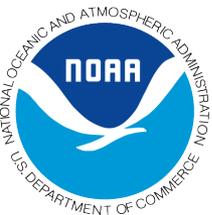


Midwest and Great Plains Climate- Drought Outlook 21 August 2014

Dr. Jeff Andresen
State Climatologist
Michigan State University
andresen@msu.edu
517-432-4756



Flooding along I-696 in Warren, MI
11 AUG 2014
Photo courtesy of NBC News

General Information

- * **Providing climate services to the Central Region**
 - * Collaboration Activity Between:
 - * State Climatologists
 - * Doug Kluck & John Eise (NOAA/NWS)
 - * American Association of State Climatologists
 - * Midwest and High Plains Regional Climate Centers
 - * National Drought Mitigation Center/USDA

- * **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>
- * **Operator Assistance for questions at the end**

Agenda

- * **Current Conditions**

- * **Impacts**

- * **Flooding**

- * **Agriculture**

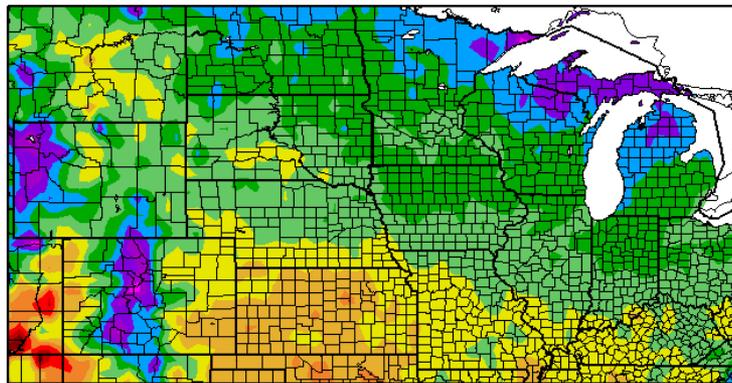
- * **Outlooks**

- * **El Niño**

Review/Current Conditions

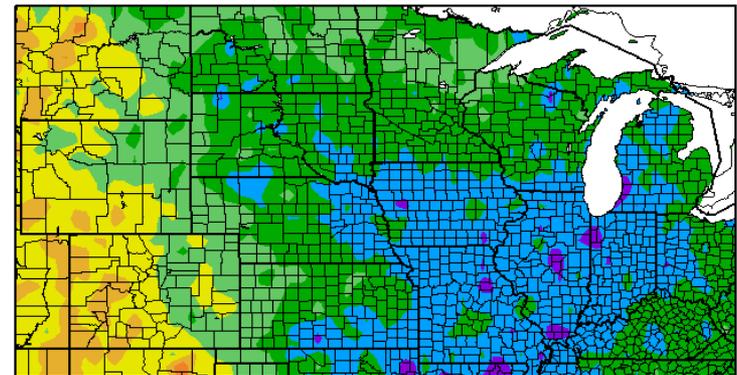
July Temperatures

Temperature (F)
7/1/2014 - 7/31/2014



Generated 8/11/2014 at HPRCC using provisional data. Regional Climate Centers

Departure from Normal Temperature (F)
7/1/2014 - 7/31/2014



Generated 8/11/2014 at HPRCC using provisional data. Regional Climate Centers

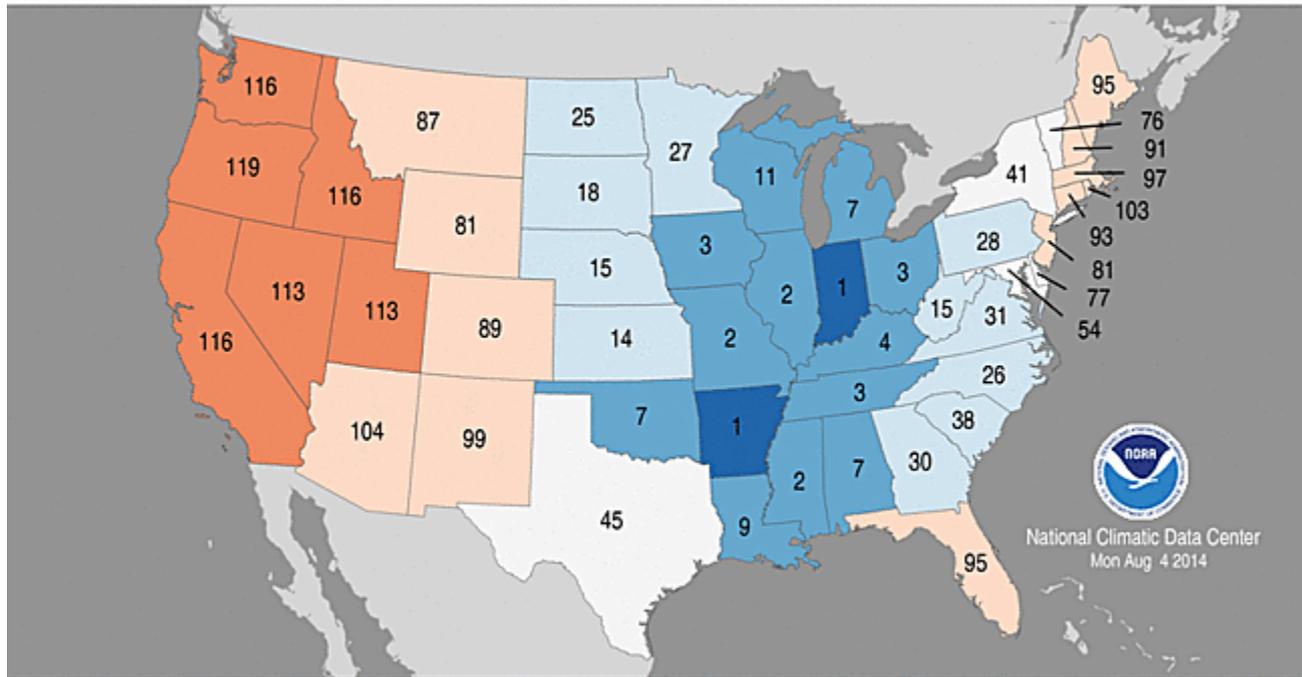
Much cooler than normal regionwide

