USDA Midwest Climate Hub
U.S. DEPARTMENT OF AGRICULTURE

Midwest CHU

Climate Hub Update

Fall 2019

Promoting Climate-Informed Decisions Since 2014.

State Climate Summaries Are Being Updated 2019

The State Climate Summaries were released in 2017 to meet a demand for state-level information in the wake of the Third U.S. National Climate Assessment. A rolling update of the full set of summaries is currently underway in 2019. The summaries cover assessment topics directly related to NOAA's mission, specifically historical climate variations and trends, future climate model projections of climate conditions during the 21st century, and past and future conditions of sea level and coastal flooding.

For additional information and state summaries, select here.

The Great Flood of 2019: A Complete Picture of a Slow-Motion Disaster

The New York Times, as reported on September 11th, 2019, created an interactive map of flooding in the Midwest that occurred earlier this year. "The blue on the map, generated from satellite data used to detect flooding, shows the estimated intensity of flooding." These images also depict rivers and farmland.

"This year's flooding across the Midwest and the South affected nearly 14 million people...To visualize just how extensive it was, the New York Times created this composite map showing all the areas that were inundated at some point from January to June (2019)."

To access this map and accompanying dialogue, select here.

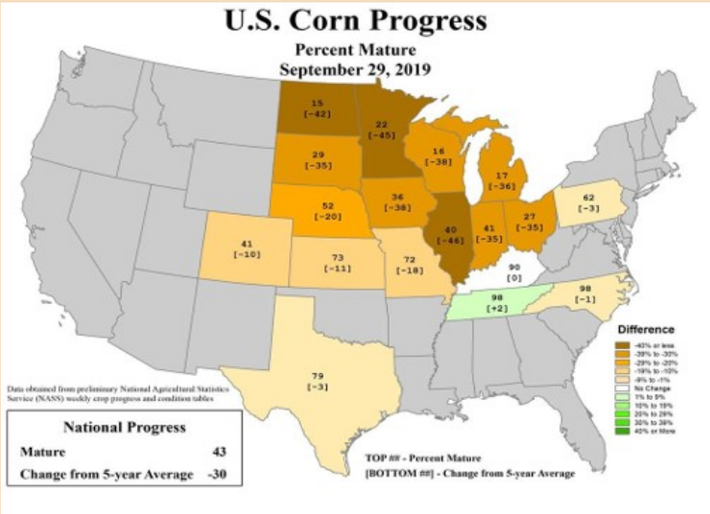
Attention NRCS Employees: Liaison Announcement Posted

Seeking applicants for USDA Climate Hub Liaison detail for 2020: NRCS supports the 10 USDA regional Climate Hubs each year by providing three employees as "Agency Project Liaisons." The selected employees are on detail for the calendar year, remain at their current duty station, and under NRCS supervision and funding, but work full time directly with a specific climate hub on a focused project that provides benefits to both NRCS and the USDA Climate Hub.

This detail is open to all employees regardless of grade, but applicants should be capable of creating their own workload, functioning independently, and managing their time. For more information, select here or contact Mike Wilson at mike.wilson2@usda.gov.

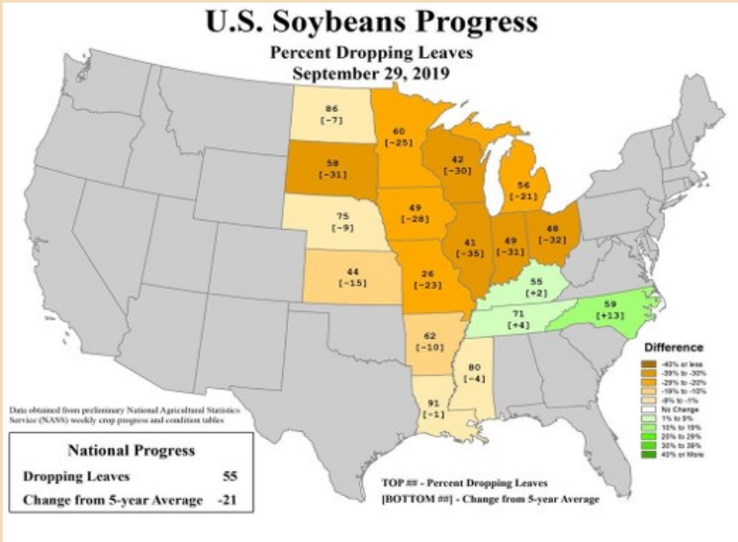
CHU in Every Issue...

