



# Ohio River Forecast Center Decision Support Service Overview

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*NOAA / National Weather Service*

*Ohio River Forecast Center*

**Kentucky Farm Bureau  
Water Management Working Group  
January 28, 2016**



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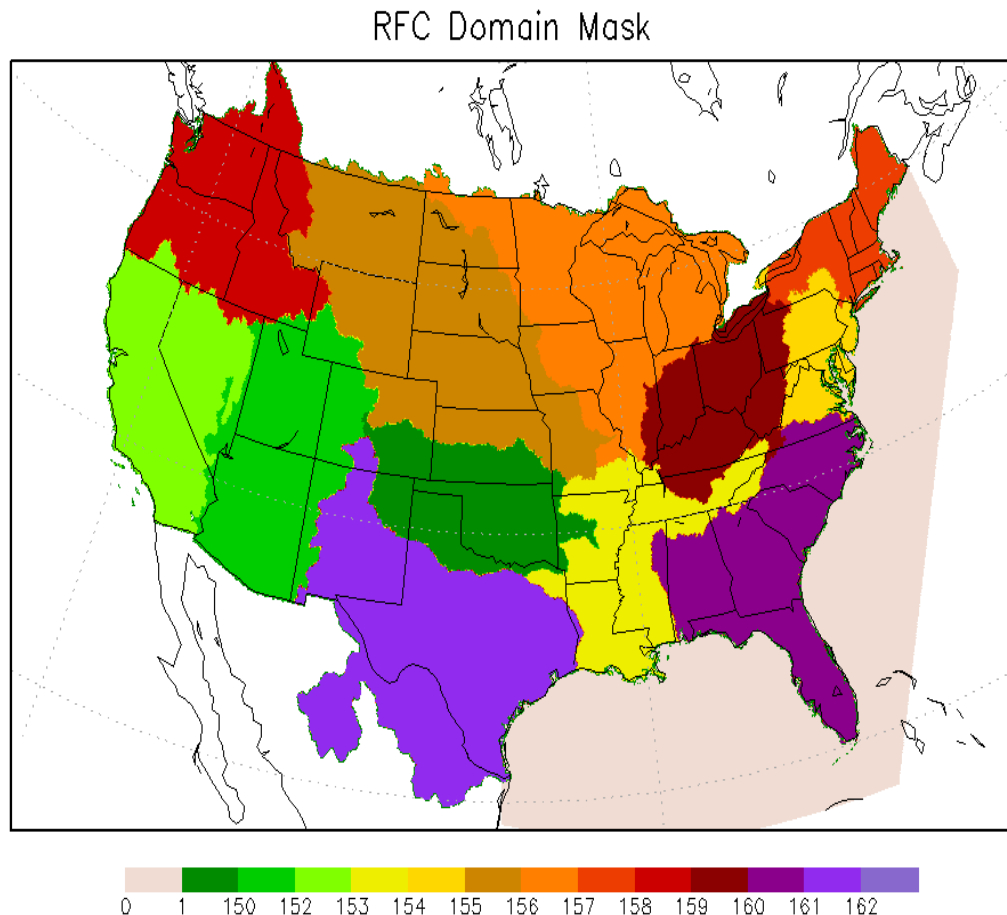


# NOAA/NWS/River Centers



**The Ohio River Forecast Center covers all of Kentucky except the far west.**

**NOAA/National Weather Service RFCs have transitioned from flood centers to water resource centers**



<http://weather.gov/ohrfc>



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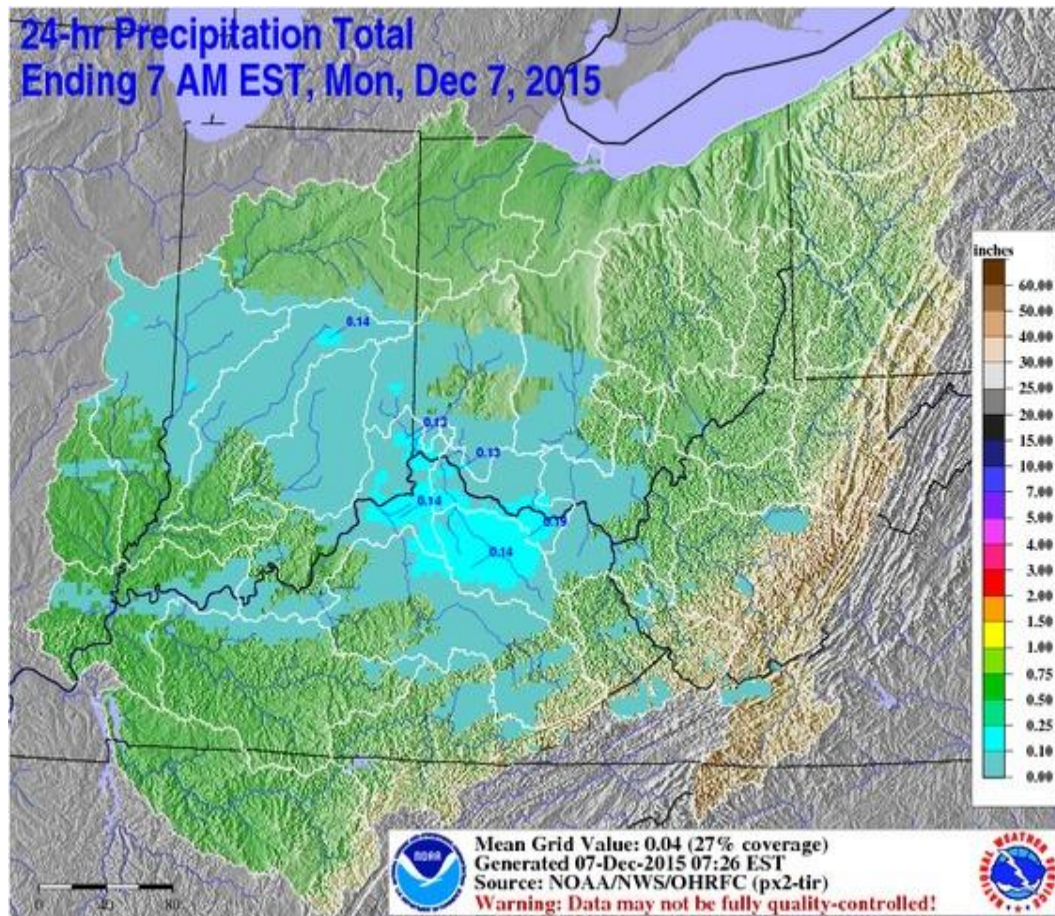
# Precipitation



**4km resolution hourly  
precipitation grids**

**Includes radar, rain gages  
from 1-24 hour durations.**

**Team of meteorologists at  
each RFC that QC  
precipitation**



<http://weather.gov/ohrfc>



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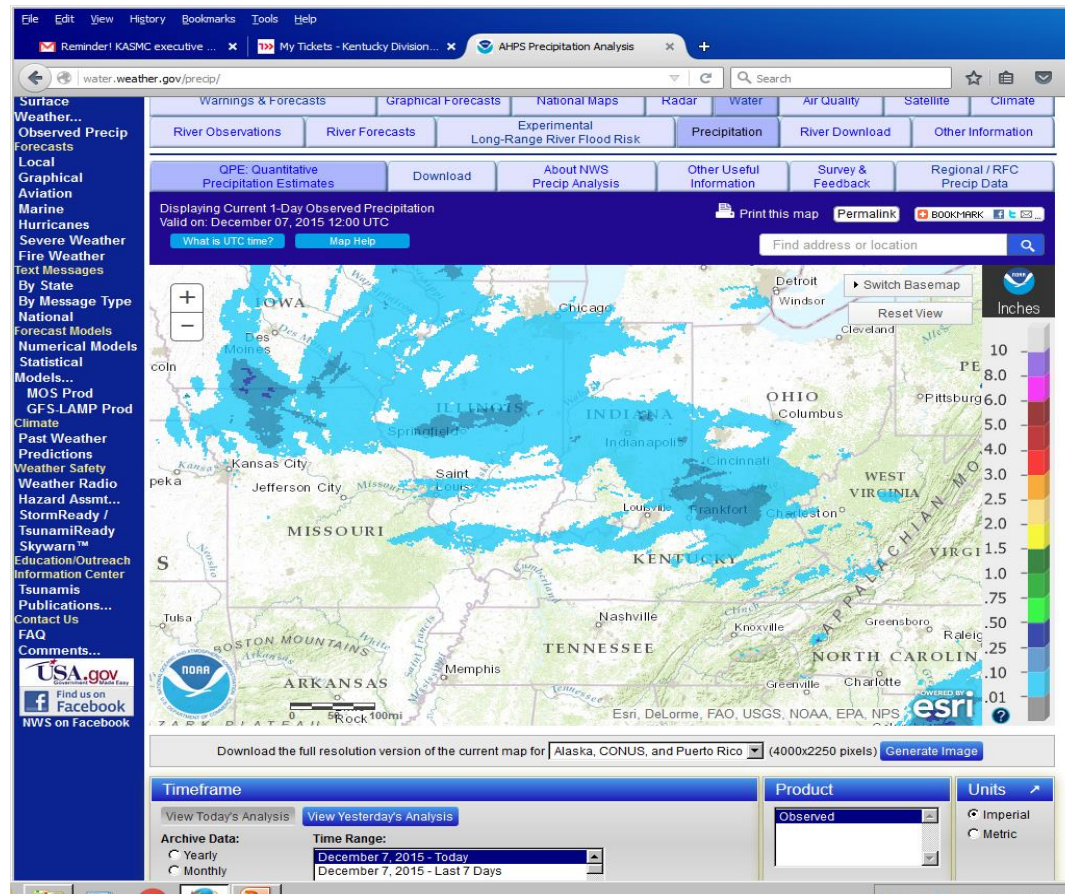


