Central Region Drought Outlook
18 October 2012

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18 October 2012
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Mississippi River at Columbus, KY on July 27th. Photo by author

General Information

- **Providing climate services to the Central Region**
  - Collaboration with Stuart Foster(State Climatologist for Kentucky), Doug Kluck (NOAA - RCSD) and John Eise (Climate Service Program Manager), State Climatologists and the Midwestern and High Plains Regional Climate Centers, NOAA Climate Prediction Center, National Drought Mitigation Center, NOAA Great Lakes Environmental Research Laboratory, Iowa State University

- **Next Climate/Drought Outlook Webinar**
  - November 15, 2012 (1 PM CDT)

- **Access to Climate/Drought Webinars and information**
- *http://mrcc.isws.illinois.edu/webinars.htm*
- *http://www.hprcc.unl.edu*

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

Agenda

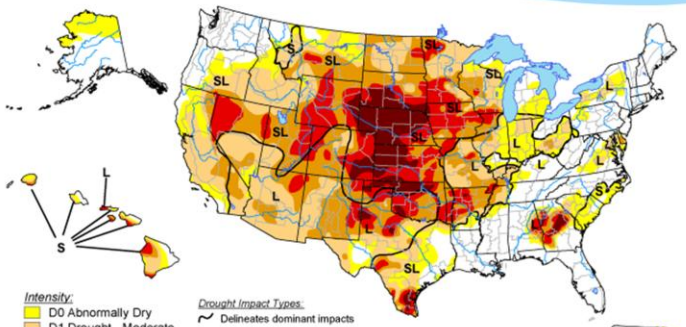
* Current conditions and climatological perspective
* Impacts and concerns looking ahead
* Climatological outlook

Key Points

- **Current Conditions**
  - Some improvement – eastern areas
  - Dryness in Great Plains impacting agriculture, fire, water supply
- **Evolution of the Drought and Impacts**
  - Some recovery in lower Midwest and shift of expanding dryness west and north into the northern Great Plains
- **Outlook**
  - Prospects for El Niño have diminished
  - Drought conditions and patterns likely to persist
  - Looking into 2013, concerns extending beyond agriculture

Drought Monitor Update

October 16, 2012



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, October 18, 2012

Author: Matthew Rosencrans, NOAA/NWS/NCEP/CPC

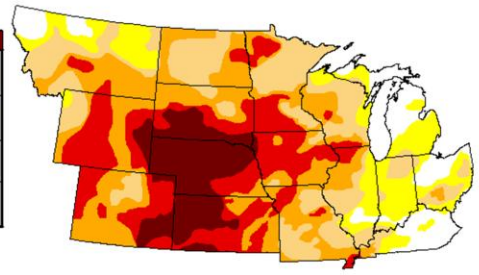
U.S. Drought Monitor

October 16, 2012
Valid 7 a.m. EST

Central Region

Drought Conditions (Percent Area)

	None	D0 - D4	D1 - D4	D2 - D4	D3 - D4	D4
Current	8.16	91.84	79.43	57.24	32.71	12.22
Last Week (10/9/2012)	5.59	94.41	80.78	59.69	34.24	12.57
3 Months Ago (7/17/2012)	12.13	87.87	73.77	53.10	17.51	0.96
1 Year Ago (10/18/2011)	69.96	30.04	14.98	8.07	2.90	1.13



Intensity:

- D0 - Abnormally Dry
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- D2 - Drought Severe
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The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forcast statements.

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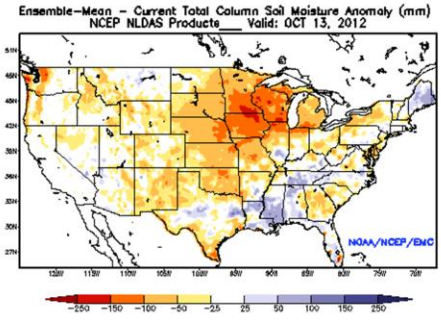
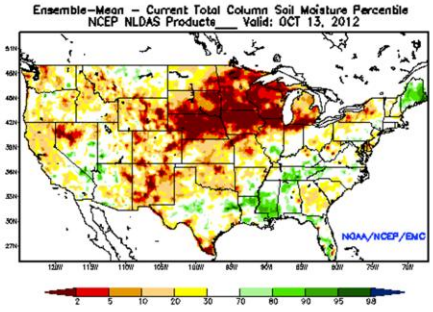
Matthew Rosencrans, NOAA/NWS/NCEP/CPC

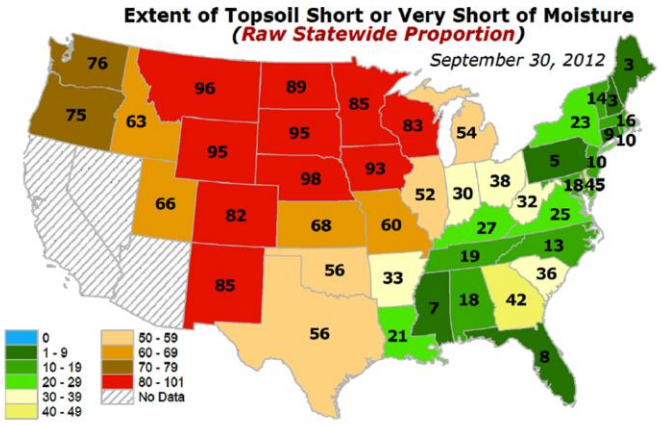
Current Soil Moisture





http://www.emc.ncep.noaa.gov/mmb/nldas/drought/

Summary of Soil Moisture Shortage

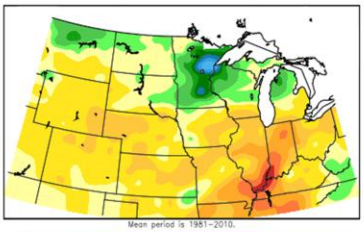


NOAA's National Climatic Data Center

Precipitation Anomalies

March through June

Accumulated Precipitation (in): Departure from Mean
March 1, 2012 to June 30, 2012

