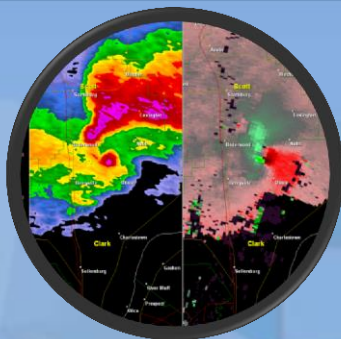




Weather Ready Nation

Preparing your community for extreme weather, water, and climate events



Sam Lashley
Senior Meteorologist



National Weather Service
Northern Indiana Office



Weather-Ready Nation
National Oceanic and Atmospheric Administration



Northern Indiana Office
Lower Michigan Northwest Ohio Northern Indiana

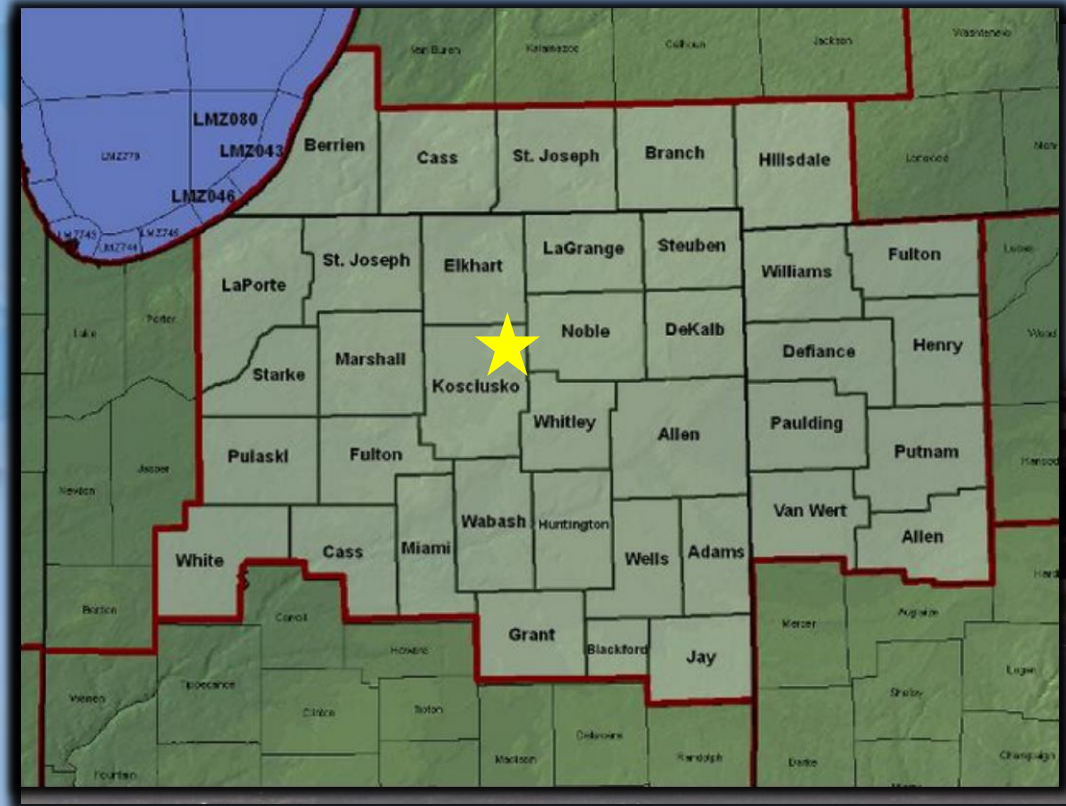


Your National Weather Service

NWS Northern Indiana (IWX)

Team of 23 Professionals:

- 13 – Forecasters
- 4 – Electronics/IT Personnel
- 3 – Administrative Meteorologists
- 1 – Observation Program Leader
- 1 – Hydrologist
- 1 – Administrative Assistant



37 counties in Northern Indiana, Lower Michigan, and Northwest Ohio
50 miles of Lake Michigan nearshore waters



Weather-Ready Nation
National Oceanic and Atmospheric Administration



Northern Indiana Office
Lower Michigan Northwest Ohio Northern Indiana



Your National Weather Service

Forecast & Warnings to:

- Protect Life & Property
- Enhance Economy

Nearly 300 years of Experience!

- Ongoing Training
- Including NIMS/ICS

Sole responsibility of issuing watches and warnings

Available 24/7/365 & Free!



Weather-Ready Nation

National Oceanic and Atmospheric Administration



Northern Indiana Office

Lower Michigan

Northwest Ohio

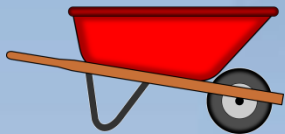
Northern Indiana



Building A Weather-Ready Nation



National
Weather Service
Impact-Based Decision
Support Services (IDSS)



Why Change?

