

2013 Upper Michigan Fire Weather Annual Operating Plan

Marquette, MI
(MQT)

Updated March 20, 2013



I.	INTRODUCTION.....	4
II.	SERVICE AREA AND ORGANIZATIONAL DIRECTORY.....	5-21
A.	List of National Weather Service (NWS) offices and points of contact.....	5-9
1.	Marquette, Michigan (MQT) office.....	5-6
2.	Surrounding National Weather Service offices.....	6-8
a)	Duluth, Minnesota (DLH) office.....	6-7
b)	Green Bay, Wisconsin (GRB) office.....	7
c)	Gaylord, Michigan (APX) office.....	7
d)	Grand Rapids (GRR) and Detroit (DTX), and Northern Indiana (IWX) office.....	8
3.	Other important NWS contacts.....	9
a)	National Fire Weather Program Leader and Operations Coordinator.....	9
b)	Regional Operational Service Meteorologist (ROSM).....	9
B.	Participating agencies.....	10-21
1.	Contacts and phone numbers.....	10-12
a)	Geographic Area Coordination Center.....	10
b)	Hiawatha National Forest, USFS.....	10
c)	Isle Royale National Park, NPS.....	10
d)	Michigan Department of Natural Resources (DNR).....	11
e)	Pictured Rocks National Lakeshore, NPS.....	11
f)	Ottawa National Forest, USFS.....	11-12
g)	Seney National Wildlife Refuge, USFW.....	12
h)	US Bureau of Indian Affairs (BIA).....	12
2.	Agency area maps.....	13-21
a)	Hiawatha National Forest, USFS.....	13-14
b)	Isle Royale National Park, NPS.....	15-16
c)	Michigan Department of Natural Resources (DNR).....	17-18
d)	Pictured Rocks National Lakeshore, NPS.....	19
e)	Ottawa National Forest, USFS.....	20-21
f)	Seney National Wildlife Refuge, USFW.....	21
III.	SERVICES PROVIDED BY THE NATIONAL WEATHER SERVICE.....	22-52
A.	Fire weather products.....	22-47
1.	Fire Weather Planning Forecast (ARBFWMQT).....	22-31
a)	Issuance (seasonal, daily).....	22
b)	Posting.....	22
c)	Content.....	22-31
2.	Conference Calls.....	32
3.	Fire Weather Matrix (ARBFWMMQT) for National Fire Danger Rating System.....	33-36
a)	Issuance (seasonal, daily).....	34
b)	Content.....	35-36
c)	WIMS ID contact.....	36
4.	Site-specific wildland fire forecasts (Spot).....	37-40
a)	Criteria.....	37-38
b)	Content.....	38-39
c)	Procedures.....	40
5.	Wildfire Potential Statement (ARBRFDMQT).....	41
a)	Criteria.....	41
b)	Content.....	41

6.	Fire Weather Watch, Red Flag Warning Program (ARBRFWMQT).....	42-43
	a) <i>Criteria</i>	42
	b) <i>Content</i>	42-43
7.	Specific Online Products.....	44-47
	a) <i>Fire Weather Graphics</i>	44
	b) <i>Hourly Weather Graph</i>	45
	c) <i>Weather Activity Planner</i>	46
	d) <i>Farsite Weather Input</i>	47
B.	Special services, procedures for obtaining and billing.....	48
C.	Alert Communications.....	49-50
	1. iNWS (Watch/Warning/Advisory Alerts).....	49
	2. NOAA Weather Radio.....	50
D.	CRH Notification Requirements for Major Events.....	51
IV.	JOINT RESPONSIBILITIES.....	52
V.	BACKUP PROCEDURES.....	53
	A. Backing up the Marquette forecast office (for APX and GRB staff).....	53
	B. Backing up surrounding offices (for MQT staff).....	53
VI.	SIGNING PAGE AND EFFECTIVE DATES OF THIS AOP.....	54

I. INTRODUCTION

This Annual Operating Plan (AOP) will identify meteorological services to be provided by the Marquette, Michigan National Weather Service (NWS) Office. The area of responsibility encompasses all Upper Michigan. This includes areas of the Michigan Department of Natural Resources and Environment (DNRE), Isle Royale National Park in the northwest, the Ottawa National Forest across the west, the Hiawatha National Forest central and east, Pictured Rocks National Lakeshore along portions of Lake Superior, Seney National Wildlife Refuge east, and the Bureau of Indian Affairs.

This NWS is supported by the Eastern Geographic Area Coordination Center (GACC).

Services provided by the NWS fall into two categories, traditional and special services. The traditional services are provided without cost and are coordinated between the user and the NWS office personnel. Most of these products are available upon request 24 hours a day throughout the year. Examples of traditional/core services include...

- Fire Weather Planning Forecast (FWF)
- Fire Weather Matrix (FWM) forecast for the National Fire Danger Rating System (NFDRS)
- Spot forecast
- Wildfire Potential Statement
- Fire Weather Watches and Red Flag Warnings
- Online Products (Fire Weather Graphics, Hourly Weather Graph, etc.)

Special services provided may include teaching weather related courses or an on-site Incident Meteorologist (IMET). Please reference the Geographic Area Mobilization Guide and/or the National Mobilization Guide for details about these special services.

II. SERVICE AREA AND ORGANIZATIONAL DIRECTORY

A. List of National Weather Service (NWS) offices and points of contact

1. Marquette, Michigan (MQT) office

Fire Weather Season: Traditionally April 15 to November 1. Wildfires across our area can occur almost any time of the year; however, there are generally two peaks of increased fire danger. These time periods are in the spring prior to green-up, and in the fall curing period prior to significant snow. If unavailable, our primary backup office is Gaylord, Michigan.

Online: www.crh.noaa.gov/mqt/?n=firewx (Fire Page)
<http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=mqt> (Spot Page)
www.crh.noaa.gov/ndfd/graphical/sectors/mqtFireDay.php
(Graphical Forecast Fire Page)
www.weather.gov/up (Forecast Area main page)
<http://weather.gov/fire> (National Weather Service Main Page)

Phone: N/A
N/A
N/A
906-475-5212 public

Address: 112 Airpark Drive South
Negaunee, MI 49866

Fire Weather Program Leader:
Kari Fleegel (IMET), Kari.Fleegel@noaa.gov

Assistant Fire Weather Program Leader:
Jason Alumbaugh, Jason.Alumbaugh@noaa.gov

Additional Team Members:
Jon Voss, Jane Marie Wix

Meteorologist in Charge:
Robin Turner, Robin.J.Turner@noaa.gov

Watch/Warning Criteria:

- A dry spell for over a week (shorter before spring green-up or after fall color)
- Sustained Wind Speed ≥ 20 mph (10 m ASOS-Airport winds)
or ≥ 15 mph (20 ft RAWS winds)
- Relative Humidity 25% or less
- Temperature 70 F or greater

Note: Temperature criteria is a soft criteria. Red Flag Warnings can be used for temperatures less than 70 degrees depending on other factors.

Marquette, Michigan Fire Weather Forecast Area (image courtesy MI DNR)



Upper Michigan Zone Codes

Alger	MIZ006	Keweenaw(including Isle Royale)	MIZ001
Iron	MIZ010	Luce	MIZ007
Chippewa	MIZ008	Mackinac	MIZ008
Baraga	MIZ005	Marquette	MIZ005
Delta	MIZ013	Menominee	MIZ012
Dickinson	MIZ011	Ontonagon	MIZ002
Gogebic	MIZ009	N. Schoolcraft	MIZ085
N. Houghton	MIZ003	S. Schoolcraft	MIZ014
S. Houghton	MIZ084		

2. Surrounding National Weather Service offices

a) Duluth, Minnesota (DLH) office

Online: www.crh.noaa.gov/dlh/?n=fireweather (Fire Page)
www.weather.gov/dlh (Forecast Area main page)

Phone: N/A
 N/A
 N/A
 218-729-6697 public

Address: 5027 Miller Truck Highway
 Duluth, MN 55811-1442

Fire Weather Program Leader:
 Amanda Graning, Amanda.Graning@noaa.gov

Assistant Fire Weather Program Leader:
 Geoff Grochocinski, Geoffery.Grochocinski@noaa.gov

Meteorologist in Charge:

Michael Stewart, Michael.Stewart@noaa.gov

Watch/Warning Criteria:

Relative Humidity < = 25%

Wind Speed > = 20 mph

Temperature > = 75 degrees F

b) Green Bay, Wisconsin (GRB) office

Online: www.crh.noaa.gov/grb/?n=firewx (Fire Page)

www.weather.gov/grb (Forecast Area Main Page)

Phone: N/A

N/A

N/A

920-494-2363 public

Address: 2485 South Point Road

Green Bay, WI 54313-5522

Fire Weather Program Leader:

Tim Kieckbusch, Tim.Kieckbusch@noaa.gov

Meteorologist in Charge:

Gary Austin, Gary.Austin@noaa.gov

Watch/Warning Criteria:

Relative Humidity < = 25%

Wind Speed (20 ft, 10 min avg.) > = 15mph

~17 mph, 10m airport wind

Temperature > = 75 degrees F

c) Gaylord, Michigan (APX) office

Online: www.crh.noaa.gov/apx/fire.php (Fire Page)

www.weather.gov/apx (Forecast Area Main Page)

Phone: N/A

N/A

N/A

989-731-3384 public

Address: 8800 Passenheim Road

Gaylord, MI 49735-9454

Fire Weather Program Leader:

David Lawrence, David.Lawrence@noaa.gov

Meteorologist in Charge:

Bruce Smith, Bruce.Smith@noaa.gov

Watch/Warning Criteria:

Relative Humidity < = 25%

Sustained Wind Speed > = 20 mph (10 m ASOS winds) or

>= 15 mph (20 ft RAWs winds)

*frequent gusts above wind criteria may be used in
place of sustained winds.

Temperature > = 75 degrees F

d) Grand Rapids (GRR), Detroit (DTX), and Northern Indiana (IWX) offices

Grand Rapids www.crh.noaa.gov/grr/fire (Fire Page)
Phone: N/A
N/A
N/A
Fire Weather Program Leader:
Nathan Jeruzal, Nathan.Jeruzal@noaa.gov
Assistant Fire Weather Program Leader:
Brian Meade, Brian.Meade@noaa.gov
Meteorologist in Charge:
Daniel Cobb, Daniel.Cobb@noaa.gov
Watch/Warning Criteria:
Relative Humidity < = 25%
Sustained Wind Speed > = 20 mph (10 m ASOS winds) or >= 15 mph (20 ft RAWS winds)
*frequent gusts above wind criteria may be used in place of sustained winds.
Temperature > = 75 degrees F

Detroit (DTX) www.crh.noaa.gov/dtx/?n=firewx (Fire Page)
Phone: N/A
N/A
N/A
248-620-9804 public
Fire Weather Program Leader:
Heather Orow, Heather.Orow@noaa.gov
Meteorologist in Charge:
Richard Wagenmaker, Richard.Wagenmaker@noaa.gov
Watch/Warning Criteria:
Relative Humidity < = 25%
Sustained Wind Speed > = 20 mph (10 m ASOS winds) or >= 15 mph (20 ft RAWS winds)
Temperature > = 75 degrees F

Northern Indiana (IWX) www.crh.noaa.gov/iwx/?n=firewx (Fire Page)
Phone: N/A
N/A
574-834-1104 public
Fire Weather Program Leader:
Lonnie Fisher, Lonnie.Fisher@noaa.gov
Meteorologist in Charge:
Michael Sabones, Michael.Sabones@noaa.gov
Watch/Warning Criteria:
Relative Humidity < = 25%
Sustained Wind Speed > = 20 mph (10 m ASOS winds) or >= 15 mph (20 ft RAWS winds)
Temperature > = 75 degrees F

3. Other important NWS contacts

a) National Fire Weather Program Leader and Operations Coordinator

Online: <http://weather.gov/fire>

Heath Hockenberry - Program Leader N/A

Heath.Hockenberry@noaa.gov

Larry Van Bussum – Ops. Coordinator N/A

N/A

Larry.Vanbussum@noaa.gov

N/A

Address: National Weather Service
3833 South Development Avenue, Bldg. 3807
Boise, ID 83705

b) Regional Operational Services Meteorologist (ROSM)

Online: www.crh.noaa.gov

Jennifer Zeltwanger – Central Region N/A

Headquarters Emergency N/A

Response Specialist

Jennifer.Zeltwanger@noaa.gov

Address: National Weather Service,
Central Region Headquarters
7220 NW 101st Terrace
Kansas City, MO 64153

B. Participating agencies

1. Contacts and phone numbers

a) Geographic Area Coordination Center

Online: <http://gacc.nifc.gov/eacc>
Floor Coordinator N/A
N/A
Address: Eastern Area Coordination Center
626 East Wisconsin Avenue, Suite 500
Milwaukee, WI 53202

Stephen Marien - Fire Weather N/A
Program Manager N/A
N/A
Stephen_Marien@nps.gov
Address: Mississippi National River and Recreation Area
111 East Kellogg Blvd, Suite 150
St. Paul, MN 55101

b) Hiawatha National Forest, USFS

Online: www.fs.fed.us/r9/forests/hiawatha/
Primary Initial Attack N/A
Steve Nurse – Fire Management N/A
Officer snurse@fs.fed.us
Jim Flores – UPC Dispatch Center N/A
Manager N/A
jflores@fs.fed.us
Brenda Dale – East Unit FMO(St.Ignace) N/A
bdale@fs.fed.us
Eric Rebitzke – West Unit FMO(Rapid River) N/A
erebitzke@fs.fed.us
N/A
428-5800 public 906-
Address: 820 Rains Dr.
Gladstone, MI 49837

c) Isle Royale National Park, NPS

Online: www.nps.gov/isro
Richard Moore – Chief Ranger N/A
Richard.Moore@nps.gov
Marshall Plumer – East District Ranger N/A
Marshall_Plumer@nps.gov
N/A
906-482-0984 public
Address: 800 East Lakeshore Drive
Houghton, MI 49931-1896

d) Michigan Department of Natural Resources (DNR)

Online: www.michigan.gov/dnr
Acting Duty Officer N/A
N/A
906-249-1497 public
Celeste Chingwa – Resource Protection chingwac@michigan.gov
Manager
Bryce Avery – Fire Specialist averyb1@michigan.gov
Dan Laux – Fire Specialist lauxd@michigan.gov
Debbie Wester – Dispatcher/Secretary westerd@michigan.gov
Address: 110 Ford Road
Marquette, MI 49855

e) Pictured Rocks National Lakeshore, NPS

Online: www.nps.gov/piro
Primary Initial Attack N/A
Steve Nurse – Zone Fire Management N/A
Officer snurse@fs.fed.us
Matt Davis – Park Ranger N/A
N/A
matthew_davis@nps.gov
Bruce Leutusher – Vegetation/Fuels N/A
Tim Colyer – Chief Ranger N/A
N/A
tim_colyer@nps.gov
N/A
906-387-2607 public/headquarters
906-387-3700 public/ Visitors Center
Address: N8391 Sand Point Road
P.O. Box 40
Munising, MI 49862-0040

f) Ottawa National Forest, USFS

Online: www.fs.fed.us/r9/ottawa
Dispatch Center/Duty Officer N/A
Brian Sabin - Dispatcher N/A
N/A
N/A
bsabin@fs.fed.us
Dean Karlovich – Fire Management N/A
Officer N/A
dkarlovich@fs.fed.us
Randy Charles – Fire Team Leader N/A
N/A
rcharles@fs.fed.us
906-358-4551 public

