Preparing For The Winter Season

National Weather Service

2018 OP3 Fall Conference

October 2, 2018

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NWS Wilmington OH

Topics

- National Weather Service Background
  - How we are organized
  - What we do and how we do it
- The Winter that Was (2017-2018)
- The Winter that Will Be (2018-2019)
- How to Address Snow Squalls
- Building a Weather-Ready Nation

NWS Mission

- ***Federal organization:***

  Department of Commerce

  ↳ **National Oceanic and Atmospheric Administration**

  ↳ **National Weather Service**

- ***To provide weather, hydrologic, and climate forecasts and warnings for the protection of life and property and the enhancement of the national economy***

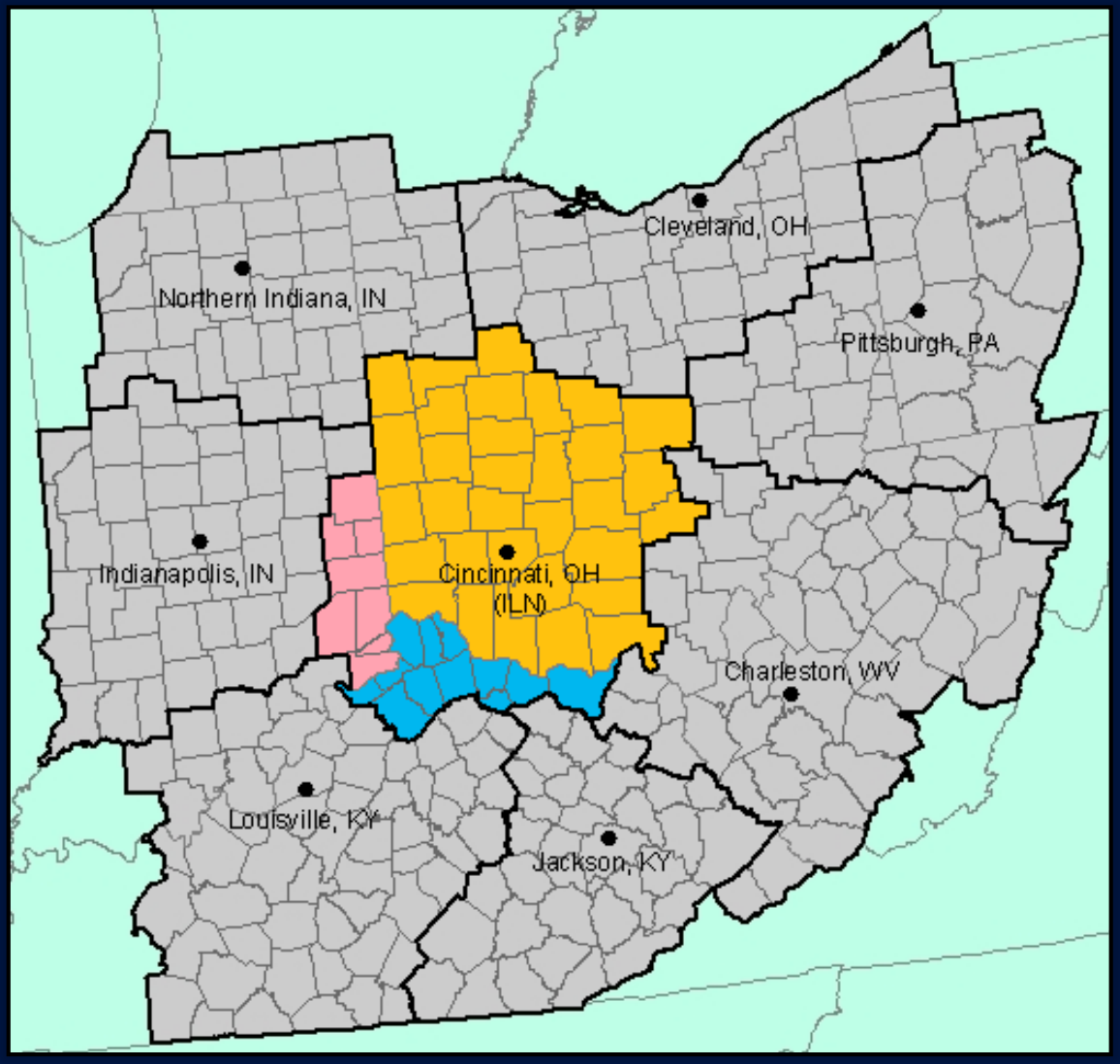
Partner Agencies & Groups

NWS Organization

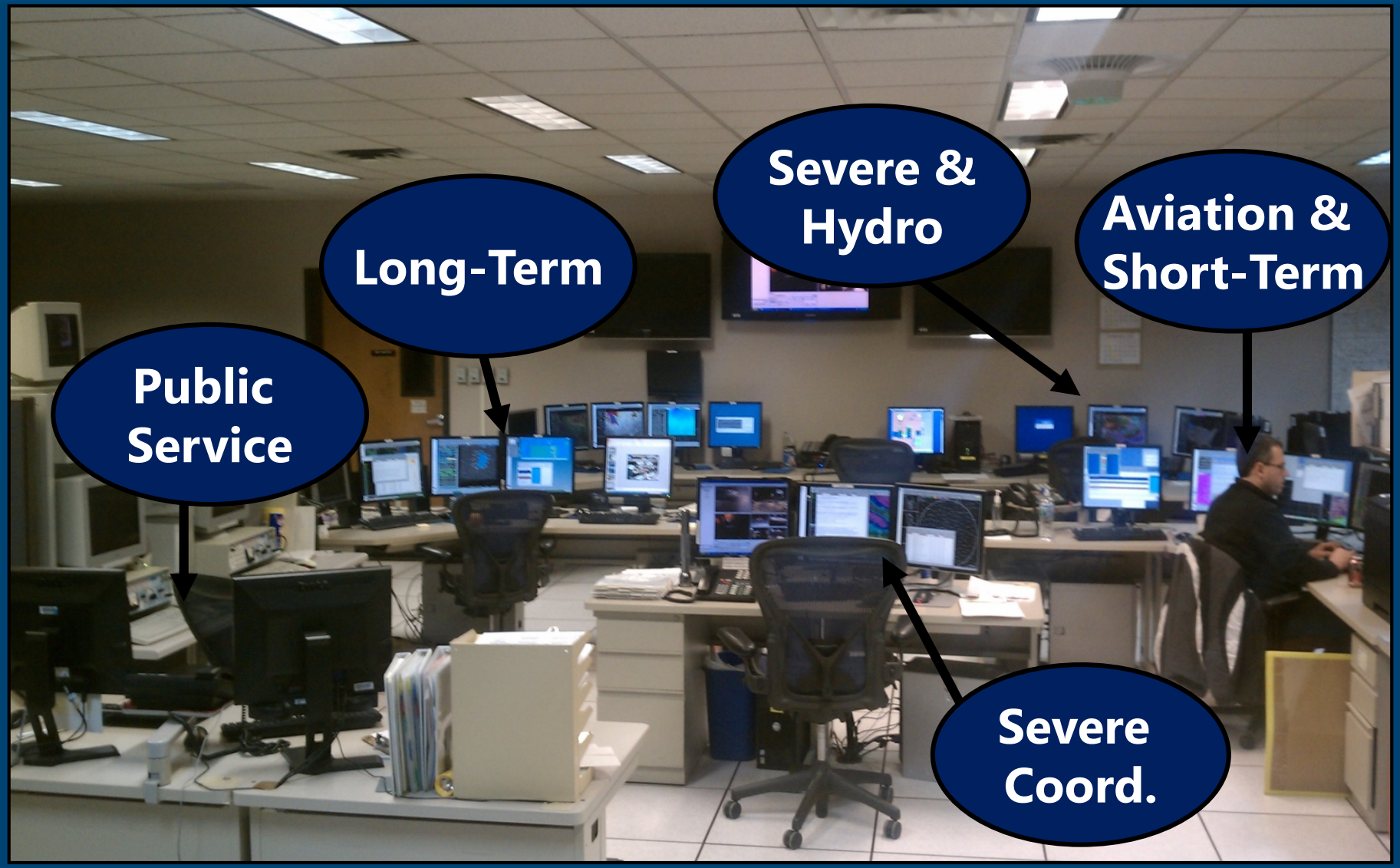
- 122 Weather Forecast Offices
- 5 NWS offices serve Ohio
  - Provide forecasts, warnings, and other local services
  - Operate 24/7/365