“Average” Year and Trends in the US



650 Deaths
\$15B in Losses



26,000 Severe
Thunderstorms



6 Atlantic Basin
Hurricanes



1,300 Tornadoes



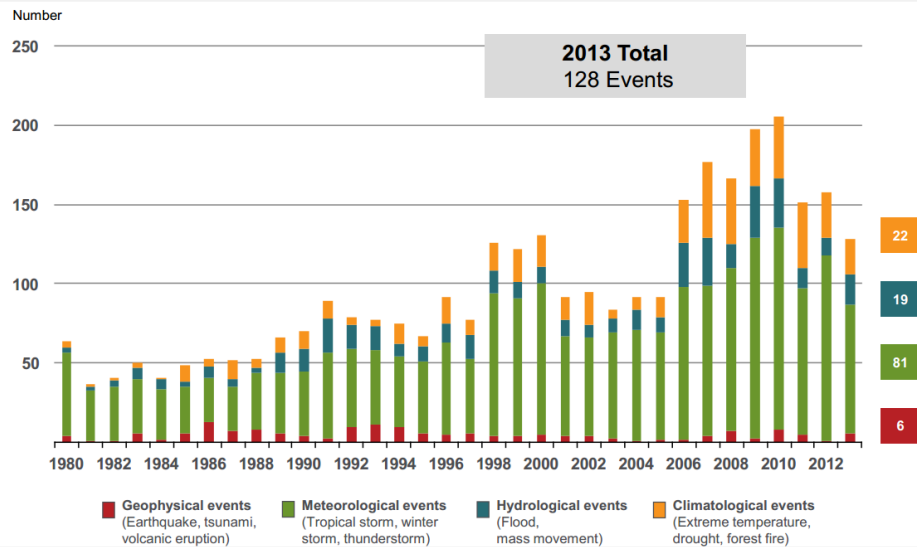
5,000 Floods

US Natural Catastrophe Update

Loss Events in the U.S. 1980 – 2013

Number of events

Munich RE



Regardless of the cause, the trend shows an increasing number of extreme weather events at increasing cost to the nation.

(Image source: Munich Re, 2014)

Weather-Ready Nation

National Oceanic and Atmospheric Administration

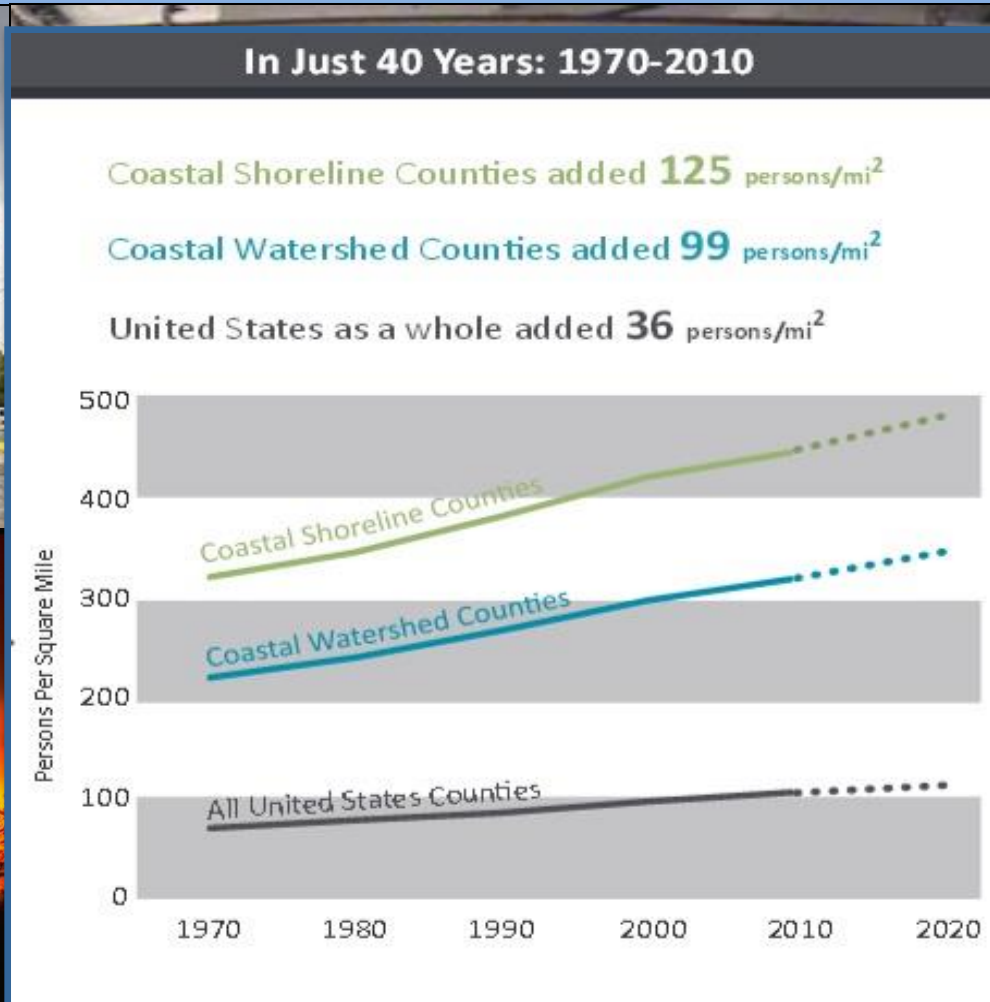


Northern Indiana Office

Lower Michigan Northwest Ohio Northern Indiana

Why Change?