Address: E23979 US Highway 2 East
Watersmeet, MI 49969

g) Seney National Wildlife Refuge, USFW

Online: www.fws.gov/midwest/seney/

Gary Lindsay – Fire Management N/A
Officer N/A
N/A

gary_lindsay@fws.gov

Greg McClellan – Deputy Refuge N/A
Manager N/A
N/A

greg_mcclellan@fws.gov

Mark Vaniman – Refuge Manager N/A
N/A
N/A

mark_vaniman@fws.gov

906-586-9851 public

Steve Nurse – Zone Fire Management N/A
Officer N/A

snurse@fs.fed.us

Address: 1674 Refuge Entrance Road
Seney, MI 49883

h) US Bureau of Indian Affairs (BIA)

Will Wiggins – Fire Management Fuels N/A
Specialist N/A

wwiggins@up.net (primary)

christopher.wiggins@bia.gov (secondary)

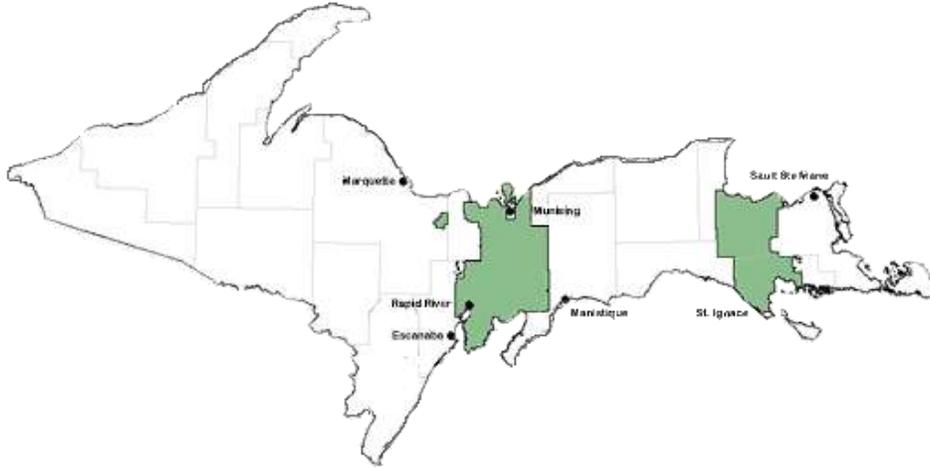
N/A

Address: 100 Hemlock Street
Baraga, MI 49908

2. Agency area maps

a) Hiawatha National Forest, USFS

Images courtesy Hiawatha National Forest (<http://www.fs.fed.us/r9/forests/hiawatha/>)



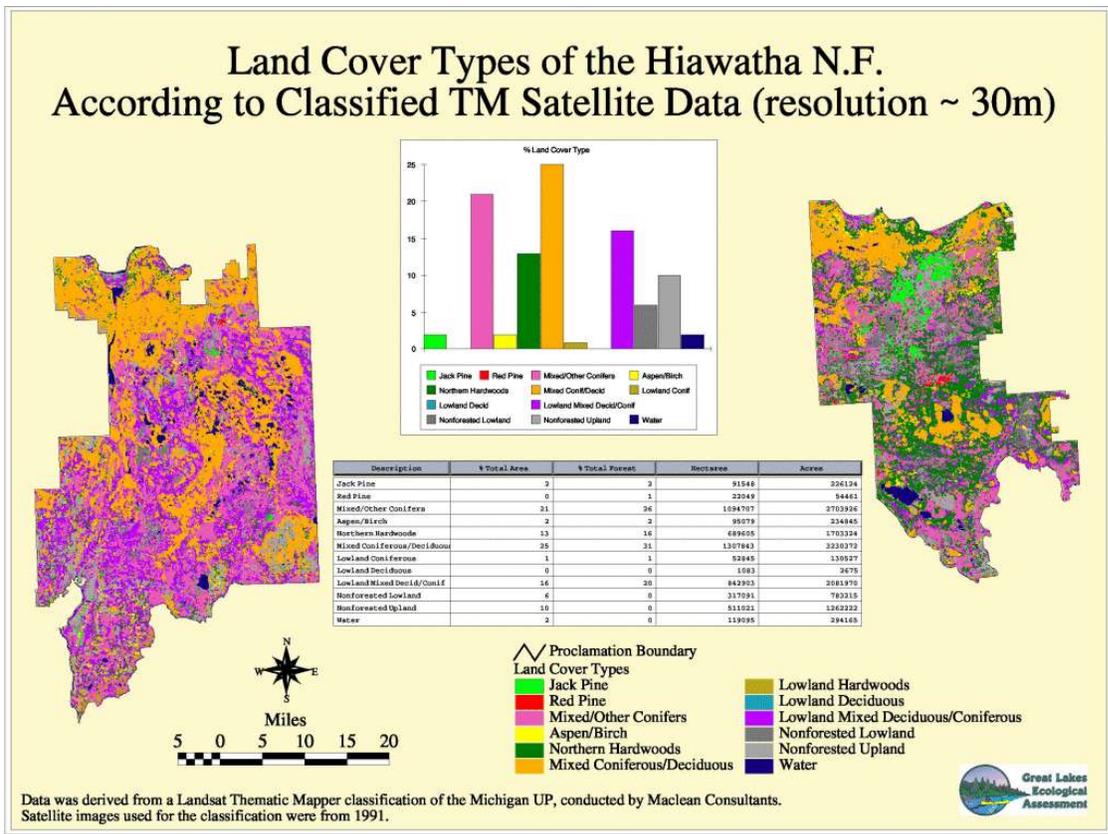
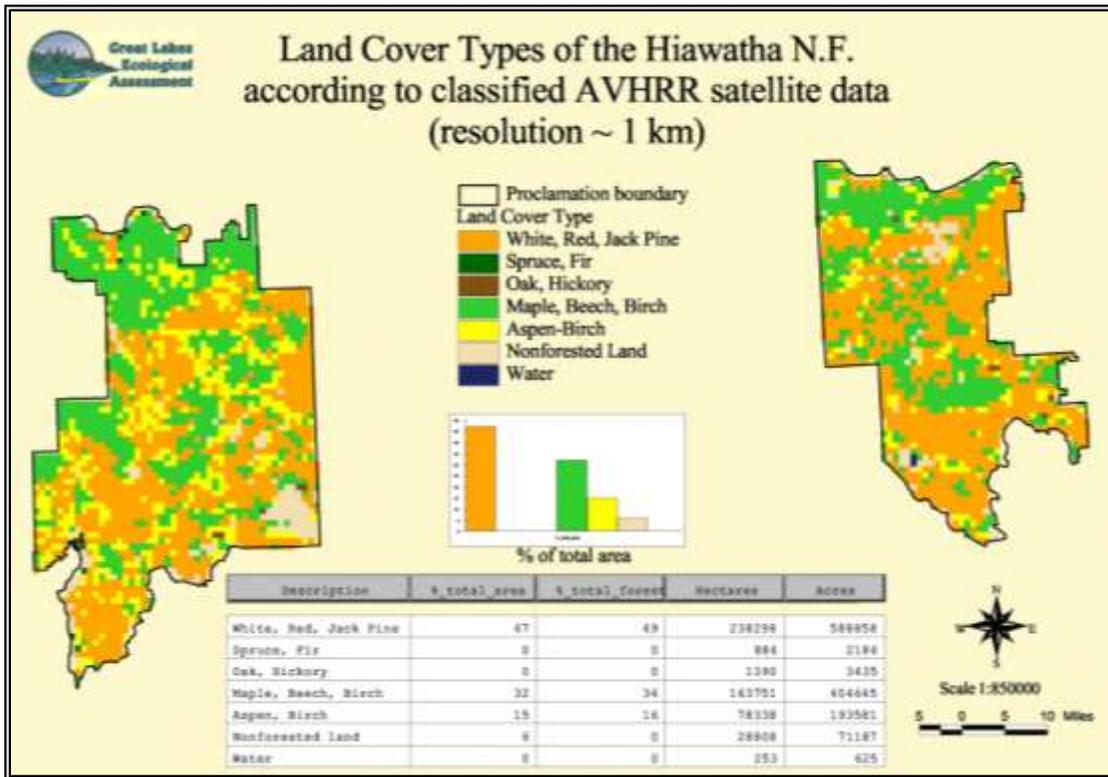
Western Unit



Eastern Unit



Land Cover Types image courtesy Great Lakes Ecological Assessment (http://www.ncrs.fs.fed.us/gla/existveg/images/hiaw_ avhrr.gif and http://www.ncrs.fs.fed.us/gla/existveg/hiaw_ tm.htm) based off of 1991 satellite



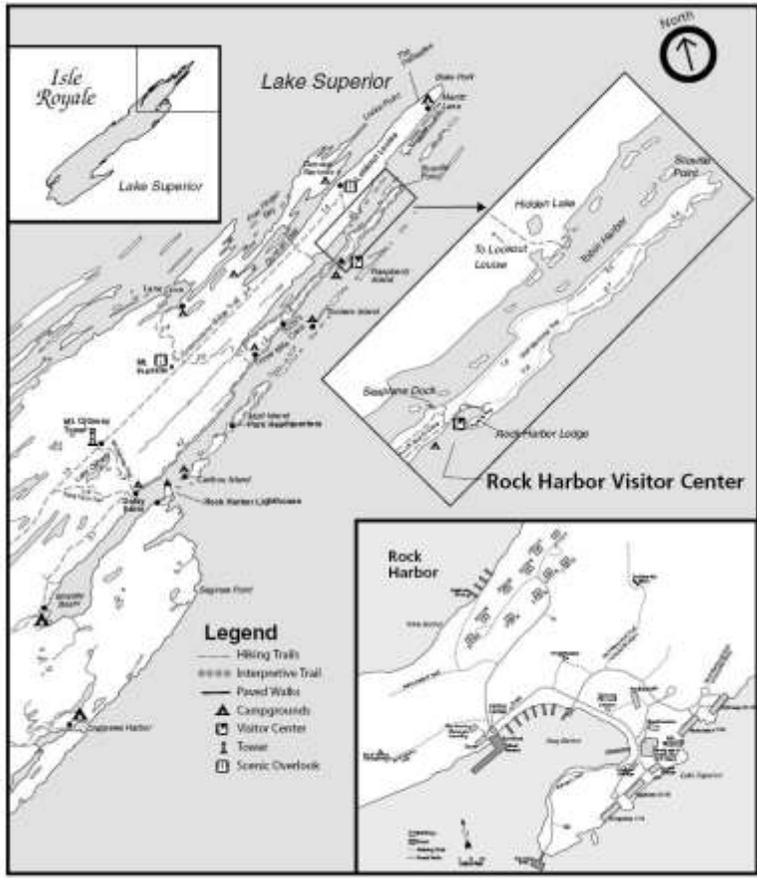
Data was derived from a Landsat Thematic Mapper classification of the Michigan UP, conducted by Maclean Consultants. Satellite images used for the classification were from 1991.

b) Isle Royale National Park, NPS

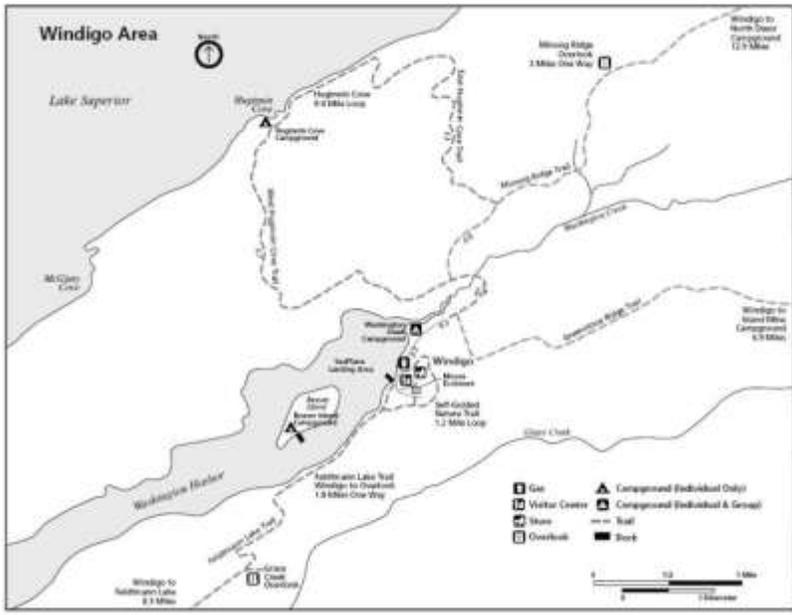
Images courtesy Isle Royale National Park (<http://www.nps.gov/isro/index.htm>)



Rock Harbor Area



Windigo Area



c) Michigan Department of Natural Resources (DNR)

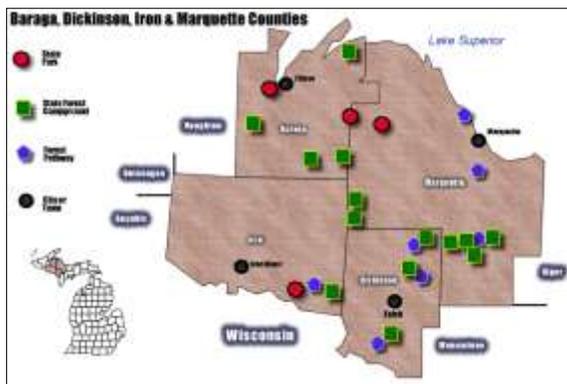
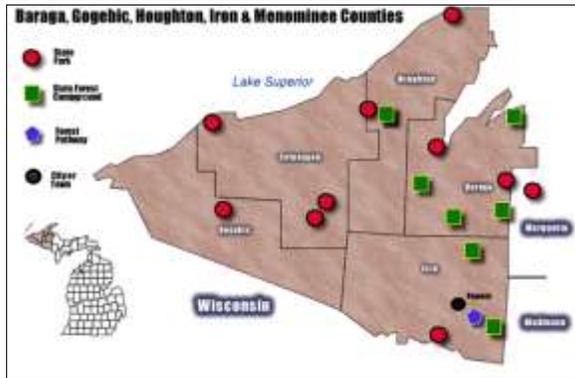
Images courtesy Michigan Department of Natural Resources (<http://www.michigan.gov/dnr>)

