North Central U.S. Climate Summary and Outlook Webinar
December 15, 2016

Stuart Foster
State Climatologist for Kentucky
Department of Geography and Geology
Western Kentucky University
Stuart.foster@wku.edu
270.745.5983
General Information

- Regional climate services for the North Central U.S., including the Great Plains and Midwest, are provided through collaboration among federal, regional, and state partners:
  - National Oceanic and Atmospheric Administration
  - U.S. Department of Agriculture
  - National Drought Mitigation Center
  - High Plains Regional Climate Center
  - Midwestern Regional Climate Center
  - American Association of State Climatologists

- Next webinar
  - January 19, 2017, Montana Climate Office

- Archive of past webinars
  - [http://mrcc.isws.illinois.edu/multimedia/webinars.jsp](http://mrcc.isws.illinois.edu/multimedia/webinars.jsp)
  - [http://www.hprcc.unl.edu/webinars.php](http://www.hprcc.unl.edu/webinars.php)
Agenda

• Current climate conditions in historical context
• Current and prospective climate impacts
• Climate outlooks
• Questions and answers
November

It’s been warm throughout the region...

... and wet, dry, or about normal, depending on where you are.

Sep-Oct-Nov

It’s been warm throughout the region...

... and wet, dry, or about normal, depending on where you are
- Near normal with warm and cool pockets over past 30 days
- From 3 to 5 °F above normal for much of the region over past 90 days
- From 1 to 4 °F above normal for much of the region year-to-date
• Above normal in upper Midwest and Plains and near to below normal in portions of the lower Midwest and Plains over past 30 days

• Above normal in upper Midwest and Plains and sharply below normal in portions of the lower Midwest over past 90 days

• Generally wetter than normal, including some areas of record wetness in portions of Iowa and Minnesota
Annual Precipitation Records Broken

**Minnesota Annual Precipitation Record Broken**

Waseca, in south central Minnesota, has set the official state precipitation record, coming in with the highest annual precipitation total for a National Weather Service Cooperative Observation site.

As of December 12, 2016 Waseca had a total of 54.96 inches with more precipitation on the way.

The old statewide annual record was 53.52 inches of precipitation at St. Francis in Anoka County in 1991.

http://www.dnr.state.mn.us/climate/journal/16_waseca.html

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**Iowa**

<table>
<thead>
<tr>
<th>Station</th>
<th>2016 Total</th>
<th>Previous Annual Record</th>
<th>Period of Record</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charles City</td>
<td>57.31 inches</td>
<td>51.35 in 1999</td>
<td>133 years</td>
</tr>
<tr>
<td>Decorah</td>
<td>56.33 inches</td>
<td>48.74 in 2007</td>
<td>128 years</td>
</tr>
<tr>
<td>Cresco</td>
<td>56.00 inches</td>
<td>47.87 in 1951</td>
<td>110 years</td>
</tr>
<tr>
<td>New Hampton</td>
<td>55.42 inches</td>
<td>51.88 in 2007</td>
<td>110 years</td>
</tr>
<tr>
<td>Osage</td>
<td>50.91 inches</td>
<td>45.72 in 1999</td>
<td>112 years</td>
</tr>
</tbody>
</table>
Modeled Soil Moisture
NLDAS

Anomaly

Percentile

http://www.emc.ncep.noaa.gov/mmb/nldas/drought/
Soil Temperature
Regional Mesonet Program

4" Soil Temperature (°F) (Sod)

24-Hour Period Through 12/13/2016

- Mesonets, <= 32°F
- Mesonets, > 32°F
- CRN/COOP, <= 32°F
- CRN/COOP, > 32°F

All data are preliminary.

NOTE: Spatial resolution is limited in some states.

http://mrcc.isws.illinois.edu/cliwatch/mesonets/soilTemp.html#bannerFixed
The Missouri River Basin mountain snowpack normally peaks near April 15. On December 13, 2016 the mountain Snow Water Equivalent (SWE) in the “Total above Fort Peck” reach was 3.2”, 62% of average. The mountain SWE in the “Total Fort Peck to Garrison” reach was 4.1”, 84% of average. Normally by December 15, about 34% of the peak mountain SWE has occurred in both reaches.

*Generally considered the high and low year of the last 20-year period, respectively. Provisional data. Subject to revision.
The North and South Platte River Basin mountain snowpacks normally peak near April 15 and the end of April, respectively. As of December 13, 2016, the mountain snowpack SWE in the "Total North Platte" reach is currently 4.8", 81% of average. The mountain snowpack SWE in the "Total South Platte" reach is currently 3.4", 74% of average.

Source: USDA, Natural Resource Conservation Service

Provisional Data. Subject to Revision
Streamflow Conditions

Thursday, December 15, 2016 09:30ET

Explanation
- **Black**: High
- **Blue**: > 90th percentile
- **Green**: 76th - 90th percentile
- **Orange**: 25th - 75th percentile
- **Yellow**: 10th - 24th percentile
- **Red**: < 10th percentile
- **Pink**: Low
- **White**: Not ranked

[Map showing streamflow conditions across the United States]
Drought Impacts
Kentucky

Wildfire Occurrence
November 2016

Images provided by Steve Kull, Kentucky Division of Forestry
7-day Quantitative Precipitation Forecast
8-14 Day Outlook
Dec 22- Dec 28
NWS Climate Predication Center

http://www.cpc.ncep.noaa.gov/products/predictions/814day/
ENSO Probabalistic Forecast

Early-Dec CPC/IRI Official Probabilistic ENSO Forecast

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

Climatological Probability:
- El Nino
- Neutral
- La Nina

North American Multi-model Ensemble Plumes
TYPICAL LA NIÑA WINTERS

Image Credit: Fiona Martin, NOAA Climate.gov
Monthly Outlook for January
NWS Climate Prediction Center

http://www.cpc.ncep.noaa.gov/products/predictions/long_range/lead14/
Summary

- Both temperature and precipitation have averaged near normal region-wide, with pockets of above and below normal in some areas.

- Snow pack is approaching normal conditions following a slow start of the season.

- Drought conditions in Kentucky are easing.

- La Niña conditions are likely to diminish into winter, though climatic conditions may still reflect La Niña influence.
Additional Information

• Today’s and Past Recorded Presentations and
  http://mrcc.isws.illinois.edu/multimedia/webinars.jsp
  http://www.hprcc.unl.edu/webinars.php

• NOAA’s National Centers for Environmental Information:
  https://www.ncei.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/

• American Association of State Climatologists
  http://www.stateclimate.org

• Regional Climate Centers serving the Central Region
  Midwestern RCC  http://mrcc.isws.illinois.edu
  High Plains RCC  http://www.hprcc.unl.edu
Questions?

**Climate**
- Stuart Foster: stuart.foster@wku.edu, 270-745-5983
- Brian Fuchs: bfuchs2@unl.edu, 402-472-6775
- Jim Angel: jimangel@Illinois.edu, 217-333-0729
- Dennis Tody: dennis.tody@ars.usda.gov, 515-294-2013
- Doug Kluck: doug.kluck@noaa.gov, 816-994-3008
- Barb Mayes: barbara.mayes@noaa.gov, 402-359-2394
- Mike Timlin: mtimlin@illinois.edu, 217-333-8506
- Natalie Umphlett: numphlett2@unl.edu, 402 472-6764

**Weather**
- crhroc@noaa.gov

Thank you for your participation!