NWS Wilmington OH

- **NWS Wilmington Ohio serves 52 counties across OH, IN, and KY**
- **The office is staffed by 26 full-time employees**

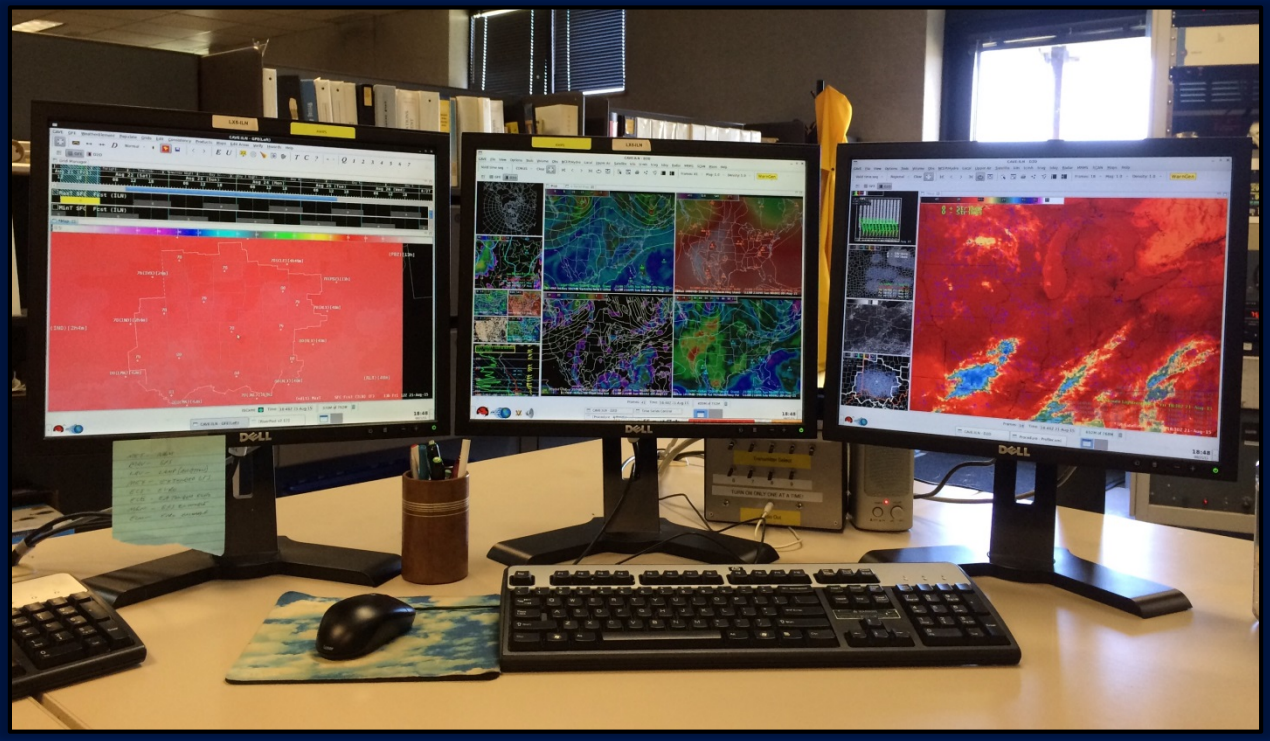


NWS Operations



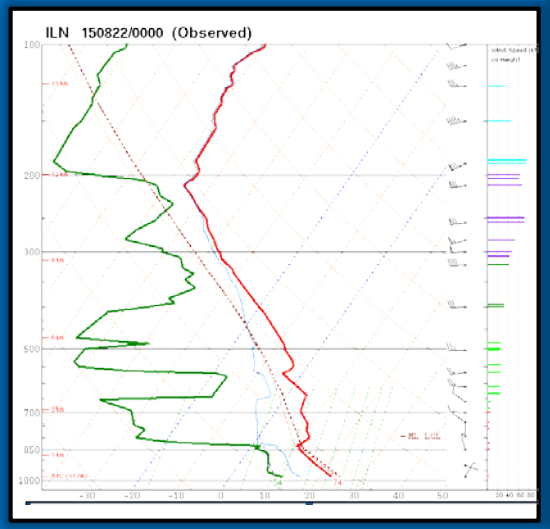
AWIPS

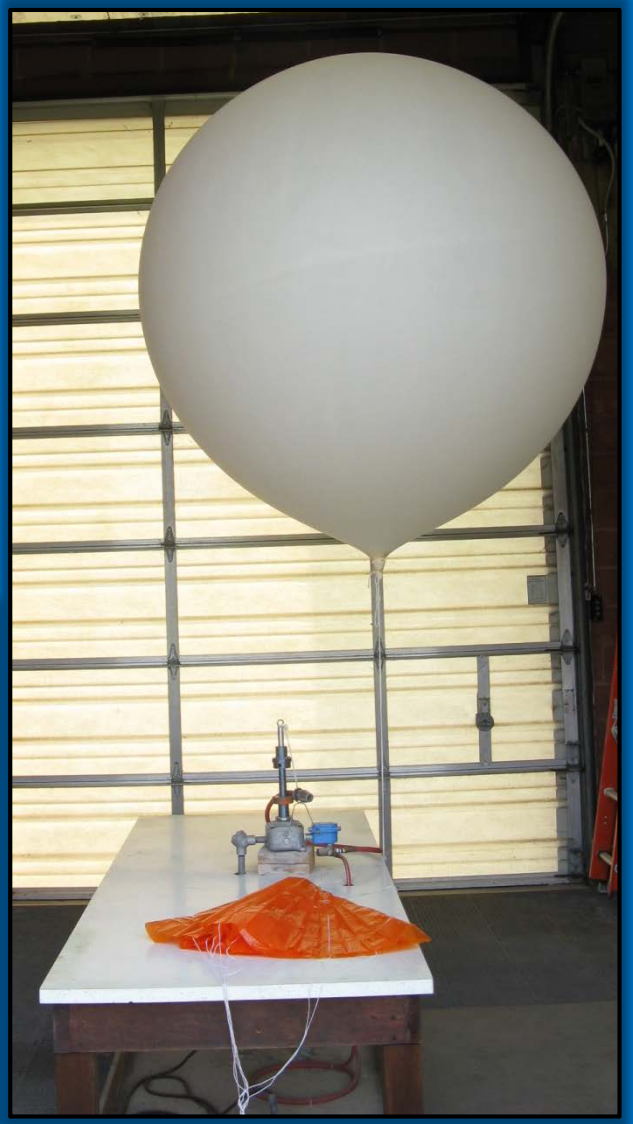
Advanced
Weather
Interactive
Processing
System



