

6-21-2011

Monitoring Drought in the Midwest

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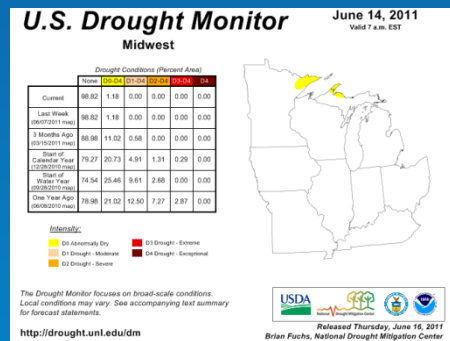


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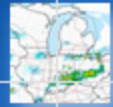
Hilberg, Steve, "Monitoring Drought in the Midwest" (2011). *2011 Symposium on Data-Driven Approaches to Droughts*. Paper 17.
<http://docs.lib.purdue.edu/ddad2011/17>

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Monitoring Drought in the Midwest



Steve Hilberg
 Director, Midwestern Regional Climate Center
 Illinois State Water Survey
 Prairie Research Institute, University of Illinois



Midwest

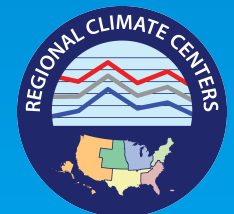
Climate Watch



MRCC

Midwestern Regional
Climate Center

- The Midwest Climate Watch offers a “one-stop shop” for current climate conditions in the Midwest.
- Products are automatically updated each day



Highlights & Reports

Weekly Climate Highlights - through 6/14/2011

Monthly Climate Overviews

Year: Month: [Go](#)

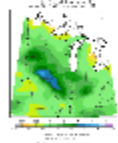
Last month's State of the Climate National Overview from NCDC (normally available by the 10th of the month)

Search past weekly climate highlights for extreme weather events.

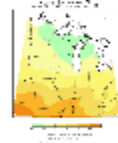
Special Reports of Climate Events

More Maps & Images

7-Day & 30-Day Maps



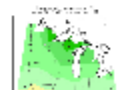
Last 7 Days Precipitation



Last 7 Days Average Temp



Last 30 Days Precipitation

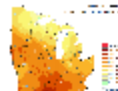


Last 30 Days Average Temp

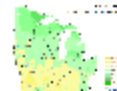
Maps & Images

Click image for large version

Coop Network - Temperature [Info](#)



Max Temp

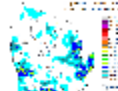


Min Temp



Freeze Maps

Coop Network - Precipitation [Info](#)



Precipitation

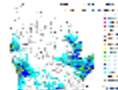


Snowfall



Snow Depth

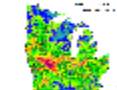
Multi-sensor Precipitation [Info](#)



24 Hours

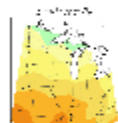


7 Days

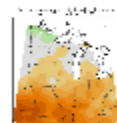


30 Days

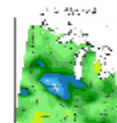
Climate Maps of the Current Month [Info](#)



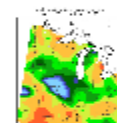
Temp



Temp Departure from Normal



Precip



Precip Percent of Normal

Climate Maps of Recent Months

Month: [Go](#)
Data Type: [Go](#)

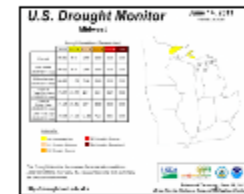
Climate Maps of Recent Seasons

Season: [Go](#)
Data Type: [Go](#)

Other Climate Links & Info

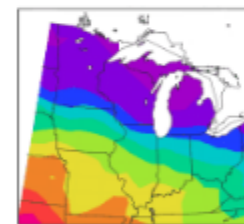
Midwest Drought Information [Go](#)

MRCC soil moisture and precipitation maps are brought together in one place with many national NOAA products for convenient assessment of drought in the Midwest.

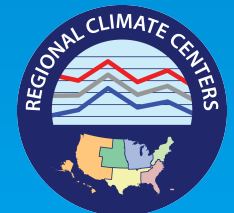


Growing Degree Day Maps [Go](#)

These maps are generated daily at approx. 11:30am Central Time during the growing season and are intended to provide a general picture of the seasonal GDD in the Midwest.



