National Weather Service
Winter Weather
Spotter and Safety Training

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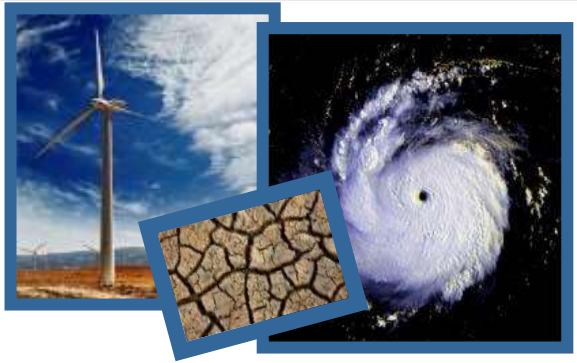
Purpose of This Training

- Educate you on winter weather hazards and how to stay safe when winter weather occurs
- Teach you about different precipitation types and how they develop and might change during a winter storm
- Show you simple techniques for measuring and reporting winter precipitation to the NWS
- Share internet resources and ways to get more information about winter weather hazards

National Weather Service

MISSION

Provide weather, water, and climate data, forecasts, warnings and impact-based decision support services for the protection of life and property and enhancement of the national economy



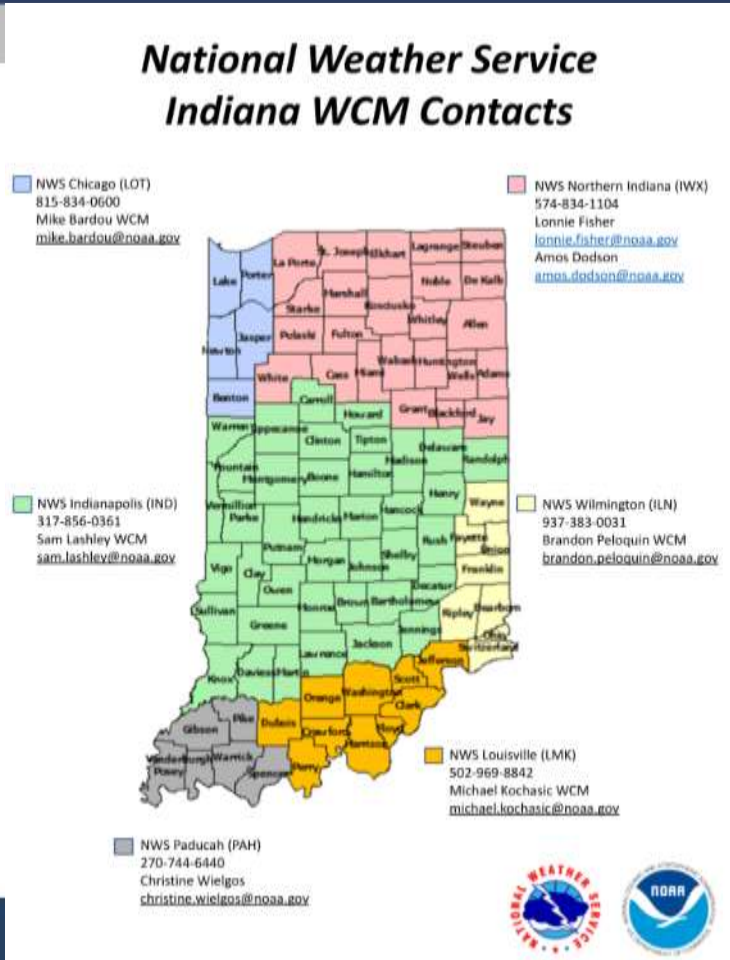
VISION

A Weather-Ready Nation: Society is prepared for and responds to weather, water, and climate-dependent events

NWS Indiana Offices and Contacts

Six NWS Offices Covering Indiana

- Indianapolis (IND)
  - State Liaison Office
  - 39 central counties
- Chicago (LOT)
  - 5 NW counties
- Northern Indiana (IWX)
  - 24 NC and NE counties
- Wilmington OH (ILN)
  - 8 SE counties
- Louisville, KY (LMK)
  - 10 southern counties
- Paducah, KY (PAH)
  - 6 SW counties



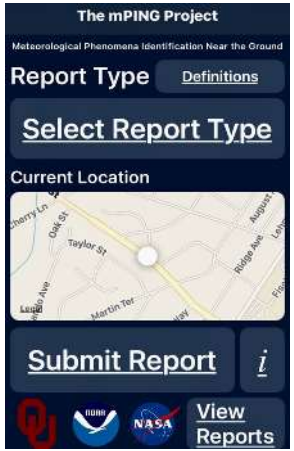
NWS Partnerships…CoCoRaHS

We can't do it alone! Consider Becoming a Volunteer

- International network of over 24,000 volunteers like you measuring and reporting precipitation each day
- Uniform tools, educational resources
- Data used by NWS to view precipitation reports and aids in warning decisions
- Data used for federal declarations
- More information at: **https://cocorahs.org**

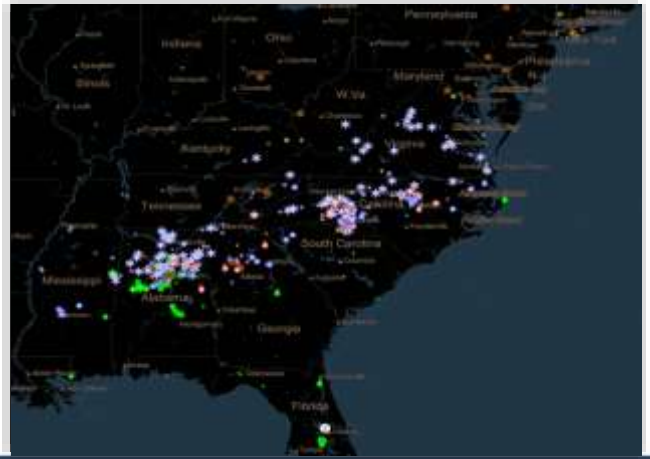
NWS Partnerships…mPING

We can't do it alone! Consider Becoming a Volunteer



- mPING is a free smartphone app to quickly report precipitation type, severe weather, flooding, and reduced visibility
- Also available through Radarscope App
- Used by NWS to see precipitation type reports in the winter
- More information at:

https://mping.nssl.noaa.gov



NWS Partnerships

We can't do it alone! Consider Becoming a Volunteer

- Dedicated volunteers like you!
- When most people think of Skywarn, they think of severe thunderstorms
- Skywarn spotters also make valuable contributions in the winter by reporting precipitation types, amounts and impacts

https://www.weather.gov/SKYWARN

SKYWARN
WEATHER.GOV

NWS Partnerships

We can't do it alone! Weather Data You Can Use

- Midwest Regional Climate Center (MRCC) and the Indiana State Climate Office
- Providing climate data and services to Indiana and the midwest
- Many useful tools for weather data analysis
- More information at:

https://mrcc.purdue.edu/

https://ag.purdue.edu/indiana-state-climate/

Winter Weather Terms and “Headline Criteria”

Winter Weather Definitions

- **Freezing Rain** – Rain falls as **liquid** and then **freezes on contact**
- **Sleet** – Raindrops freeze into ice pellets **prior** to reaching ground.
- **Snow** – An aggregation of many ice crystals
- **Graupel** – Snowflakes which have been heavily rimed. Also called snow pellets.

Winter Weather Definitions

- **Snowfall** - Snow that falls and accumulates during a period of time between measurements.

- **Snow Depth** - The combined total depth of both old and new snow on the ground. Usually measured once per day

Winter Weather Definitions

SNOW:RATIO

The percentage of water within a sample of snow is called "snow ratio". An old rule of thumb was that for every 10 inches of snow, there would be 1 inch of water (10:1).

However, snow ratios can vary dramatically around the country and from event to event.

Variables that affect snow ratio

Depth of the "warm" layer from the surface into the snow-producing cloud.

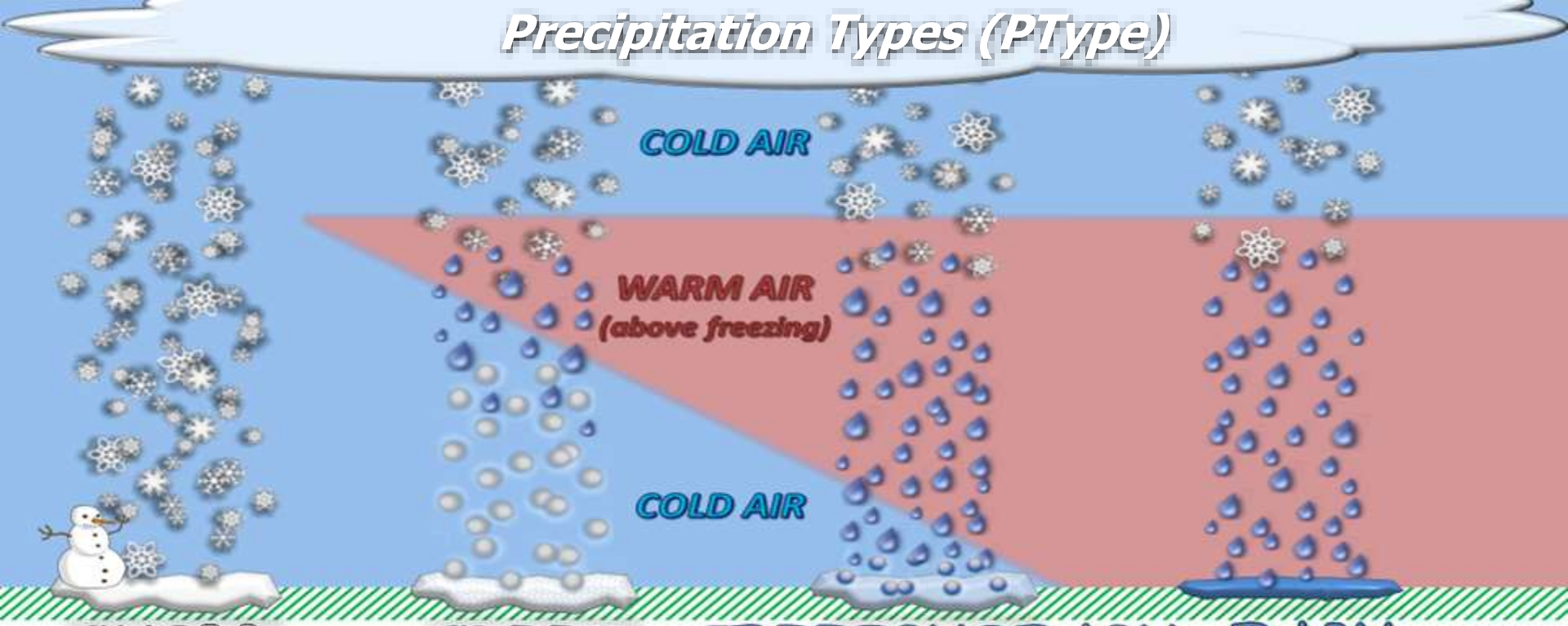
Amount of ice in the snow-producing cloud.

If it's windy, snowflakes can fracture, losing their "lacy" structure.

Deep cold leads to higher snow ratios.

Rain	Wet Snow	Normal/Usual Snow	Dry Snow
Snow:Liquid Ratio 0:1	5:1	10:1	15:1	20:1	30:1

Precipitation Types (PType)



SNOW	SLEET	FREEZING RAIN	RAIN
No melting has occurred.	Snow melts and refreezes before reaching the surface.	Snow melts and refreezes on contact with the surface.	Snow melts and does not refreeze.

Hazardous Weather Outlook

Daily Hazardous Weather Outlooks Give You "Heads Up" Information

- **Issued every day between 5 AM and 7 AM**
- **Updated as necessary throughout the day**
- **Outlines potential weather hazards expected over the next 7 days**
- **Potential storms mentioned once forecaster confidence reaches 30 percent**

Hazardous Weather Outlook
National Weather Service Indianapolis
515 AM EST Sat Feb 13 2021

.DAY ONE...Today and tonight.

Snow will spread across the area late today and tonight. Accumulations of 1 to 2 inches are expected north of I-74.

.DAYS TWO THROUGH SEVEN...Sunday through Friday.

Snow will continue on Sunday with an additional one to two inches possible north of I-70.

Minimum wind chill values between 5 below zero and 10 below zero will be possible late Sunday night into Monday morning.

Snow chances are expected to increase again Monday into Tuesday, with potential for moderate to heavy snow accumulations across the entire area.

