MIDWEST AND GREAT PLAINS DROUGHT AND CLIMATE OUTLOOK

19 SEP 2013

“UPDATE ON CLIMATOLOGICAL CONTEXT”

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GENERAL INFORMATION

• This drought and climate outlook webinar is a collaborative effort among the following climate services providers:
  Doug Kluck and John Eise (NOAA), State Climatologists, Midwest Regional Climate Center, High Plains Regional Climate Center, NOAA’s Climate Prediction Center, Iowa State University, National Drought Mitigation Center

• Next drought and climate outlook webinar
  October 17, 2013    1:00 PM CDT    Dr. Jim Angel, Illinois State Climatologist

  Registration:
  http://www.drought.gov/drought/content/regional-programs/regional-drought-webinars

• Access to past webinars
  http://mrcc.isws.illinois.edu/webinars.htm
  http://www.hprcc.unl.edu/webinars.php

• Operator assistance will be available for questions at the end of the presentation
AGENDA

Recent events
Current conditions highlighting recent change
Historical context
Outlooks
RECENT EVENTS

Flooding in Colorado

http://www.crh.noaa.gov/bou/?n=stormtotals_092013

Midwest heatwave in late August 2013

September 10, 2013

A heat wave struck the Midwest in late August and early September 2013. Daytime highs were 6 degrees above average, and nighttime lows were 11 degrees above average in late August. In contrast, the first three weeks of the month had temperatures 2 to 6 degrees below average. Through September 8, all-time daily record highs were tied or broken at 326 weather stations in the Midwest and High Plains.

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

http://droughtmonitor.unl.edu/
A LOOK BACK
THE PAST 30 DAYS

Average Temperature (°F): Departure from Mean August 20, 2013 to September 18, 2013

Accumulated Precipitation (in): Departure from Mean August 20, 2013 to September 18, 2013

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

Wednesday, September 18, 2013 15:30ET

http://waterwatch.usgs.gov/?id=ww_current
CURRENT SOIL MOISTURE ANOMALY

Ensemble-Mean – Current Total Column Soil Moisture Anomaly (mm)
NCEP NLDAS Products Valid: SEP 14, 2013

Soil Moisture Anomaly in millimeters
http://www.emc.ncep.noaa.gov/mmb/nldas/drought/
FROM ONE EXTREME TO ANOTHER

Accumulated Precipitation: Percent of Mean
April 1, 2013 to June 30, 2013

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

Accumulated Precipitation: Percent of Mean
July 1, 2013 to September 18, 2013

Midwestern Regional Climate Center
Illinois State Water Survey, Prairie Research Institute
University of Illinois at Urbana-Champaign
A TALE OF TWO SEASONS: FROM EARLY SPRING

Historical perspective from a spatial sample of climate divisions

- Unusually to near record wet conditions in eastern portion
- Persistence of unusually dry conditions in western portion

Cumulative Precipitation for April through June
Total for 2013 Relative to Years 1895-2013
A TALE OF TWO SEASONS: TO LATE SUMMER

Historical perspective from a spatial sample of climate divisions

Cumulative Precipitation for July through August

Total for 2013 Relative to Years 1895-2013

- Shift to below to near record dryness in eastern portion
- Below to near average precipitation in western portion
- AMJ-JA period is distinctive for persistent dryness relative to climatology
- Dryness during JA is not an effective predictor of SO precipitation, but may indicate reduced probability of extreme wetness
BEFORE AND AFTER
IOWA, SOUTH CENTRAL DIVISION

- AMJ-JA shows transition from extreme wetness to extreme dryness
- Dryness during JA is not an effective predictor of SO precipitation
BEFORE AND AFTER
WISCONSIN, WEST CENTRAL DIVISION

Historical Persistence of the Precipitation Pattern, AMJ and JA
Wisconsin West Central (04) Climate Division

- AMJ-JA shows transition from *record* wetness to *record* dryness
- Dryness during JA is not an effective predictor of SO precipitation
ENSO OUTLOOK

Early–Sep CPC/IRI Consensus Probabilistic ENSO Forecast

ENSO state based on NINO3.4 SST Anomaly
Neutral ENSO: $-0.5^\circ C$ to $0.5^\circ C$

Climatological Probability:
- El Nino
- Neutral
- La Nina

http://iri.columbia.edu/climate/ENSO/currentinfo/figure1.html
8-14 DAY CLIMATE OUTLOOK

Temperature

Precipitation

http://www.cpc.ncep.noaa.gov/products/predictions/814day/
OCTOBER CLIMATE OUTLOOK

Temperature

Precipitation

http://www.cpc.ncep.noaa.gov/products/predictions/30day/
SEASONAL CLIMATE OUTLOOK
OCTOBER – DECEMBER

Temperature

Precipitation

http://www.cpc.ncep.noaa.gov/products/predictions/long_range/seasonal.php?lead=1
U.S. Seasonal Drought Outlook

Drought Tendency During the Valid Period

Valid for September 19 - December 31, 2013
Released September 19, 2013

KEY:
- Brown: Drought persists or intensifies
- Orange: Drought remains but improves
- Green: Drought removal likely
- Yellow: Drought development likely

Author: 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 Green and Brown hatched 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
  * Dryness in Midwest rapidly intensifying
  * Wetness in portions of Great Plains easing drought conditions in limited areas

* Outlook
  * Climatology
    * The recent past is a poor predictor of the near future
    * Upcoming fall and winter months are relatively dry
      (but precipitation is critical for groundwater/soil moisture recharge)
  * Models
    * ENSO is expected to remain in a neutral phase into the fall and winter months
    * Climate outlooks currently provide minimal guidance beyond climatology
    * Drought conditions expected to persist through the end of the year with improvement on a small scale in some areas
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/

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

• Regional climate centers
  • http://mrcc.isws.illinois.edu
  • http://www.hprcc.unl.edu
IF YOU HAVE QUESTIONS

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