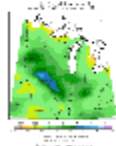
STATE CLIMATE WATCH
For a more detailed look at specific states, select a



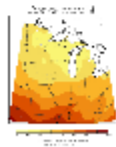
Special Reports of Climate Events

More Maps & Images

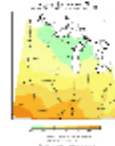
7-Day & 30-Day Maps



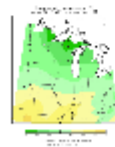
Last 7 Days
Precipitation



Last 7 Days
Max Temp



Last 7 Days
Average Temp

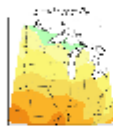


Last 7 Days
Min Temp

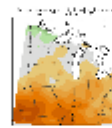
See all of the 7-Day and 30-Day Precipitation and Temperature Maps

Climate Maps of the Current Month

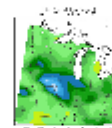
Info



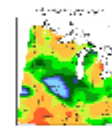
Temp



Temp
Departure
from Normal



Precip



Precip
Percent of
Normal

Climate Maps of Recent Months

Month:

Data Type:

Go

Climate Maps of Recent Seasons

Season:

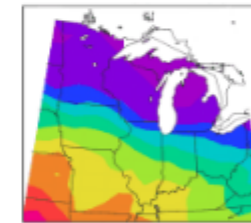
Data Type:

Go

Growing Degree Day Maps

Go

These maps are generated daily at approx. 11:30am Central Time during the growing season and are intended to provide a general picture of the seasonal GDD in the Midwest.



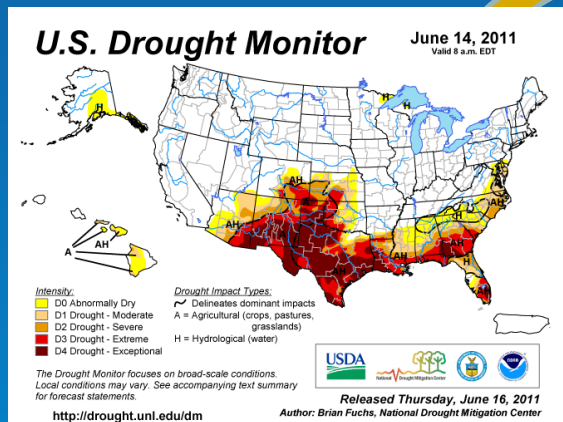
STATE CLIMATE WATCH

For a more detailed look at specific states, select a link below:

- [ILLINOIS](#)
- [INDIANA](#)
- [IOWA](#)
- [KENTUCKY](#)
- [MICHIGAN](#)
- [MINNESOTA](#)
- [MISSOURI](#)
- [OHIO](#)
- [WISCONSIN](#)

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Drought Monitoring



National

Other Climate Links & Info

Midwest Drought Information

MRCC soil moisture and precipitation maps are brought together in one place with many national NOAA products for convenient assessment of drought in the Midwest.

Regional

PURDUE UNIVERSITY |Climate.org Search

ICLIMATE.ORG
 Indiana State Climate Office

Home Data Indiana Climate Current Climate Maps About Us

Drought

[Click here for Field Crop Drought Information](#)
 Drought Maps: [Click here for Maps Archive](#)

U.S. Drought Monitor June 14, 2011
 Valid 7 a.m. EDT

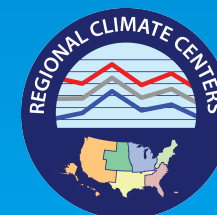
Indiana

	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000
Area	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000
Land Area	36,820	36,820	36,820	36,820	36,820	36,820	36,820	36,820	36,820	36,820	36,820	36,820
Population	6,400,000	6,400,000	6,400,000	6,400,000	6,400,000	6,400,000	6,400,000	6,400,000	6,400,000	6,400,000	6,400,000	6,400,000
Population Density	174	174	174	174	174	174	174	174	174	174	174	174
Population Density (per sq. mi.)	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7
Population Density (per sq. km.)	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3
Population Density (per sq. mi.)	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7
Population Density (per sq. km.)	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3

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

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.
 Released Thursday, June 16, 2011
 Brian Fuchs, National Drought Mitigation Center
<http://drought.unl.edu/dm>

State/Local





Drought Information

Midwest Drought Information

U.S. DROUGHT MONITOR

U.S. Drought Monitor

June 14, 2011
10:01 PM CDT

Drought Conditions (Percent Area)

	Area	D1-D2	D2-D3	D3-D4	D4-D5	D5+
Current	88,800	1,700	0,200	0,300	0,000	0,000
Year-to-Date (2000-2011)	88,800	1,700	0,200	0,300	0,000	0,000
3-Month High (2000-2011)	88,800	11,000	0,500	0,300	0,000	0,000
Year of Current Peak (2000-2011)	79,200	20,700	4,000	1,500	0,000	0,000
Year of Current Low (2000-2011)	74,500	20,400	0,000	2,000	0,000	0,000
Year of High (2000-2011)	78,800	21,000	10,500	2,000	2,000	0,000



Legend:

- All Anomally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional
- D5+ Drought - Catastrophic