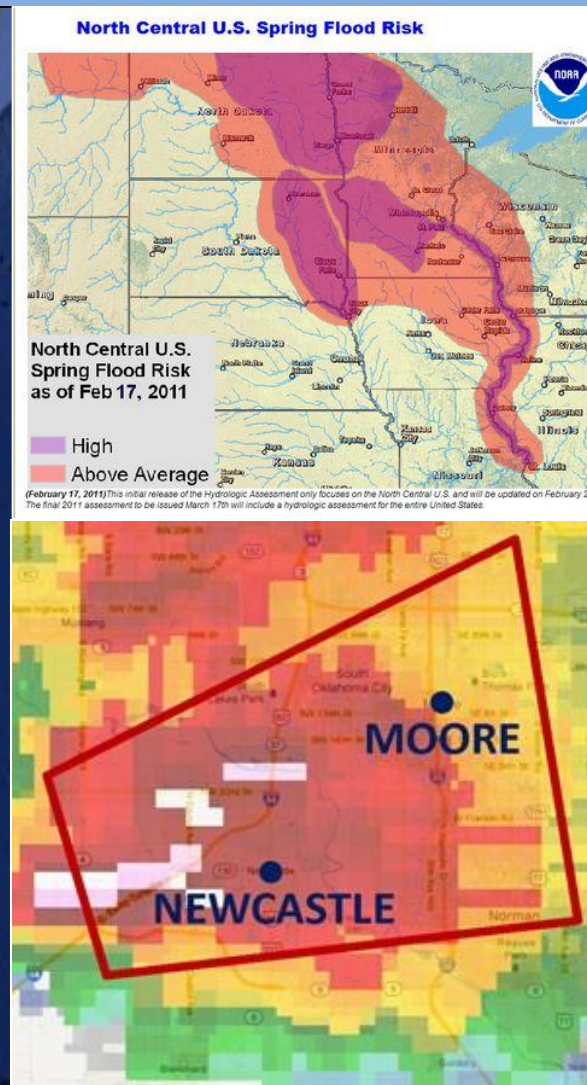
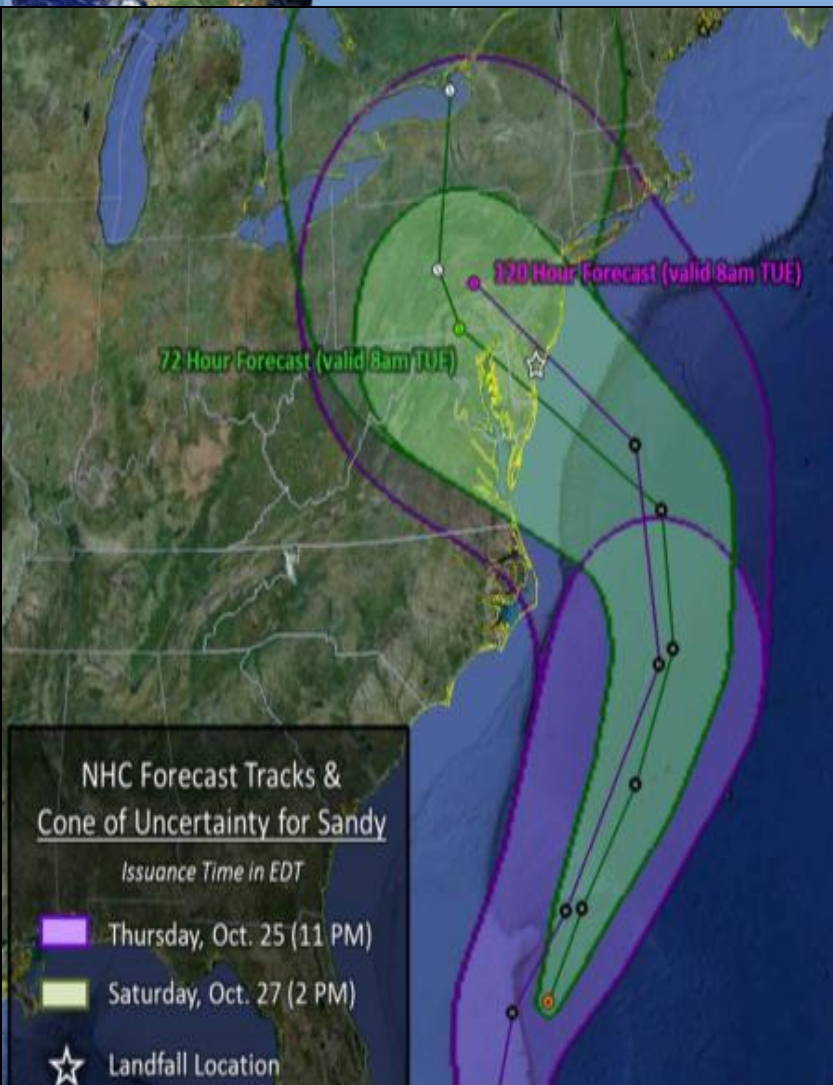
Recent Magnitude of Disasters Reflects Increased Societal Vulnerability





Why Change?