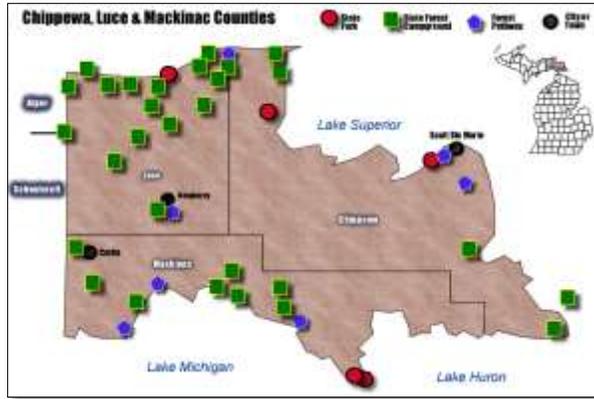
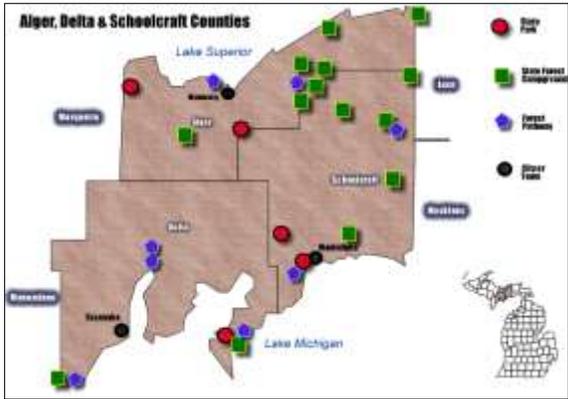


State Park, Forest Campground, and Pathways (by region)

<http://www.michigandnr.com/parksandtrails/parkmap.aspx>

<http://www.michigandnr.com/parksandtrails/listing.aspx?list=parks>





d) Pictured Rocks National Lakeshore, NPS

Images courtesy Pictured Rocks National Lakeshore (<http://www.nps.gov/piro>)

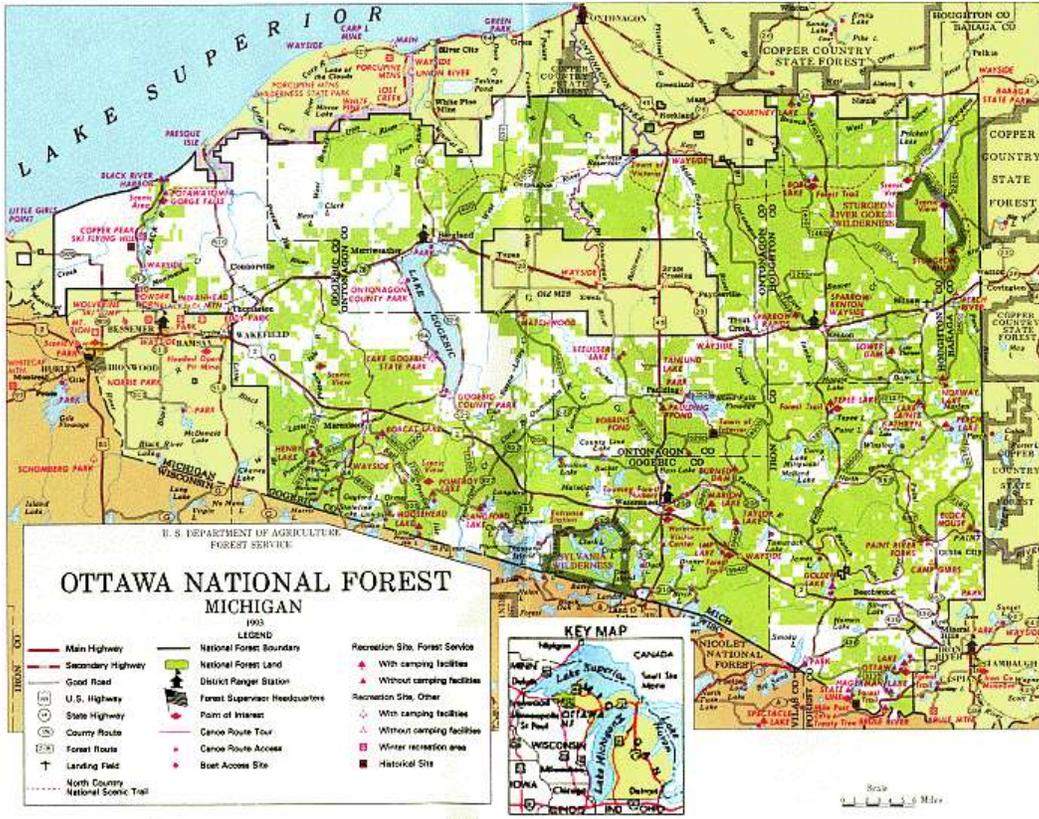
Official Park Map and Guide

<http://www.nps.gov/piro/planyourvisit/brochures.htm>

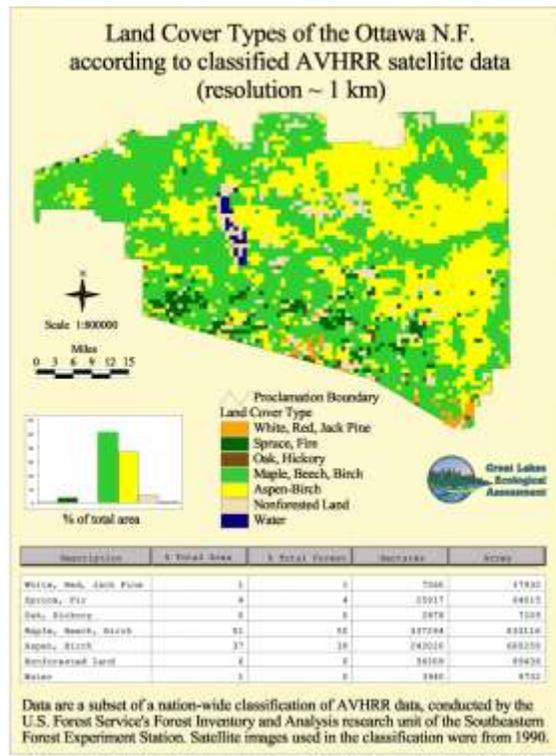


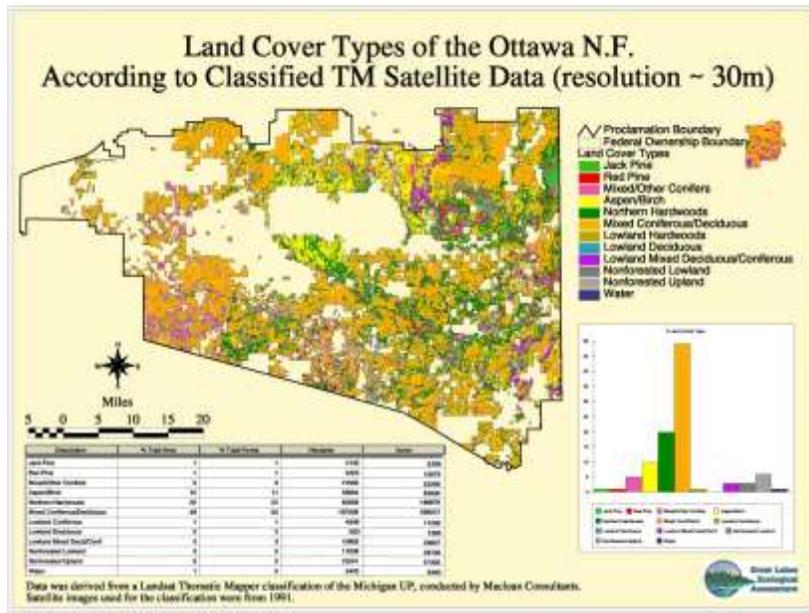
e) Ottawa National Forest, USFS

Image courtesy Ottawa National Forest (<http://www.fs.usda.gov/main/ottawa/maps-pubs>)



Land Cover Types image courtesy Great Lakes Ecological Assessment (http://www.ncrs.fs.fed.us/gla/existveg/ott_avhrr.htm and http://www.ncrs.fs.fed.us/gla/existveg/otta_tm.htm)



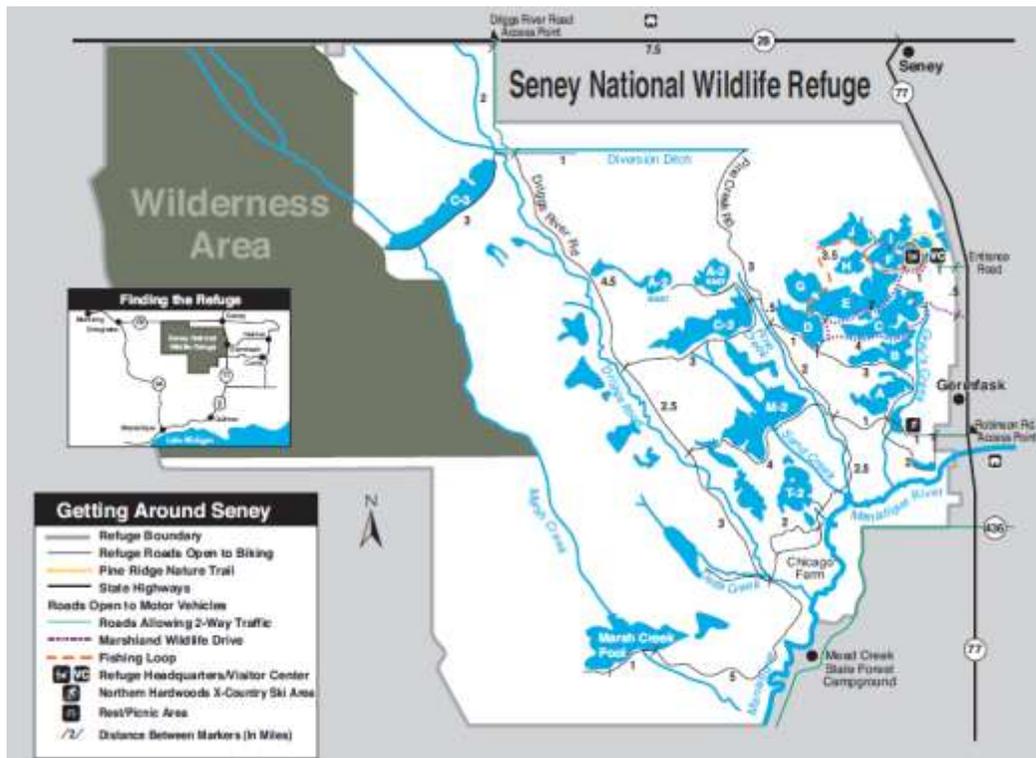


f) Seney National Wildlife Refuge, USFW

Seney National Wildlife Refuge also manages the following areas in the Marquette NWS forecast area ...

- **Harbor Island National Wildlife Refuge** – 695 acres one mile north of Drummond Island
- **West Huron Island lighthouse** – 3 miles off the southern shore of Lake Superior, 18 miles east of the Keweenaw Peninsula
- **Whitefish Point** (migratory bird reserve) – 33 acres adjacent to the Great Lakes Shipwreck Historical Museum

Image courtesy Seney National Wildlife Refuge (<http://www.fws.gov/midwest/seney/>)



III. SERVICES PROVIDED BY THE NATIONAL WEATHER SERVICE

A. Fire weather products

1. Fire Weather Planning Forecast (ARBFWMQT)

a) Issuance (seasonal, daily)

The National Weather Service in Marquette will produce the fire weather planning forecast during the fire season, which traditionally runs from April 15 to November 1. The start and end times are a collaborated between the National Weather Service and participating land management agencies. The forecast is then produced daily during the fire season, and is typically issued by 6 am local time. It will be updated during the day if significant differences are expected or occurring.

b) Posting

The primary way to receive our forecasts would be through our website, www.weather.gov/up and more specifically the Fire Weather link in the left column (www.crh.noaa.gov/mqt/?n=firewx). Forecasts are also available through WIMS, GACC Predicted Service, as well as other linked sites.

c) Content

This product usually has a set county/zone combination, which may be broken down further if certain headlines are issued (Wind Advisory, High Wind Warning, Fire Weather Watch, and/or Red Flag Warning). The current county/zone combination can be changed upon agency agreement. The forecast will include the next 3 weather periods in detail: today, tonight, and tomorrow. The following forecast example, for western Upper Michigan, is only a fraction of the entire forecast.

Traditional County/Zone Combination:

West = Gogebic, Ontonagon, Southern Houghton
Keweenaw Peninsula = Keweenaw and Northern Houghton
North Central = Baraga and Marquette
Interior South Central = Iron, Dickinson
South Central = Menominee
Northeast = Alger, Luce, Northern Schoolcraft
Far Northeast = Chippewa
Southeast = Delta, Southern Schoolcraft
Far Southeast = Mackinac

Forecaster Note: The FWF is created in GFE, called "Our FWF." If a NPW (Wind Advisory/High Wind Warning) or RFW (Red Flag Warning/Fire Weather Watch) have been issued, the formatter will automatically break out the appropriate counties. This will need to be double checked for Mackinac and Chippewa Counties.

FIRE WEATHER PLANNING FORECAST FOR UPPER MICHIGAN
NATIONAL WEATHER SERVICE MARQUETTE MI
427 AM EDT SAT NOV 1 2014

...DRY TODAY THEN A CHANCE OF SHOWERS ON SUNDAY...

.DISCUSSION...HIGH PRESSURE OVER ONTARIO THIS MORNING WILL BRING DRY WEATHER TO UPPER MICHIGAN TODAY AND TONIGHT BEFORE A LOW PRESSURE TROUGH MOVING IN FROM THE NORTHWEST BRINGS A CHANCE OF RAIN SUNDAY INTO SUNDAY NIGHT. HIGH PRESSURE WILL THEN RESULT IN DRY WEATHER AND A SLIGHT WARM UP FOR MONDAY AND TUESDAY. TEMPERATURES WILL AVERAGE WELL ABOVE NORMAL FROM SUNDAY INTO THE MIDDLE OF THE COMING WEEK.

MIZ002-009-084-021100-
WEST - GOGEBIC...ONTONAGON AND SOUTHERN HOUGHTON COUNTIES-
427 AM EDT SAT NOV 1 2014 /327 AM CDT SAT NOV 1 2014/

.TODAY...
SKY/WEATHER.....PARTLY CLOUDY.
MAX TEMPERATURE.....AROUND 52.
24 HR TREND.....UNCHANGED.
MIN HUMIDITY.....30-35 PERCENT.
24 HR TREND.....UNCHANGED.
AIRPORT WINDS.....SOUTHEAST 5 MPH OR LESS.
PCPN AMOUNT.....NONE.
HOURS OF SUN.....7.
LAL.....1.