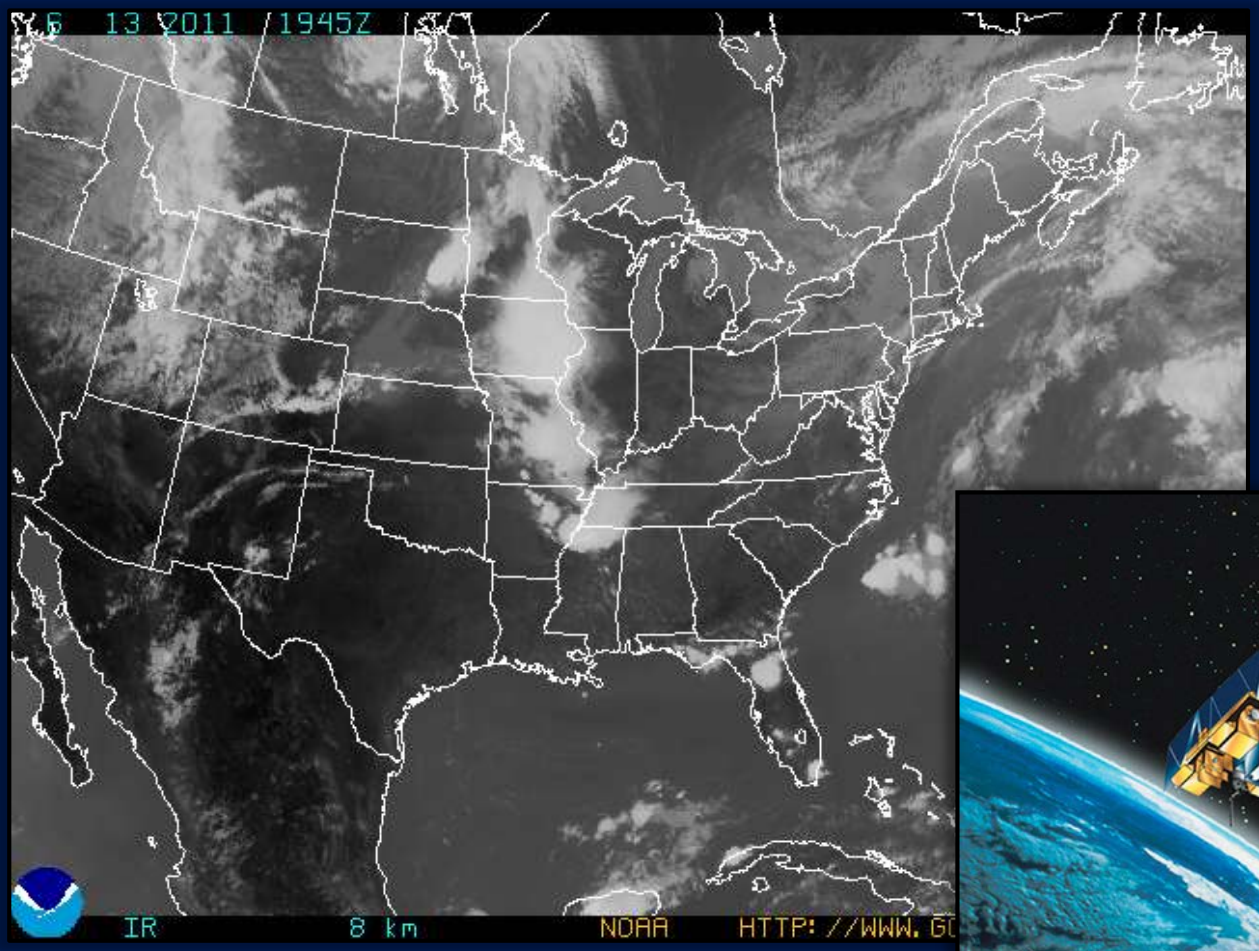
Upper Air Observations

- Used by computer models to help forecast the weather.
- Launched twice daily from 73 sites in the US and 92 in North America.
- Can reach heights over 100,000 feet



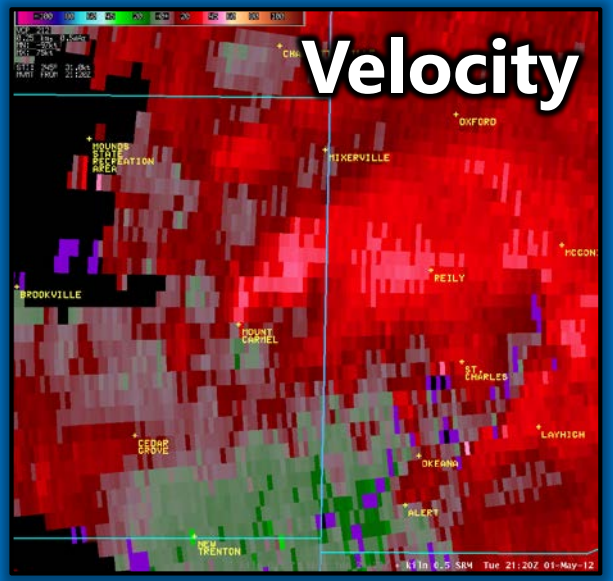


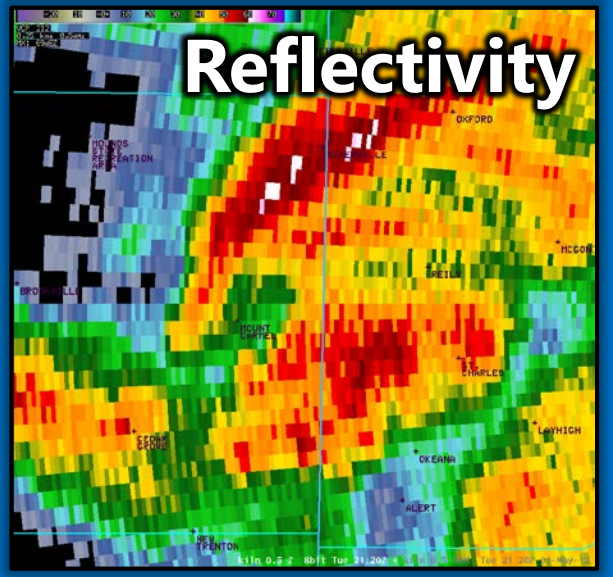
Satellite



Radar (WSR-88D)

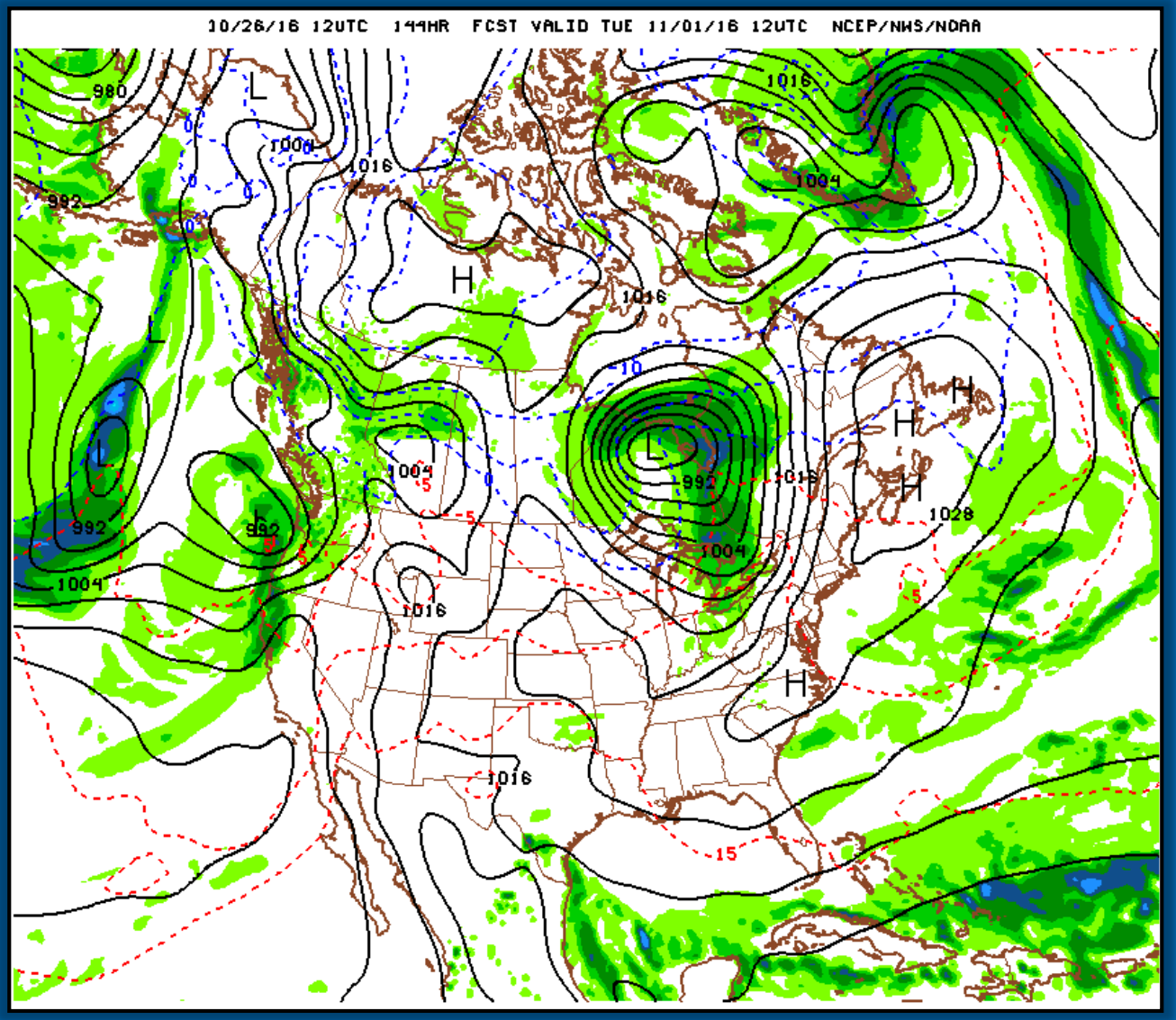
Inside of the Radar “Dome”