Extreme Events Well Forecast, But What About Societal Impacts?





Adding Value to Forecasts/Warnings

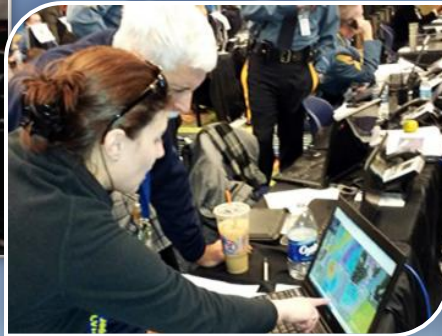
*Intrinsic Value is realized through providing
Impact-Based Decision Support Services (IDSS)*

Generating forecasts and warnings + Connecting those forecasts/warnings with impacts = **IDSS**

"Ready, Responsive, Resilient"



Expertise



Training



Deployment



Trustworthy

Adding Value to Forecasts/Warnings

INC003-OHC125-010800-
/O.NEW.KIWX.TO.W.0008.170301T0731Z-170301T0800Z/

BULLETIN - EAS ACTIVATION REQUESTED

Tornado Warning

National Weather Service Northern Indiana

231 AM EST WED MAR 1 2017

The National Weather Service in Northern Indiana has issued a

* Tornado Warning for...

Northern Allen County in northeastern Indiana...

Northwestern Paulding County in west central Ohio...

* Until 300 AM EST

* At 231 AM EST, a severe thunderstorm capable of producing a tornado was located near Hometown, or near Fort Wayne, moving east at 75 mph.

HAZARD...Tornado and quarter size hail.

SOURCE...Radar indicated rotation.

IMPACT...Flying debris will be dangerous to those caught without shelter. Mobile homes will be damaged or destroyed. Damage to roofs, windows, and vehicles will occur. Tree damage is likely.

* This dangerous storm will be near...

Grabill around 240 AM EST.

Woodburn around 245 AM EST.

Antwerp and Payne around 250 AM EST.

Paulding around 255 AM EST.

Other locations impacted by this tornadic thunderstorm include Worstville, Cuba, Leo-cedarville, Latty, Harlan, Briceton, Cecil, Wallen and Broughton.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

TAKE COVER NOW! Move to a basement or an interior room on the lowest floor of a sturdy building. Avoid windows. If you are outdoors, in a mobile home, or in a vehicle, move to the closest substantial shelter and protect yourself from flying debris.

&&



IMPACT...Flying debris will be dangerous to those caught without shelter. Mobile homes will be damaged or destroyed. Damage to roofs, windows, and vehicles will occur. Tree damage is likely.



Weather-Ready Nation

National Oceanic and Atmospheric Administration



Northern Indiana Office

Lower Michigan

Northwest Ohio

Northern Indiana

Adding Value to Forecasts/Warnings

BULLETIN - EAS ACTIVATION REQUESTED

TORNADO WARNING

NATIONAL WEATHER SERVICE NORTHERN INDIANA

539 PM EDT WED AUG 24 2016

THE NATIONAL WEATHER SERVICE IN NORTHERN INDIANA HAS ISSUED A

* TORNADO WARNING FOR...

EAST CENTRAL ALLEN COUNTY IN NORTHEASTERN INDIANA...

SOUTHWESTERN DEFIANCE COUNTY IN NORTHWESTERN OHIO...

NORTHWESTERN PAULDING COUNTY IN WEST CENTRAL OHIO...

* UNTIL 615 PM EDT

* AT 538 PM EDT...A CONFIRMED LARGE AND EXTREMELY DANGEROUS TORNADO WAS LOCATED NEAR WOODBURN...OR 8 MILES SOUTHWEST OF HICKSVILLE...MOVING NORTHEAST AT 25 MPH.

THIS IS A PARTICULARLY DANGEROUS SITUATION. TAKE COVER NOW!

HAZARD...DAMAGING TORNADO.

SOURCE...RADAR CONFIRMED TORNADO.