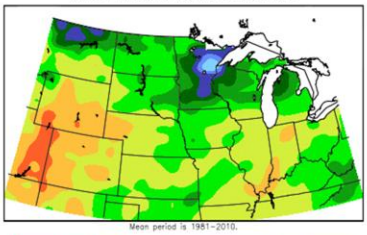


Mean period is 1981-2010.

−12 −8 −4 0 4 8 12

Midwestern Regional Climate Center
Illinois State Water Survey, Prairie Research Institute
University of Illinois at Urbana-Champaign

Accumulated Precipitation: Percent of Mean
March 1, 2012 to June 30, 2012



Mean period is 1981-2010.

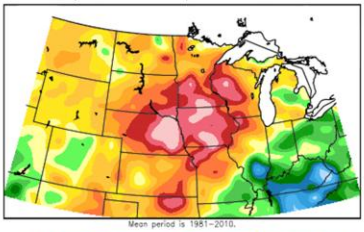
10 25 50 75 100 125 150 175 200 300

Midwestern Regional Climate Center
Illinois State Water Survey, Prairie Research Institute
University of Illinois at Urbana-Champaign

Precipitation Anomalies

July through September

Accumulated Precipitation (in): Departure from Mean
July 1, 2012 to September 30, 2012

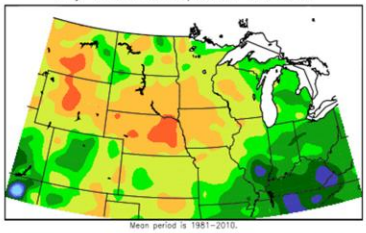


Mean period is 1981–2010.

−8 −6 −4 −2 0 2 4 6 8

Midwestern Regional Climate Center
Illinois State Water Survey, Prairie Research Institute
University of Illinois at Urbana–Champaign

Accumulated Precipitation: Percent of Mean
July 1, 2012 to September 30, 2012

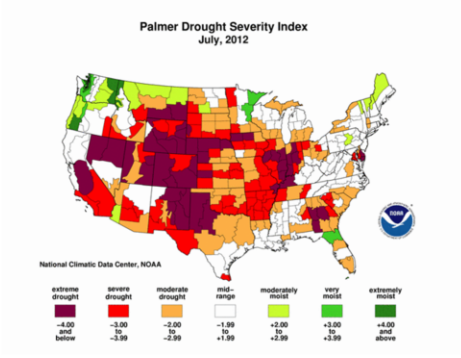


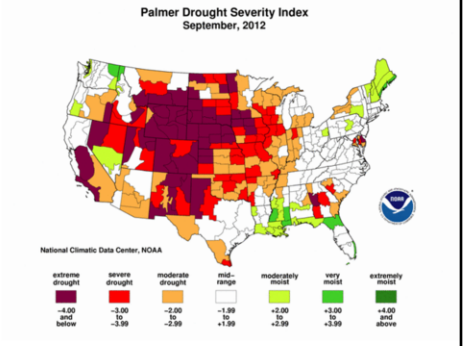
Mean period is 1981–2010.

10 25 50 75 100 125 150 175 200 300

Midwestern Regional Climate Center
Illinois State Water Survey, Prairie Research Institute
University of Illinois at Urbana–Champaign

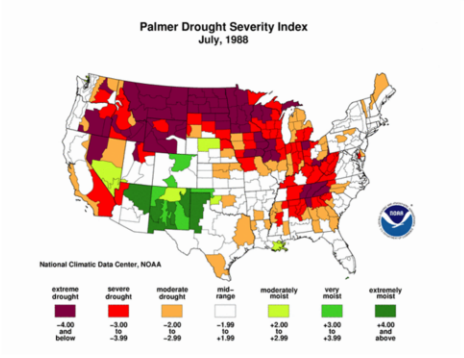
Palmer Drought Severity Index
2012

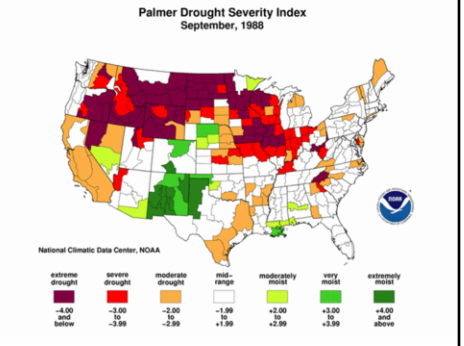




Source: NOAA's National Climatic Data Center
(http://www.ncdc.noaa.gov/temp-and-precip/drought/historical-palmers.php)