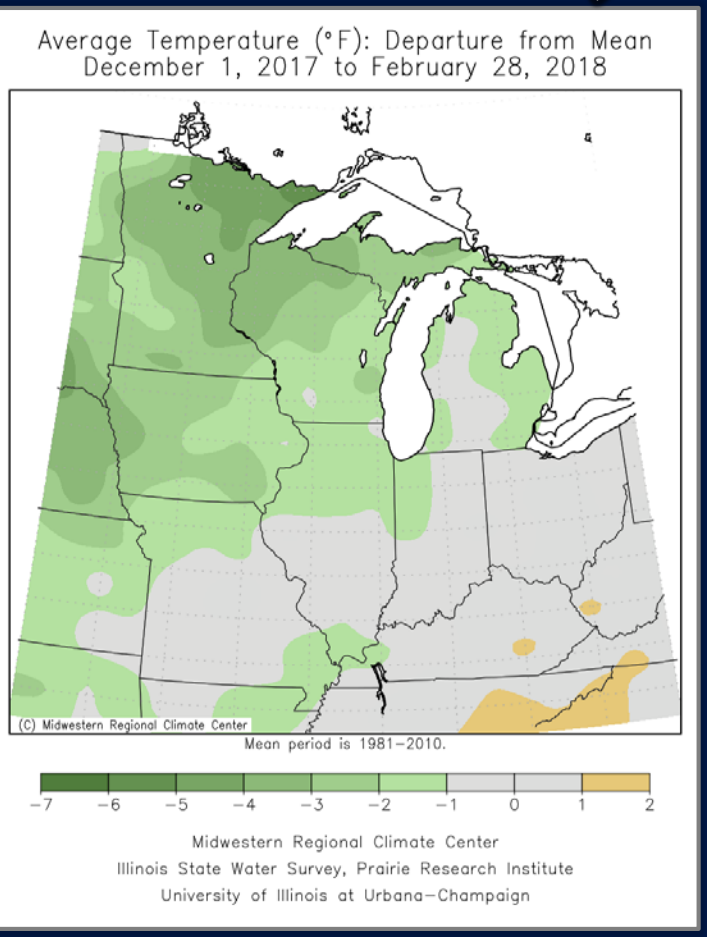


Computer Model Info

- Computer models project a hypothetical state of the atmosphere hours and days into the future.
- The computer models ingest radar, satellite and observational data and process this information through a complex series of mathematical equations to produce data/maps as shown to the right.

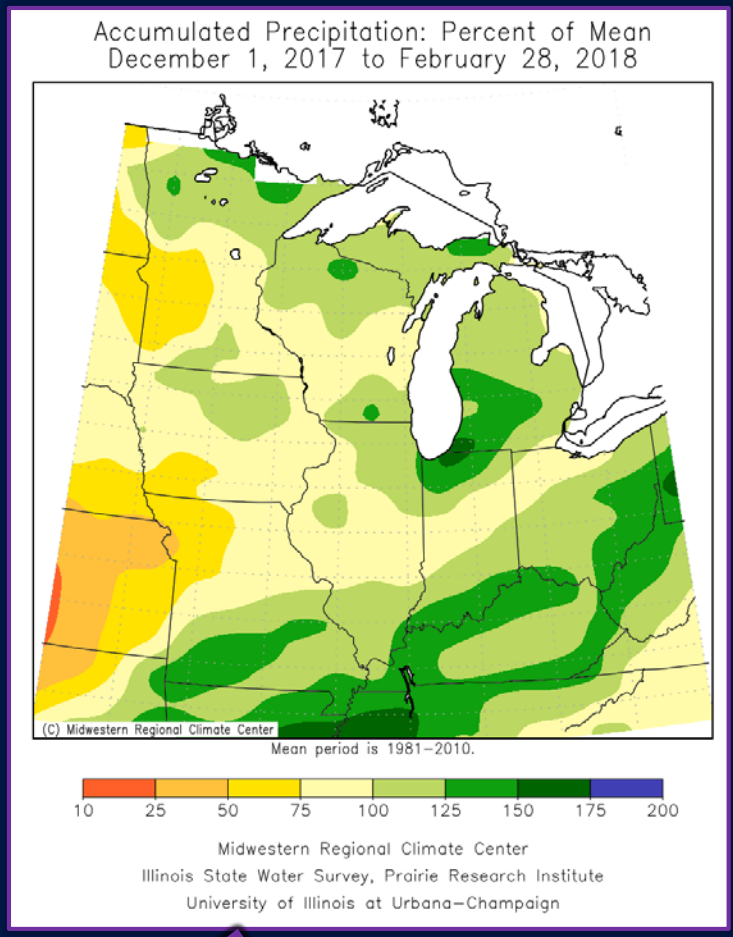


Winter Review
2017 - 2018



Although February featured much above normal temperatures in the state of Ohio, the cooler-than-normal months of December and January helped counteract the warmth of February. Therefore, the winter as a whole ended up with near normal average temperatures in the region.

With a very wet February across the state of Ohio, which lead to widespread flooding and river flooding in the region, the winter precipitation ended up being above normal through much of the region. The river flooding of February 2018 was some of the most extensive experienced in many years.



