



# Strengthening Michigan Fire Weather Partnerships through Communications and Technology

**Kari Fleegel**

Incident Meteorologist / Fire Weather  
Co-Focal Point

National Weather Service  
Marquette, Michigan



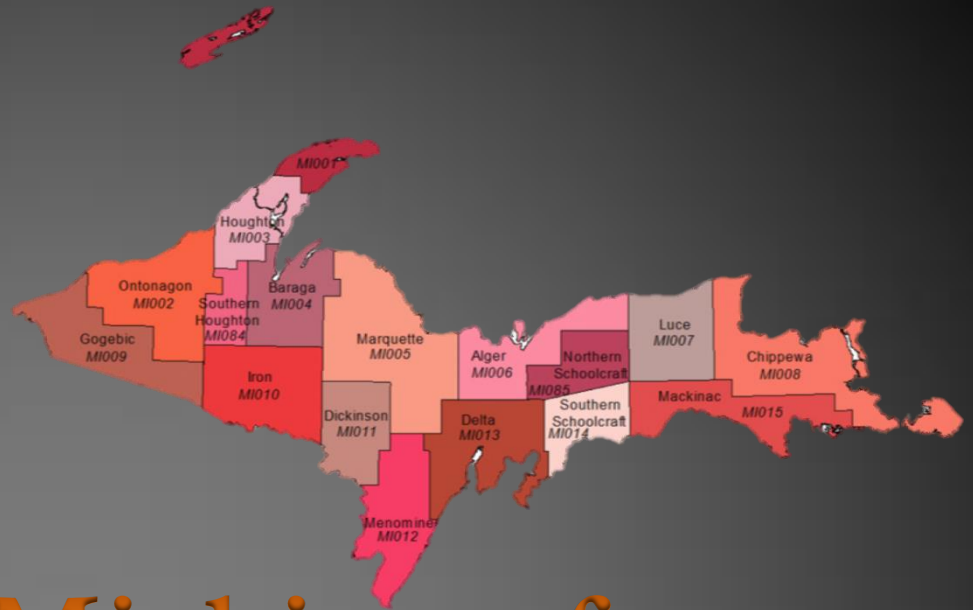
# TRUST



- Consistent
- Transparent
- Truthful
- Open to feedback



- Communications
- Technology



## 45 percent of Michigan forests

The NWS Marquette Fire Weather Zones accounts for only 29 percent of Michigan's area but has 45 percent of the forests!

# 7 Federal and State Partner Agencies



Pictured Rocks National Lakeshore  
Isle Royale National Park

Ottawa National Forest  
Hiawatha National Forest



Bureau of Indian Affairs

Seney National Wildlife Refuge



Michigan Department of Natural Resources

Communications

# Meetings & Training

- Annual Spring & Fall Meetings
- On-site Spring Refresher Courses  
(~150 firefighters/year)
- Guest Instruct at NMU Wildland Firefighting Program
- After Incident Reviews of 2012  
Duck Lake Wildfire  
21,135 acres – 3<sup>rd</sup> largest Michigan  
fire since 1881





Communications

# Weekly Conference Calls

- Spring Fire Season
- Around Holidays
- Prolonged dry periods



Friday 10 am EDT



Communications

Participate and keep up on latest science and technology



# Lake States Fire Science Consortium

A JFSP KNOWLEDGE EXCHANGE CONSORTIUM



2012 Lake States Fire Science Consortium webinar, "Making Sense of Wildland Smoke"

[http://lakestatesfiresci.net/webinar\\_4\\_19\\_12.htm](http://lakestatesfiresci.net/webinar_4_19_12.htm)