July Temperatures

Statewide Average Temperature Ranks

July 2014

Period: 1895–2014



National Climatic Data Center
Mon Aug 4 2014

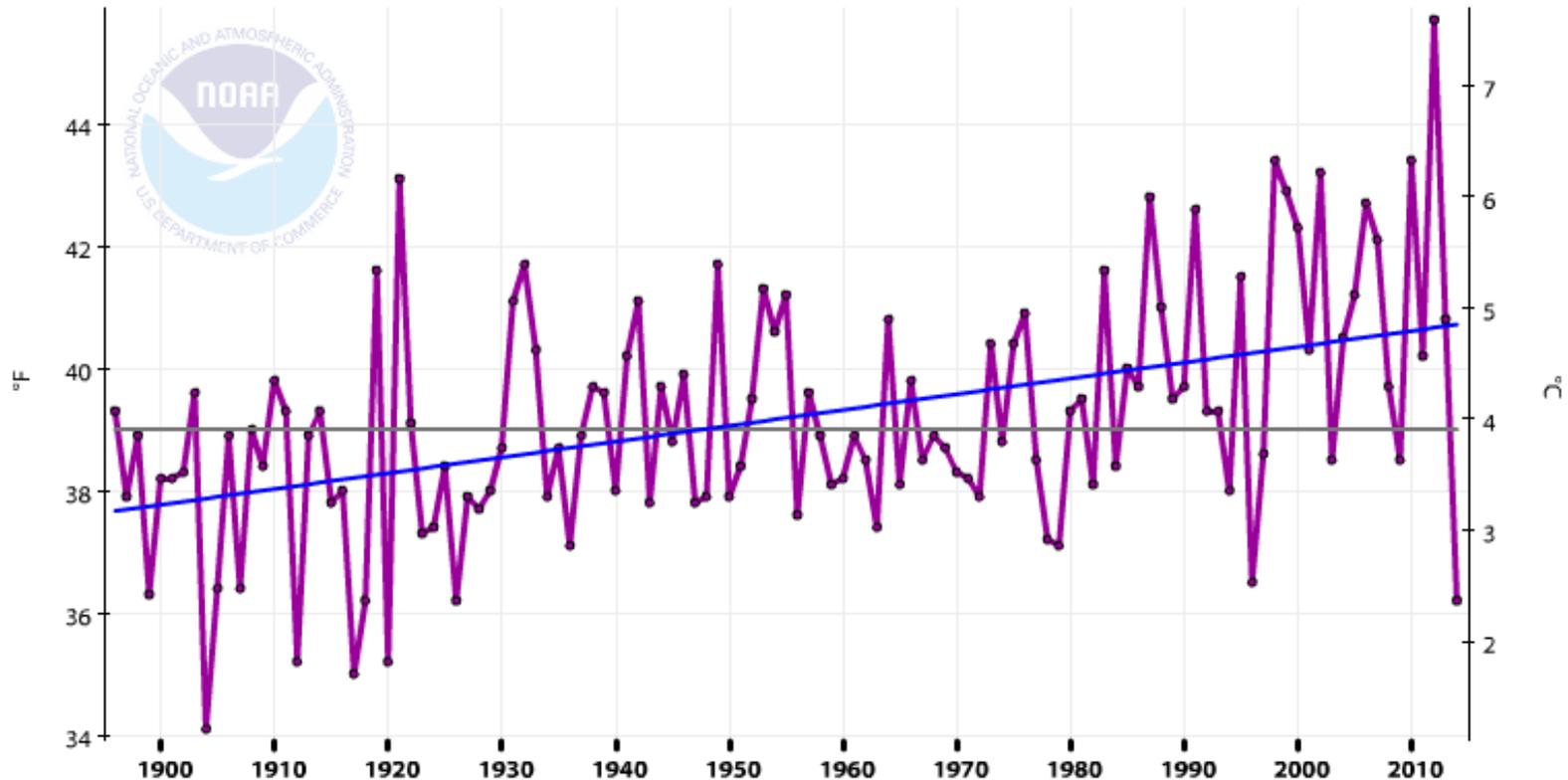


November – July Temperatures

1895-2014

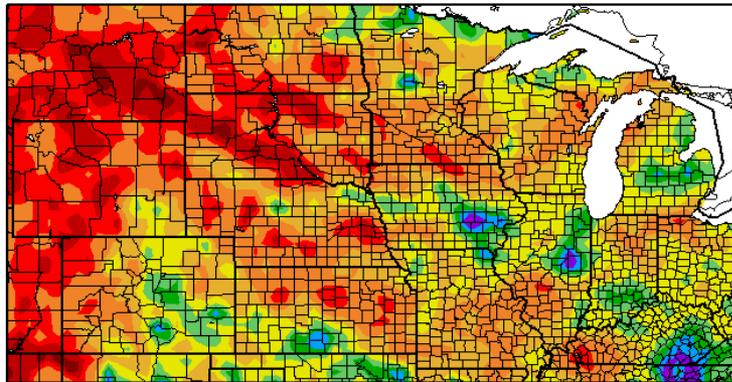
Michigan, Average Temperature, November-July

— 1896-2014 Trend +0.3°F/Decade — 1901-2000 Avg: 39.0°F ●— Avg Temperature



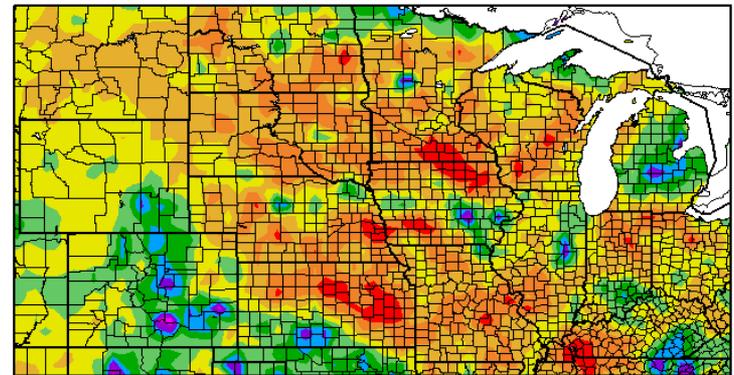
July Precipitation Totals

Precipitation (in)
7/1/2014 - 7/31/2014



0.1 0.5 1 2 3 4 5 6 7 8 9
Generated 8/11/2014 at HPRCC using provisional data. Regional Climate Centers

Departure from Normal Precipitation (in)
7/1/2014 - 7/31/2014

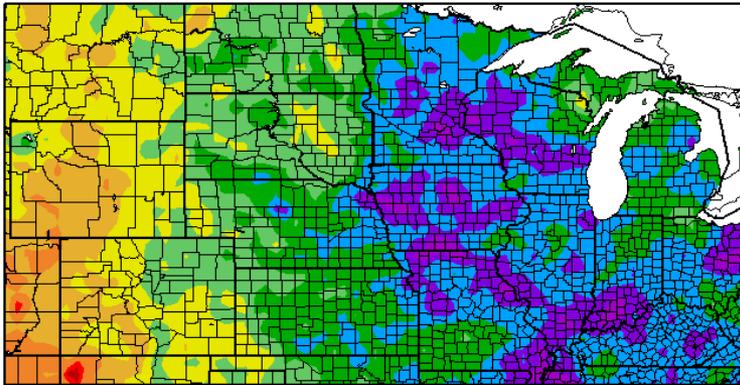


-5 -4 -3 -2 -1 0 1 2 3 4 5
Generated 8/11/2014 at HPRCC using provisional data. Regional Climate Centers

Most of Midwest turned drier

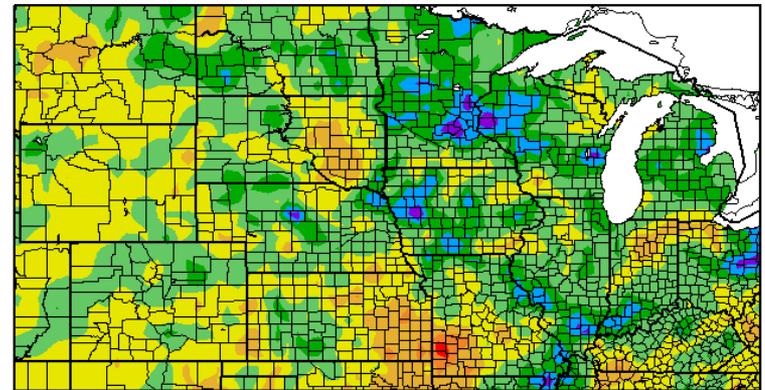
Total Growing Season Precipitation

Precipitation (in)
4/1/2014 - 8/20/2014



0.1 0.75 1.5 3 6 10 14 18 22 26 30
Generated 8/21/2014 at HPRCC using provisional data. Regional Climate Centers

Departure from Normal Precipitation (in)
4/1/2014 - 8/20/2014



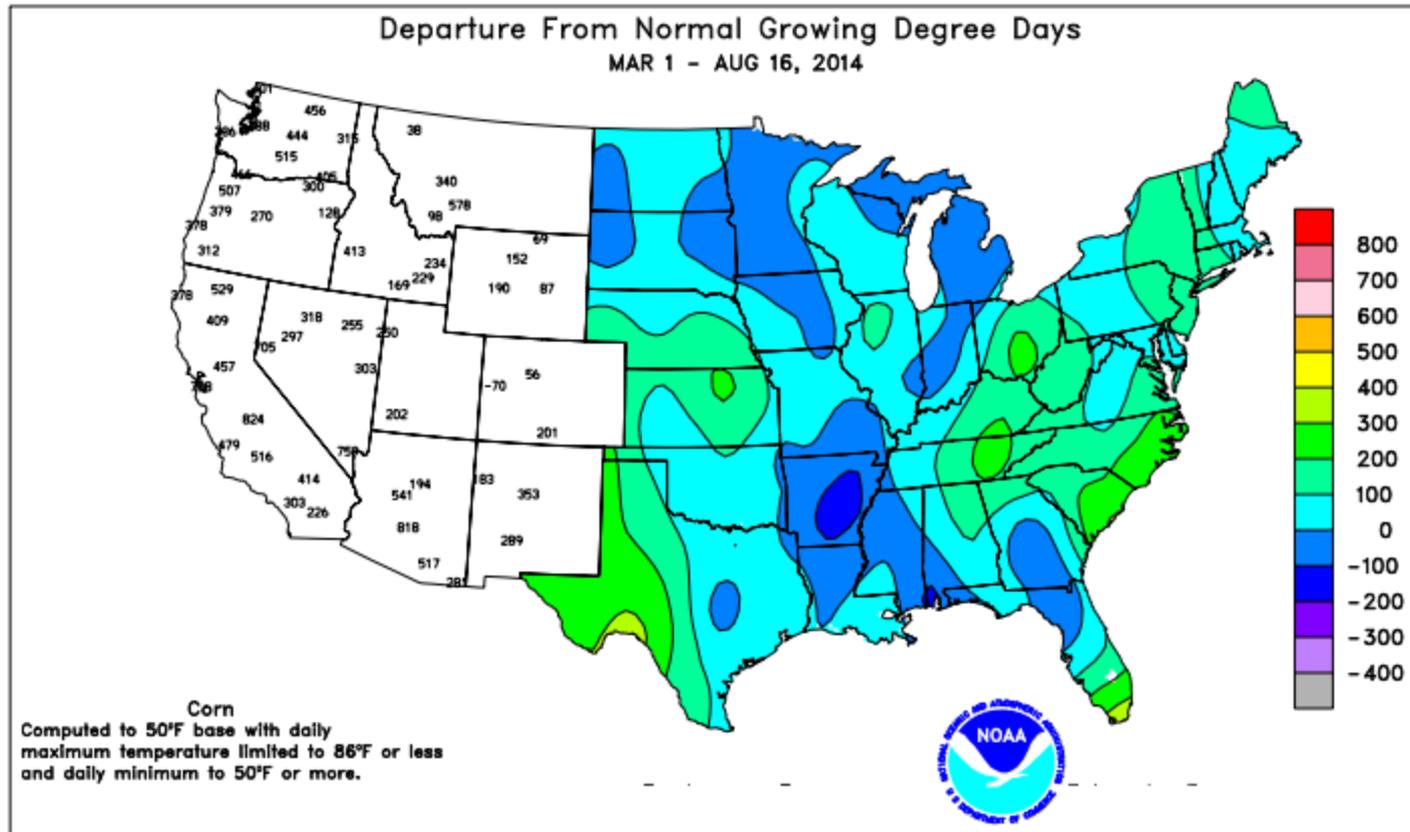
-15 -12 -9 -6 -3 0 3 6 9 12 15
Generated 8/21/2014 at HPRCC using provisional data. Regional Climate Centers