Midwest Ag Focus Climate Update: October 2, 2019



Current Conditions: Warmer-than-average temperature covered the whole region during September leading to very warm conditions in many areas, but also helping crop progress move along more quickly...Precipitation had a somewhat different look: The northern states were mainly above average with some places seeing several times their average in the Dakotas and in the IA-IL-WI border area. In the south precipitation dropped off to be well below average allowing drought conditions to increase.

U.S. Agriculture Progress Maps Supplied by Brad Rippey, USDA World Agricultural Outlook Board.



Impacts: Precipitation has increased some of the harvest issues due to wet soils (along wide delayed development). Some small areas are likely complete losses due to flooding. The heavy rainfalls have recharged soil moisture and left very wet fields, which will be slow to dry in the latter part of the warm season and with less active crop growth. Some northern areas may not be able to be harvested until soils freeze or possibly not at all before winter.

To read the full outlook select here.

To sign up to receive these outlooks in your inbox, email charlene.felkley@ars.usda.gov.

Quarterly Climate Impacts and Outlooks

In collaboration with NOAA, NIDIS, and the Midwest Regional Climate Center, we are pleased to provide the following September 2019, Regional Outlooks and Drought Status Update. These can be accessed by clicking on their titles to the right. Select here for a list of all regions.

Missouri River Basin

Midwest Region

Great Lakes Region

Meet the Climate Hub Partners: Molly Woloszyn, Regional Drought Information Coordinator, NIDIS

The success of the Midwest Climate Hub in transferring management practices, decision tools and information to our stakeholders can only be achieved through coordination via a diverse array of regional partners. In that spirit, we would like to highlight one of our partners: ***Molly Woloszyn is a Regional Drought Information Coordinator with the National Integrated Drought Information System (NIDIS), and is the program point of contact for the Midwest Drought Early Warning System (DEWS).***

Molly Woloszyn is a Regional Drought Information Coordinator. She holds a M.S. in Atmospheric Science from Colorado State University and a B.S. in Meteorology from Northern Illinois University. When not working, Molly loves spending time with her family, working out, and relaxing with a good TV show or book.

Molly Woloszyn grew up in, and currently resides in Champaign, Illinois. She was scared of foul weather as a child. Her father however, who was a pilot, would do his best to sooth her worries through explaining the 'how-to's 'and 'what-for's' of weather. Molly was inspired to not only pursue meteorology in her studies and career, but specifically the communication of weather and climate thanks to her father. "A large part of my job as the regional coordinator is building partnerships with many different people in the region. I truly enjoy when I am meeting new people, discussing their work, and exploring ways for our programs to collaborate."

The Midwest Climate Hub (MCH) has called Molly a partner for over 4 years. "MCH has been a great partner for NIDIS in the Midwest region! We collaborate in a multitude of ways – including communicating climate information and its impacts, and helping to identify important needs and gaps when it comes to climate services in the region...I hope to continue to advance the region's resilience to drought in the agricultural sector." We do too Molly!

The Regional Drought Information Coordinators with NIDIS strengthen integrated systems for drought monitoring, forecasting, and planning and preparedness jointly with federal agency partners, tribes, states, municipalities, academic institutions, and other organizations. For more on NIDIS, select here.

For more on the Midwest DEWS, select here.

On the RADAR....

2019 AISES National Conference
Milwaukee, WI: Oct 10-13, 2019

The Annual AISES National Conference is a one-of-kind, three-day event focusing on educational, professional and workforce development! Attendees include American Indian, Alaska Native, Native Hawaiian, Pacific Islander, and First Nation high school and college students, educators, professionals, tribal nations and tribal enterprises, universities, corporations, and government agencies. This conference has become the premier event for American Indian Science, Technology, Engineering and Math (STEM) students and professionals attracting over 2,200 attendees from across the country.