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

<http://droughtand.edu/dm/>



Released Thursday, June 16, 2011
Boise, Idaho, National Drought Mitigation Center

(Click maps to enlarge in a new window)

STATE DROUGHT INFORMATION

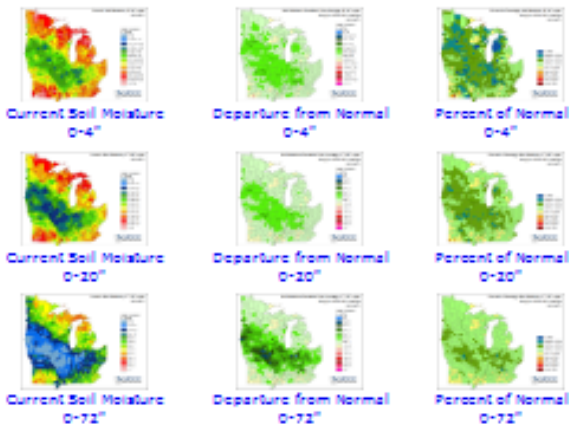
Mouse over a state to see the available State Climate Office web site or state-specific drought web sites. Click your choice on the menu:

- Illinois ▶
- Indiana ▶
- Iowa ▶
- Kentucky ▶
- Michigan ▶
- Minnesota ▶
- Missouri ▶
- Ohio ▶
- Wisconsin ▶

SOIL MOISTURE

Soil moisture estimates based on yesterday's data are updated in the late morning and estimates based on today's data are updated in the late afternoon.

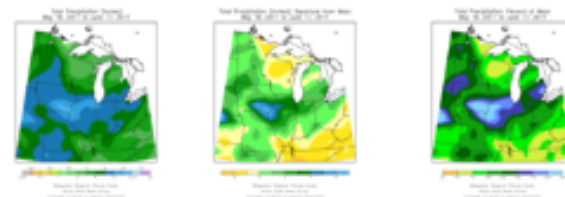
Info



PRECIPITATION

Precipitation Maps for 30, 90, and 180 day periods through Today. These maps are updated at 10:30 AM Central Time.

Please click on the time periods to enlarge

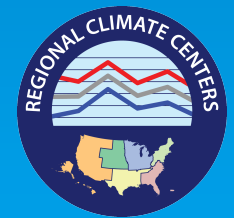


Precipitation Total	Precipitation Departure	Precipitation Percentage
30 days	from Normal	of Normal
90 days	30 days	30 days
180 days	90 days	90 days
	180 days	180 days

PALMER DROUGHT SEVERITY INDEX

Info

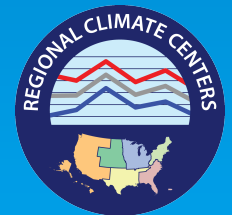
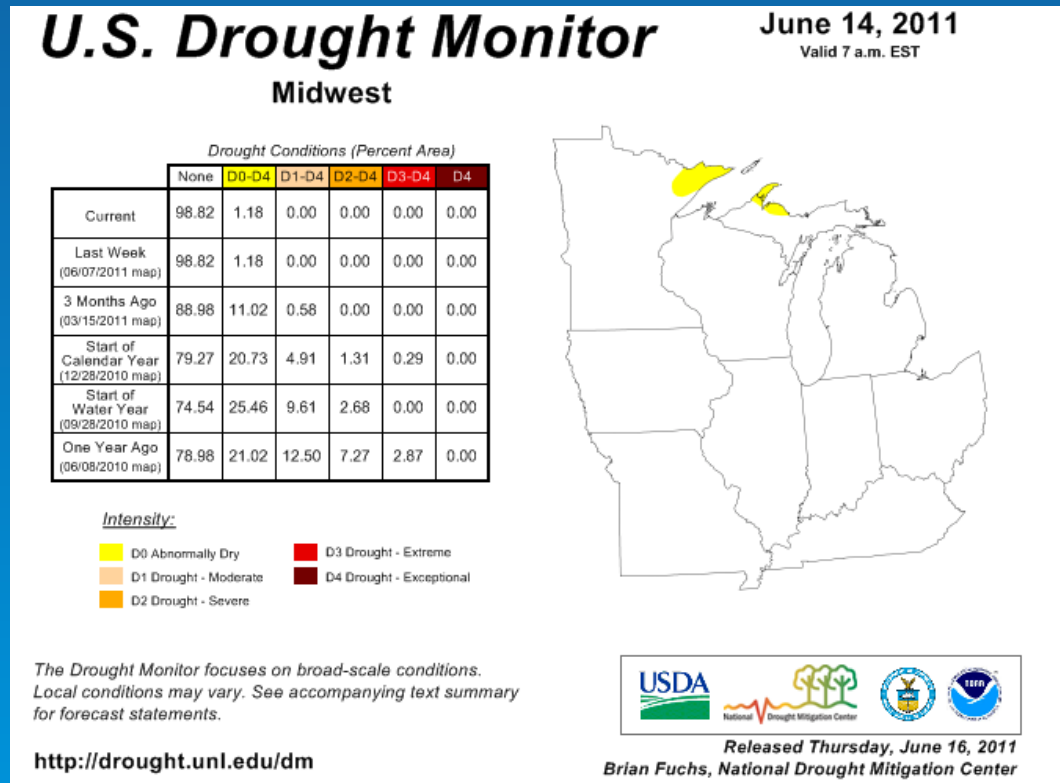
Drought Severity Index by Wilhite
Drought Index by Wilhite, 1987