# National Precipitation Analysis



<http://water.weather.gov/precip/>

- Current precipitation data (today through year to date)
- Archive plots of Daily / Monthly / Annual Data
- Comparison to Normal



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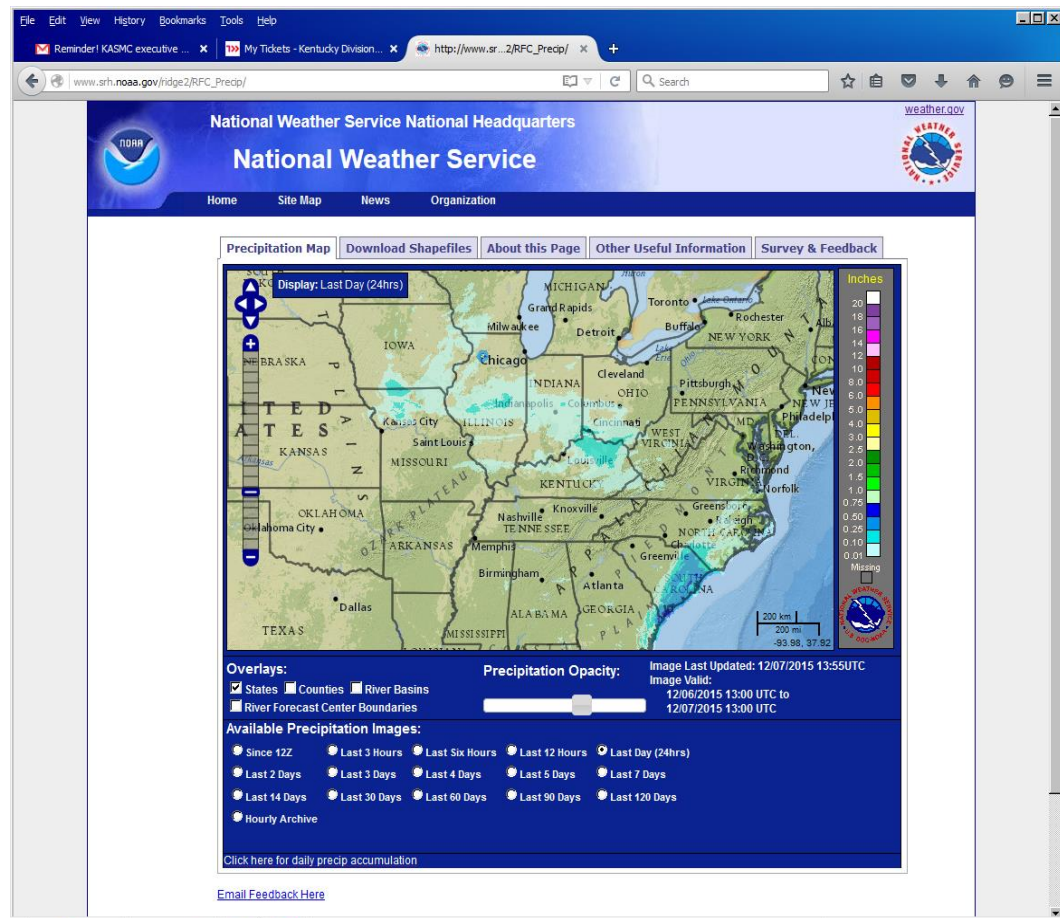


# National Precipitation Analysis



[http://www.srh.noaa.gov/ridge2/RFC\\_Precip/](http://www.srh.noaa.gov/ridge2/RFC_Precip/)

- Current precipitation data (3 hrs through 120 days)
- Hourly precipitation archive available

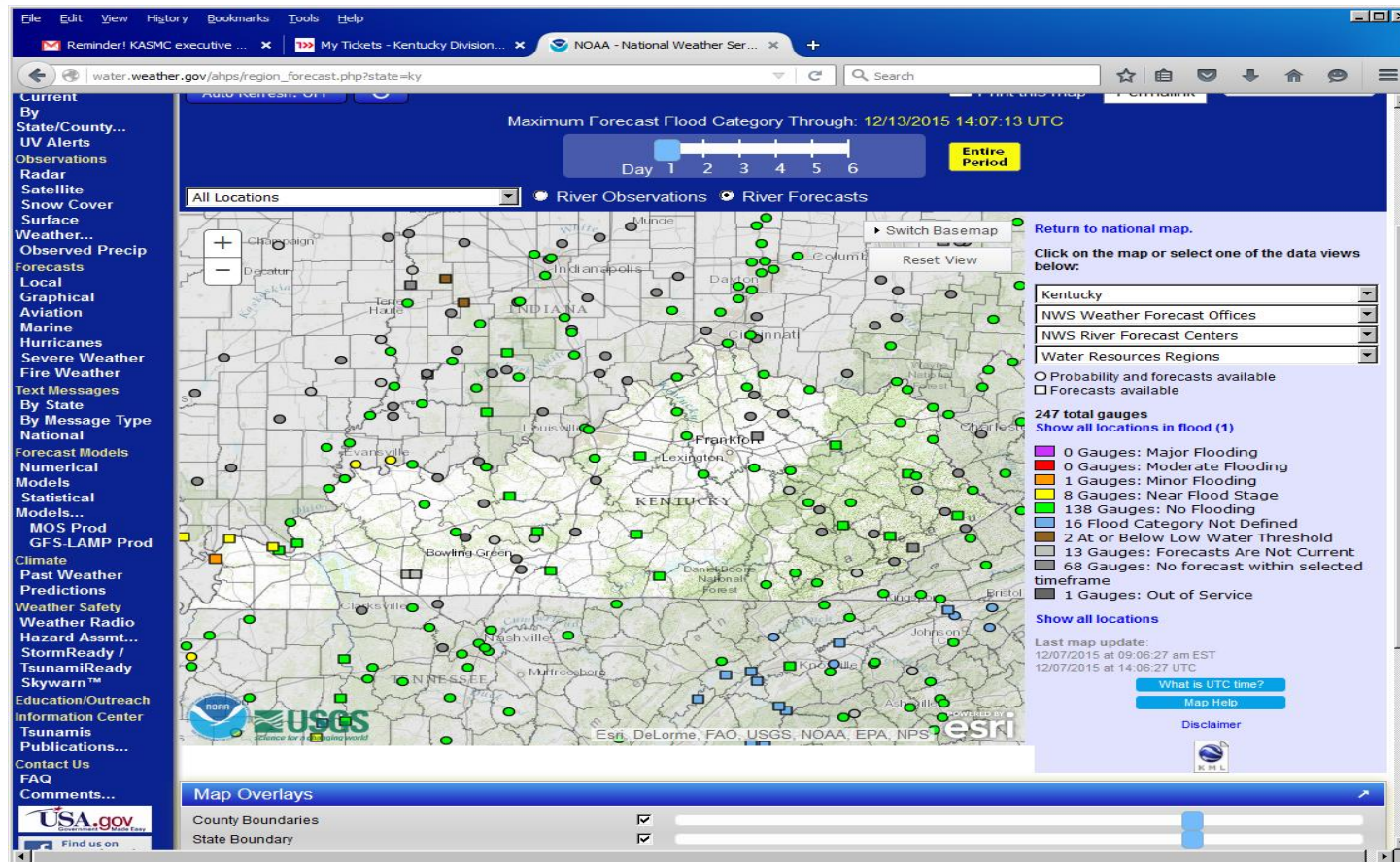


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# Forecast Flood Risk



Forecast Flood Risk can be found here:

