

Midwest and Great Plains Climate-Drought Outlook

17 March 2016

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Photo taken Feb. 19, 2016



Virga near Huron SD – Author Photo

General Information

- * **Providing climate services to the Central Region**
 - * Collaboration Activity Between:
 - * State Climatologists
 - * Doug Kluck (NOAA)
 - * American Association of State Climatologists
 - * Midwest and High Plains Regional Climate Centers
 - * National Drought Mitigation Center/USDA
- * **Next Regular Climate/Drought Outlook Webinar**
 - * Apr. 21, 2016 (1 PM CDT) Pat Guinan
- * **Access to Future Climate Webinars and Information**
- * <http://www.drought.gov/drought/content/regional-programs/regional-drought-webinars>
- * <http://mrcc.isws.illinois.edu/webinars.htm>
- * <http://www.hprcc.unl.edu/webinars.php>
- * **Open for questions at the end**

Agenda

- * **Current Conditions**

- * **Impacts**

- * **Ag**

- * **Hort**

- * **Fire**

- * **Water**

- * **Outlooks**

- * **El Niño to La Niña**

- * **Spring and Summer**



**Magnolia Tree Outside
Hardin Hall East Campus, UNL
March 14, 2016**

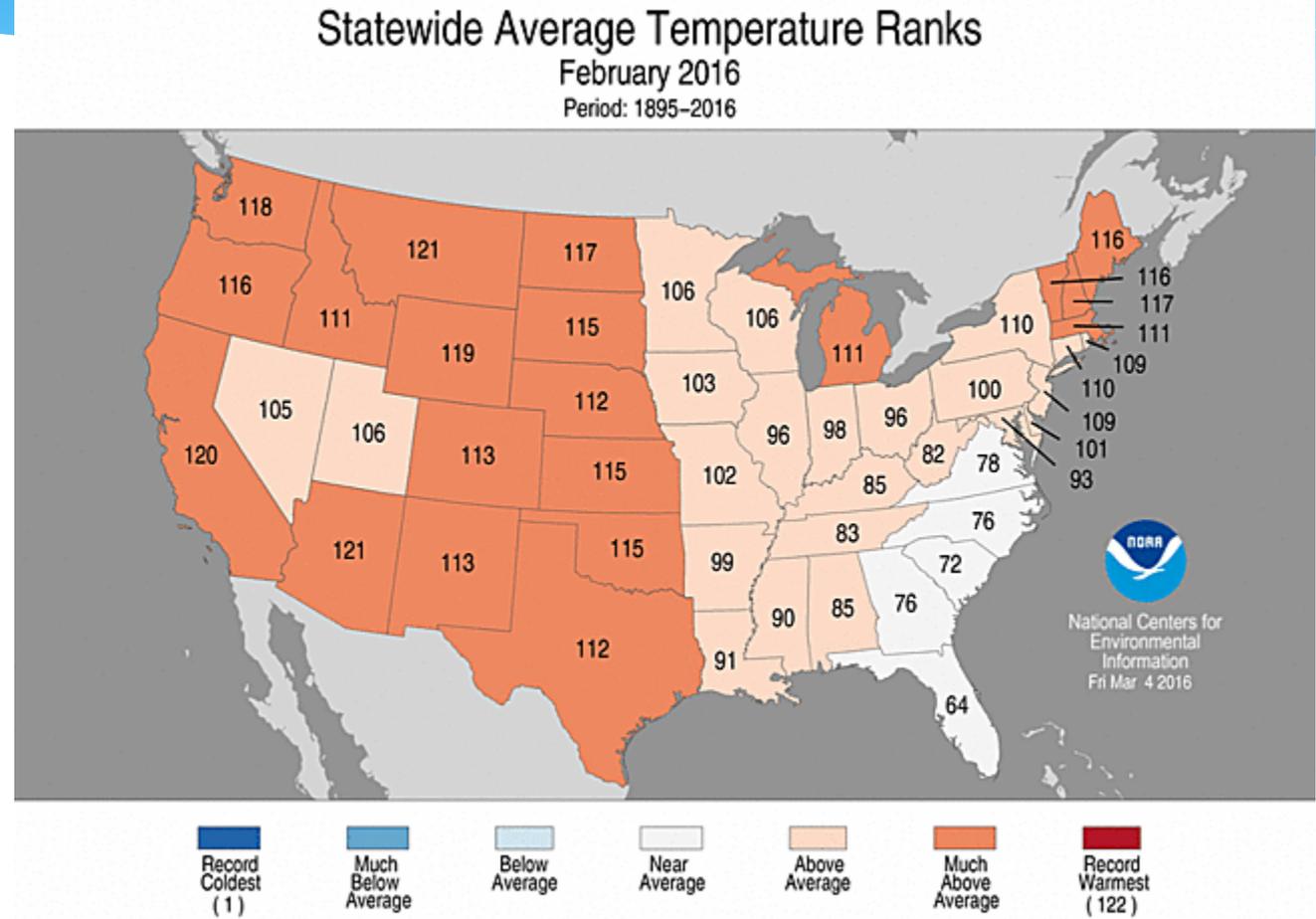


**Magnolia Tree Outside
Hardin Hall East Campus, UNL
April 5, 2011**

Review/Current Conditions

February Temperature Recap

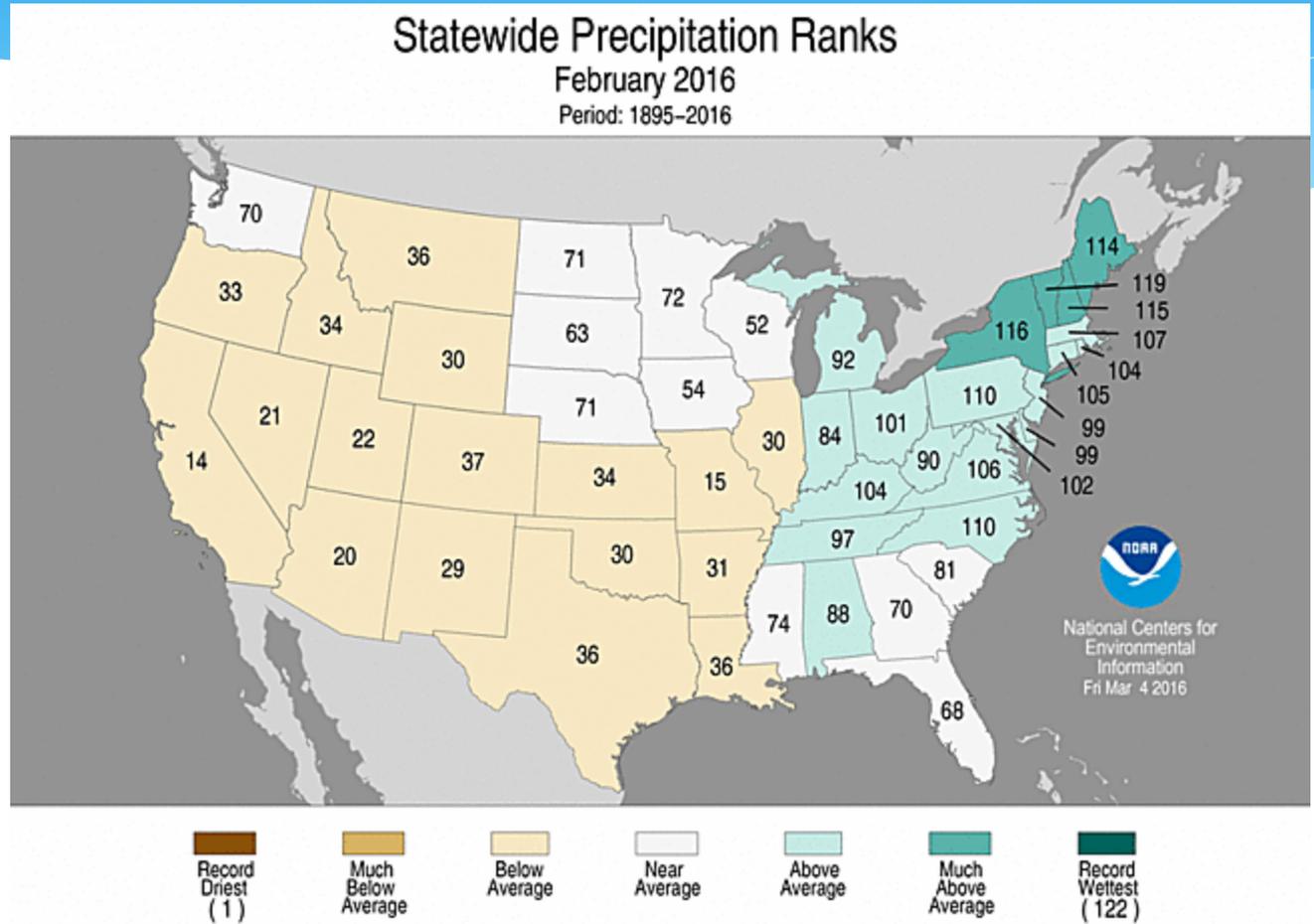
Warm across the US – warmer in the western areas.