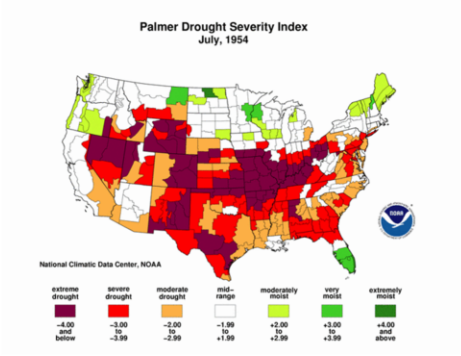
Palmer Drought Severity Index 1988

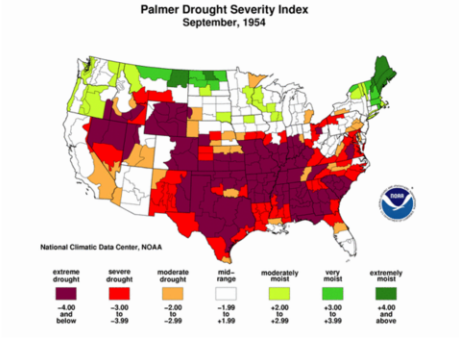




Source: NOAA's National Climatic Data Center
(http://www.ncdc.noaa.gov/temp-and-precip/drought/historical-palmers.php)

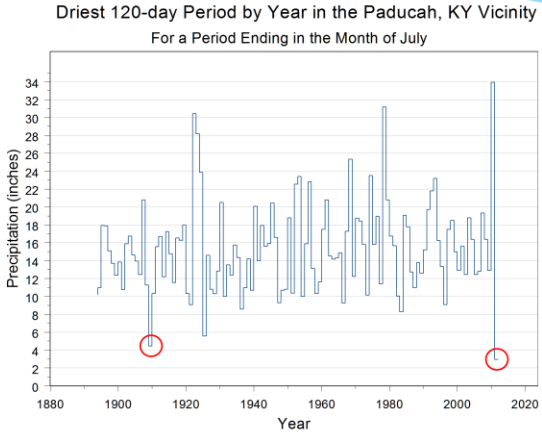
Palmer Drought Severity Index 1954





Source: NOAA's National Climatic Data Center
(http://www.ncdc.noaa.gov/temp-and-precip/drought/historical-palmers.php)

Record Dryness in Western Kentucky



A running 120-day cumulative precipitation total was calculated beginning in 1894 and continuing through August of 2012. Based on 120-day totals ending in the month of July, the driest period on record with a cumulative total of 2.94" occurred in July of 2012. The previous record was a dry spell with 4.44" for a 120-day period that ended in July of 1910.