Images Courtesy of MRCC (Midwest Regional Climate Center)

Winter Review
2017 - 2018

Temperatures: Slightly Above Normal

SEASON	Location	Cincinnati	Cleveland	Columbus	Dayton	Toledo
2017 – 2018	Dec. Avg. Temp	32.3°F (-1.8°F)	28.7°F (-3.7°F)	31.2°F (-2.3°F)	28.8°F (-2.4°F)	26.4°F (-3.3°F)
	Jan. Avg. Temp	28.0°F (-2.0°F)	26.9°F (-1.2°F)	27.3°F (-2.3°F)	25.7°F (-1.8°F)	24.9°F (-0.6°F)
	Feb. Avg. Temp	40.9°F (+6.4°F)	36.0°F (+5.5°F)	38.8°F (+6.0°F)	37.1°F (+6.1°F)	31.4°F (+3.1°F)
	Seasonal Dep.	+2.6°F	+0.6°F	+1.4°F	+1.9°F	-0.8°F

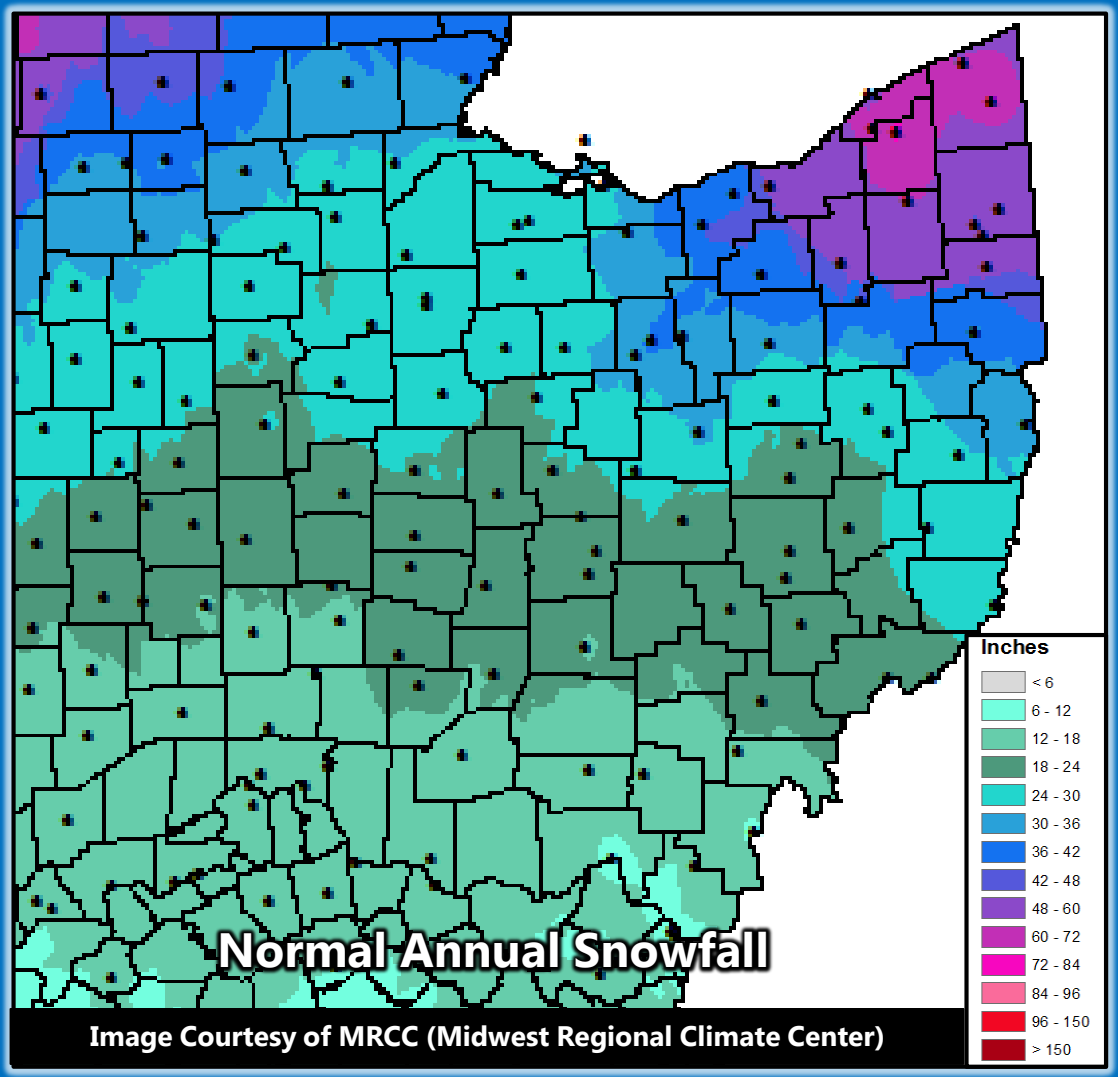
Snowfall: Mixed

SEASON	Location	Cincinnati	Cleveland	Columbus	Dayton	Toledo
2017 - 2018	Dec. Snowfall	3.8″	17.2″	8.1″	8.6″	13.9″
	Jan. Snowfall	6.2″	12.0″	10.5″	10.3″	6.6″
	Feb. Snowfall	1.6″	7.1″	6.0″	2.6″	10.3″
	Seasonal Total	11.6″ (-4.2″)	36.3″ (-11.4″)	24.6″ (+4.3″)	21.5″ (+3.2″)	30.8″ (+2.4″)

**Stats for December 2017, January 2018 and February 2018 only*

Annual Snowfall

Normals (1981 – 2010)



*Record Annual Snowfall

	MAX	MIN
Cincinnati:	53.9" (1977)	5.0" (1919)
Cleveland:	108.4" (2005)	13.0" (1931)
Columbus:	49.4" (2003)	3.9" (1946)
Dayton:	52.9" (1978)	8.0" (2001)
Toledo:	77.4" (2014)	6.6" (2006)

