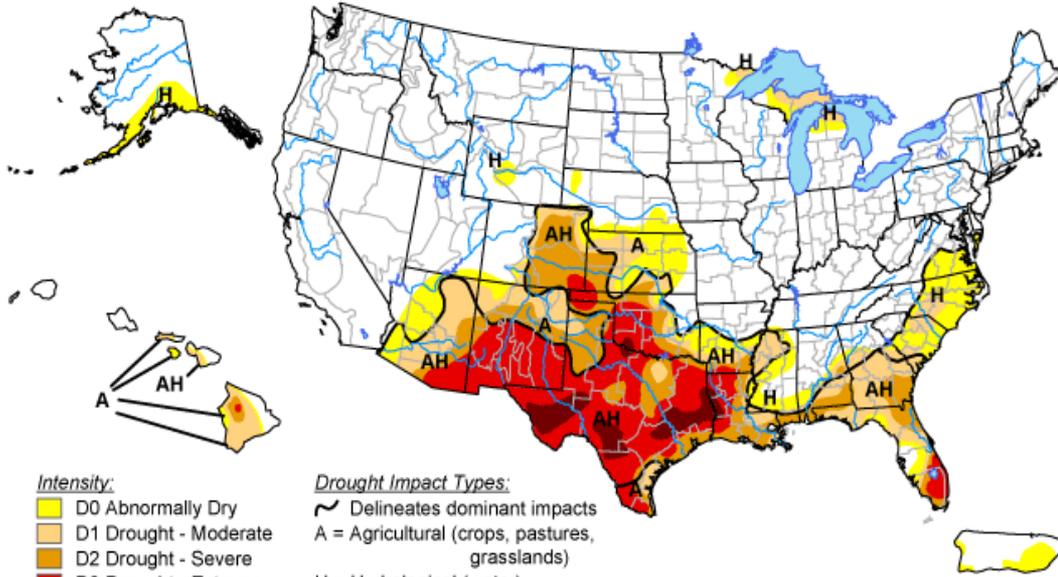
NOTE: Data are compressed for quicker downloads. See [Here](#) for information about dealing with this format.



Rocky Mountain Area National Drought Conditions

U.S. Drought Monitor

April 26, 2011
Valid 8 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
- 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, April 28, 2011

Author: Michael Brewer/L. Love-Brotak, NOAA/NESDIS/NCDC

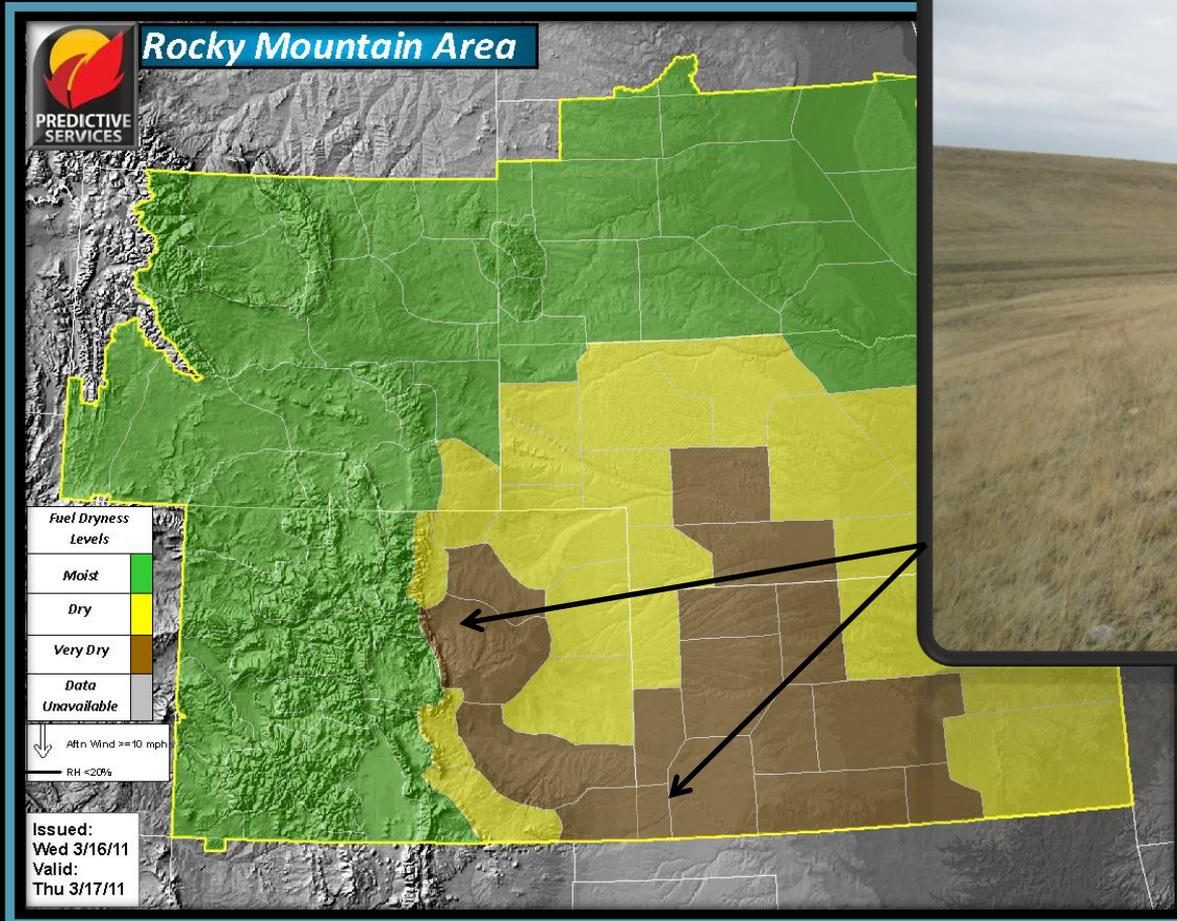
Intensifying Drought

- Abnormally Dry
- Moderate
- Severe
- Extreme
- Exceptional



Rocky Mountain Area

Dryness Levels and Fuels



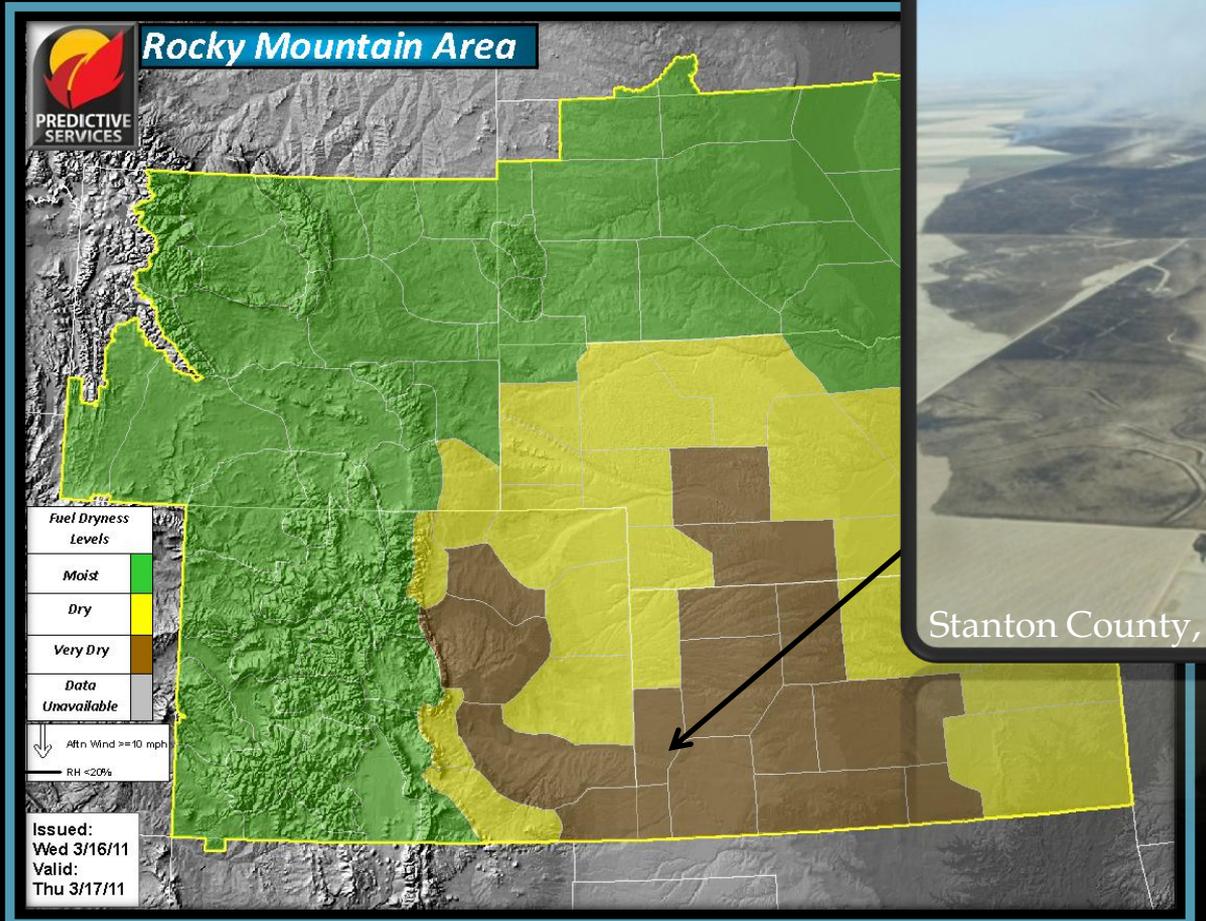
**Significant Grass Fuel Loading
From the 2010 Growing Season**