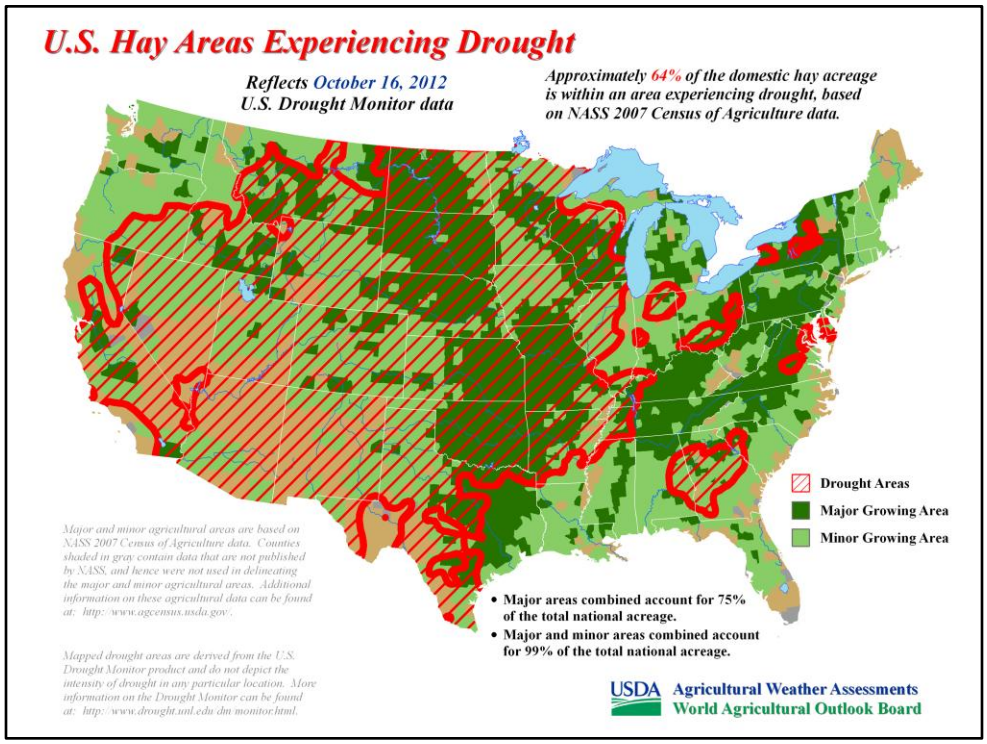
KENTUCKY CLIMATE CENTER

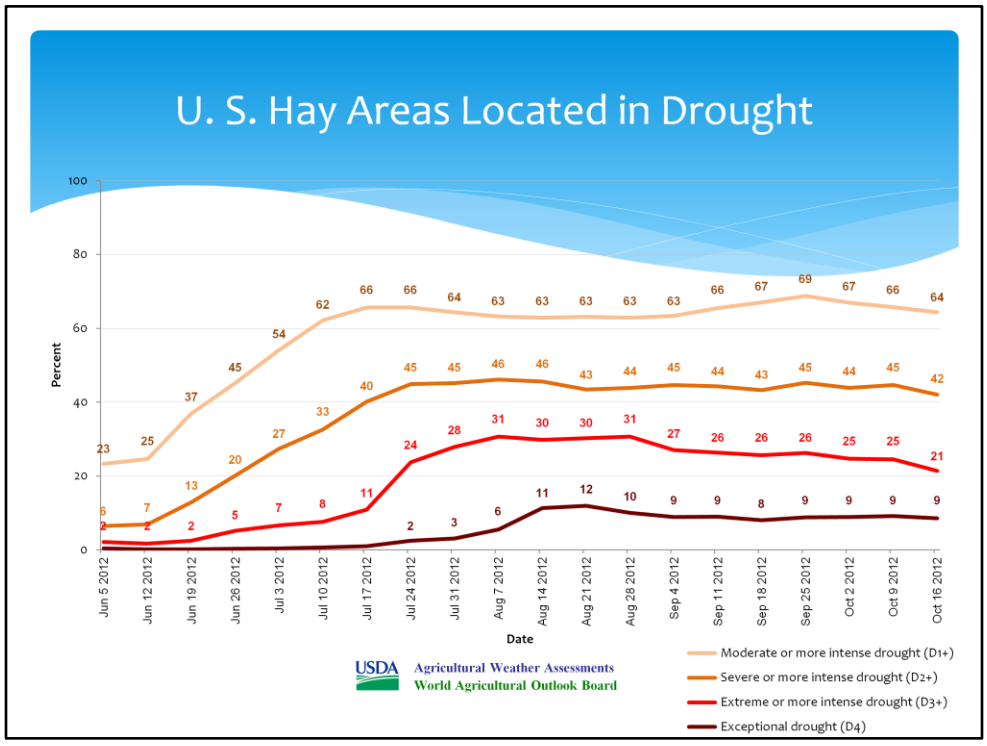
Drought and Impacts in Western Kentucky

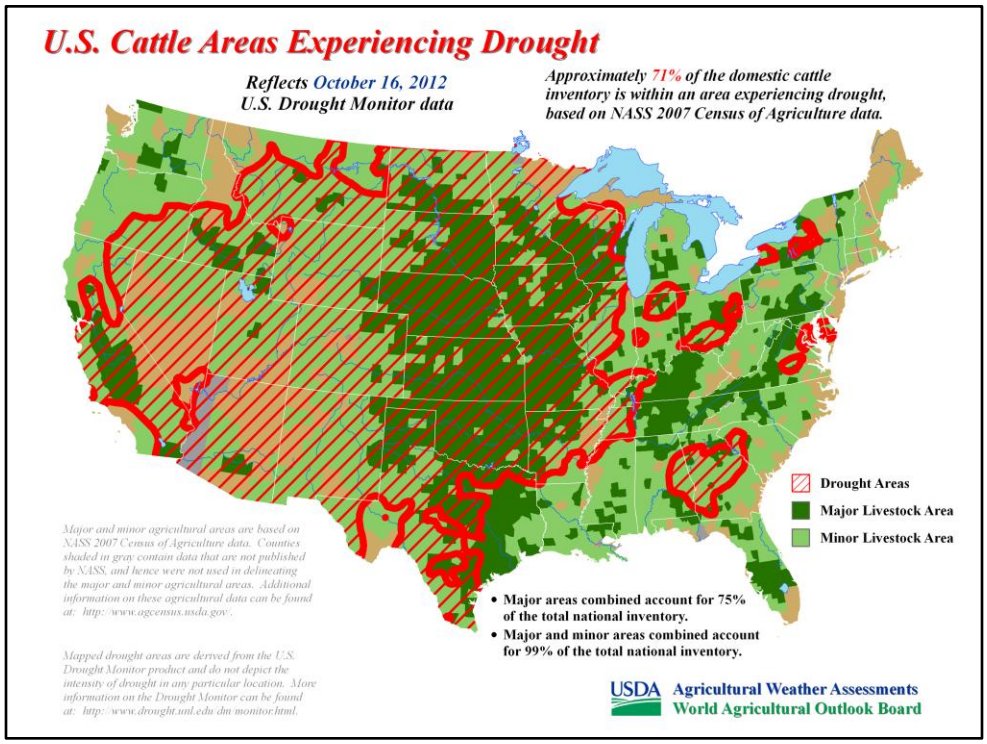
Photos by author

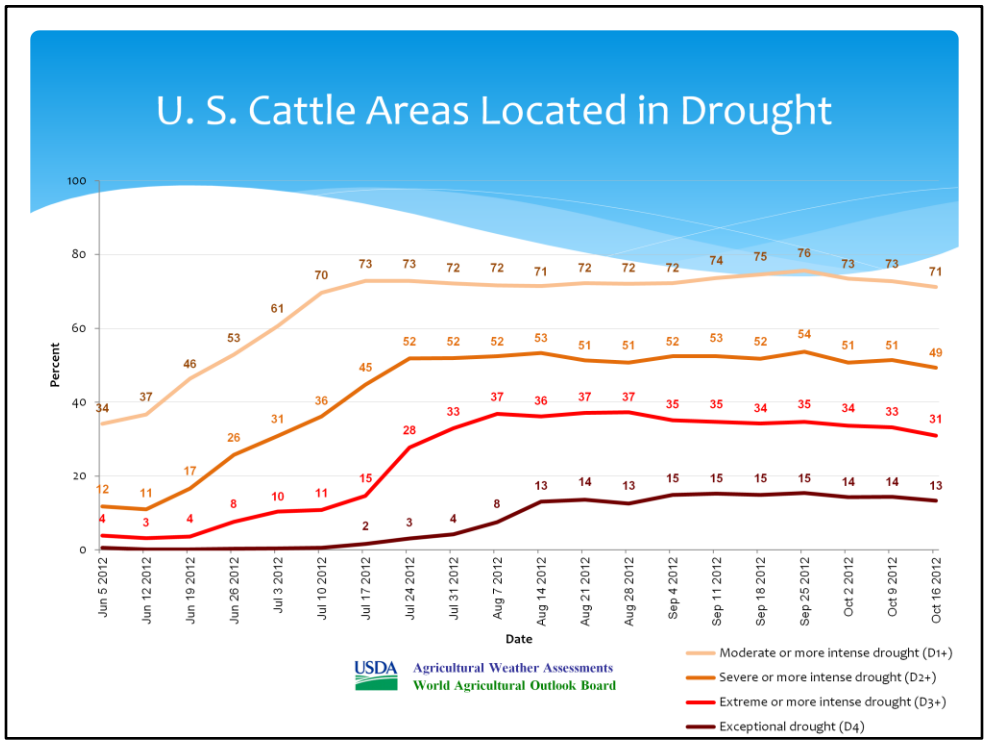
Context for Decision Making

* High market prices for grain
* Record precipitation deficits follow by extreme heat
* Impact of irrigation on corn yields
* Cost and reliability of irrigation


U.S. Hay Areas Experiencing Drought
Reflects October 16, 2012
U.S. Drought Monitor data
Approximately 64% of the domestic hay acreage is within an area experiencing drought, based on NASS 2007 Census of Agriculture data.
Drought Areas
Major Growing Area
Minor Growing Area
Major and minor agricultural areas are based on NASS 2007 Census of Agriculture data. Counties shaded in gray contain data that are not published by NASS, and hence were not used in delineating the major and minor agricultural areas. Additional information on these agricultural data can be found at: http://www.agcensus.usda.gov/.
• Major areas combined account for 75% of the total national acreage.
• Major and minor areas combined account for 99% of the total national acreage.
Mapped drought areas are derived from the U.S. Drought Monitor product and do not depict the intensity of drought in any particular location. More information on the Drought Monitor can be found at: http://www.drought.unl.edu/dm/monitor.html.
USDA Agricultural Weather Assessments
World Agricultural Outlook Board


U. S. Hay Areas Located in Drought