**FIRESCIENCE**.GOV  
Research Supporting Sound Decisions



## Wildland Fire Lessons Learned Center

*A lesson is learned when we change our behavior.*

# Communications Michigan Interagency Wildland Fire Protection Association (MIWFPA)

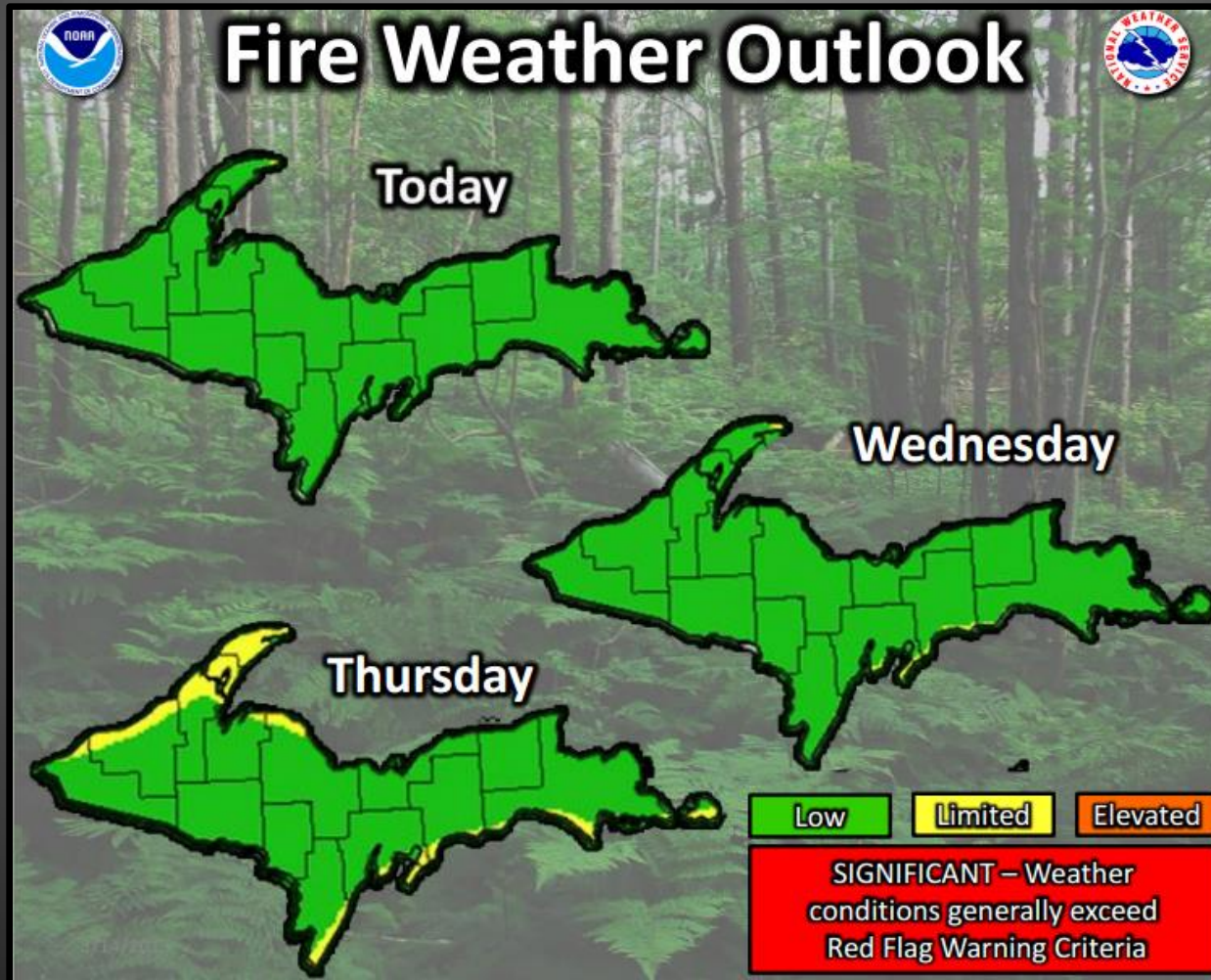
- Prevention Committee Member
- Facebook page creator and manager
- All Michigan NWS Offices participate





