Weather/Climate Review/Outlook
2019

Dennis Todey
Director, Midwest Climate Hub
Dennis.todey@ars.usda.gov

Charlene Felkley
Coordinator, Midwest Climate Hub
Charlene.felkley@ars.usda.gov
Topics

• A brief Background of USDA Climate Hubs
  • The need, mission
  • More on the Midwest Climate Hub

• Current conditions

• Crop Impacts

• Outlooks

• Resources of the USDA Midwest Climate Hub
  • Website
  • For more Information
Intro to Climate Hub Work

Assessments and Syntheses
*delivering relevant information*

Outreach and Education
*enabling climate-informed decisions*

Technical Support
*facilitating engagement, discovery and exchange*

USDA Midwest Climate Hub
U.S. DEPARTMENT OF AGRICULTURE
Here in the Midwest...

Our Goal
To provide information to help producers cope with climate change through linkages of research, education and partnerships in a region that represents one of the most intense areas of agricultural production in the world.
MCH Thematic Areas

Assessments and Syntheses
*delivering relevant information*
MCH Thematic Areas

Outreach and Education
*enabling climate-informed decisions*

MAC-T
Midwest Agriculture and Climate Team
May temperatures mostly colder than average. Signal more in the max temps.

- Top 10 coldest average highs central/western US.
- Warmer minimums eastern US
Spring Temperature

- May temperatures mostly colder than average. Signal more in the max temps.
- Top 10 coldest average highs central/western US.
- Warmer minimums eastern US
May and spring precipitation well above average through middle US
Top 10 and wettest all time for a few states at these time scales
• Extended period of wetness back to a year.
• Top 10/record wettest in states back to a year.
• Wetness problems are long term issues.
• Iowa wettest June-May period on record (124 years)

10-22” last 90 days. West central to north – pockets less than 70% average. Around 150% SE.
30 Day Precip. Total/% Avg.

Totals less than 5” across northern IA to near 11” in the SE and SW. 150-200% of average in the south and far NW. Pockets below 70% avg. WC and NE.

[Map of Precipitation (in) from 5/24/2019 - 6/22/2019]

[Map of Percent of Normal Precipitation (%) from 5/24/2019 - 6/22/2019]

https://hprcc.unl.edu/maps.php?map=ACISCClimateMaps
30 Day Temperatures

Close to average (+/- 1 F) for much of the state. Mostly slightly below avg.
Soil moisture several inches above average – 95th percentile (basically still very wet)

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

D0 pockets in Minnesota. Northern North Dakota in D1/D2.
Corn progress nationally through June 23 (96% planted -4%; 89% -10%). Iowa better than many states (100%; 96% -4%).
Bean progress nationally through June 23 (85% planted -12%; 71% - 20%). Iowa still better than many states (95% - 4%; 81% -15%).
Condition indexed similar to 2012 and 1993 at this point. 2012 was dropping quickly.
Bean progress nationally through June 23 (85% planted - 12%; 71% - 20%).

Iowa still better than many states (95% - 4%; 81% - 15%).
GDD Accumulation – Floyd County

Corn Growing Degree Day Tool
Location: 43.02, −92.59 in Floyd Co., IA, Start Date: May 25, Maturity Days: 100, Freeze Temp: 28°F, Variation: All Years

Note: Both versions working.
http://mrcc.isws.illinois.edu/U2U/gdd/ or https://hprcc.unl.edu/gdd.php
GDD Accumulation – Floyd County

Note: Both versions working.

http://mrcc.isws.illinois.edu/U2U/gdd/ or https://hprcc.unl.edu/gdd.php
Assumptions

- Assumes avg. GDD accumulation rest of season (that is a big question right now)
- Does not incorporate shortening of GDD requirement for late planted corn.
Assuming near average condition – 16% chance of freeze before black layer.
Crop/Harvest issues

- **Growing season:**
  - Slow development
  - Disease
  - Weed issues
  - Lack of sunlight (don’t have good data on this)

- **Harvest:**
  - Some potential freeze concerns
  - More likely lots of immature high moisture corn

- **GDD Tool - Keep checking back on progress**
Crop/Harvest issues

Growing season:
- Slow development
- Disease

Harvest:
- Some potential freeze concerns
- More likely lots of immature high moisture corn

GDD Tool - Keep checking back on progress
Figure 6.1. Observed changes in annual, winter, and summer temperature (°F). Changes are the difference between average for present-day (1986–2016) and the average for the first half of the last century (1901–1960 for the conterminous United States, 1925–1960 for Alaska and Hawai’i). Estimates are derived from the nClimDiv dataset.1,2 (Figure NOAA/NCEI).
Fraction of Actual/Attainable Yield for Midwest Maize

RCP 4.5
Year: 2025

RCP 8.5
Year: 2025

RCP 4.5
Year: 2075

RCP 8.5
Year: 2075

Legend:
- 0.21 - 0.30
- 0.31 - 0.35
- 0.36 - 0.40
- 0.41 - 0.45
- 0.46 - 0.50
- 0.51 - 0.55
- 0.56 - 0.60
- 0.61 - 0.65
- 0.66 - 0.70
- 0.71 - 0.75
- 0.76 - 0.80
- 0.81 - 0.85
- 0.86 - 0.90
- 0.91 - 0.95
Climate Change and Agricultural Pests

1) Expanding geographic ranges northward

2) Reducing winter die offs

3) Earlier spring emergence

4) Increased generations per year

• Invasive insects are of particular concern since they often limited more by climate in their non-native ranges (no natural enemies and abundant food)
AG Risk Viewer – Cause of Loss Data

El Niño is favored to continue with chances nearing 50% in Northern Hemisphere fall and winter.
Smaller areas of rains (up to 2”) – more northern Midwest.
Early July – above average precip chances continue. Likely warmer than average temperatures good news for crops.
Persistence of cooler and wetter more likely through July.

http://www.cpc.ncep.noaa.gov/
Persistence of cooler and wetter still more likely through the summer. Soil moisture, El Niño and persistence from spring are main drivers.
• **Current conditions:**
  - Lighter rains during last week.
  - Some additional crop progress
  - Mostly wetter than average in the state but some slightly drier areas west central

• **Outlook info:**
  - Rain issues should continue this week and likely into the end of June. Some heavier amounts possible. But wet soils cannot handle too much.
  - Temperatures mostly moderate. Need some above average to push crop development.
  - New longer range outlooks will be released Thursday June 20
  - Crop issues still developing
Midwest and Great Plains Climate-Drought Outlook

15 September 2016

Dr. Dennis Todey
Director – USDA Midwest Climate Hub
Nat’l Lab. for Ag. and Env.
Ames, IA
dennis.todey@ars.usda.gov
515-294-2013

Sign up:
https://www.drought.gov/drought/dews/midwest

Archives:
http://mrcc.isws.illinois.edu/multimedia/webinars.jsp
For More Information

Charlene Felkley, Coordinator  
515-294-0136  
Charlene.felkley@ars.usda.gov

Dennis Todey, Director  
515-294-2013  
Dennis.todey@ars.usda.gov

Erica Kistner, Fellow  
515-294-9602  
Erica.kristner@ars.usda.gov

Midwest Climate Hub

@dennistodey  
@dusdaclimatehubs

https://www.climatehubs.oe.usda.gov/hubs/midwest

National Laboratory for Agriculture and the Environment  
Attn: Midwest Climate Hub  
1015 N University Blvd  
Ames, Iowa 50011-3611