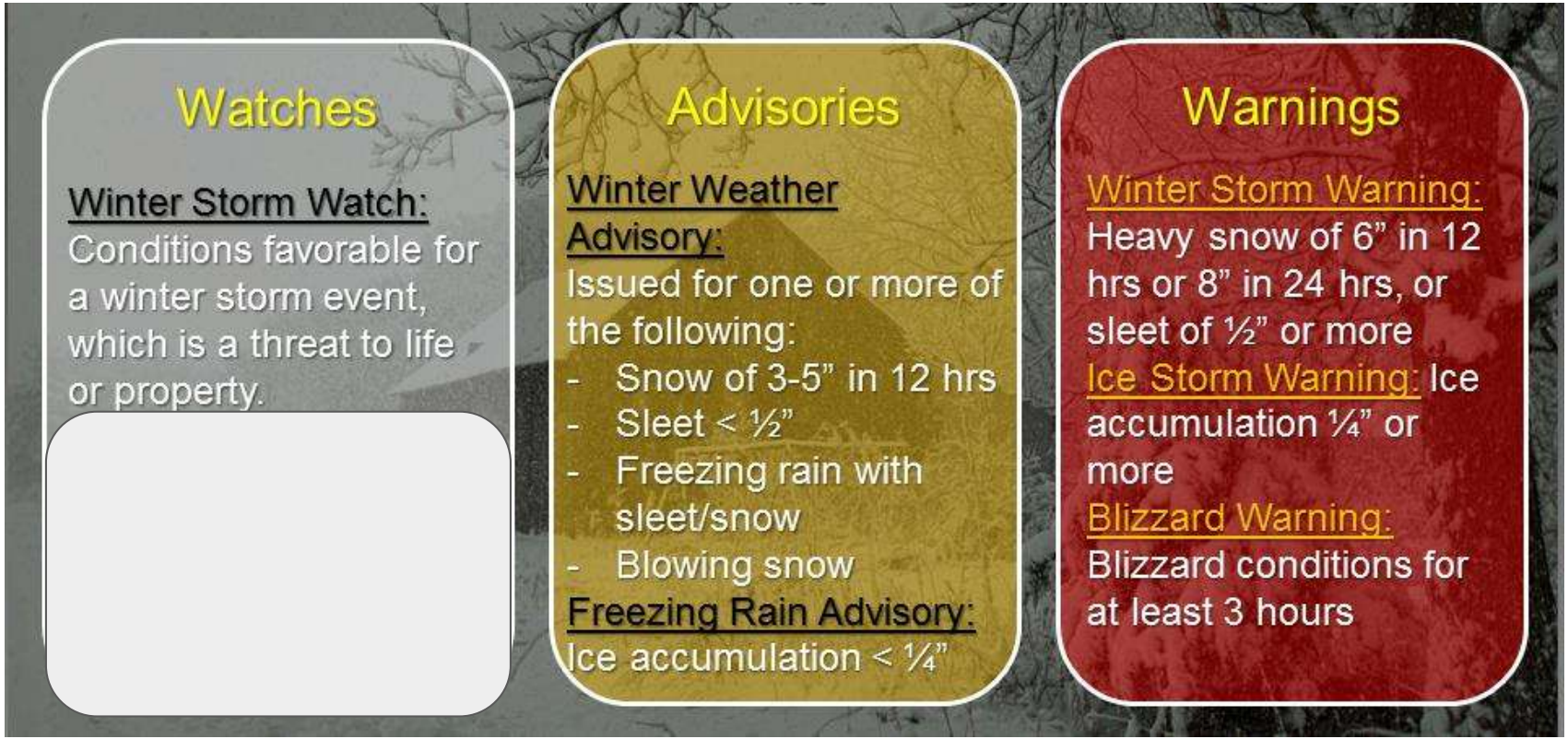
Graphical Hazardous Weather Outlook

https://www.weather.gov/crh/ghwo?sid=ind

24 Hr Hazard	Day 1	Sat	Sun	Mon	Tue	Wed	Thu
Tornado							
Hail							
Thunderstorm Wind							
Severe Thunderstorms							
Excessive Rainfall							
Lightning							
Excessive Heat							
Fog							
NonThunderstorm Wind							
Fire Weather							
Grassland Fire Danger Index (GFDI)							
Frost Freeze							
Excessive Cold							
Ice Accumulation							
Snow Sleet							

Watches, Warnings, & Advisories

These "headlines" may be issued for lower criteria when greater impacts expected



General Winter Storm Event Timeline

4-7 Days

- Focused on general overview, trends and storm potential
- Hazardous Weather Outlook, Forecast Discussions

1-3 Days

- Increasing confidence as storm track becomes clearer (watches if needed)
- Confidence, probabilistic, & potential amount graphics created & updated frequently

0-36 hours

- Fine tune forecast & narrow down details
- Warnings & advisories if needed with details on location and timing
- Situation Reports, Social media posts, graphics and updates

After Event

- Data collection/quality control of reports & finalize snowfall maps
- Post summary information on local NWS webpages

NWS Indiana Winter Warning Criteria

- **Criteria Varies Across the State**
  - Lower criteria (amounts) far south and southeast (PAH, LMK, ILN)
  - Timing and Impacts may alter when warnings are issued from event to event for entire state
  - Advisories are issued for events where warning criteria are not expected to be met but hazardous conditions could develop

Snow Squall Warnings

- **Warning Criteria (30-60 minutes each)**

  Reliable reports (Radar, INDOT, webcams, road network observations etc.) of snow squalls meeting or exceeding either of the following two conditions:

  - Visibility 1/4SM or less in snow with sub-freezing ambient road temperatures
  - Plunging temperatures behind an arctic front sufficient to produce flash freezes, along with a significant reduction in visibility from falling and/or blowing snow.

- In those instances when lesser impacts are expected, a Special Weather Statement (SPS) can be issued
- Snow squall warnings will not be issued if winter storm warnings or blizzard warnings are already in effect

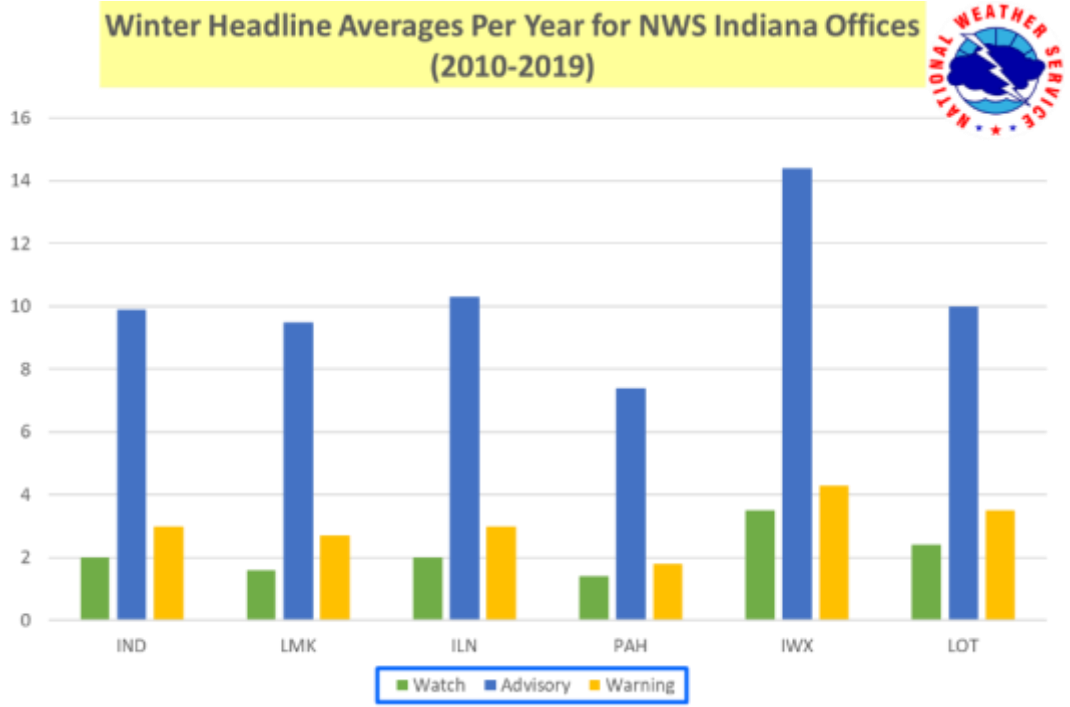
NWS Winter Product Summary

Outlooks	30 Percent Confidence	***Significant Winter Impacts <u>Possible</u>***
Watches	50 Percent Confidence	***Significant Winter Impacts <u>May Occur</u>***
Warnings	80 Percent Confidence	***Significant Winter Impacts <u>Will Occur</u>***
Advisories	80 Percent Confidence	***Minor Winter Impacts <u>Will Occur</u>***

Indiana Winter Weather Climatology

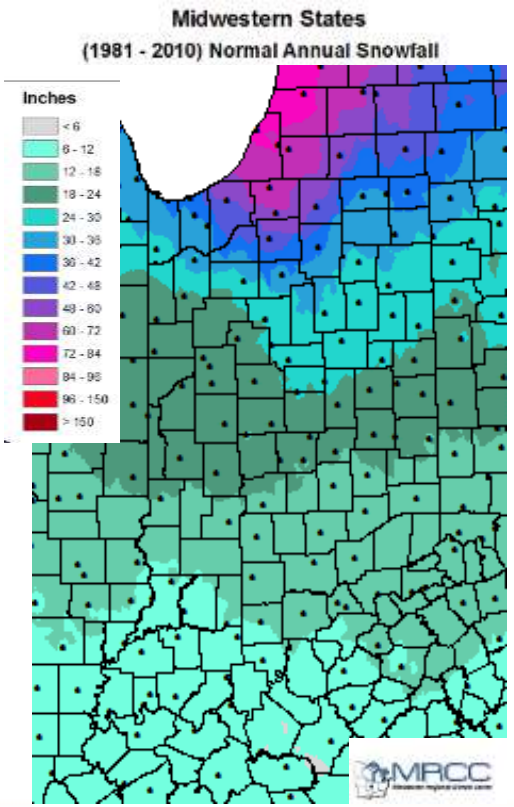
Indiana Winter Headline Climatology

- Average number of winter headlines issued each year by NWS Office
- Greater numbers for northern offices due to lake effect snow and greater chances of having colder air during winter months
- Remainder of central and southern Indiana had similar numbers of headlines



Snowfall Last 23 Winters Across Indiana

Year	South Bend Area	Fort Wayne Area	Indianapolis Area	Evansville Area
Normal	**64.5"**	**33.6**	**25.5**	**10.8**
2022-04-30	56	23.2	11	4.1
2021-04-30	52.4	35.8	24.2	7.8
2020-04-30	44.9	26	16.2	1.1
2019-04-30	45.7	24.7	19.4	8.8
2018-04-30	93.1	32.7	23.2	12.1
2017-04-30	42.2	18.5	9.7	1.4
2016-04-30	70.2	20.1	13.3	14.2
2015-04-30	83.7	45.1	25.5	18.5
2014-04-30	108.9	74.7	55.7	12.6
2013-04-30	59.9	38.4	34.5	12.3
2012-04-30	51.2	32.2	9.8	0.5
2011-04-30	105.6	46.5	37.4	15.5
2010-04-30	57.3	29.3	33	15.3
2009-04-30	76.5	27.6	24.3	7.3
2008-04-30	75.9	43.9	23.3	10.5
2007-04-30	62.7	29.1	25.8	3.6
2006-04-30	38	27.1	27	5.8
2005-04-30	78.4	44.7	27.6	22.6
2004-04-30	44.3	36.4	20.9	7
2003-04-30	60.1	46.7	50	21
2002-04-30	62.8	16.7	10.9	6.1
2001-04-30	76.6	28.3	19.6	17.3
2000-04-30	58.9	26.5	24.1	4.4



Indianapolis Snowfall Climatology

https://mrcc.purdue.edu/gismaps/snowclimatology.htm

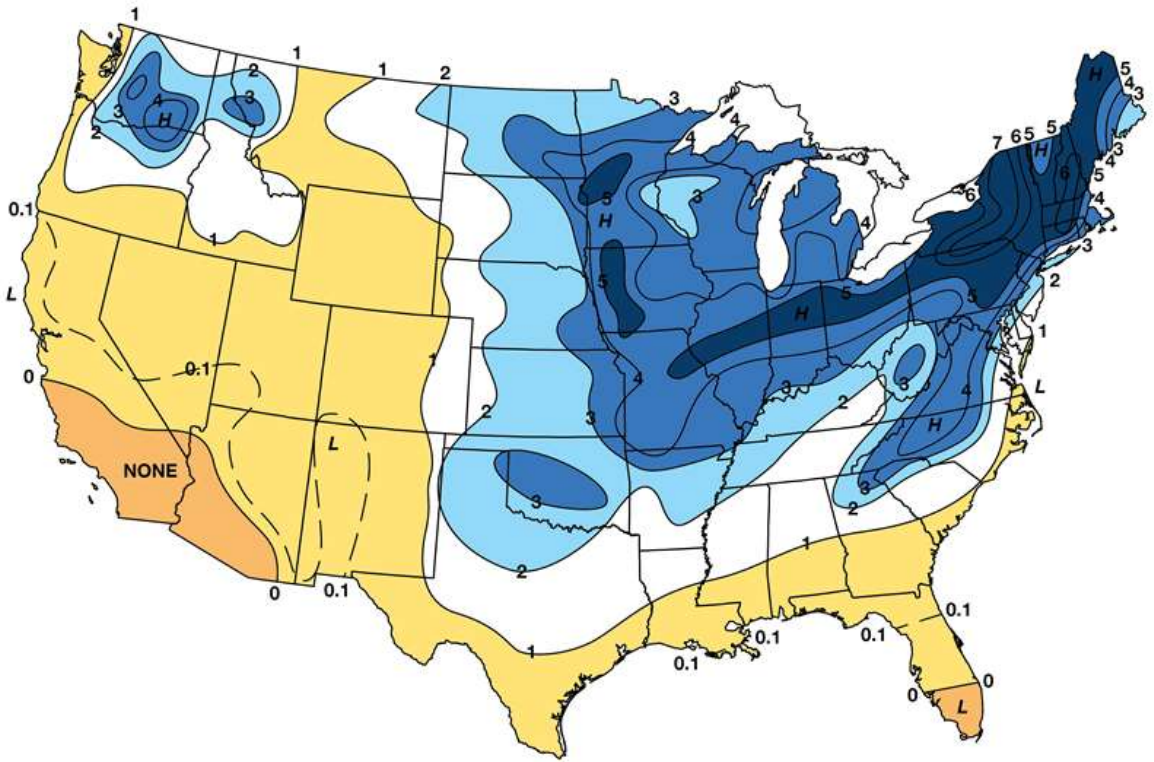
Snow Climatology: Average number of 2-Day Snow Totals for

Indianapolis Area

	≥ 0.1"	≥ 1.0"	≥ 2.0"	≥ 3.0"	≥ 4.0"	≥ 6.0"	≥ 8.0"	≥ 12.0"	≥ 18.0"	≥ 24.0"
All Months	38.4	15.9	8.4	5.1	3.3	1.6	0.7	0.1	0	0
January	11.3	4.9	2.7	1.6	1	0.5	0.3	0	0	0
February	9.4	4.1	2.2	1.4	1.1	0.6	0.1	0	0	0
March	5	1.9	1.1	0.7	0.4	0.2	0.1	0	0	0
April	1	0.3	0.1	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0	0	0
June	0	0	0	0	0	0	0	0	0	0
July	0	0	0	0	0	0	0	0	0	0
August	0	0	0	0	0	0	0	0	0	0
September	0	0	0	0	0	0	0	0	0	0
October	0.2	0.1	0.1	0	0	0	0	0	0	0
November	2.7	0.7	0.3	0.1	0.1	0	0	0	0	0
December	8.8	3.9	2	1.2	0.7	0.3	0.1	0	0	0