February Precipitation Recap

Wettest in the eastern part of the region

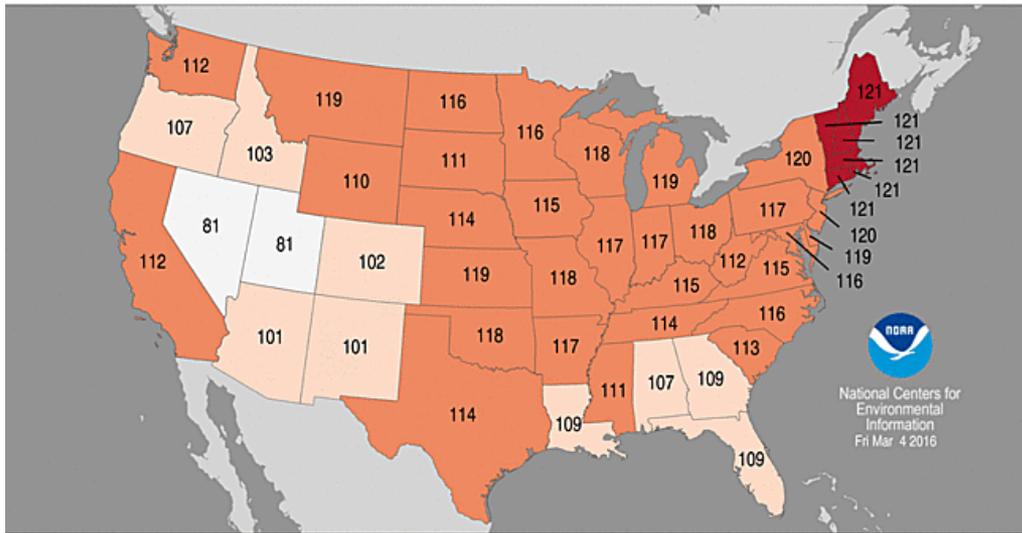
Moderate conditions north central



Statewide Average Temperature Ranks

December 2015–February 2016

Period: 1895–2016

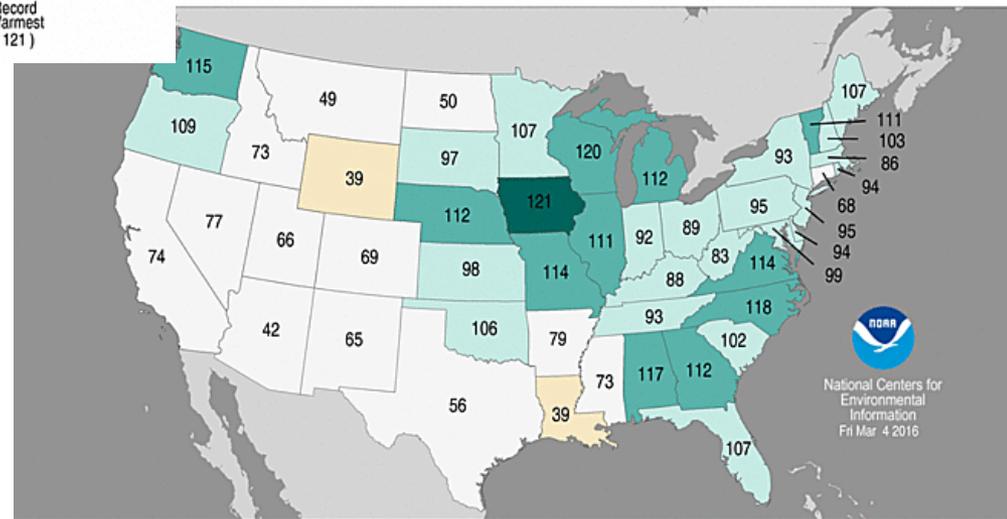


90 day temperature and precipitation ranks

Statewide Precipitation Ranks

December 2015–February 2016

Period: 1895–2016



Winter cloudiness – temperature impact

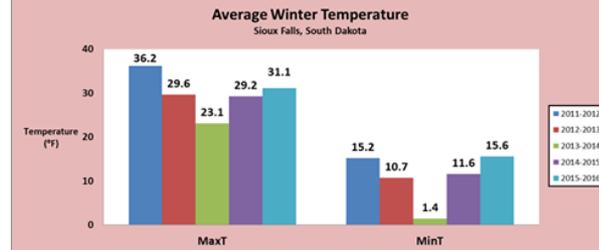
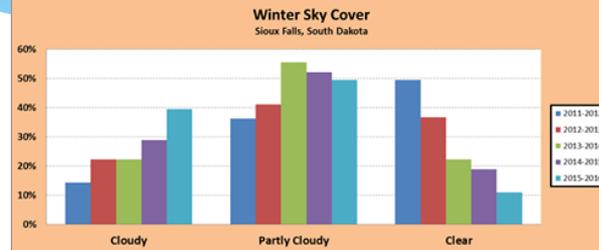
Winter temps – lows ranked higher than highs in 121 year rankings

Part of the issue – cloudiness keeps warmer at and less warming in the day

Sioux Falls only 10% clear days – least in last 5 years

Winter 2015-2016: Cloudy days and warm nights

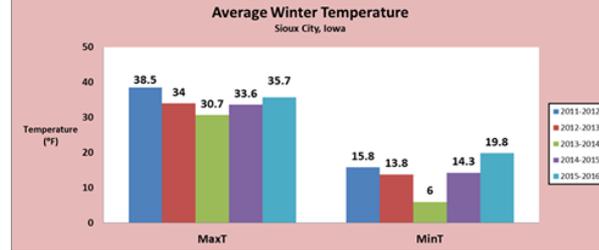
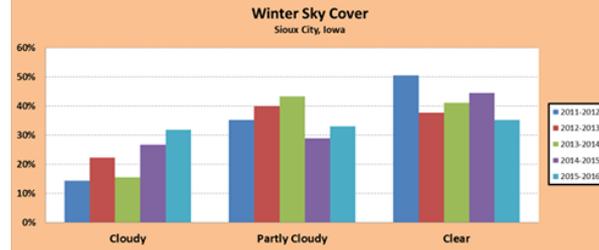
Sioux Falls, South Dakota



Summary

- **Cloudiest winter in the last 5 years.**
 - Only 10% of days were clear.
- Average minimum temperature of 15.6°F
 - 7th warmest on record.
- 6 days had minimum temperatures at or above freezing
 - Tied for 8th most days on record.
- Only 12 days were below zero.

Sioux City, Iowa

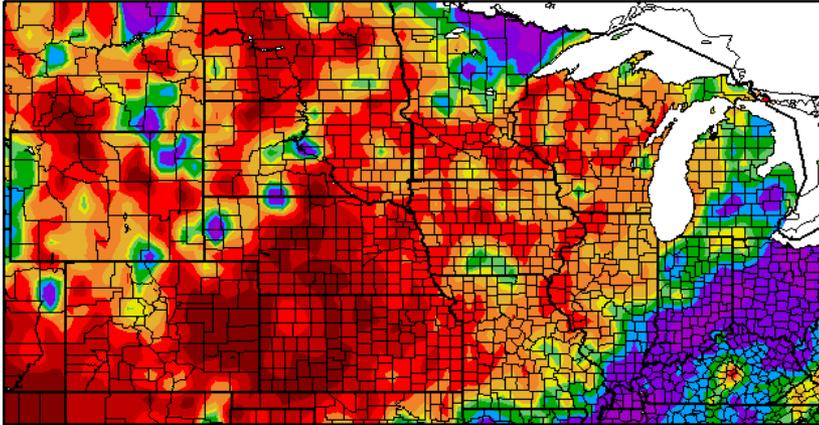


Summary

- **Cloudiest winter in the last 5 years.**
 - 35% of days were clear
- The average minimum temperature of 19.8°F.
 - 6th warmest on record.
- 12 days had minimum temperatures at or above freezing
 - Tied for 7th most on record.
- Only 8 days were below zero.

Most recent 30 and 90-day precipitation

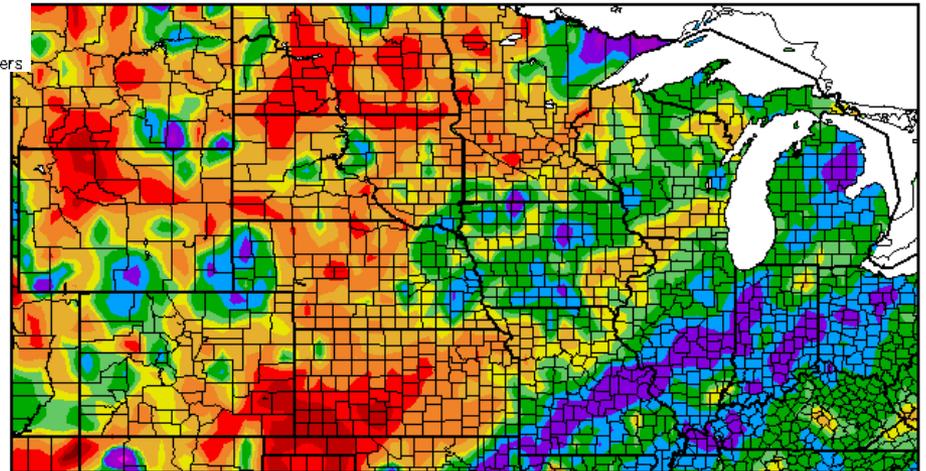
Percent of Normal Precipitation (%)
2/15/2016 – 3/15/2016



Generated 3/16/2016 at HPRCC using provisional data. Regional Climate Centers

Drying has occurred late winter across much of the plains.

Percent of Normal Precipitation (%)
12/17/2015 – 3/15/2016



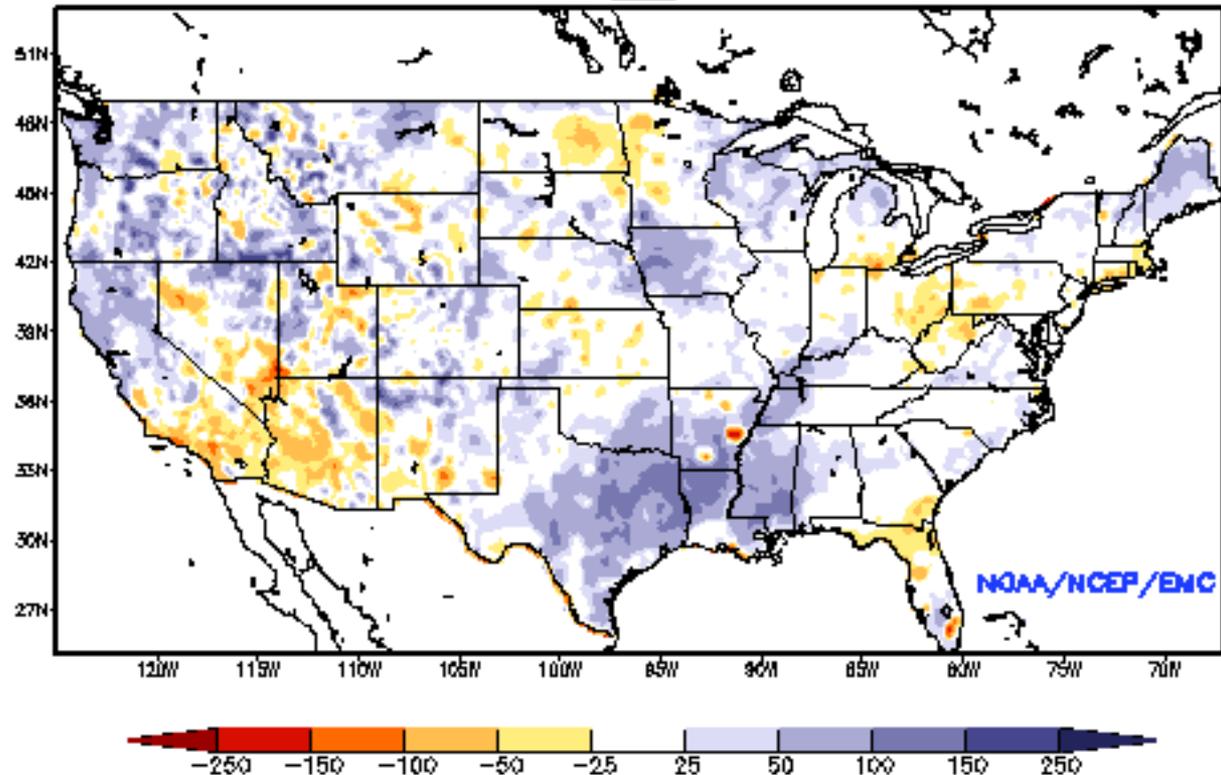
Generated 3/16/2016 at HPRCC using provisional data. Regional Climate Centers

<http://www.hprcc.unl.edu/maps/current/>

HPRCC – Regional Climate Centers

Soil Moisture

Ensemble-Mean - Current Total Column Soil Moisture Anomaly (mm)
NCEP NLDAS Products Valid: MAR 12, 2016

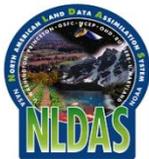


Some dryness showing up in northern plains and spotty other areas.

Still wetness showing in IA

Will it delay planting?