**Minimal new grasses due to the
lack of precipitation below
average soil moisture**



Rocky Mountain Area

Dryness Levels and Fuels



Stanton County, KS- March 22, 2011- 38,000 Acres

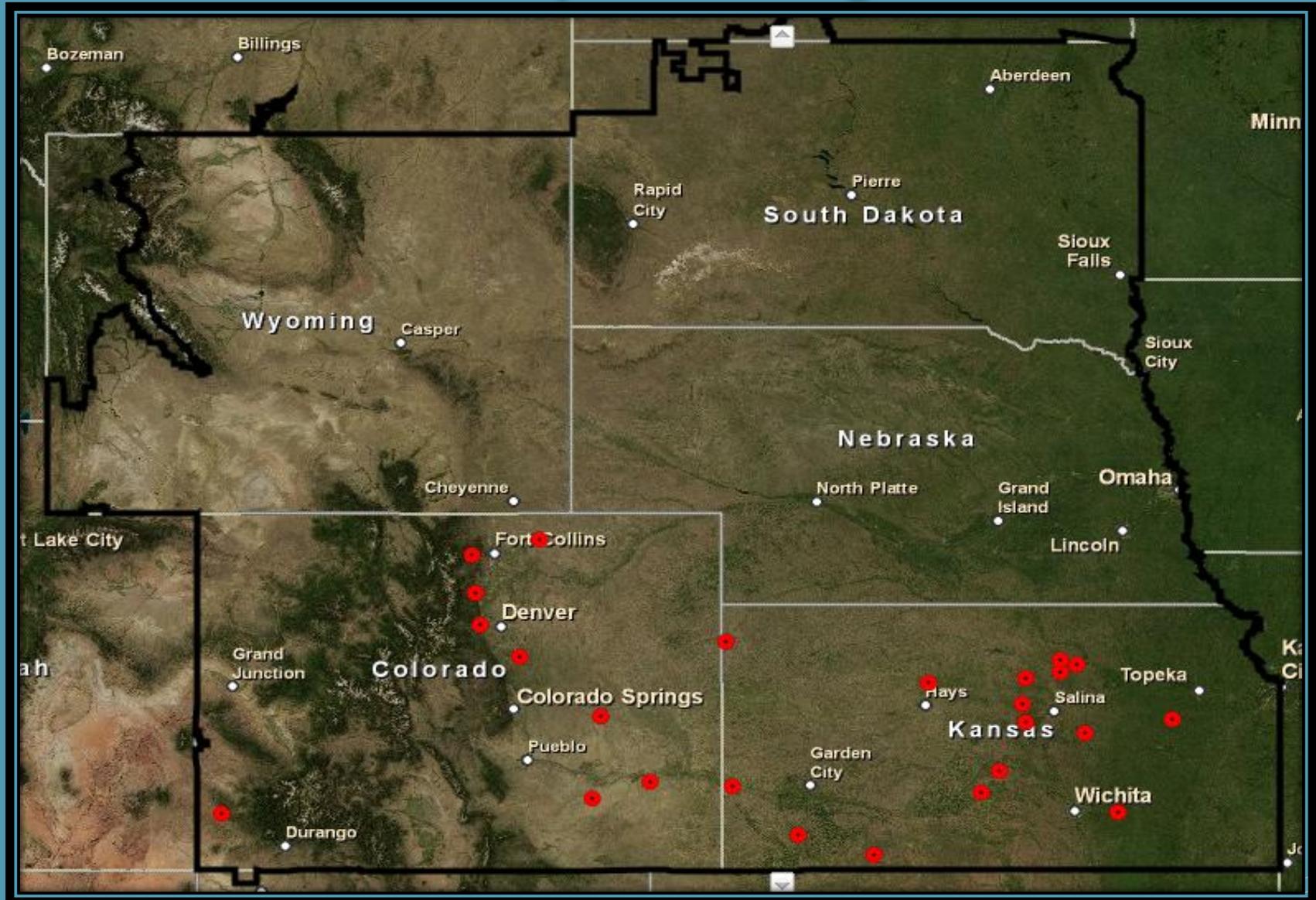
**Significant Grass Fuel Loading
From the 2010 Growing Season**

**Minimal new grasses due to the
lack of precipitation below
average soil moisture**



Rocky Mountain Area

2011 "Reported" Large Fires

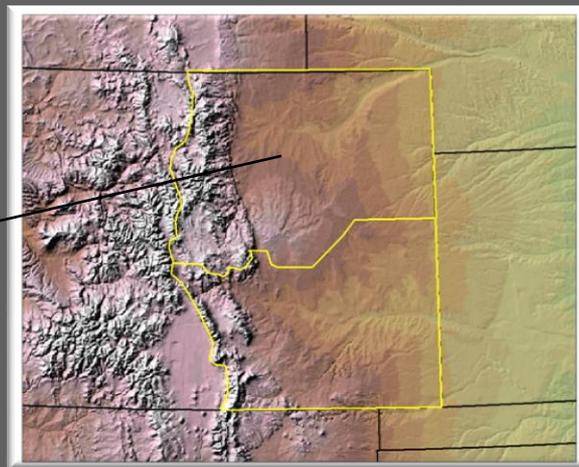
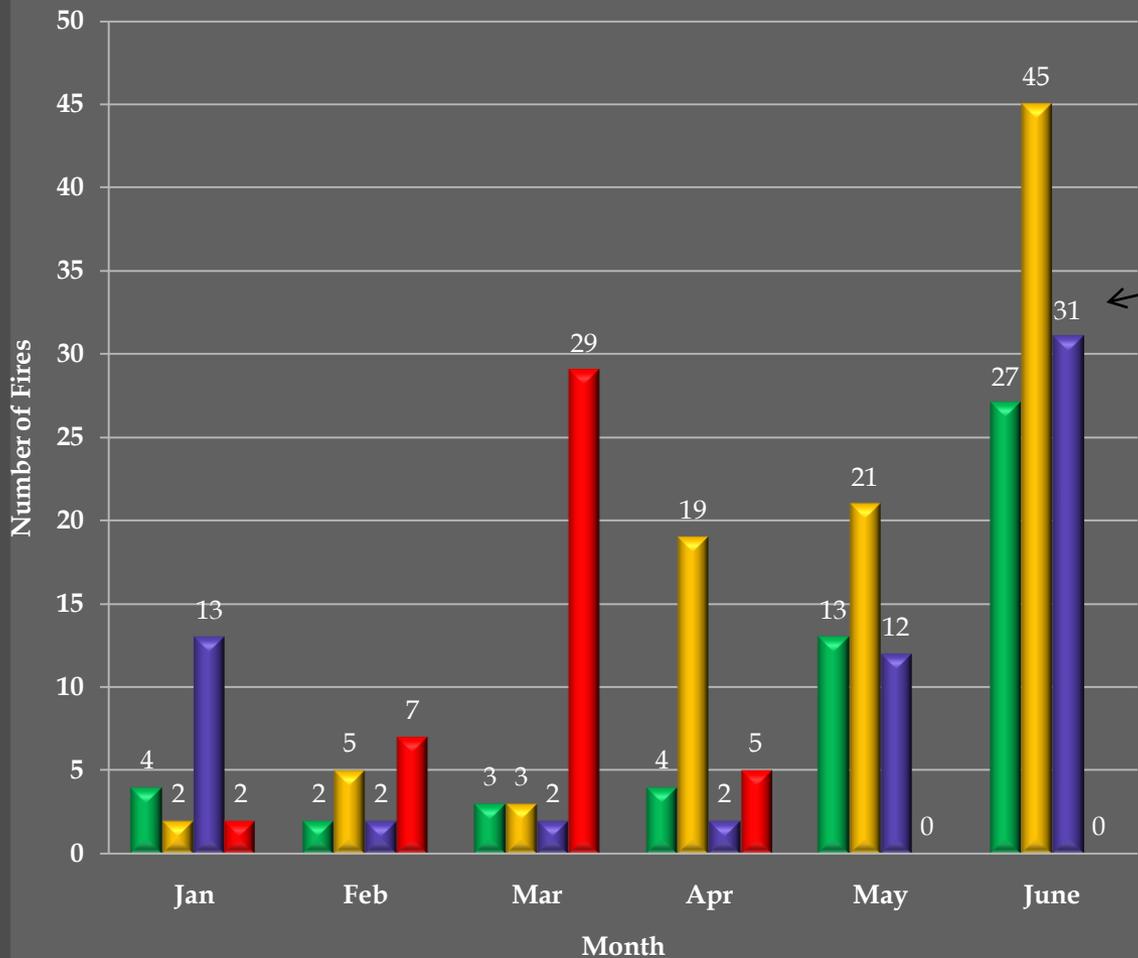




Rocky Mountain Area

2011 Fire Occurrence

Northeast Colorado Fire Occurrence



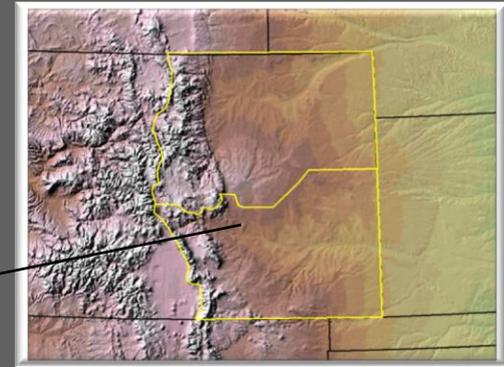
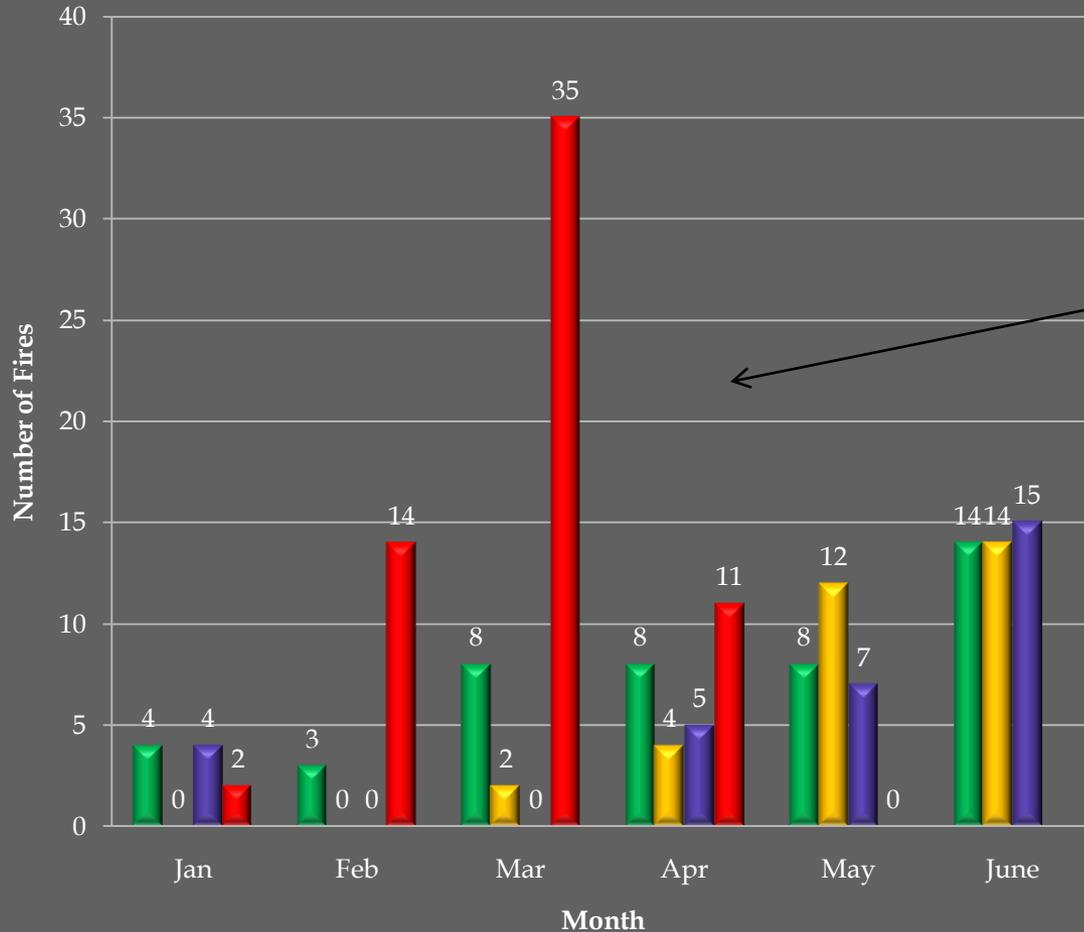
- Northeast Colorado Average Number of Fires 1994-2009
- Northeast Colorado Number of Fires 2002
- Northeast Colorado Number of Fires 2008
- Northeast Colorado Number of Fires 2011