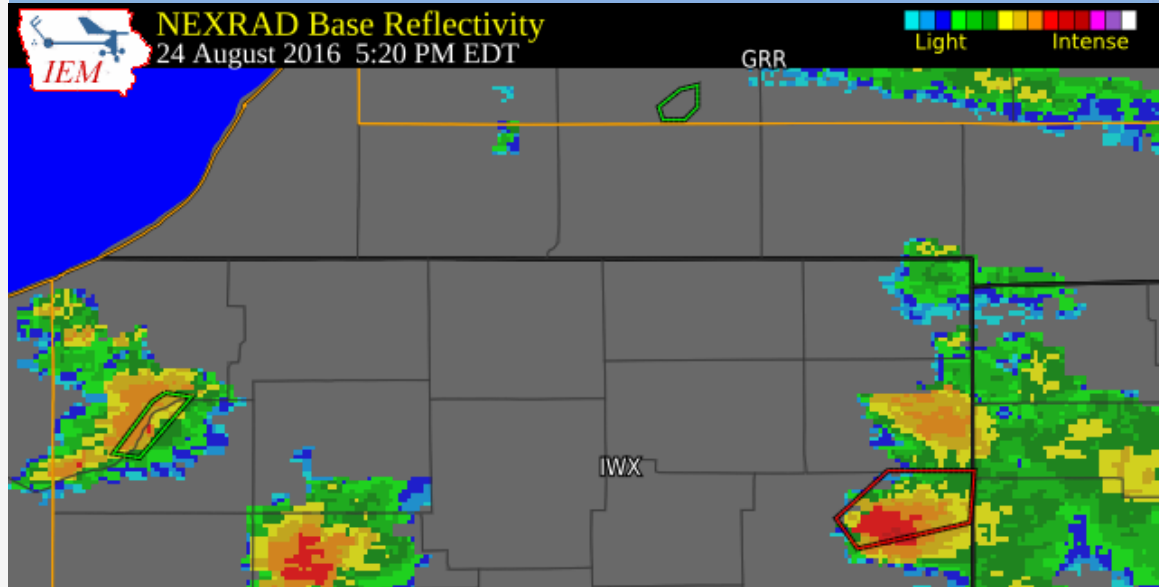
IMPACT...YOU ARE IN A LIFE-THREATENING SITUATION. FLYING DEBRIS MAY BE DEADLY TO THOSE CAUGHT WITHOUT SHELTER. MOBILE HOMES WILL BE DESTROYED. CONSIDERABLE DAMAGE TO HOMES...BUSINESSES...AND VEHICLES IS LIKELY AND COMPLETE DESTRUCTION IS POSSIBLE.

* THE TORNADO WILL BE NEAR...
ANTWERP AROUND 550 PM EDT.
HICKSVILLE AROUND 555 PM EDT.

OTHER LOCATIONS IMPACTED BY THIS TORNADIC THUNDERSTORM INCLUDE CECIL AND MARK CENTER.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

TO REPEAT...A LARGE...EXTREMELY DANGEROUS AND POTENTIALLY DEADLY TORNADO IS ON THE GROUND. TO PROTECT YOUR LIFE...TAKE COVER NOW! MOVE TO A BASEMENT OR AN INTERIOR ROOM ON THE LOWEST FLOOR OF A STURDY BUILDING. AVOID WINDOWS. IF YOU ARE OUTDOORS...IN A MOBILE HOME...OR IN A VEHICLE...MOVE TO THE CLOSEST SUBSTANTIAL SHELTER AND PROTECT YOURSELF FROM FLYING DEBRIS.



HAZARD...DAMAGING TORNADO.

SOURCE...RADAR CONFIRMED TORNADO.

IMPACT...YOU ARE IN A LIFE-THREATENING SITUATION. FLYING DEBRIS MAY BE DEADLY TO THOSE CAUGHT WITHOUT SHELTER. MOBILE HOMES WILL BE DESTROYED. CONSIDERABLE DAMAGE TO HOMES...BUSINESSES...AND VEHICLES IS LIKELY AND COMPLETE DESTRUCTION IS POSSIBLE.