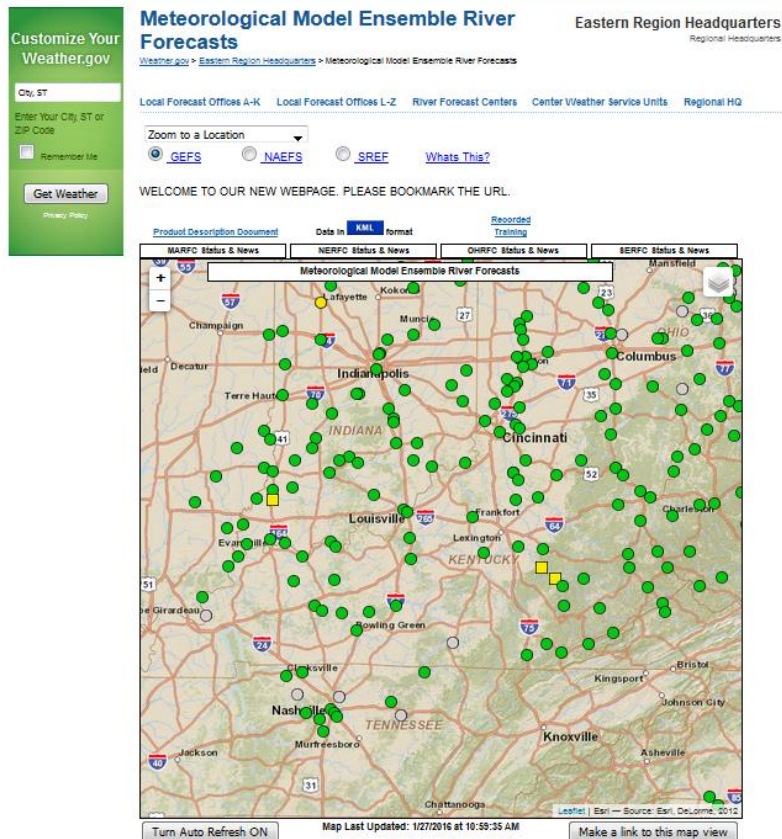
[http://water.weather.gov/ahps/region\\_forecast.php?state=ky](http://water.weather.gov/ahps/region_forecast.php?state=ky)



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# Short-Range Ensemble Forecasts



<http://www.weather.gov/erh/mmefs>

Uses rainfall (snowmelt) from up to 42 weather models to quantify flood risk over next 3 to 7 days

News Legend		
News items less than 24 hours old	News items 1 to 7 days old	No current news items
Map Legend		
Chance of Exceedance		River Forecast Centers
30%	Level	70%
Yellow dot	Action	Middle Atlantic River Forecast Center
Orange dot	Minor Flood	Northeast River Forecast Center
Red dot	Moderate Flood	Ohio River Forecast Center
Purple dot	Major Flood	Southeast River Forecast Center
Green dot	less than 30% chance of reaching Action level	
Grey dot	no critical levels defined for this point	



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# Short-Range Ensemble Forecasts



<http://www.weather.gov/erh/mmefs>

**Meteorological Model Ensemble River Forecasts** Eastern Region Headquarters

Customize Your Weather.gov  
City, ST  
Enter Your City, ST or ZIP Code  
Remember Me  
Get Weather  
Privacy Policy

Local Forecast Offices A-K Local Forecast Offices L-Z River Forecast Centers Center Weather Service Units Regional HQ

Zoom to a Location  
☒ GEFS ☐ NAEFS ☐ SREF [Whats This?](#)

WELCOME TO OUR NEW WEBPAGE. PLEASE BOOKMARK THE URL.

[Product Description Document](#) Data in **KML** format [Recorded Training](#)

[MARFC Status & News](#) [NERFC Status & News](#) [OHRFC Status & News](#) [SERFC Status & News](#)

**Meteorological Model Ensemble River Forecasts**

Turn Auto Refresh ON Map Last Updated: 1/27/2016 at 10:59:35 AM Make a Print

News Legend		
News items less than 24 hours old	News items 1 to 7 days old	No current news items

Map Legend	
Chance of Exceedance	River Forecast Centers
30% Level 70%	
● Action	● Middle Atlantic River Forecast Center
● Minor Flood	● Northeast River Forecast Center
● Moderate Flood	● Ohio River Forecast Center
● Major Flood	● Southeast River Forecast Center
● less than 30% chance of reaching Action level	
○ no critical levels defined for this point	

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**Meteorological Model Ensemble River Forecasts**



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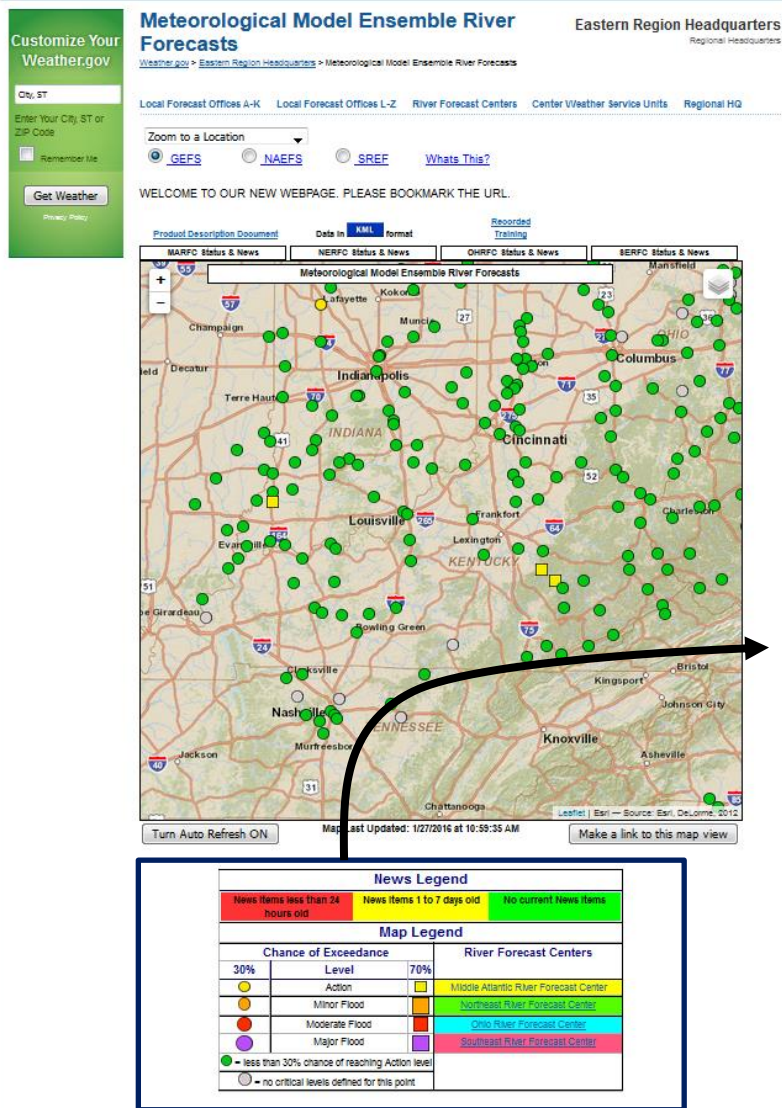














# Short-Range Ensemble Forecasts



<http://www.weather.gov/erh/mmefs>



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# Short-Range Ensemble Forecasts



<http://www.weather.gov/erh/mmefs>

**Meteorological Model Ensemble River Forecasts** Eastern Region Headquarters  
Regional Headquarters

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City, ST  
Enter Your City, ST or ZIP Code  
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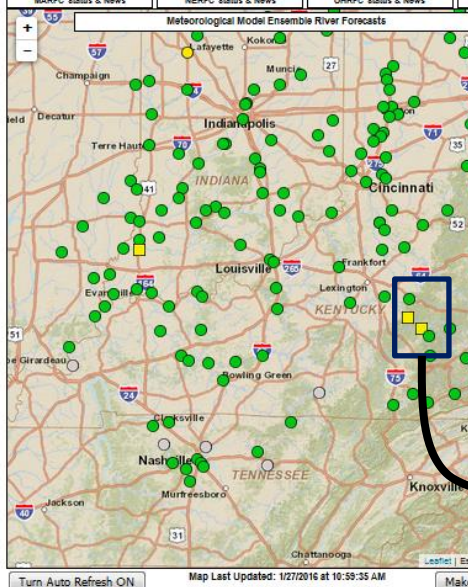
Local Forecast Offices A-K Local Forecast Offices L-Z River Forecast Centers Center Weather Service Units Regional HQ

Zoom to a Location  
GEFS NAEFS SREF Whats This?