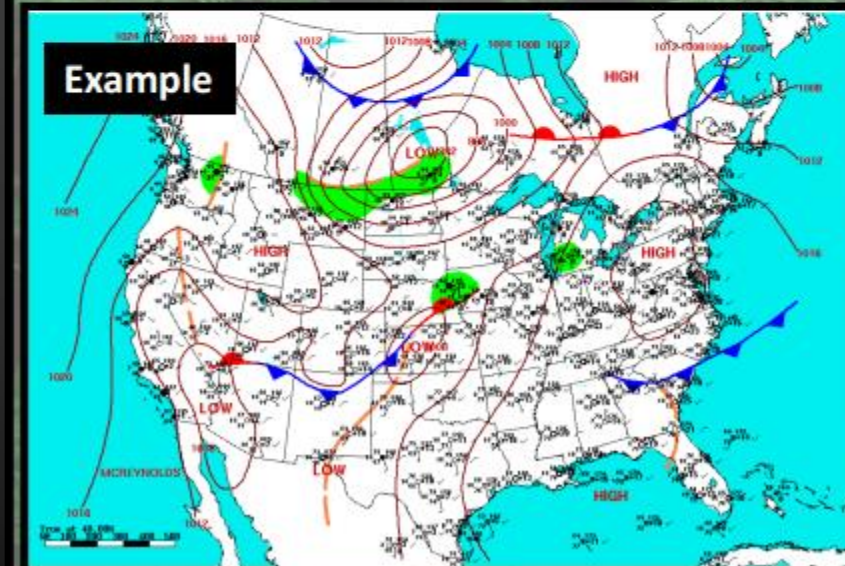
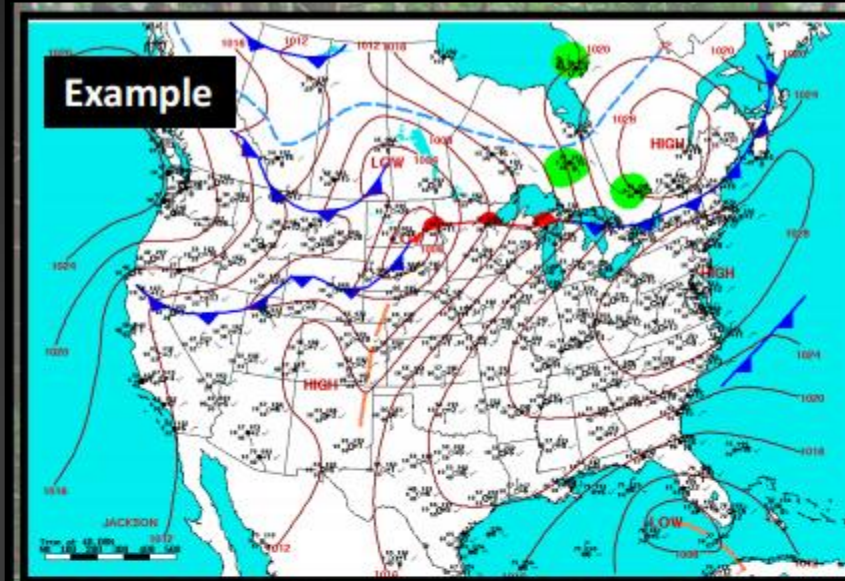
# U.P. Fire Weather Briefing automated