Period of Record used: Snow Years 1960-61 to 2017-18

Freezing Rain and Ice Climatologies

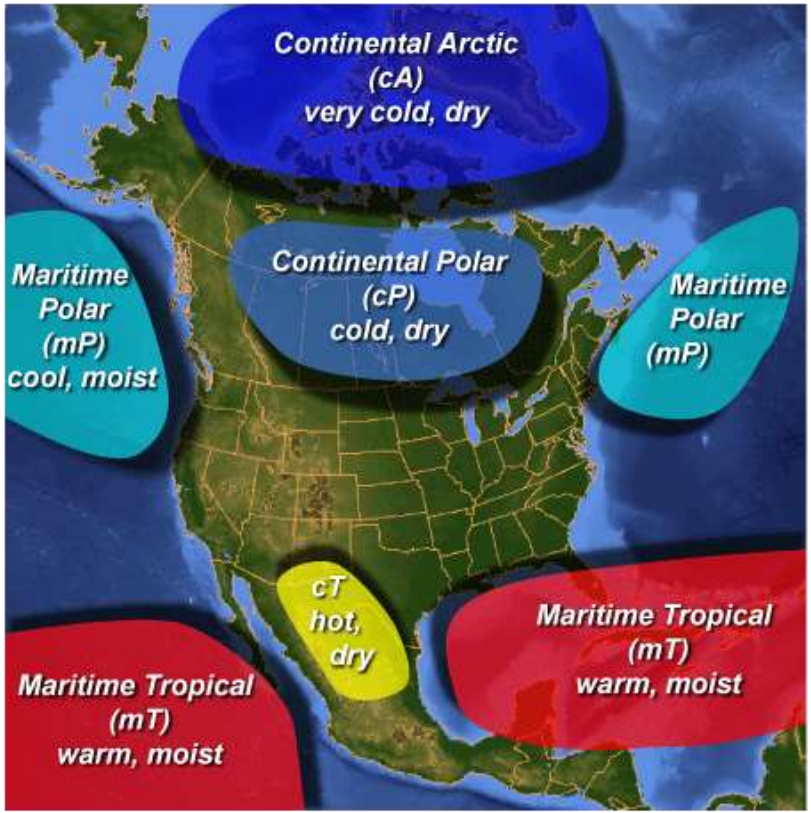


The average annual number of days with freezing rain, based on 1948-2000 data. *From Changnon and Karl, 2003.*

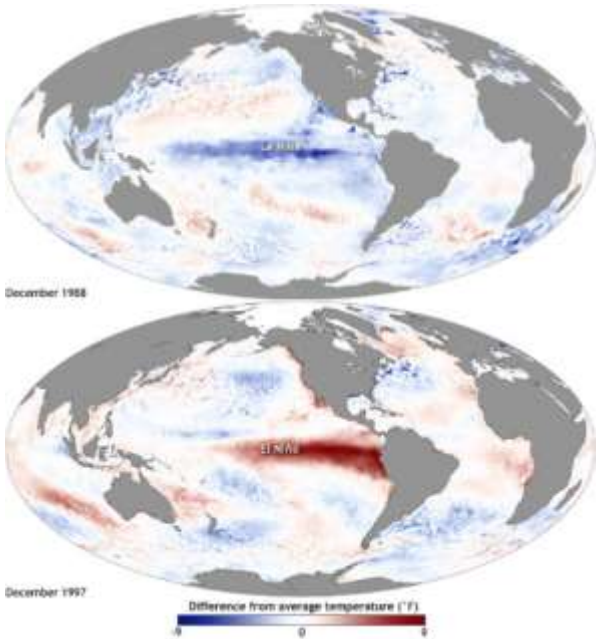
Indiana Winter Weather and Associated Patterns

Air Masses of Winter

- **Our typical winter air mass is *Continental Polar*, cold and dry**
- **For heavy snow, we usually need moisture from the Gulf of Mexico - *Maritime Tropical* air**
- **Too much *Maritime Tropical* air can mean mixed precipitation**



Winter Influences - "Teleconnections"

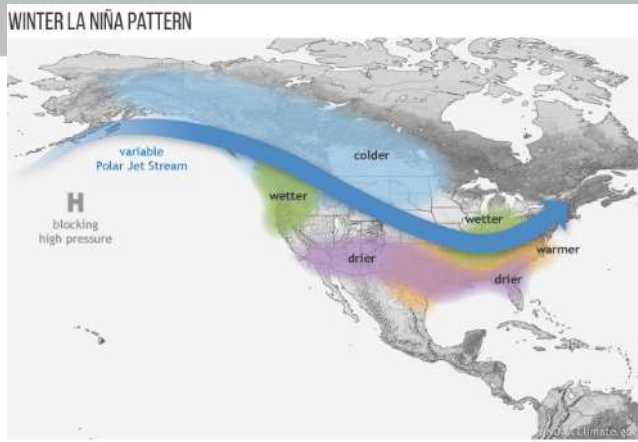


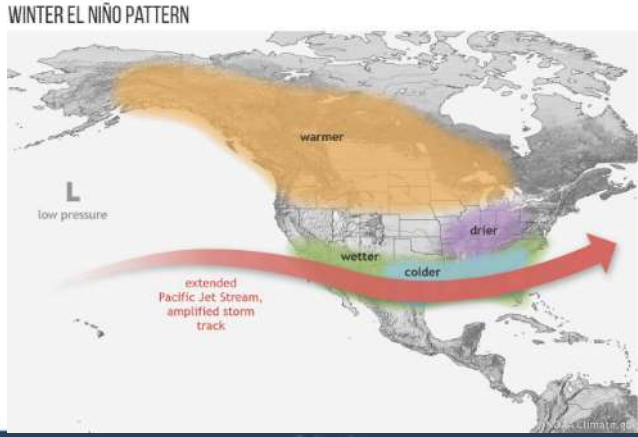
La Niña:

- Retracted Jet Stream
- More meridional flow
- Blocking over N. Pac
- Stronger Hudson Bay Low
- More Arctic outbreaks

El Niño:

- Extended Jet Stream
- More zonal flow over U.S.
- South shift of storm track
- Weaker Hudson Bay Low
- Fewer Arctic outbreaks

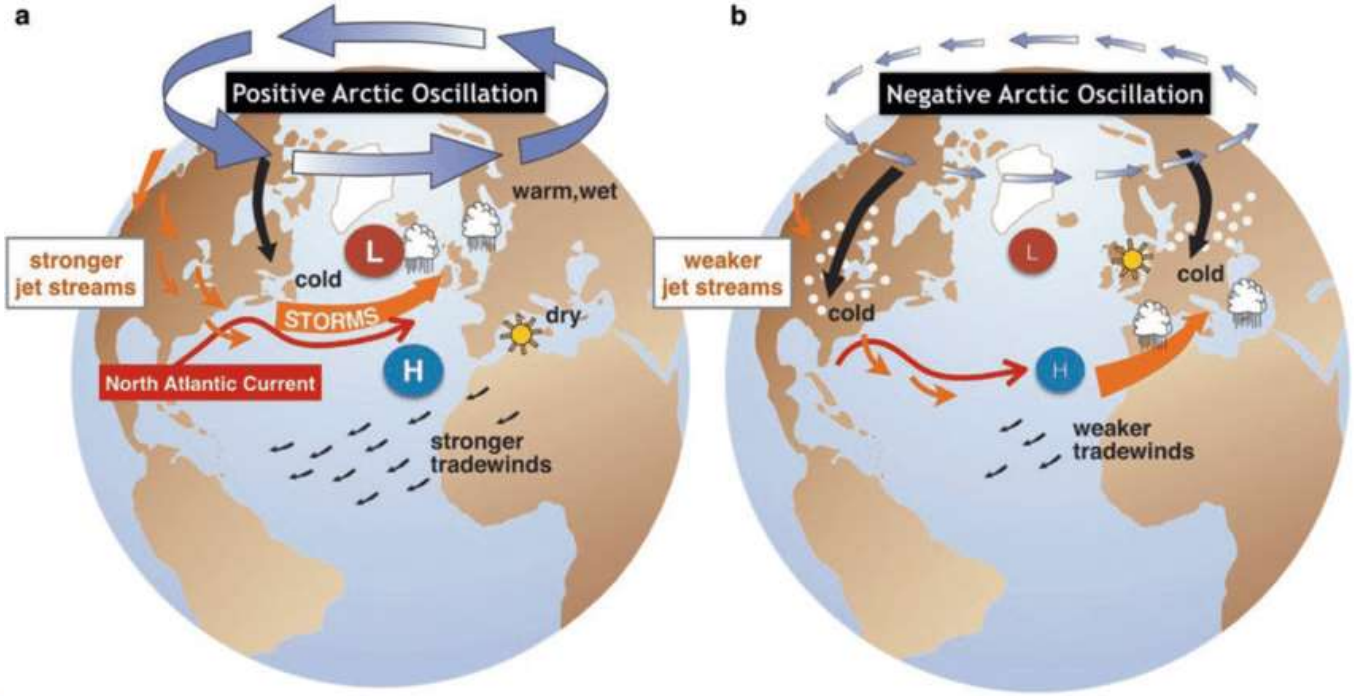




Winter Influences - "Teleconnections"

North Atlantic Oscillation:

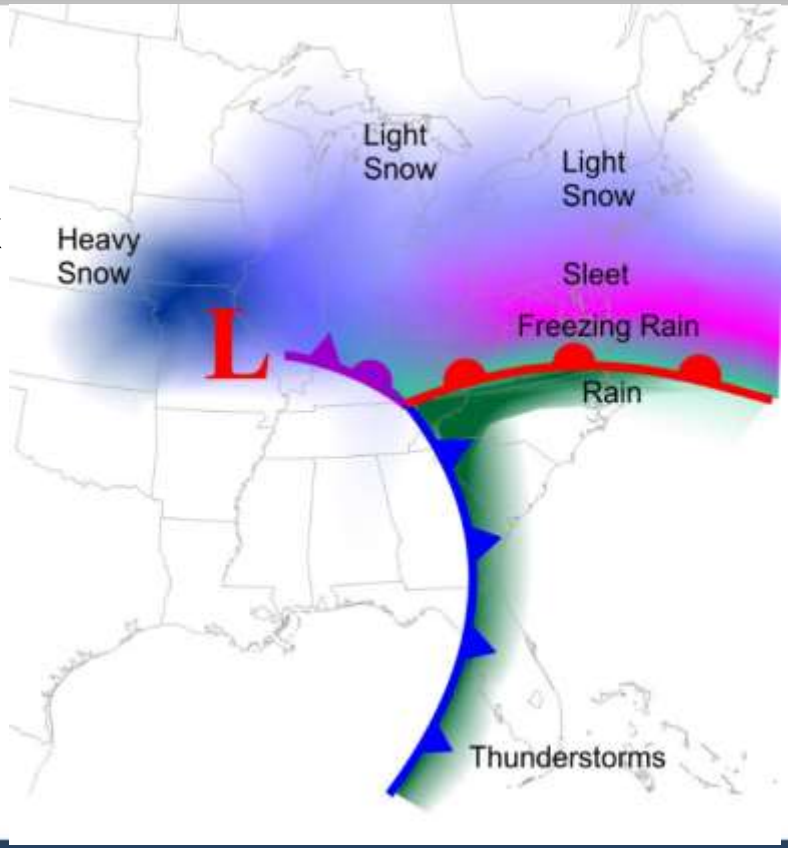
- **Positive and Negative**



Winter Influences - "Polar Vortex"

Influence of Track on Precipitation Type

Blue: Snow
Pink: Wintry Mix
Green: Rain

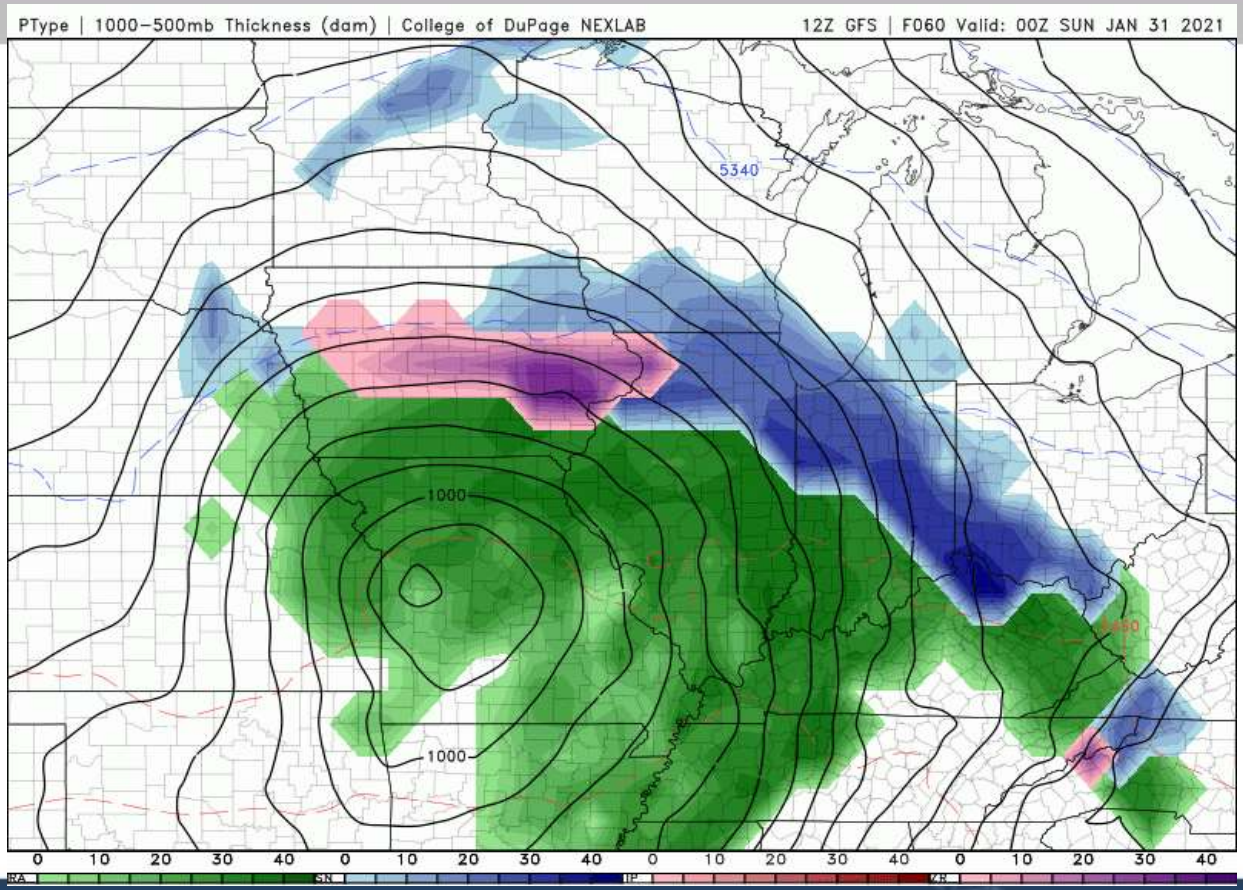


- **Snow generally north and west of surface low track**
- **Freezing rain/sleet near and just north of surface warm front**
- **Rain along and south of warm front and surface low track**
- **Thunderstorms/heavy rain along cold front**