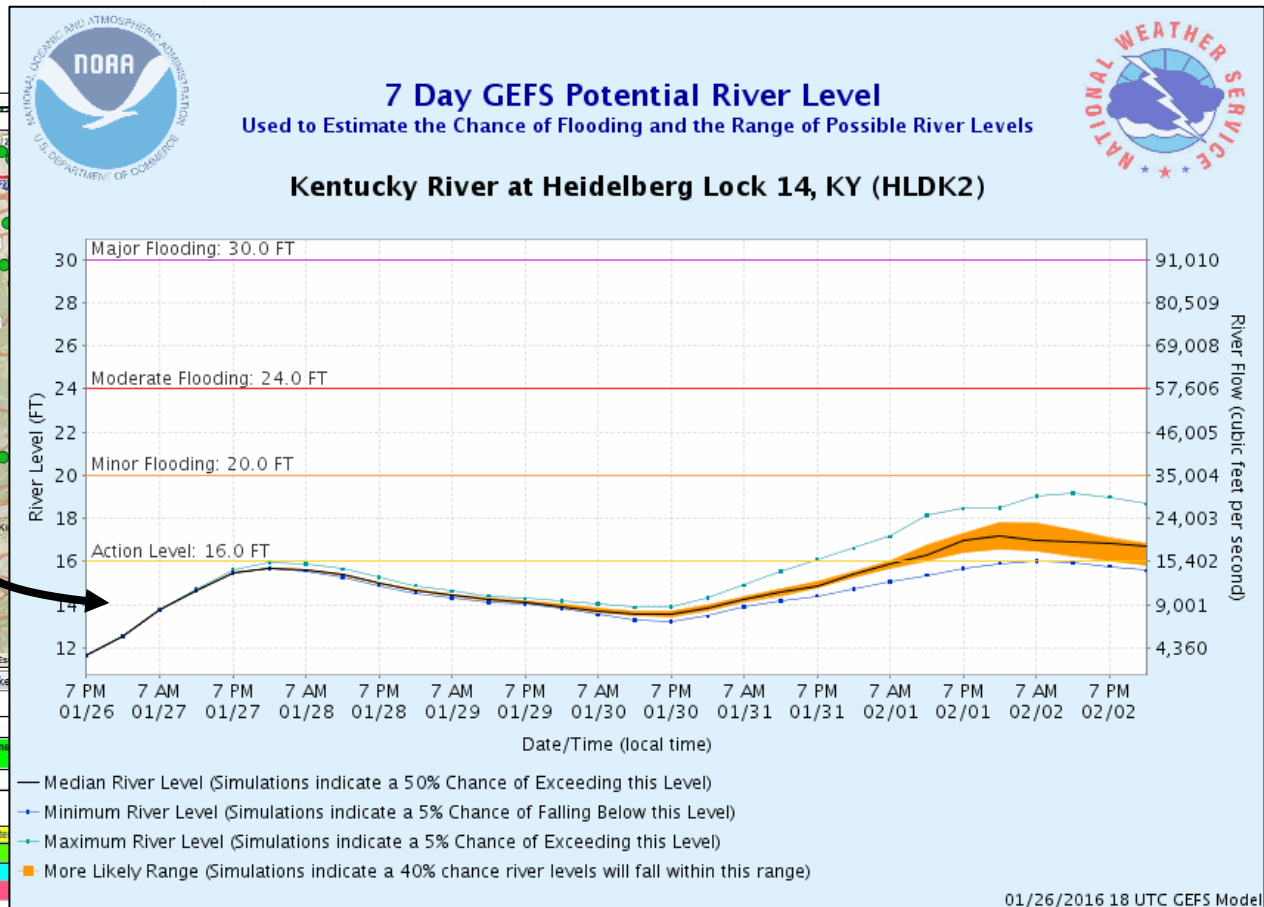
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Product Description Document Data in AML format Recorded Training

MARFC Status & News NERFC Status & News QHRFC Status & News



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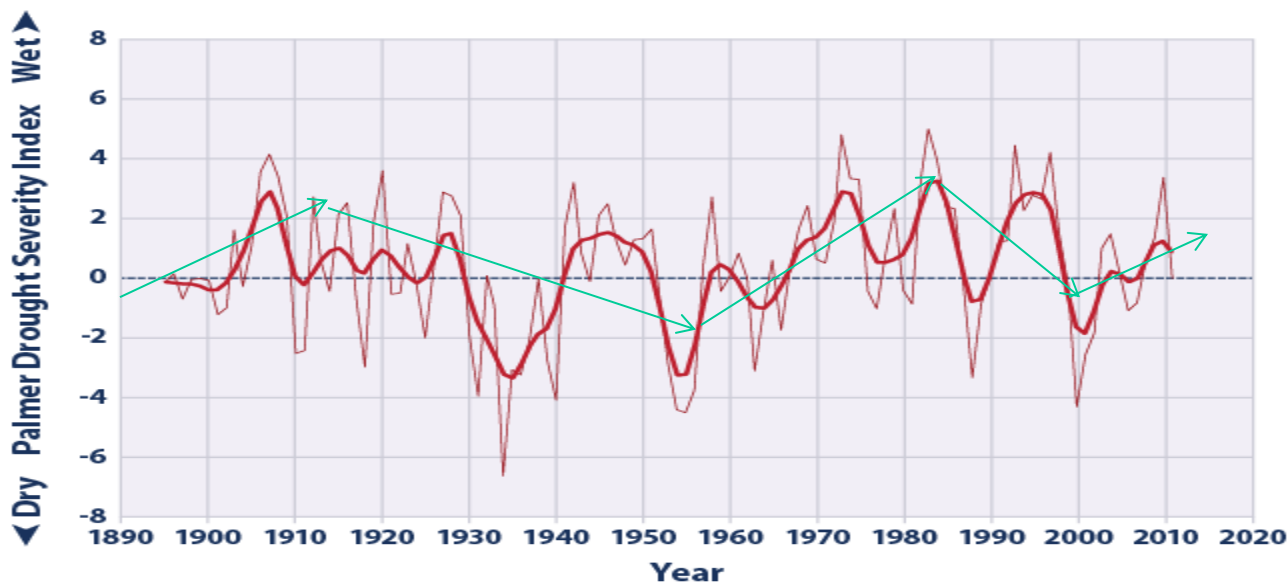


# Drought Risk



**Droughts increased into the 1950s, decreased into the 1990s and are increasing again the opposite of cycle frequency. Risk is increasing again. Can we spot them faster in the Ohio River basin.**

Average Drought Conditions in the Contiguous 48 States, 1895–2011



Data source: NOAA (National Oceanic and Atmospheric Administration). 2012. National Climatic Data Center. Accessed January 2012. [www.ncdc.noaa.gov/oa/ncdc.html](http://www.ncdc.noaa.gov/oa/ncdc.html).

For more information, visit U.S. EPA's "Climate Change Indicators in the United States" at [www.epa.gov/climatechange/indicators](http://www.epa.gov/climatechange/indicators).