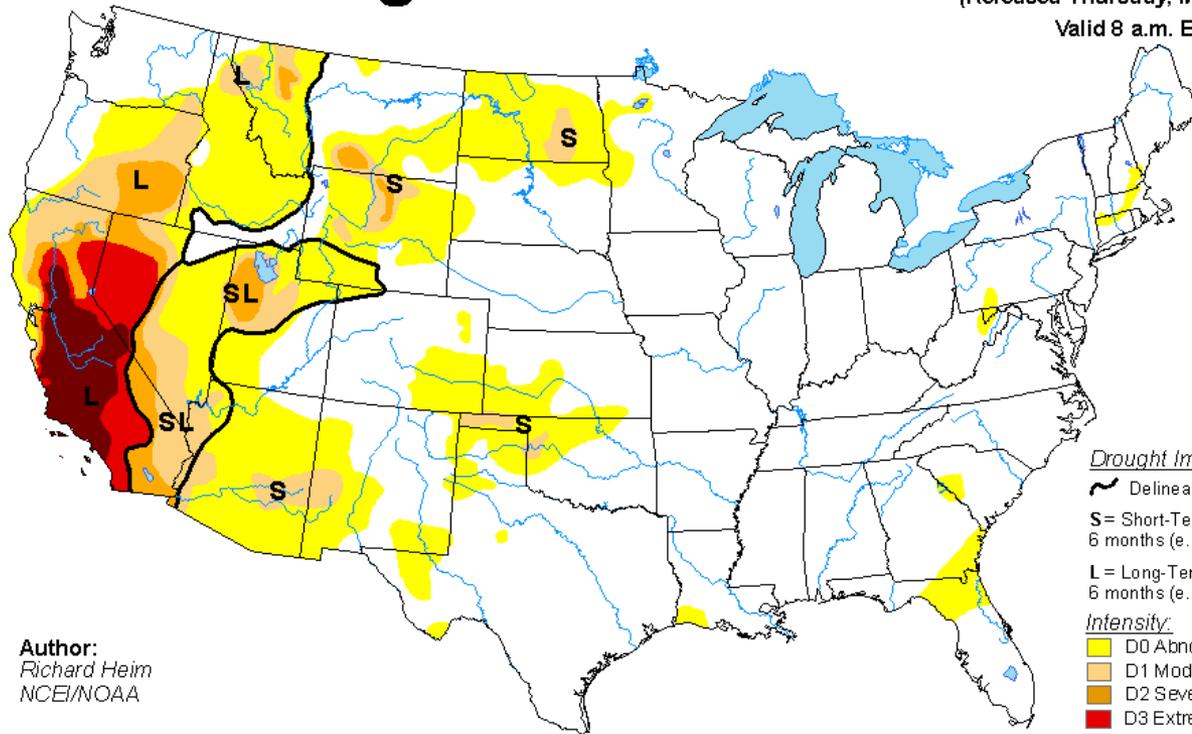
Soil Moisture Anomaly in millimeters



US Drought Monitor

U.S. Drought Monitor

March 15, 2016
 (Released Thursday, Mar. 17, 2016)
 Valid 8 a.m. EDT



Author:
 Richard Heim
 NCEI/NOAA

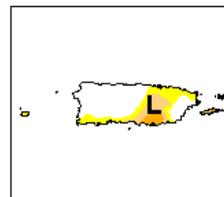
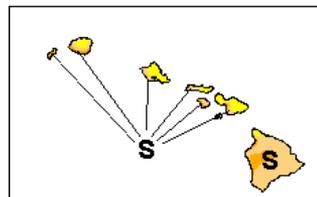
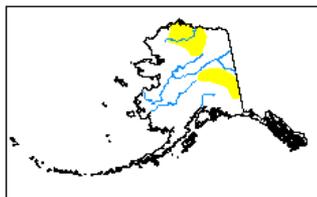
Drought Impact Types:

- ~ 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:

- Yellow: D0 Abnormally Dry
- Light Orange: D1 Moderate Drought
- Orange: D2 Severe Drought
- Dark Orange: D3 Extreme Drought
- Dark Red: D4 Exceptional Drought

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



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

Impacts

The image features a solid blue background with a white wavy line at the bottom. The word "Impacts" is centered in white text.

Potpourri

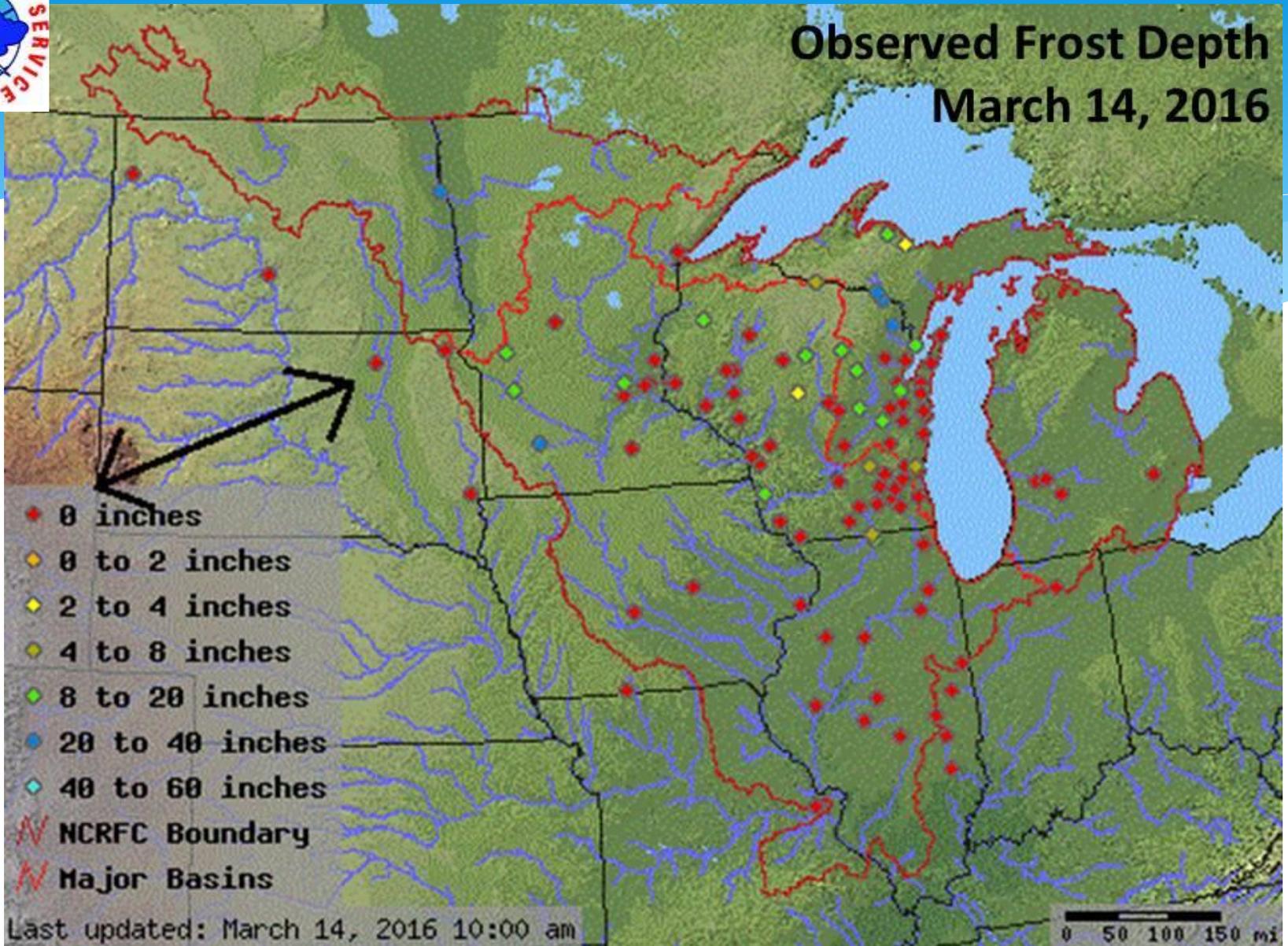
- * Very warm early March
- * Cheyenne Feb. 20 days of 40 mph or more (tied for most in Feb.)
- * Mississippi River and Great Lakes open for shipping early
- * Reduced winter road maintenance IL area.

Impacts

- * Ag –
 - * Early green-up rangeland winter wheat
 - * Always concern for potential freeze
 - * S KS wheat nearing jointing
 - * Field prep work
 - * Various small grains being planted plains states
- * Environmental
 - * Early dormancy breaks flowers/trees
 - * Early bird migration
 - * Pheasant habitat questions
 - * Early ice-out on lakes/ponds
 - * Early frost out of ground (mixed)



Observed Frost Depth March 14, 2016



Missouri Vegetation

Report submitted on March 14, 2016 from central Missouri:
Michele Warmund, University of MO Horticulture Professor

- Cherries are past full bloom at New Franklin, peaches will be in full bloom likely by this weekend, apples likely in 2 weeks.

Report submitted on March 15, 2016 from southwestern Missouri, Greene county:
Pat Byers, Extension Horticulture Specialist, Southwest Missouri Region

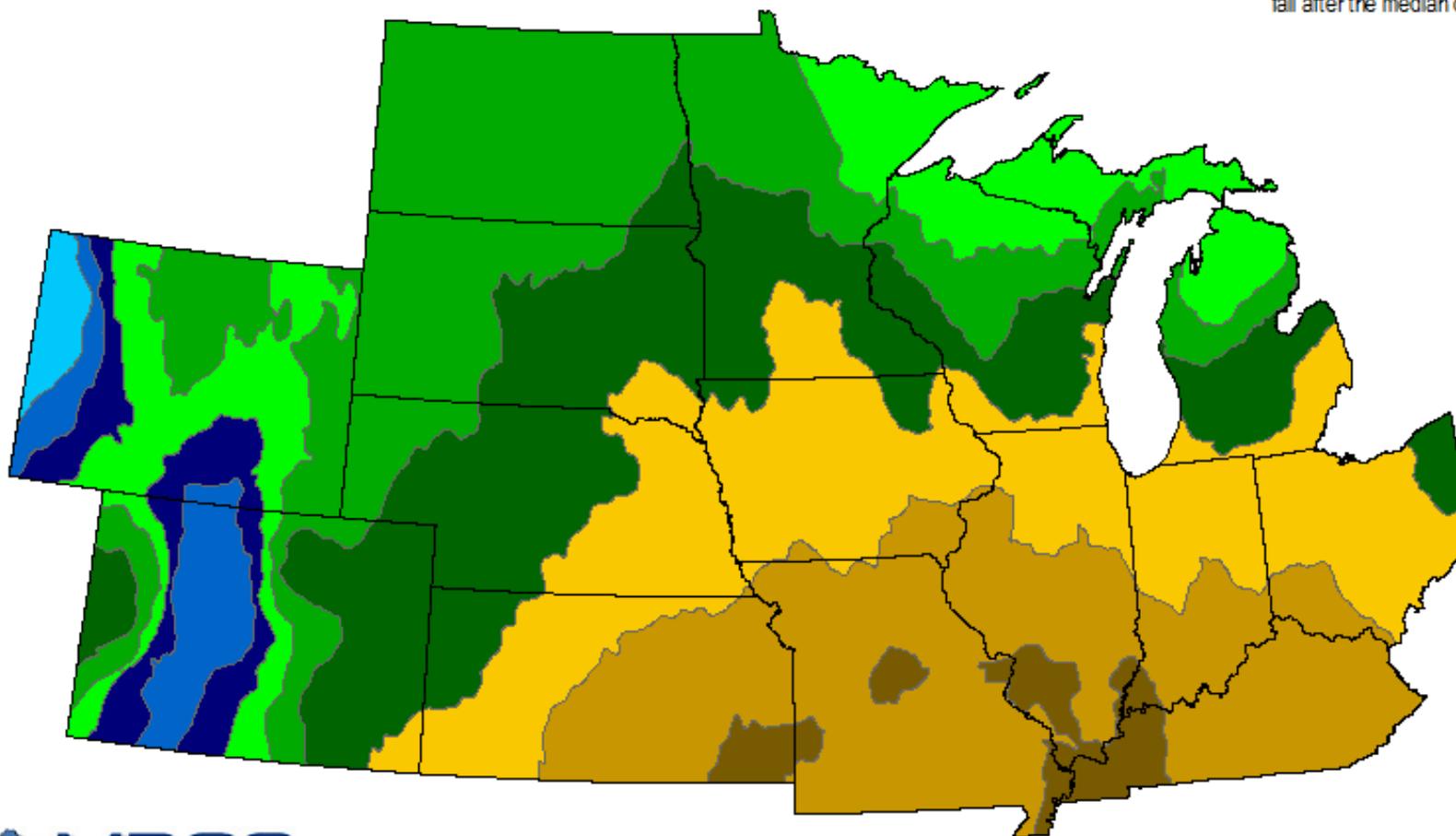
- Peaches – pink to full bloom; 10% bud kill at 25-27F; 90% bud kill at 15-24F
- Apples – half inch green to tight cluster; 10% bud kill at 23-27F; 90% bud kill at 15-21F
- Blueberries – bud break to early bloom; expected flower bud damage at 20-28F
- Strawberries – tight buds in the crown; growers will protect with row covers
- Blackberry – green tip, expected bud damage at 15-20F
- Ornamental trees/shrubs in blossom – saucer magnolia, other magnolia, flowering pear, flowering plum, forsythia, quince, etc – freezing temperatures will impact ornamental value

