Early Season Snowstorm in the Upper High Plains.
Source: NASA satellite image, October 6, 2013
Providing climate services to the Central Region

Collaboration Activity Between:

Collaboration with Dennis Todey (South Dakota State Climatologist), Jim Angel (Illinois State Climatologist), Doug Kluck and John Eise (NOAA), State Climatologists and the Midwest Regional Climate Center, High Plains Regional Climate Center, NOAAs Climate Prediction Center, Iowa State University, National Drought Mitigation Center

Next Climate/Drought Outlook Webinar

November 21, 2013

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

There will be time for questions at the end
Agenda

* Historical context
* Current conditions
* Impacts
* Outlooks
September Temperature

Departure from Normal Temperature (F)
9/1/2013 – 9/30/2013

Generated 10/11/2013 at HPRCC using provisional data.

Regional Climate Centers
September Precipitation

Percent of Normal Precipitation (%)

9/1/2013 – 9/30/2013

Generated 10/11/2013 at HPRCC using provisional data.

Regional Climate Centers
October Precipitation

Percent of Normal Precipitation (%)  
10/1/2013 - 10/23/2013
Accumulated Snowfall (in)  
September 1, 2013 to October 23, 2013
7-Day Average Streamflow

http://waterwatch.usgs.gov/?id=ww_current
Mississippi River Below St. Louis

![Graph showing Gage height with periods of approved and provisional data and National Weather Service Floodstage.](chart.png)
Lake Superior Water Levels

Long-Term Monthly Means & Record Water Levels for Lake Superior: Station 9099018 (Marquette, MI)

Key:
- **1918–2008** Long-Term Monthly Mean (Black)
- Record Highs (Red)
- Record Lows (Green)
- **2013** Current Level (Blue)

Great Lakes Environmental Research Laboratory/NOAA
http://www.glerl.noaa.gov/data(now)/wlevels/
Contact: Craig.Stow@noaa.gov
Lakes Michigan-Huron

Long-Term Monthly Means & Record Water Levels for Lakes Michigan-Huron: Station 9075014 (Harbor Beach, MI)

Key:
- 1918-2008 Long-Term Monthly Mean (Black)
- Record Highs (Red)
- Record Lows (Green)

2013 Current Level (Blue)

Great Lakes Environmental Research Laboratory/NOAA
http://www.glerl.noaa.gov/data/now/wlevels/
Contact: Craig.Stow@noaa.gov
Date of First 28°F Freeze

As of 10/23/2013

MRCC Experimental Freeze Guidance:
These experimental maps may be utilized as a guide to local and regional freeze conditions but should NOT be used by themselves for decision processes.
Soil Moisture Anomaly

Soil Moisture Anomaly in millimeters

http://www.emc.ncep.noaa.gov/mmb/nldas/drought/
October 22, 2013
(Released Thursday, Oct. 24, 2013)
Valid 7 a.m. EDT

Drought Conditions (Percent Area)

<table>
<thead>
<tr>
<th></th>
<th>None</th>
<th>D6-D4</th>
<th>D1-D4</th>
<th>D2-D4</th>
<th>D3-D4</th>
<th>D4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current</td>
<td>47.57</td>
<td>52.43</td>
<td>22.40</td>
<td>11.90</td>
<td>2.05</td>
<td>0.30</td>
</tr>
<tr>
<td>Last Week</td>
<td>45.14</td>
<td>54.86</td>
<td>29.51</td>
<td>12.46</td>
<td>2.18</td>
<td>0.30</td>
</tr>
<tr>
<td>3 Months Ago</td>
<td>19.86</td>
<td>80.14</td>
<td>66.27</td>
<td>47.65</td>
<td>22.59</td>
<td>8.47</td>
</tr>
<tr>
<td>Start of Calendar Year</td>
<td>1.54</td>
<td>98.46</td>
<td>93.01</td>
<td>86.20</td>
<td>60.25</td>
<td>26.99</td>
</tr>
<tr>
<td>Start of Water Year</td>
<td>29.87</td>
<td>70.13</td>
<td>43.21</td>
<td>19.50</td>
<td>3.01</td>
<td>0.30</td>
</tr>
<tr>
<td>One Year Ago</td>
<td>17.90</td>
<td>82.10</td>
<td>52.25</td>
<td>32.62</td>
<td>13.99</td>
<td>0.28</td>
</tr>
</tbody>
</table>

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

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

Author:
Brian Fuchs
National Drought Mitigation Center

http://droughtmonitor.unl.edu/
According to the October 20 report from USDA:

- 94 percent mature
- 39 percent harvested
- Year ago 85 percent by this date
- Average is 50 percent by this date
- Forecasted corn yield is 155.3 bu/acre (September report)
Soybeans

* 94 percent of crop has dropped leaves
* 63 percent harvest
* Last year 100 percent harvested by this date
* Average is 50 percent by this date
Winter Wheat

* 79 percent sown, right at 5-year average
* 53 percent has emerged
* 65 percent of the winter wheat was rated as good to excellent condition
U.S. Winter Wheat Areas Experiencing Drought

Reflects October 22, 2013
U.S. Drought Monitor data

Approximately 34% of the winter wheat grown in the U.S. is within an area experiencing drought, based on historical NASS crop production data.

