

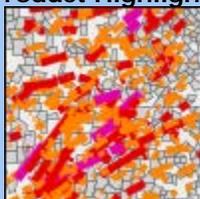


THE CLIMATE OBSERVER

A publication of the *Midwestern Regional Climate Center*

August 1, 2014

MRCC
Product Highlight:



[Tornado Tracks Tool](#)

Climate
Cool Tool:



[Climate Central](#)

Quick Links:

[Temp & Precip](#)

[Growing Degree Days](#)

[Drought](#)

[CPC-Climate Prediction Ctr.](#)

[Natl. State of the Climate](#)



Follow us!



A Real-Time West Nile Virus Threat Tool based on Climate Divisions for Illinois

Dr. Nancy Westcott, Midwestern Regional Climate Center



Since the 2002 introduction of West Nile Virus (WNV) into Illinois, over 1,300 of the severe West Nile Neuroinvasive disease cases have occurred in Illinois, and Peterson (2013) estimated that over 200,000 WNV infections have occurred in persons 16 years of age or older. WNV activity in Illinois was greatest in 2002, 2005, 2006 and 2012, with moderate activity in 2007 and 2013. Generally,

above average temperatures and below average precipitation in the summer months favors WNV, and cool and/or wet summer conditions are not as favorable for WNV. Several climate-based county models have been developed to help predict the onset of WNV in Illinois, one for [Cook and DuPage counties](#) (Ruiz et al. 2010) and one for [Champaign County](#) (Westcott et al. 2011). Results from the verification of these model predictions suggest that climate is indeed an important factor related to the timing and severity of WNV outbreaks.

These two existing WNV models have been calibrated to their local areas, however, and WNV activity can vary throughout the state for a given year. For example in 2007 and 2013 when southern Illinois experienced their highest number of cases, there was only moderate activity in northeast Illinois. One possible cause of the difference in WNV activity is the variation in temperature and precipitation regimes across the state during any given summer. In order to help determine the impact of climate on WNV outbreaks across the state, the Midwestern Regional

Climate Center (MRCC) has launched a new project that focuses on using tool development and research to create a real-time climate-based WNV Threat Tool for each of the nine Illinois Climate Divisions (Figure 1, right).



Fig. 1: Illinois Climate Divisions

A preliminary graphical tool was launched in June 2014, available from the [Illinois](#)

On the Road:

NC - RCC Industry Day
Saudi Arabia - Dept. of Meteorology and Env.
WI/MI/MN - MRCC Summer Road Trip
IL - Climate Change & Chicago Workshop

[State Water Survey's MRCC research web site](#). Click on an individual Climate Division to see the graphics for that region. Currently, a user must compare the current weather parameters with historical parameters to determine whether this might be a high or low WNV case year. It is expected that when temperatures are above normal in June, July, and August, and when there are long periods with little precipitation during the same period, there will be an increased WNV threat.

This tool is expected to change in design and in content over the next year, and is not meant to replace the two county-based models. A long range goal is to develop an empirically-based WNV Threat Index for use in future years. Both the graphical model and the future WNV Threat Index (will) use daily values of a) accumulated temperature departure from normal (ATD) and b) accumulated precipitation departure from normal (ADP), plus 10-day forecasted (dotted) ATD and 3-day forecasted APD (Figure 2).