Keith Cooley, Jason Alumbaugh, Kari Fleege





# Technology Research → Customers and Operations



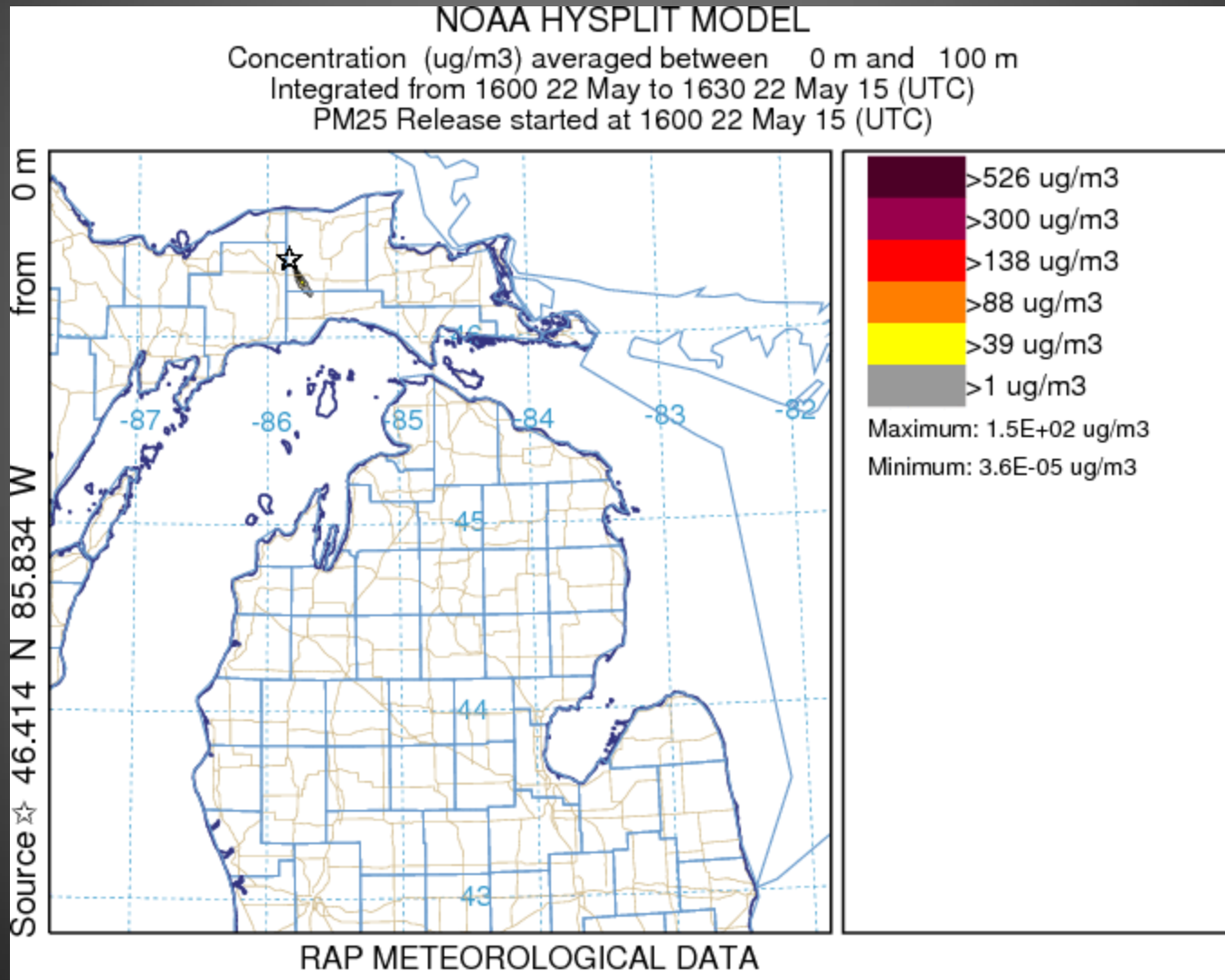
## Critical Watch-out Patterns

A weather map of the United States showing pressure systems and wind patterns. A black box in the top left corner contains the word "Example". The map features isobars, high and low pressure areas, and wind vectors. A scale bar and the name "JACKSON" are visible in the bottom left corner.