.TONIGHT...
SKY/WEATHER.....MOSTLY CLOUDY.
MIN TEMPERATURE.....32-37.
24 HR TREND.....10 DEGREES WARMER.
MAX HUMIDITY.....76-81 PERCENT INLAND TO 69 PERCENT AT THE SHORE.
24 HR TREND.....28 PERCENT DRIER.
AIRPORT WINDS.....SOUTHEAST 5 MPH OR LESS INCREASING TO SOUTH 5
TO 10 MPH BY MIDNIGHT...THEN INCREASING TO 10
TO 15 MPH LATE.
PCPN AMOUNT.....NONE.
LAL.....1.

.SUNDAY...
SKY/WEATHER.....MOSTLY CLOUDY. A SLIGHT CHANCE OF RAIN SHOWERS.
MAX TEMPERATURE.....AROUND 54.
MIN HUMIDITY.....60-65 PERCENT.
AIRPORT WINDS.....SOUTH 10 TO 15 MPH BECOMING 15 TO 20 MPH
BY LATE MORNING...THEN BECOMING 10 TO 15 MPH BY
MID AFTERNOON.
PCPN AMOUNT.....NONE TO 0.06 IN.
HOURS OF SUN.....3.
LAL.....1.

\$\$

.FORECAST DAYS 3 THROUGH 7...

.MONDAY...PARTLY TO MOSTLY CLOUDY. PATCHY FOG EARLY WEST AND CENTRAL. LOWS 36 TO 46. HIGHS 55 TO 63...WARMEST WEST. SOUTH WINDS 5 TO 10 MPH.

.TUESDAY...PARTLY TO MOSTLY CLOUDY. A CHANCE OF SHOWERS WEST. LOWS 46 TO 50. HIGHS 55 TO 63. SOUTH WINDS 10 TO 15 MPH.
 .WEDNESDAY...A CHANCE OF SHOWERS. MOSTLY CLOUDY. LOWS 44 TO 50. HIGHS 55 TO 60. SOUTH WINDS 10 TO 15 MPH.
 .THURSDAY...MOSTLY CLOUDY. A CHANCE OF LIGHT RAIN. A CHANCE OF SNOW SHOWERS LATE. LOWS AROUND 43. HIGHS 49 TO 54.
 .FRIDAY...COLDER. MOSTLY CLOUDY. A CHANCE OF RAIN AND SNOW SHOWERS. LOWS 30 TO 35 INLAND TO AROUND 37 AT THE SHORE. HIGHS 37 TO 42.

.OUTLOOK FOR SAT NOV 8 THROUGH FRI NOV 14...EXPECT BELOW NORMAL TEMPERATURES AND ABOVE NORMAL PRECIPITATION.

\$\$

.....SMOKE MANAGEMENT FORECAST DATA.....

THE FOLLOWING VALUES ARE FOR 1 PM EST (2 PM EDT) TODAY...

WIMS ID/	SITE/	HAINES INDEX	MIXING HEIGHT	TRANSPORT WIND	VENTILATION INDEX
471301 /	WAUSAUKEE/	4 LOW	/ 3000	/ NE 5	/ 150 (F)
200301	KENTON/	4 LOW	/ 3000	/ NE 5	/ 150 (F)
201004 /	MUNISING/	4 LOW	/ 3000	/ N 5	/ 175 (F)
201002 /	DOE LAKE/	4 LOW	/ 3500	/ N 5	/ 175 (F)
201103 /	HIGH BRIDGE/	4 LOW	/ 3300	/ N 5	/ 165 (F)
200703 /	GWINN/	4 LOW	/ 3200	/ N 5	/ 160 (F)
200903 /	LABRANCHE/	4 LOW	/ 3400	/ N 5	/ 170 (F)
200503 /	PELKIE/	4 LOW	/ 3600	/ N 3	/ 108 (P)
201504 /	RACO/	4 LOW	/ 3500	/ N 3	/ 105 (P)
200802 /	RANDVILLE/	4 LOW	/ 3100	/ N 5	/ 155 (F)
201401 /	REXTON/	4 LOW	/ 3500	/ N 4	/ 140 (F)
201505 /	RUDYARD/	4 LOW	/ 3700	/ N 3	/ 111 (P)
201202 /	SENEY/	4 LOW	/ 3600	/ N 4	/ 144 (F)
201302 /	SPINCICH LAKE/	4 LOW	/ 3500	/ N 4	/ 140 (F)
201102 /	STONINGTON/	4 LOW	/ 3300	/ N 5	/ 165 (F)
200102 /	WAKEFIELD/	4 LOW	/ 2700	/ NE 3	/ 81 (P)
200103 /	WATERSMEET/	4 LOW	/ 2800	/ N 3	/ 84 (P)
	/DRUMND ISLAND/	4 LOW	/ 3600	/ N 4	/ 144 (F)
	/ KEW/	4 LOW	/ 2700	/ NW 3	/ 81 (P)

THE FOLLOWING VALUES ARE FOR 1 PM EST (2 PM EDT) SUN...

WIMS ID/	SITE/	HAINES INDEX	MIXING HEIGHT	TRANSPORT WIND	VENTILATION INDEX
471301 /	WAUSAUKEE/	2 VERY LOW	/ 2000	/ S 23	/ 460 (G)
200301 /	KENTON/	2 VERY LOW	/ 2000	/ S 23	/ 460 (G)
201004 /	MUNISING/	4 LOW	/ 2000	/ S 26	/ 520 (G)
201002 /	DOE LAKE/	4 LOW	/ 2000	/ S 26	/ 520 (G)
201205 /	HIGH BRIDGE/	4 LOW	/ 2100	/ S 24	/ 504 (G)
200703 /	GWINN/	2 VERY LOW	/ 2000	/ S 27	/ 540 (G)
200903 /	LABRANCHE/	2 VERY LOW	/ 2300	/ S 24	/ 552 (G)
200503 /	PELKIE/	2 VERY LOW	/ 2200	/ SW 28	/ 616 (E)
201504 /	RACO/	4 LOW	/ 2200	/ S 21	/ 462 (G)
200802 /	RANDVILLE/	2 VERY LOW	/ 2200	/ S 25	/ 550 (G)
201401 /	REXTON/	4 LOW	/ 1900	/ S 20	/ 380 (G)
201505 /	RUDYARD/	4 LOW	/ 2300	/ S 19	/ 437 (G)
201202 /	SENEY/	4 LOW	/ 2300	/ S 24	/ 552 (G)

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201302 /SPINCICH LAKE/ 4 LOW      / 2100 / S 24 / 504 (G)
201102 / STONINGTON/ 3 VERY LOW / 2200 / S 24 / 528 (G)
200102 / WAKEFIELD/ 2 VERY LOW / 1900 / SW 31 / 589 (G)
200103 / WATERSMEET/ 2 VERY LOW / 1700 / SW 31 / 527 (G)
      /DRUMND ISLAND/ 4 LOW      / 2800 / S 20 / 560 (G)
      /          KEW/ 2 VERY LOW / 1000 / SW 27 / 270 (F)

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NOTE: MIXING HEIGHTS ARE IN FEET ABOVE GROUND LEVEL
TRANSPORT WINDS ARE IN MILES PER HOUR

.....

THE FOLLOWING IS POINT FORECAST INFORMATION VALID AT 1 PM EST.
NOTE THAT THE QPF IS FROM 7 AM TO 1 PM EST. ALSO...WIND SPEEDS HAVE
BEEN REDUCED BY A FACTOR OF 0.7 BY THE REQUEST OF LOCAL FIRE OFFICIALS.

WIMS ID/	SITE/TEMP/	RH/WSPD/WDIR/	QPF
471301 /	WAUSAUKEE/	47/ 45/ 4/	E/0.00
200301 /	KENTON/	46/ 43/ 2/	E/0.00
201004 /	MUNISING/	45/ 45/ 1/	NE/0.00
201002 /	DOE LAKE/	45/ 45/ 1/	NE/0.00
201205 /	HIGH BRIDGE/	45/ 47/ 2/	NE/0.00
200703 /	GWINN/	45/ 46/ 1/	E/0.00
200903 /	LABRANCHE/	46/ 45/ 2/	E/0.00
200503 /	PELKIE/	46/ 48/ 1/	SE/0.00
201504 /	RACO/	43/ 48/ 2/	N/0.00
200802 /	RANDVILLE/	47/ 45/ 1/	E/0.00
201401 /	REXTON/	44/ 45/ 2/	N/0.00
201505 /	RUDYARD/	42/ 49/ 3/	N/0.00
201202 /	SENEY/	44/ 45/ 1/	N/0.00
201302 /	SPINCICH LAKE/	44/ 47/ 2/	N/0.00
201102 /	STONINGTON/	45/ 48/ 2/	E/0.00
200102 /	WAKEFIELD/	48/ 41/ 1/	SE/0.00
200103 /	WATERSMEET/	47/ 45/ 1/	SE/0.00
	/DRUMND ISLAND/	42/ 58/ 1/	N/0.00
	/ KEW/	45/ 55/ 2/	S/0.00

Time of issuance is located in the header of the product and is given in local time.

A headline is usually added, which describes the most important features of the period. In the case of a Red Flag Warning or Fire Weather Watch, information the reason, time frame, and areal coverage will be discussed.

Example:

...RED FLAG WARNING TODAY FOR SOUTH CENTRAL UPPER MICHIGAN INCLUDING
PORTIONS OF THE OTTAWA NATIONAL FOREST FOR LOW HUMIDITY AND STRONG WIND...

.DISCUSSION...

The discussion is a brief synopsis of the current conditions and what can be expected over the next 2 days, but may extend farther out if conditions are expected to significantly influence fire operations. It will include the mention of major weather features expected to affect the forecast area, along with any fire weather specific concerns of low humidity, high winds, high temperatures, or significant frost. We will make every effort to not use the phrases "near red flag conditions" or "fire

danger,” as this may create confusion. The discussion should be 8 lines or less, unless extreme fire weather deems otherwise.

SKY/WEATHER

The prevailing sky conditions across the area, given as Clear, Sunny, Mostly Sunny, Partly Cloudy, Partly Sunny, Mostly Cloudy, or Cloudy. There is a wide variety of weather options including a chance of rain showers, or a chance of showers and thunderstorms.

The chance of precipitation ranges from 0 to 100 percent. This value indicates the percent probability that any one location will receive measurable rain of 0.01 inches or greater.

0 - 14%	=	None, unless flurries, sprinkles, or drizzle
15 - 30%	=	Slight chance or isolated
31 - 60%	=	Chance, widely scattered, or scattered
61 - 80%	=	Likely or numerous
80 - 100%	=	Definite

MAX/MIN TEMPERATURE

24 HOUR TREND

Maximum and minimum temperatures are forecast in degrees Fahrenheit. Maximum temperatures will be given during the daytime hours, and minimum temperatures for the overnight. 24 Hour Trend is a value, positive or negative, depicting the difference between the maximum or minimum temperatures of the previous day to those expected that period.

MAX/MIN HUMIDITY

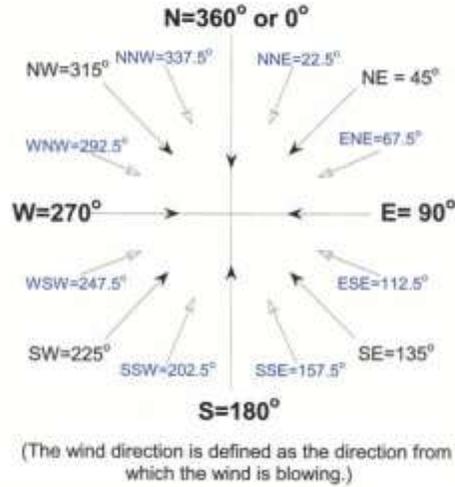
24 HR TREND

The relative humidity is the ratio, in percent, of the amount of moisture in the air compared to the amount the air could hold if it were fully saturated (100%). Maximum values are given for the overnight periods, while minimum values are for the daytime hours.

AIRPORT WINDS

This value is a combination of wind direction and speed in mph. Significant gusts or erratic wind speed or direction changes will be included. Direction is given in the 8 cardinal points; the direction from which the wind is blowing. The 8 cardinal points are N, NE, E, SE, S, SW, W, and NW. Wind speed is given in miles per hour. Currently at the National Weather Service Office in Marquette, MI, the wind we place in this parameter is the traditional airport wind, or 10-meter (33-foot) wind, titled *Wind Speed and Direction, Surface Wind*, or just *Wind* in our graphical and text based products. The National Weather Service directive 10-401: Fire Weather Services Product Specification states, “Wind will be derived from the local surface wind grid which approximates the 20 foot, 10 minute average.” Due to land cover and specific location, a correction factor may be needed to get the 20-foot (*0.7 is standard for the table below), mid flame, or other wind value of interest.

Converting Degrees Azimuth to Wind Direction



MI DNR / US BEHAVE Wind speed & Fire Shape

WIND ADJUSTMENT TABLE		MIDFLAME WINDSPEED							
Airport Winds		Fire Weather Obs		Unsheltered Fuels			Partial Shelter	Fully Sheltered	
		10m	20ft	FM 4	FM 13	Others		Open	Dense
1.0	0.9	0.8	0.7	0.6	0.5	0.4	0.3	0.2	0.1
1	1	1	1	1	1	0	0	0	0
2	2	2	1	1	1	1	1	0	0
3	3	2	2	2	2	1	1	1	0
4	4	3	3	2	2	2	1	1	0
5	5	4	4	3	3	2	2	1	1
6	5	5	4	4	3	2	2	1	1
7	6	6	5	4	4	3	2	1	1
8	7	6	6	5	4	3	2	2	1
9	8	7	6	5	5	4	3	2	1
10	9	8	7	6	5	4	3	2	1
11	10	9	8	7	6	4	3	2	1
12	11	10	8	7	6	5	4	2	1
13	12	10	9	8	7	5	4	3	1
14	13	11	10	8	7	6	4	3	1
15	14	12	11	9	8	6	5	3	2
16	14	13	11	10	8	6	5	3	2
17	15	14	12	10	9	7	5	3	2
18	16	14	13	11	9	7	5	4	2
19	17	15	13	11	10	8	6	4	2
20	18	16	14	12	10	8	6	4	2
21	19	17	15	13	11	8	6	4	2
22	20	18	15	13	11	9	7	4	2
23	21	18	16	14	12	9	7	5	2
24	22	19	17	14	12	10	7	5	2
25	23	20	18	15	13	10	8	5	3
26	23	21	18	16	13	10	8	5	3
27	24	22	19	16	14	11	8	5	3

28	25	22	20	17	14	11	8	6	3
29	26	23	20	17	15	12	9	6	3
30	27	24	21	18	15	12	9	6	3
40	36	32	28	24	20	16	12	8	4
50	45	40	35	30	25	20	15	10	5

1. No Wind Adjustment Downhill at night.
2. Generally, NWS wind forecasts are based on winds recorded at airports. These sites are usually much more exposed than our fire weather recording stations.
3. **Eye level winds** are the most appropriate to use in making fire behavior predictions in the US BEHAVE system. However, RAWS record windspeeds at **20 ft**. If you are using a NWS forecast product, or obtaining wind readings from a mast at 10m or 20ft at one of your fire weather sites, the eye level winds may be estimated from the chart above.