*Only Years That Had No Missing Data Per Year

Winter Temperatures

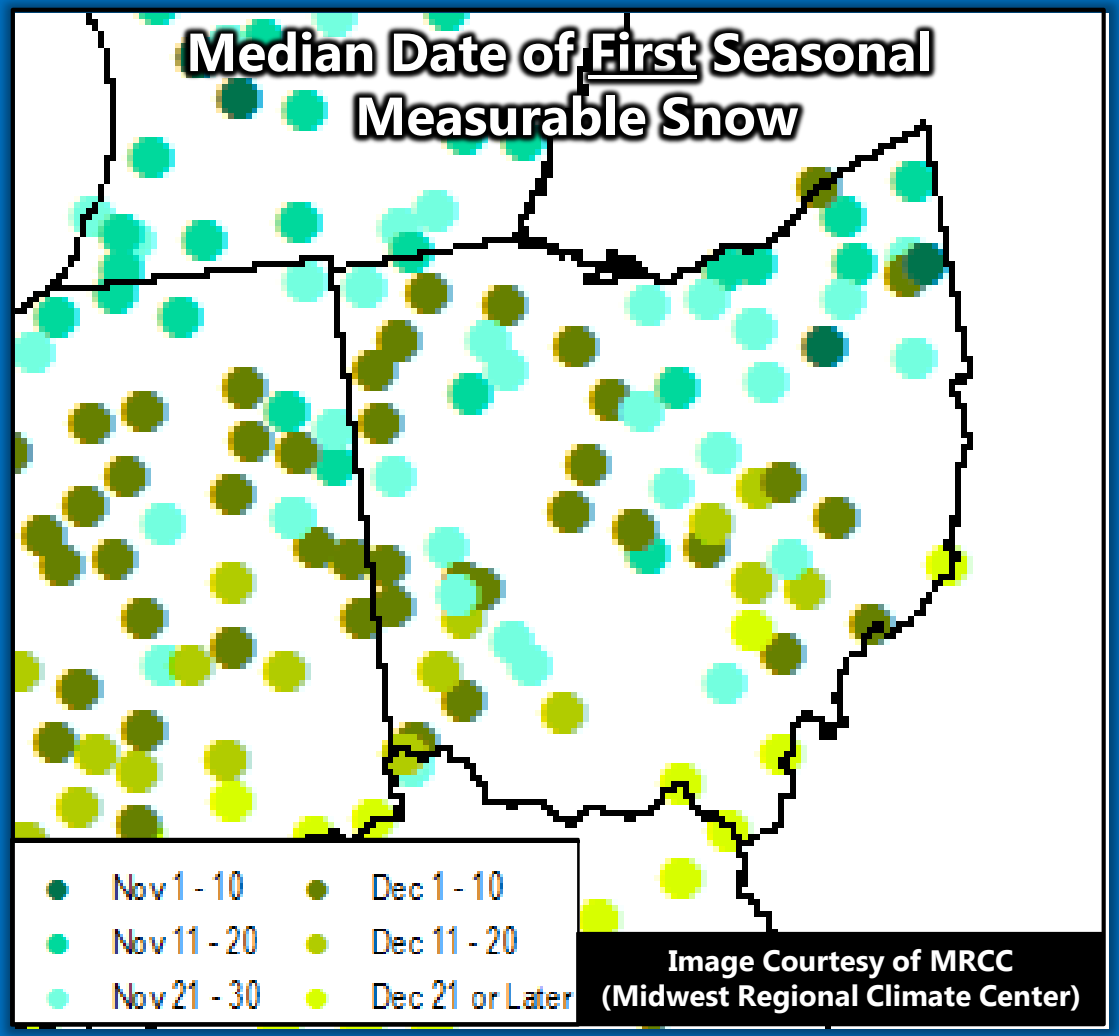
Regional Extremes

Regional Temperature Extremes					
Location	**Cincinnati**	**Cleveland**	**Columbus**	**Dayton**	**Toledo**
Dec. Rec. High	75°F (1982)	77°F (1982)	76°F (1982)	72°F (1998)	70°F (2001)
Dec. Rec. Low	-20°F (1989)	-15°F (1989)	-17°F (1989)	-20°F (1989)	-19°F (1989)
Jan. Rec. High	77°F (1943)	73°F (1950)	74°F (1950)	75°F (1906)	71°F (1950)
Jan. Rec. Low	-25°F (1977)	-20°F (1994)	-22°F (1994)	-25°F (1994)	-20°F (1984)
Feb. Rec. High	79°F (2018)	77°F (2017)	78°F (2017)	76°F (2017)	71°F (2017)
Feb. Rec. Low	-17°F (1899)	-17°F (2015)	-20°F (1899)	-28°F (1899)	-19°F (2015)
2017-2018 Winter Highest Temp	*79°F (02/20)	73°F (02/20)	77°F (02/20)	75°F (02/20)	70°F (02/20)
2017-2018 Winter Lowest Temp	-7°F (01/02)	-5°F (01/07)	-4°F (01/02)	-13°F (01/02)	-8°F (12/28)
Records Since:	***1873***	***1876***	***1879***	***1894***	***1875***

The high temperature of 79°F at Cincinnati on February 20th was the highest temperature ever recorded at the site in any winter month of December, January, or February.

Early/Late Snowfall

Regional Extremes

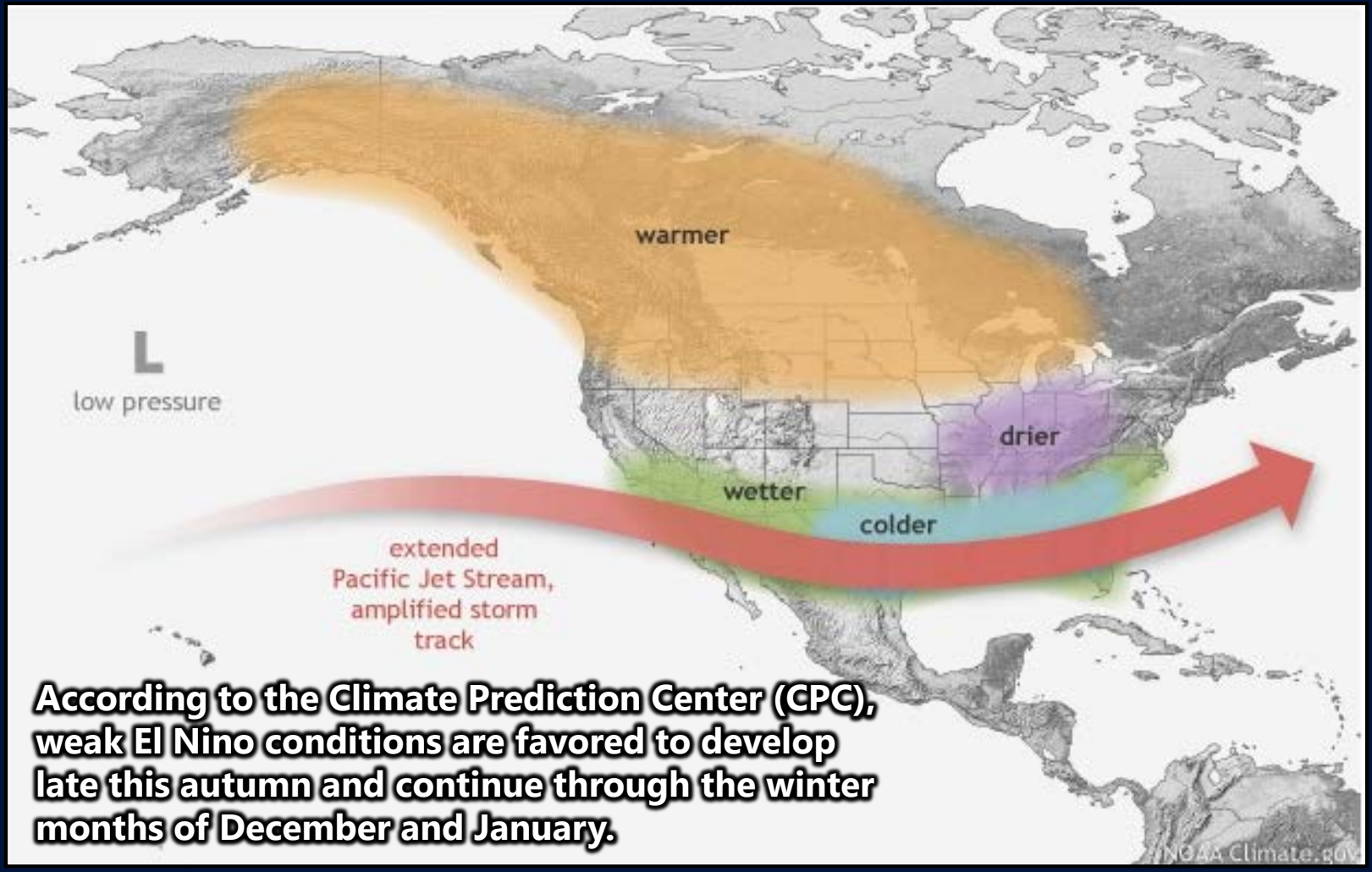


Earliest/Latest Snowfall

	EARLIEST	LATEST
Cincinnati:	10/19 (1989)	05/05 (1992)
Cleveland:	10/02 (2003)	05/10 (1907)
Columbus:	10/19 (1989)	05/07 (1989)
Dayton:	10/18 (1989)	05/09 (1923)
Toledo:	10/18 (1972)	05/07 (1989)