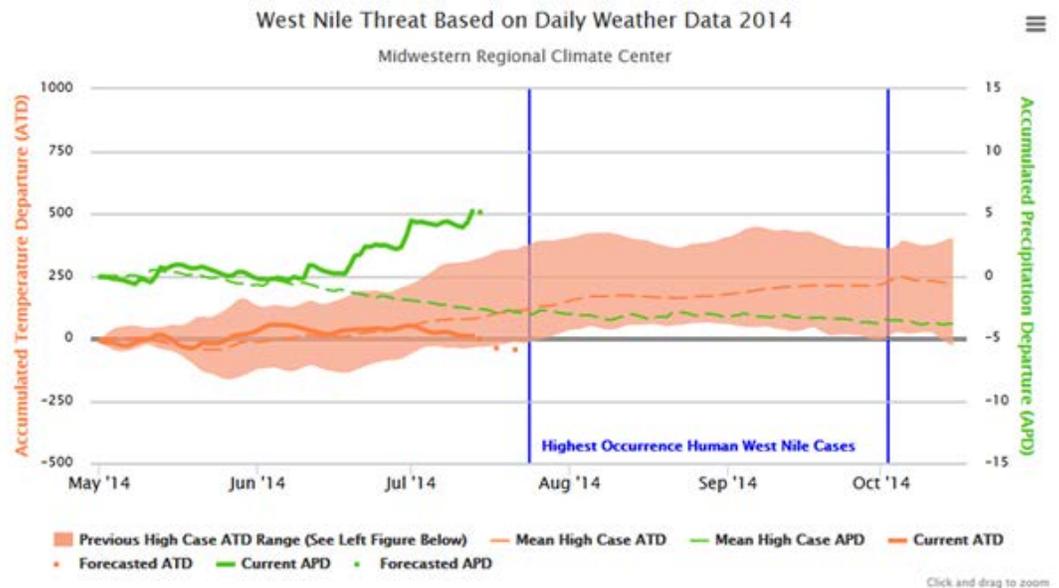


Figure 2. For Climate Division 2 (northeast Illinois): current (bold solid, as of 07/14/2014) and mean (dashed) ATD and ATP values

When ATD is above the zero line (hot temperatures), particularly in July and August, and APD is below the zero line or steadily decreasing (dry or drying conditions) in July and August, a higher incidence of WNV is expected (Figure 3).

Years with high number of West Nile Virus Cases

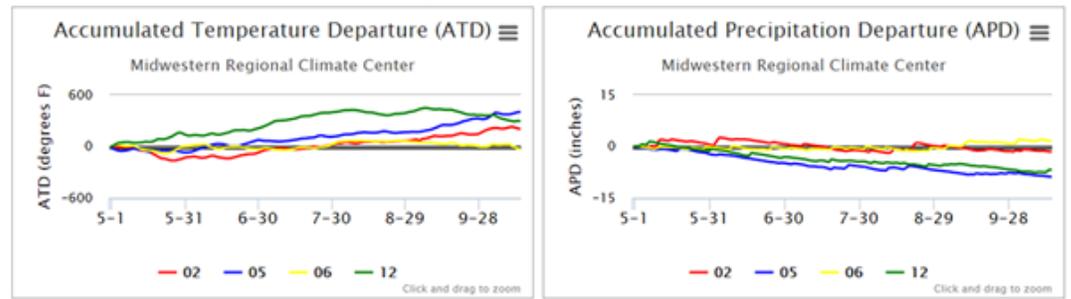


Figure 3. For Climate Division 2 (northeast Illinois): ATD and APD values for years with a high number of WNV cases. An increased risk of human WNV cases is associated with ATD values above the zero line (hot) and APD values below the zero line (dry) and/or steadily decreasing (drying), particularly in July and August.

Cold summers tend to have a late onset of WNV. Wet summers often result in a lower incidence of WNV (Figure 4). The Statistical Modeling Branch of the Meteorological Development Laboratory of the National Weather Service Office of Science and Technology provided the climate division forecast data.

Years with low number of West Nile Virus cases

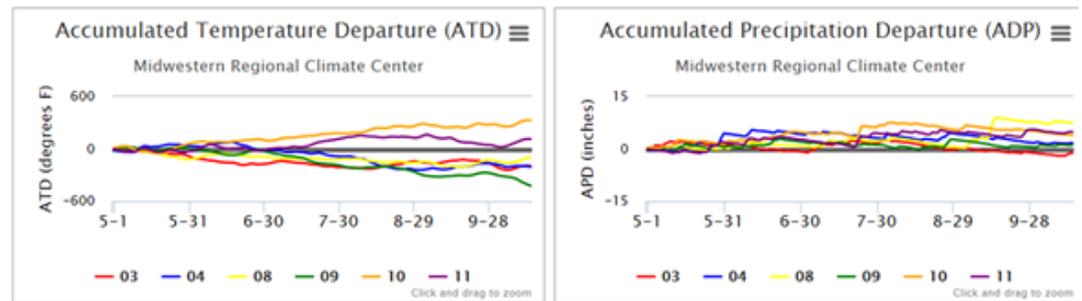


Figure 4. For Climate Division 2 (northeast Illinois): ATD and APD values for years with a low number of WNV cases. Lower risk of human WNV cases is associated with APD values above the zero line and/or increasing (wet conditions), particularly in July and August.