\*\*\*\*\* Not a Forecast \*\*\*\*\*

# HYSPLIT

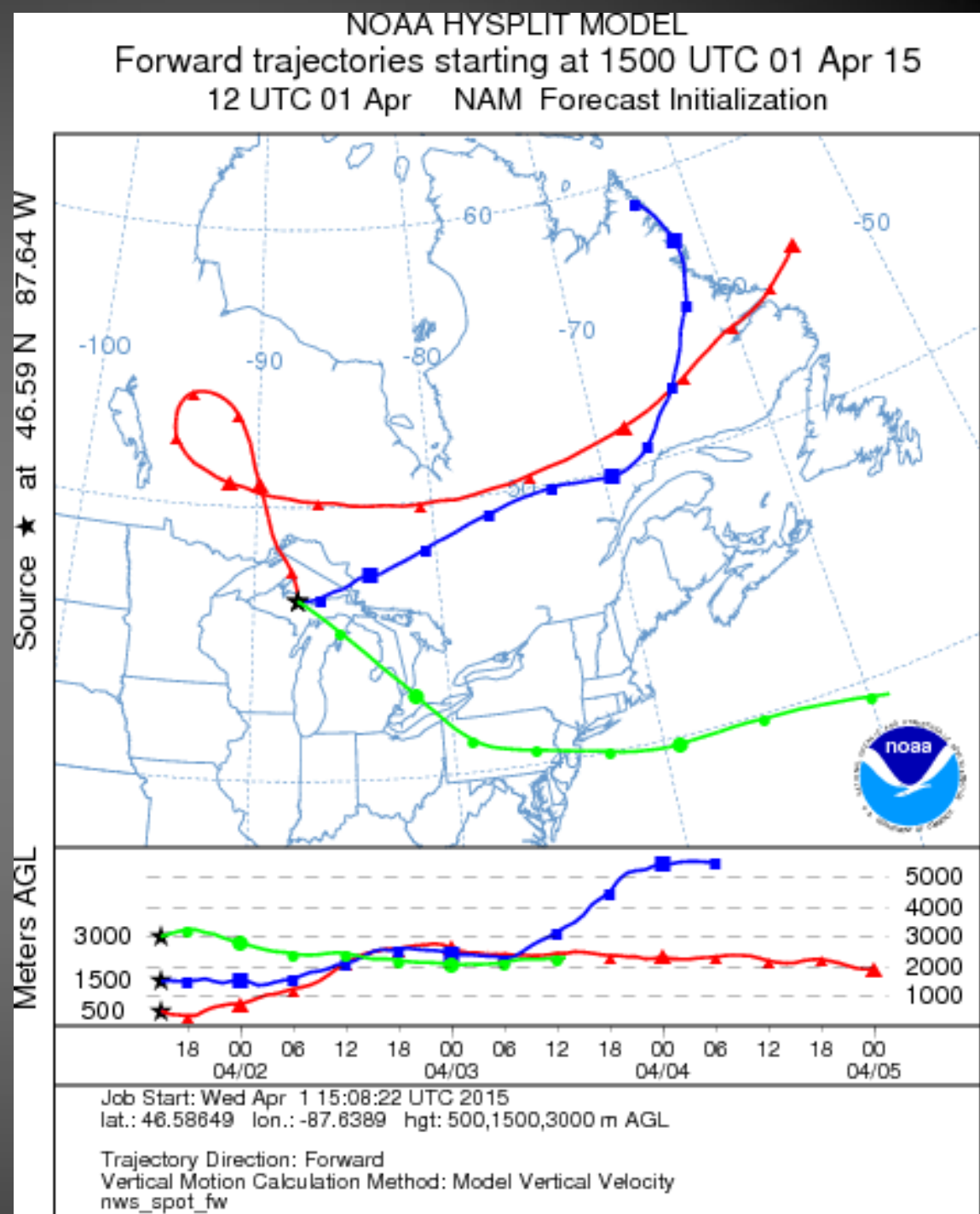
Implemented ~2011 NWS Detroit – Heather Orow





# Technology

NWS Spot  
requested  
HYSPLIT run





# Enhanced Graphics

**Graphical Forecasts - Marquette, MI**

Public Marine Fire Weather

Daily View Weekly View Loops

Image List Page Help Metric Units Key

Go to Region View Images Get Text Forecast

Mouse over the table below to change the forecast image.