Spring Freeze

Median Date Of Last 32°F Freeze
Based on 1981-2010 Average

- | | | | |
|---------------------|---------------|---------------|-------------------|
| ● Mar 10 or Earlier | ● Apr 1 - 10 | ● May 1 - 10 | ● Jun 1 - 10 |
| ● Mar 11 - 20 | ● Apr 11 - 20 | ● May 11 - 20 | ● Jun 11 - 20 |
| ● Mar 21 - 31 | ● Apr 21 - 30 | ● May 21 - 31 | ● Jun 21 or Later |

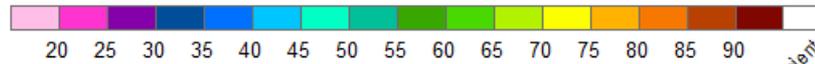
Median date is determined such that half of all years fall before and half fall after the median date.



Soil temperatures

4" Soil Temperature (°F) (Bare)

24-Hour Period Through 3/15/2016

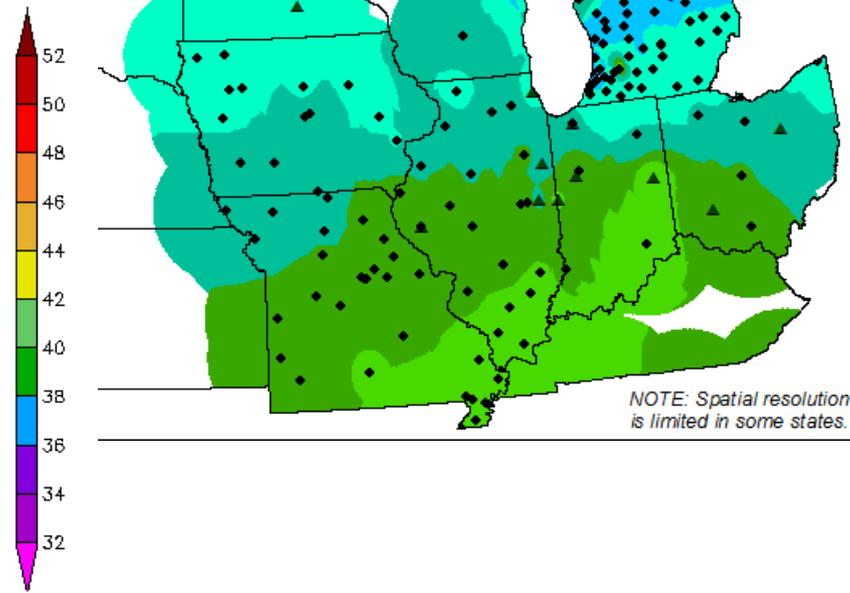
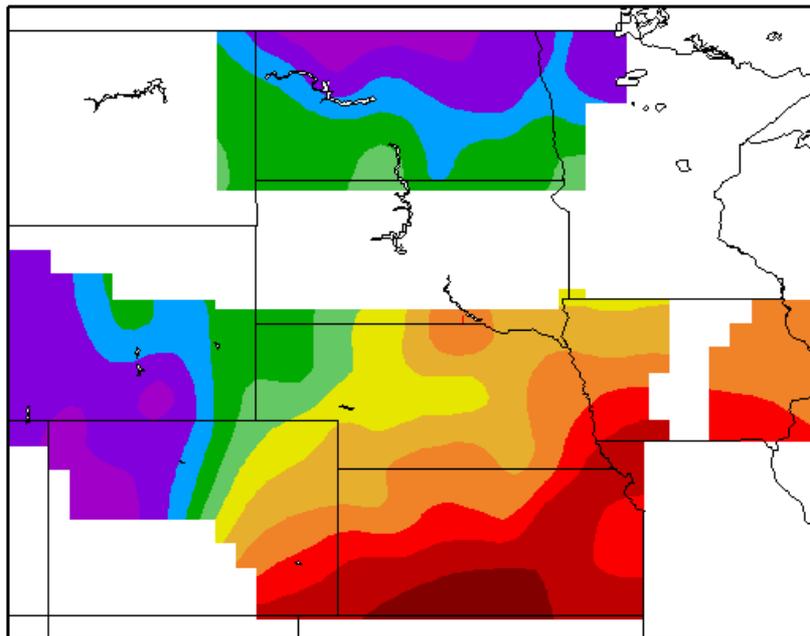


Insufficient Data



- ◇ Mesonets, ≤ 32°F
- ◆ Mesonets, > 32°F
- △ COOP, ≤ 32°F
- ▲ COOP, > 32°F

Soil Temperature (F at 4 inches)
3/16/2016 – 3/16/2016



U2U Decision Support Tools - Corn GDD

Map Graph Data Animations

Feedback?

About GDD

This tab allows you to put corn (86/50) GDD progress into a 30-year historical perspective. Customize your data:

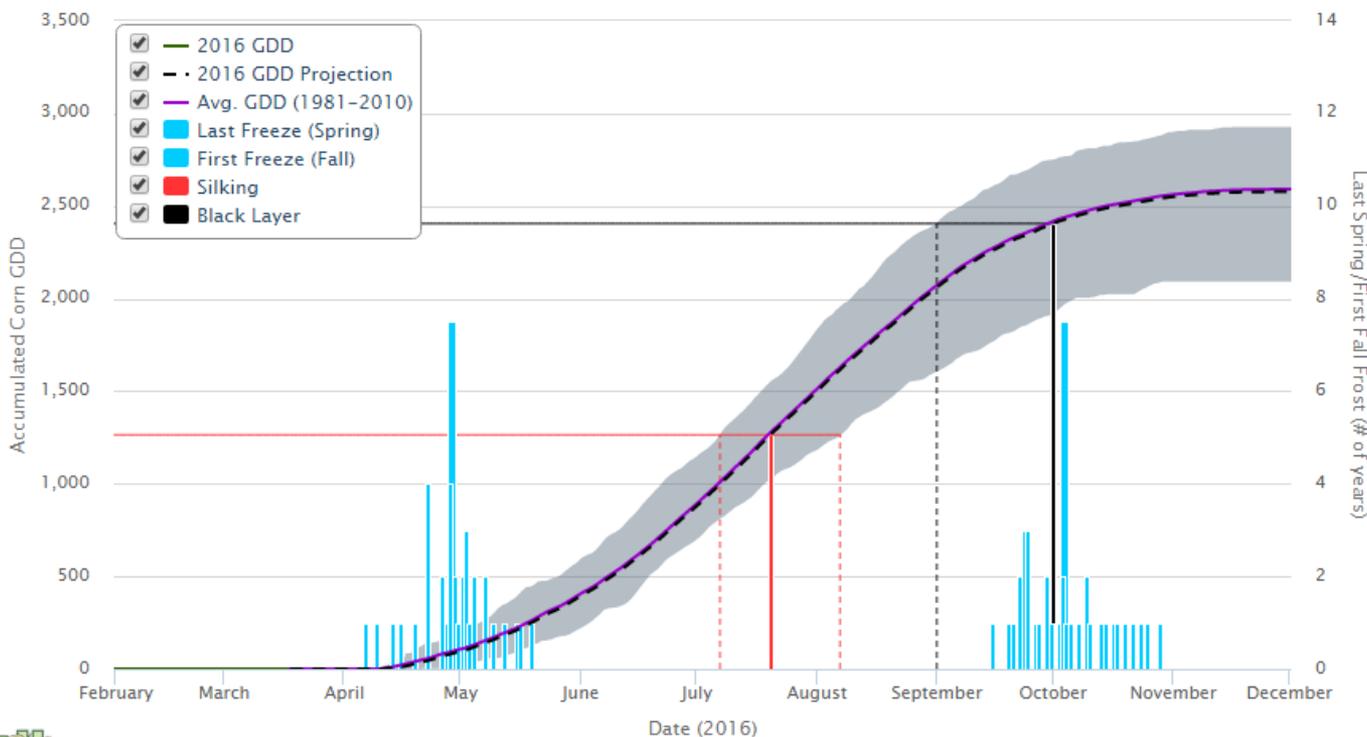
- Choose your GDD start date, freeze temperature threshold and corn maturity rating
- Add up to 3 years from 1981 to previous year for comparison
- Adjust the variation of historical GDD and temperature data visible on the graph
- Add or remove silking, black layer and freeze dates for a comprehensive growing cycle snapshot

GDD Start: April 10 Comparison Years: Choose a Year Corn Maturity Days: 100 Silking GDDs: 1246
Freeze Temperature (°F): 28 Variation: All Years Current Day: Today Black Layer GDDs: 2401

Corn Growing Degree Day Tool

Chart Options

Location: 44.32, -96.78 in Brookings Co., SD, Start Date: April 10, Maturity Days: 100, Freeze Temp: 28°F, Variation: All Years



Tool Tips:

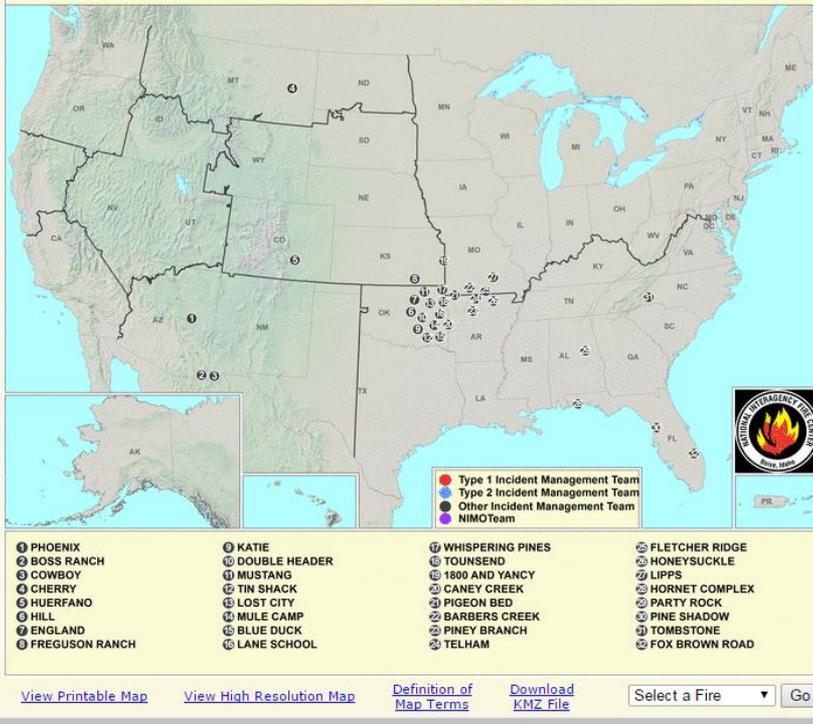
<http://www.agclimate4u.org>

GDD Base 50/86 (degrees F); Created: 03/17/2016

Impacts

Fire

New Large Incidents March 11, 2016



Fire Activity

- * Fewer big events
- * Numerous smaller events
- * Some burn bans
- * Not uncommon this time of year.
 - * Lack green-up
 - * High T
 - * Low RH
 - * Winds.....