Midwest Drought Information Page

The Drought Monitor offers a quick graphical overview of conditions in the Midwest. This is automatically updated every Thursday morning.

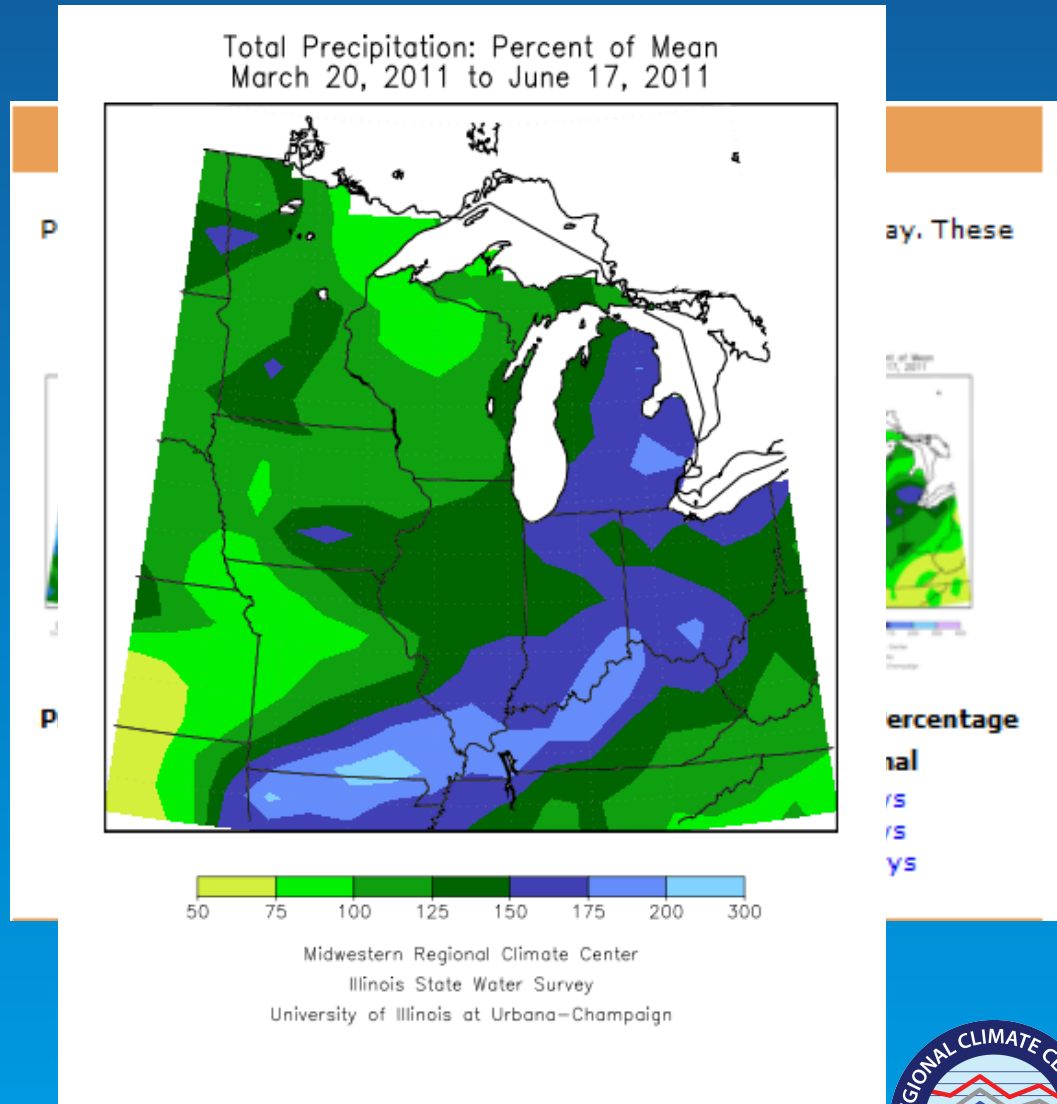
- The Drought Monitor - Midwest Region



Midwest Drought Information Page

Precipitation maps are available for the last 30, 90, and 180 days. Daily, month-to-date and 7-day maps are available on the main Climate Watch page.