Today	-12Hrs	+12Hrs
Max/Min Temperature	High	
Lightning Activity Level	3am	11am 2pm 5pm
Ventilation Rate	3am	11am 2pm 5pm
Max/Min Relative Humidity	RH	
Relative Humidity	8am	11am 2pm 5pm
Haines Index	8am	11am 2pm 5pm
Mixing Height	8am	11am 2pm 5pm
Transport Winds	8am	11am 2pm 5pm
Wind Speed & Direction	8am	11am 2pm 5pm
Wind Gusts	8am	11am 2pm 5pm
Probability of Precip.	12 hr. probability	
Amount of Precip.	QPF	QPF
Dewpoint Temp	7am	10am 1pm 4pm
Weather	7am	10am 1pm 4pm
Sky Cover	7am	10am 1pm 4pm
Next Image	⏪	⏩

High Temperature (F) Ending Tue Aug 18 2015 9PM EDT  
(Wed Aug 19 2015 01Z)

**NWS Marquette, MI**  
Graphic Created Aug 18 3:07PM EDT

# Base Graphics

Today	-12Hrs	+12Hrs
Max/Min Temperature	High	
Relative Humidity	7am	10am 1pm 4pm
Wind Gusts	7am	10am 1pm 4pm
Probability of Precip.	12 hr. probability	
Amount of Precip.	QPF	QPF
Dewpoint Temp	7am	10am 1pm 4pm
Weather	7am	10am 1pm 4pm
Sky Cover	7am	10am 1pm 4pm
Next Image	⏪	⏩

## Graphical Forecasts

Weather.gov - National Digital Forecast Database Graphical Forecasts

National Weather Service

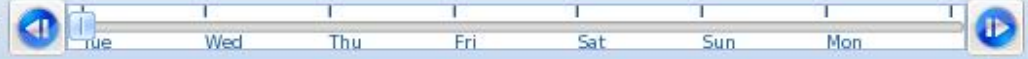
National Headquarters

### National Digital Forecast Database Display

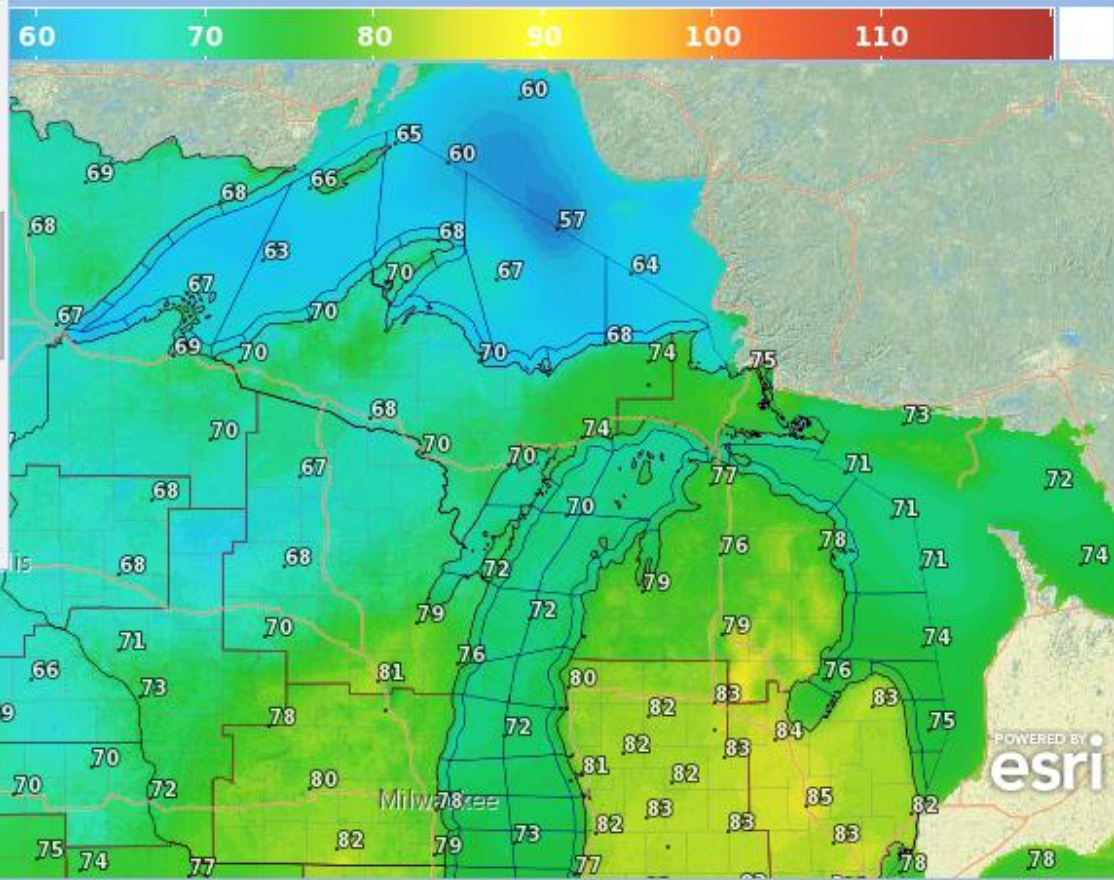
National (CONUS)