Seasonal surpluses N, NE, deficits SW

Impacts

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

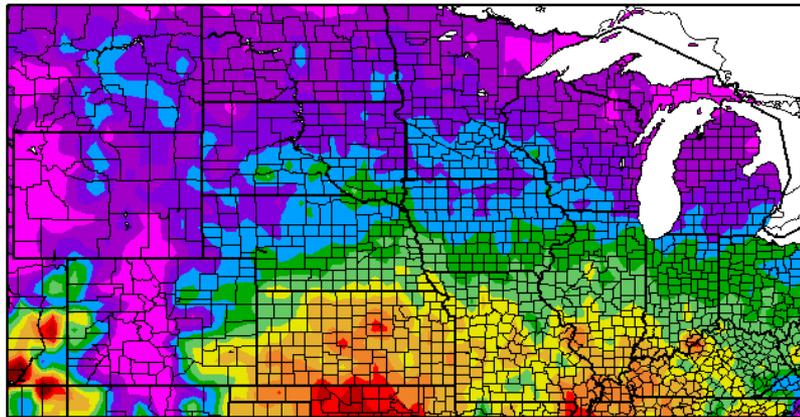
Total Growing Season GDDs



Surpluses west, east, deficits north, south

Cooling Degree Day Accumulations

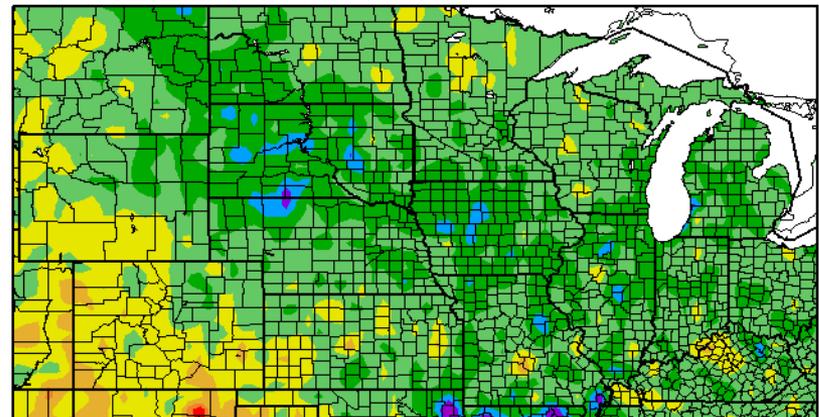
Cooling Degree Days (base 65)
5/1/2014 – 7/31/2014



Generated 8/11/2014 at HPRCC using provisional data.

Regional Climate Centers

Departure from Normal CDD (base 65)
5/1/2014 – 7/31/2014



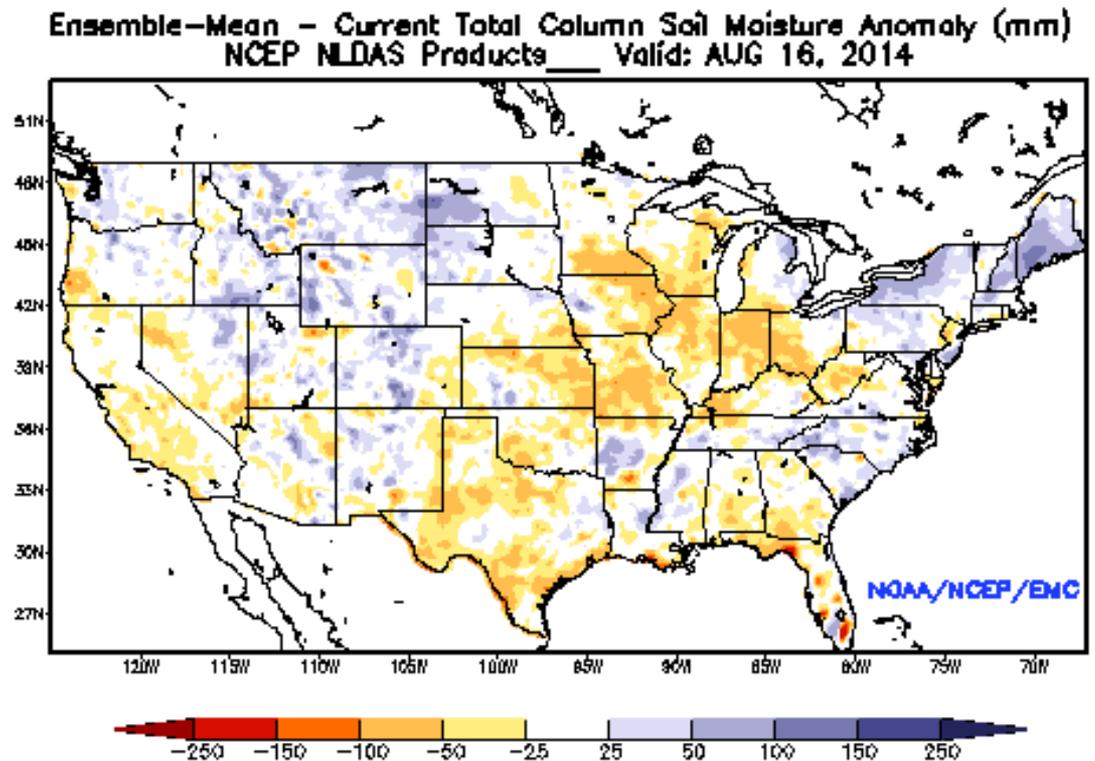
Generated 8/11/2014 at HPRCC using provisional data.

Regional Climate Centers

Deficits most areas, lower electricity bills

Soil Moisture status

Deficits have developed in recent weeks across central and other parts of the region



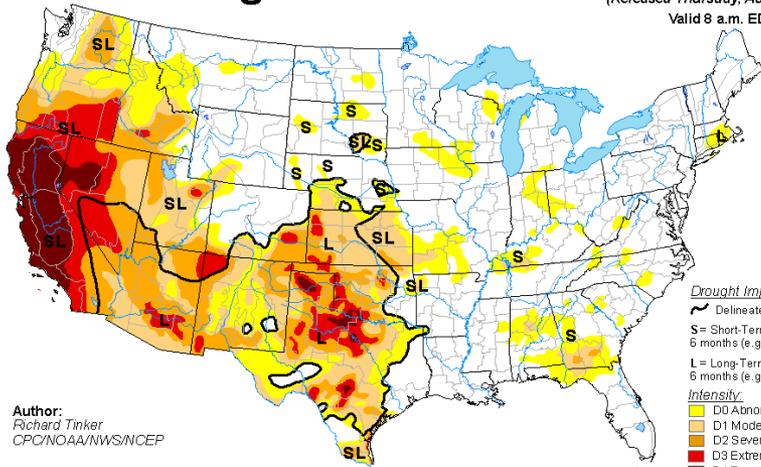
Soil Moisture status

U.S. Drought Monitor

August 19, 2014

(Released Thursday, Aug. 21, 2014)

Valid 8 a.m. EDT



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

Orange D1 Moderate Drought

Red D2 Severe Drought

Dark Red D3 Extreme Drought

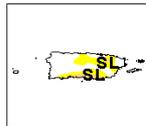
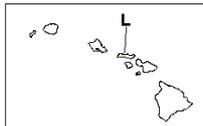
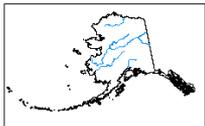
Black D4 Exceptional Drought

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

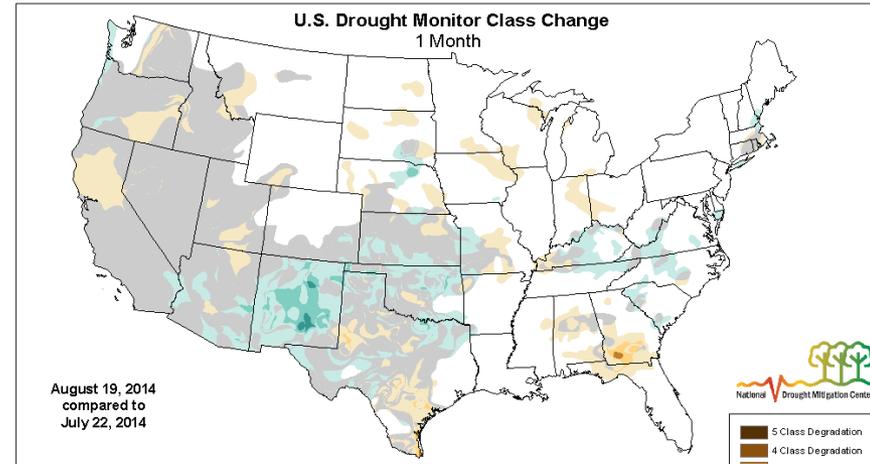
Author:
Richard Tinker
CPC/NOAA/NWS/NCEP



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



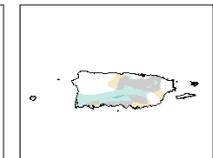
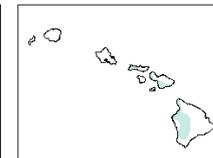
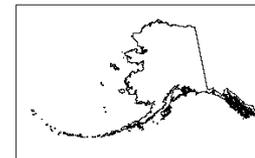
U.S. Drought Monitor Class Change 1 Month



August 19, 2014
compared to
July 22, 2014



- Dark Brown 5 Class Degradation
- Orange 4 Class Degradation
- Red 3 Class Degradation
- Yellow 2 Class Degradation
- Light Yellow 1 Class Degradation
- Grey No Change
- Light Green 1 Class Improvement
- Green 2 Class Improvement
- Dark Green 3 Class Improvement
- Very Dark Green 4 Class Improvement
- Black 5 Class Improvement