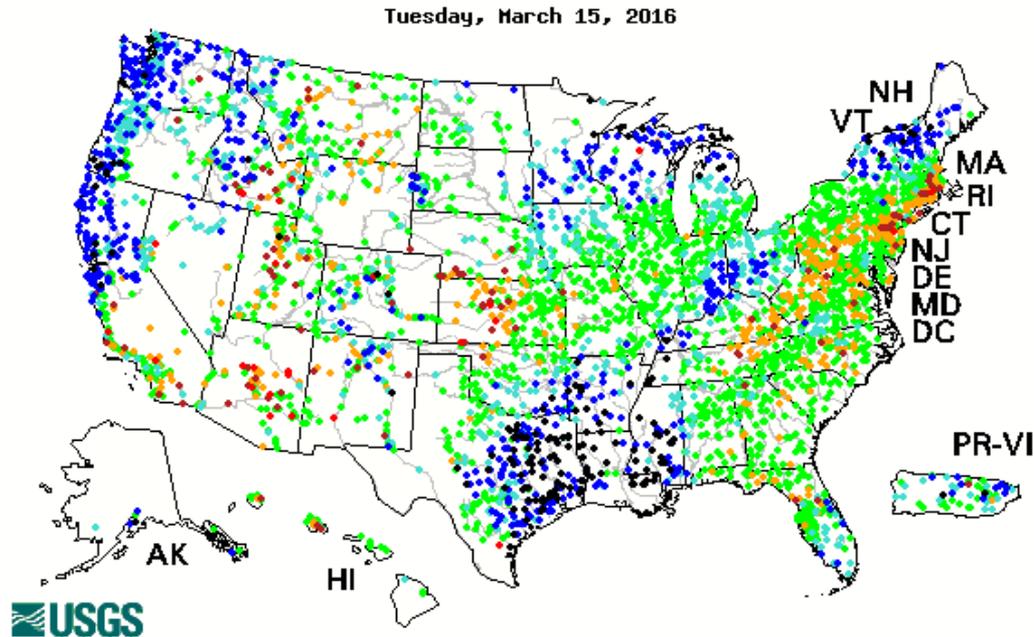
USDA Forest Service

<http://activefiremaps.fs.fed.us/current.php>

Impacts

Missouri River/Streams

7-Day Average Streamflow



Choose a data retrieval option and select a location on the map

List of all stations in state, State map, or Nearest stations

Explanation - Percentile classes						
Low	<10 Much below normal	10-24 Below normal	25-75 Normal	76-90 Above normal	>90 Much above normal	High

Wednesday, 16 March 2016

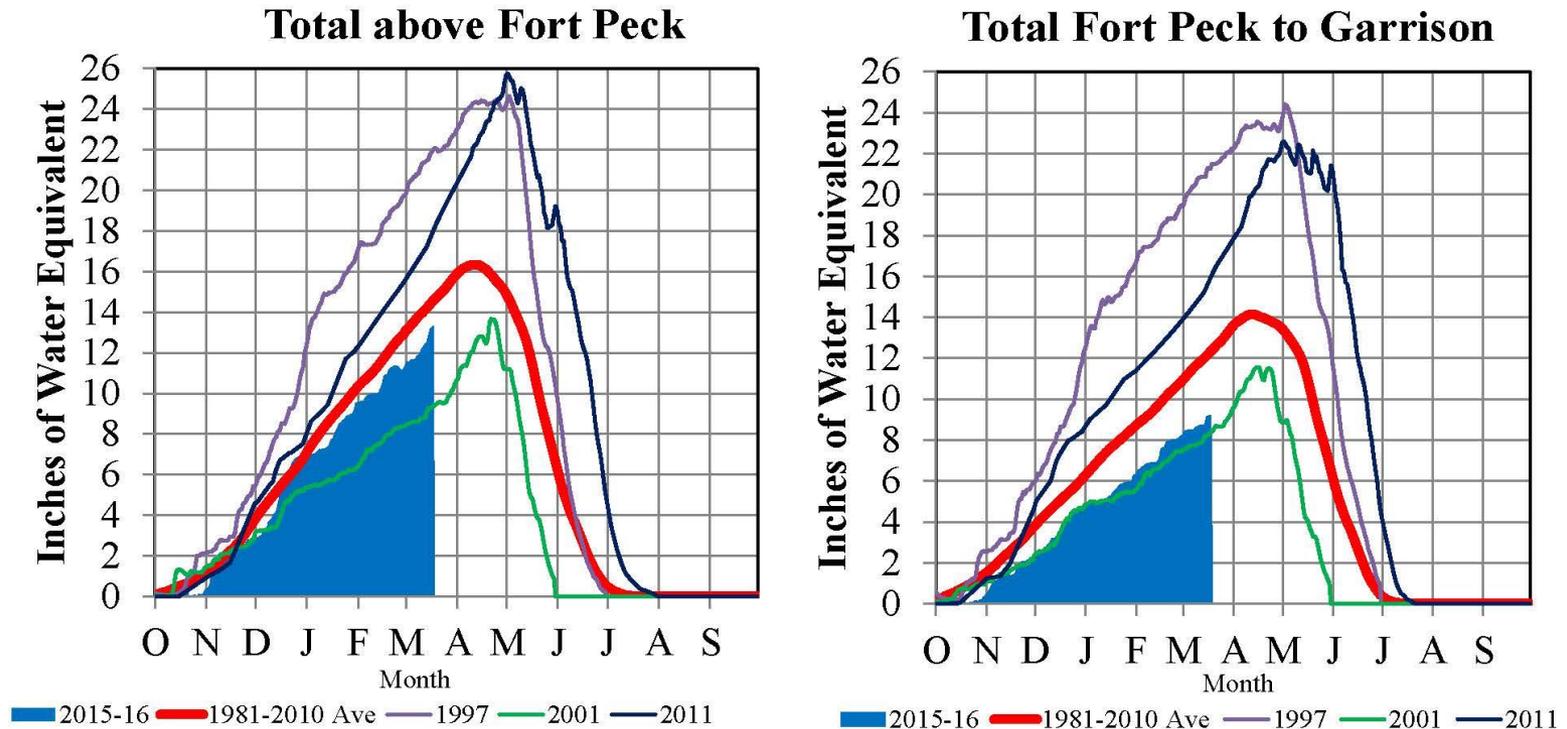
Wetter WI-MN

Dry in NE-KS

<http://waterwatch.usgs.gov/index.php?id=pa07d>

Missouri River Basin – Mountain Snowpack Water Content 2015-2016 with comparison plots from 1997*, 2001*, and 2011

March 17, 2016



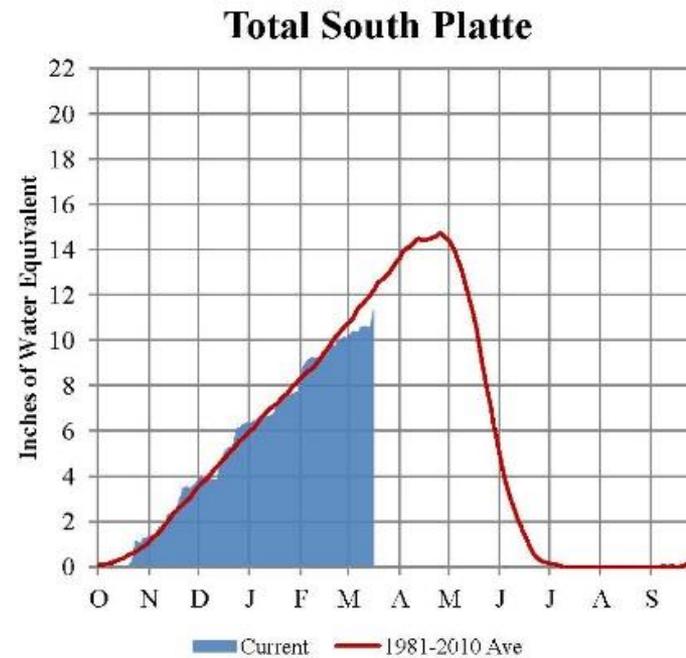
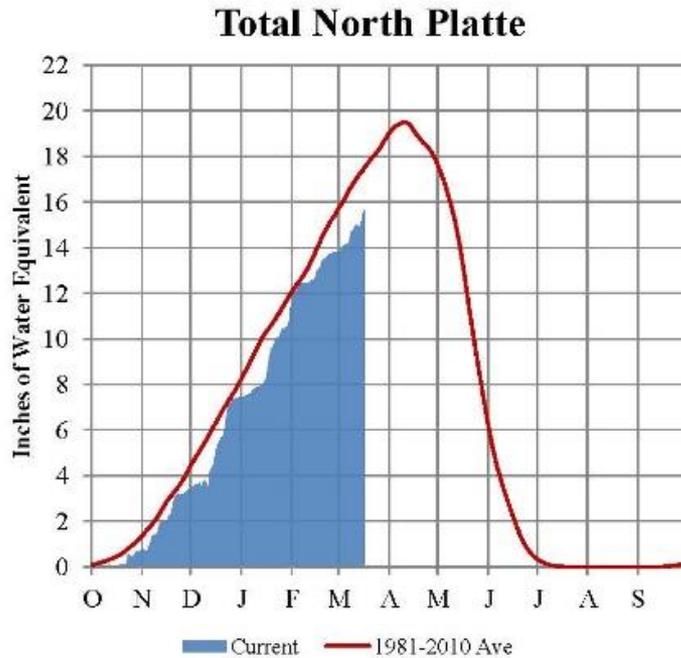
The Missouri River Basin mountain snowpack normally peaks near April 15. By March 15, normally 87% of the peak has accumulated. On March 10, 2016 the mountain Snow Water Equivalent (SWE) in the “Total above Fort Peck” reach is currently 13.3”, 92% of average. The mountain SWE in the “Total Fort Peck to Garrison” reach is currently 9.2”, 74% of average.

*Generally considered the high and low year of the last 20-year period.

Provisional data. Subject to revision.

Platte River Basin - Mountain Snowpack Water Content Water Year 2015-2016

3/17/2016



The North and South Platte River Basin mountain snowpacks normally peak near April 15. As of March 16, 2016, the mountain snowpack SWE in the "Total North Platte" reach is currently 15.6", 89% of average. The mountain snowpack SWE in the "Total South Platte" reach is currently 11.3", 93% of average.