Maximum Temperature (°F)

Ending Aug 18, 8 PM EDT



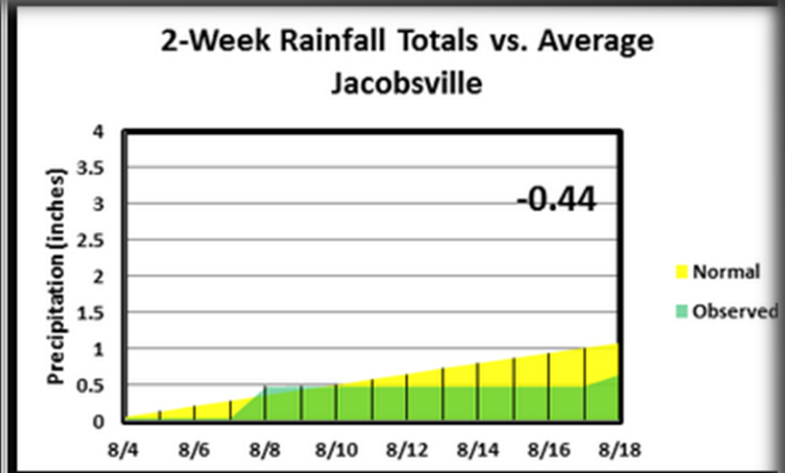
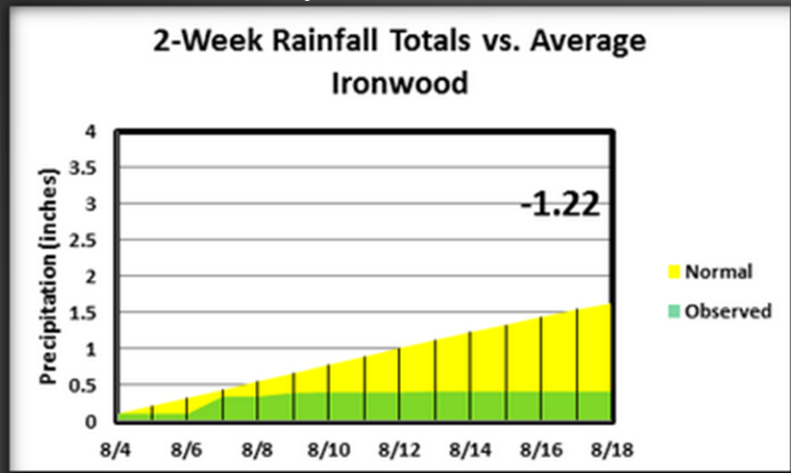
- 30 Fire Weather
- Maximum Relative Humidity (%)
- Minimum Relative Humidity (%)
- Dry Thunderstorms
- Critical Fire Weather
- Severe Weather
- Convective Outlook
- Tornado Probability(%)
- Extreme Tornado Prob.(%)
- Damaging T-storm Wind Prob.(%)
- Extreme T-storm Wind Prob.(%)
- Hail Probability(%)
- Extreme Hail Prob.(%)
- Total Prob. Severe T-Storms(%)