Influence of Track on Precipitation Type

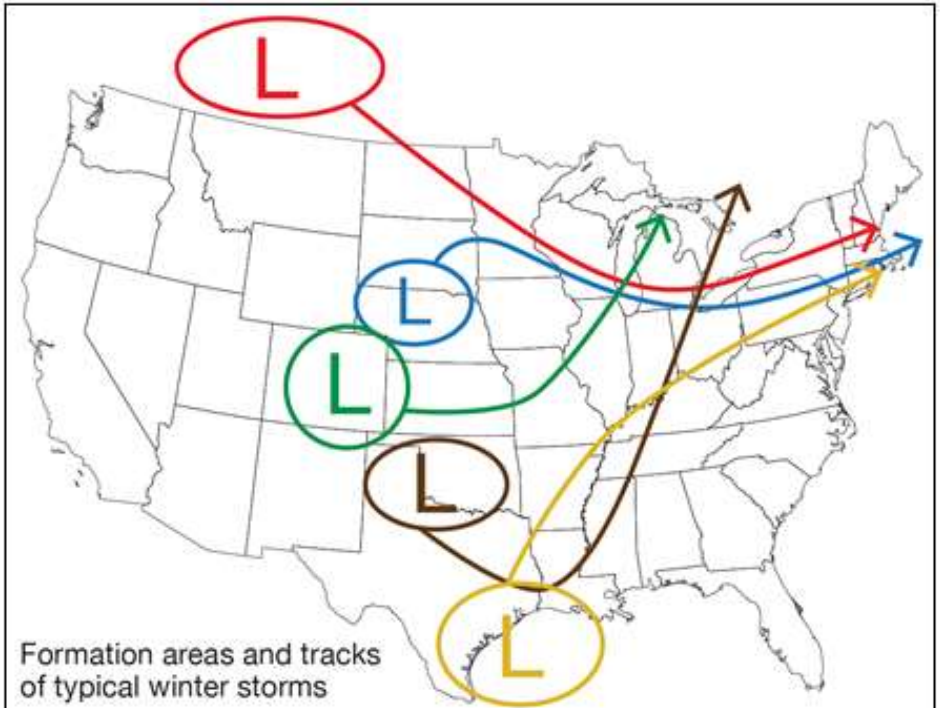
Blue: Snow
Pink: Wintry Mix
Green: Rain

Be cautious with weather model depictions of precipitation types



Weather Systems

Main Winter Storm Tracks Impacting Indiana



This figure shows where typical winter storms that affect the central U.S. tend to develop or undergo major reformation or intensification and their tracks. *After Boris, 2012; Changnon, 1969.*

Alberta Clipper Systems

- **Typically 1-3 inches snow north of surface low track**
- **Little/no snow south of surface low track**
- **Liquid snow ratios often between 20:1 and 30:1 ("dry snow")**
- **Reinforcing arctic air follows surface low**
- **Snow squalls most likely with this storm type**

Alberta Clipper Systems

Surface and Upper Level Features

Alberta Clipper Systems

Surface and Upper Level Features

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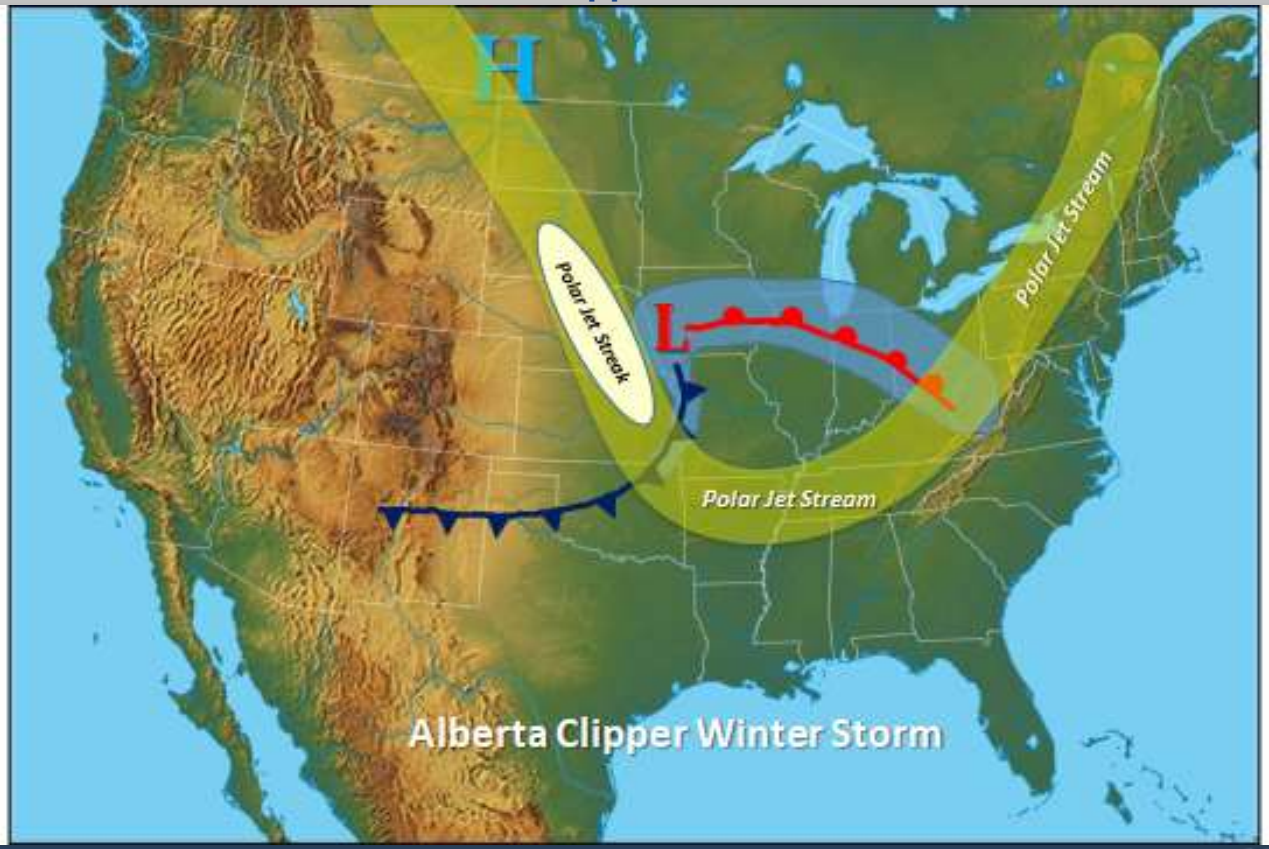
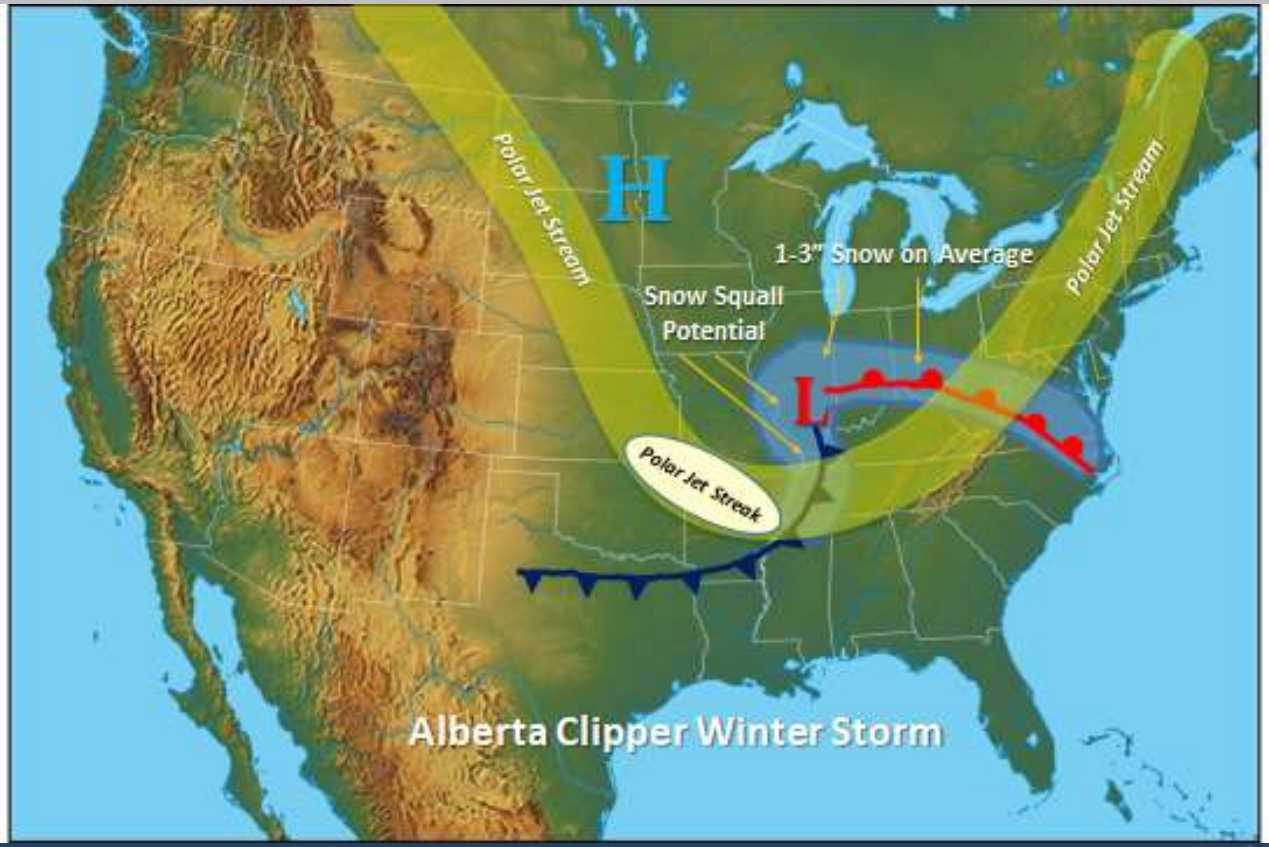
Surface and Upper Level Features



Alberta Clipper Systems

Surface and Upper Level Features

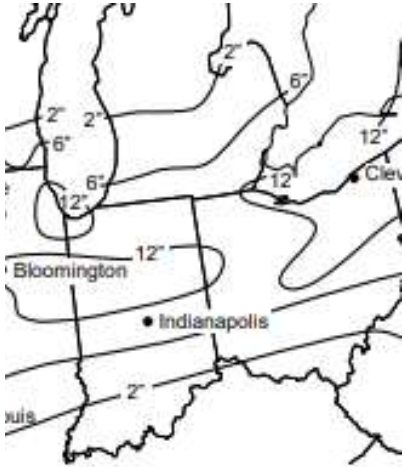


Alberta Clipper Systems

Surface and Upper Level Features

Panhandle Hook Systems

Figure 3-2. Location of the center of the surface low-pressure system (denoted by "L") at 6-hour intervals between 6 a.m. CST on February 12, 2007, and 12 a.m. CST on February 15.