Rocky Mountain Area

2011 Fire Occurrence

Southeast Colorado Fire Occurrence

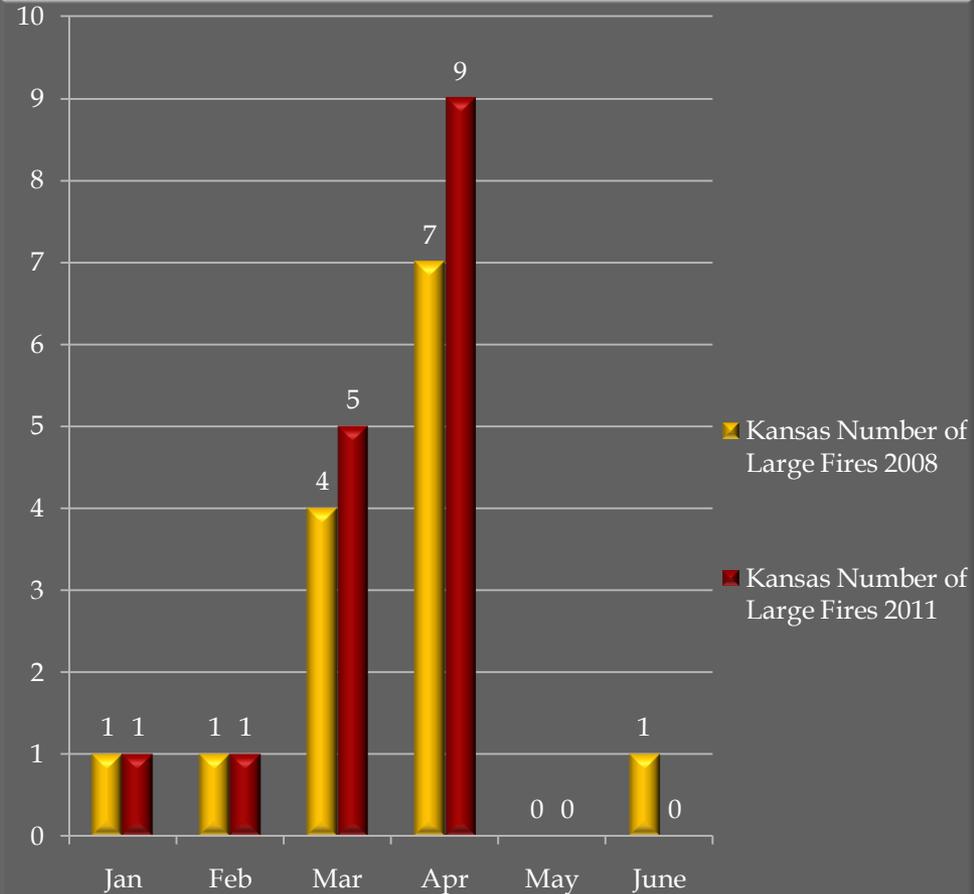
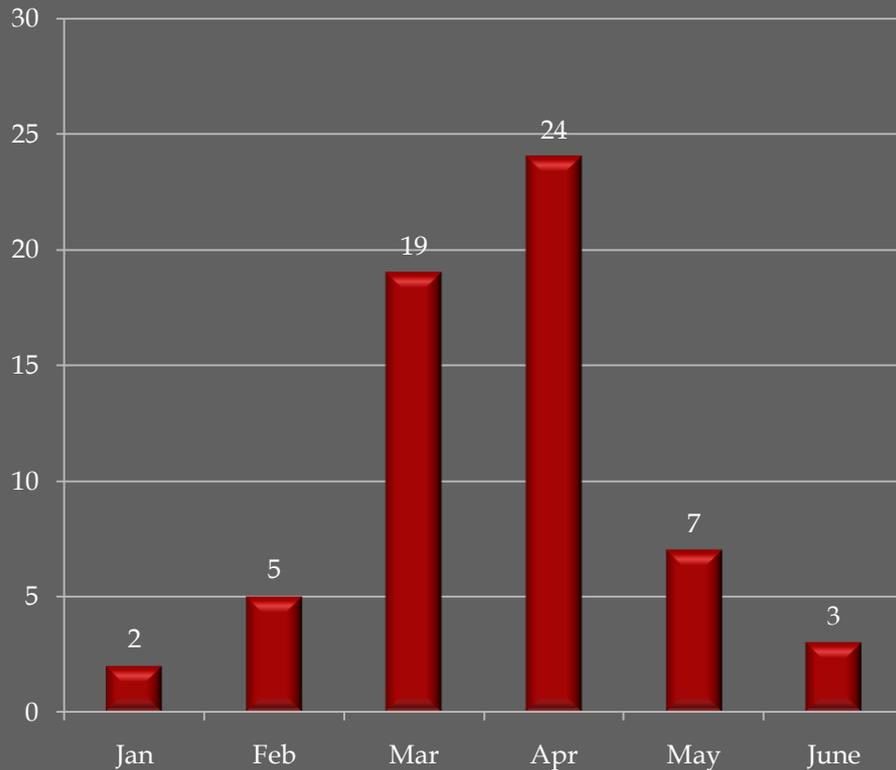


- Southeast Colorado Average Number of Fires 1994-2009
- Southeast Colorado Number of Fires 2002
- Southeast Colorado Number of Fires 2008
- Southeast Colorado Number of Fires 2011



Rocky Mountain Area 2011 Fire Occurrence

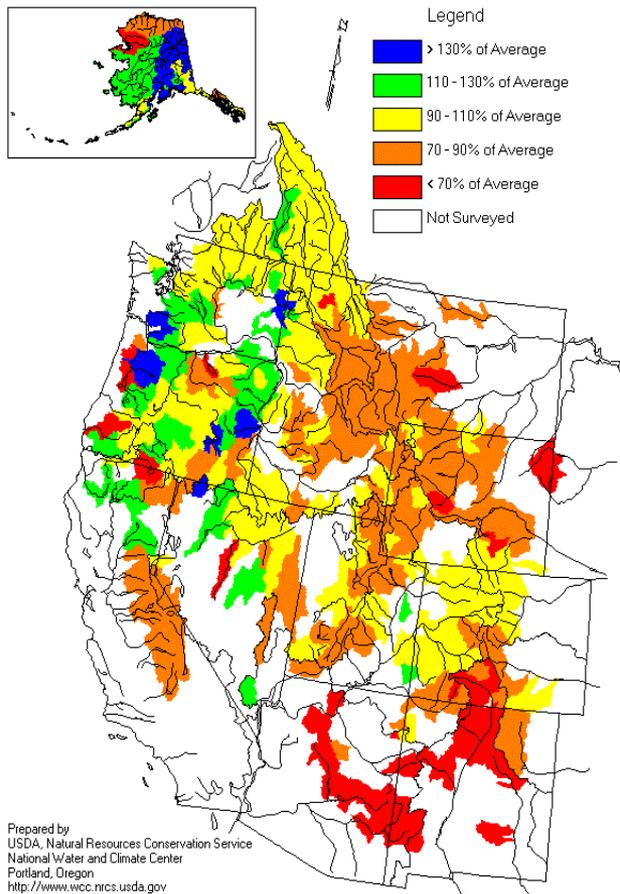
Reported Kansas Number of Large Fires 1994-2009