- 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.

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/.

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://droughtmonitor.unl.edu/.
Northern High Plains Blizzard
Snowfall Accumulation

Accumulated Snowfall (in)
October 1, 2013 to October 6, 2013

Midwestern Regional Climate Center
ci-MATE: MRCC Application Tools Environment
Support contact: 785-587-3584, 1-800-352-7327
Selected Observations

* Steamboat Springs, CO with 19.6 inches
* Pony, MT with 32.0 inches
* Casper, WY with 34.0 inches
* Silver City, SD with 47.0 inches
* Rapid City, SD with 31.0 inches
* Wind gust of 71 mph at Ellsworth AFB
Impacts of Blizzard

* Cattle losses in SD alone at 15-30,000 head of cattle according to the State Veterinarian with more losses in Nebraska and North Dakota.

* Why so bad:
  1. Early season storm with rain and heavy snow, combined with falling temperatures and high winds soaked animals
  2. Open range with little shelter, not moved to winter pasture yet
  3. Cattle did not have their protective winter coat yet

* Economic losses, direct and indirect, could be up to 1.7 billion dollars.
Climate Outlooks

- 7-day precipitation forecast
- 8-14 day outlook
- November
- 3 Months (November - January)
- Seasonal Drought Outlooks
7-day Quantitative Precipitation Forecast
Valid: 12z Thu Oct 24 – 12z Thu Oct 31

http://www.wpc.ncep.noaa.gov/qpf/day1-7.shtml
Temperature and Precipitation Probabilities for Oct 31 – Nov 6, 2013

Temperature

Precipitation

http://www.cpc.ncep.noaa.gov/products/predictions/814day/index.php
Sea-Surface Temperatures in the Pacific – October 16, 2013
El Nino/La Nina Forecast

Early-Oct CPC/IRI Consensus Probabilistic ENSO Forecast

ENSO state based on NINO3.4 SST Anomaly
Neutral ENSO: −0.5°C to 0.5°C

Probability (%)

Time Period
SON 2013
OND
NDJ
DJF
JFM
FMA
MAM
AMJ
MJJ 2014

Climatological Probability:
- Red: El Nino
- Green: Neutral
- Blue: La Nina
ENSO-Neutral Winter Pattern

- Polar Jet Stream
- Pacific Jet Stream
- Atlantic Jet Stream
- Subtropical Jet Stream
- COLD
- WARM
- WET
November Temperature and Precipitation Probabilities

Temperature

Precipitation

http://www.cpc.ncep.noaa.gov/
3 Month Temperature and Precipitation Probabilities (November-January)

Temperature

Precipitation

http://www.cpc.ncep.noaa.gov
November Precipitation - Ensemble
November Temperature - Ensemble

NMME Forecast of TMP2m Anom IC=201310 for Lead 1 2013Nov
U.S. Monthly Drought Outlook
Drought Tendency During the Valid Period
Valid for October 2013
Released September 30, 2013

KEY:
- **Drought persists or intensifies**
- **Drought remains but improves**
- **Drought removal likely**
- **Drought development likely**

Author: Brad Pugh/Anthony Artusa, Climate Prediction Center, NOAA

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 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)

Summary

* Recent Conditions
  * Wet in the Dakotas
  * Some dryness across Kansas, Missouri, Iowa, and Illinois.
  * Drought still in place in the central High Plains and parts of the Midwest.
  * Corn and soybean harvest are well underway, winter wheat planting and emergence close to average
  * Catastrophic early season blizzard in the northern High Plains led to major cattle loss
Outlooks

* ENSO neutral conditions through Spring 2014
* Drought conditions are expected to linger in some of the Plains states (NE, KS, CO), as well as parts of the Midwest (MO, IL, IA, MN, WI)
* Next 2 weeks cooler and wetter, especially in the southern and eastern parts of the region.
* Frost has arrived in many areas, more on the way.
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
- NOAA’s Climate Prediction Center: www.cpc.ncep.noaa.gov
- Climate Portal: www.climate.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
Questions:

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