Typical El Nino

Winter Pattern



Weak El Nino

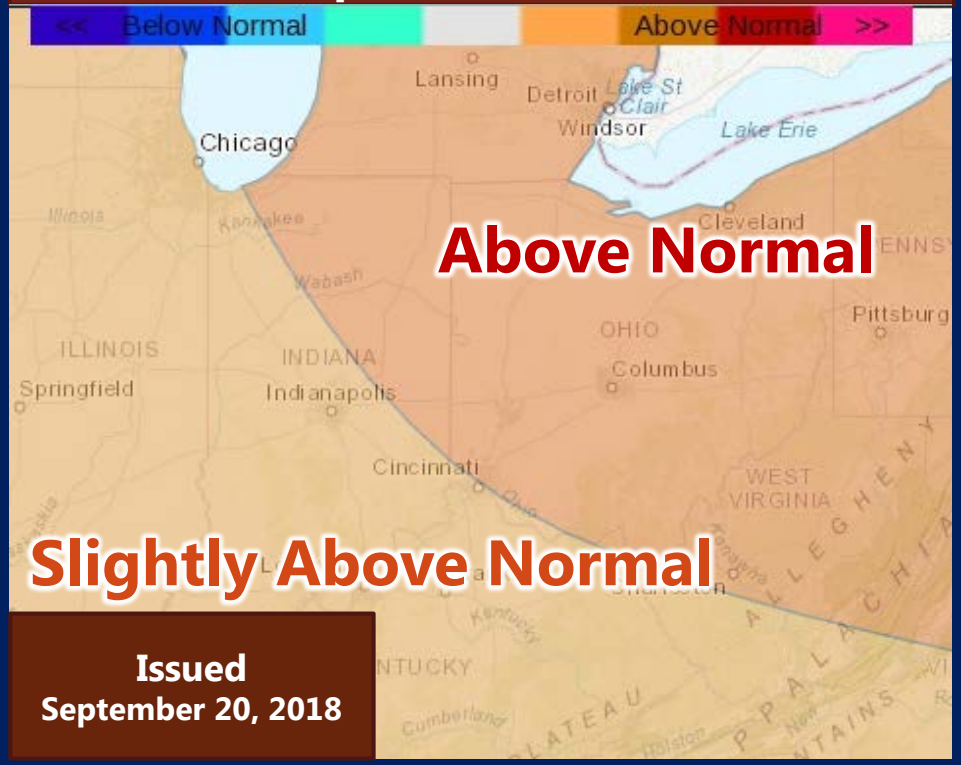
Implications on the Ohio Valley

- An El Nino watch is currently in effect.
  - However, a weak El Nino is favored (opposed to a strong El Nino).
- Confidence is moderate to high on a slightly warmer-than-normal winter in the Ohio Valley.
  - However, there still will be arctic outbreaks and a wide variation in day-to-day and week-to-week temperature trends.
- Confidence remains low on exactly how the precipitation patterns may evolve this winter
  - Because a weak or nearly-non existent El Nino is expected, the precipitation patterns are difficult to ascertain this far out. As such, near normal precipitation is favored at this time.
  - With the slightly warmer than normal temperatures expected with near normal precipitation, snowfall is expected to be near or slightly below normal. This would translate to approximately 20-25 inches of snow for the state as an areal average, except in traditional lake effect snow belt areas. However, some areas will receive more or less than the above range indicated.

Early Winter Outlook

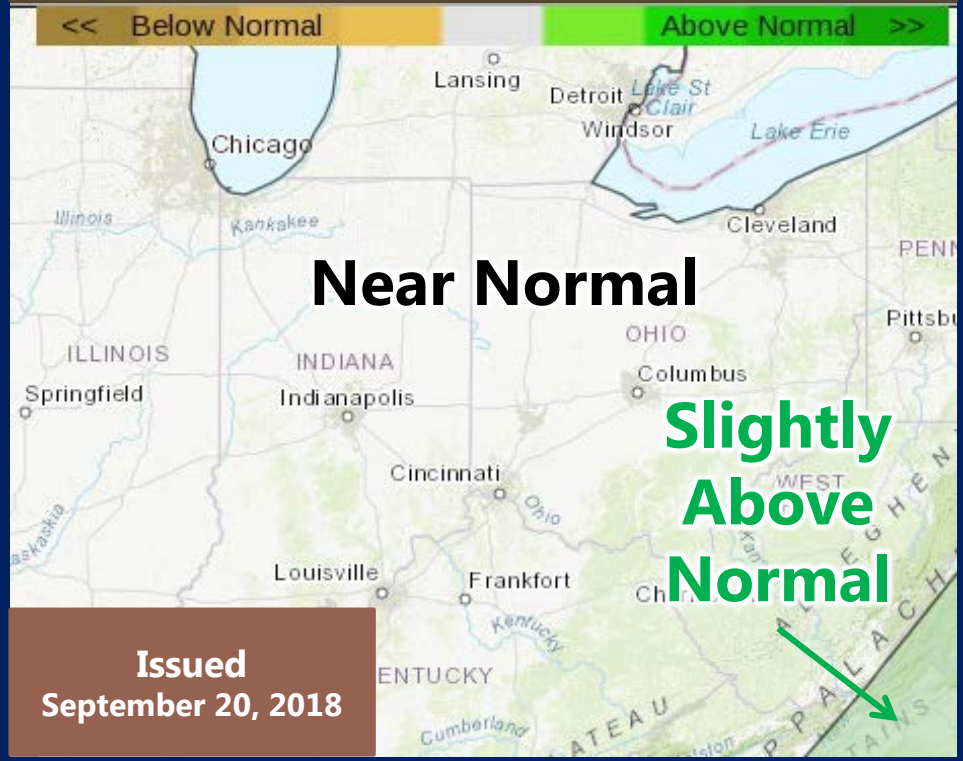
2018 - 2019

October – December Temperature Outlook



According to the Climate Prediction Center (CPC), the entire Ohio Valley region will have favorable probabilities for above normal temperatures during the October – December time frame.

October – December Precipitation Outlook



According to the Climate Prediction Center (CPC), there is not yet a clear signal for precipitation being either above or below normal in the immediate local area from October through December.

Be Prepared…

… For Winter Hazards

Snow Squall Safety

Newspaper Articles – February 14, 2015

National

2 deadly pileups close Ohio Turnpike; snow grounds flights

whiteout conditions, accidents
gh area

Columbus, Ohio • Feb 16, 2015 • 9° Overcast

The Columbus Dispatch

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Wind, white-out conditions cause fatal crashes

Icy roads, blinding snow cause pileups across state, killing 4

PREVIOUS

The pileup involving more than 30 vehicles closed the interstate.

Whiteout conditions c
Ohio, traffic snarls in

Share 189

CAPTIONS 1/13

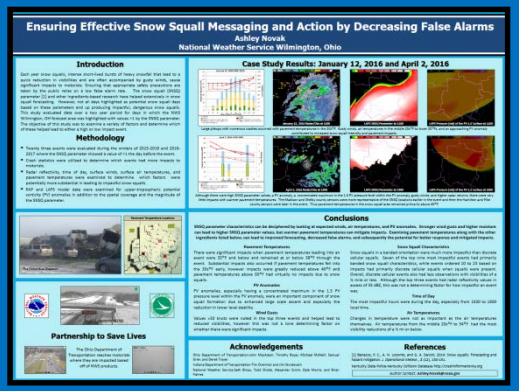
Tribune wire reports
1:26 a.m. EST, February 15, 2015

Blowing snow fueled by wind gusts of more than 40 mph caused whiteout conditions across Indiana on Saturday, causing pileups including one that killed a child and forcing the closure of highways in the north and east.

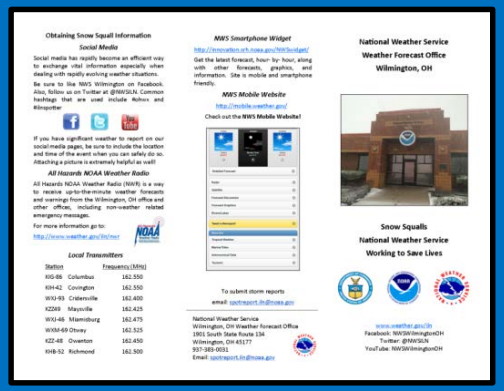
(Courtesy: Banacos, Lahiff)

Working Together to Mitigate Impacts

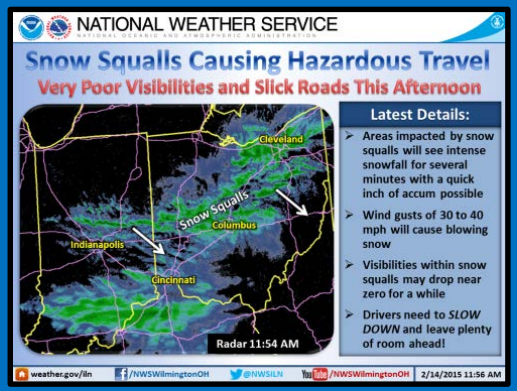
The Ohio Department of Transportation is a valued proactive partner that works closely with the NWS to motivate action, mitigate weather impacts, and explore different avenues to ensure a Weather Ready Nation.