Weather-Ready Nation

National Oceanic and Atmospheric Administration

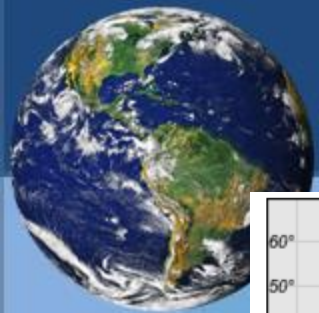


Northern Indiana Office

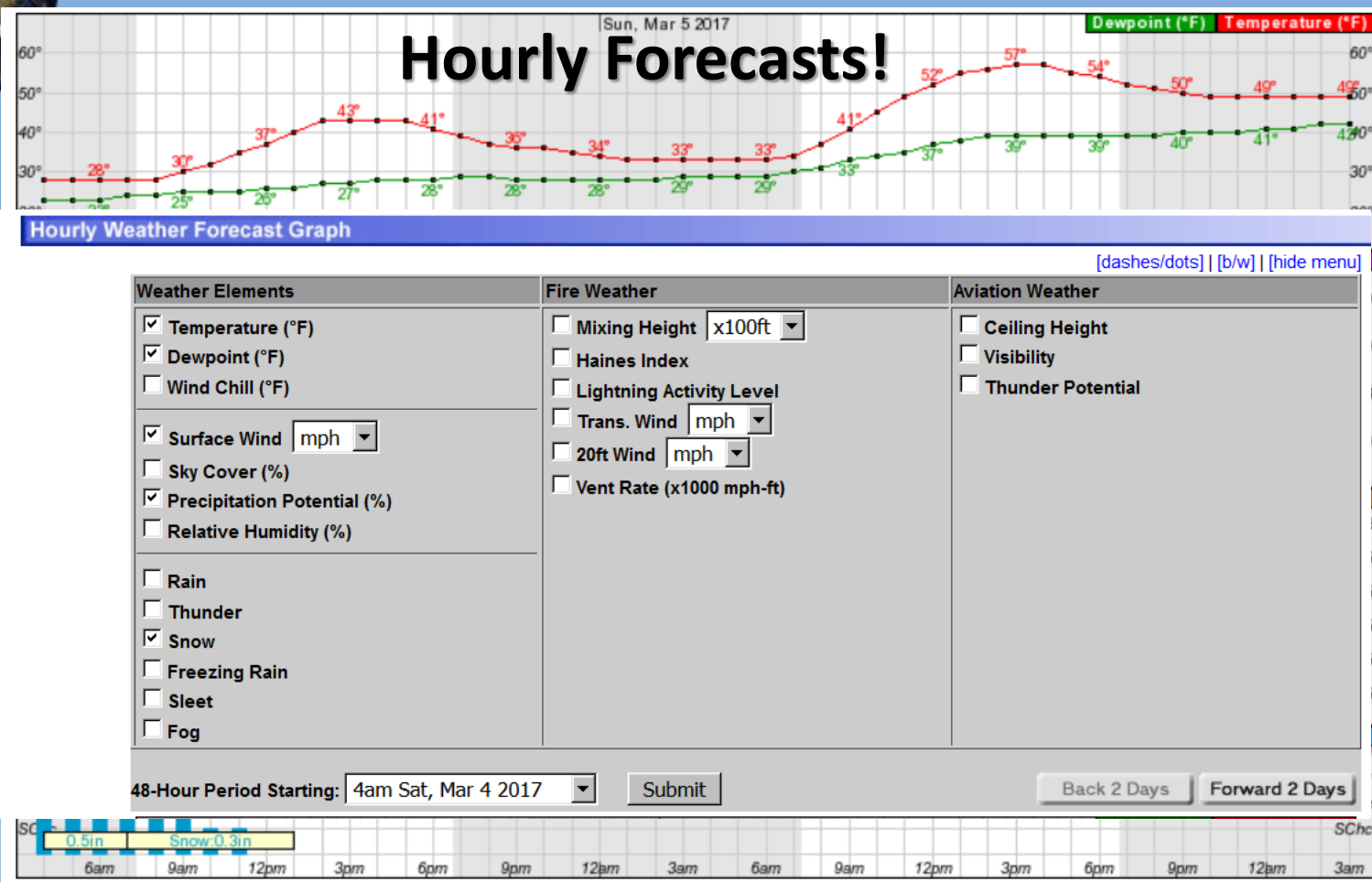
Lower Michigan

Northwest Ohio

Northern Indiana



Adding Value to Forecasts/Warnings

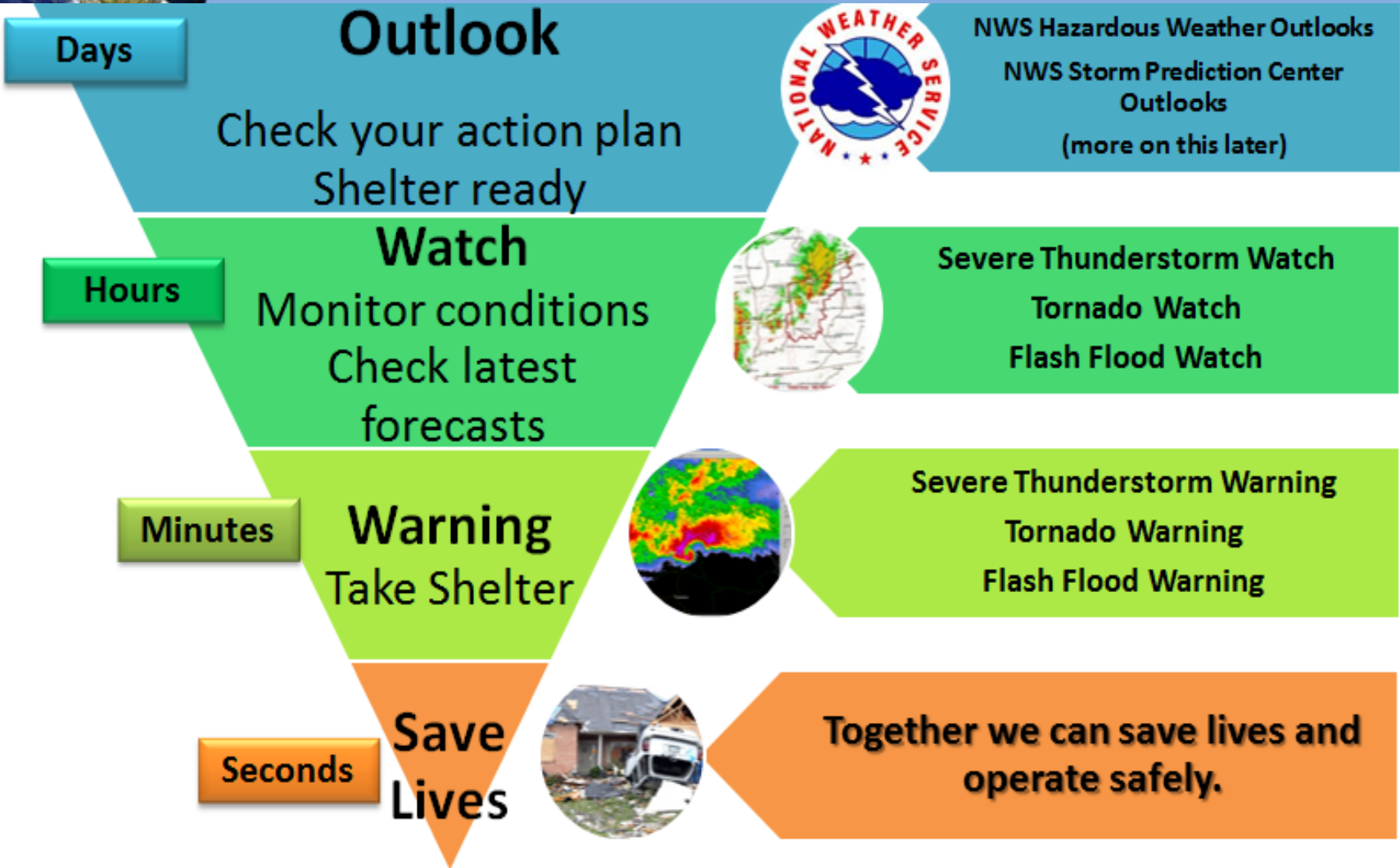


weather.gov/iwx



Decision Support Services (DSS)

Hazardous Weather Communication from the NWS





NWS Hazardous Weather Outlooks

THIS HAZARDOUS WEATHER OUTLOOK IS FOR PORTIONS OF NORTHWEST OHIO...
NORTHERN INDIANA AND SOUTHWEST LOWER MICHIGAN.

.DAY ONE...TODAY AND TONIGHT

THERE IS A HIGH RISK OF SEVERE THUNDERSTORMS THIS AFTERNOON AND
THIS EVENING. SCATTERED THUNDERSTORMS WITH DAMAGING WINDS AND
POSSIBLY TORNADOES... ARE EXPECTED TO MOVE INTO WESTERN PORTIONS
OF THE AREA BY EARLY AFTERNOON... THEN TRANSITION TO A LINE OF
SEVERE STORMS WITH WIDESPREAD DAMAGING WINDS AND ISOLATED
TORNADOES AS THEY MOVE ACROSS OUR AREA THIS AFTERNOON AND THIS
EVENING. THE STORMS ARE EXPECTED TO BE MOVING EAST TO NORTHEAST AT 50
TO 60 MPH. IN ADDITION... IT WILL BE VERY WINDY TODAY AND