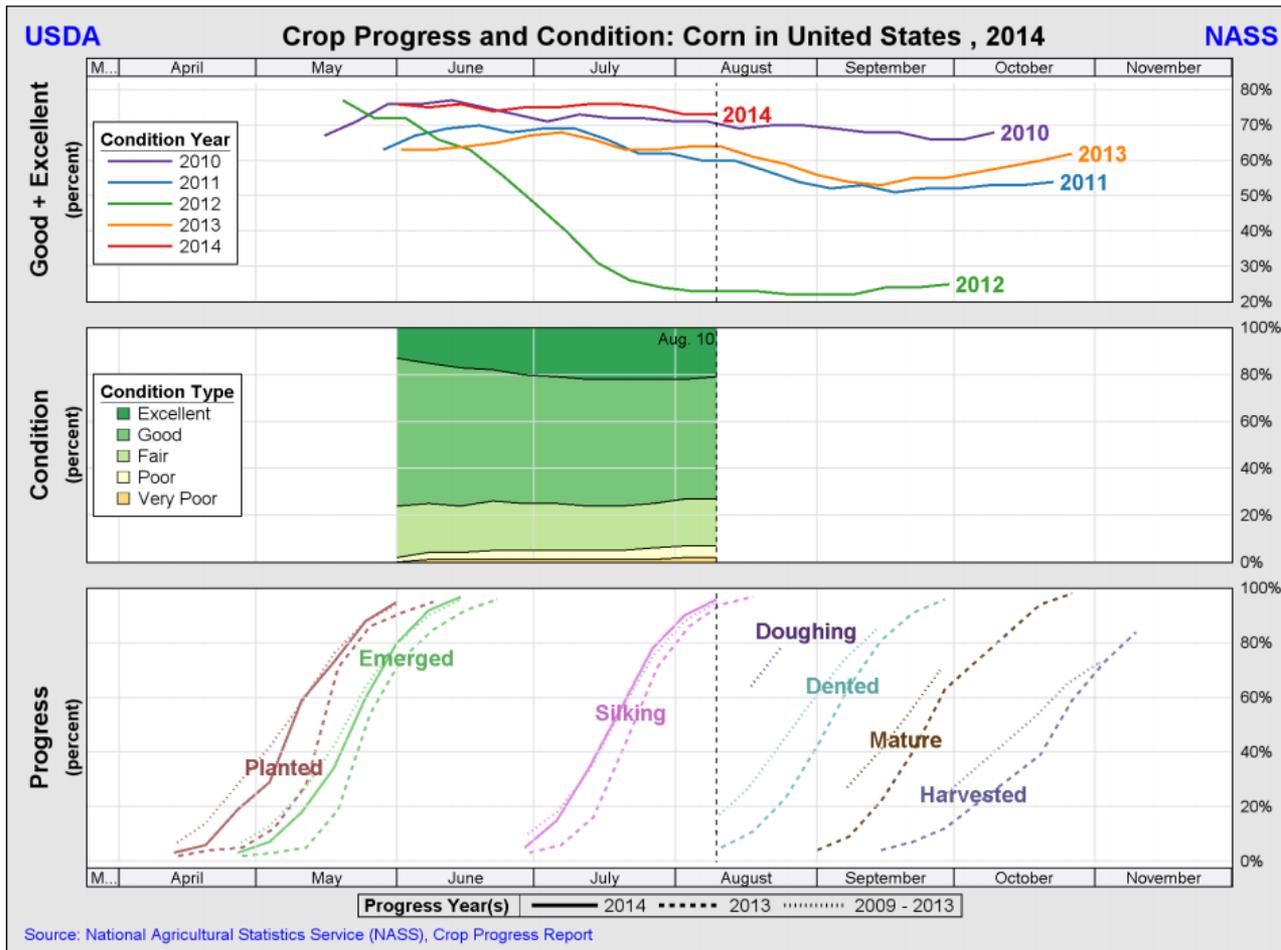


<http://droughtmonitor.unl.edu>

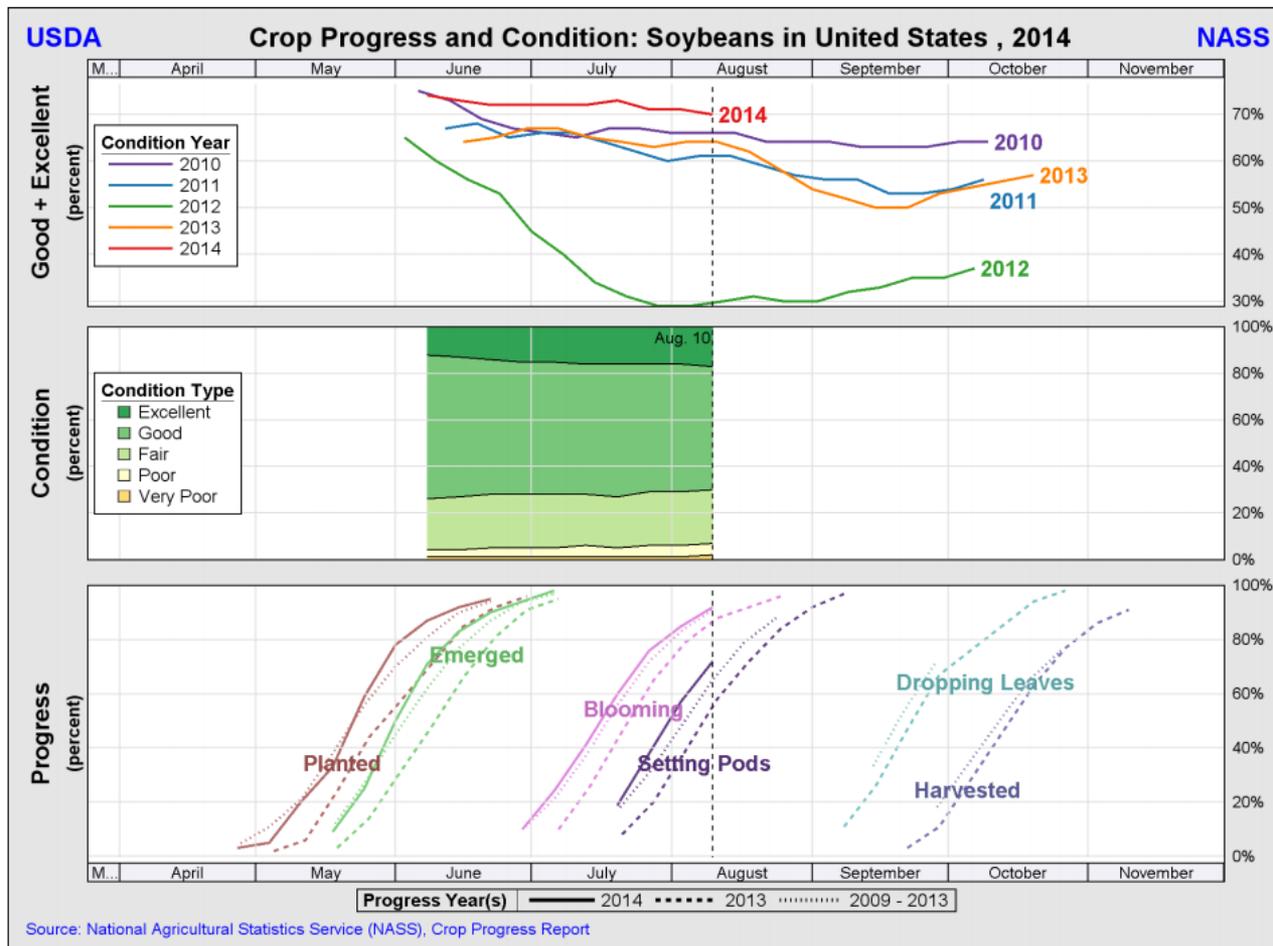
Impacts

Agriculture

Crop Progress and Condition: Corn

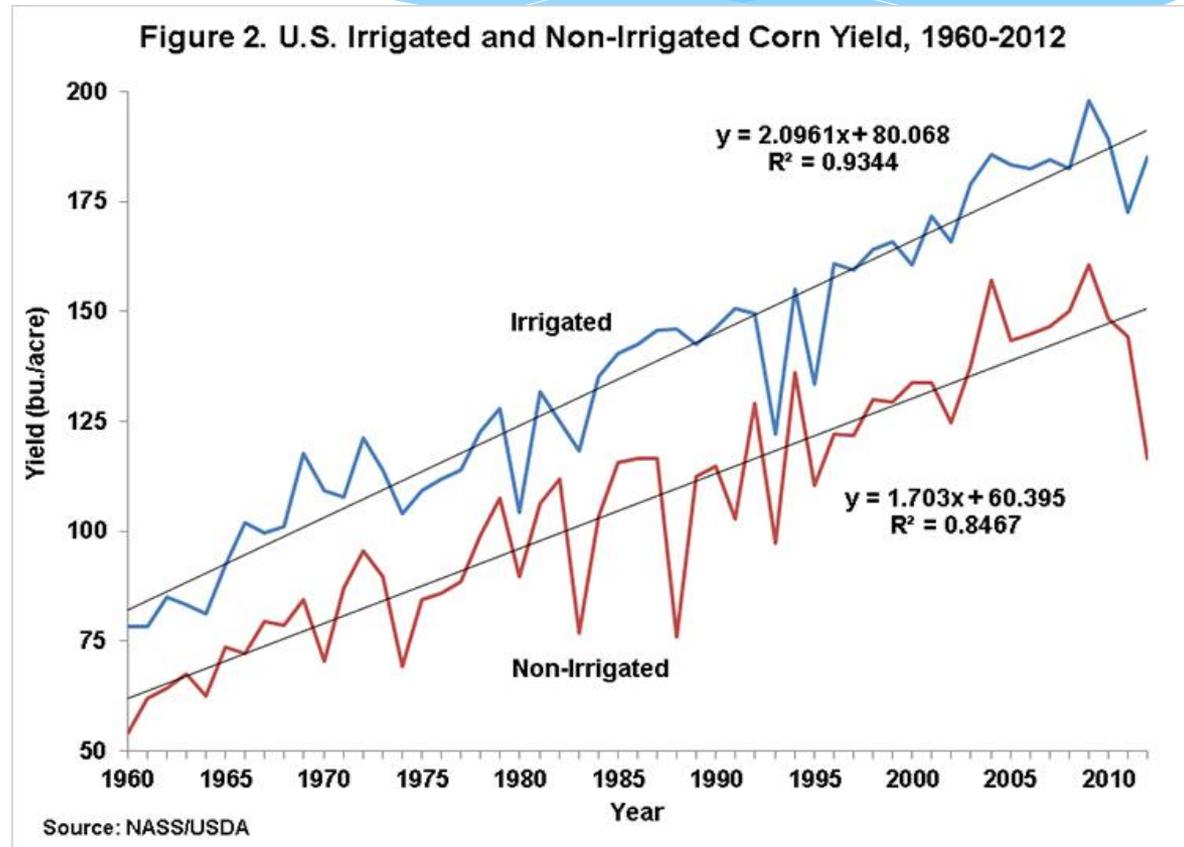


Crop Progress and Condition: Soybean



Cool, Wet Growing Seasons and Midwestern Crop Yields

High corn and soybean yields in the Midwest are strongly linked with cooler and wetter than normal growing seasons



Ag summary

- * Crop conditions across much of the region are good to excellent with high potential yields
- * Crops progressed through sensitive reproductive stages with adequate soil moisture
- * Crops generally progressing at or near normal rates of development except northern sections where they lag behind normal
- * Growing concern about late planted crops reaching maturity prior to first killing freeze across northern sections