- **Typically 6+ inches snow well north of surface low track**
- **Rain near and south of surface low track**
- **Freezing rain/sleet sometimes between low track and heavy snow**
- **Liquid snow ratios often between 8:1 and 15:1 ("wet snow")**
- **Arctic air may follow, sometimes with an Alberta Clipper 1 to 2 days later**

Images Courtesy Major Winter Storms in the Midwest during Winter 2006-2007. Changnon, Stanley A. and Kenneth E. Kunkel., 2007 ISWS DCS 2007-04

Panhandle Hook Systems

Surface and Upper Level Features

Panhandle Hook Systems

Surface and Upper Level Features

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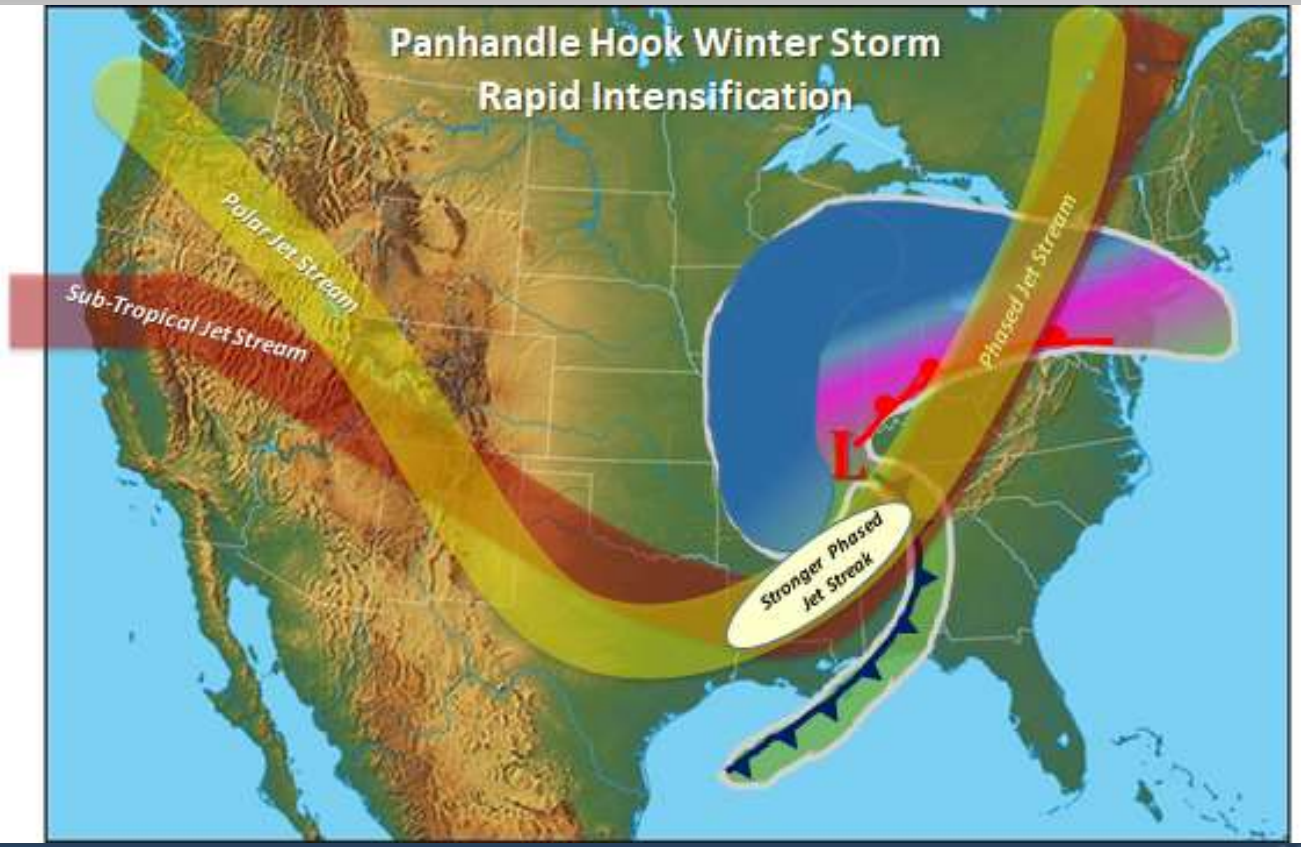
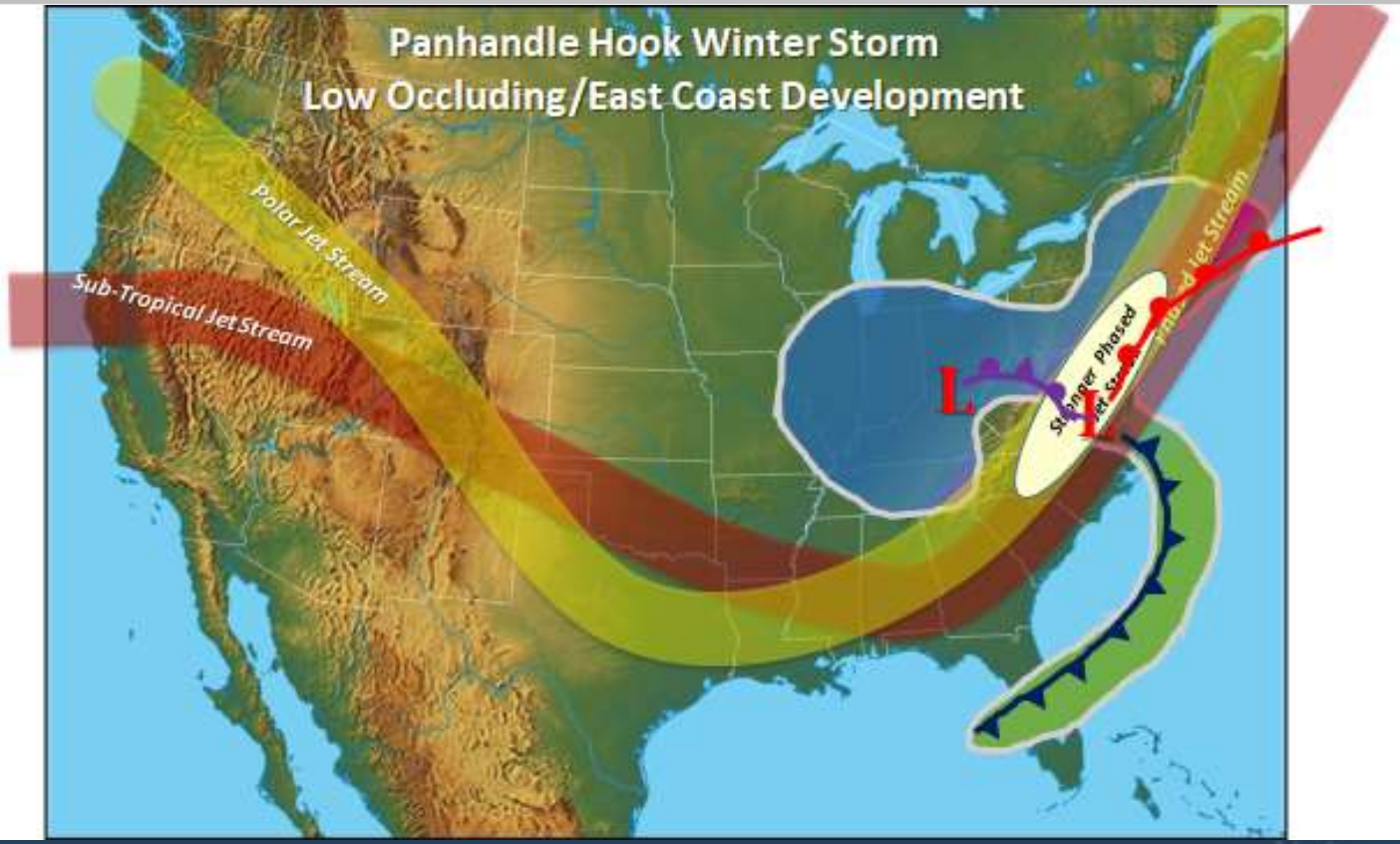