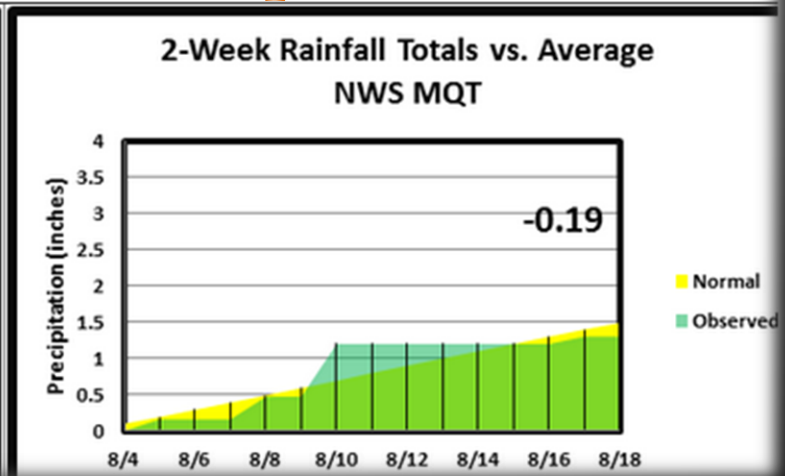
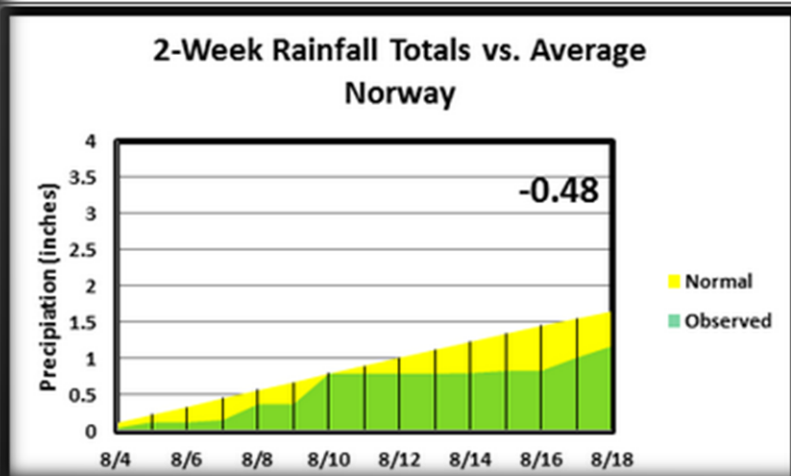


# 2-Week Rainfall Graphics

Keith Cooley



**Reported rainfall compared to NCDC normals for the same period**

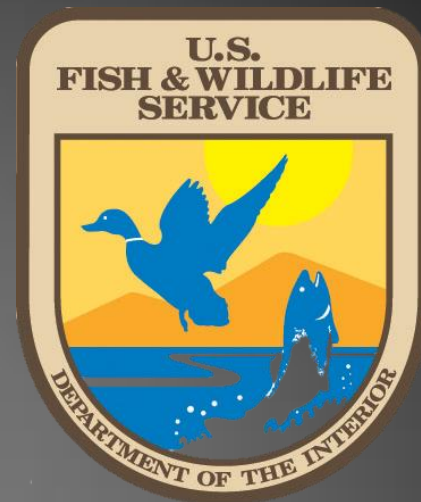


# AWIPS II Fire Weather Matrix Program

Keith Cooley

- Fire Weather RAWS observation retrieval program via  MESO WEST
- Speeds up the quality control of daily Fire Weather Matrix (FWM) used in creation of National Fire Danger Rating System parameters





Questions?