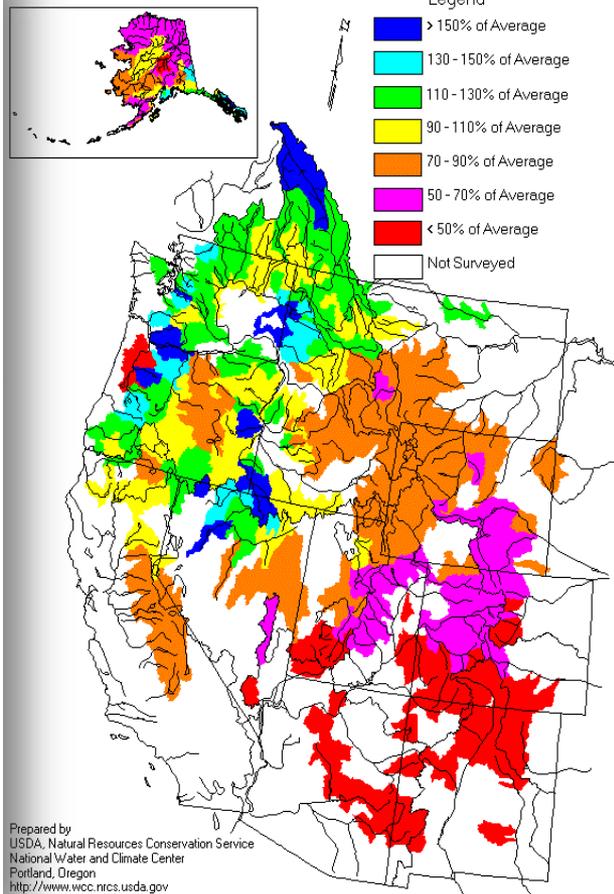


Rocky Mountain Area Snowpack Comparisons

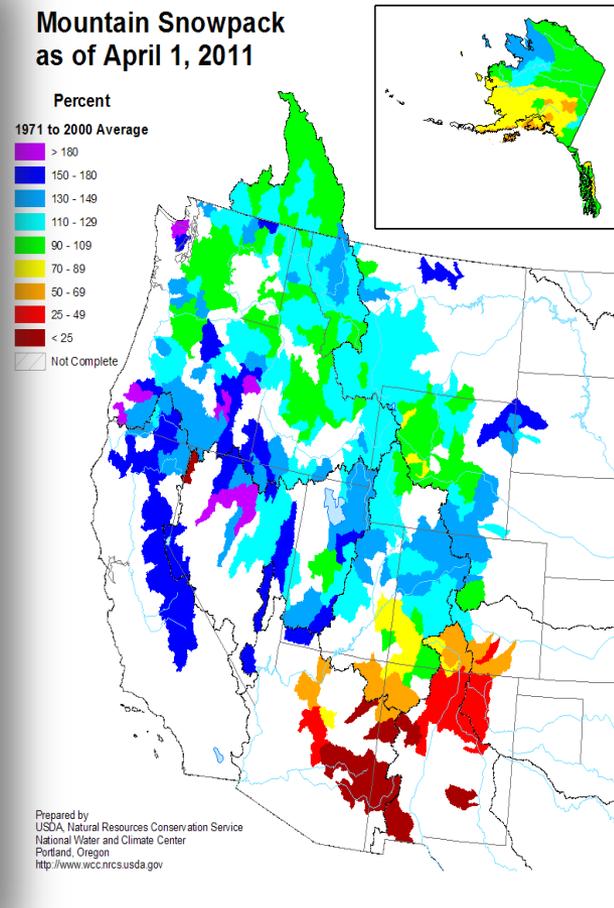
Mountain Snowpack as of April 1, 2000



Mountain Snowpack as of April 1, 2002



Mountain Snowpack
as of April 1, 2011

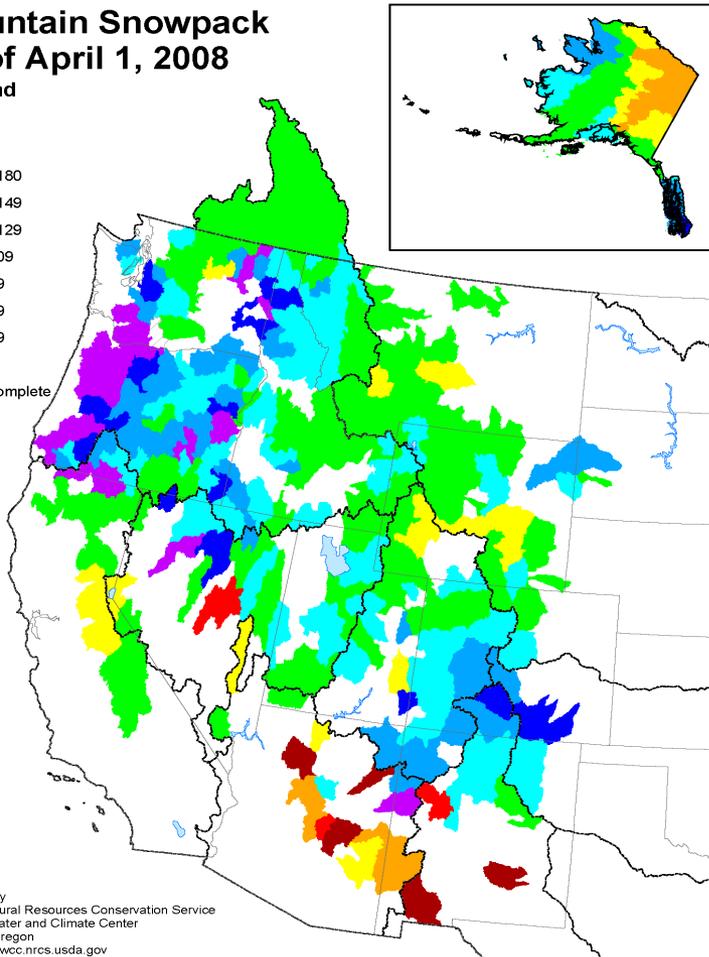


Rocky Mountain Area Snowpack Comparisons

Mountain Snowpack as of April 1, 2008

Legend

percent

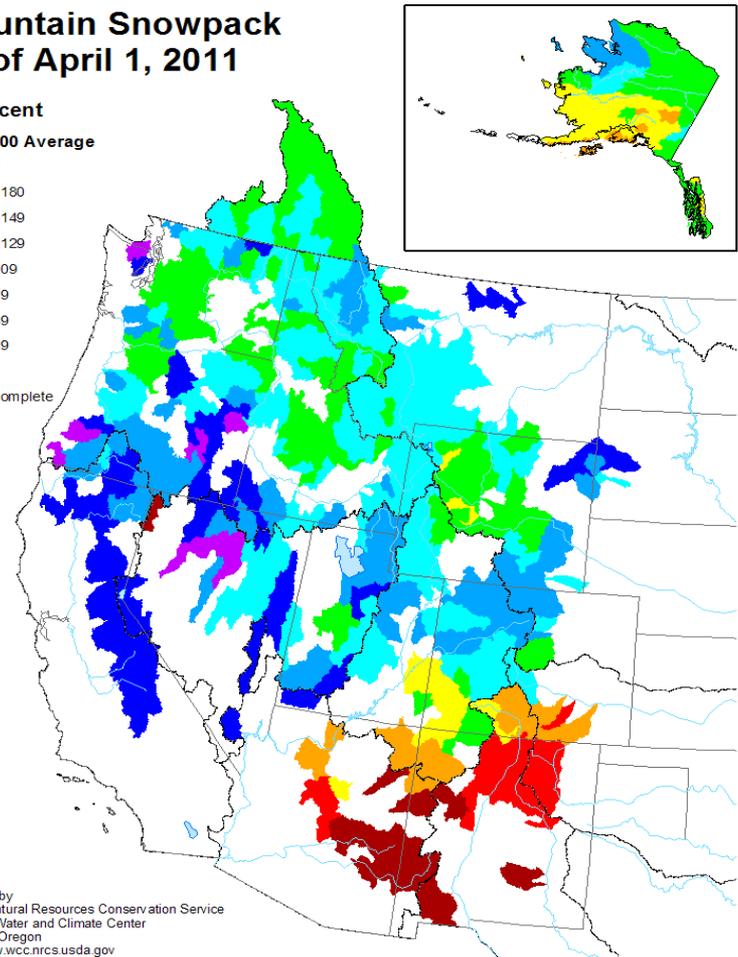
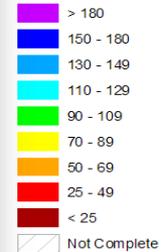


Prepared by
USDA, Natural Resources Conservation Service
National Water and Climate Center
Portland, Oregon
<http://www.wcc.nrcs.usda.gov>

Mountain Snowpack as of April 1, 2011

Percent

1971 to 2000 Average



Prepared by
USDA, Natural Resources Conservation Service
National Water and Climate Center
Portland, Oregon
<http://www.wcc.nrcs.usda.gov>



Rocky Mountain Area Regional Drought Comparisons

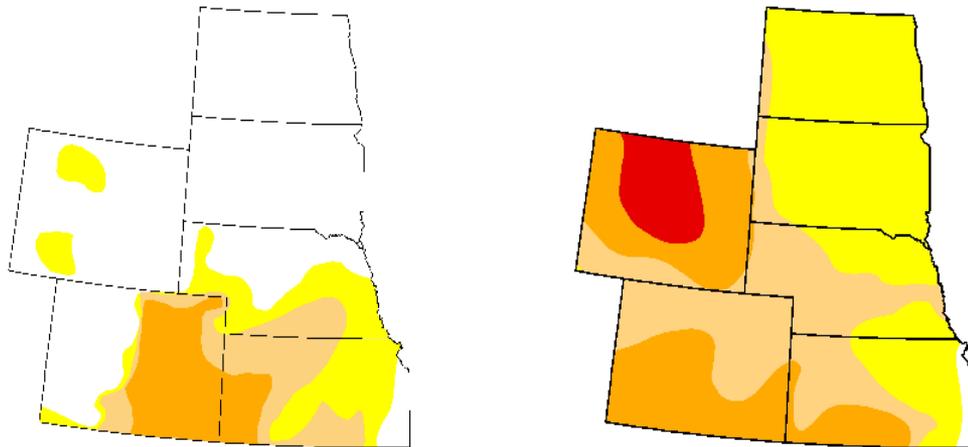
Drought Monitor Archives

Maps Tables Animations 1999 Archive GIS Data

High Plains

Drought Severity

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



April 5, 2011

April 9, 2002

Week	Nothing	D0-D4	D1-D4	D2-D4	D3-D4	D4
April 5, 2011	62.49	37.51	22.11	10.92	0.00	0.00
April 9, 2002	1.18	98.82	59.78	30.90	5.96	0.00

Drought Comparisons





Rocky Mountain Area Regional Drought Comparisons

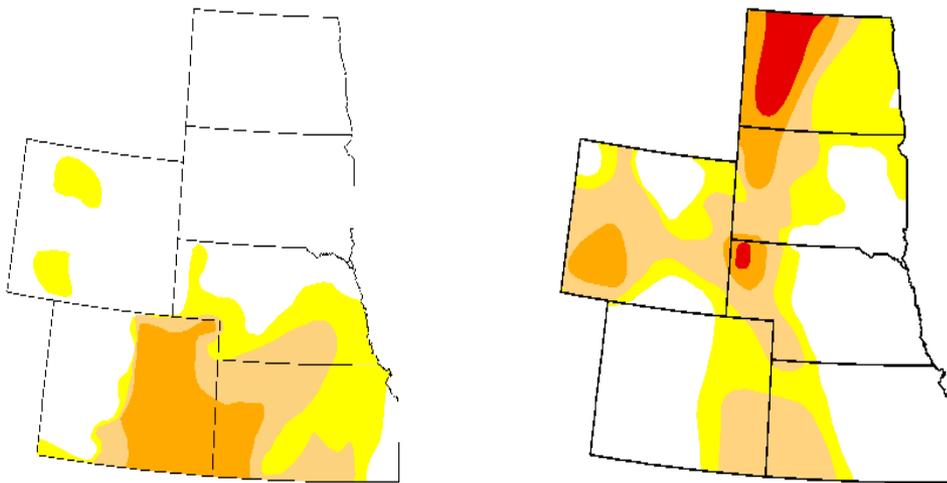
Drought Monitor Archives

Maps Tables Animations 1999 Archive GIS Data

High Plains

Drought Severity

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



Print Download

 April 5, 2011

Print Download

 April 8, 2008



Week	Nothing	D0-D4	D1-D4	D2-D4	D3-D4	D4
April 5, 2011	62.49	37.51	22.11	10.92	0.00	0.00
April 8, 2008	43.56	56.44	34.11	11.26	3.43	0.00