# 30-90 Day Drought Risk



**Water Resource Outlook (WRO) is issued monthly**

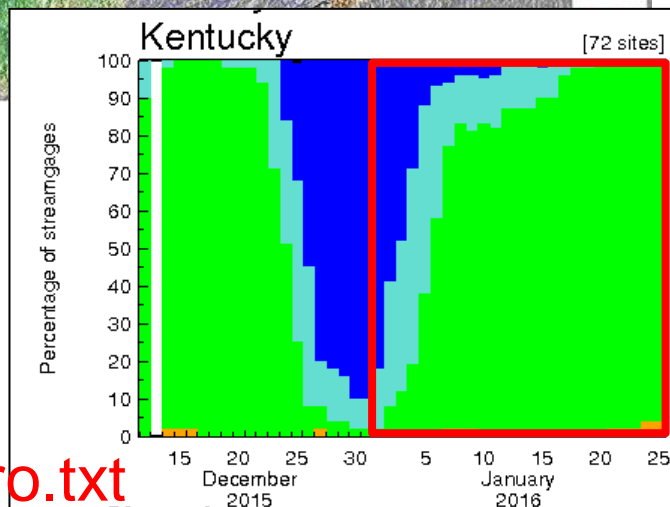
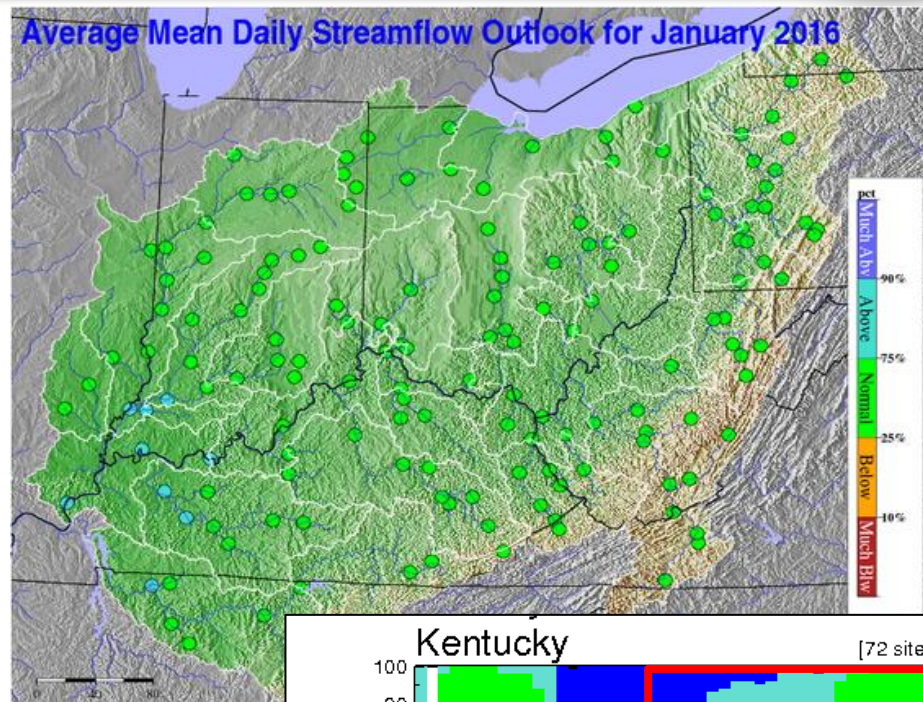
**Categories are set using USGS Percentiles**

**January forecast in Kentucky was for normal to slightly above normal flows**

**Blues = higher flood risk  
Orange/Red = drought risk**

<http://www.weather.gov/ohrfc/WRO>

<http://www.erh.noaa.gov/ohrfc/HAS/text/wro.txt>







# OHRFC Self Briefing Pages

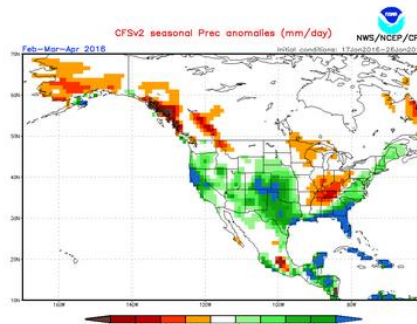


**Flood, Drought and Seasonal Self Briefing Pages are available any time**

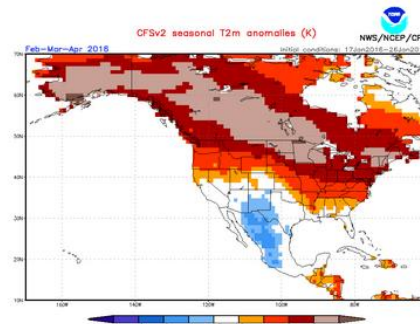
**Weakening strong El Nino during winter and spring and rapid rate of change will mean we will need to monitor possible dryness developing.**

<http://www.weather.gov/ohrfc/Briefings>

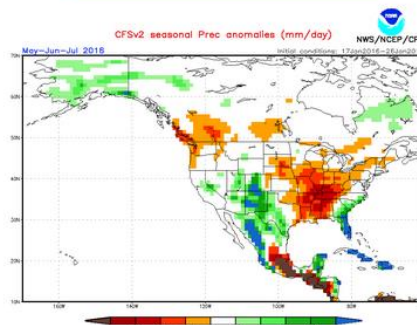
3-month U.S. Climate Model Rainfall



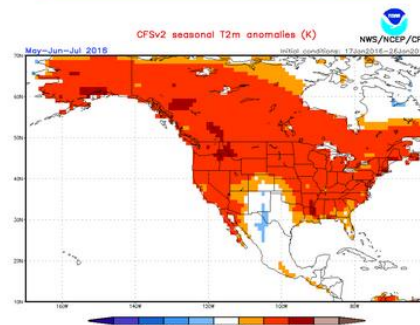
3-month U.S. Climate Model Temperatures



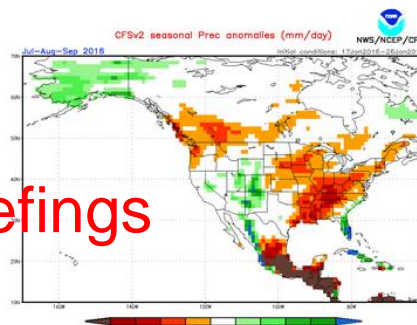
3-6 month U.S. Climate Model Rainfall



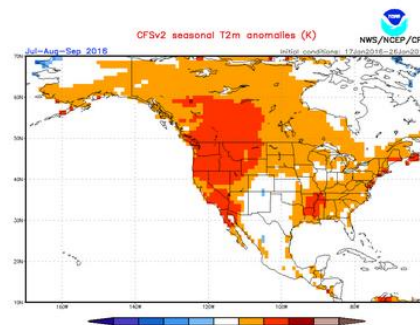
3-6 month U.S. Climate Model Temperatures



5-8 Month U.S. Climate Model Rainfall



5-8 Month U.S. Climate Model Temperatures



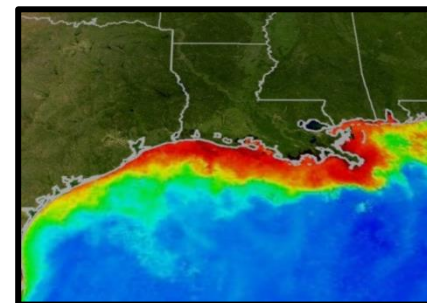
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# Nutrient Pollution → Ecological Issue → NOAA Focus

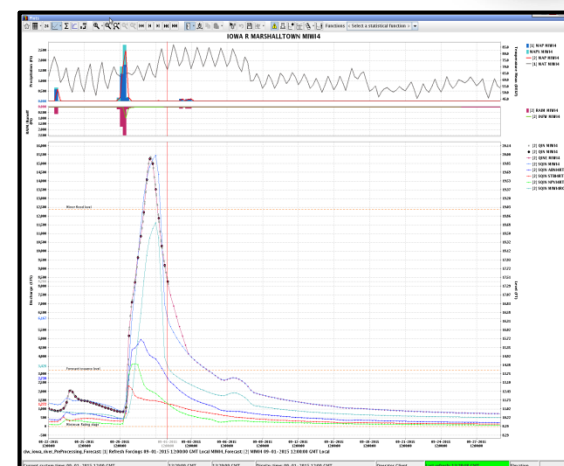
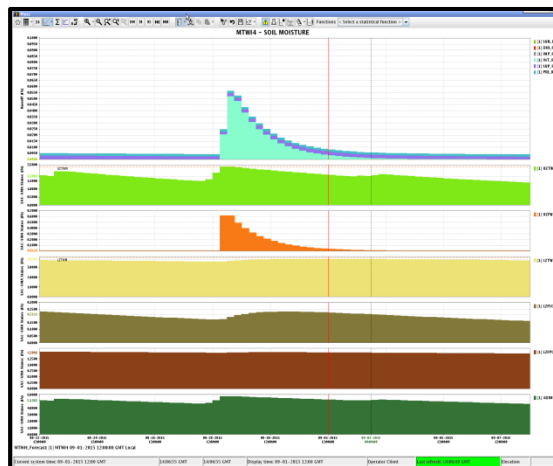
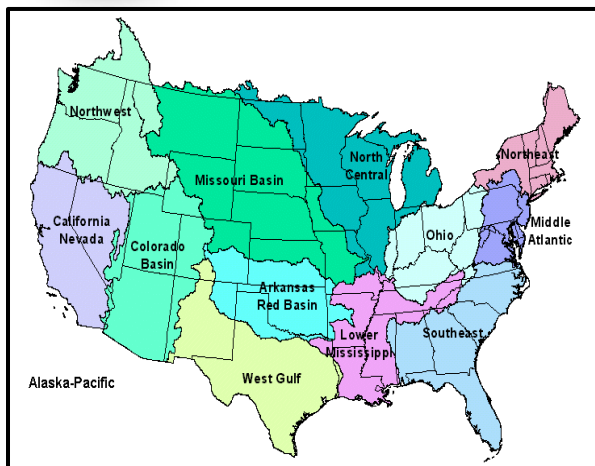