Science



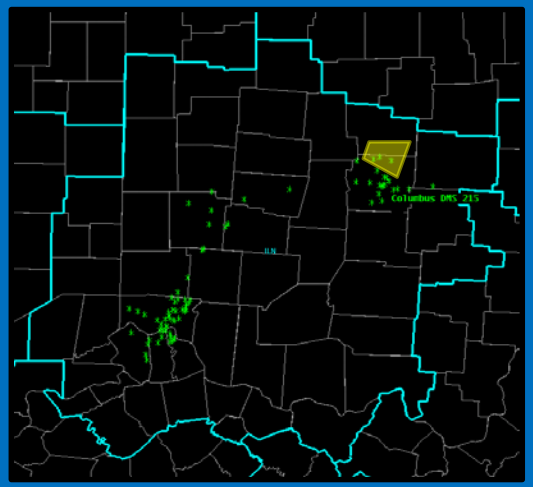
Education



Communication

Pathfinder and Beyond
Partnership to Save Lives

The Ohio Department of Transportation reaches motorists where they are impacted based off of NWS products. What started with snow squalls has expanded to other weather messaging with the Pathfinder Initiative.



The National Weather Service in Binghamton has issued a

* Snow Squall Warning for...
Broome County in central New York...
Cortland County in central New York...
Eastern Tioga County in central New York...
Chenango County in central New York...
Susquehanna County in northeastern Pennsylvania...

Northeastern Bradford County in northeastern Pennsylvania...

* Until 230 PM EDT.

* At 135 PM EDT, a dangerous snow squall was located along a line extending from Tully to near Rome, moving east at 40 mph.

HAZARD...Heavy snow and blowing snow. Wind gusts up to 30 mph.
SOURCE...Radar indicated.
IMPACT...Dangerous life-threatening travel.

* This snow squall will be near...
East Homer around 140 PM EDT.
Truxton around 145 PM EDT.
Taylor, Rushville and Brushville around 155 PM EDT.
Montrose, Plymouth and Earlville around 215 PM EDT.

* This includes the following highways...
Interstate 81 in New York between mile markers 0 and 65.
Interstate 81 in Pennsylvania between mile markers 233 and 206.
Interstate 86 in New York between mile markers 220 and 270.
Interstate 88 in New York between mile markers 0 and 32.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Consider avoiding or delaying travel until the snow squall passes your location. If you must travel, use extra caution and allow extra time. Rapid changes in visibility and slick road conditions may lead to accidents.

&&

New Snow Squall Warning This Winter

Snow Squall Warning: short-fused polygon warning similar to a severe/tornado warning. Future (not this winter): possible EAS/WEA.

Snow Squall: an intense short-lived burst of heavy snowfall that leads to a quick reduction in visibilities and is often accompanied by gusty winds. They may be characterized by one main squall or multiple squalls.

Impact: The combination of quick reductions in visibilities and sudden slick conditions on roadways can often lead to high speed wrecks, pileups, and subsequently injuries and fatalities.

Building A Weather-Ready Nation

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

NOAA is developing new decision support services, improving technology to track and forecast storms, and expanding its dissemination efforts to achieve far-reaching national preparedness for weather events.

Decreasing Vulnerability by Increasing Resilience

WRN Ambassador

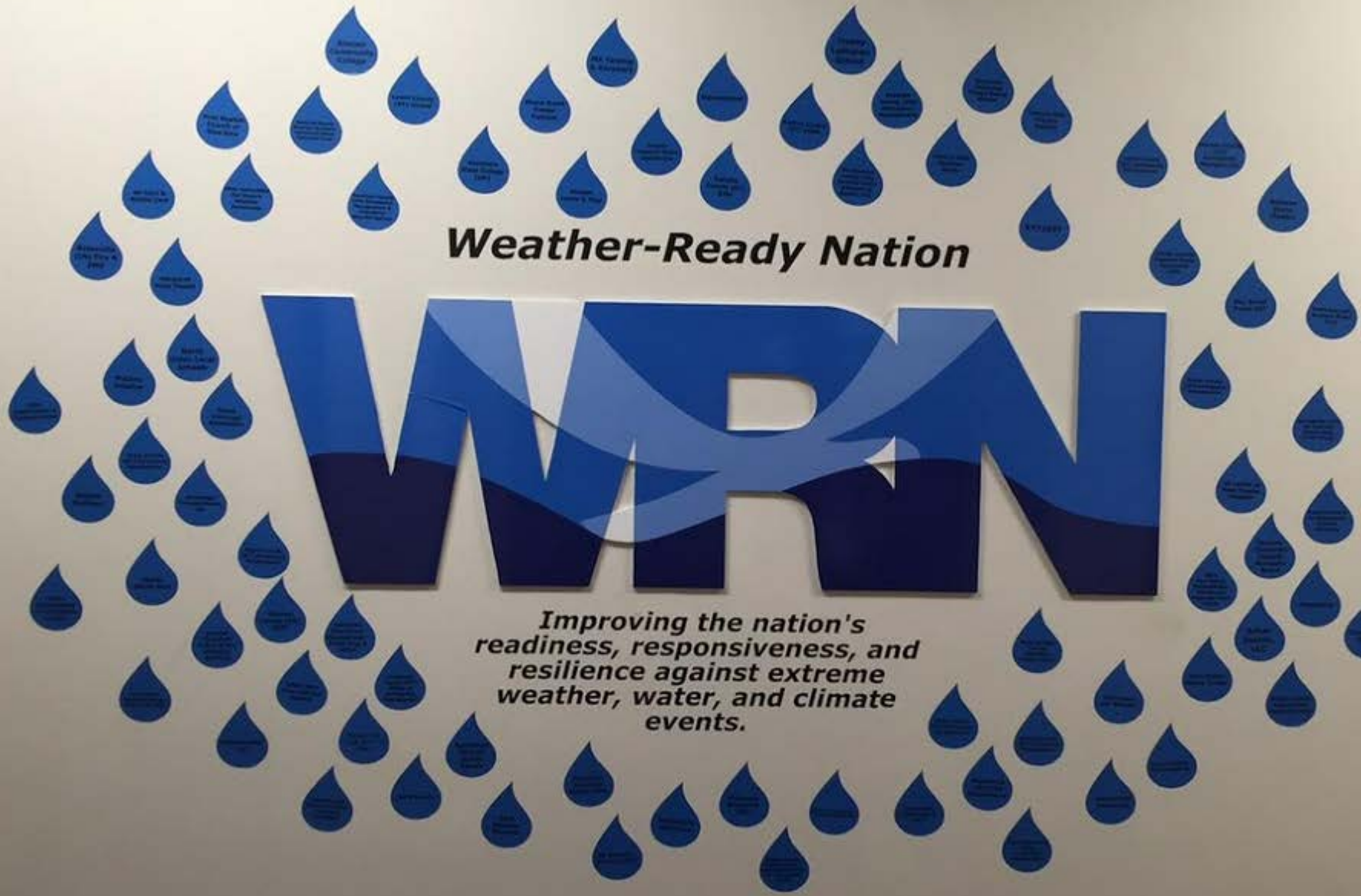
NWS Initiative

Promoting value of NOAA/NWS "Environmental Intelligence"

- Community events
- Press releases and media interviews
- Social media outreach
- Data access/formatting inquiries
- Corporate identity
- Expansion of stakeholder engagement to non-traditional sectors, including:

- Insurance, health, real estate
- Museums/Science Centers
- Vulnerable populations

http://www.nws.noaa.gov/com/weatherreadynation/ambassadors.html


Weather-Ready Nation
WRN
Improving the nation's readiness, responsiveness, and resilience against extreme weather, water, and climate events.


Questions???
Thank You!
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