The Midwest Climate Hub will be presenting on Saturday, October 12th from 1430-1520. The session titled 'Agriculture in a Changing Climate: Identifying Tribal Information Needs' will consist of discussions on existing climate/weather information, tools and resources in the framework of agriculture adaptation in a changing climate. Topics will include: how the climate is changing in the Midwest, how climate change/extreme weather events are impacting various crops, the effects on diseases, insects, and soil, and explore what producers are doing to adapt.

Midwest DEWS Regional Partner Meeting
St. Paul, MN: November 19-20

The 2019 Midwest Drought Early Warning System (DEWS) Regional Partner Meeting will bring together federal, state, tribal, local, academic, and other partners from across multiple sectors in the Midwest to share and explore information and ideas that advance drought early warning and preparedness in this 8-state region. Attendees of this meeting will share and discuss ongoing drought activities, learn about new and innovative drought research and resources, explore emerging issues and opportunities, and brainstorm ideas on how to continue to advance the Midwest DEWS.

A registration page with more information is in the works. Select here for updates! For immediate questions, contact Molly Woloszyn at mary.woloszyn@noaa.gov

Charting a New Course for the Mississippi River Watershed
Washington, D.C.: Dec 3, 2019

Host: Renewable Natural Resources Foundation (RNRF). RNRF is pleased to announce our upcoming congress on "Charting a New Course for the Mississippi River Watershed. "The Mississippi River watershed routinely experiences severe flooding events, causing damage to infrastructure, agriculture, the economy, and the environment. Now, climate change is exacerbating this flooding, guaranteeing that the situation will only get worse in the future. A new, radical course needs to be charted. RNRF congress speakers and delegates will discuss impacts of the new climate normal, reimagine management for different sectors of the watershed, and examine the stubborn and long-standing impediments to sustainably managing resources within the watershed. Registration will open in the coming weeks. Mark your calendars!

For more on this meeting, select here.

SD Agri-Business Association Annual Agronomy Conference

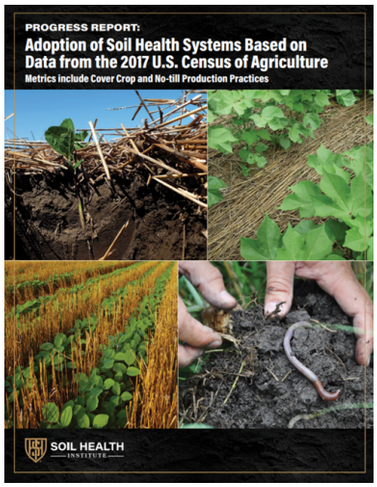
Sioux Falls, SD: Dec 11-12, 2019

The South Dakota Agri-Business Association is pleased to provide the annual Agronomy Conference in December of each year. This conference provides an opportunity to learn the latest trends in crop management and production, as well as to earn 20 CCA credits in just two days.

Justin Mount, USDA Midwest Climate Hub NRCS Liaison and Natural Resource Specialist, will be presenting at SD Agri-Business Association Annual Agronomy Conference on Modeling Row Cropping Systems to understand impacts on soil quality attributes such as soil carbon trends and soil loss estimates as a result of erosion. As precipitation event intensity, timing and location variability continue to increase, join Justin Mount to improve your understanding of why annual row crop farmer soil resource resiliency can be somewhat determined by modeling their cropping system and observing the soil metric Soil Condition Index (SCI). This presentation will briefly discuss observed and predicted rainfall variations across the country, define the functions of a healthy soil, explain what SCI is and why SCI is a soil resource metric for annual row crop farmers plus explain how a cropping system can be modeled using the Integrated Erosion Tool (IET) to include IET outputs plus actions farmers can avoid or implement in order to increase financial resiliency.

Additional Resources

PROGRESS REPORT: Adoption of Soil Health Systems Based on Data from the 2017 U.S. Census of Agriculture



Metrics include Cover Crop and No-till Production Practices: The 2017 Census of Agriculture was released by the U.S. Department of Agriculture on April 11, 2019. The Census represents the most thorough overall assessment of a number of agricultural metrics that is conducted in the U.S. and is conducted only once every five years.