**Goal:** Utilize NWS modeling to warn farmers of forecast conditions unsuitable for application with intention to reduce nutrient transport from fields over time





# How can the NWS Help?



- ❑ NWS has unique capability of national scale real-time forecasting to drive this type of tool
- ❑ Timing of nutrient applications matters
  - A few large events can carry most nutrients off fields
  - These significant events could negate year-long adherence to BMPs

**Right Source   Right Rate   Right Time   Right Place**



# Foundation of Runoff Risk



- ❑ Decision support for agricultural nutrient applications
- ❑ Developed in collaboration with states and partners to incorporate state specific application rules and guidelines
- ❑ States make an investment (time/website/management) and act as the tool owner and presenter to the public
- ❑ Produced multiple times daily while modeling 10 days into future
- ❑ Identifies threat of significant future runoff in both space and time → Not modeling nutrient transport/loads

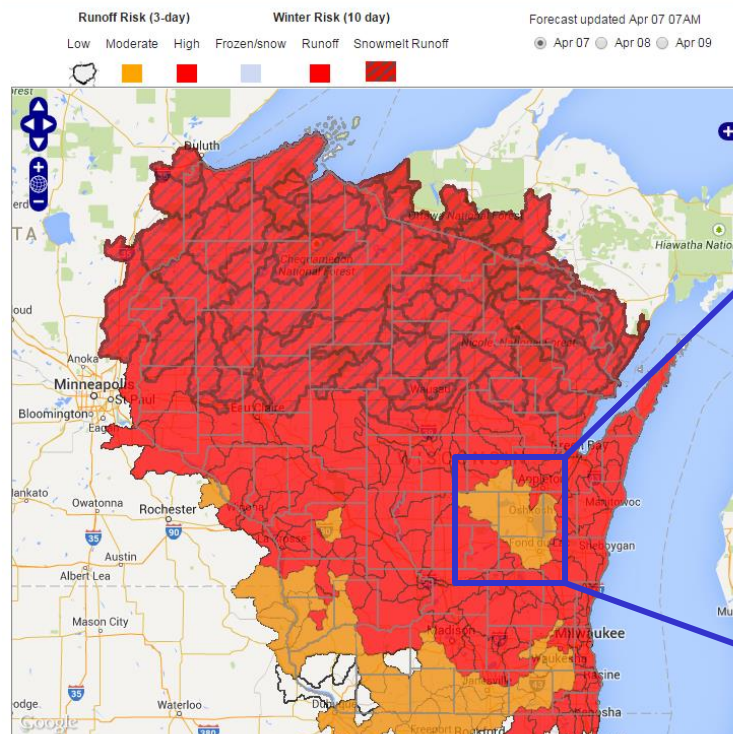


## Runoff Risk Advisory Forecast



Runoff Risk Advisory Forecast  
Wisconsin Manure Management Advisory System

MMAS Home | 590 Nutrient Appl. Restriction Maps | Runoff Risk Advisory Forecast | Interactive/Online 590 Maps | 590 Map Layers | Contact Us



### Click for Details

Click on the map to pop up the forecast for precipitation and runoff risk.

### The Forecast

The Runoff Risk Advisory Forecast map shows day-to-day risk of runoff occurring across Wisconsin using National Weather Service forecast methods that consider precipitation, soil moisture, and individual basin characteristics.

### Using this map

About the forecast  
Need to spread on a high-risk day?  
More weather information  
Soil Temperatures and Frost Depths  
Snapshots of previous RRAF maps

### Site News

[Apr 01: Spring!](#)  
[Nov 18: Winter is here](#)  
[Nov 13: Winter is Coming!](#)  
[Apr 17: Spring for southern WI!](#)

### Additional Resources

Field maps for spreading  
NM planning & NCRS 590 standard  
Information for CAFOs  
WI-specific NM software

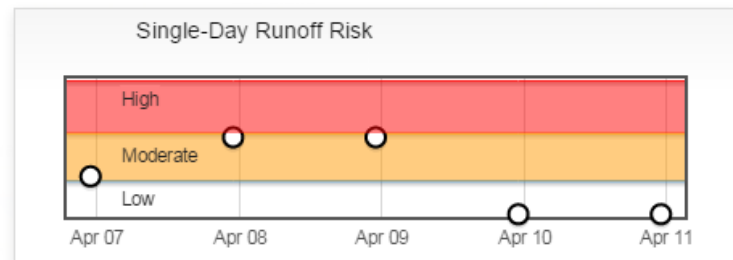
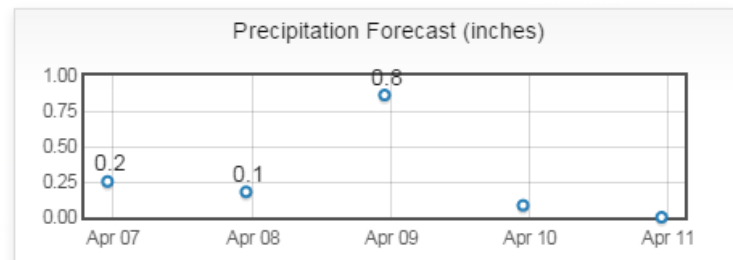
### Help and Contacts

System requirements  
Contact/Feedback  
Credits  
Frequently Asked Questions

Basin name: LAKE WINNEBAGO OSHKOSH (OSHW3)

3-day spreading risk forecast on Apr 07: **Moderate**

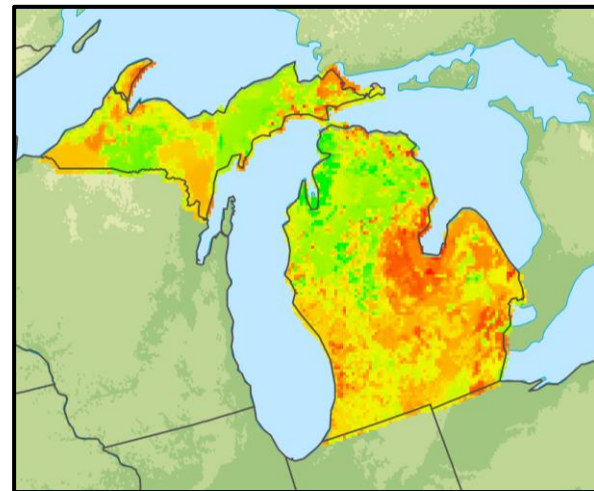
Earliest runoff expected (after Apr 07): **Apr 07**



Forecast updated: Apr 7 4:00 PM

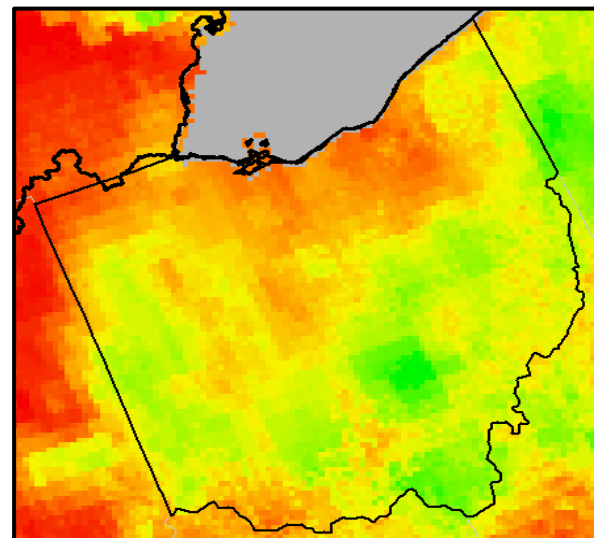
Department of Agriculture, Trade and Consumer Protection  
Wisconsin Manure Management Advisory System © 2014