MI DNR CCFDRS Wind Speed & Fire Shape

Airport Winds	Fire Weather Obs Windspeed, mph		Eye Level Windspeed, mph		Fire Shape Length:Width	
	10m	20ft	Unsheltered	Sheltered	Unshelt.	Shelt.
1.0	0.8	0.7	0.5	0.3	O1a, O1b	C,M,D,S
1	1	1	1	0	1.4	1.0
2	2	1	1	1	1.4	1.0
3	2	2	2	1	1.4	1.0
4	3	3	2	1	2.3	1.1
5	4	4	3	2	2.6	1.2
6	5	4	3	2	2.9	1.3
7	6	5	4	2	3.2	1.4
8	6	6	4	2	3.2	1.4
9	7	6	5	3	3.4	1.6
10	8	7	5	3	3.6	1.8
11	9	8	6	3	3.8	1.9
12	10	8	6	4	4.0	2.1
13	10	9	7	4	4.0	2.1
14	11	10	7	4	4.2	2.3
15	12	11	8	5	4.4	2.5
16	13	11	8	5	4.5	2.7
17	14	12	9	5	4.6	2.9
18	14	13	9	5	4.7	2.9
19	15	13	10	6	4.8	3.1
20	16	14	10	6	5.0	3.3
21	17	15	11	6	5.1	3.5
22	18	15	11	7	5.2	3.7

23	18	16	12	7	5.2	3.7
24	19	17	12	7	5.4	3.9
25	20	18	13	8	5.5	4.1
26	21	18	13	8	5.6	4.3
27	22	19	14	8	5.8	4.5
28	22	20	14	8	5.8	4.5
29	23	20	15	9	5.9	4.7
30	24	21	15	9	6.0	4.9
40	32	28	20	12	6.3	5.4
50	40	35	25	15	6.9	6.4

Generally, NWS wind forecasts are based on winds recorded at airports. These sites are usually much more exposed than RAWs.

10 m winds are the most appropriate to use in determining Initial Spread Index (ISI) and making fire behavior predictions. However, our fire weather recording stations record windspeeds at **20 ft**. If you are taking eye level winds, working with a NWS forecast product, or obtaining 20 ft readings from our fire weather sites, the 10 m winds may be estimated from the chart above.

PCPN AMOUNT

Precipitation amount is given in tenths of an inch (in), and is the average amount expected when precipitation is forecast. When the chance of precipitation is 14% or less a value of 0 will be given. At values at or above 15%, a range of probably values is given (example 0.12 to 0.25 in). A chance of precipitation (up to 60%) may also begin with a range of no precipitation, at the discretion of the forecasters (example, None to 0.12 in). This may be appropriate when spotty showers are expected or event uncertainty is high.

LAL

LAL or Lightning Activity Level describes the intensity or frequency of thunderstorms if forecast, otherwise a value of 1 is given. Since the objective is to describe the lightning activity, lightning counts take precedence over the cloud-storm-rain narrative descriptions. For instance, if the clouds fit the LAL 3 descriptive criteria, but the lightning average 3 cloud-to-ground discharges per minute, the LAL should be classified as a 4.

<i>Lightning Activity Level Values</i>		
	<i>Cloud and Storm Development</i>	<i>Cloud to Ground Lightning Strikes 5 min (15 min)...areal coverage</i>
1	No Thunderstorms	None...0%
2	Cumulus clouds are common but only a few reach the towering cumulus stage. Light rain will occasionally reach the ground. Lightning is very infrequent.	1-5 (1-8)...1-14%
3	Towering cumulus covers less than two-tenths of the sky. Thunderstorms are few, but two to three must occur within the observation area. Light to moderate rain will reach the ground, and lightning is infrequent.	6-10 (9-15)...15-24%
4	Towering cumulus covers two to three-tenths of the sky. Thunderstorms are scattered. Moderate rain is common and	11-15 (16-25)...25-54%

	lightning is frequent.	
5	Towering cumulus and thunderstorms are numerous, covering more than three-tenths of the sky. Rain is moderate to heavy, with frequent and intense lightning.	>15 (>25)...>54%
6	Similar to LAL 3 except thunderstorms are dry.	

.FORECAST DAYS 3 THROUGH 7...

This portion of the forecast will contain general temperatures, sky conditions, and precipitation expected through the remainder of the 7 day forecast period. Wind direction and speed will be included through day 5, with gusts added when they are significant (typically over 35 mph).

.OUTLOOK FOR 8 TO 14 DAYS...

This extended outlook is taken directly from the daily forecast produced by the Climate Prediction Center, <http://www.cpc.ncep.noaa.gov/products/predictions/814day/> . It includes temperature and precipitation probabilities compared to seasonal normal values for the time periods. Values of near normal, above normal, or below normal will be given.

.....SMOKE MANAGEMENT FORECAST DATA.....

This section includes the 1 pm EST (2 pm EDT) Haines Index, Mixing Height, Transport Winds, and Ventilation Index for different RAWS sites for current day and the next day (day 2).

HAINEX INDEX

Haines Index is the sum of a stability term and a moisture term. The sum provides an indication of the potential for wildfire growth and extreme behavior of a fire on a given day. A Haines Index of 2-3= Very Low, 4= Low, 5=Moderate, and 6= High. We use the low-elevation formula, which is as follows:

Stability Term (T950-T850)	Moisture Term (T850-Td850)
1...3 C or less	1...5 C or less
2...4 to 17 C	2...6 to 9 C
3...8 C or greater	3...10 C or greater

MIXING HEIGHT

The mixing height is the depth of the unstable air in the boundary layer and is used for forecasting smoke or pollutant trajectories, in feet above ground level (FT-AGL). In other words, it's the layer in the atmosphere from the surface to the first inversion layer. This is the layer where vigorous mixing occurs due to convection. Quite variable in space and time, the mixed-layer depth typically increases during fair-weather daytime over land from tens of meters (around a hundred feet or less) shortly after sunrise to 1-4 km (about 3,000 to 13,000 feet) before sunset, depending on the location and season.

Forecaster Note: The Miller-Holzworth can be employed to calculate mixing height, but is a very basic, and assumes stability is based only on solar insolation, and does not take into account any changes in airmass during the day. Subsidence inversions, precipitation (non dry adiabatic parcel ascent), and upward vertical motion will usually result in different values. To estimate morning mixing heights, add 5 degrees C to the minimum surface

temperature. Then follow the dry adiabat to the intersection of the 12Z sounding. The height above the ground is the predicted morning height. Afternoon mixing heights can be forecast in much the same manner. The predicted maximum temperature is followed up the dry adiabat to the intersection of the 12Z sounding. This level is the forecast of the afternoon mixing height.

TRANSPORT WIND

Transport wind is defined as the average wind speed in all directions of all winds within the layer bounded by the surface and the mixing height. Transport winds provide land managers with information about the horizontal dispersion (location and distance downwind from the source) or suspended particles from prescribed fires.

VENTILATION INDEX

Smoke dispersal improves as the mixed layer and transport wind increase. A derived value used to indicate smoke dispersal is the ventilation index, which may also be called the clearing index:

$$\text{Ventilation Index} = \{\text{mixing height (ft agl)} * \text{transport winds (mph)}\} / 100$$

Value		Rating
Less than 130	=	Poor (P)
130 – 299	=	Fair (F)
300 – 599	=	Good (G)
600 +	=	Excellent (E)

THE FOLLOWING IS POINT FORECAST INFORMATION VALID AT 1 PM EST.

The Point Forecast includes TEMP (temperature), RH (relative humidity), WSPD (wind speed), WDIR (wind direction), and QPF (quantitative precipitation forecasts). These forecasts are valid for each RAWS site at 1 pm EST (2 pm EDT).

2. Conference Calls

NWS Marquette and the Michigan Interagency Wildland Fire Protection Association (MIWFPA) will hold a conference call every Thursday at 10 am Eastern as needed during the fire season. The day and time is flexible, and may be changed as needed. The conference call will be used to coordinate current weather, status of fuels, and the potential need for any Fire Weather Watches over the upcoming week. Calls will likely take place through spring green up and during any prolonged dry periods through the fire weather season. Depending upon the current fire weather conditions, additional calls may be needed during the week. The NWS will typically start off the call, followed by a discussion by MIWFPA agencies about available fuels, fire behavior, and resources.

Given by Michigan DNR, TDB (participant code TBD)

The backup number will be the NWS MQT conference call number
N/A (participant code N/A)
(leader pin N/A)

Forecaster Note:

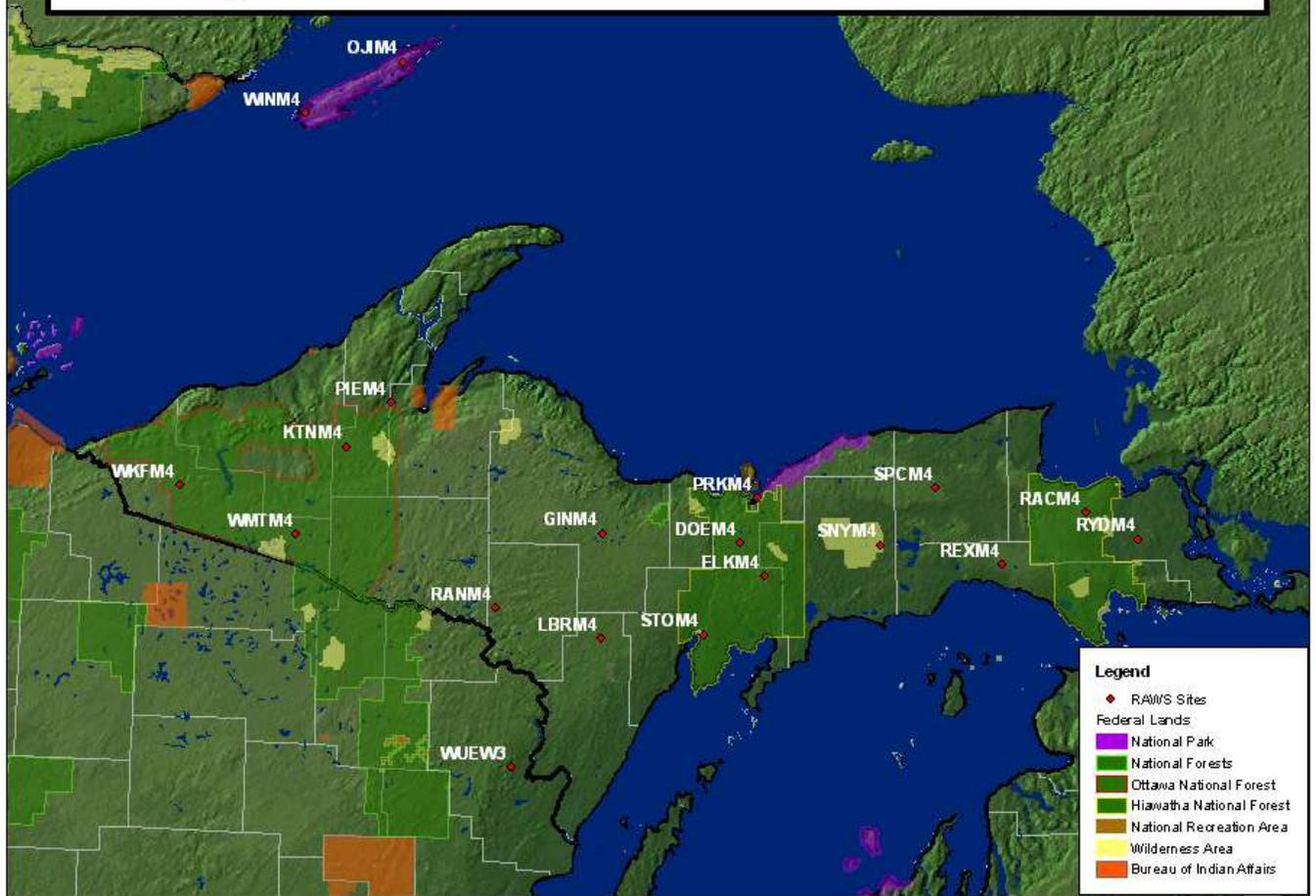
The forecaster working the short term desk (I shift) will typically participate in the call. Do not give the phone number/code to anybody other than MIWFPA share holders or the EACC Meteorologist. JoinMe may be used, with webinar instructions are found off the local Intranet.

3. Fire Weather Matrix (ARBFWMMQT) for National Fire Danger Rating System

The Fire Weather Matrix is a part of the The National Fire Danger Rating System (NFDRS). NFDRS evaluates complex model and fuel parameters as a quantitative means for evaluating the fire danger across a vast area such as a forest. The input values include daily weather observations, fuel moisture, and our Fire Weather Matrix. Fire managers receive numeric output that suggests the severity of fire danger over a large area.

Station Name (NFDRS Zone)	Station ID#	County	Controlling Agency	Elevation (ft)
Windigo/WINM4 (951)	200403	Keweenaw	NPS	830
Ojibway/OJIM4 (951)	200405	Keweenaw	NPS	1040
Wakefield/WKFM4 (952)	200102	Gogebic	MDNRE	1200
Watersmeet/WMTM4 (951)	200103	Gogebic	USFS	1605
Kenton/KNTM4	200301	Houghton	USFS	1262
Pelkie/PIEM4 (None)	200503	Baraga	MDNRE	1000
Randville/RANM4 (951)	200802	Dickinson	MDNRE	1255
Gwinn/GINM4 (950)	200703	Marquette	MDNRE	1225
Labranche/LBRM4 (None)	200903	Menominee	MDNRE	1000
Doe Lake/DOEM4 (950)	201002	Alger	USFS	815
Munising/PRKM4	201004	Alger	NPS	771
Stonington/STOM4 (949)	201102	Delta	USFS	653
High Bridge/HBRM4 (949)	201103	Delta	USFS	759
Seney/SNYM4 (950)	201202	Schoolcraft	USFWS	702
Spincich Lake/SPCM4 (951)	201302	Luce	MDNRE	896
Rexton/REXM4 (None)	201401	Mackinac	MDNRE	862
Raco/RACM4 (948)	201504	Chippewa	USFS	900
Rudyard/RYDM4 (None)	201505	Chippewa	MDNRE	700

Marquette WFO Fire Weather Sites



a) Issuance (seasonal, daily)

The FWM, or Fire Weather Matrix point forecast product, is produced on a seasonal basis, similar to the Fire Weather Planning Forecast. This coded forecast is produced for all 18 NFDRS RAWS sites in the forecast area (plus Mott Island, 200401) on a routine basis. Additional sites may be added upon request to the fire weather focal point.