In relation to soil health-promoting practices, the main data that the Census provides is on use of cover crops and tillage. This report provides several tables and maps that were generated by extracting data from the online Census of Agriculture data sets and then analyzing or ranking the data to provide insights into progress with soil health practices, specifically cover crops and no-till. For the full report, select here.

Data in this report is from the USDA Census of Agriculture, both the 2017 and 2012 reports. Analysis was written by Rob Myers, Ph.D., Co-chair of the Soil Health Institute Policy Action Team. Data tables and maps were prepared by Joe LaRose and Rob Myers, both of University of Missouri.

Seeing is not always believing: crop loss and climate change perceptions among farm advisors

Select here for the full article.

As climate change is expected to significantly affect agricultural systems globally, agricultural farm advisors have been increasingly recognized as an important resource in helping farmers address these challenges. While there have been many studies exploring the climate change belief and risk perceptions as well as behaviors of both farmers and agricultural farm advisors, there are very few studies that have explored how these perceptions relate to actual climate impacts in agriculture. Here we couple survey data from United States Department of Agriculture farm service employees with historical crop loss data across the United States to explore the relationship of actual climate-related crop losses on farm to farm advisor perceptions of climate change and future farmer needs..Results suggest that seeing crop loss may not lead to climate change belief, but may drive weather variability perceptions, which in turn affect farm adaptation perceptions. This lends further evidence to the debate over terminology in climate change communication and outreach, suggesting that weather variability may be the most salient among agricultural advisors.

Climate Change Likely to Have Uneven Impacts on Agricultural Productivity

According to ERS productivity statistics, U.S. farm output since 1948 has grown by 170 percent. With little change in the total use of inputs—such as fertilizer, pesticides, labor, machinery, land, and other materials—increases in total factor productivity (TFP, measured as total output per unit of total input use) accounted for more than 90 percent of that output growth. However, TFP growth rates fluctuate considerably from year to year, mostly in response to adverse weather, which can lower productivity estimates. Select here to read more about recent ERS research exploring the relationship between climate change and agricultural productivity.

Article drawn from "Impacts of Climate Change and Extreme Weather on U.S. Agricultural Productivity: Evidence and Projection" by Sun Ling Wang, Eldon Ball, Richard Nehring, Ryan Williams, and Truong Chau. National Bureau of Economic Research, Agricultural Productivity and Producer Behavior, edited by Wolfram Schlenker, University of Chicago Press, 2019

Amber Waves
The Economics of Food, Farming, Natural Resources, and Rural America.

Impacts of land cover and land use change on long-term trend of land surface phenology: a case study in agricultural ecosystems

Vegetation phenological trends during last few decades have been frequently reported and these trends are commonly assumed to result from climate change. With the widespread influence of both human activities and natural processes, however, land cover and land use change (LCLUC) has dominated across various ecosystems in more than one-third of world's land surface. LCLUC could lead to changes in vegetation types and species composition at local to regional scales. Thus, we hypothesize that LCLUC can significantly influence phenological trends at an ecosystem scale....This finding indicates that extensive LCLUC can be the primary driver of satellite-observed phenological trends, especially in intensively managed agricultural landscapes.

For access to the full article, select here.

Diverse Team Assembles to Protect Iconic US Crop from Climate Change

Photo Credit: Anna Locke, Ph.D. (USDA-ARS), the principal investigator of this project

Public-Private Consortium Leverages Benson Hill Biosystems' AI-Driven Plant Biodiversity Engine to bolster soybean adaptation to changing environments: In recognition of the crucial role soybeans play in U.S. agriculture, the Foundation for Food and Agriculture Research (FFAR) awarded a $942,000 Seeding Solutions Grant to the United States Department of Agriculture (USDA) Agricultural Research Service (ARS), alongside scientific partners North Carolina State University and VIB (Institute for Biotechnology in Flanders, Belgium), to improve soybean crop resiliency.

To read more on this collaboration, select here.