2016 U.S. Spring Flood Risk



Be prepared: Visit www.floodsafety.noaa.gov
and follow @NOAA and @NWS on Twitter

Outlooks

Climate Outlooks

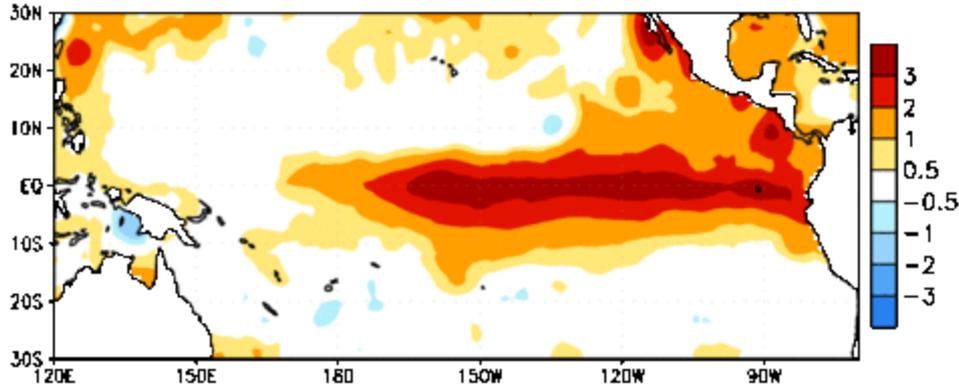
- * **El Niño**
- * **7-day precipitation forecast**
- * **8-14 day outlook**
- * **April**
- * **3 Months (April - June)**
- * **Seasonal Drought Outlooks**
- * **Summer – a look ahead**

Impacts

El Niño

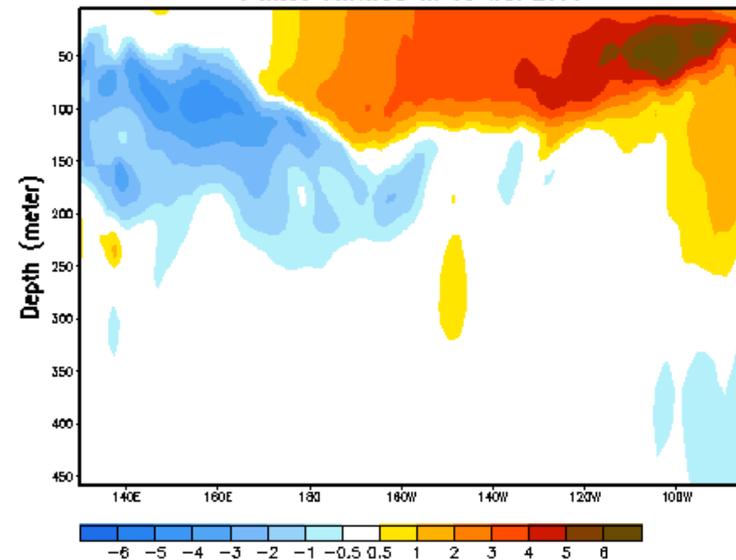
Current El Nino Conditions

Week centered on 23 DEC 2015
SST Anomalies (°C)



Warm SSTs
Very strong El Niño
Definitely weakening
Top 3 events in last 65 years

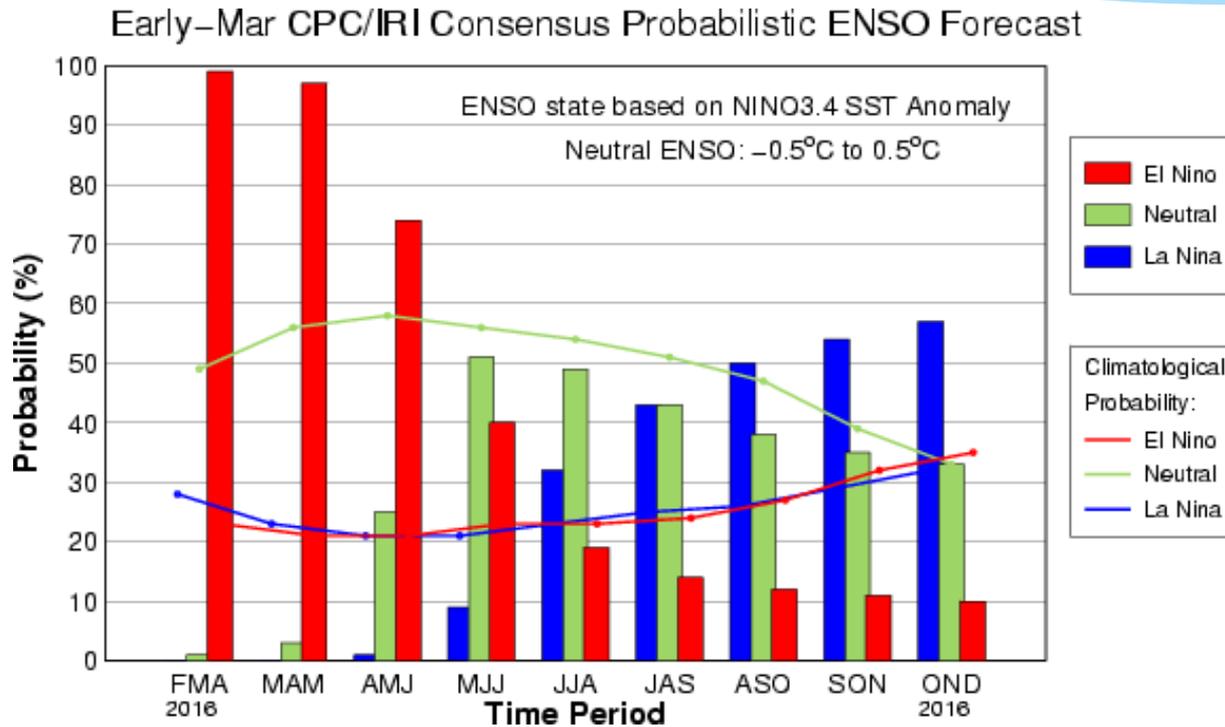
Equatorial Temperature Anomaly (°C)
Pentad centered on 08 JAN 2016



CPC/IRI Probabilistic ENSO Outlook

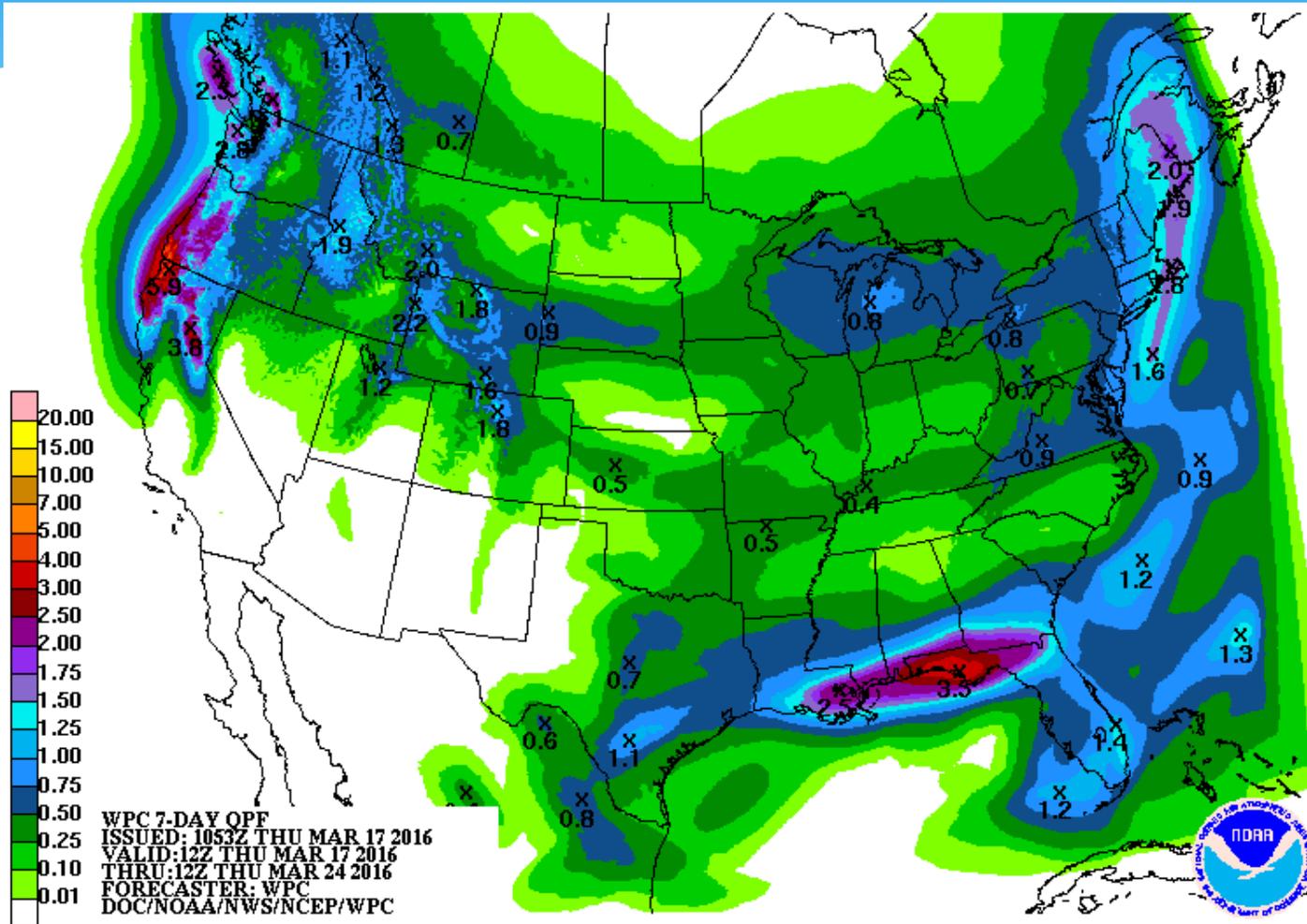
Updated: Early March 2016

The chance of El Niño gradually decreases into the spring and ENSO-neutral is favored by May-June-July (MJJ) 2016. Possible La Niña by fall.