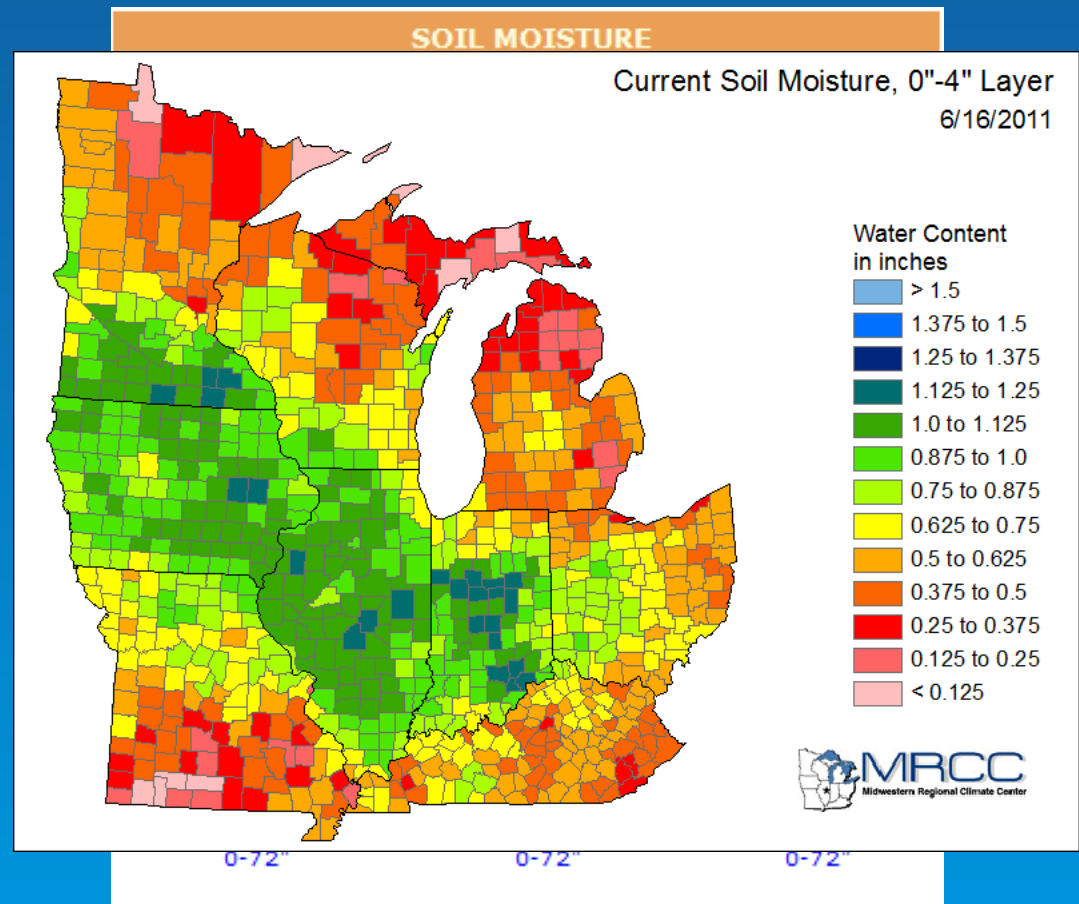
- Precipitation Maps



Midwest Drought Information Page

The soil moisture amounts for the three levels are calculated using a multi-level soil model responding to daily temperature and precipitation in the counties of the region. Daily estimates of precipitation are obtained from The National Weather Service Multi-sensor Precipitation Estimate product. Daily temperatures are derived from the NOAA cooperative observer network. County-level soil characteristics were derived from the State Soil Geographic (STATSGO) climate division database.