Percent
Date
Jun 5 2012
Jun 12 2012
Jun 19 2012
Jun 26 2012
Jul 3 2012
Jul 10 2012
Jul 17 2012
Jul 24 2012
Jul 31 2012
Aug 7 2012
Aug 14 2012
Aug 21 2012
Aug 28 2012
Sep 4 2012
Sep 11 2012
Sep 18 2012
Sep 25 2012
Oct 2 2012
Oct 9 2012
Oct 16 2012
USDA Agricultural Weather Assessments
World Agricultural Outlook Board
Moderate or more intense drought (D1+)
Severe or more intense drought (D2+)
Extreme or more intense drought (D3+)
Exceptional drought (D4)


U.S. Cattle Areas Experiencing Drought
Reflects October 16, 2012
U.S. Drought Monitor data
Approximately 71% of the domestic cattle inventory is within an area experiencing drought, based on NASS 2007 Census of Agriculture data.
Drought Areas
Major Livestock Area
Minor Livestock Area
Major and minor agricultural areas are based on NASS 2007 Census of Agriculture data. Counties shaded in gray contain data that are not published by NASS, and hence were not used in delineating the major and minor agricultural areas. Additional information on these agricultural data can be found at: http://www.agcensus.usda.gov/.
• Major areas combined account for 75% of the total national inventory.
• Major and minor areas combined account for 99% of the total national inventory.
Mapped drought areas are derived from the U.S. Drought Monitor product and do not depict the intensity of drought in any particular location. More information on the Drought Monitor can be found at: http://www.drought.unl.edu/dm/monitor.html.
USDA Agricultural Weather Assessments
World Agricultural Outlook Board