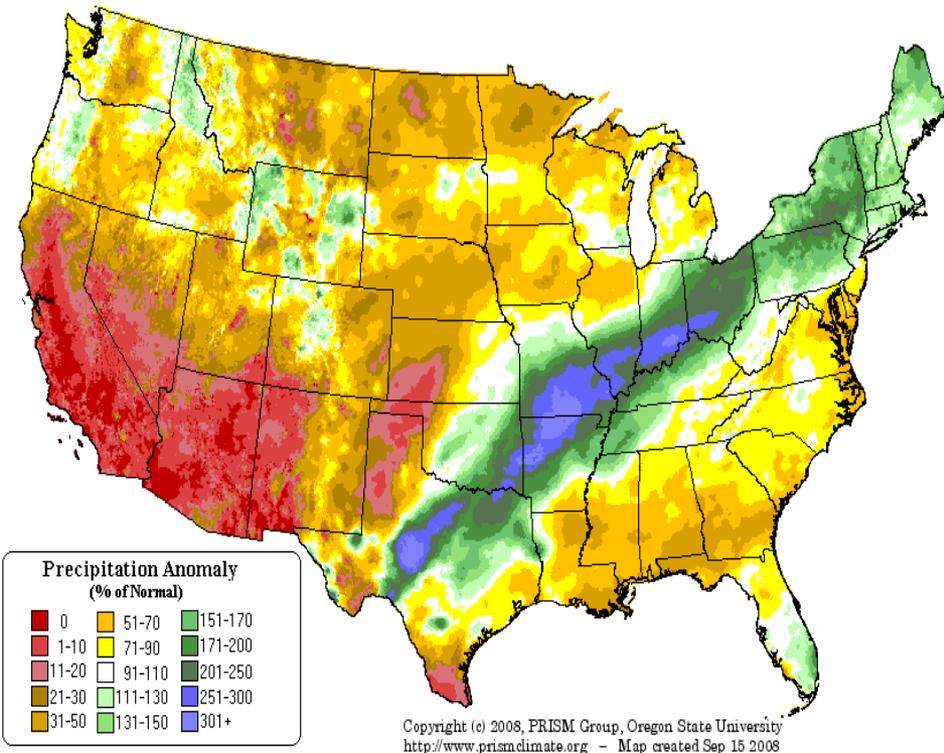
Drought Comparisons



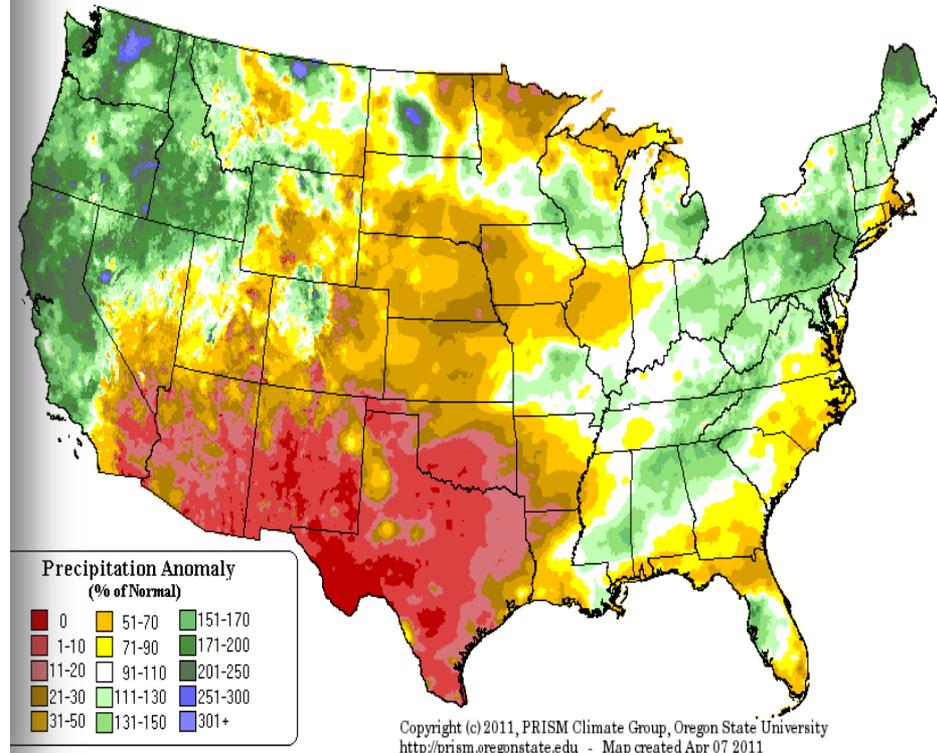
Rocky Mountain Area

March Precipitation Comparison

Precipitation Anomaly: Mar 2008
Final Data



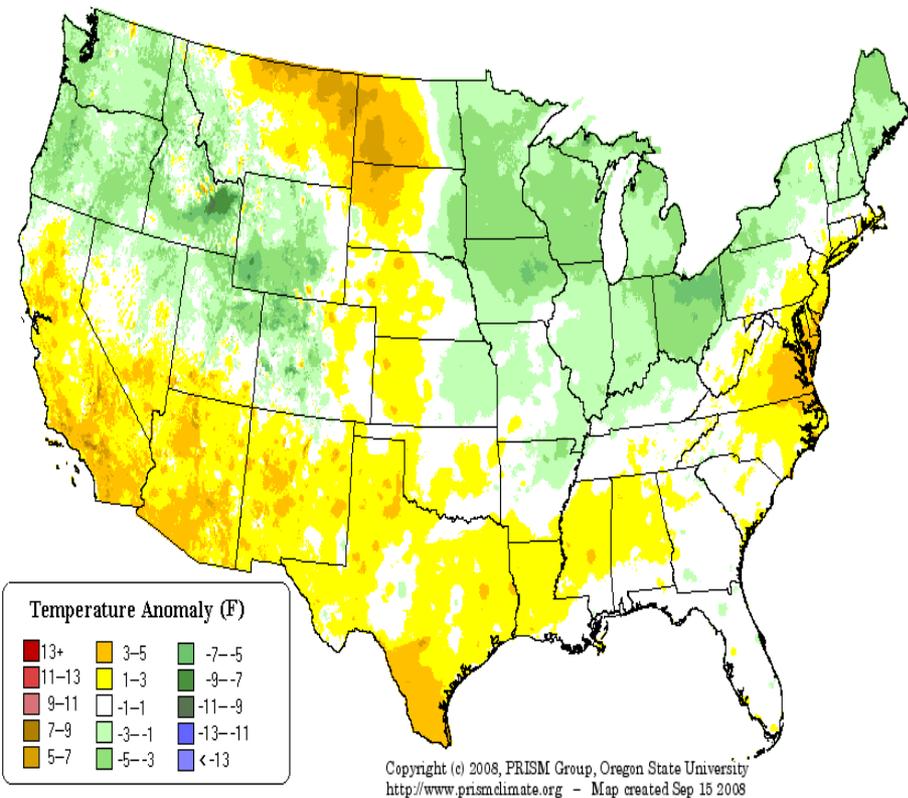
Precipitation Anomaly: Mar 2011
Provisional Data