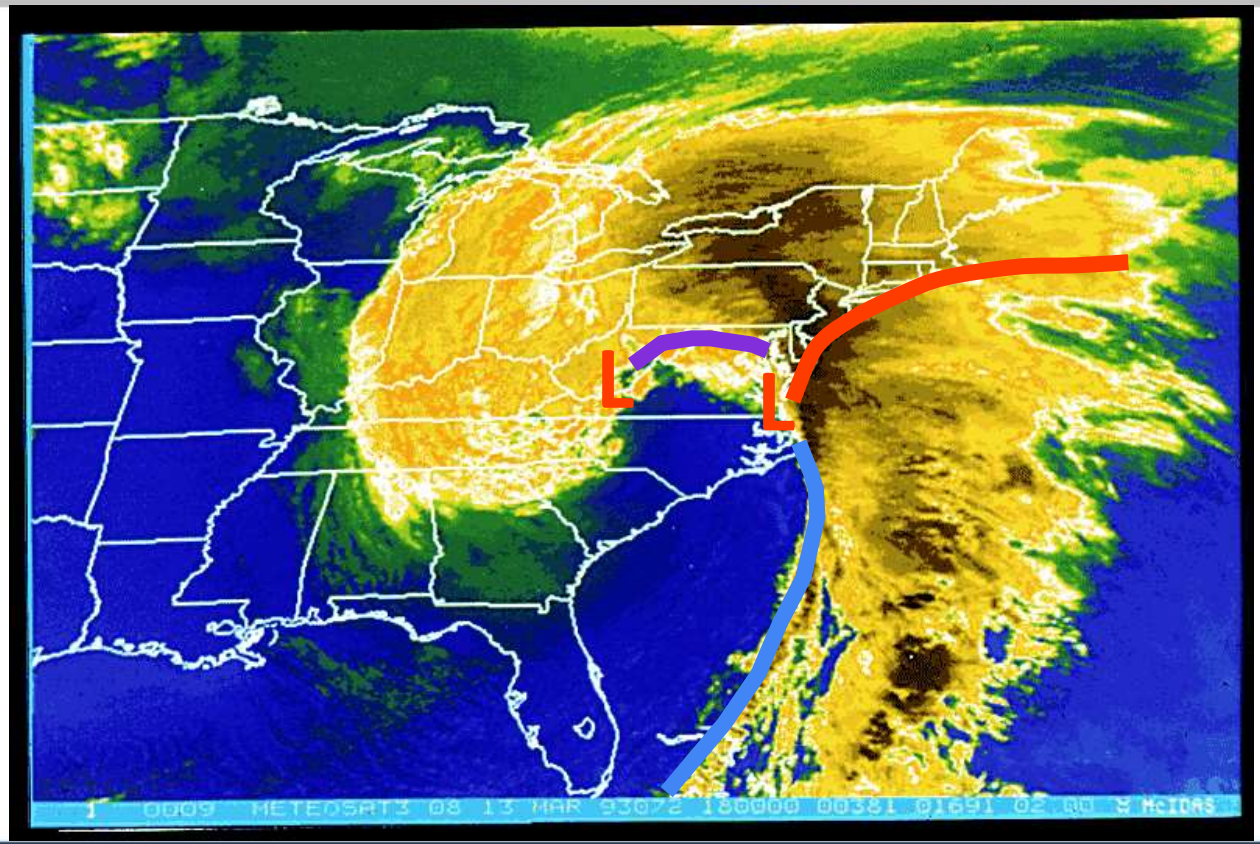
Panhandle Hook Systems

Surface and Upper Level Features



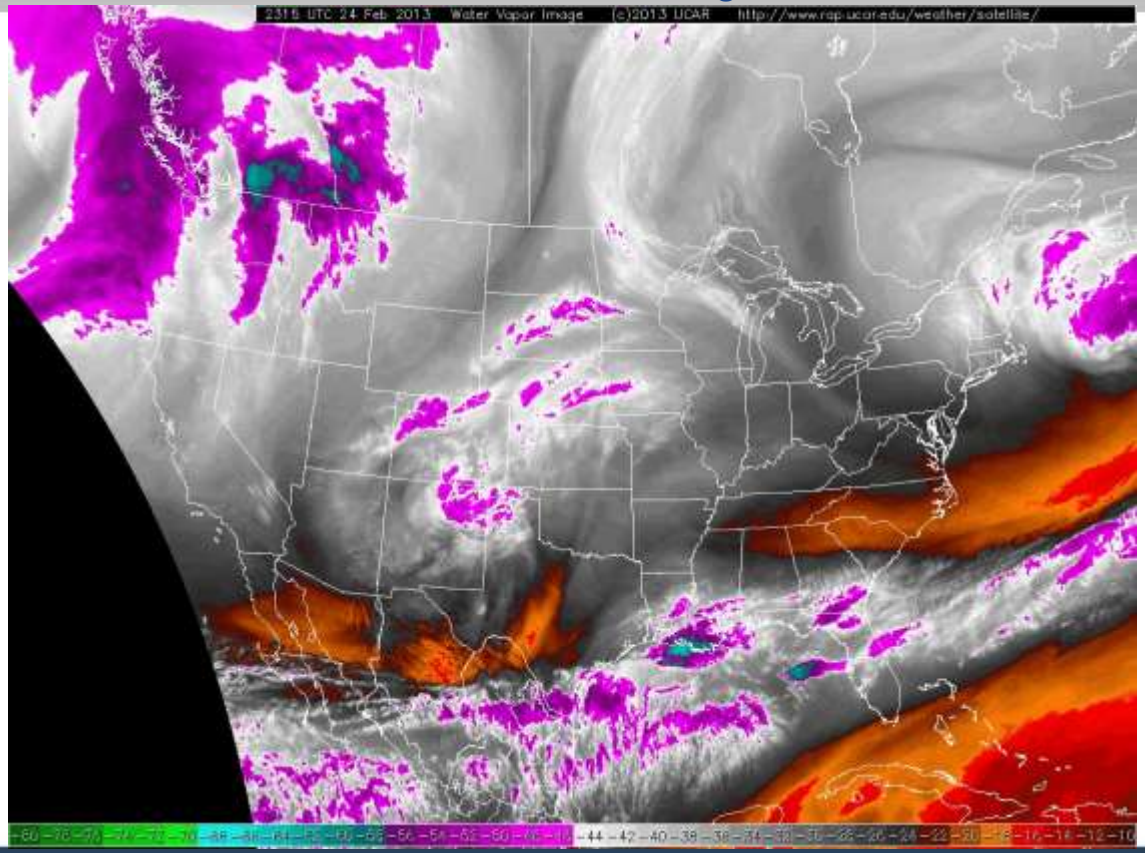
Panhandle Hook Systems

Satellite View of an Occluding System

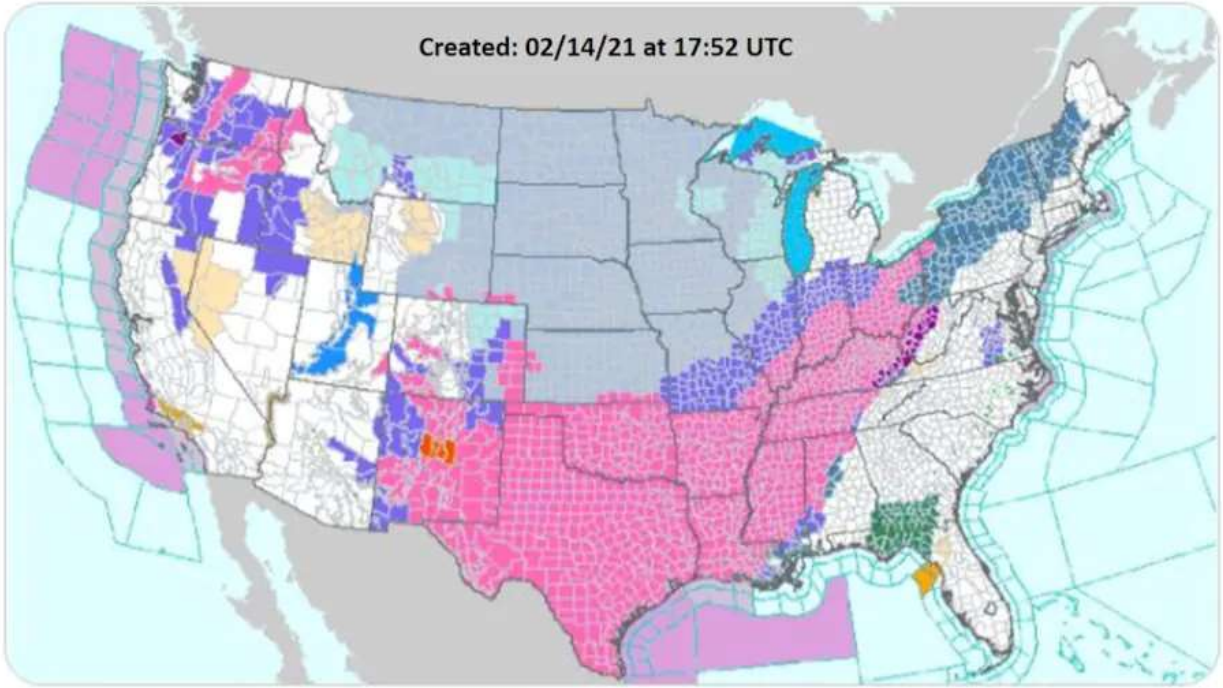


Panhandle Hook Systems

Satellite View - A Lot Going On!



Panhandle Hook Systems



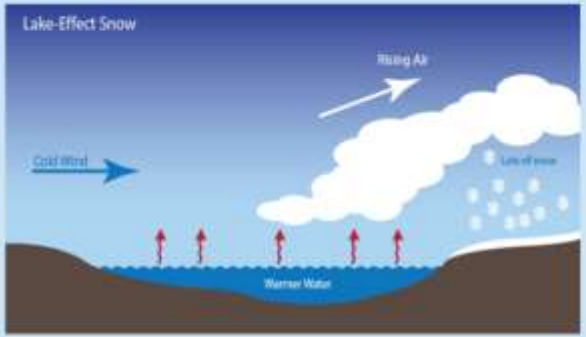
- Typical Watches/Warnings and Advisories with a Panhandle Hook System
- Feb 12-16th 2021 Winter Storm
- These storms impact a large part of the country
- Often followed by a clipper system in 1-2 days

Other Winter Weather Hazards and Concerns

Other Indiana Winter Weather Events

Lake Effect Snow Can Extend into Central Indiana

Lake Effect Snow



- Significant lake effect snows are most common in parts of northwest Indiana, but occasionally in northeast Illinois.
- Lake effect can have a HUGE impact on driving with greatly reduced visibilities and sudden changes in road conditions over short distances.
- Lake effect snow season usually runs from November through March.

Lake Effect Snow 1/21/14
Griffith, IN
Jason Lee Miller

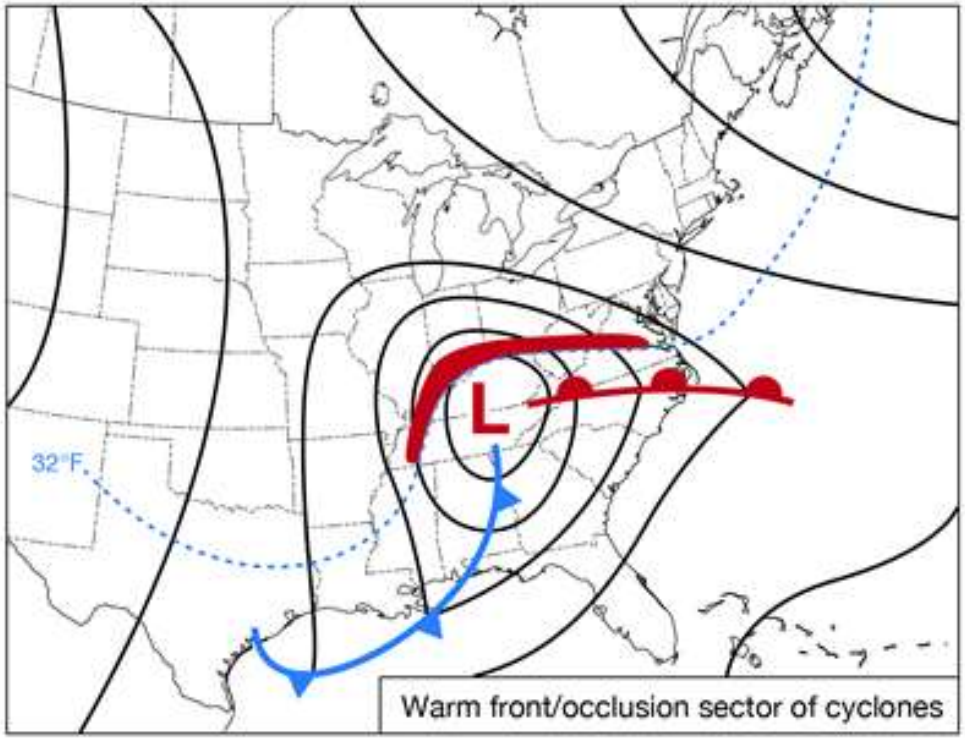
Other Indiana Winter Weather Events

Freezing Rain and Ice Storms

- **Large accretion of ice and wind can result in extensive tree damage and power outages**
- **In extreme cases, massive destruction of the power grid can result in power outages lasting for weeks during the coldest time of year**
- **It only takes a few tenths of an inch of ice accretion to bring down tree limbs and utility lines.**
- **Ice accretion of an inch or more has been observed in the past**

Ice Storms

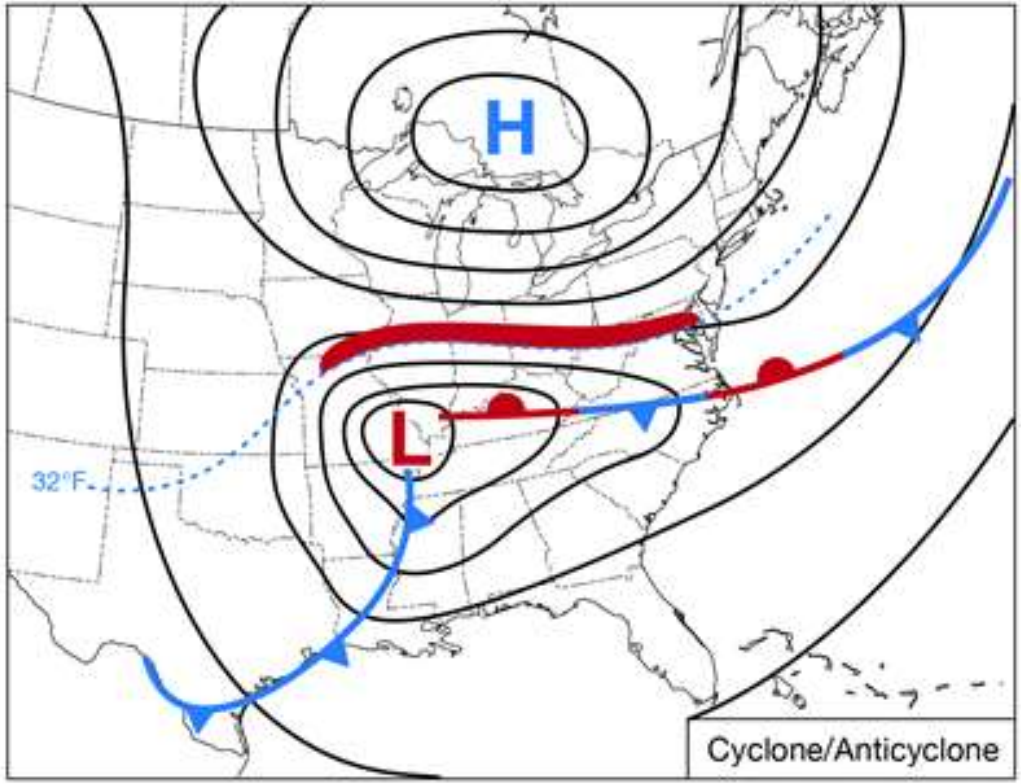
Setup 1 - Freezing rain and icing generally “light” (0.01” - 0.25”)



2009 Ice Storm Damage.
Photo courtesy NWS Paducah website

Ice Storms

Setup 2 - Freezing rain and icing generally “Heavy” (0.25” - 1.00+”)



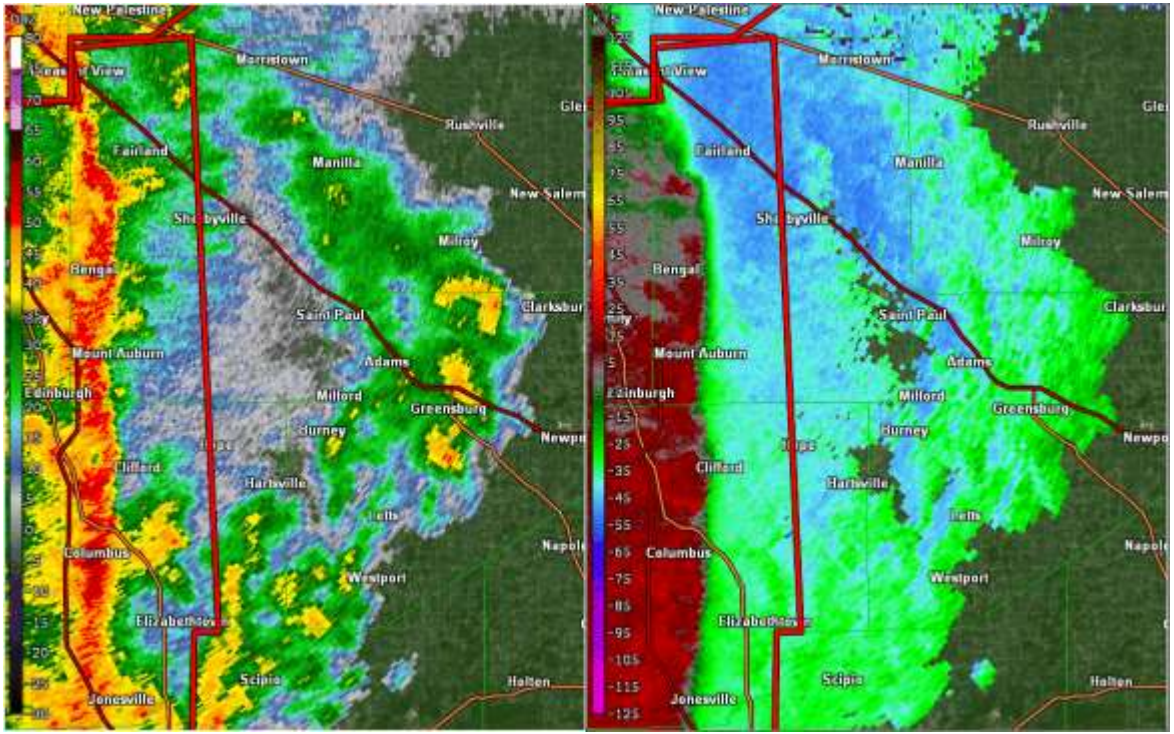
- High pressure to north “locks in” cold air
- Prolonged period of freezing rain, often moderate to heavy rates
- Surface temperatures may remain below 30°F
- Severe icing potential
- Strong winds between the low and high pressure leads to significant damage

Ice Storms


FREEZING RAIN IS THE WORST
Freezing rain is more dangerous than snow, as ice can form on pavement
Watch out for falling branches and powerlines
Don't drive if there is, or recently was, freezing rain
weather.gov
NOAA

Don’t Forget Severe Weather!