TONIGHT... EVEN OUTSIDE OF THUNDERSTORM ACTIVITY... ESPECIALLY
LATE THIS AFTERNOON AND THIS EVENING WHEN WIND GUSTS TO 60 MPH ARE
EXPECTED.

.DAYS TWO THROUGH SEVEN...MONDAY THROUGH SATURDAY

NO HAZARDOUS WEATHER IS EXPECTED AT THIS TIME.

.SPOTTER INFORMATION STATEMENT...

SPOTTER ACTIVATION WILL LIKELY BE NEEDED THIS AFTERNOON AND EARLY
THIS EVENING.



Weather-Ready Nation

National Oceanic and Atmospheric Administration



Northern Indiana Office

Lower Michigan Northwest Ohio Northern Indiana



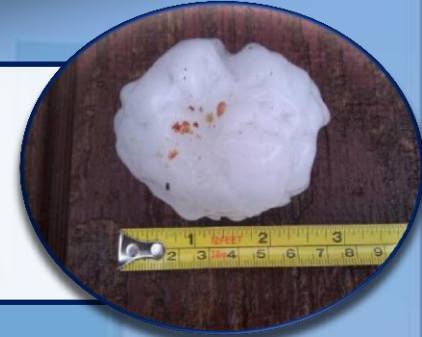
NWS Watches

When Conditions Become Favorable

Be prepared for...

Severe Thunderstorm Watch

- Damaging wind gusts
- Large Hail



Tornado Watch

- Tornadoes
- Damaging winds and large hail



Flash Flood Watch

- Water flowing over roadways
- A rapid rise in water that is a threat to life and property



Weather-Ready Nation
National Oceanic and Atmospheric Administration



Northern Indiana Office
Lower Michigan Northwest Ohio Northern Indiana



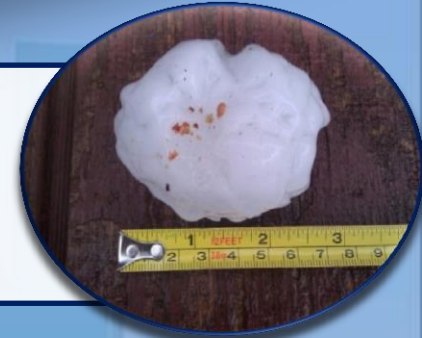
NWS Warnings

When Severe Weather is Imminent

Take Shelter Now!