# Second Generation: Great Lakes Drainages



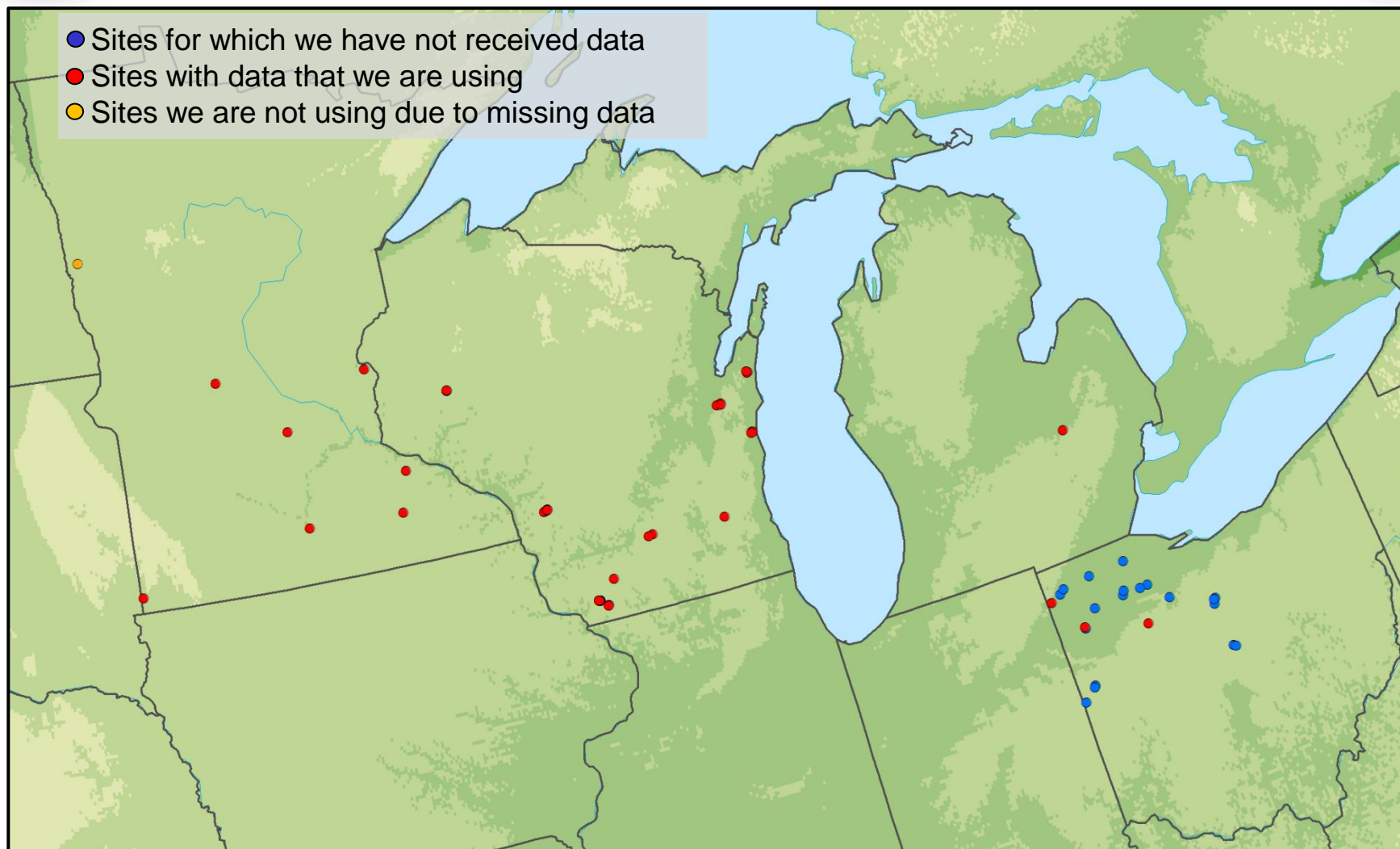
## ❑ Great Lakes Restoration Initiative Project

- New gridded model (4km x 4km) can account for localized effects
- First round: MI, OH, MN, WI
- Second round: IL, IN, NY\*