U. S. Cattle Areas Located in Drought
Percent
Date
Jun 5 2012
Jun 12 2012
Jun 19 2012
Jun 26 2012
Jul 3 2012
Jul 10 2012
Jul 17 2012
Jul 24 2012
Jul 31 2012
Aug 7 2012
Aug 14 2012
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Aug 28 2012
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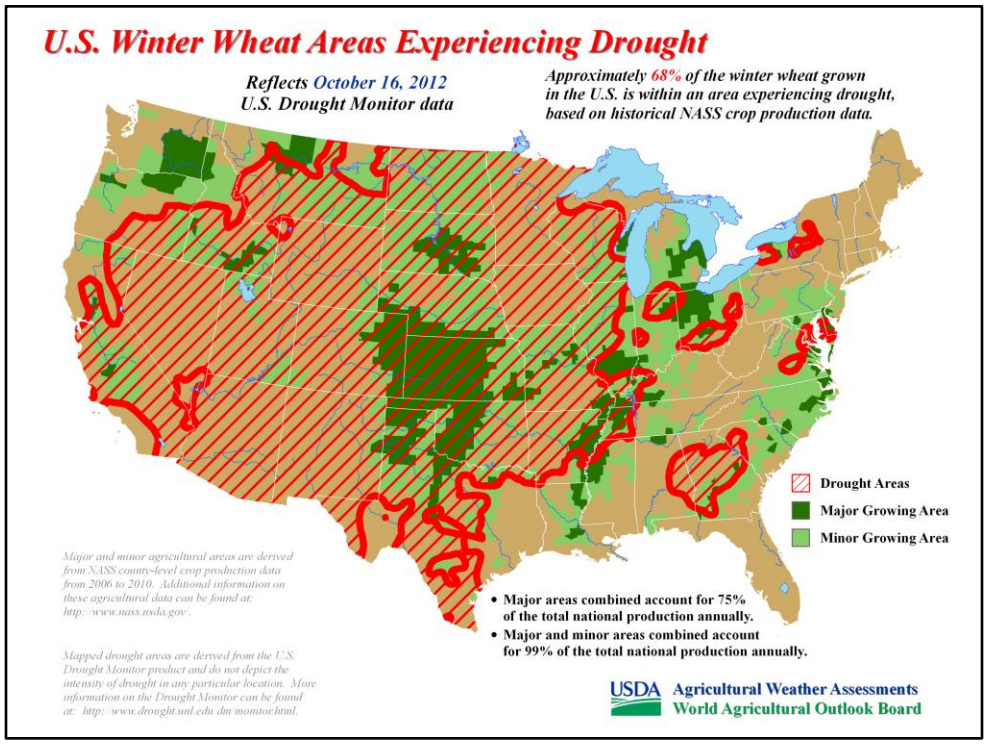
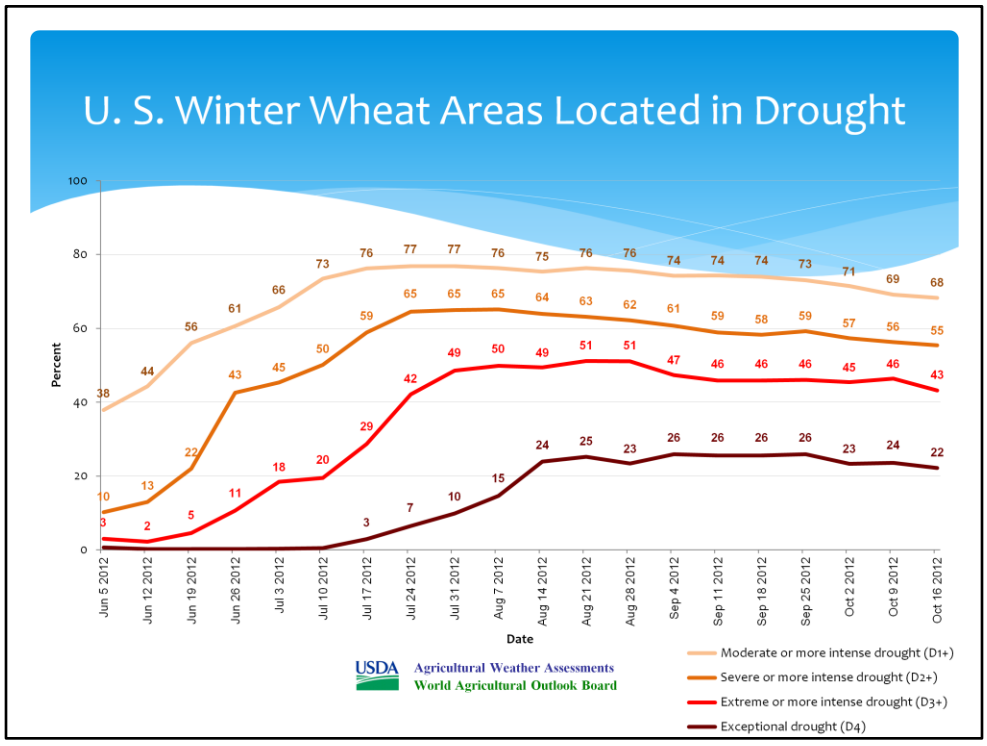
USDA Agricultural Weather Assessments
World Agricultural Outlook Board
Moderate or more intense drought (D1+)
Severe or more intense drought (D2+)
Extreme or more intense drought (D3+)
Exceptional drought (D4)


U.S. Winter Wheat Areas Experiencing Drought
Reflects October 16, 2012
U.S. Drought Monitor data
Approximately 68% of the winter wheat grown in the U.S. is within an area experiencing drought, based on historical NASS crop production data.
Drought Areas
Major Growing Area
Minor Growing Area
Major and minor agricultural areas are derived from NASS county-level crop production data from 2006 to 2010. Additional information on these agricultural data can be found at: http://www.nass.usda.gov.
• Major areas combined account for 75% of the total national production annually.
• Major and minor areas combined account for 99% of the total national production annually.
Mapped drought areas are derived from the U.S. Drought Monitor product and do not depict the intensity of drought in any particular location. More information on the Drought Monitor can be found at: http://www.drought.unl.edu/dm/monitor.html.
USDA Agricultural Weather Assessments
World Agricultural Outlook Board


U. S. Winter Wheat Areas Located in Drought
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Jun 5 2012
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USDA Agricultural Weather Assessments
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Moderate or more intense drought (D1+)
Severe or more intense drought (D2+)
Extreme or more intense drought (D3+)
Exceptional drought (D4)

Agricultural Concerns

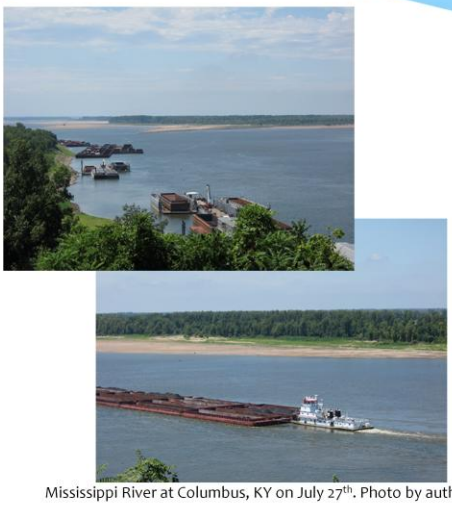
Current

* Winter wheat planting and emergence
  * Precipitation needed during September to provide necessary soil moisture
  * No crop insurance available until spring
* Pasture and stock water