Impacts

Regional Flooding

Flooding issues

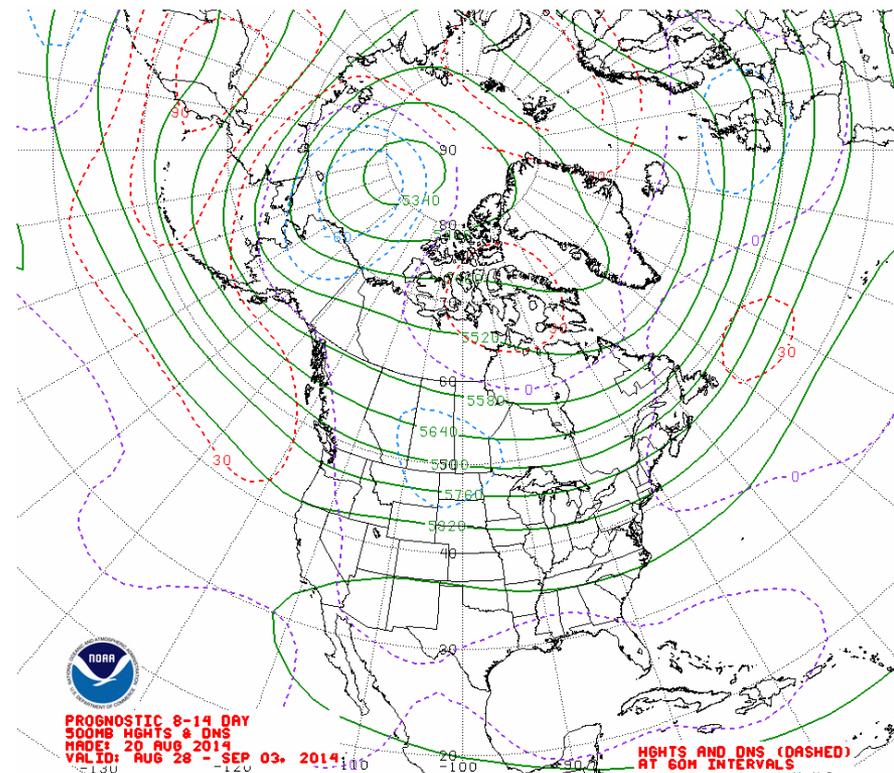
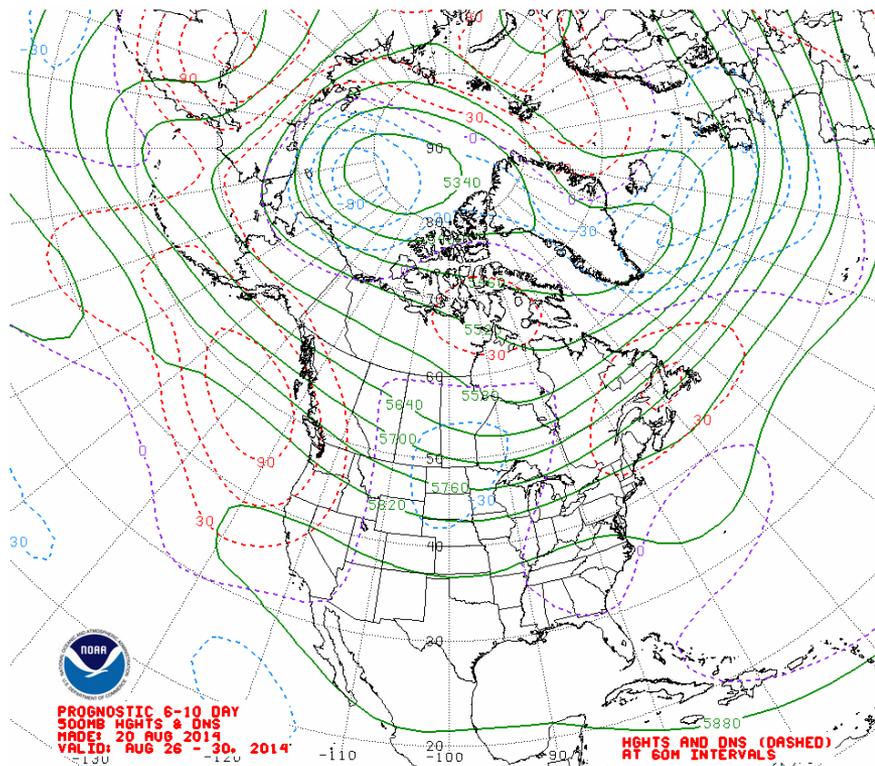
- * A slow-moving frontal boundary led to heavy rainfall and flooding across sections of Missouri during the first week of August, leading to several days of flash flooding. Near 15 inches of rain was recorded in Waynesville, MO in a two-day period, with one-day totals of 6 inches or more were common across the width of the southern part of Missouri. The communities of Branson and Hoillister, MO were especially hard hit, necessitating waterborne rescues.
- * A series of training thunderstorms brought 3-6 inches in less than 12 hours resulting in widespread flooding across SE Lower Michigan on the 11th. Preliminary damage estimates are in excess of \$500M.