Severe Thunderstorm Warning

- Thunderstorm wind gusts ≥ 58 mph & or:
- Hail ≥ 1 inch in diameter



Tornado Warning

- Doppler Radar indicated rotation
- Confirmed reports of a tornado



Flash Flood Warning

- 6 inches or more of flowing water over roadways
- A rapid rise in water that is a threat to life and property



Weather-Ready Nation
National Oceanic and Atmospheric Administration



Northern Indiana Office
Lower Michigan Northwest Ohio Northern Indiana



Decision Support Services (DSS)

Hazardous Weather Communication from the NWS

When hazardous weather is expected...



**Email
Blast**



**Multimedia
Briefing**



**Webinar/
Conference Call**

Increasing Severity



Weather-Ready Nation
National Oceanic and Atmospheric Administration



Northern Indiana Office
Lower Michigan Northwest Ohio Northern Indiana



January 22nd - 23rd 2016 Mid Atlantic/East Coast Blizzard

Connecting All of the Pieces

Jan 15 - 18

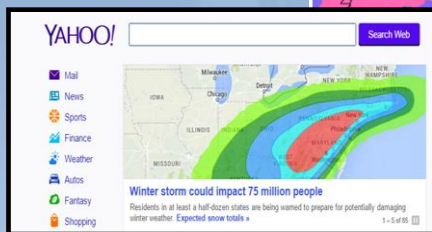
Medium Range products begin identifying snowstorm threat for the end of next week

NWS offices begin briefing partners on potential storm

Jan 19
Confidence increasing
Partner Coordination/
Briefings



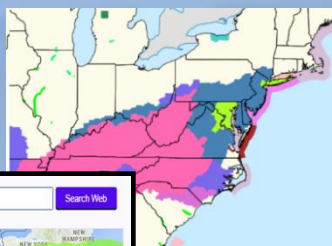
Media interviews



Jan 20
Partner Coordination/
Briefings

Media interviews

Blizzard Watches Issued



Jan 21
Fed./state/local govt make critical decisions **before** the snow begins

State of Emergency Declared:

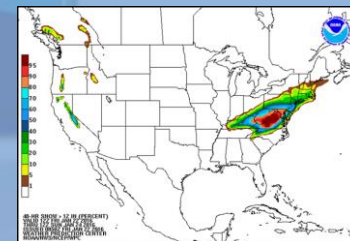
- North Carolina
- Virginia
- West Virginia
- District of Columbia
- Maryland
- Pennsylvania
- New Jersey
- New York

Blizzard Warnings Issued

1 pm: Press Briefing



Jan 22
Snow begins in the Mid-Atlantic
Snow forecast adjusted to include NYC in Blizzard Warning



Schools/Gov't Close
Flights Canceled
Roads Closed





NWS Strategic Outcome: A Weather & Water-Ready Nation

Becoming a Weather-Ready Nation is about building community resiliency in the face of increasing vulnerability to extreme weather, water and climate events

Requires NWS to :

- *Improve forecasts and warnings*
- *Produce consistent products and services*
- *Work with partners, including embedding NWS in Emergency Operations Centers and incorporating Social Sciences, to gain public's needed response*





Strengthening Partnerships

- We need YOUR help in transforming society to become ready, responsive and resilient to increasing extreme weather threats.



[illegible]

National Oceanic and Atmospheric Administration



Lower Michigan Northwest Ohio Northern Indiana



Strengthening Partnerships

Weather Ready Nation Ambassador Initiative

By becoming a **WRN Ambassador**, your organization can serve a pivotal role in affecting societal change by:

- Promoting Weather-Ready Nation messages
- Collaborating with NOAA
- Sharing your success stories
- Serving as an example



Visit: www.weather.gov or www.noaa.gov/wrn

We have **4000**
WRN Ambassadors



Weather-Ready Nation

National Oceanic and Atmospheric Administration



Northern Indiana Office

Lower Michigan

Northwest Ohio

Northern Indiana



Strengthening Partnerships

Weather Ready Nation Ambassador Initiative

- What Can WRN Ambassadors Do?
 - Fundraisers to purchase Weather Radios
 - Volunteer to help program Weather Radios
 - Distribute weather safety information
 - Use Social Media to relay NWS warnings
 - Host weather safety fairs or events
 - Create and distribute weather safety kits
 - Educate family, friends, co-workers
 - Partnerships/collaboration with NWS

Be Creative

Work towards a common goal of saving lives!



Weather-Ready Nation
National Oceanic and Atmospheric Administration



Northern Indiana Office

Lower Michigan Northwest Ohio Northern Indiana



Ready to Be a Force of Nature?

Questions?

“We can’t stop extreme events from happening. But we surely can come together and find ways to make our societies more dynamically resilient in the face of those threats.”

NOAA Administrator Dr. Kathryn Sullivan
American Meteorological Society Annual Meeting
January 10, 2013

www.weather.gov

www.noaa.gov/wrn

Sam.Lashley@noaa.gov



Weather-Ready Nation
National Oceanic and Atmospheric Administration



Northern Indiana Office
Lower Michigan Northwest Ohio Northern Indiana