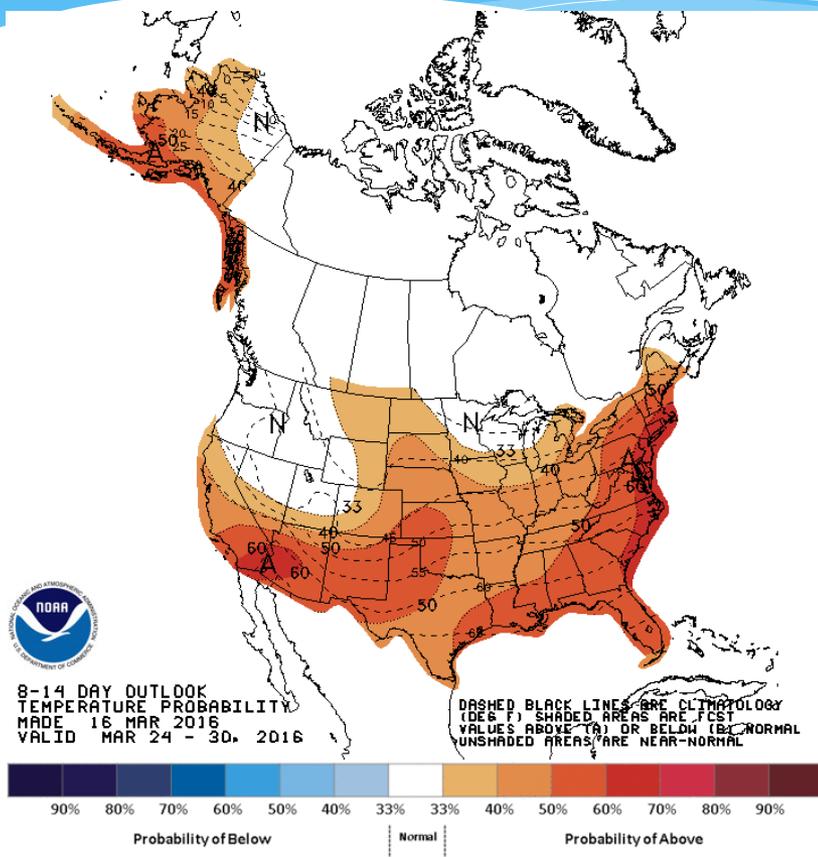
7-day Quantitative Precipitation Forecast