Severe Thunderstorms, Tornadoes and Heavy Rain Can All Occur in the Winter

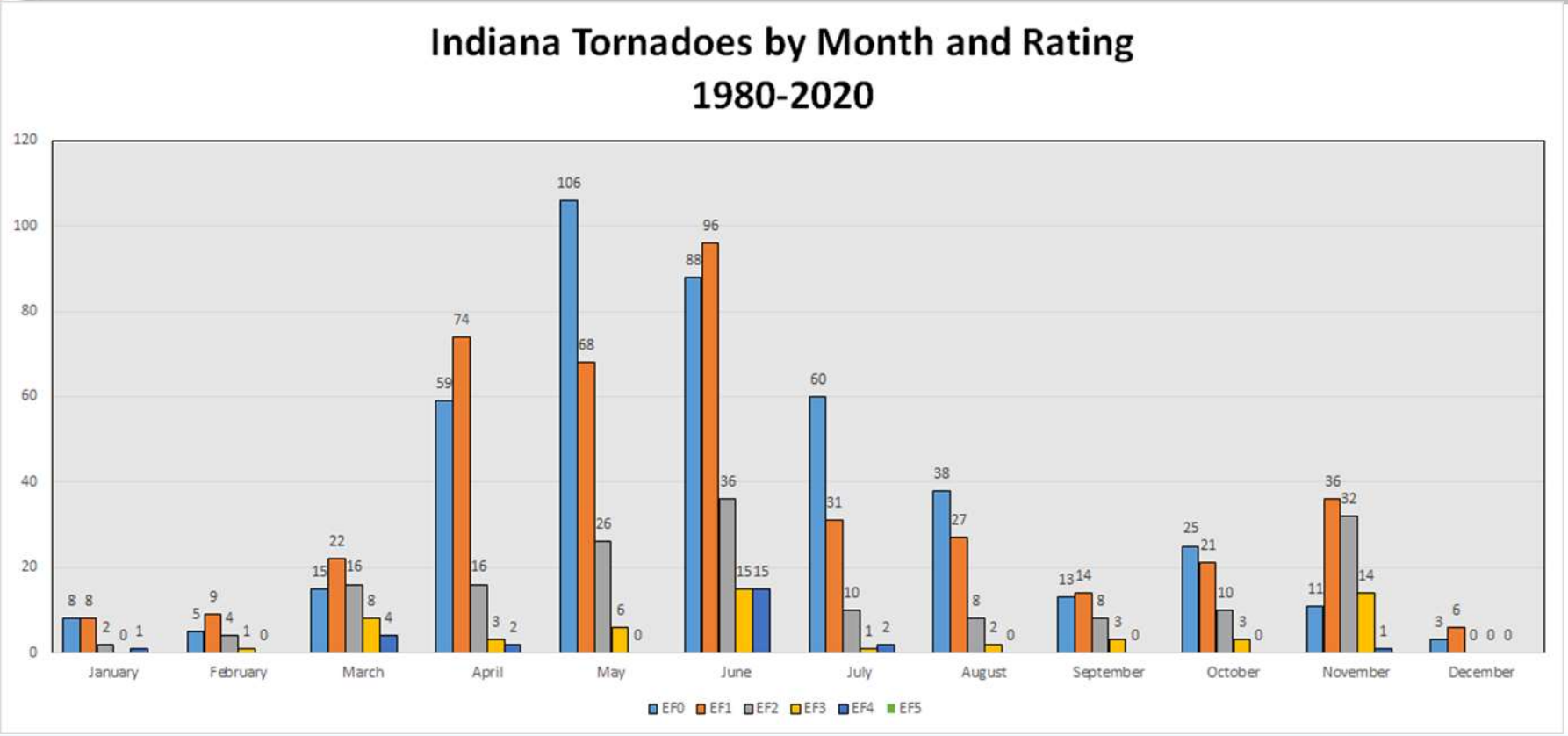


December 23rd, 2015 - Early Evening

- Strong winter storms can bring mild temperatures, heavy rain and even severe storms to Indiana
- Low pressure usually tracks near or just to our north
- Strong wind shear can lead to tornadoes
- A “Thin Line” of thunderstorms is the most likely scenario (sometimes no thunder)

Don’t Forget Severe Weather!

Severe Thunderstorms, Tornadoes and Heavy Rain Can All Occur in the Winter

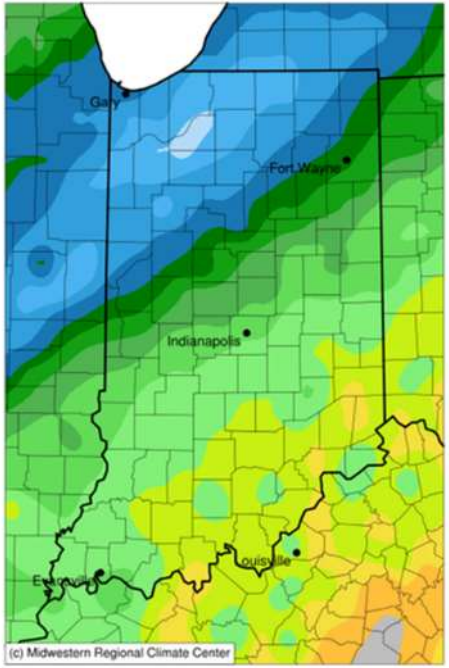


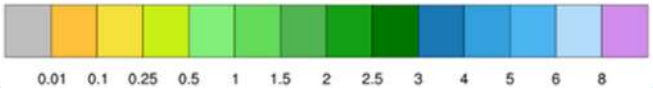
Don’t Forget Severe Weather!

Severe Thunderstorms, Tornadoes and Heavy Rain Can All Occur in the Winter

Accumulated Precipitation (in)

February 19, 2018 to February 21, 2018





Extreme Rainfall and Flooding Events

February 19th – 21st 2018

2” to 7.5” Rainfall Statewide

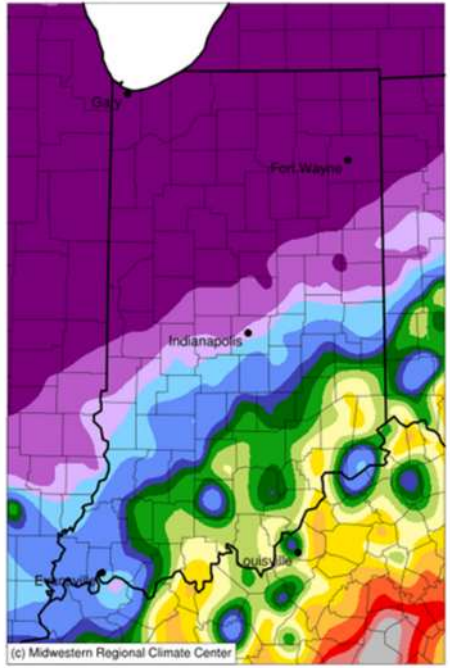
400-800 percent of normal monthly rainfall in just 3 days!

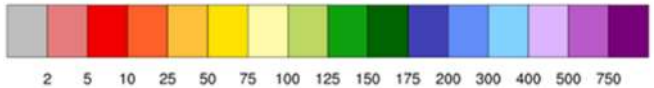
Winter months can have more runoff due to frozen ground and lack of growing vegetation

MRCC
Midwestern Regional Climate Center

Accumulated Precipitation (in): Percent of 1981-2010 Normals

February 19, 2018 to February 21, 2018

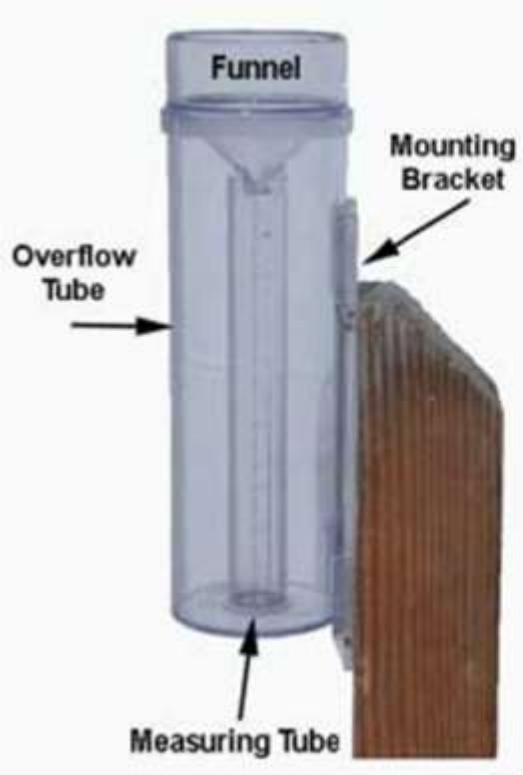




How to Measure and Report Winter Precipitation

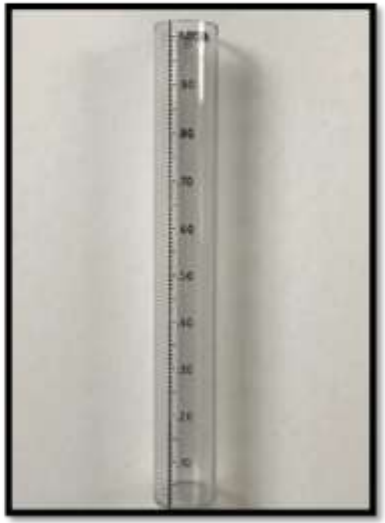
Obtain a Quality 4” Rain Gauge

Not required but helpful. More info at www.cocorahs.org



Overflow Catch Tube

Funnel Top



Inner Measuring Tube

Properly Install Your Rain Gauge

www.cocorahs.org

- Location, accuracy & consistency are important
- Install in an open area, away from trees, buildings and any obstructions. “Twice the height” of nearest building or trees
- Make sure top of gauge is several inches above top of post to avoid “splattering”
- Refer to cocorahs.org for more information

Properly Maintain Your Rain Gauge

Most important step if you have a 4” rain gauge!

Remove the funnel and inner tube, otherwise snow will clog the funnel.
We recommend leaving the inner tube inside all winter, it can freeze and break!

How to Measure Snowfall

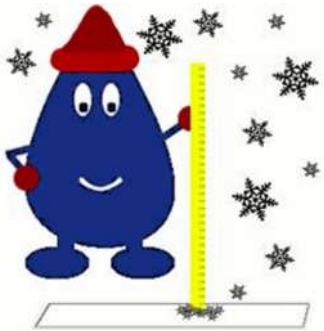
Snow that has recently fallen

- Use a ruler or yardstick! Measure to nearest **tenth of an inch**
- Ideally, use a snowboard to measure on. Any flat light colored board about 2ft x 2ft will do
- After you measure the snow on the board, clear it off and place the board on top of the snowpack
- Only measure and clear the board off a maximum of once every 6 hours, to allow for compaction of the snow as it falls
    - If you can't measure every 6 hours, you can measure once per day

How to Measure Snowfall

Snow that has recently fallen

- If snow falls and melts on contact, never sticking, there is a Trace of snow (T)
- If snow falls and sticks, then melts, snowfall is the maximum depth reached before it begins to melt
- Sleet (ice pellets) count towards snowfall, freezing rain (glaze) does not
- If there is significant drifting, take numerous measurements including some low and high areas, and take an average



How to Measure Snow Depth

Snow that has fallen over time and remains on the ground

- Snow depth is total amount of snow on the ground, measured once per day, usually at 7am
- Report snow depth to the nearest **half inch**
- Take about 10 different measurements around your yard and average
    - Avoid un-natural high and low areas (drifts created by buildings)
- ***Do Not*** always stick ruler all the way to base of ground if in grassy areas
- Snow depth can decrease even with temperatures below freezing - “settling”

How to Make a Report

Reporting often is encouraged

- Become a CoCoRaHS observer and report via their website, cocorahs.org
- Share your report on Facebook or Twitter via your local NWS office (@NWSIndianapolis)
- Send measurements and pictures to our email: nws.indianapolis@noaa.gov
- Call our spotter hotline - ***Reports Only!***
  - **1-800-499-2133**

When to Make a Report

Reporting often is encouraged

- Storm Total Snowfall after the storm tapers off, especially for events of 3 inches or more
- Snowfall increases of two inches or more during the storm or significant impacts observed
- Precipitation type changes that persist
- Sleet that persists for more than 30 minutes
- Ice accretions every tenth of an inch
- Thundersnow is observed
- Heavy rainfall and significant flooding

Winter Weather Safety Information and Online Resources

Before Wintry Weather: Prepare!

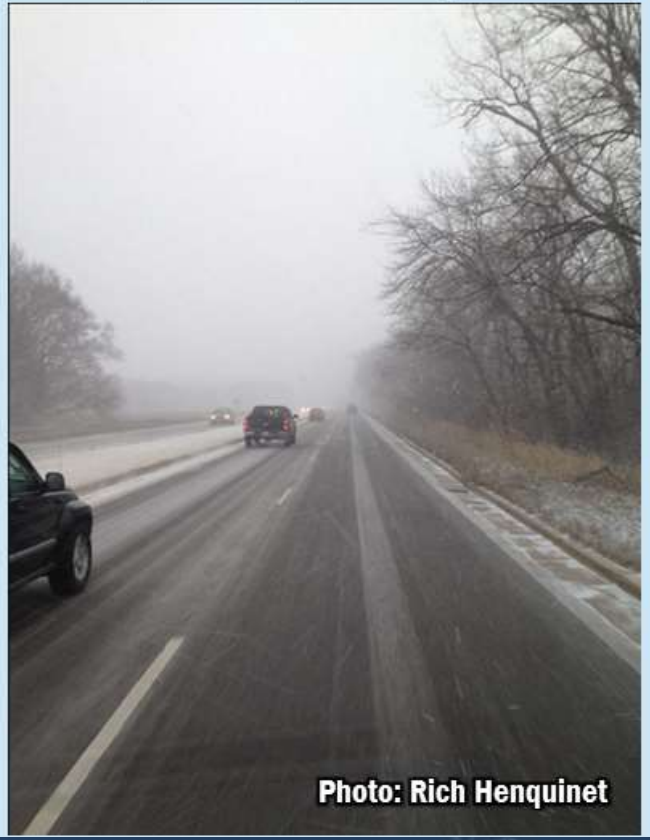
Postpone Travel, Have a Preparedness Kit Ready and Available

What to Include in Your Winter Weather Preparedness Kits

Home	Car
Extra Food, Water	Full tank of gas
First Aid Supplies	Snow Shovel and Brush
Extra Medicine and Baby Items	Water, Snacks
Extra Pet Supplies	Blankets, Warm Clothes
Portable Charger	Jumper Cables
Emergency Heat Source	First Aid Kit
(Used properly and safely)	Phone Charger
Smoke Alarm	Sand or Kitty Litter
Carbon Monoxide Detector	Flashlight

One or Two Inch Snowfall Can Create Havoc

"Minor" winter events are more deadly on Midwestern roadways than notable winter storms.
- Stephen Strader, Walker Ashley (NIU)



<u>Due to</u>:

- Heavier motor vehicle traffic.
- Possibly more dangerous road and visibility conditions than perceived by drivers in these situations.