In 2011, the Fire Agencies implemented a combined automated and manual observation issuance system, using what is known as the Nelson model. This results in a new observation type, “N or R” and indicates that the Nelson model was used in determining 1-hour and 10-hour fuel moisture. Though several Nelson model observations are generated, only the final “N or R” type observation is stored for the 1300 LST observation. Several N-model calculations are performed to generate automated State of Weather (SOW) and Wet Flag. A user can at this point manually edit the SOW and Wet Flag values based on local knowledge. In this case, the observation is recalculated, and the type of observation becomes “O” to indicate user editing. The manual editing of SOW and Wet Flag is the key difference, along with automatic availability of the “N or R” observation type.

Forecaster Note: The FWM is created in the GFE Formatter Launcher, “Our FWM.” Click Transmit to send the point forecasts after editing the forecast values. Check the latest observations, and make necessary changes to max/min temperature, relative humidity, and in extreme occasions the Wet Flag values. Add hours of precipitation by hand if needed. To check if the forecast made it for the final collective that runs around 4pm EST, view the text product NMCFWOER (O for Official, F for Forecast and R for Nelson Model).

b) Content

FNUS83 KMQT 261945
 FWMMQT
FCST,200103,030127,13,2,17,92,1,1,NW,10,M,18,10,98,56,1,0,N
FCST, Station, Date, 13, wx, T, RH, L1, L2, WD, WS, M, TM, TN, HM, HN, P1, P2, L

Decoding the FWM (Fire Weather Matrix)

NOTE: All times are given in Eastern Standard/Daylight time. Adjust as needed for Central Time zone.

Station – NFDRS station number (starts with 20, indicating Michigan)

Date – ddhhmm (day, hour, minute)

13 – indicates that the forecast is valid at 1300 LST (18Z), this is a constant

Wx – state of weather given as a value of 0 through 9, at 18Z (1 pm EST / 2 pm EDT) tomorrow.

0 = Clear sky
1 = Scattered clouds
2 = Broken clouds
3 = Cloudy
4 = Fog
5 = Drizzle
6 = Rain
7 = Snow/sleet
8 = Showers
9 = Thunderstorms

T – temperature at 18Z (1 pm EST / 2 pm EDT) tomorrow (°F)

RH – relative humidity at 18Z (1 pm EST / 2 pm EDT) tomorrow (%)

L1 – lightning activity level from 19Z today to 04Z tonight; 2 pm EST (3 pm EDT) to 11 pm EST (midnight EDT)

L2 – lightning activity level for 24 hours, from 04Z tonight until 04Z tomorrow night; 11 pm EST (midnight EDT) to 11 pm EST (midnight EDT)

Lightning Activity Level Guide (Coverage)

1 = No T-storms
2 = Isolated T-storms (1-14% coverage)
3 = Widely Scattered T-Storms (15-24% coverage)
4 = Scattered T-storms (25-54% coverage)
5 = Numerous (55+% coverage)

6 = Dry Lightning, when $\geq 15\%$ coverage
and little or no rain

WD – wind direction at 18Z (1 pm EST / 2 pm EDT) tomorrow, using a 16-point compass (N, NNE, NE...)

WS – wind speed at 18Z (1 pm EST / 2 pm EDT) tomorrow (mph)

M – Missing, constant M given in place of forecast fuel moisture

TM – maximum temperature from 18Z (1 pm EST / 2 pm EDT) today until 18Z (1 pm EST / 2 pm EDT) tomorrow (°F)

TN – minimum temperature from 18Z (1 pm EST / 2 pm EDT) today to 18Z (1 pm EST / 2 pm EDT) tomorrow (°F)

HM – maximum humidity from 18Z (1 pm EST / 2 pm EDT) today to 18Z (1 pm EST / 2 pm EDT) tomorrow (%)

HN – minimum humidity from 18Z (1 pm EST / 2 pm EDT) today to 18Z (1 pm EST / 2 pm EDT) tomorrow (%)

P1 – hours of precipitation from 18Z (1 pm EST / 2 pm EDT) today until 10Z (500 am EST / 6 am EDT) tomorrow

P2 – hours of precipitation from 10Z (5 am EST / 6 am EDT) tomorrow until 18Z (1 pm EST / 2 pm EDT) tomorrow

WF – wet flag is used to indicate if fuels will be wet at 18Z tomorrow (1 pm EST / 2 pm EDT), and is given as Y or N. If Y is used, then all indices will be forced to zero. N is most common. A 75% or greater probability of precipitation at 18Z tomorrow (1 pm EST / 2 pm EDT) will result in a Y.

c) *WIMS ID contact*

All fire weather stations have been assigned numbers to be used as the identification number when entering into the Weather Information Management System (WIMS). If a new station is established, or a present station is moved, a new identification number should be requested from the Eastern Area GACC Meteorologist, in coordination with WIMS and the National Weather Service.

4. Site-specific wildland fire forecasts (Spot)

Spot Forecasts are issued when requested by Interagency Wildland Fire Agencies for wildland fires or planned burn operations and are available 24 hours a day. They differ from our routine fire weather forecasts by incorporating greater detail in timing, higher resolution of terrain influences, as well as meso-scale and sometimes micro-scale weather influences impacting the site.

A Spot Forecast may also be requested for non-fire incidents or events. Examples would include search and rescue, HAZMAT, or other situation where the information would be critical to public safety. The request must be made by a government or contract government official (federal, state, tribal, or local).

A HYSPLIT trajectory run can be created for smoke by adding the words HYSPLIT and then an email address for the run to be sent to. Example... Hysplit email.address@user.gov Dispersion runs can be generated by calling the NWS MQT office. While this may be more helpful for shorter-term burns, they can still only be generated for fires (Rx or wildfires) of 100 acres or more. Contact the fire weather focal point for more information.

	Dispersion Model	Trajectory Model (Experimental)
Description	Forecasts the evolution of a smoke/chemical plume over time and space 	Forecasts where a parcel would travel from a given point starting at a specific elevation 
Needed Information	Additional Information required (burn size, duration, email)	All gathered from spot request
Request Method	Phone	Spot Forecast Request
Produced by	NWS forecaster	Automated
Delivery Method	Email	Email
Return Time	Up to ½ hour	Few Minutes

a) Criteria

Before we issue a forecast for a particular site, we need detailed information about the site, who is making the request, and why. Some of these site details include elevation, latitude, longitude, and aspect. The more information we receive about a burn site, the more accurate our forecasts tend to be. Current weather information is of great benefit if available, including temperature, wind speed, and relative humidity. We will also need to know the requesting agency, project name, phone number, and effective time for the requested forecast. The turnaround time between the request and forecast issuance is typically between 30 and 40 minutes.

Forecaster Note: If the online NWSpot program is down, complete requests using Form D-1 (located on the NWS MQT Fire webpage, or in a dark blue folder in the data desk area). If a spot forecast is completed using the D-1 form, make a note in the shift log and place a hard copy in mailbox of the fire weather focal point.

To compose a Spot Forecast, create/update any appropriate grids. Use the Formatter Launcher in GFE, "Our Spot Forecast," and select *Our Spot Forecast* from the *Products* menu. Click the *Run Formatter* button. Select the appropriate spot request. Fill in the appropriate boxes pertaining to the request, and click *OK*. Edit the spot forecast as needed, paying special attention local weather features and how they relate to any available observations. Large ranges are of little help to the user, so try to be as specific as possible. Be sure to address specific questions that came in with the request, either in the synopsis or elsewhere. Do not use the term "Red Flag" within the Spot Forecast or any other text products unless a Red Flag Warning is in effect!

Once completed, the Spot Forecast will be relayed back to the requesting agency via the NWSPOT program.

b) Content

A Spot Forecast traditionally contains sky conditions, weather, temperature, relative humidity, and wind speed.

Optional Spot Forecast elements include...

- Sky/Weather
- Temperature
- Relative Humidity
- General Wind (**Note: This will be the same wind as discussed in the Fire Weather Planning Forecast (Airport Winds). General Wind is utilized, as the term Airport Wind is not an option in the NWS Spot template. Winds may be diminished or otherwise edited by the forecaster based on input of sheltering and other topographic information.**)
- Haines Index
- Smoke Dispersion (Transport Winds and Ventilation Index)
- Lightning Activity Level
- Mixing Height
- Wind Wave
- Rainfall Amount
- Additional information upon request

PRIMARY FORECAST ELEMENTS

TDA TNT TMR (Today, Tonight, Tomorrow)

- Sky / Weather
- Temperature
- Relative Humidity
- General Wind
- Haines Index
- Smoke Dispersion
- Lightning Activity Level
- Mixing Height
- Wind Wave
- Rainfall Amount

All parameters, excluding Dispersion and Wind Wave, are discussed in length in the Fire Weather Planning Forecast section of this Annual Operating Plan.

DISPERSION

Clicking on the option for dispersion will result in the following 2 parameters, Transport Winds and Ventilation Index. The Ventilation Index was discussed in the Fire Weather Planning Forecast section. The Transport Wind is the average wind speed and direction in the mixed layer.

WIND WAVE

Wind Wave is the wave height in feet (ft). This parameter is, in our case, available over most of Lake Superior and northern Lake Michigan. It is especially important for search-and-rescue, spills, incidents, or near water fire operations.

```
IF CONDITIONS BECOME UNREPRESENTATIVE,  
CONTACT THE NATIONAL WEATHER SERVICE.  
SPOT FORECAST FOR TEST LOCATION...MI DNR  
NATIONAL WEATHER SERVICE MARQUETTE MI  
1019 AM EDT TUE APR 12 2011  
  
FORECAST IS BASED ON IGNITION TIME OF 1100 EDT ON APRIL 12.  
IF CONDITIONS BECOME UNREPRESENTATIVE...CONTACT THE NATIONAL WEATHER  
SERVICE.  
  
.DISCUSSION...LOW PRESSURE OVER SOUTHEAST CANADA WILL MAINTAIN A  
COOL NORTHWEST FLOW THROUGH WEDNESDAY. EXPECT NORTHWEST WINDS  
GENERALLY IN THE 10 TO 15 MPH RANGE TODAY WITH GUSTS OCCASIONALLY  
INTO THE 20 TO 25 MPH RANGE. LOOK FOR INCREASING CLOUD COVER THROUGH  
THE DAY. A LOW PRESSURE TROUGH MOVING THROUGH THE AREA TONIGHT MAY  
BRING A FEW SPRINKLES. ANOTHER TROUGH ON WEDNESDAY WILL BRING A  
CHANCE OF A FEW LIGHT SHOWERS. HIGH PRESSURE WILL THEN BUILD INTO THE  
REGION THROUGH THE END OF THE WEEK...BRINGING A WARMING TREND WITH  
NO PRECIPITATION.  
  
.TODAY...  
  
SKY/WEATHER.....MOSTLY SUNNY THEN BECOMING MOSTLY CLOUDY.  
MAX TEMPERATURE.....53 AT IGNITION...MAX 58.  
MIN HUMIDITY.....42 PERCENT AT IGNITION...MIN 37 PERCENT.  
GENERAL WIND.....WINDS NORTHWEST AT 11 MPH AT IGNITION...  
OTHERWISE NORTH WINDS 7 TO 12 MPH INCREASING
```

TO NORTHWEST 10 TO 15 MPH.
HAINES INDEX.....4...OR LOW POTENTIAL FOR LARGE PLUME DOMINATED
FIRE GROWTH.
TRANSPORT WINDS.....NORTHWEST 16 TO 35 MPH INCREASING TO 24 TO 40
MPH LATE.
VENTILATION INDEX...GOOD (350) INCREASING TO EXCELLENT (2099) .
LAL.....1.
MIXING HEIGHT.....300-1800 FT AGL INCREASING TO 7500-8000 FT AGL.
RAINFALL AMOUNT.....0.00 INCHES.

TIME (EDT)	11 AM	1 PM	3 PM	5 PM	7 PM
SKY (%)	36	64	75	81	80
WEATHER COV.					
WEATHER TYPE	NONE	NONE	NONE	NONE	NONE
TEMP.	53	56	57	56	53
RH.	42	38	37	37	40
GENERAL WIND	NW 11	NW 11	NW 12	NW 12	NW 11
GENERAL WIND GUST20	20	20	25	25	20
HAINES INDEX	4	4	4	4	4

c) Procedures

The preferred method for requesting and issuing a spot forecast is from our website:
<http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=mqt>

If necessary, you may fax a Spot Request Form D-1 to our office or phone in the specific request. If you use this method, a call would be greatly appreciated to alert us of the arriving fax. This will expedite the process. Copies of the Spot Request Form D-1 can be downloaded from the following site, or made available upon request:
http://www.weather.gov/directives/010/401f/WS_FORM_D_SPOT.pdf

Once sent, the forecasters will be alerted, as the product ARBSTQMQT alarms at the weather service office. A phone call to the forecast office is usually not needed, but may help clear up questions the forecasters may have about the request.

Once the forecast has been issued, the Spot website will auto-update/refresh. At the forecast office, the final forecast will also alert on the workstations, as the product ARBFWSMQT.

Feel free to test out our online request page. If you do send in a test request, please contact our office to tell one of the forecasters that you are doing so. If you have any questions about Spot requests feel free to give us a call. Feedback is greatly appreciated via the NWS Spot interface.

5. Wildfire Potential Statement (ARBRFDMQT)

a) Criteria

A Wildfire Potential Statement (ARBRFDMQT) can be used as an outlook to potential critical fire weather conditions beyond when a Fire Weather Watch is traditionally issued. It can also be utilized for those times when conditions do not quite meet specific Fire Weather Watch or Red Flag Warning criteria, but there will still be an elevated fire danger. One example is the summer season, when humidity values may likely be closer to 35%, but very strong winds could carry crown fires for several miles within hours. The product briefly describes the fire danger, the weather conditions behind it, how long the conditions will last, and concludes with a brief call to action. A Special Weather Statement (SPS) may also be utilized for larger events, as it will automatically highlight on our website, and may be a higher alert product for local and national media sources.

