



# THE CLIMATE OBSERVER

A publication of the *Midwestern Regional Climate Center*

July 23, 2013

## MRCC Returns to the Wolverine State

*Beth Hall, MRCC Director*



There are some states in the U.S. that seem to always be a joy to visit...

I hear Hawaii is one of them! But, since it has been difficult to convince the Powers That Be to add Hawaii to the Midwestern region, Michigan has made a strong argument for a solid runner-up to the contest. Sure, Michigan may not have the pineapple industry or luaus that Hawaii seems to be known for, but that might be the end of the differences, right? (Keep an open mind, here). Both states have beaches. Both states are known for their fruit industry. Both states can find

themselves in the path of some pretty impressive storms, and both states have dunes to brag about. What else could there be?

Well, Allan Curtis (MRCC assistant climatologist) and I were pretty impressed by what Michigan has to offer. We had the opportunity to meet with members of Michigan State University's Extension team that focuses on Michigan fruit – Mark Longstroth and Nikki

Rothwell. One truly begins to appreciate all the work and relationships that Land Grant Extension personnel engage in and how much they seem to enjoy their jobs. Mark invited us to his Monday meeting with local growers where we got to meet a group of about 30 fruit growers from southwest Michigan. We were given

several minutes to share the MRCC's latest efforts involving our [Vegetation Impact Program \(VIP\)](#)

initiative, and in particular, the relatively new frost/freeze project. Feedback from the growers seemed so positive that we were offered fresh cherries from the trees. To give an example of how "city girl" I am, this was the first time I ever ate ANYTHING directly from a tree, let alone cherries! They were wonderful. If anyone is ever in southwest Michigan, be sure to stop by one of the many wonderful fruit growers!



Sweet Michigan Cherries.  
Photo courtesy Fruit Acres Farms website.

### MRCC Product Highlight:



[Mobile Maps Web App](#)

### Climate Cool Tool:



[NCAR Climate Data Guide](#)

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[Natl. State of the Climate](#)



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**On the Road:**

**IL** - National Great Rivers  
Symposium

**KY** - Ohio River Basic Alliance  
Conference

**IL** - American Planning Assn.  
Meeting

**MO Area** - MRCC Road Trip

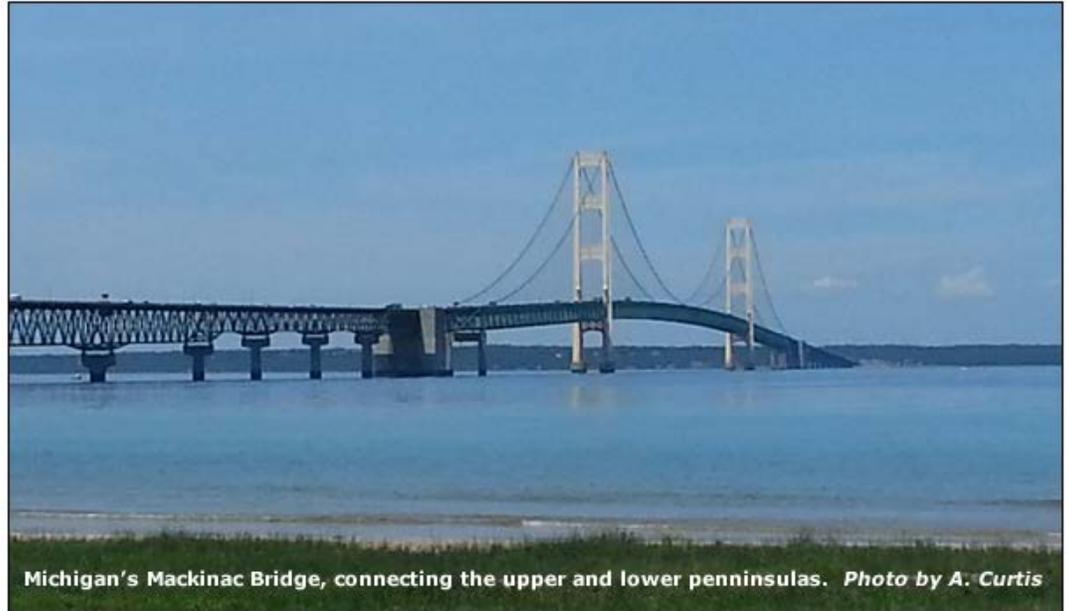
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Visiting the Gaylord, Michigan NWS office. Left to right are Bruce Smith, Meteorologist in Charge; James Keysor, Warning Coordination Meteorologist; and Allan Curtis, MRCC Assistant Climatologist.

folks LOVE their weather! Grand Rapids was anxiously awaiting a nice summertime storm making its way across Lake Michigan. Gaylord seemed excited to learn more about the frost/freeze program started this past spring, and shared with us some of the climate impacts from the northern part of the Lower Peninsula. While neither office visit seemed to time well with their climate focal point forecaster being present (we believe this was a ploy to keep the MRCC returning), the hosts to our visits were extremely gracious and even volunteered their "missing" staff to write a future article for *The Climate Observer*! We can't wait to read those articles, indeed. We thought we had hit all Michigan NWS offices in 2013, but low and behold, did you know there are FOUR NWS offices in Michigan? (I wonder how many Hawaii can brag about!). Yes, the Upper Peninsula also hosts an office in Marquette.