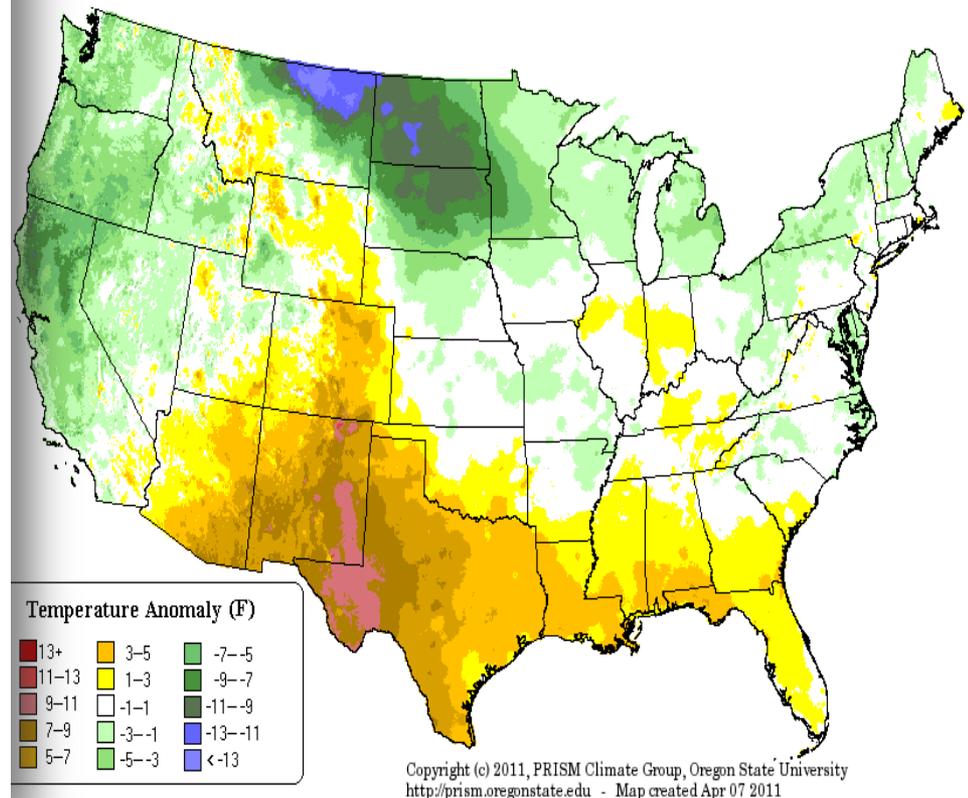
Rocky Mountain Area

March Temperature Comparison

Maximum Temperature Anomaly: Mar 2008
Final Data



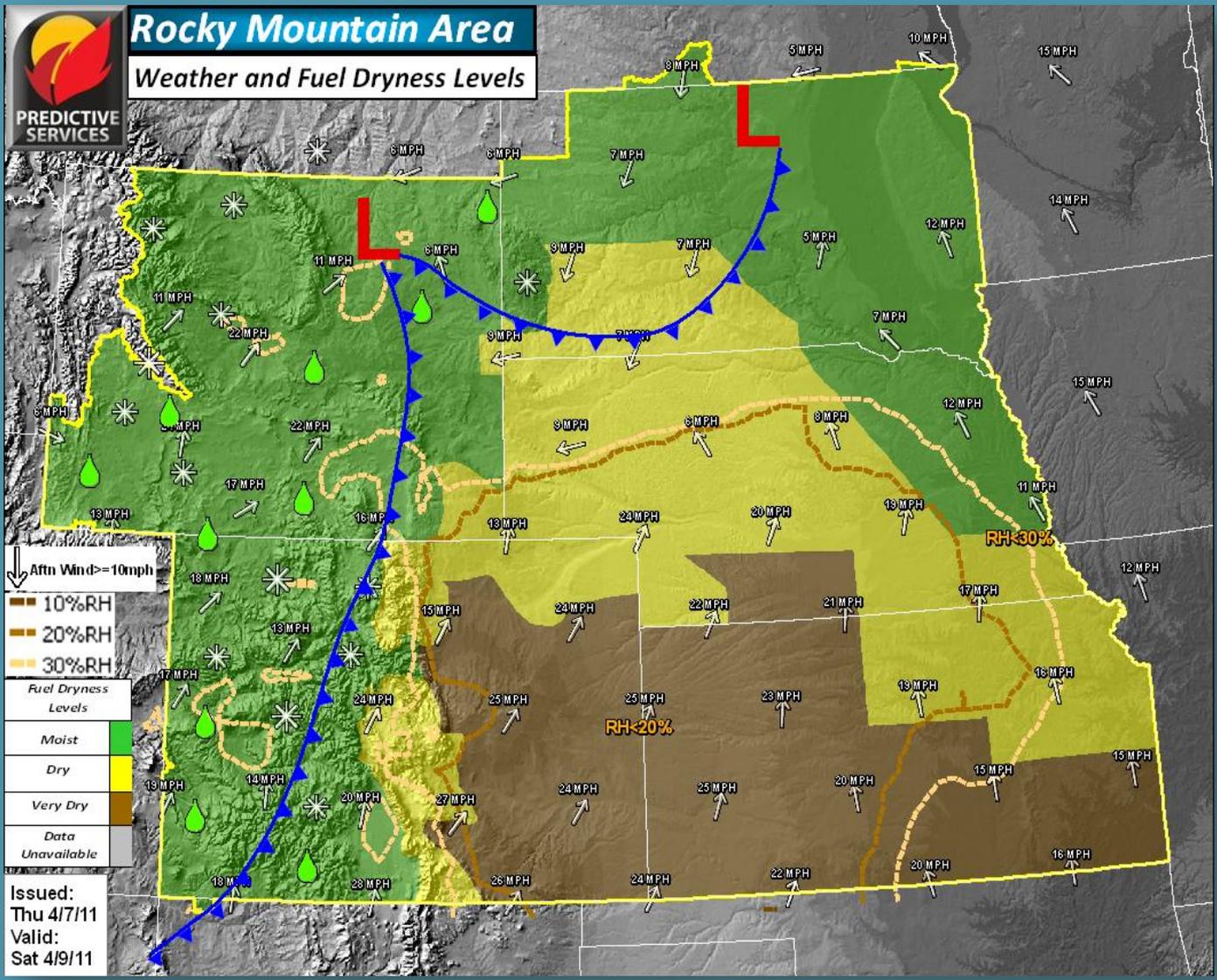
Maximum Temperature Anomaly: Mar 2011
Provisional Data





Rocky Mountain Area

The Pre-Frontal Environment



Pre-Frontal Conditions

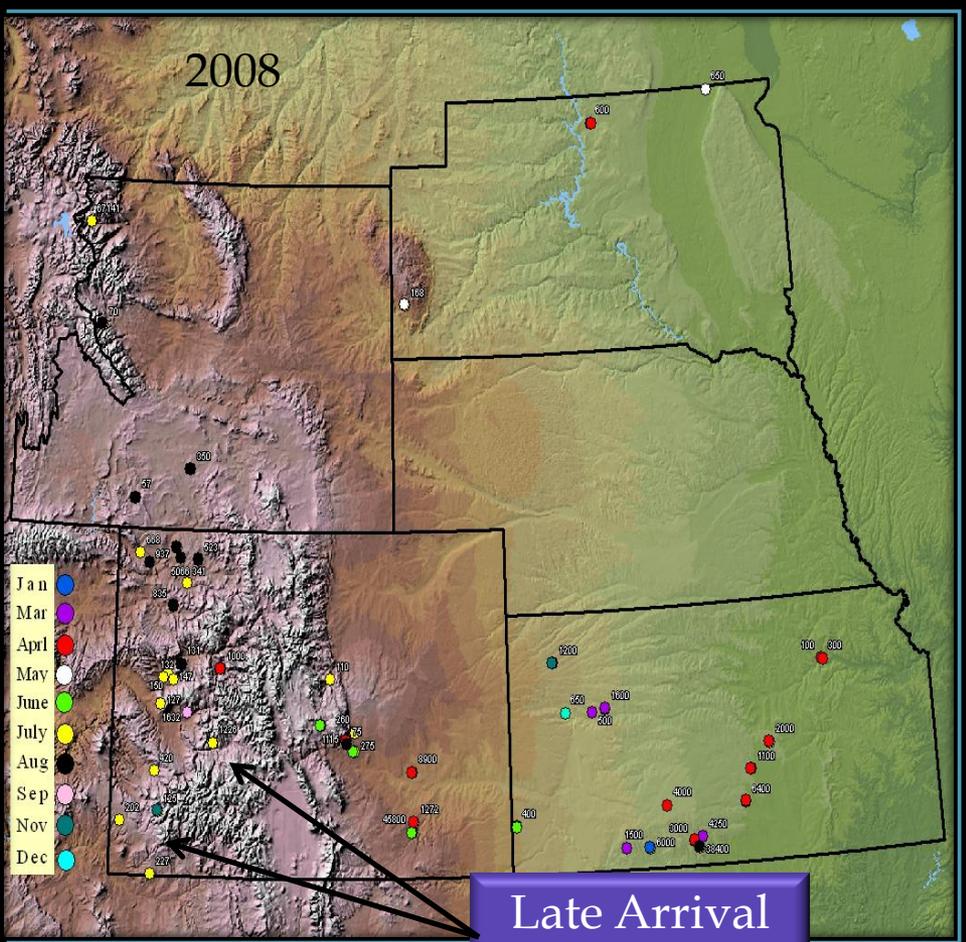
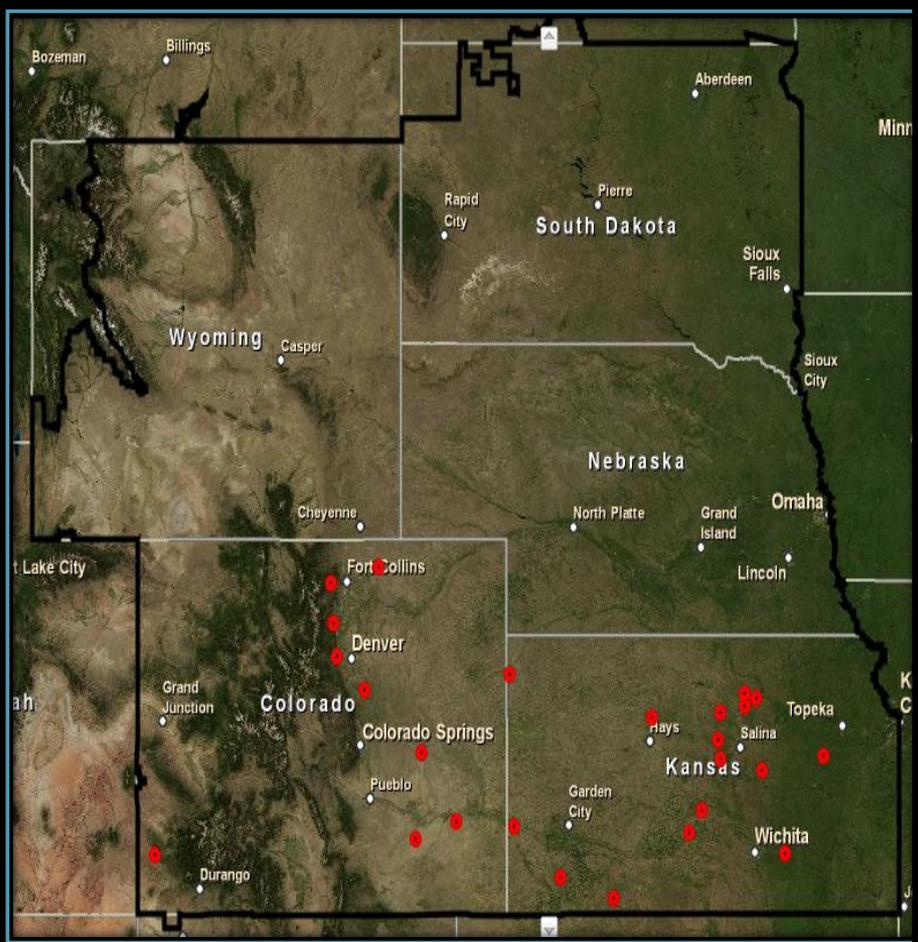
More Numerous in 2011