Outlook

* Need for groundwater recharge before soil freezes
* Need for runoff to fill ponds

Mississippi River System



Mississippi River at Columbus, KY on July 27th. Photo by author

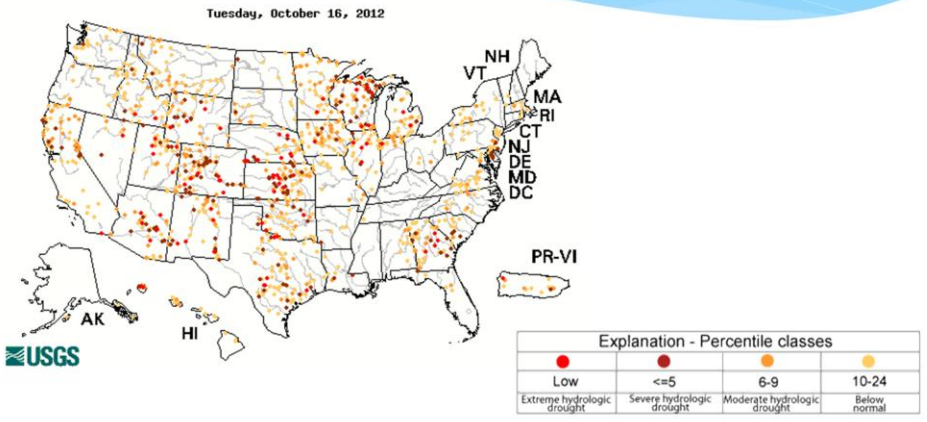
Impacts by Sector

* Navigation
* Municipal & Industrial
* Energy

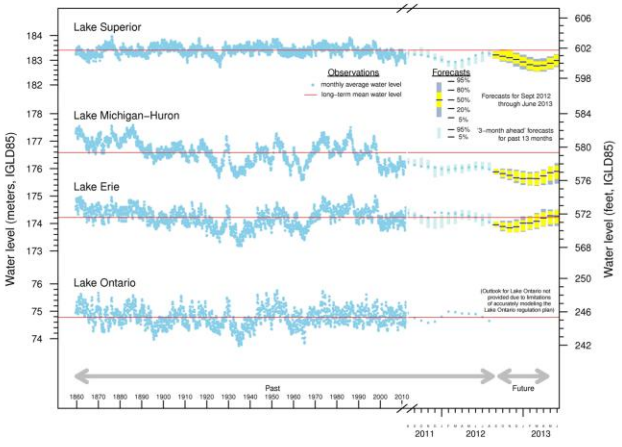
Outlook

* Fall into Winter
* Spring into Summer

Below Normal 14-day Average Streamflow Compared to Historical Streamflow for the Day of Year (United States)



Great Lakes System



Context

* Below normal snowpack
* Below normal streamflows

Source: NOAA's Great Lakes Environmental Research Laboratory

If Drought Persists

Vulnerabilities include:

- Continued Agricultural Impacts
- Continued Heightened Fire Conditions
- Ecosystems
- Water Supply
- Energy
- Infrastructure
- Navigation
- Recreation/Tourism

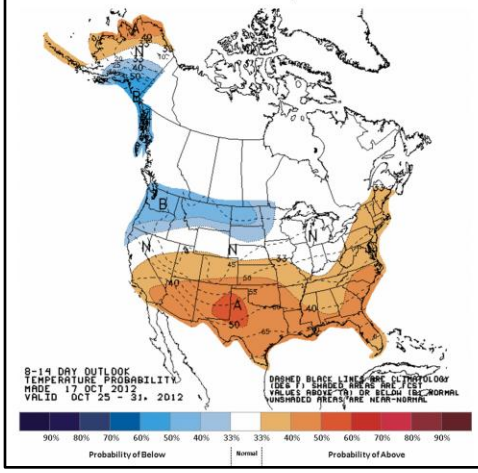
Climate Outlooks

* **2 weeks out (8-14 days)**
* **November**
* **3 Months (November-January)**
* www.cpc.ncep.noaa.gov
* Drought Outlook