No MRCC road trip would be complete without stopping by a few National Weather Service offices. Leslie Stoecker and I had visited the Detroit NWS office in February, so Allan and I decided to stop by both the Grand Rapids and Gaylord offices on this trip. True to their reputation, these



Michigan's Mackinac Bridge, connecting the upper and lower peninsulas. Photo by A. Curtis

We weren't able to make it to Marquette on this trip, but we did manage to drive across the Mackinac Bridge toward Sault Ste. Marie. Neither of us brought our passports, so there was a bit of concern that a wrong turn would end up having us requesting asylum in Canada (is that how it works?). Always wanting to reach out to our climate partners in tribal communities, Dwight Sargent was gracious enough to spend some time talking with us to learn more about the services and expertise of the MRCC. Dwight is an environmentalist with the Intertribal Council of Michigan and climate change is becoming more and more evident among the tribal communities – particularly those heavily dependent upon hunting and gathering. Days, if not years, could be spent learning more and more about those communities. But alas, Champaign, IL was surely missing us by this point, so Allan and I had to start heading south.



At Central Michigan University, Allan (far left) and Beth (far right) are with (l-r) Ashton Peyrefitte, Marty Baxter, and Leigh Orf, faculty with CMU's Department of Earth and Atmospheric Sciences.

Anyone know of any young adults thinking about majoring in atmospheric science? Central Michigan University has a wonderful undergraduate program! Marty Baxter and his faculty at CMU were awesome

hosts to Allan and me. They are continually expanding and even building a focus on climatology. Their department offers many resources to their students and they are clearly excited about learning new ways for their students to get involved with internships, research projects, and other mentoring opportunities with fellow institutions.

And finally, no road trip is complete without stopping to visit with the state climatologist. Jeff Andresen, Michigan's state climatologist, is fantastic at his job and makes anyone feel like family when you meet him. Located at Michigan State University, he seems to have all the connections. Therefore, he arranged a meeting with the US Forest Service in East Lansing. With my research background in wildfire climatology, I always love getting together with some colleagues involved with any sort of atmospheric-wildfire research. The partnership opportunities between MRCC and USFS seemed promising and we hope to engage in many more conversations with them in the future.

While this wrapped up our Spring 2013 MRCC Road Trip, there isn't too much time to relax. The MRCC still hasn't made an official Road Trip visit to Missouri, so that state and surrounding regions are on our list for the next visit. If you are in Missouri or one of her neighboring states, "Show Me" via email that you are interested in a visit and we'll do our best to drop by and say hi!

*For more information on this article or the [MRCC](#), please contact Beth Hall via email at [bethhall@illinois.edu](mailto:bethhall@illinois.edu)*

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## **Volunteer Observers Make E-T Measurements**

***Steve Hilberg, CoCoRaHS Illinois State Coordinator***

Originating in Colorado in 1998, the Community Collaborate Rain, Hail, and Snow Network (CoCoRaHS) has historically focused on measuring precipitation, or the amount of water that comes from the sky. However, knowing how much water returns to the atmosphere is just as important. Therefore, volunteer observers with CoCoRaHS are now making evapotranspiration measurements in 38 states across the country, providing the information needed to determine the "water balance" in a given area.



Evapotranspiration (ET) is the sum of evaporation from ground surfaces and the transpiration of water to the atmosphere from plant leaves. ET is a function of temperature, wind speed, relative humidity, and solar radiation. Transpiration occurs when the roots of a plant draw moisture from the soil where it moves up through the