Currently, the WNV Threat Index tool does not provide any information on the timing of the peak in human WNV cases. However, in the near future, an important change to the tool will be the inclusion of real-time WNV-positive mosquito case data. The mosquito sample data will be provided by the Illinois Department of Public Health and can be a good predictor of the peak in human samples.

Differences in environmental conditions (mosquito habitat), differences in human and bird behavior, the impact of mosquito abatement, and differences in the target human population may also impact the frequency of WNV cases. While not a guarantee, it is hoped that this experimental tool will help indicate the current years' severity of WNV

threat throughout Illinois. The models will be fine-tuned this summer and next. To help make the tool more user-friendly, send in questions and comments to nan@illinois.edu.

The Illinois WNV-carrying mosquitos (*Culex pipiens*) typically come out at night. To keep safe, wear long-sleeves outside during nighttime hours and use insect repellent. In addition, *Culex pipiens* breed in stagnant water. Dump the water from containers in your yard and keep your gutters clean! To check statewide activity for WNV go to the [Illinois Public Health website](#) and the [Center for Disease Control and Prevention website](#).

Article References:

Peterson, L.R., P.J. Carson, B.J. Biggerstaff, B. Custer, S.M. Borchardt, and M.P. Busch, 2013: Estimated cumulative incidence of West Nile virus infection in US adults, 1999-2010. *Epidemiology and Infection*, 141, 591-595.

Ruiz, M.O., L.F. Chaves, G.L. Hamer, T. Sun, W.M. Brown, E.D. Walker, L. Haramis, T.L. Goldberg, and U.D. Kitron, 2010: Local impact of temperature and precipitation on the West Nile virus infection in *Culex* species mosquitoes in northeast Illinois, USA. *Parasites and Vectors*, 3, 1-16.

Westcott, N.E., S.D. Hilberg, R.L. Lampman, B. W. Alto, A. Bedel, E.J. Muturi, H. Glahn, M. Baker, K.E. Kunkel, and R.J. Novak, 2011: Predicting the Seasonal Shift in Mosquito Populations Preceding the Onset of the West Nile Virus in Central Illinois, *Bulletin of the American Meteorological Society*, 92, 1173-1180.

For more information on this article or the [West Nile Virus research project](#), please contact Nancy Westcott via email at nan@illinois.edu

[^Top](#)

MRCC Now Hiring Climatologist Positions

Dr. Beth Hall, Director, MRCC



The Midwestern Regional Climate Center is pleased to be in a position to hire two climatologists that will help the center continue to provide climate data, information, outreach and research findings to the region's stakeholders.

[The first position is a Visiting Climatologist](#) with either a PhD or in "all but dissertation (ABD)" status with PhD completion within 12 months of hire. This qualified candidate

will be assisting the MRCC in communicating, assessing, and monitoring climate conditions from around the MRCC's 9-state region. He or she will also be developing, organizing, and hosting climate partner and stakeholder workshops and marketing the MRCC on regional road trips. Duties also include writing weekly and monthly climate summary reports on the climate conditions of the region (e.g., impacts, extremes, patterns) and participating in media interviews and press releases. The Visiting Climatologist will be aiding in the development of value-added climate tools and applied climate research. Climate tools are often designed to help better assess and monitor either present or past climate conditions. It is expected that the candidate will initiate, participate, and contribute to the pursuit of external funding and lead applied climate research, resulting in peer-reviewed publications.

The second position, which will be announced soon, is for a *Visiting Service Climatologist* in the MRCC's Service Office. A full description and links to apply for this position will be posted on our website as soon as it has been approved. Stay tuned!

For more information on this article, please contact Beth Hall via email at bethhall@illinois.edu

[^Top](#)

Best Wishes to Allan Curtis!