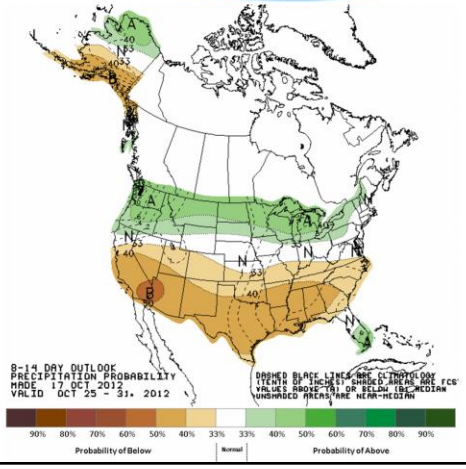
* Released Thursday 10/16/2012

8-14 Day Outlook
Climate Prediction Center

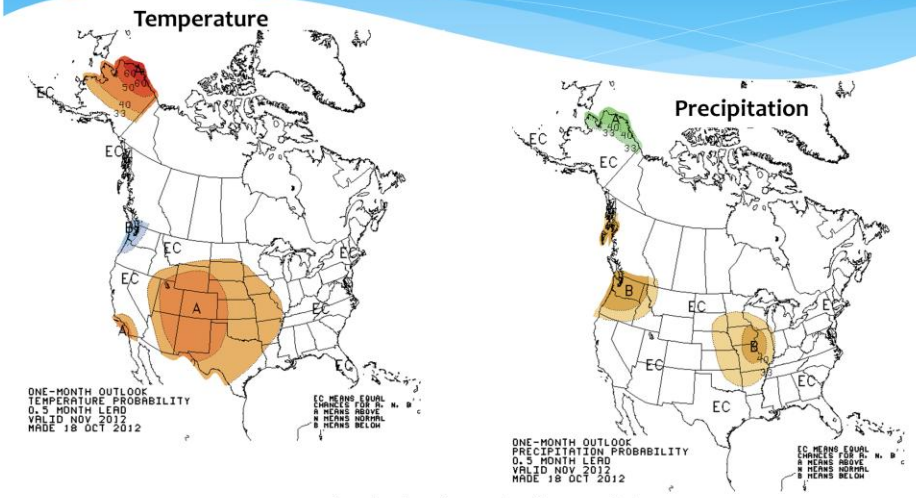
Surface Temperature Probability Forecast
Valid Oct 25-31, 2012



Surface Precipitation Probability Forecast
Valid Oct 25-31, 2012

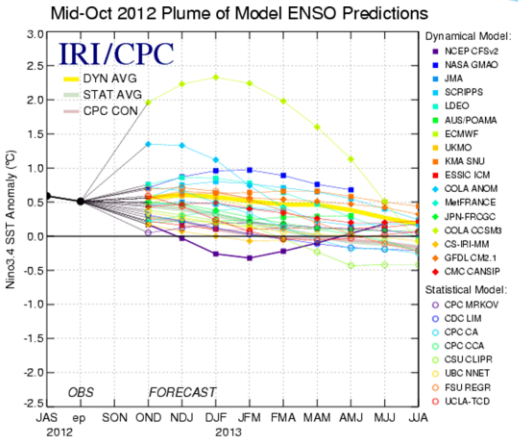


November Temperature and Precipitation Probabilities



Source: NOAA's National Weather Service, Climate Prediction Center (http://www.cpc.ncep.noaa.gov/products/predictions/30day/)

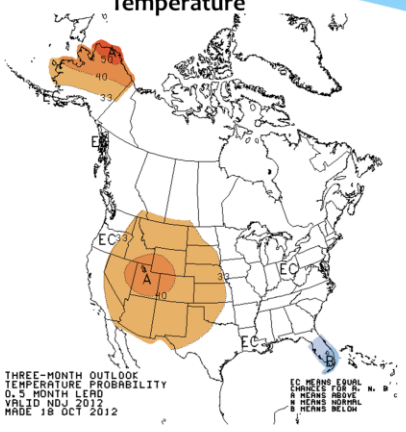
ENSO Outlook: El Niño?



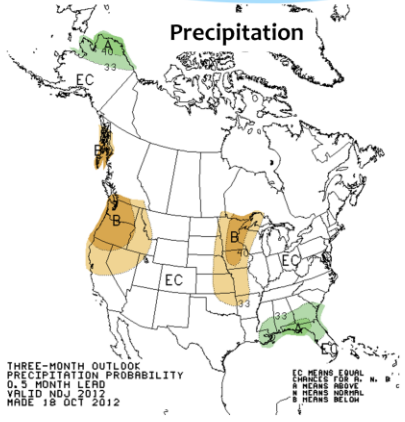
- *Prospect of an El Niño has waned*

3 Month Temperature and Precipitation Probabilities
(November - January)

Temperature

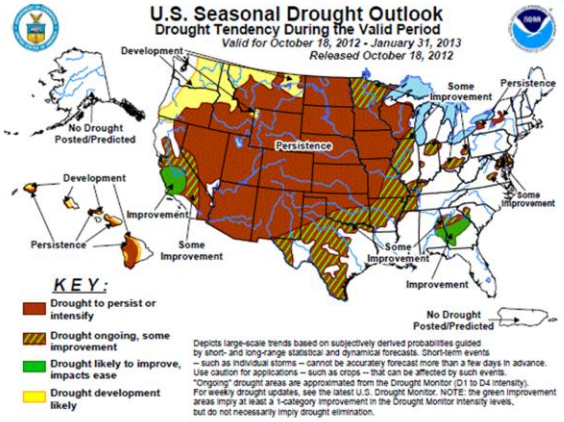


Precipitation



Source: NOAA's National Weather Service, Climate Prediction Center
(http://www.cpc.ncep.noaa.gov/products/predictions/long_range/seasonal.php?lead=1)

Drought Outlook



Comments

- Likelihood of continued improvement in Midwest
- Drought persists in Great Plains and expands further toward the northwest

Source: NOAA's National Weather Service, Climate Prediction Center (http://www.cpc.ncep.noaa.gov/products/expert_assessment/seasonal_drought.html)

Summary

- **Current Conditions**
  - Some improvement – eastern areas
  - Dryness in Great Plains impacting agriculture, fire, water supply
- **Evolution of the Drought and Impacts**
  - Some recovery in lower Midwest and shift of expanding dryness west and north into the northern Great Plains
- **Outlook**
  - Prospects for El Niño have diminished
  - Drought conditions and patterns likely to persist
  - Looking into 2013, concerns extending beyond agriculture

Further Information - Partners

Today's Recorded Presentation:

- ***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:**
  * Stuart Foster: stuart.foster@wku.edu, 270-745-5983
  * Doug Kluck: doug.kluck@noaa.gov, 816-994-3008
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