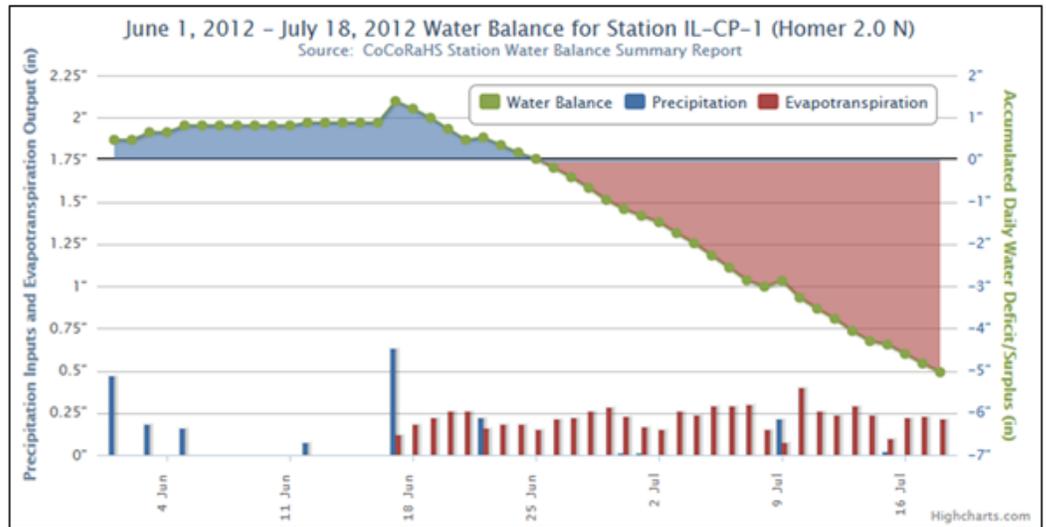


The CoCoRaHS E-T Gage

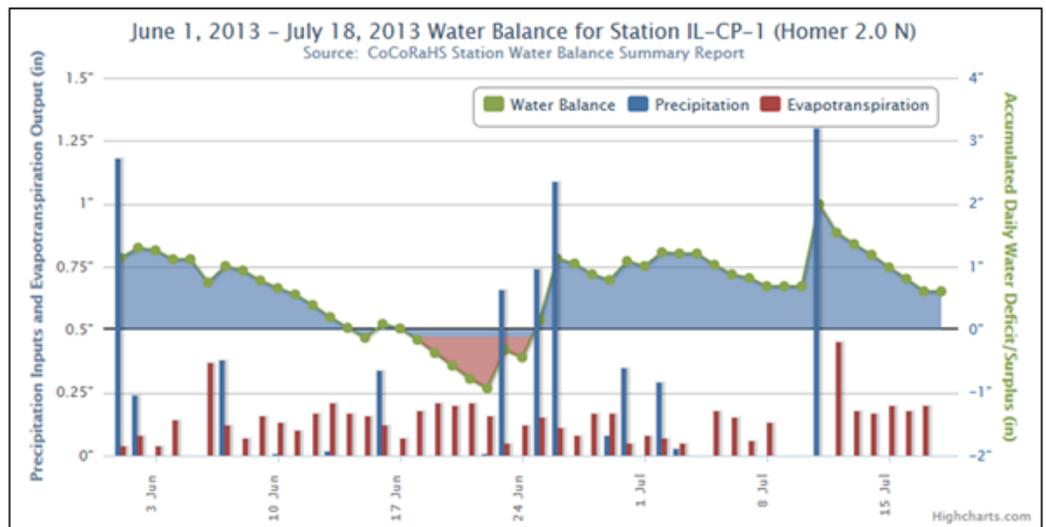
plant to be released as water vapor from the leaves. On average, more than half the precipitation that falls is returned to the atmosphere through ET. Studies show that transpiration by vegetation accounts for about 10% of the moisture in the atmosphere. Amazingly, an acre of corn can transpire about 3,000 to 4,000 gallons of water per day. The transpiration from agricultural crops is often significant enough contribute to the higher dew point temperatures that create muggy conditions during the summer and may enhance the formation of showers and thunderstorms. Conversely, the reduction in transpiration, such during drought, reduces the return of moisture to the atmosphere, which in turn inhibits the development of showers and thunderstorms.

Beginning last year, a number of CoCoRaHS observers have been measuring evapotranspiration, the "return" side of the water cycle (or what is going back into the atmosphere) during the growing season. Evapotranspiration measurements actually began in mid-2011 with a few volunteers as a pilot project. Last spring the opportunity to make ET measurements was opened up to the observers at large. At present there are about 90 observers participating.

The measurements are made using a special ET gauge developed for this purpose. The gauge consists of a water reservoir, with a cap consisting of a ceramic evaporator surface with a green fabric cover. The fabric used by CoCoRaHS simulates evaporation over turf, so the gauge needs to be sited in a sunny, exposed area and preferably over grass. Observers measure "reference ET" which is defined as "the ET from an extensive surface of clipped grass... that is well-watered, and fully shades the ground." This reference ET is referred to as ETo .



Water Balance Chart for June 1 to July 18, 2012 in east-central Illinois. The development of drought conditions is clearly seen in the progressively negative water balance.



Water Balance Chart for June 1 to July 18, 2013 in east-central Illinois. In contrast to 2012, frequent precipitation in 2013 has kept the water balance on the positive side.