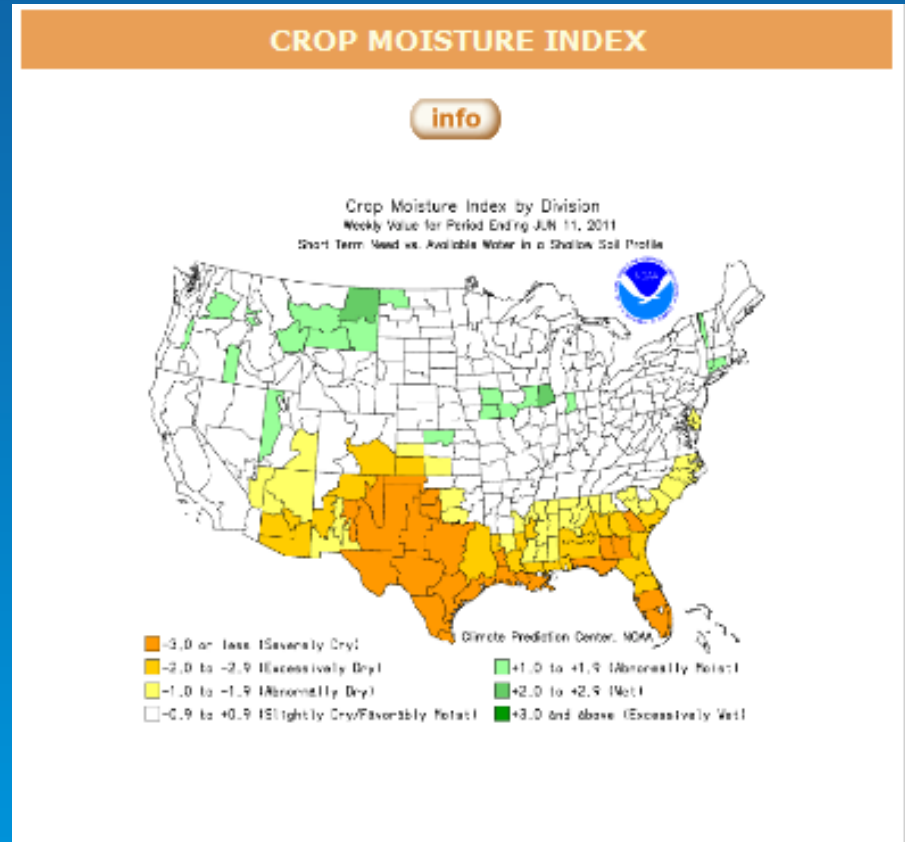
- County Level Modeled Soil Moisture



Midwest Drought Information Page

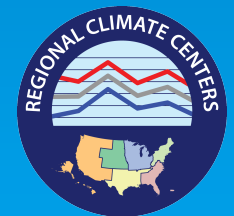
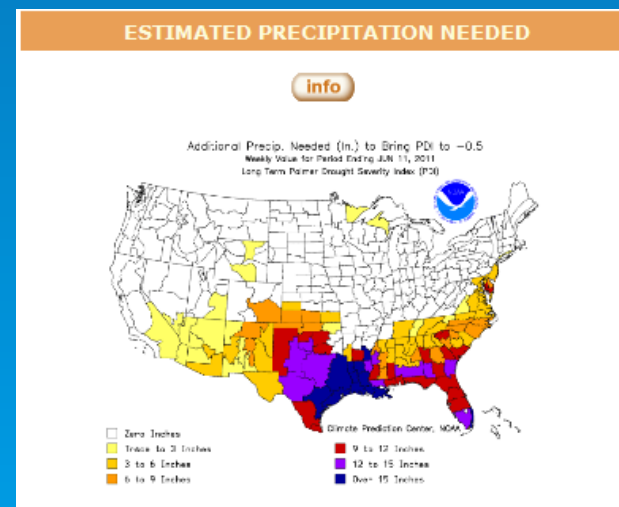
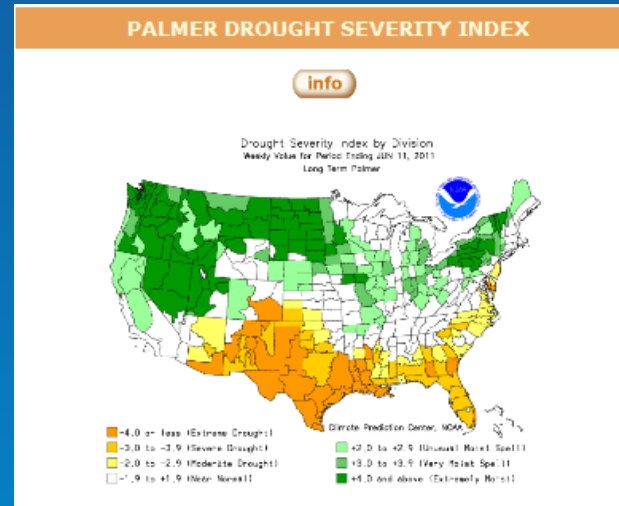
The Palmer Crop Moisture Index is a short-term index that indicates whether soils have enough moisture to meet the short-term needs of crops.