Allan Curtis led the MRCC's Service Office from October 2012 through July 2014. He recently accepted a new position as Meteorologist Intern at the National Weather Service (NWS) Forecasting Office in Des Moines, IA. While at the MRCC, in addition to leading the Service Office, he contributed to the development of several informational and resource pages on the MRCC website, co-coordinated science fairs, participated in several MRCC regional road trips that allowed him to meet with many of our stakeholders, and was an expert on all of the nuances associated with the many observational atmospheric data sets that the MRCC provides to the public. His climatological contributions and overall positive energy and enthusiasm will be missed. We know he will fit right in at his new job and we look forward to continuing to work with him as one of our NWS partners well into the future!

[^Top](#)

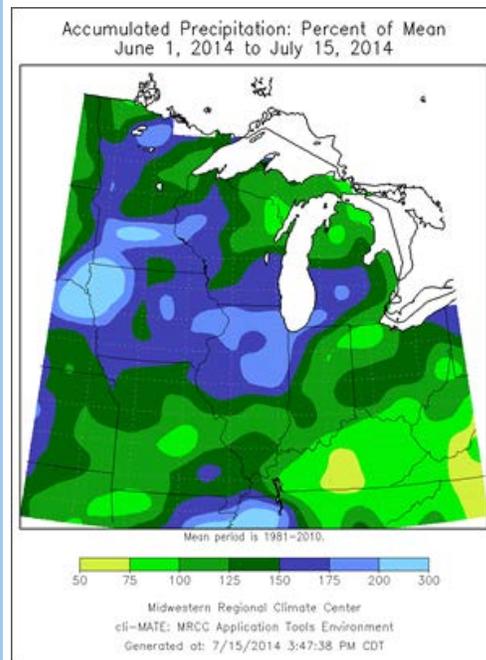
The MRCC Website Has a New Look and Layout — [please take a look!](#)

We would love your feedback on our redesigned site. Please feel free to give us your feedback at [About Us > Contact Us](#) via email or online form.

The screenshot shows the MRCC website homepage. At the top is the MRCC logo and a navigation menu with links: About Us, Data & Services, Midwest Climate, Resources, Research, Multimedia, and Home. Below the menu is a large map titled "Mesonet 4' Soil Temperature (°F) 7-Day Period Through 7/14/2014". The map shows temperature variations across the Midwest, with a legend on the right ranging from 60-65°F to 75-80°F. Below the map is a section titled "4-Inch Soil Temp for 7-Day Period" with navigation dots. To the right is a "New on MRCC:" section with several bullet points: "Cool Start to July" (temperatures 5°F below normal), "Have you ever wondered what tornadoes have gone through your area in the past?" (Tornado Track Tool), "Looking for CDM or West Nile Virus pages?" (Research section), and "The Silver Jackets' 'Great Flood of 1913'" (Resources > Climate Links > Notable Events). On the far right is a sidebar with "Drought Resources", "Vegetation Impact Program (VIP)", "Midwest Climate Watch", "cli-MATE MRCC APPLICATION TOOLS ENVIRONMENT", "Living With Weather", and "Like us on Facebook!".

[^Top](#)

Midwest Climate at a Glance - Summer 2014 So Far



As of mid-July, summer 2014 has been wetter than normal across much of the Midwest (see graphic). In terms of temperature, so far summer 2014 temperatures average near normal. However, individual months show slightly above normal temperatures in June and slightly below normal temperatures so far in July.

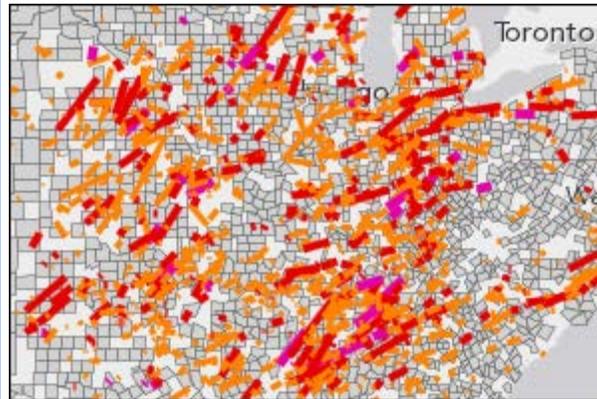
June 2014 was a rainy month for a majority of the Midwest, with much of the region receiving at least 5" of precipitation. Eight out of nine Midwest states had above average precipitation in June, with the greatest departure of +4.30" in Iowa. Kentucky was

the only state with below normal precipitation in June (-0.37" below normal). Average temperatures in June in the Midwest ranged from near normal in the west to slightly

above normal further east. June was also an active month for severe weather, with 25 of the 30 days having at least one severe weather report in the region. Read more about June 2014 in the [Climate Watch monthly overview](#).