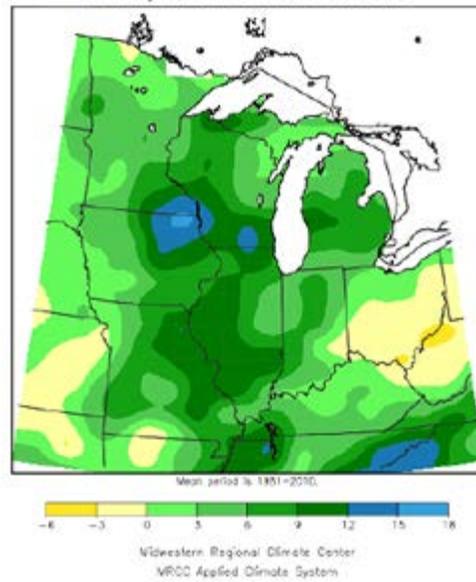
The measurement of both precipitation and evapotranspiration allows us to calculate an atmospheric water balance. Knowing the atmospheric water balance for a location benefits agriculture, lawn care, weather prediction, hydrology, and much more. Water balance charts are available on the [CoCoRaHS web site](#). The charts show precipitation, ET, and the accumulated difference over time. [Visit the Reference Evaporation page](#) on the CoCoRaHS website for more information.

For more information on this article or [CoCoRaHS](#), please contact Steve Hilberg via email at [hberg@illinois.edu](mailto:hberg@illinois.edu)

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## Midwest Climate at a Glance

Accumulated Precipitation (in): Departure from Mean  
January 1, 2013 to June 30, 2013



Following the drought-stricken 2012, the first six months of 2013 are off to a record wet start in much of the Midwest. Year-to-date regional precipitation totals rank as the wettest January to June period on record (records start in 1895) for the Midwest as a whole. Region-wide precipitation for January through June 2013 was 23.71 inches, just over six inches above normal. This was very different than 2012, when January to June precipitation for the Midwest ranked 18th driest with only 14.82 inches during the first half of the year.

January to June statewide values also ranked as the wettest in Illinois (29.11 inches), Iowa (24.93 inches), Michigan (20.80 inches), and Wisconsin (21.85 inches). Three additional states, Minnesota (3rd), Indiana (8th), and Missouri (9th), ranked among the top 10 wettest on record. Kentucky ranked as the 27th wettest while Ohio ranked as the median value (60th) in the 119-year record. More details are available in the [Midwestern Regional Climate Center press release from July 15th](#).

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## MRCC Product Highlight

MRCC Mobile Maps  
Midwestern Regional Climate Center

Select maps from the past seven days below - tap map for scaleable version

Cooperative Federal Precipitation (2013-01-01 to 2013-06-30)

MRCC

Current -1 Days  
-2 Days -3 Days  
-4 Days -5 Days  
-6 Days -7 Days

Do you need to know how hot it was yesterday in Iowa, or how cold it was in Wisconsin this morning? The MRCC is converting its extensive suite of maps and climate data products to a format suitable for mobile devices, which can be found on the [MRCC Mobile Maps](#) page. The first of the products available is from the popular Midwest Climate Watch webpage, including maps of maximum and minimum temperature, precipitation, snowfall, growing degree days, drought, and soil moisture are available for the nine-state Midwest region for the current day, previous seven days, and for some variables, the last 30 days. The list of available products will continue to expand in the future, so

users should check back often to see what has been added.

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## Climate Cool Tool



Like an insider's guidebook to an unexplored country, the [NCAR Climate Data Guide](#) provides the key insights needed to select the data that best align with your goals, including critiques of data sets by experts from the research community. The Climate Data Guide will be a living repository for the climate community's collective wisdom and expertise on a broad array of observational datasets and their appropriate use in analyses and model evaluation. In addition, the Climate Data Guide also provides the opportunity for the expert-user to contribute. So, if you are a dataset developer or frequent user, please consider taking some time to contribute to this site.

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## MRCC On The Road



### **Alton, IL (August 5-6) - National Great Rivers Research and Education Center Symposium**

Nancy Westcott will be attending the National Great Rivers Research and Education Center Symposium, where student intern Iain Konigsberg will be presenting a poster and talk, "The Association between Precipitation Events and Flooding of the Mississippi River between 1851 and 2010".

### **Louisville, KY (August 19-21) - Ohio River Basin Alliance Conference**

Beth Hall will be meeting with partners during the Ohio River Basin Alliance Conference to continue collaboration on the Ohio River Basin's Climate Change project.

### **Chicago, IL (August 23) - American Planning Association Meeting-Chicago Metro Section**

Molly Woloszyn will be presenting on climate change and the changing climate conditions in the Chicago metropolitan region at the American Planning Association meeting, as a follow-up to the [adaptation toolkit](#) that the MRCC helped develop with the Chicago Metropolitan Agency for Planning.

### **Missouri Area (August 26-30) - MRCC Road Trip**

Mike Timlin and Beth Hall will travel throughout Missouri and surrounding states to visit with current and potential climate partners.

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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!](#)

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