- Palmer Drought indices



Midwest Drought Information Page

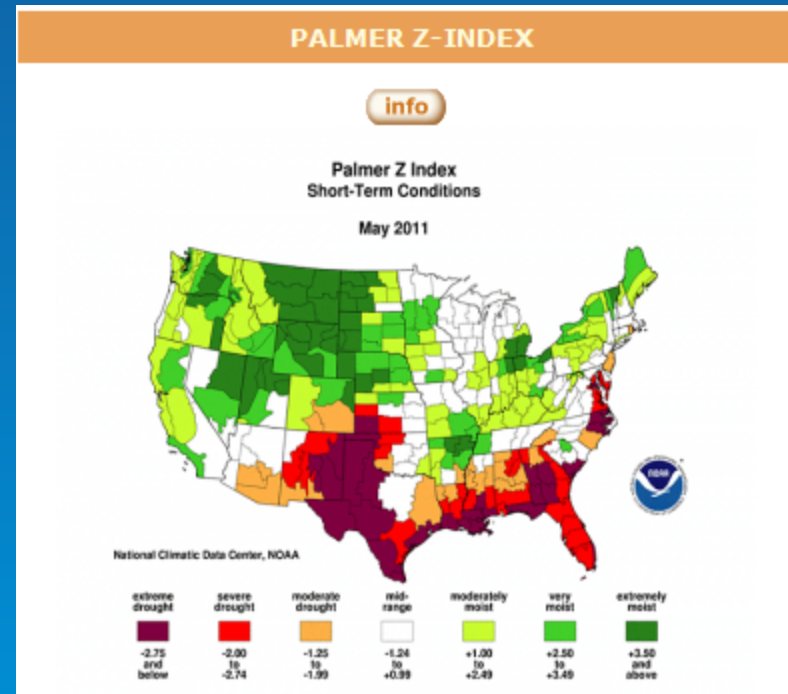
- Palmer Drought indices



Midwest Drought Information Page

- Palmer Drought indices

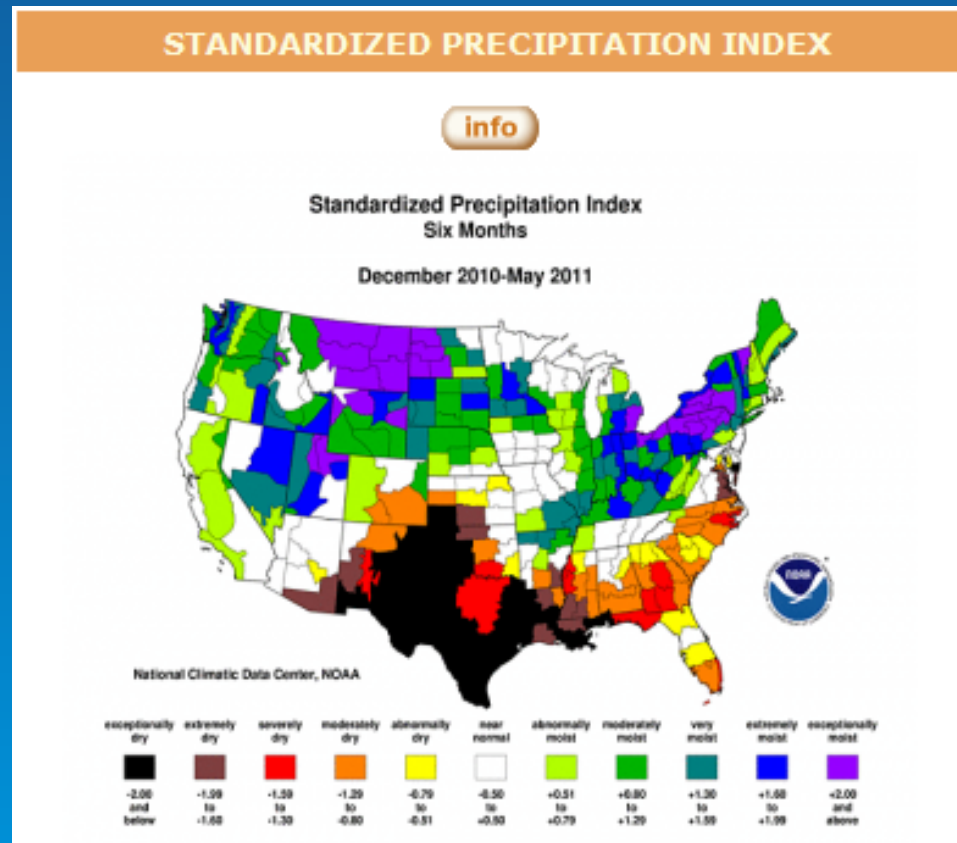
The Palmer Z-Index represents the change in soil moisture conditions over the last month due to the imbalance between precipitation and water lost to the air and plants and to runoff. It is a short term measure of the direction of moisture change, with positive numbers indicating wetter conditions, and negative numbers indicating drier conditions.



Midwest Drought Information Page

The Standardized Precipitation Index (SPI) is a measure of precipitation that is comparable across time and space. The index is based on the statistical distribution of rainfall amounts for a given location and period of time. An index of zero is the median value, positive numbers indicate wet conditions, and negative numbers represent dry conditions. Because the probabilities are standardized by location, one can compare places with different climates using the same scale.