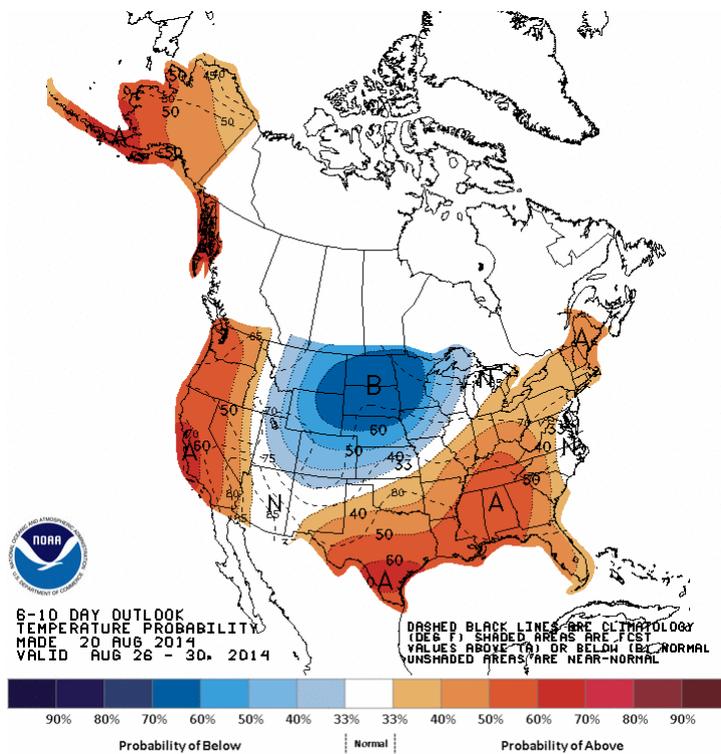
Outlooks

Forecast Upper Air Flow

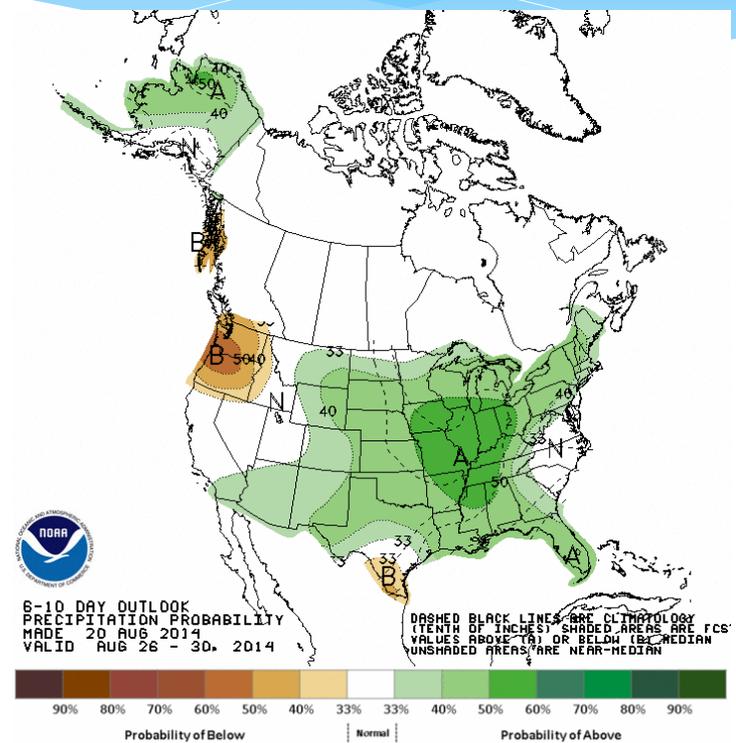
Aug 26-30 and Aug 28- Sep 3, 2014



Temperature and Precipitation Probabilities for 26-30 August 2014



Temperature



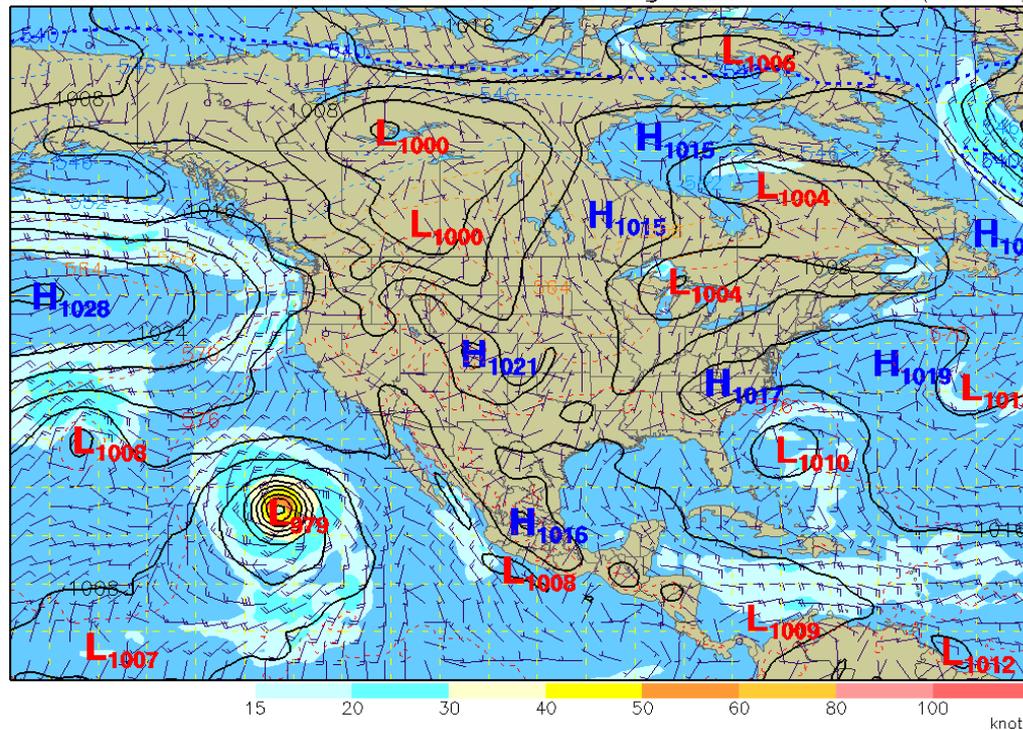
Precipitation

Tropical Influences?

Sfc Wind (knots) / MSLP (mb) / 500-1000 mb Thickness (dm)

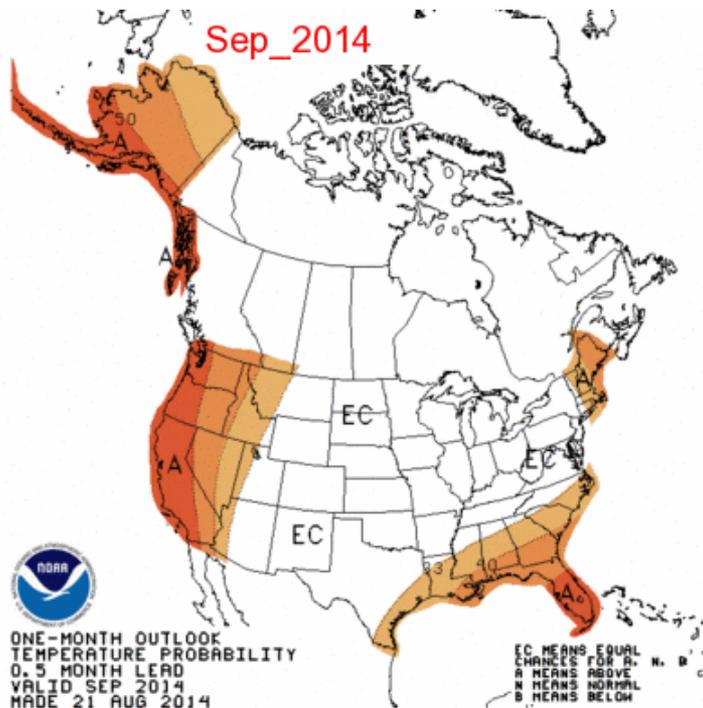
168-hour forecast valid 1200 UTC Thu 28 Aug 2014

GFS (12z 21 Aug)

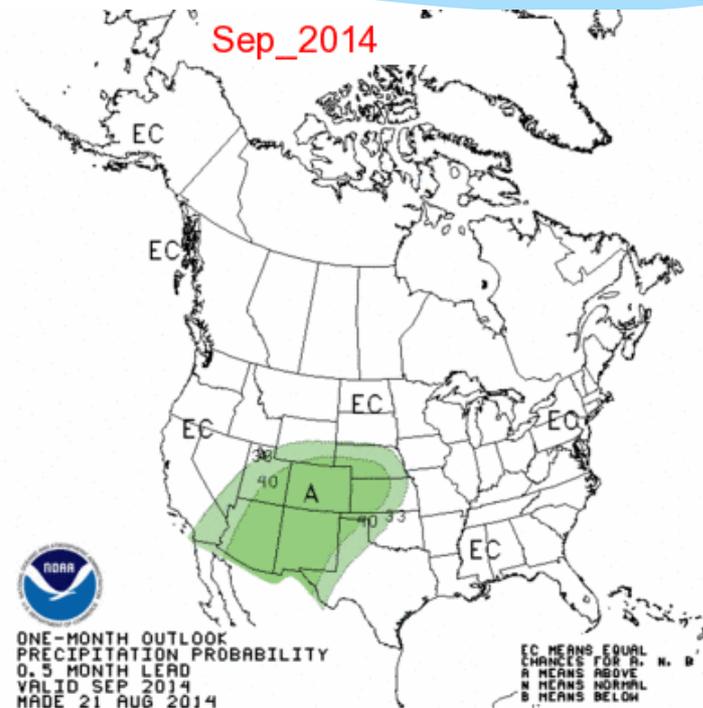


Latest forecast guidance suggests an increase in tropical cyclone activity in the vicinity of the southern USA, including the NW Atlantic Basin

September Temperature and Precipitation Probabilities



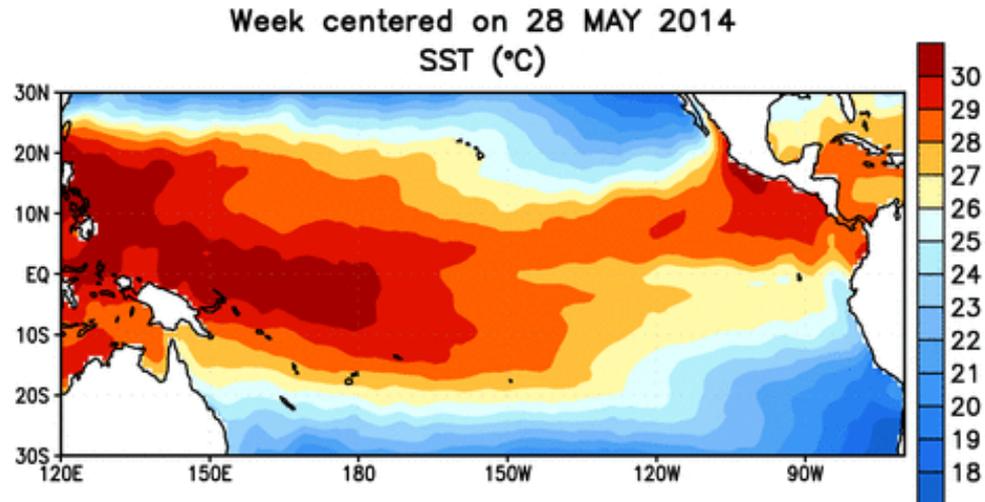
Temperature



Precipitation

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

El Nino Development?



CPC/IRI Probabilistic ENSO Outlook

Updated: 10 August 2014

While it has decreased relative to previous outlooks, the forecast chance of El Niño remains at about 65% during the No. Hemisphere fall and early winter.