[^Top](#)

MRCC Product Highlight



Have you ever wondered what tornadoes have gone through your area in the past? The new, one-of-a-kind [Tornado Tracks Tool](#) from the Midwestern Regional Climate Center allows you to search historical tornado tracks from 1950 to present using an interactive and easy-to-use GIS format.

You can filter tornadoes by magnitude (F/EF0-F/EF5), by year range, or by zooming in or out to view a certain area. By clicking on a county, you will be provided a complete tornado track map for that county from 1950-2013. If you click on a specific tornado track, a window will provide additional information about that tornado (i.e. magnitude, date, time, injuries, fatalities, length, and width).

[^Top](#)

Climate Cool Tool



Founded in 2008 by leading scientists and communications experts at Princeton, Yale and Stanford, [Climate Central](#) brings together award-winning journalists and internationally recognized scientists to report the science and impacts of climate change through its

research and journalism programs. A core program of Climate Central, called [Climate Matters](#), delivers localized information on weather and climate to weathercasters around the U.S., providing ready-to-use, broadcast quality graphics and analyses that put [climate change in a local context](#). Launched in 2010 with our partners at George Mason, Yale, American Meteorological Society, and the National Weather Association as a

National Science Foundation-funded pilot project with just one TV meteorologist – [Jim Gandy at WLTX in Columbia, South Carolina](#) – the program has grown to a network that includes more than 150 weathercasters across the country, including a recent expansion to [Spanish-language stations](#). While the content is geared toward television meteorologists, the localized data and graphics can be of broad use to climate science educators.

To find out more, contact Bernadette Woods Placky at bpplacky@climatecentral.org.

[^Top](#)

MRCC On The Road



Asheville, NC (July 31) – Regional Climate Center Industry Day
Dr. Beth Hall will be attending.

Jeddah, Saudi Arabia (August 8-22) - Saudi Arabia Meteorology and Environment

Dr. Nancy Westcott will develop a "Climate Data Rescue" plan for the Saudi Arabian Department of Meteorology and Environment to help further that country's efforts to preserve historical climate data.

Wisconsin, Michigan, and Minnesota (end of August) - Summer MRCC Road Trip

Beth Hall and Mike Timlin will be visiting our region's northern tier of upper Wisconsin, Michigan, and Minnesota (from Duluth to Green Bay) on the Summer MRCC Regional Road Trip. If you're up in that region and would like for us to stop by, please [contact Beth](#) and let her know!

Chicago, IL (September 30) – Climate Change & Chicago Workshop

The MRCC, Illinois-Indiana Sea Grant, Illinois State Climate Office, and the Chicago Metropolitan Agency for Planning are co-hosting a workshop in Chicago that will focus on providing Chicagoland planners, municipal staff, and educators information on climate change specific to northeastern Illinois and tips on how to plan for the future based on the recent findings of the National Climate Assessment. More details to come soon!

[^Top](#)

Need Climate Data?

[Ask about](#) our [Online Climate Data Resources](#) (cli-MATE) or [Request some data!](#)

Can't Find a Climate Product?
[Let us know!](#)

[Email us](#) your local climate impacts! We are constantly keeping a log of how climate is impacting our region, and our information would not be complete with YOUR help!

Have something to share as a feature article in an upcoming *The Climate Observer* issue, or interested in being contacted for an article interview? [Please let us know!](#)

[Read the full newsletter](#) | [Subscribe](#) | [Newsletter Archives](#) | [Unsubscribe](#) | [Privacy](#)

The MRCC is a partner in a national climate service program that includes the [NOAA National Climatic Data Center](#), [Regional Climate Centers](#), and [State Climate Offices](#).

MRCC is based at the Illinois State Water Survey, a division of the Prairie Research Institute at University of Illinois Urbana-Champaign.

©Copyright 2014. Midwest Regional Climate Center