Coupled with above average temperatures



Rocky Mountain Area

Large Fires Comparisons

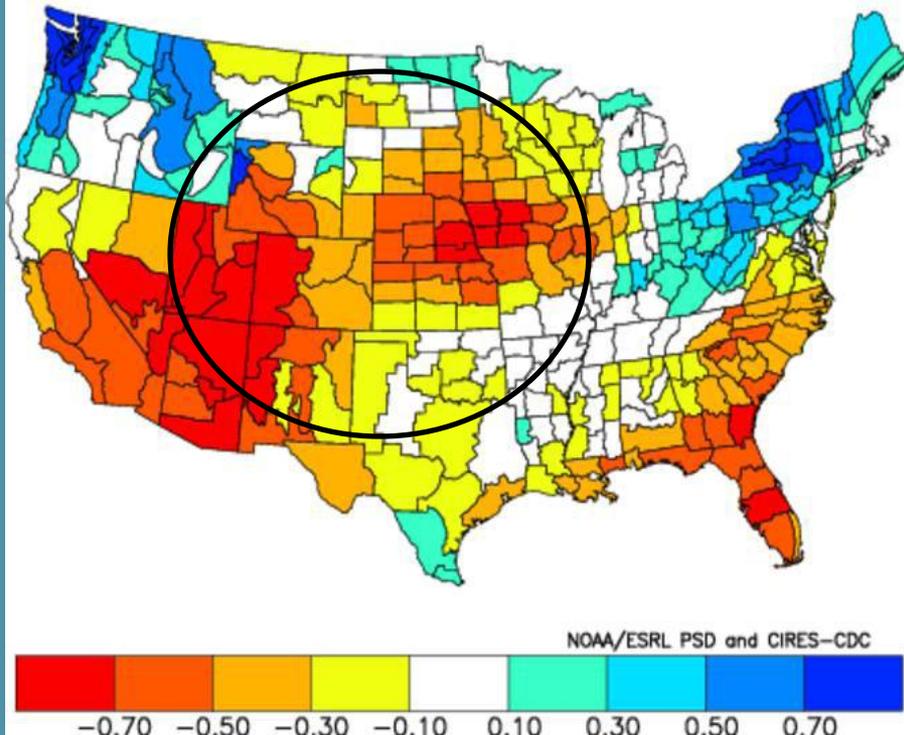


Late Arrival of Monsoon Moisture

Rocky Mountain Area

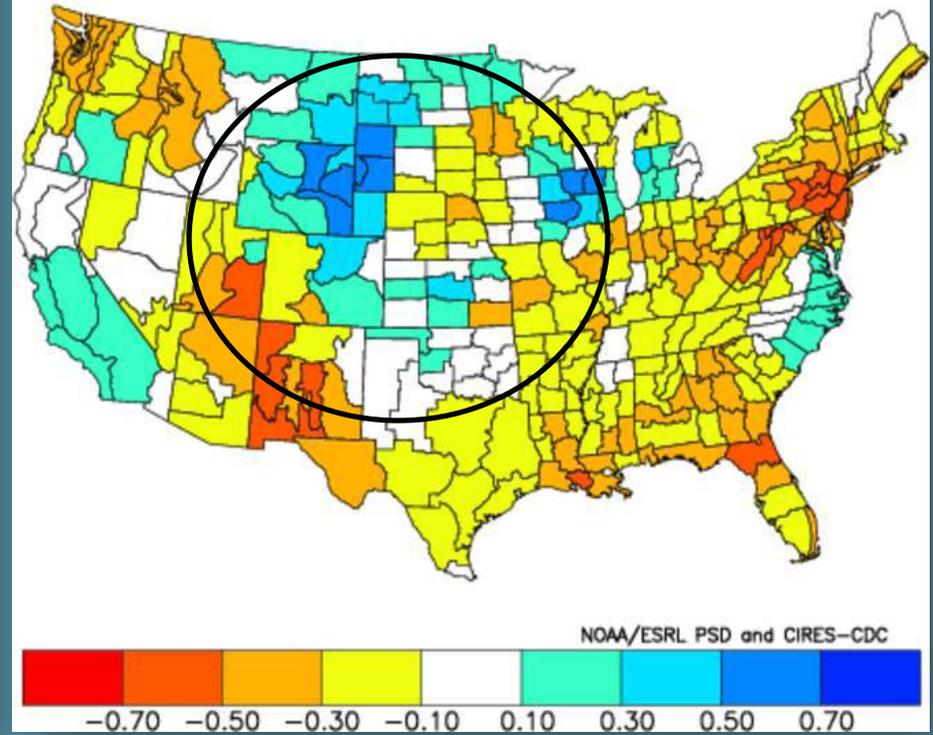
The Outlook

Composite Standardized Precipitation Anomalies
Versus 1950–1995 Longterm Average
Mar 1950,1955,1956,1967,1971,1974,1976,1989,1999,2000
2008



March- Composite Precipitation Analogs

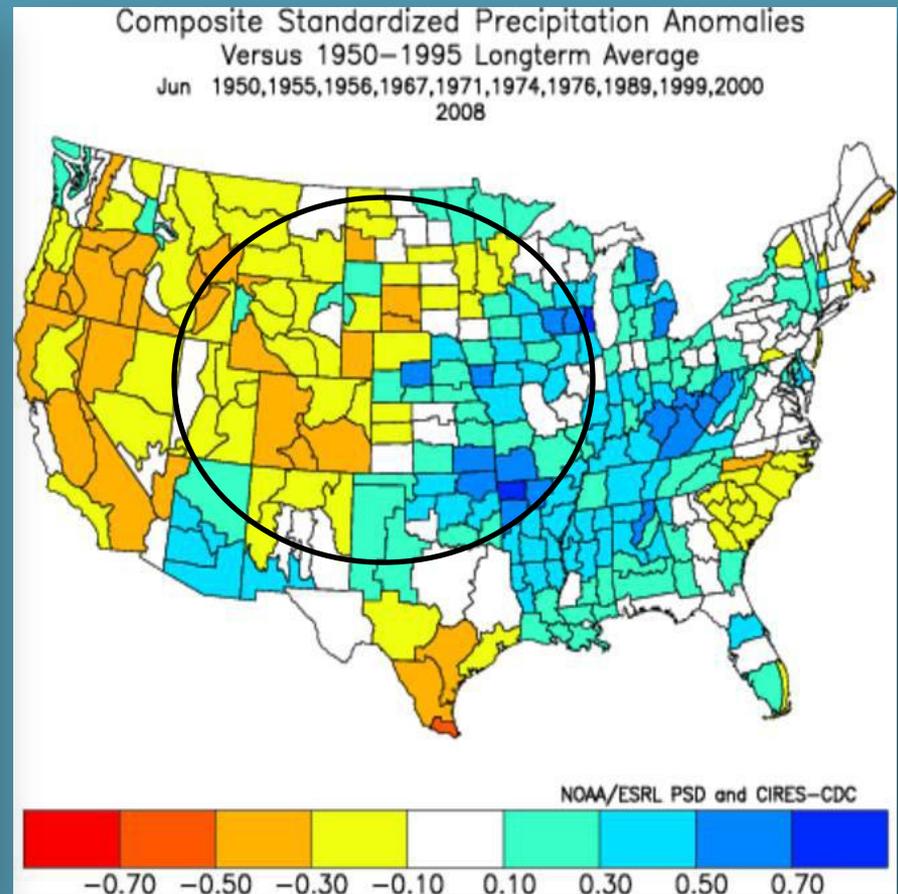
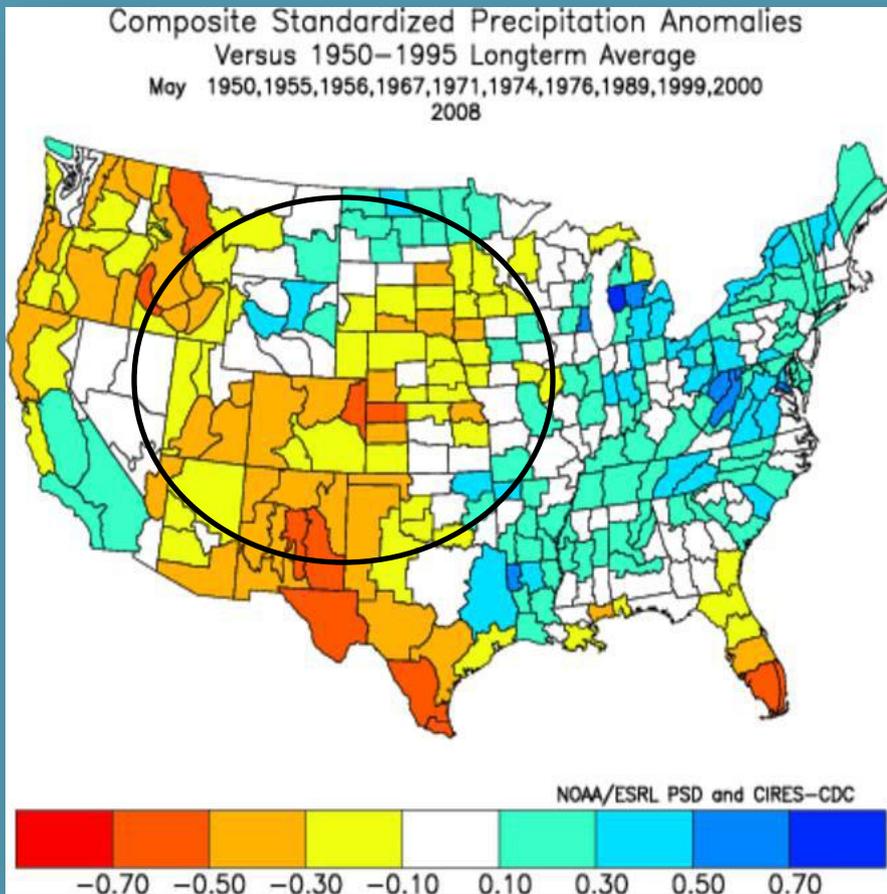
Composite Standardized Precipitation Anomalies
Versus 1950–1995 Longterm Average
Apr 1950,1955,1956,1967,1971,1974,1976,1989,1999,2000
2008