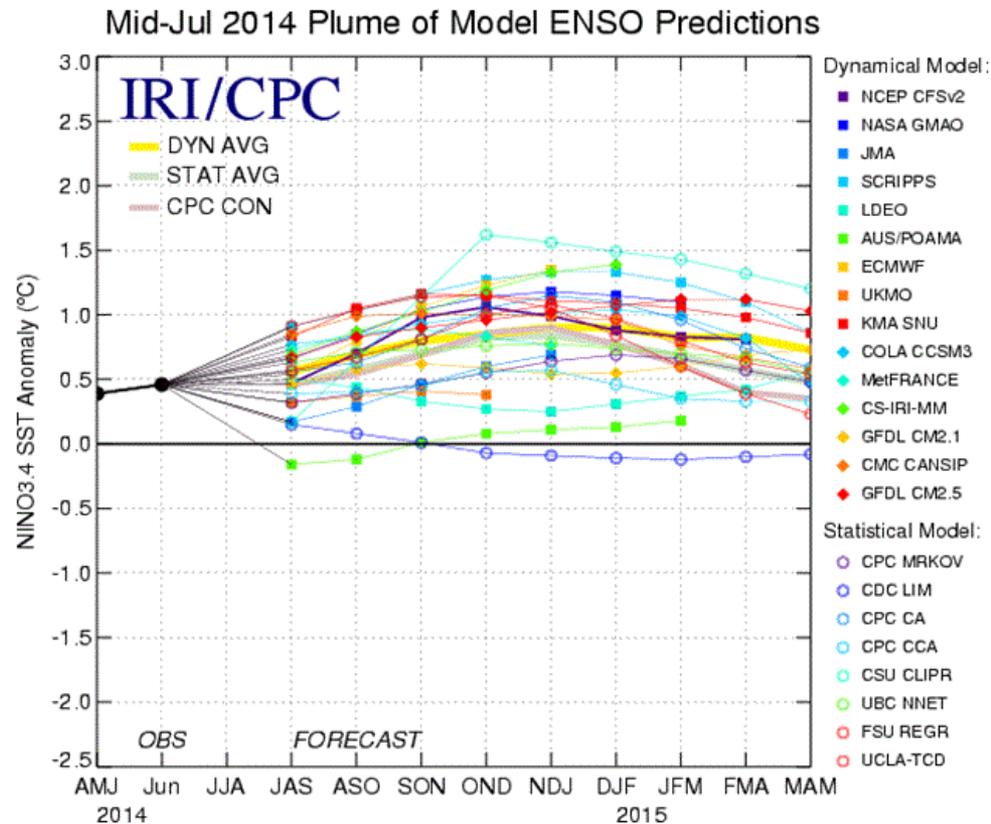
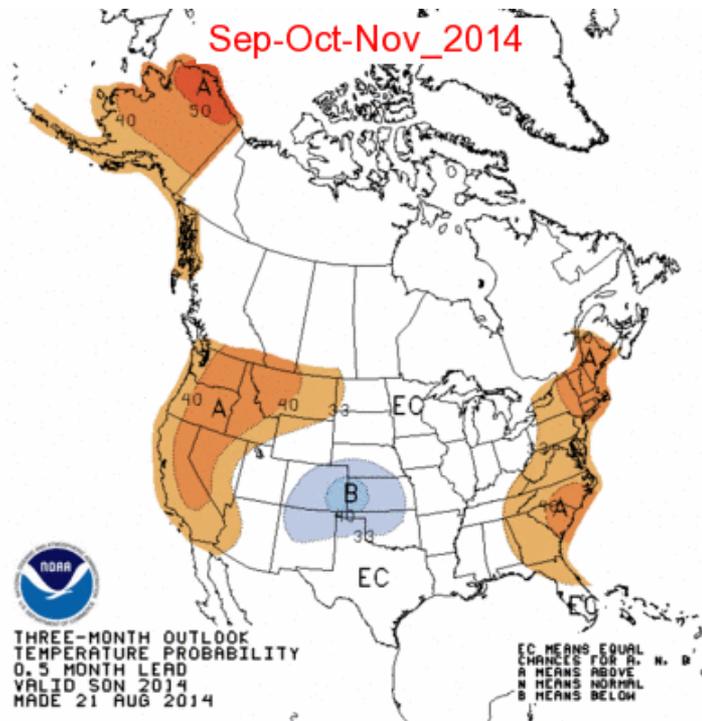
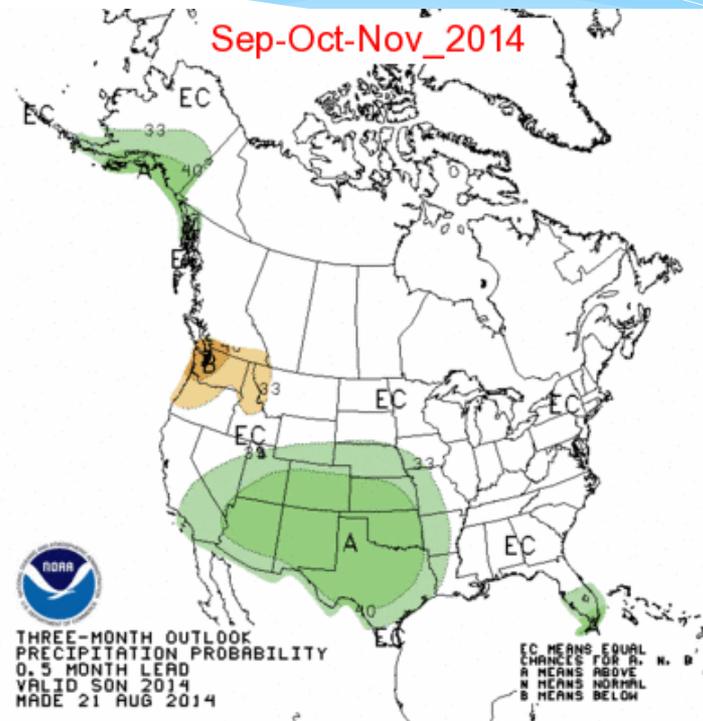


Figure 6. Forecasts of sea surface temperature (SST) anomalies for the Niño 3.4 region (5°N-5°S, 120°W-170°W). Figure updated 15 July 2014.