Valid: 7 AM Thu 17 Mar– 7 AM Thu 24 Mar

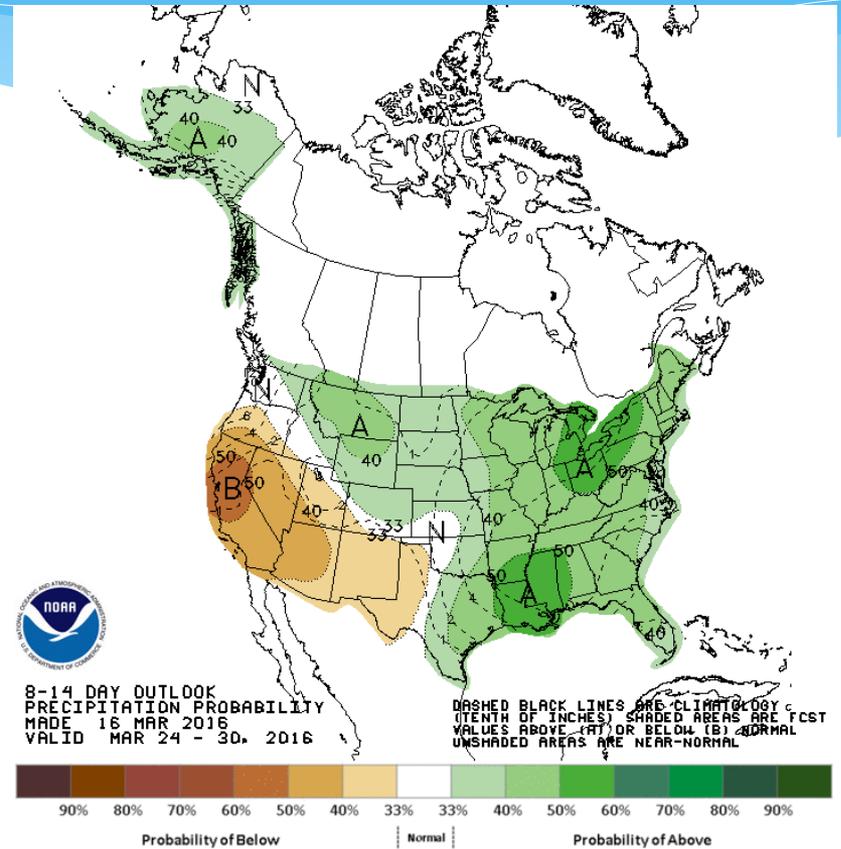


<http://www.wpc.ncep.noaa.gov/qpf/day1-7.shtml>

Temperature and Precipitation Probabilities for 24 Mar. – 30 Mar. 2016

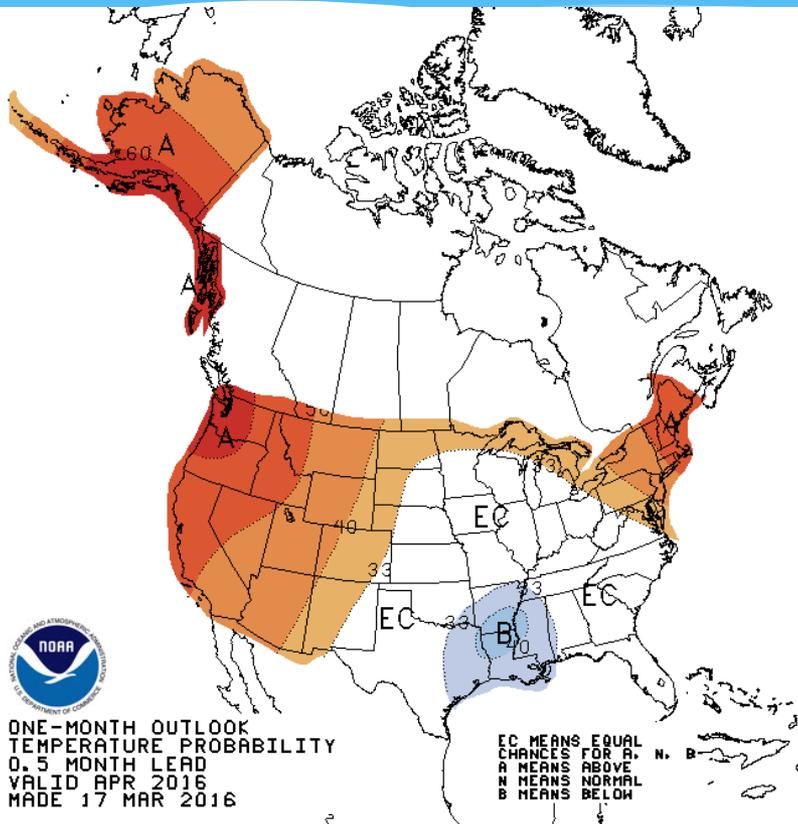


Temperature

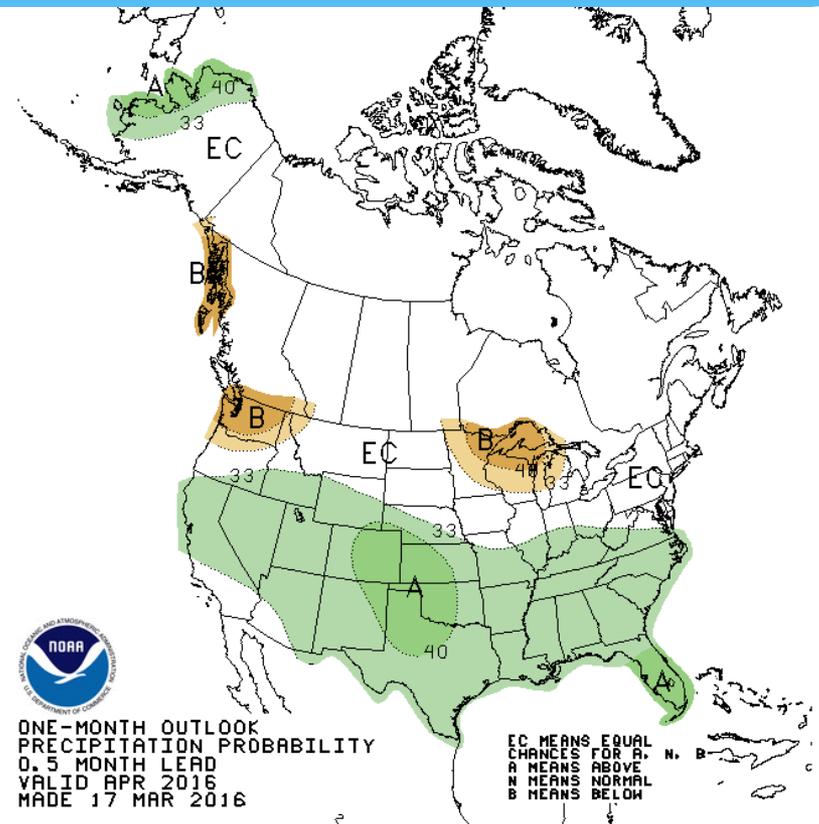


Precipitation

April Temperature and Precipitation Probabilities



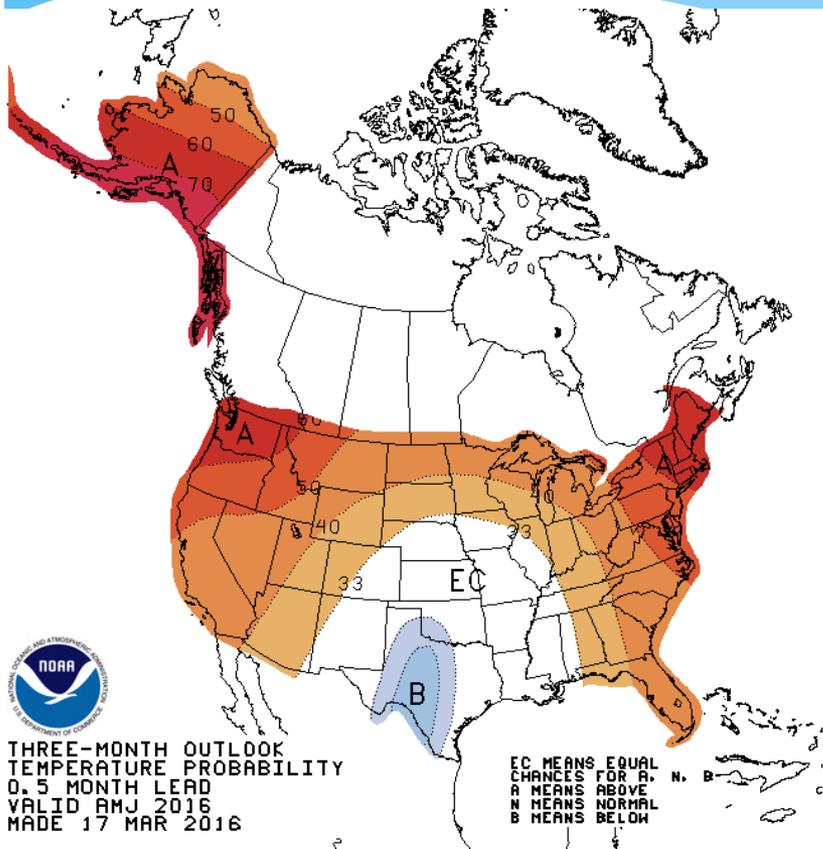
Temperature



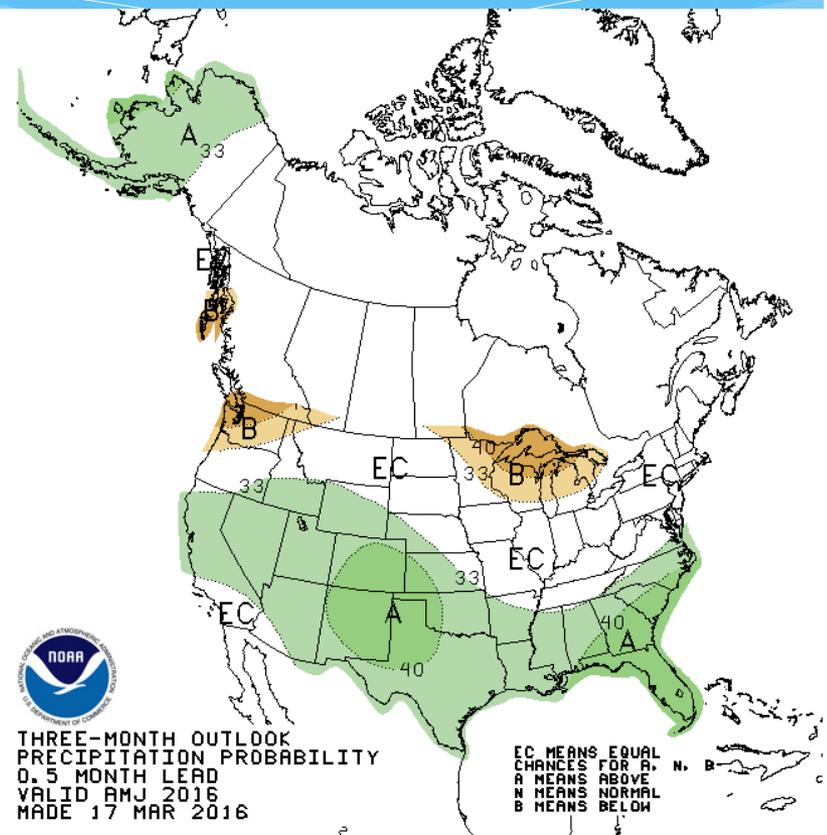
Precipitation

<http://www.cpc.ncep.noaa.gov/products/predictions/30day/>

3 Month Temperature and Precipitation Probabilities (April – June)

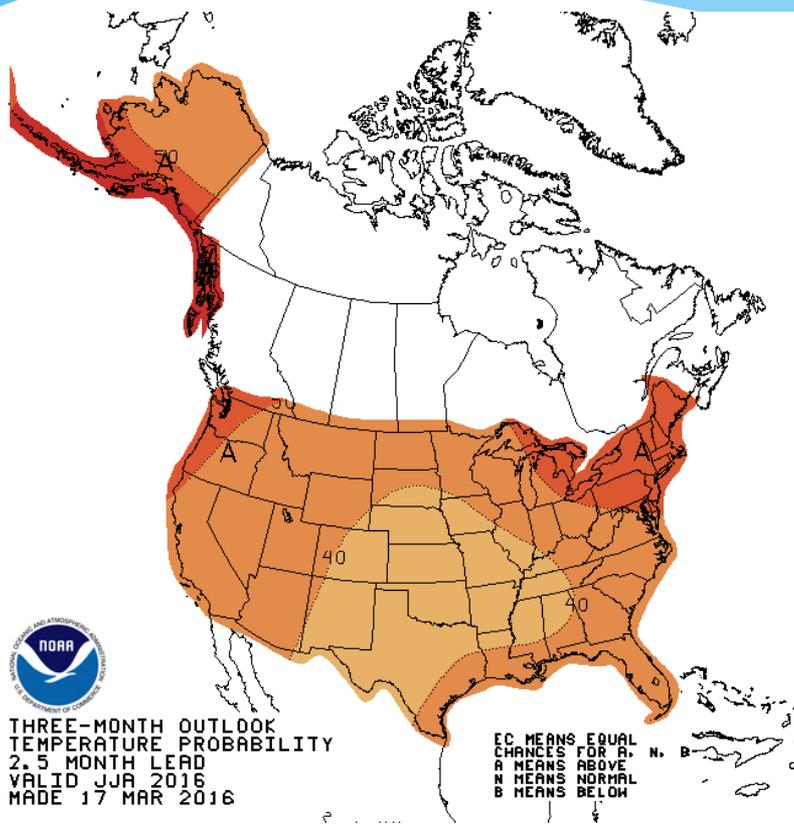


Temperature

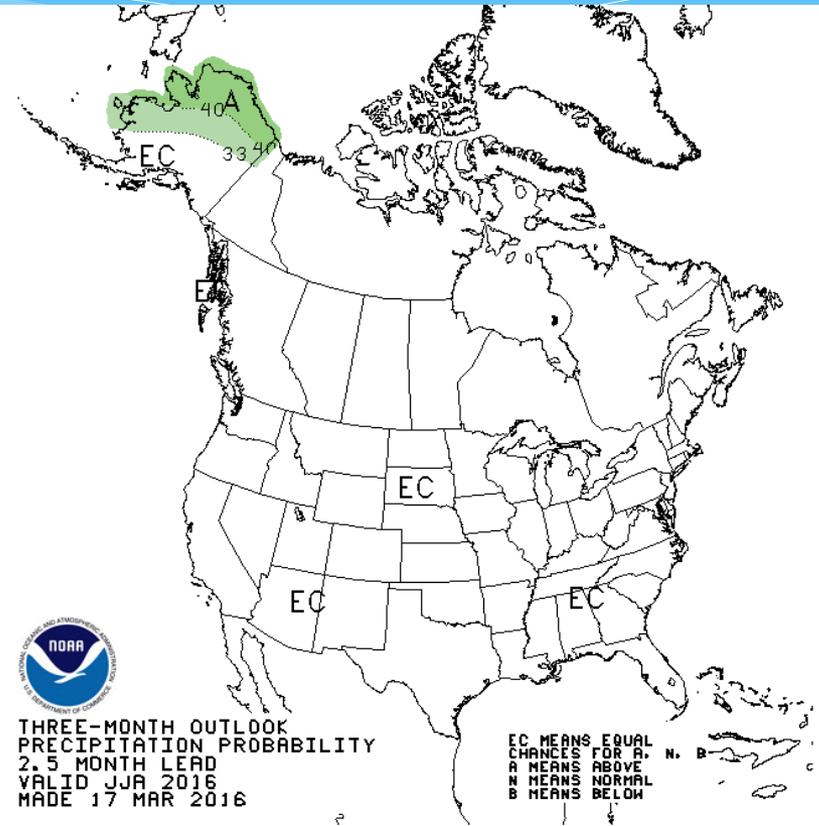


Precipitation

3 Month Temperature and Precipitation Probabilities (June – August)



Temperature

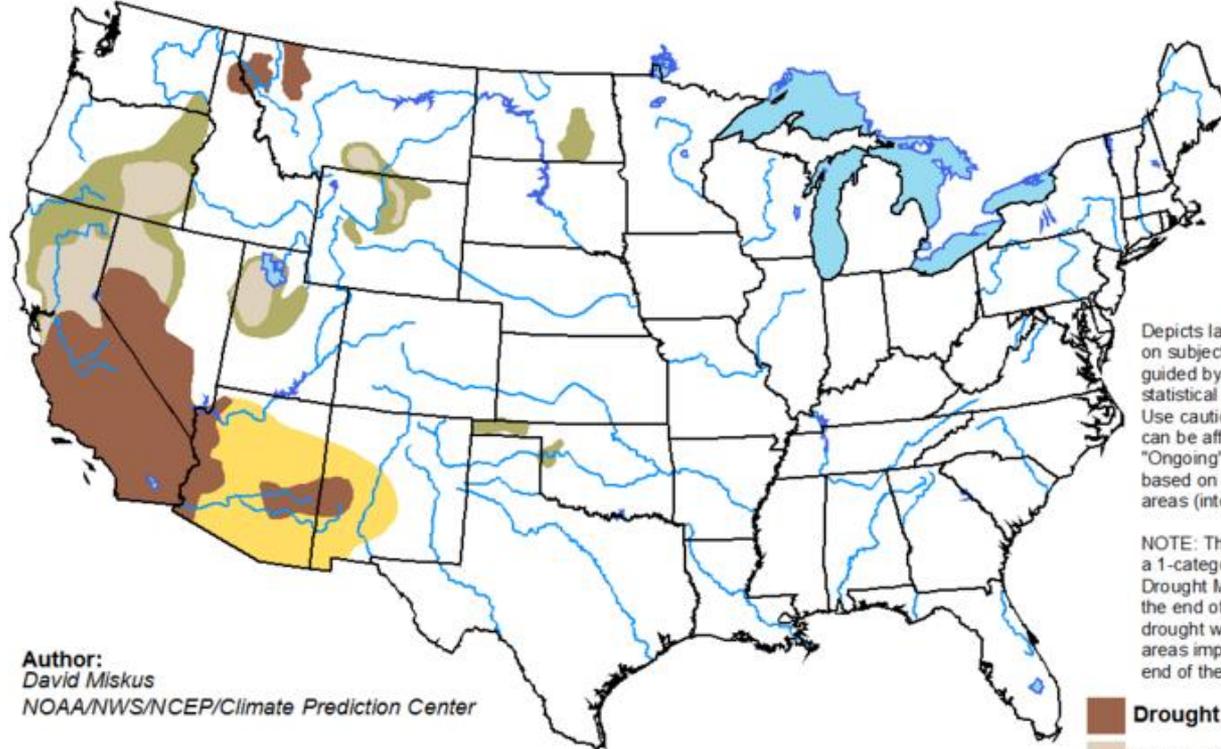


Precipitation

Drought Outlook through 30 June

U.S. Seasonal Drought Outlook Drought Tendency During the Valid Period

Valid for March 17 - June 30, 2016
Released March 17, 2016

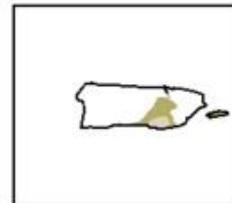
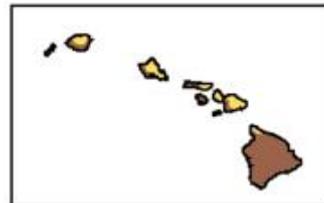


Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. "Ongoing" drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to D4).

NOTE: The tan 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).

Author:
David Miskus
NOAA/NWS/NCEP/Climate Prediction Center

-  Drought persists
-  Drought remains but improves
-  Drought removal likely
-  Drought development likely



<http://go.usa.gov/3eZ73>

Summary - Conditions

- * Warmer nearly everywhere in the winter.
- * More wet earlier and some drier late in the winter
- * Early onset of spring – potential of freeze issues
- * Allowing early ag activity
- * Potential horticulture problem

Summary - Outlooks

- * El Niño – advisory. Weakening.
- * Transition out in spring/summer. La Niña by fall?
- * Spring mixed
 - * Warmer likely north
 - * Wetter south
- * Summer
 - * Likely warmer whole region
 - * Precipitation no strong indications

Further Information - Partners

- **Today's and Past Recorded Presentations and :**
- * <http://mrcc.isws.illinois.edu/webinars.htm>
- <http://www.hprcc.unl.edu>
- NOAA's National Climatic Data Center: www.ncdc.noaa.gov
 - Monthly climate reports (U.S. & Global):
www.ncdc.noaa.gov/sotc/
- NOAA's Climate Prediction Center: www.cpc.ncep.noaa.gov
- Climate Portal: www.climate.gov
- U.S. Drought Portal: www.drought.gov
- National Drought Mitigation Center: <http://drought.unl.edu/>
- State climatologists
 - * <http://www.stateclimate.org>
- Regional climate centers
 - * <http://mrcc.isws.illinois.edu>
 - * <http://www.hprcc.unl.edu>

Thank You and Questions?

- * Questions:

- * **Climate:**

- * Dennis Todey: dennis.todey@sdstate.edu , 605-688-5141

- * Doug Kluck: doug.kluck@noaa.gov, 816-994-3008

- * Mike Timlin: mtimlin@illinois.edu; 217-333-8506

- * Natalie Umphlett: numphlett2@unl.edu ; 402 472-6764

- * Brian Fuchs: bfuchs2@unl.edu 402 472-6775

- * **Weather:**

- * crhroc@noaa.gov