April- Composite Precipitation Analogs

Rocky Mountain Area

The Outlook



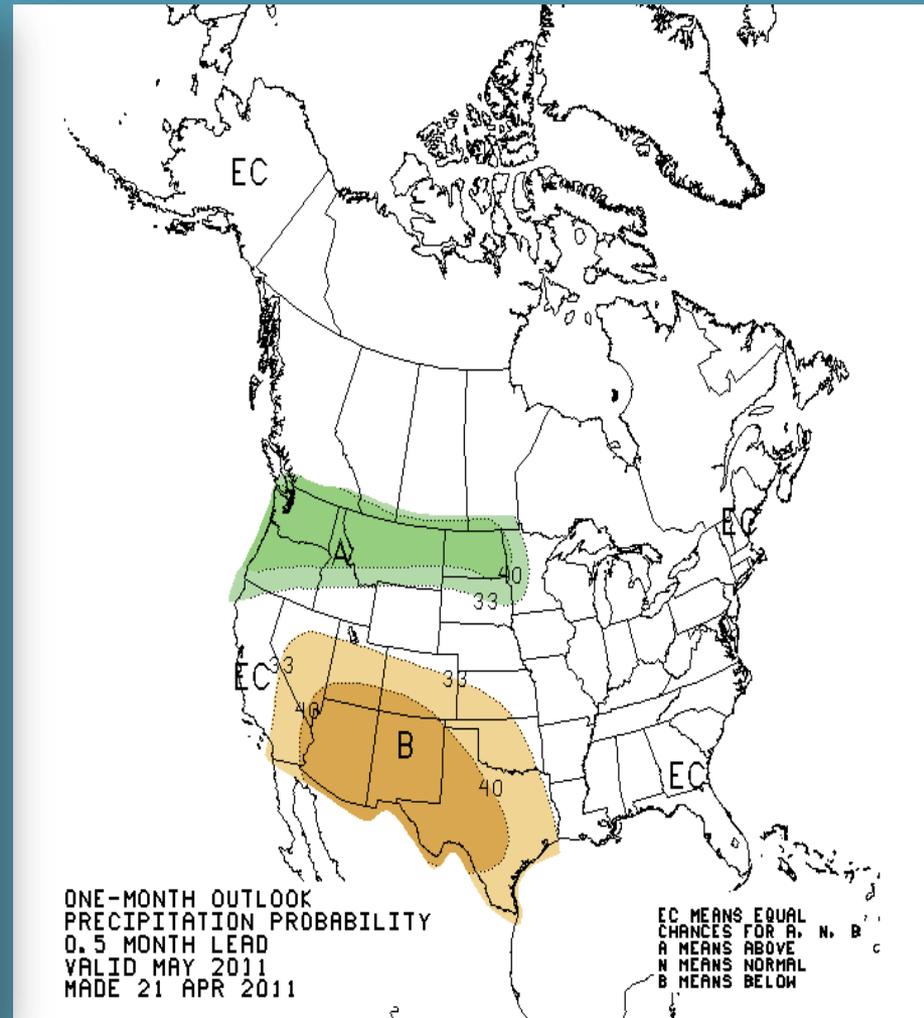
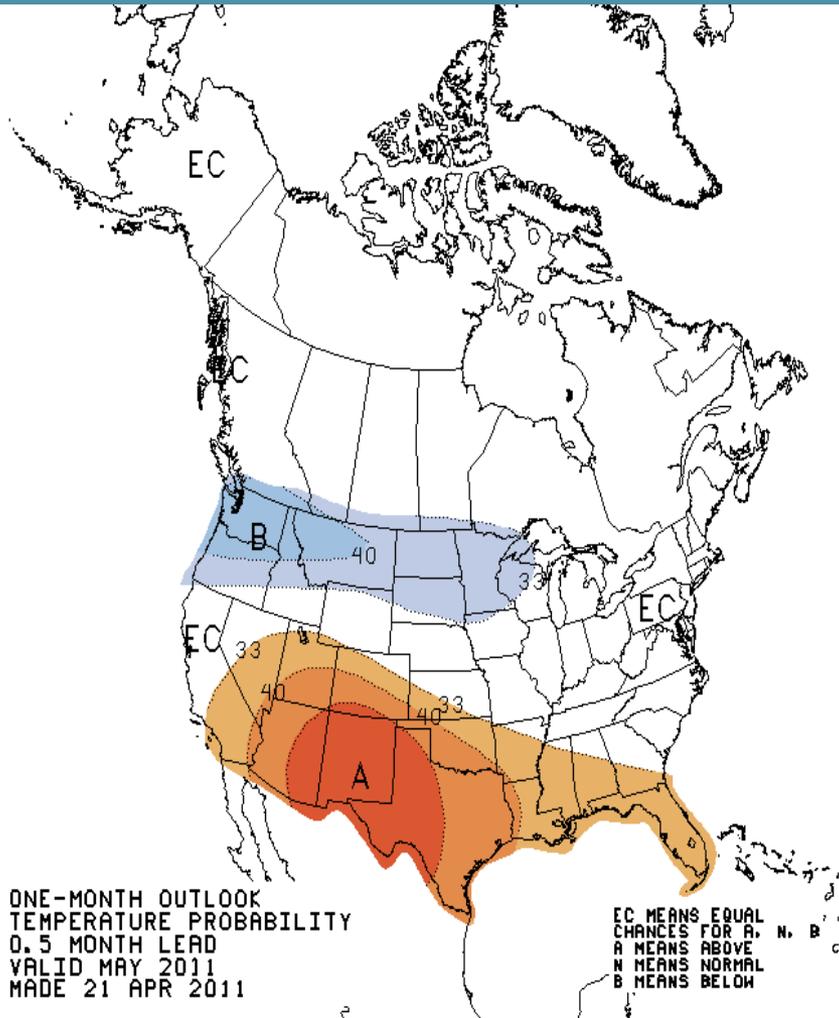
May- Composite Precipitation Analogs

June- Composite Precipitation Analogs



Rocky Mountain Area

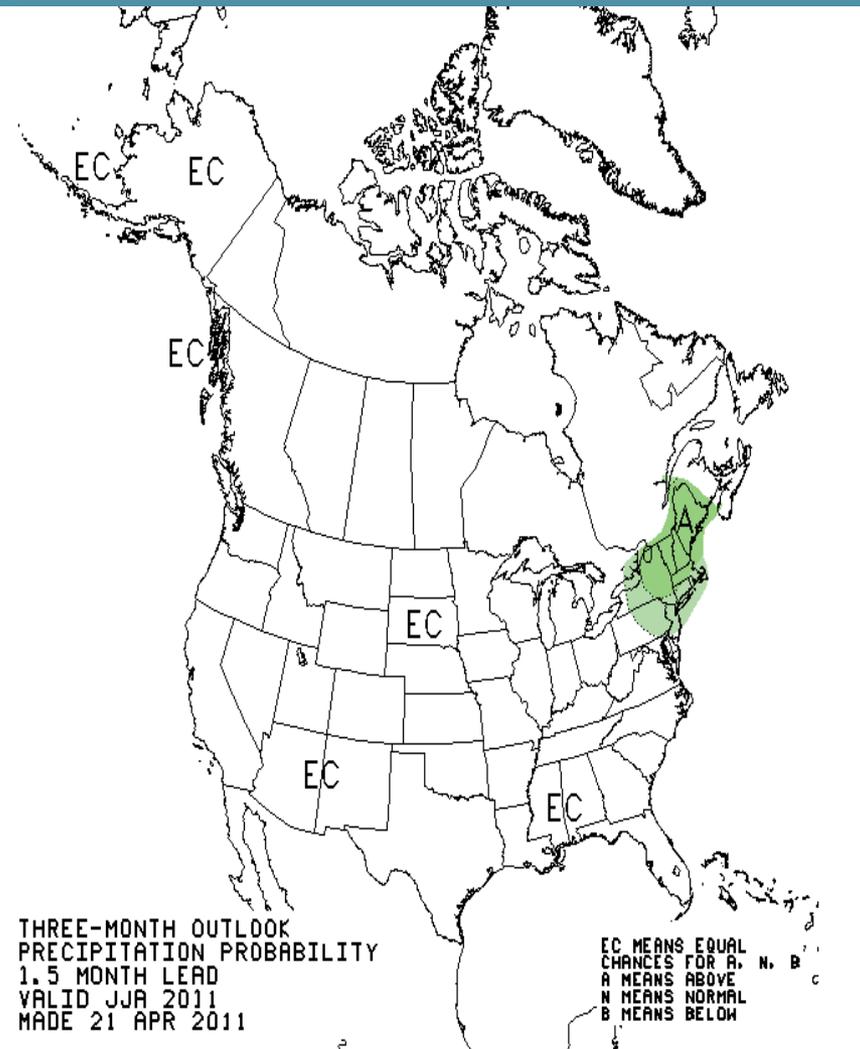
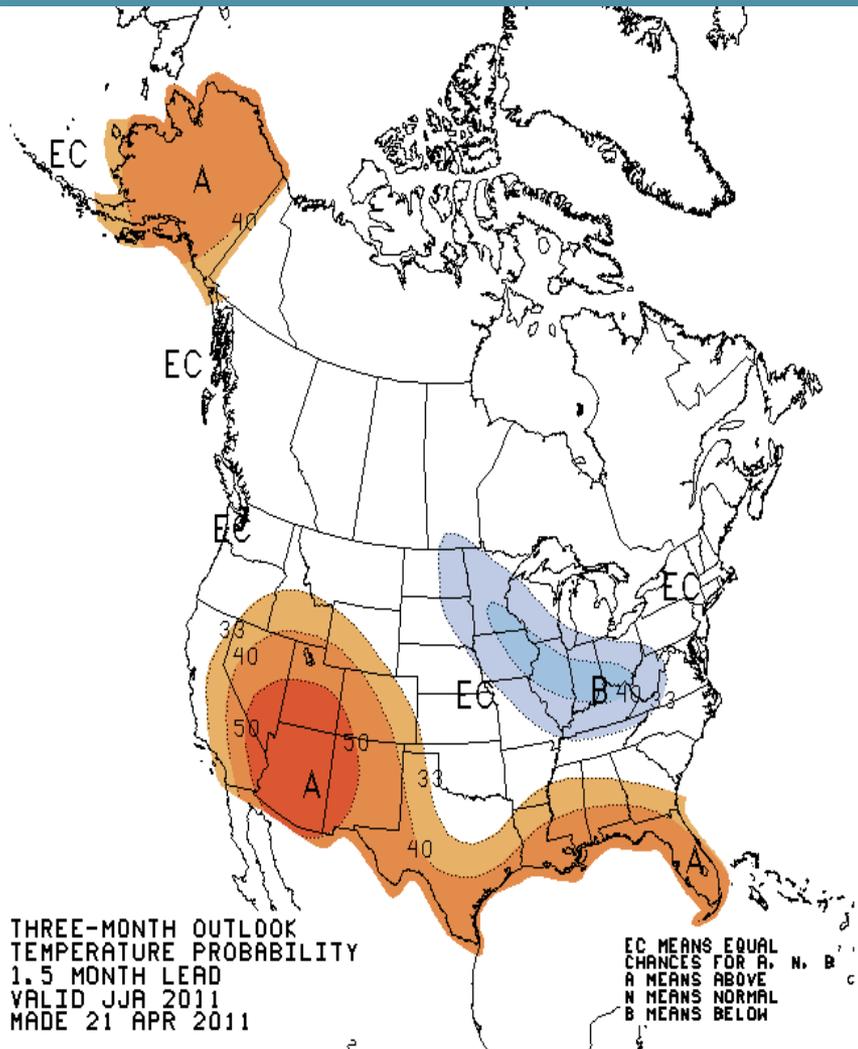
May 2011 Outlook





Rocky Mountain Area

2011 JJA Outlook





Rocky Mountain Area

2011 Outlook Summary

- Above average fire potential across the plains of southeast Colorado and southwest Kansas is forecast to decrease to near average by mid to late May, primarily a result of a typical seasonal increase in spring humidity, in addition to increased shower and thunderstorm activity and marginal green-up conditions. Above average fire potential is forecast to continue across the southern Front Range mountains however, generally below 8000 feet. "Severe" long-term drought conditions, precipitation deficits, marginal green-up, and frequent windy and dry periods from lingering La Nina conditions are the primary factors. This area typically experiences an increase in ignition in May and June.
- Fire potential is forecast to increase to above average across the south central and southwest portion of Colorado, generally below 8000 feet. Significant dryness has develop across this area during the last 60 days, in addition to below average and a quickly melting snowpack. Green-up is expected to be less prevalent at lower elevations, with carry over fuels from last years growing season more dominate. Also, climatic increases in relative humidity will be less influential than what is typically seen on the plains. Overall, these trends are forecast to continue into early or mid July, when subtropical moisture associated with the Southwest Monsoon, pushes northward into southern Colorado, ultimately decreasing the potential to near seasonal averages.
- Average to Below Average fire potential is forecast. The fire season is expected to start later than average across northern Wyoming and much of South Dakota, with an expected "wet" end to spring, cool temperatures and above average snowpack(western and northern mountains of Wyoming). However, average fire season conditions are expected in August and September, with some concerns of drier and warmer than average conditions developing, similar to the fall of 2010.
- **Bottom-line:** Lingering La Nina affects could keep fire potential above average over southern portions of Colorado through early July, or until monsoon moisture pushes northward later this summer. A normal climatic northward shift of fire season is expected into northern portions of the region, but this process will likely be delayed until late summer or early fall.



Rocky Mountain Area

May thru September 2011 Fire Potential Outlook