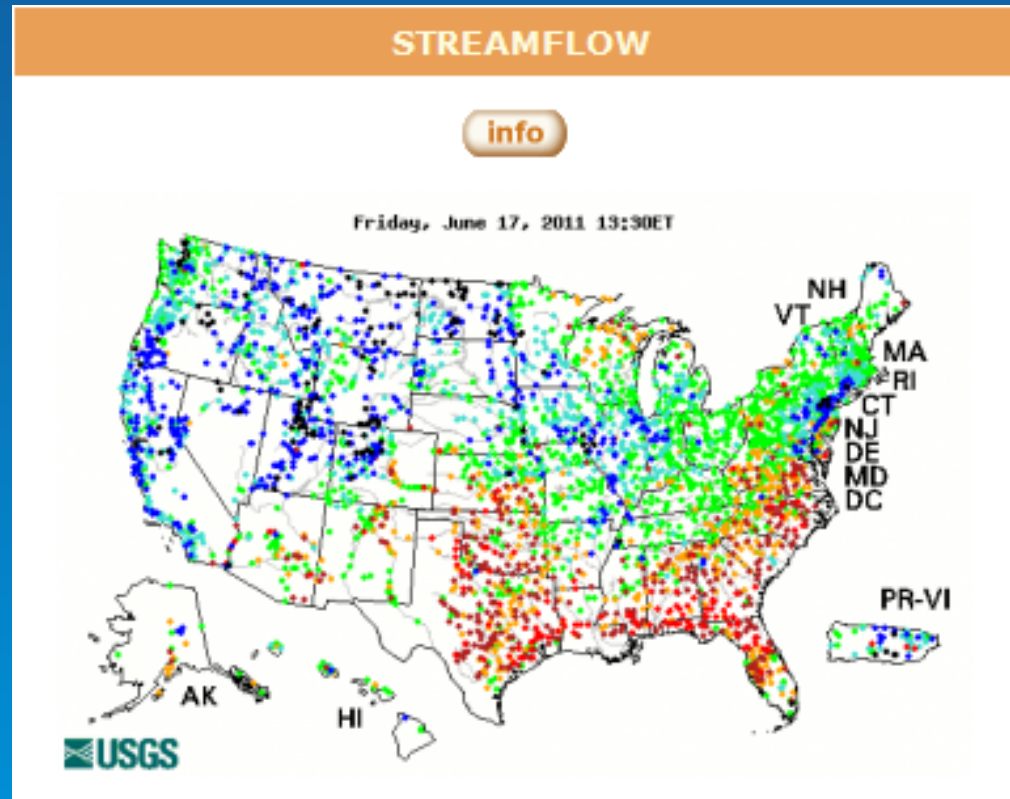
- Palmer Drought indices



Midwest Drought Information Page

This map is a snapshot of streamflow data reported to the USGS system in real time.

- USGS Streamflow



Midwest Drought Information Page

The Drought Outlook, and 30- and 90-day precipitation outlooks from the Climate Prediction Center

A link to the U.S. Drought Portal (NIDIS)

- Outlooks

OUTLOOKS

These outlooks are produced by NOAA's Climate Prediction Center, and are based on a blend of statistical and modeling forecast products and expert opinion. Statistical forecasts use observations of the sequence and size of climate variations in the past to give clues to future variations. Mathematical models of the atmosphere and oceans predict near future conditions using our fundamental knowledge of climate system processes and current conditions as a starting point, in a way quite similar to weather forecasting. In both cases, one cannot predict the weather for a single day in the distant future. Instead, climate forecasts give the chances for certain variations to occur in the next 30 or 90 days, or further into the future.

U.S. Seasonal Drought Outlook
Drought Tendency During the Valid Period
VALID: JUN 16, 2011 - September 30, 2011
Released June 16, 2011

KEY:
■ Drought to persist or intensify
■ Drought easing, some improvement
■ Drought likely to improve, impacts ease
■ Drought development likely

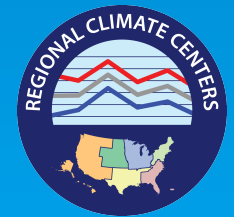
U.S. 30-Day Precipitation Outlook
PRECIPITATION PROBABILITY
0.5 MONTH LEAD
VALID: JUN 16, 2011
MADE: 16 JUN 2011

U.S. 90-Day Precipitation Outlook
PRECIPITATION PROBABILITY
0.5 MONTH LEAD
VALID: JUN 2011
MADE: 16 JUN 2011

National Integrated Drought Information System

[<< Back to Midwest Climate Watch](#)

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Midwest Drought Information Page

- Fills the continuum between a national perspective and local perspective on drought
- Links to the local, and back to the national

<http://mrcc.isws.illinois.edu/index.jsp>