# Always Looking for More Observed EOF Data



# Analyzing Model vs EOF Data

Air Temp

Day with Obs Runoff

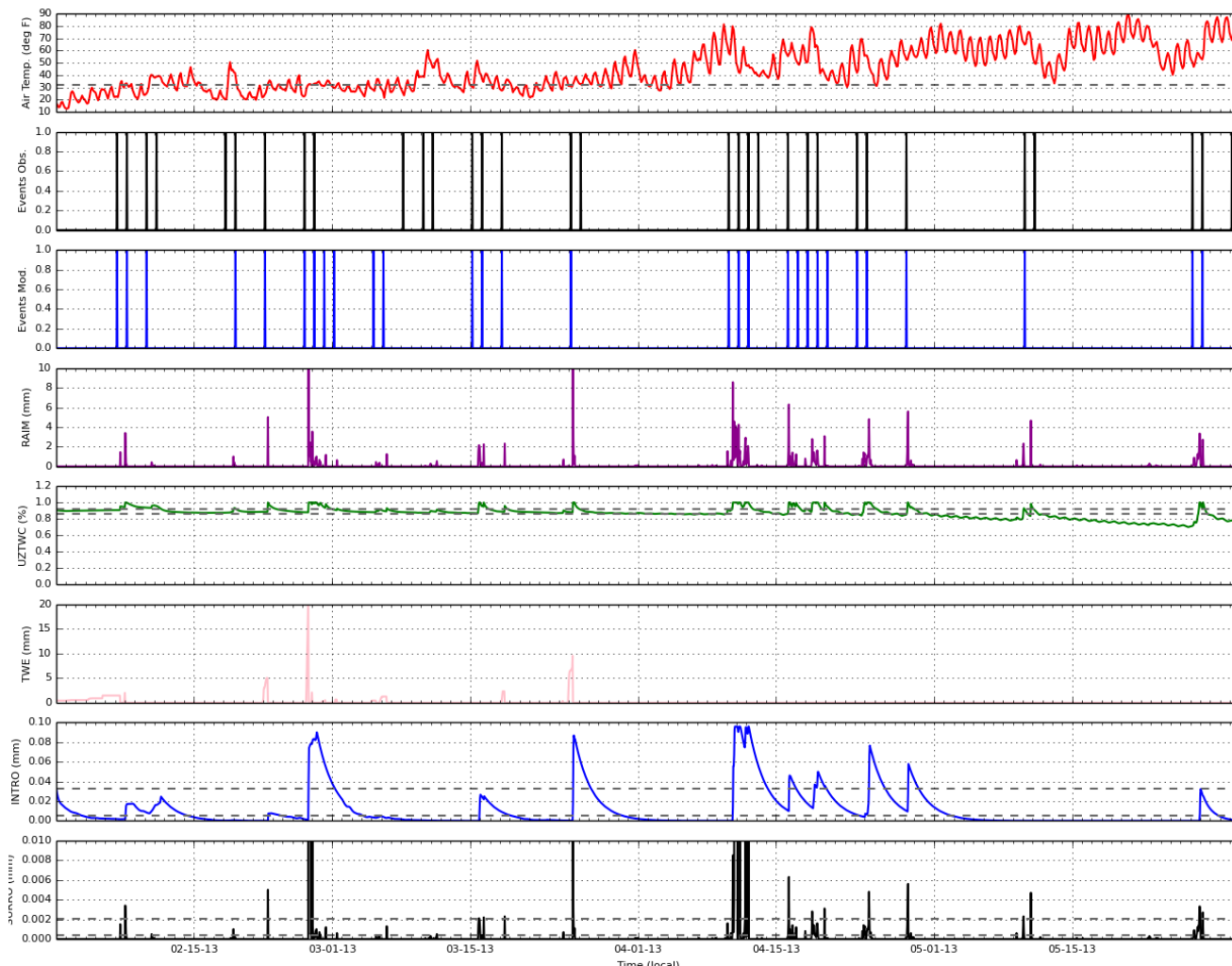
Day with Sim Runoff

Rain and/or Snowmelt

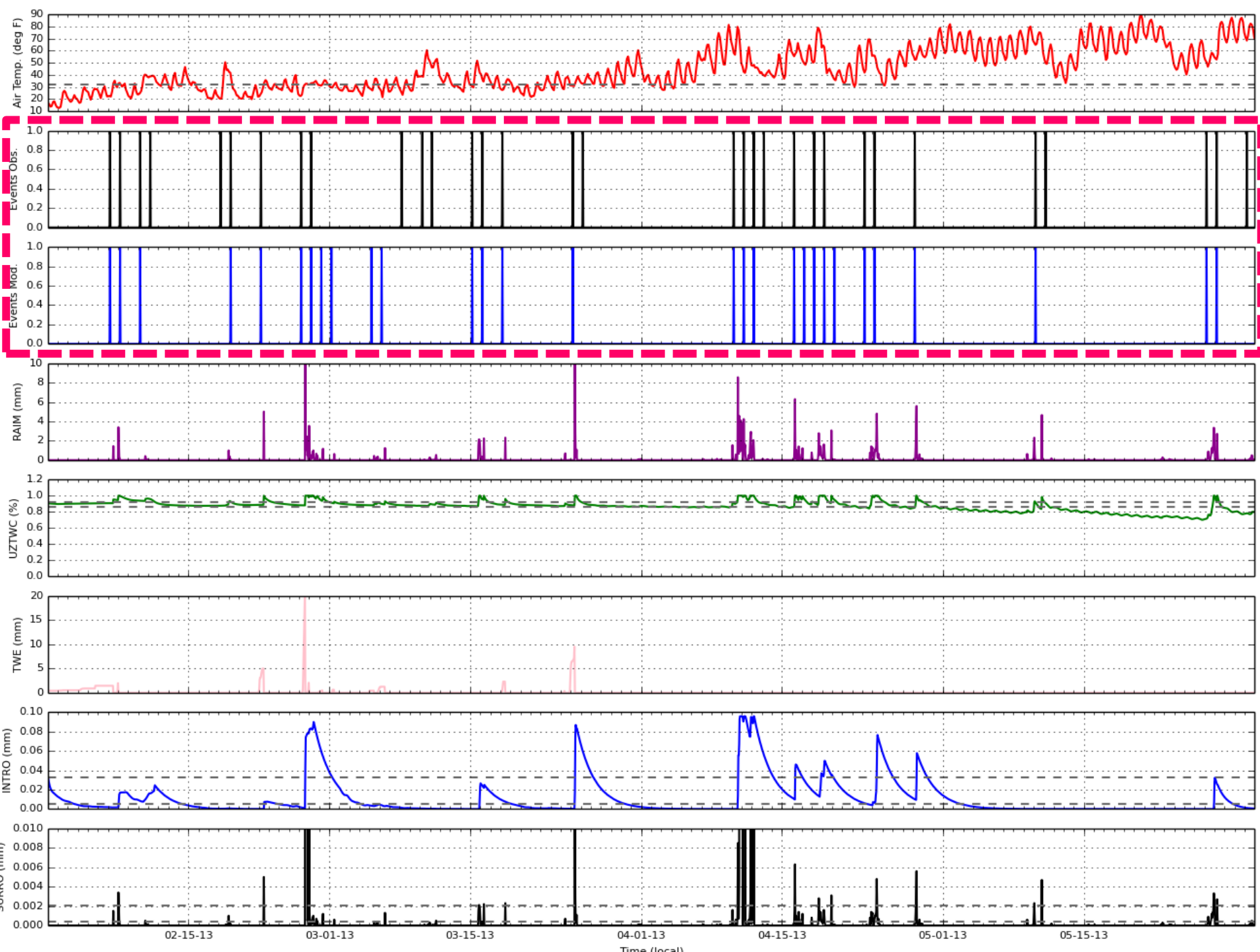
Top soil layer Saturation

Snow Water Equivalent

Types of Runoff

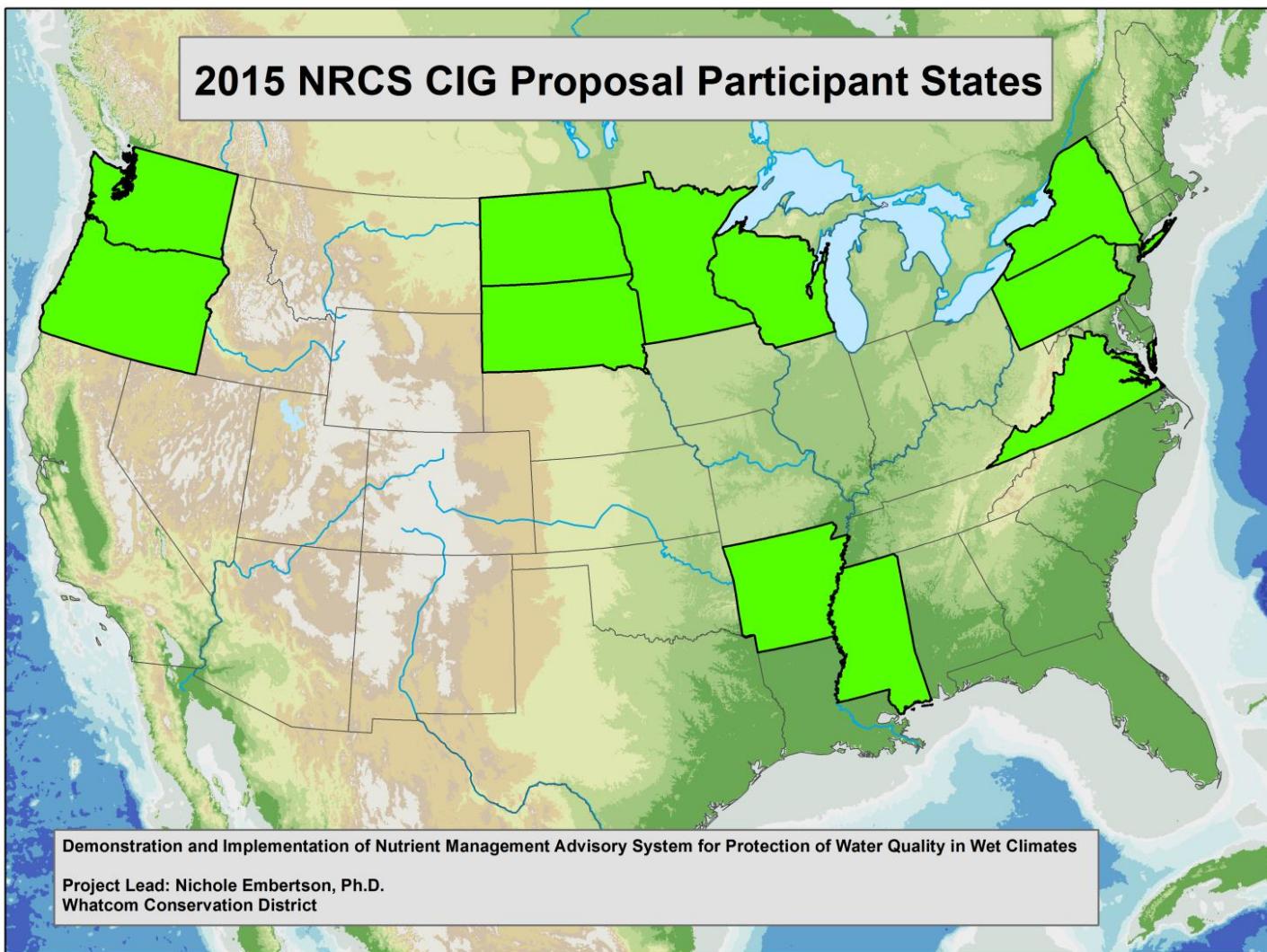








# NRCS Proposal







# Questions?



## **Contacts:**

**Ohio River Forecast Center – 937-383-0528**

**Brian Astifan – [brian.astifan@noaa.gov](mailto:brian.astifan@noaa.gov)**

**Joseph Heim – [joseph.heim@noaa.gov](mailto:joseph.heim@noaa.gov)**

**Jim Noel – [james.noel@noaa.gov](mailto:james.noel@noaa.gov)**

**<http://weather.gov/ohrfc>**



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# More Information



## ❑ Wisconsin RRAF

- Google “Wisconsin RRAF”
  - [www.manureadvisorysystem.wi.gov/app/runoffrisk](http://www.manureadvisorysystem.wi.gov/app/runoffrisk)
- Background Information
  - *NOAA Tech Report NWS 55*
  - [http://docs.lib.noaa.gov/noaa\\_documents/NWS/TR\\_NWS/](http://docs.lib.noaa.gov/noaa_documents/NWS/TR_NWS/)

## ❑ Further Questions & Comments

- Dustin Goering ([dustin.goering@noaa.gov](mailto:dustin.goering@noaa.gov))
- Liz Houle ([liz.houle@noaa.gov](mailto:liz.houle@noaa.gov))
- Steve Buan ([steve.buan@noaa.gov](mailto:steve.buan@noaa.gov))