3 Month Temperature and Precipitation Probabilities (September - November)

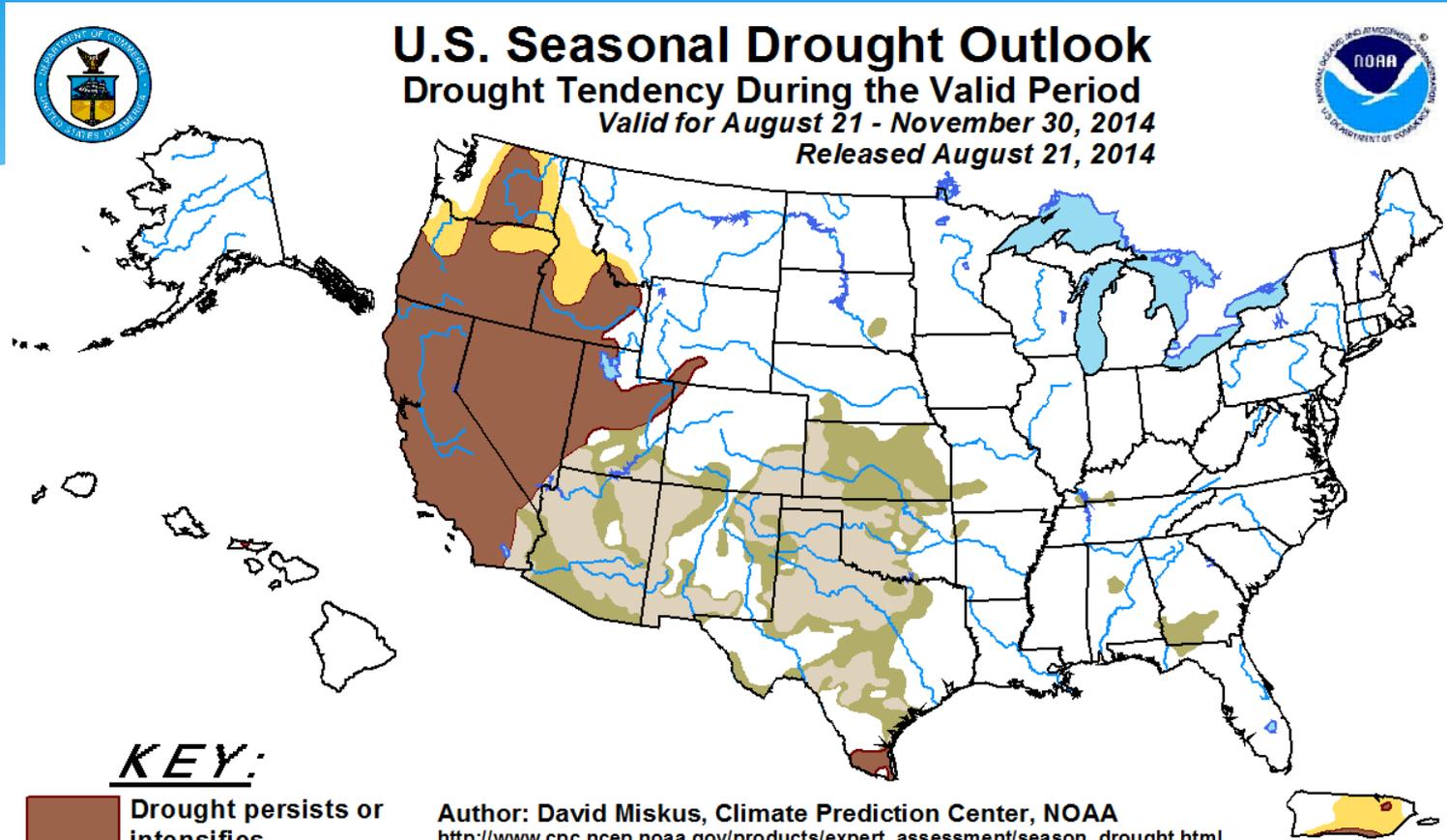


Temperature



Precipitation

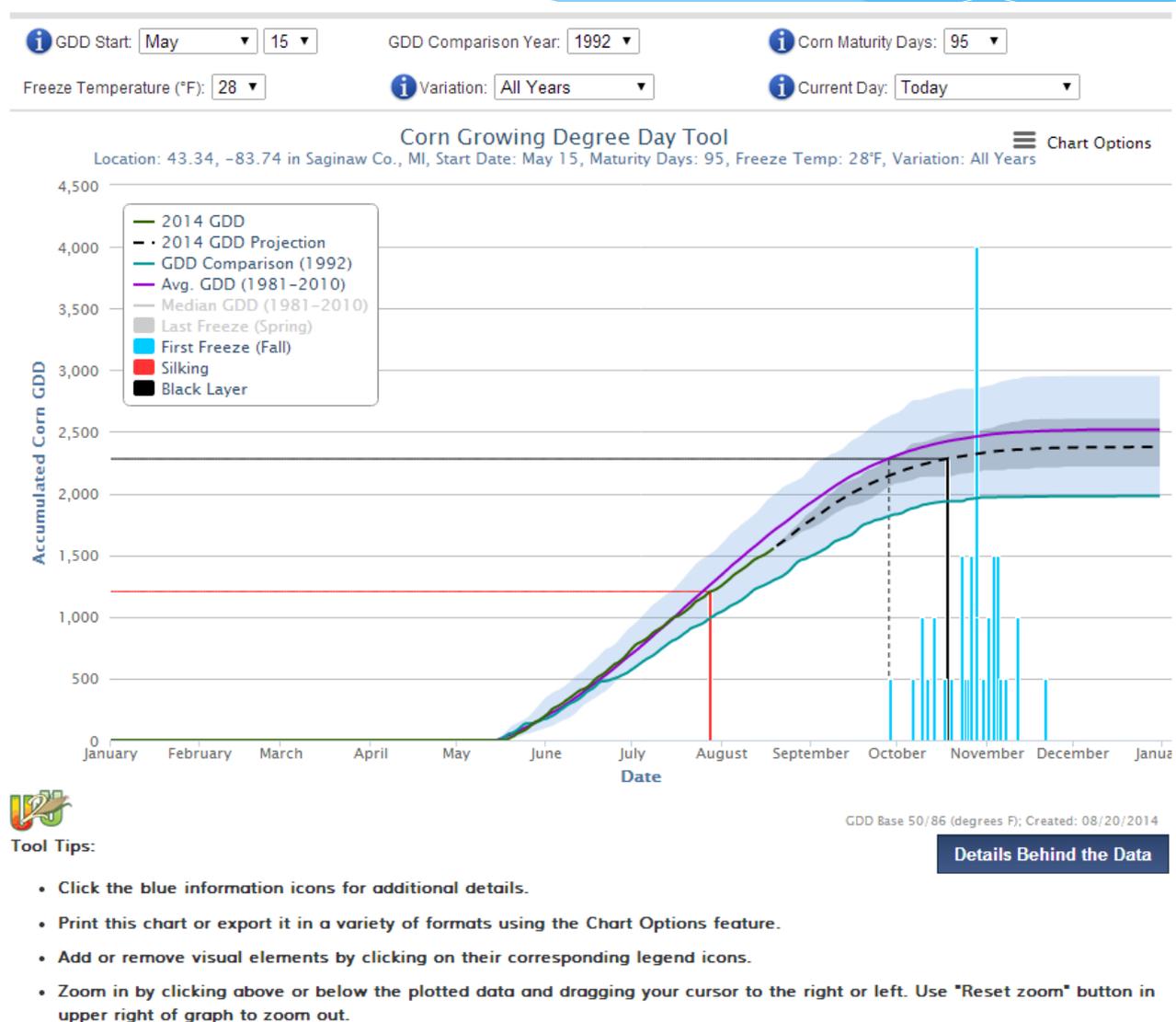
Drought Outlook through 30 Nov.



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.

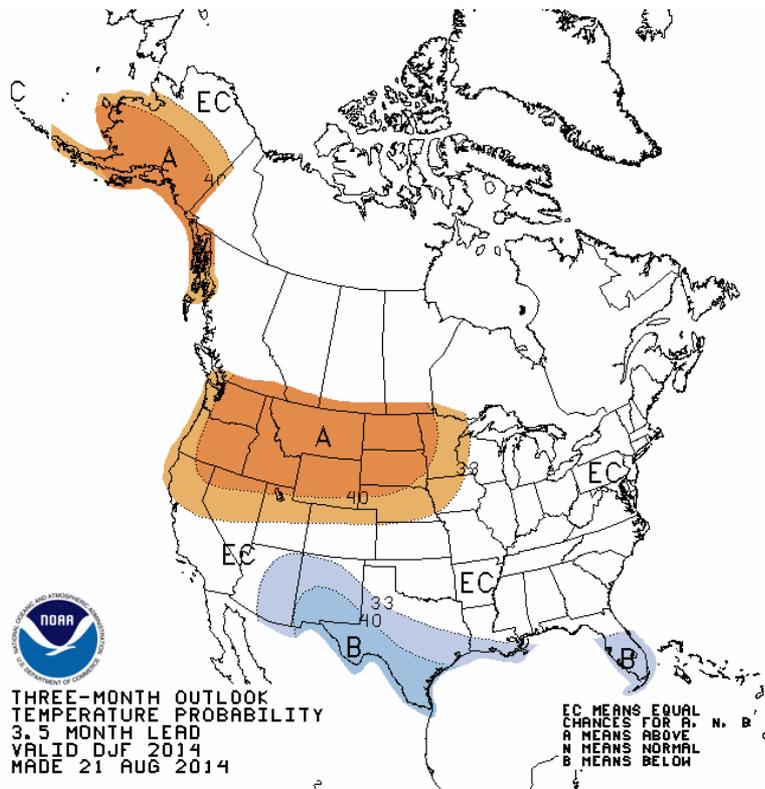
NOTE: The tan area areas imply at least a 1-category improvement in the Drought Monitor intensity levels by the end of the period although drought will remain. The Green areas imply drought removal by the end of the period (D0 or none)

Crop Maturity Before First Frost?

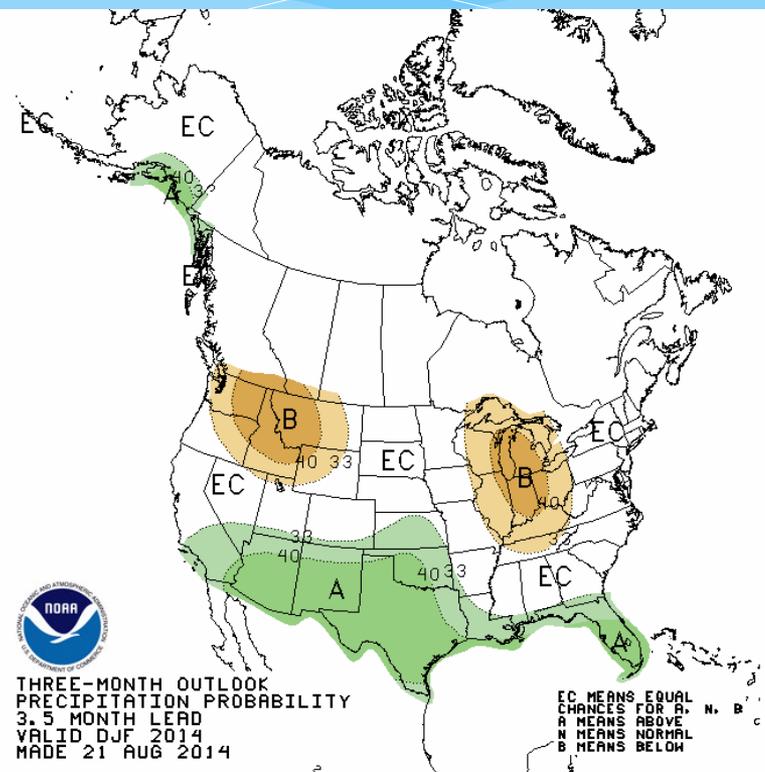


Winter Outlook

(December 2014 – February 2015)



Temperature



Precipitation

Summary - Conditions

- * Generally cooler than average across much of the region, although hot weather has developed recently across sections of the region
- * Overall, seasonal precipitation surpluses continue across most of the region, but some areas have become dry in recent weeks
- * Crops generally in good to excellent condition

Summary - Outlooks

- * Warmer next several days, then average to cooler more likely by first week of September.
- * Wetter than normal conditions likely regionwide through early September
- * Increasing concern for late planted crops reaching maturity prior to first freeze across northern sections
- * Cooler and wetter than normal across central Great Plains during the fall
- * El Nino still likely – warmer and drier than normal conditions possible across much of the region during the upcoming winter

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:**

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- * Dennis Todey: dennis.todey@sdstate.edu , 605-688-5141
- * Doug Kluck: doug.kluck@noaa.gov, 816-994-3008
- * John Eise: john.eise@noaa.gov, 816-268-3144
- * 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

Winnipeg, MB
2013/2014 Snow
Removal Pile,
15 AUG 2014