Forecaster Note:

When a Wildfire Potential Statement has been issued, there is no need to include a special headline in the routine FWF. There is no requirement to update the statement at a certain time, but during a prolonged period of high fire danger RFDs should be issued at least once a day. No cancellation statement is needed when conditions improve. The RFD is created in GFE. Select the areas you want, with segments if appropriate. *Unless instructed to do otherwise by fire officials, avoid trying to describe the level of fire danger. Instead, use terms like elevated fire risk or increased fire potential. Only the use of the phrase "Extreme Fire Danger" in the headline of this product will activate the WWA maps (color coding on NWS web sites). Create/Edit the Top News of the Day story.*

b) Content

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WILDFIRE POTENTIAL STATEMENT
NATIONAL WEATHER SERVICE MARQUETTE MI
500 AM EDT THU APR 14 2011
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...VERY HIGH FIRE RISK TO CONTINUE THROUGH THE WEEKEND...
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HIGH PRESSURE CENTERED OVER HUDSON BAY...ALONG WITH A WEEK WITHOUT
RAINFALL...HAS RESULTED IN VERY DRY CONDITIONS AND AN INCREASED
WILDFIRE POTENTIAL ACROSS UPPER MICHIGAN. EXPECT NO RAINFALL AND
VERY LOW HUMIDITIES INTO THE WEEKEND...MAINTAINING THE VERY HIGH
FIRE RISK.
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BECAUSE OF THE VERY HIGH FIRE RISK...POSTPONE ANY OUTDOOR
BURNING AT LEAST UNTIL NEXT WEEK. IF BURNING MUST BE DONE...CHECK
WITH LOCAL GOVERNMENTAL AGENCIES FOR ANY BURNING RESTRICTIONS THAT
MAY BE IN EFFECT.
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6. Fire Weather Watch, Red Flag Warning Program (ARBRFWMQT)

The Fire Weather Watches and Red Flag Warnings are issued to alert of combination of dry fuel and weather conditions that could result in extensive wildfire occurrence or extreme fire behavior. These conditions alert our land management agencies to the potential for widespread new ignitions or control problems with existing fires, both of which could pose a threat to life and property.

A **Fire Weather Watch** is issued 12 to 96 hours in advance of the onset of possible warning conditions.

A **Red Flag Warning** is issued within 24 hours of the event (or onset of warning conditions).

a) Criteria

The parameters used to define a watch or warning includes relative humidity, wind speed, and temperature, and fuel moisture (defined as a period of dry weather). Specific fuel moisture must be coordinated with our users.

- A dry spell for over a week (shorter before spring green-up or after fall color)
- Sustained Wind Speed \geq 20 mph (10 m ASOS-Airport winds)
or \geq 15 mph (20 ft RAWS winds)
- Relative Humidity 25% or less
- Temperature 70 F or greater

Note: The temperature criterion is soft. Red Flag Warnings can be used for temperatures less than 70 degrees depending on other factors.

Initial watch/warning coordination may be accomplished during the semi-routine weekly MIWFPA conference call. If a Fire Weather Watch is already in effect and expected weather conditions still meet Red Flag Warning criteria, no ok is needed from MIWFPA to issue the Red Flag Warning. Once a Red Flag Warning is issued the different agencies of MIWFPA should be notified as soon as possible. If no Fire Weather Watch is in effect, then contact must be made with MIWFPA before a Red Flag Warning is issued. Contacts for MIWFPA coordination are listed below...

- Michigan DNR – Duty Officer
- Hiawatha NF, Pictured Rocks NL – Steve Nurse
- Seney NWR – Gary Lindsay
- Ottawa NF – Duty Officer
- US BIA – Will Wiggins

Once a decision is made to issue a Fire Weather Watch or Red Flag Warning, the Fire Weather Forecast should be updated accordingly. You must also notify the EACC Floor Coordinator.

Forecaster Note: The expiration time of the RFW should line up with the issuance of the next FWF, unless conditions are anticipated to improve in the meantime. Also update the FWF, and AFD to include WWA coding. Create and publish a story for the [Top News of the Day](#).

b) Content

The following is an example of a Red Flag Warning; a fire weather watch would look very similar. The header will state whether it is a Fire Weather Watch or Red Flag Warning.

This narrative product will be comprised of a headline followed by a brief statement with more detail as to where, when, and why the product has been issued.

RED FLAG WARNING
NATIONAL WEATHER SERVICE MARQUETTE MI
601 AM EDT WED SEP 22 2010

...RED FLAG WARNING IN EFFECT FROM 2 PM EDT /1 PM CDT/ THIS AFTERNOON TO 9 PM EDT /8 PM CDT/ THIS EVENING FOR NORTHWEST UPPER MICHIGAN...

.HIGH PRESSURE WILL REMAIN ACROSS THE AREA TODAY. EXPECT AFTERNOON RELATIVE HUMIDITY TO BOTTOM OUT AS LOW AS 20 PERCENT AWAY FROM THE MODERATING INFLUENCE OF THE LAKE SUPERIOR AS HIGH TEMPERATURES REACH 65 TO 70. NORTHWEST UPPER MICHIGAN MISSED OUT ON WIDESPREAD RAIN THAT FELL ON SUNDAY. SUSTAINED WEST WINDS WILL BE 10 TO 15 MPH THIS AFTERNOON AS WELL.

ALTHOUGH THE WINDS ARE NOT LIKELY TO BE AS STRONG ON THURSDAY AFTERNOON AND THE RELATIVE HUMIDITY WILL BE A BIT HIGHER...DAYTIME HIGH TEMPERATURES ARE FORECAST TO PEAK FROM 70 TO 75 AWAY FROM THE GREAT LAKES. SO THE ELEVATED FIRE RISK WILL PERSIST THROUGH THURSDAY BEFORE A CHANCE OF SHOWERS RETURNS LATE THURSDAY NIGHT AND FRIDAY.

MIZ001>004-009-084-290100-
/O.NEW.KMQT.FW.W.0001.080528T1800Z-080529T0100Z/
KEWEENAW-ONTONAGON-NORTHERN HOUGHTON-BARAGA-GOGEbic-
SOUTHERN HOUGHTON-
601 AM EDT WED SEP 22 2010 /501 AM CDT WED SEP 22 2010/

...RED FLAG WARNING IN EFFECT FROM 2 PM EDT /1 PM CDT/ THIS AFTERNOON TO 9 PM EDT /8 PM CDT/ THIS EVENING...

THE NATIONAL WEATHER SERVICE IN MARQUETTE HAS ISSUED A RED FLAG WARNING...WHICH IS IN EFFECT FROM 2 PM EDT /1 PM CDT/ THIS AFTERNOON TO 9 PM EDT /8 PM CDT/ THIS EVENING.

HIGH TEMPERATURES WILL WARM TO 65 TO 70 DEGREES TODAY AWAY FROM LAKE SUPERIOR WITH RELATIVE HUMIDITY VALUES DROPPING TO AS LOW AS 17 TO 24 PERCENT THIS AFTERNOON INTO THIS EVENING AWAY FROM LAKE SUPERIOR. WEST WINDS WILL BE 10 TO 15 MPH THIS AFTERNOON AND EARLY EVENING WITH CRITICAL FIRE WEATHER CONDITIONS EXPECTED FROM 2 PM EDT TO 9 PM EDT TODAY. CONDITIONS WILL IMPROVE AFTER SUNSET WITH TEMPERATURES FALLING...RELATIVE HUMIDITIES RISING AND WINDS DYING DOWN.

A RED FLAG WARNING MEANS THAT CRITICAL FIRE WEATHER CONDITIONS ARE EITHER OCCURRING NOW...OR WILL SHORTLY. A COMBINATION OF STRONG WINDS...LOW RELATIVE HUMIDITY...AND WARM TEMPERATURES WILL CREATE EXPLOSIVE FIRE GROWTH POTENTIAL.

\$\$

7. Specific Online Products

There are many fire specific data and forecasts offered through our local and national NWS fire pages...

www.crh.noaa.gov/mqt/?n=firewx

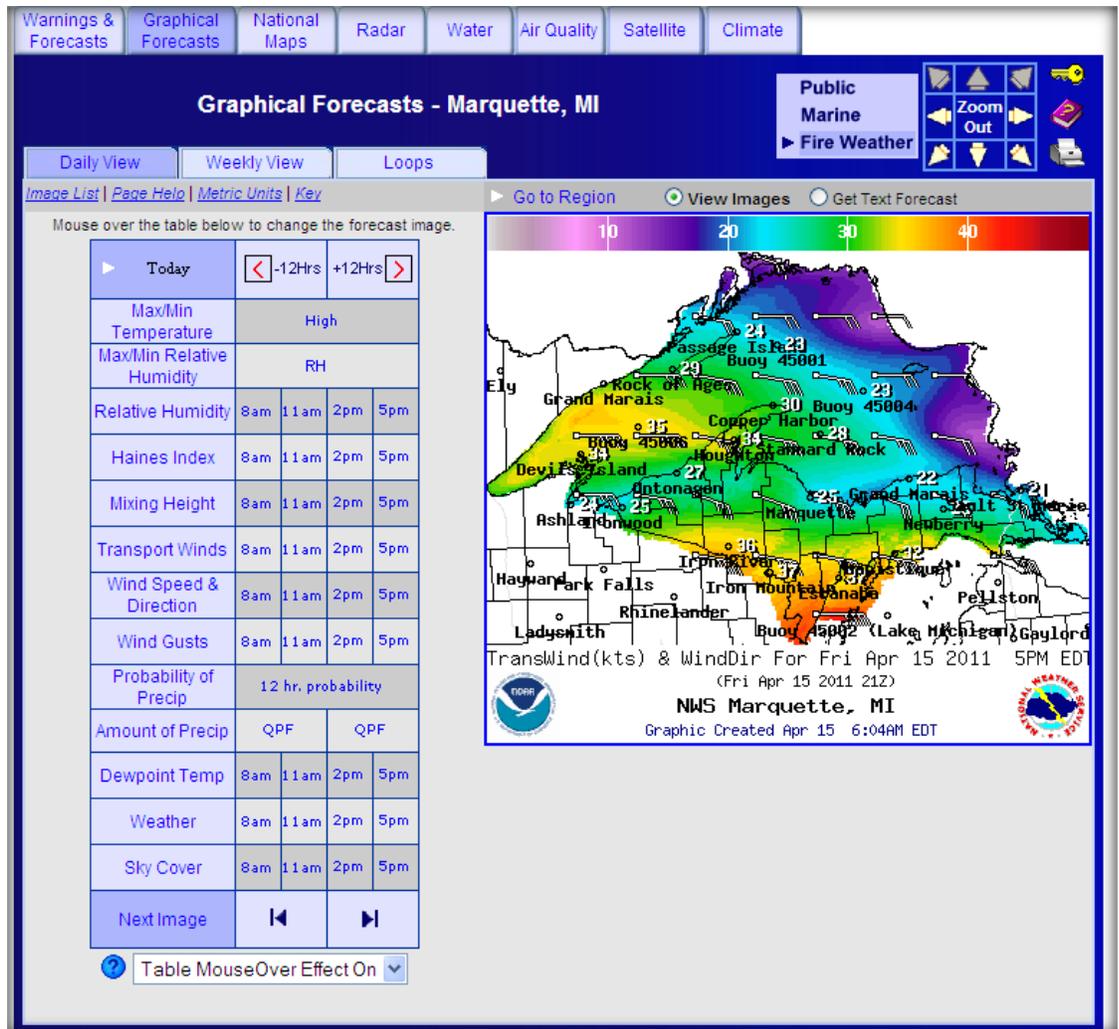
<http://weather.gov/fire>

The following are just a few of the more useful products available.

a) Fire Weather Graphics

<http://www.weather.gov/forecasts/wfo/sectors/mqtFireDay.php#tabs>

Weather elements displayed in a map form in 3, 6, or 12 hour increments depending on the parameter. Data is available out through 6-7 days, with most Fire Weather elements going through the next 2 days. This product is updated several times a day, with the Fire Weather elements updated at least 2 times a day during the fire season (around 6 am and 5 pm).

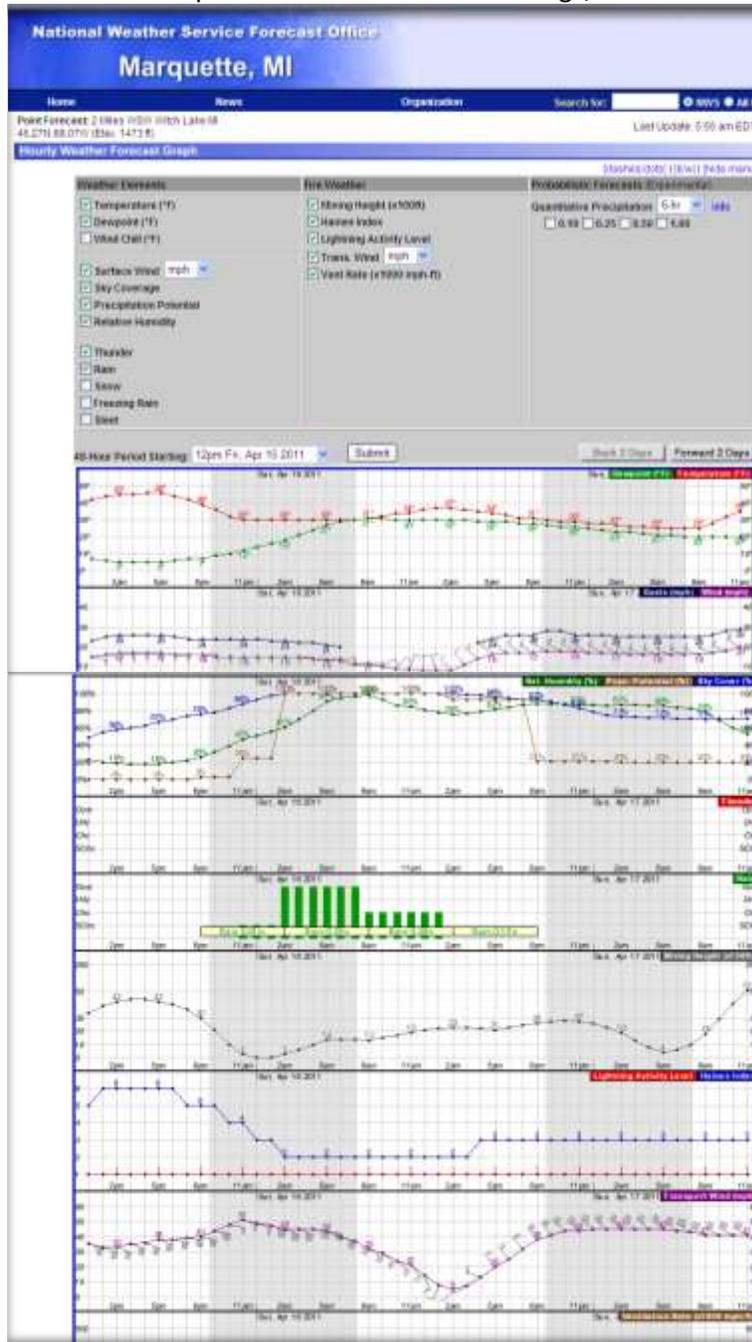


b) **Hourly Weather Graph**

<http://www.weather.gov/mqt>

Point-based hourly weather output for most parameters through the next 6-7 days, with most Fire Weather elements going through the next 2 days. This product is updated several times a day, with the Fire Weather elements updated at least 2 times a day during the fire season (around 6 am and 5 pm).

- On the map, click on your desired location
- If needed, edit location via the map in middle of page
- Scroll down to the bottom-right side of the page
- Select **Hourly Weather Graph**
- Select your desired Weather/Fire Weather Elements, adjust the time period “48-Hour Period Starting”, and hit **Submit**



d) **Farsite Weather Input**

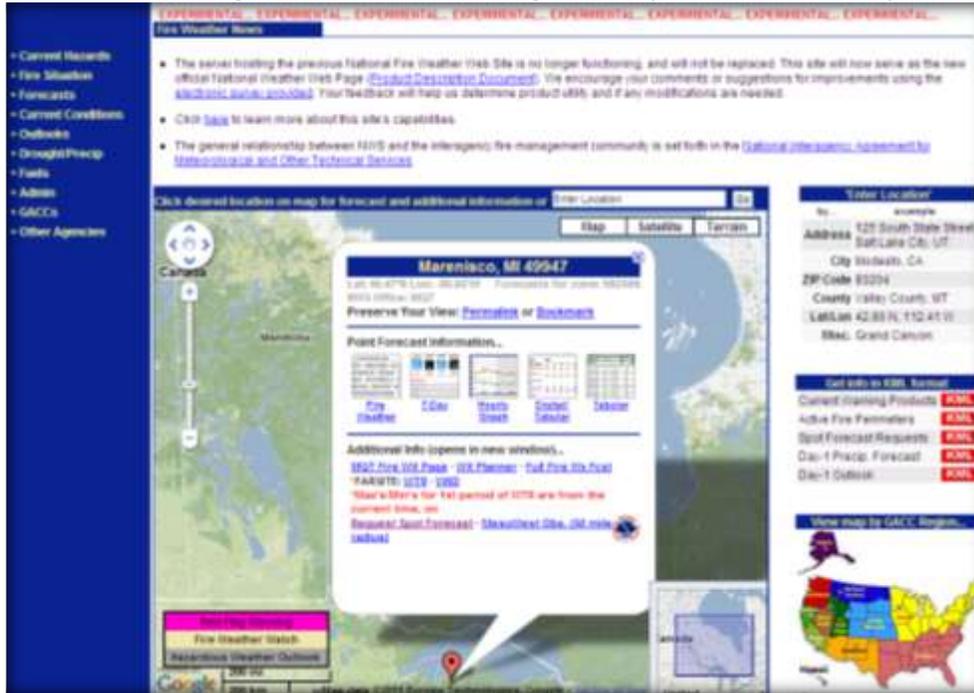
<http://weather.gov/fire> (zoom into and click on the area of interest, open WTR and WND files for FARSITE)

or

<http://radar.srh.noaa.gov/fire/FARSITE/wtr.php?lat=46.468&lon=-89.6484>

<http://radar.srh.noaa.gov/fire/FARSITE/wnd.php?lat=46.468&lon=-89.6484>

Adjust the 2 links above for your specific latitude and longitude, remembering that forecast outputs are for 2.5 km grid boxes. Caution: If the location is in rough terrain or near a body of water, a small change in the latitude and longitude may result in a more representative forecast.



B. Special services, procedures for obtaining and billing

Special services could include teaching weather related courses or an on-site Incident Meteorologist (IMET).

When land management agencies wish for a fire weather forecaster to teach a course, the request should be made at least 3 weeks ahead of time. This can be done by calling or emailing the Fire Weather Program Manager(s). A one-day trip will not incur any costs to the requesting agency. However, with an overnight stay, travel expenses should be paid for by the requesting agency. In most cases reimbursement agreements are in place.

Please reference the Geographical Area Mobilization Guide and/or the National Mobilization Guide for details about IMET dispatches for wildland fire suppression operations.

C. Alert Communications

1. iNWS (Watch/Warning/Advisory Alerts)

<http://inws.wrh.noaa.gov>

The iNWS network is available for emergency personnel, which includes wildland firefighters and emergency planners. You are able to sign up for a location specific account that will provide you with email and/or text messages for selected Watch, Warning, and Advisory products issued by the National Weather Service. While many alerted products are available including Severe Thunderstorm and Tornado Warnings, the following products are for fire weather purposes...

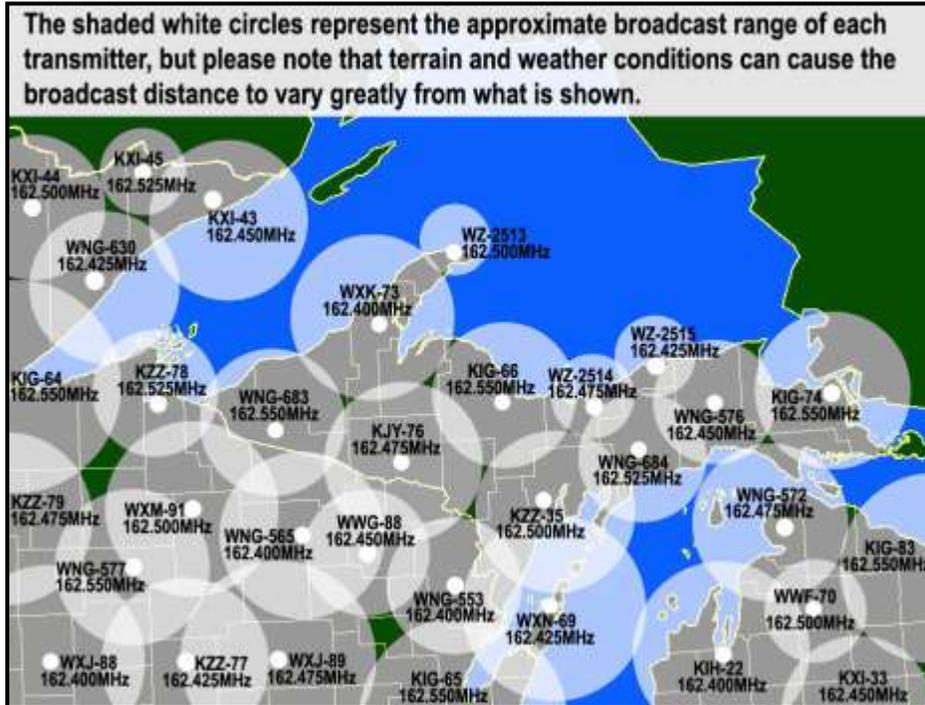
- Red Flag Warnings/ Fire Weather Watches (RFW)
- Wildfire Potential Statements (RFD)

The screenshot shows the NOAA Interactive NWS My Alerts website. The top navigation bar includes links for Home, My Alerts, News, FAQ, and About, along with the user name Kari Fleegel and links for Settings and Logout. The main heading is "Interactive NWS My Alerts" with the NOAA logo. A left sidebar contains navigation options: Alerts Home, Account Settings, Logout, iNWS Alert Areas (with a sub-option "Add New Alert Area"), Pictured Rocks, and Hydrology Alert Points (with a sub-option "Add New Hydro Point"). The main content area features a map titled "Create an alert point or alert area by custom drawing." with a yellow instruction box: "Using the map, draw a point, line or polygon over the area you wish to receive alerts for." The map shows a coastal region with a "Pictured Rocks National Lakeshore" label. Below the map are four radio buttons for "Navigate", "Draw Point", "Draw Line", and "Draw Polygon". A legend at the bottom explains: "For 'Draw Point' - Single click to draw a point. For 'Draw Line' and 'Draw Polygon' - Single click to add points; double click to end drawing." The map data is attributed to "Data CC-BY-SA by OpenStreetMap".

2. NOAA Weather Radio All Hazards

The products listed below will play on NOAA Weather Radio All Hazards at various intervals from every broadcast cycle, every 10 minutes, or more infrequent as needed. The periodicity of each product will vary depending on the severity of the fire situation and the presence of additional weather hazards (example- severe thunderstorms, flooding, etc.). However, they are typically broadcast every 10 minutes. Please contact the Fire Weather Focal Point(s) with any periodicity change requests.

- Wildfire Potential Statement (RFDMQT)
- Fire Weather Watch/Red Flag Warning (RFWMQT)



Call Sign	Site Name	Site Location (County)	Frequency	Power
KZZZ78	Ashland	Ashland (Ashland)	162.525	1000
WZ2513	Copper Harbor	Copper Harbor (Keweenaw)	162.500	300
KJY76	Crystal Falls	Crystal Falls (Iron)	162.475	1000
KZZ35	Escanaba	Escanaba (Delta)	162.500	1000
WNG572	Emmet County	Emmet County (Cheboygan)	162.475	300
WZ2515	Grand Marais	Grand Marais (Alger)	162.425	100
WXX73	Houghton	Painesdale (Houghton)	162.400	1000
WNG84	Manistique	Steuben (Schoolcraft)	162.525	300
WNG683	Marinesco	Marinesco (Gogebic)	162.550	300
KIG66	Marquette	Negaunee (Marquette)	162.550	300
WZ2514	Munising	Munising (Alger)	162.475	100
WNG576	Newberry	Newberry (Luce)	162.450	300
KIG74	Sault St. Marie	Daftner (Chippewa)	162.550	1000
WXN69	Sister Bay	Sister Bay (Door)	162.425	1000
WNG553	Wausaukee	Wausaukee (Marinette)	162.400	1000

D. CRH Notification Requirements for Major Events

Forecaster Note:

If a major fire weather event occurs in Upper Michigan, it must be reported immediately to the MIC/AMIC, the EACC Meteorologist, and Central Region Headquarters (CRH). Such events are defined as:

1. Major fire weather occurrences resulting in:
 - a. One or more directly related fatalities
 - b. Numerous injuries
 - c. Major property damage
 - d. Significant media attention
2. Any request for the deployment of a fire weather incident forecaster (IMET).

To notify Central Region Headquarters:

Follow the Google Sites CHR Logging and Notification decision Tree...

N/A

CRH will call back. Provide the following information to the CRH contact.

For a wildfire:

- a. Time wildfire began, if known
- b. Location of wildfire
- c. Acreage burned, if known, and valid time of this information
- d. Percent contained if known, and valid time of this information
- e. Fatalities
- f. Injuries
- g. Damage
- h. Media coverage
- i. Warning or other product in effect

For IMET deployment notification contact will be made with the Region Fire Weather Program Leader. This can wait until daytime or early evening hours. This is typically done by the IMET and/or the MIC.

1. Name of the IMET deployed
2. Wildfire to which the IMET is being deployed
3. The field office from which the IMET is being deployed
4. Time IMET scheduled to leave the field office and report to the wildfire site

IV. JOINT RESPONSIBILITIES

Service boundaries and fire weather forecast zones, and text product specifics may be negotiated to meet customer and forecaster need.

V. BACKUP PROCEDURES

A. Backing up the Marquette forecast office (for APX and GRB staff)

We exchange primary backup responsibility with WFO Gaylord and secondary responsibility with WFO Green Bay. Please see the Service Area and Organizational Directory for phone numbers.

Forecaster Note:

Please view our intranet site, [N/A](#)

See Bookmarks (from the top bar) > Fire Weather > MQT Fire Intranet Page

For additional information, please contact MQT Fire Weather Focal Point (s) or other staff members.

Backup Quick Reference

- Grids created through GFE, Procedures, Create Fire_Wx_Grids
 - Created 2x a day during, with the morning and afternoon forecast packages
 - Updated as needed
- Products issued through the GFE Formatter Launcher
 - FWF (Our FWF)...issued by 6 am EST daily (traditionally from April 15th – November 1st)
 - FWM (Our FWM)...will automatically pull in all of our NFDRS sites
 - Spot (Our Spot Forecast)...set up [ARBSTQMQT](#) to alarm
 - RFD (RFD)...at the request of the agencies (plays on NWR every ~10 min.)
 - RFW (Hazard_RFW)...coordinate with MIWFPA users (plays on NWR every ~10 min.)
 - Michigan DNR – Duty Officer
 - Hiawatha NF, Pictured Rocks NL – Steve Nurse/Matt Davis
 - Seney NWR – Gary Lindsay
 - Ottawa NF – Duty Officer
 - BIA – Will Wiggins

Criteria:

- A dry spell for over a week (shorter before spring green-up or after fall color)
- Sustained Wind Speed > = 20 mph (10 m ASOS-Airport winds)
or >= 15 mph (20 ft RAWS winds)
- Relative Humidity 25% or less
- Temperature 70 F or greater
 - Note: Temperature criteria is a soft criteria. Red Flag Warnings can be used for temperatures less than 70 degrees depending on other factors.*
- Thursday 10 am EST MIWFPA Conference Call...spring and late summer only, as needed
 - Ask NWS MQT or MI DNR for call-in information
 - Weather for the week, potential for RFWs

B. Backing up surrounding offices (for MQT staff)

Forecaster Note:

See the attached reference material from both APX and GRB (in the Fire Weather Binder and MQT Fire Intranet site), as well as the “Service Backup” binder.

Please remember to set up the appropriate workstation alarms for spot requests.

- Gaylord: ARBSTQAPX
- Green Bay: MKESTQGRB

VI. SIGNING PAGE AND EFFECTIVE DATES OF THIS AOP

This Agreement shall be effective until the issuance of the next Annual Operating Plan, expected out March of next year.

National Weather Service, Marquette, MI, NOAA

_____	_____
<i>Kari Fleegel – Fire Weather Focal Point/IMET</i>	<i>Date</i>
<i>Jason Alumbaugh – Assistant Fire Weather Focal Point</i>	
<i>Robin J. Turner – Meteorologist in Charge</i>	

Hiawatha National Forest, USFS

_____	_____
<i>Steve Nurse – U.P. C.C. Fire Management Officer</i>	<i>Date</i>
<i>Jim Flores – U.P. C. C. Manager</i>	

Isle Royale National Park, NPS

_____	_____
<i>Richard Moore, Chief Ranger</i>	<i>Date</i>
<i>Marshall Plumer- East District Ranger</i>	

Michigan Department of Natural Resources

_____	_____
<i>Celeste Chingwa – Resource Protection Manager</i>	<i>Date</i>
<i>Bryce Avery – Fire Specialist</i>	
<i>Dan Laux – Fire Specialist</i>	

Pictured Rocks National Lakeshore, NPS

_____	_____
<i>Matthew Davis – Park Ranger</i>	<i>Date</i>
<i>Bruce Leutusher – Vegetation/Fuels</i>	
<i>Tim Coyler – Chief Ranger</i>	
<i>Steve Nurse – U.P.C.C. Fire Management Officer</i>	

Ottawa National Forest, USFS

_____	_____
<i>Dean Karlovich – Fire Management Officer</i>	<i>Date</i>
<i>Brian Sabin – Dispatcher</i>	

Seney National Wildlife Refuge, USFW

_____	_____
<i>Gary Lindsay – Fire Management Officer</i>	<i>Date</i>
<i>Greg McClellan – Deputy Refuge Manager</i>	
<i>Mark Vaniman – Refuge Manager</i>	
<i>Steve Nurse – U.P.C.C. Fire Management Officer</i>	

US Bureau of Indian Affairs (BIA)

_____	_____
<i>Will Wiggins – Fire Management Fuels Specialist</i>	<i>Date</i>