<u>When roads are wet, slushy, ice or snow covered</u>:

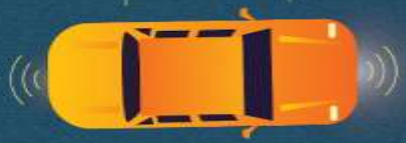
- SLOW DOWN
- Increase following distance

Know What to Do When on the Road

WINTER DRIVING WHILE ON THE ROAD

Don't crowd the plow.
The road behind an active plow is safer to drive on. Give them plenty of room to work and only pass when it is safe to do so.

Change the way you drive.
Drive slower than normal and leave more room *between you and surrounding vehicles when roads are wet, snowy or icy. DO NOT use cruise control, brake quickly or take sharp turns.*



Stay alert.
Make sure you keep your gas tank over half full and keep a close eye on road conditions, which can change rapidly. On road trips, take breaks often so you can stay focused on the road.

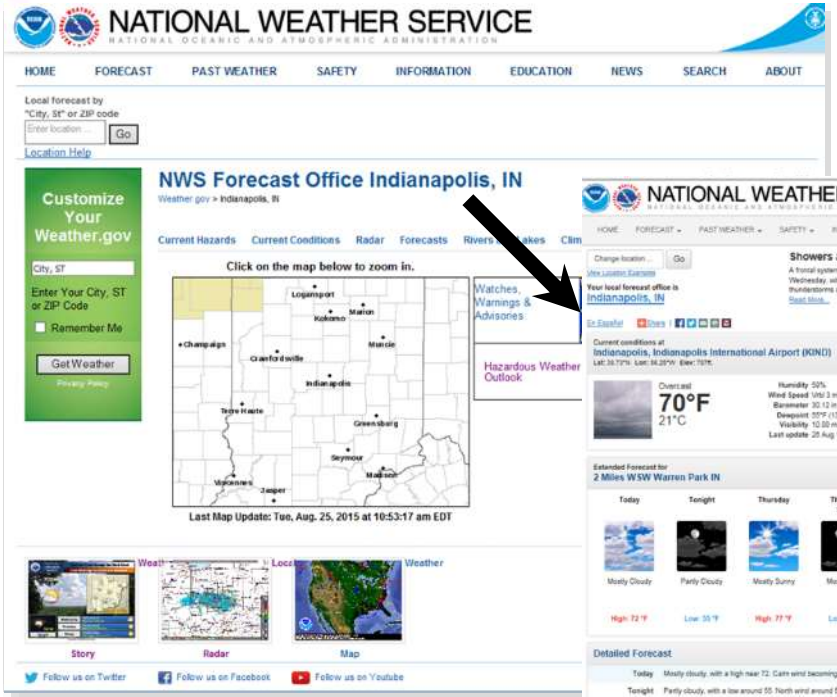
After Wintry Weather: Clean-Up

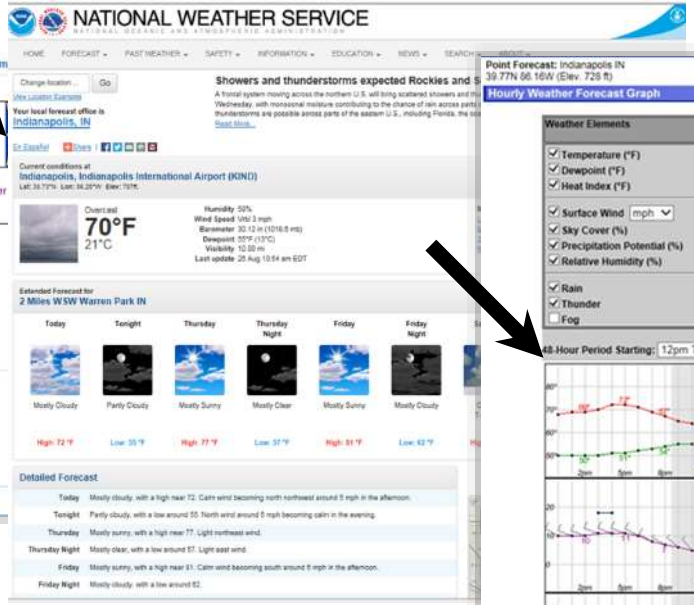
Take it easy when shoveling:

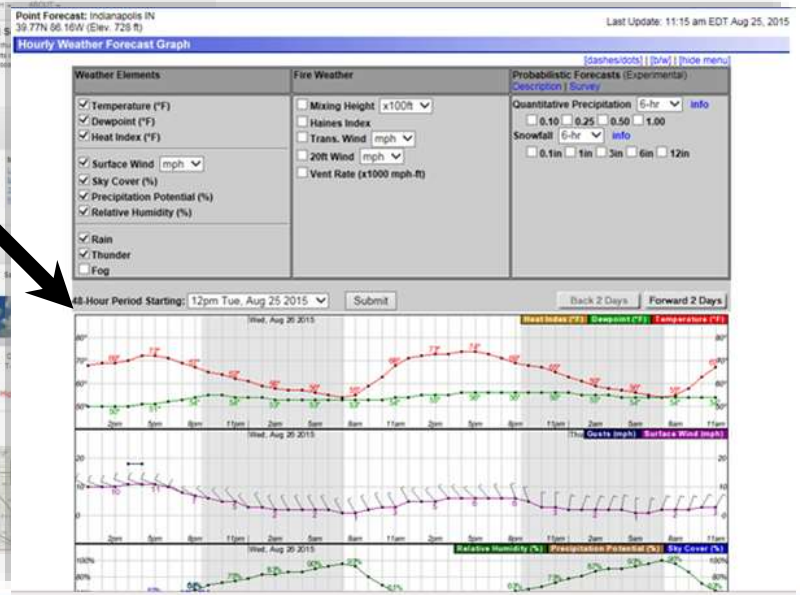
- **Take frequent breaks**
- **Stay hydrated**
- **Stay warm and dry**
- **Have someone check on you**

The weight of snow varies between every storm!

www.weather.gov







lot for NWS Chicago
iwx for NWS Northern Indiana
iln for NWS Wilmington OH
lmk for NWS Louisville KY
pah for NWS Paducah
ind for NWS Indianapolis

www.weather.gov/ind/INwxbrief

Briefing for Indiana

Weather.gov > Indianapolis, IN > Briefing for Indiana

Current Hazards | Current Conditions | Radar | Forecasts | Rivers and Lakes

NWS Indiana Decision Support

Current Hazards/Conditions for NWS offices serving Indiana

NWS CHICAGO - Active Watches/Warnings/Statements

Latest Storm Reports

There are no watches, warnings, or advisories

NWS NORTHERN INDIANA - Active Watches/Warnings/Statements

Latest Storm Reports

There are no watches, warnings, or advisories

NWS INDIANAPOLIS - Active Watches/Warnings/Statements

Latest Storm Reports

There are no watches, warnings, or advisories

NWS WILMINGTON, OH - Active Watches/Warnings/Statements

Latest Storm Reports

There are no watches, warnings, or advisories

NWS LOUISVILLE - Active Watches/Warnings/Statements

Latest Storm Reports

NWS PADUCAH - Active Watches/Warnings/Statements

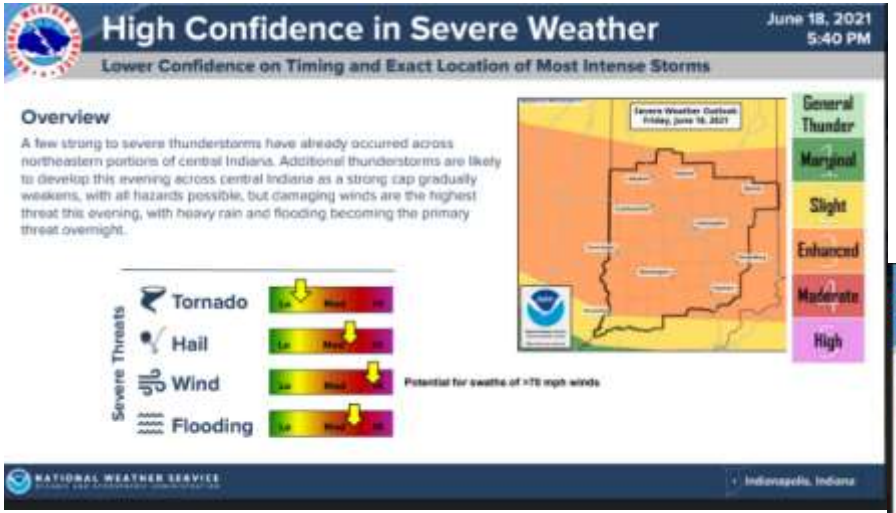
Latest Storm Reports

Hazardous Weather Outlook

Hazardous Weather Outlook

NATIONAL WEATHER SERVICE
OCEANIC AND ATMOSPHERIC ADMINISTRATION

Decision Support Briefing Packets



Issued for More Impactful Storm Systems

- Updated about every 12 hours
- Details on event, timing, duration, amounts

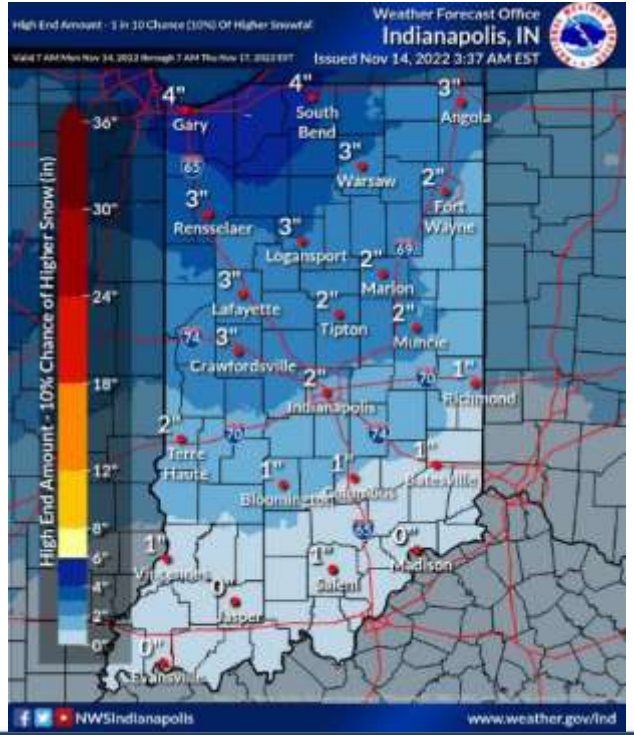
Emailed to Partners
Available on our Website

www.weather.gov/ind/winter

Experimental CWA and State Level Snow and Ice Forecasts

Most Likely/Expected

High End Potential (1 in 10 Chance)



Low End Potential (9 in 10 Chance)

Snowfall Totals by Location

Experimental - Leave feedback

11/14/2022 0700AM to 11/17/2022 0700AM

What's this?

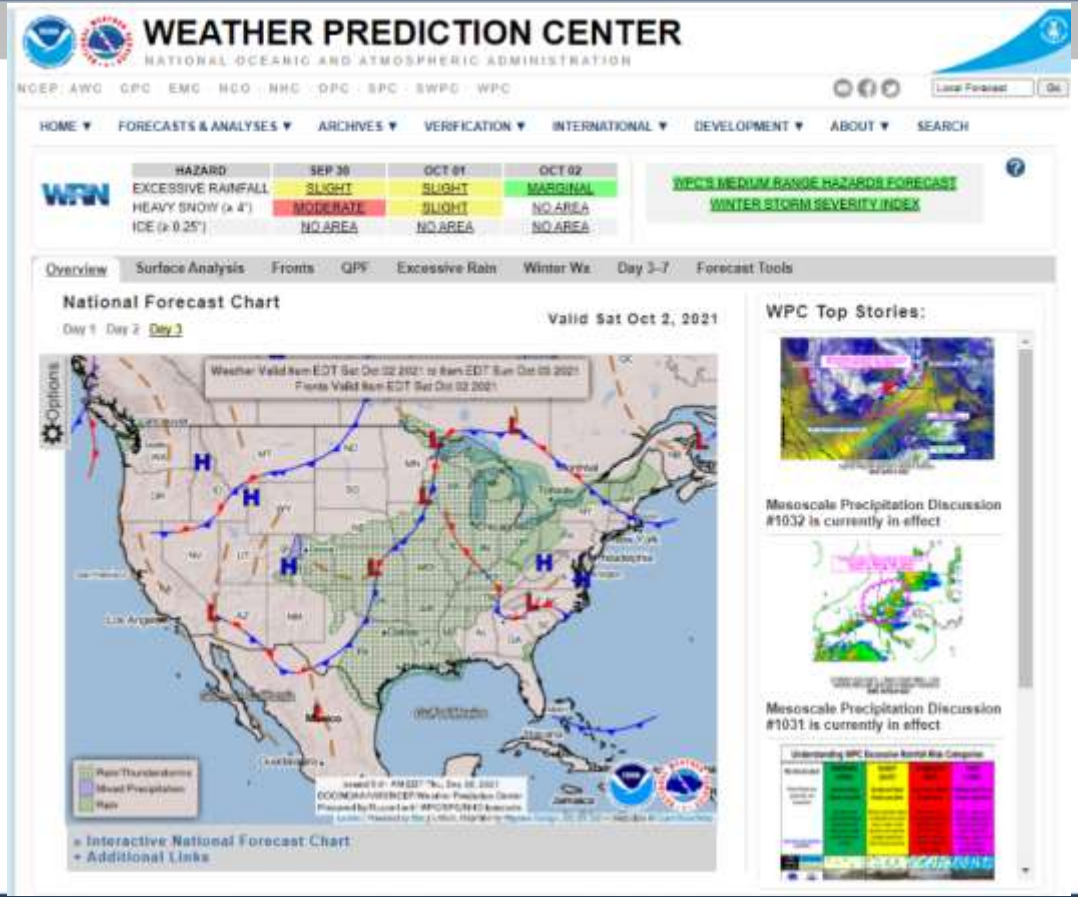
County: Selected

Box Plots | Bar Plots

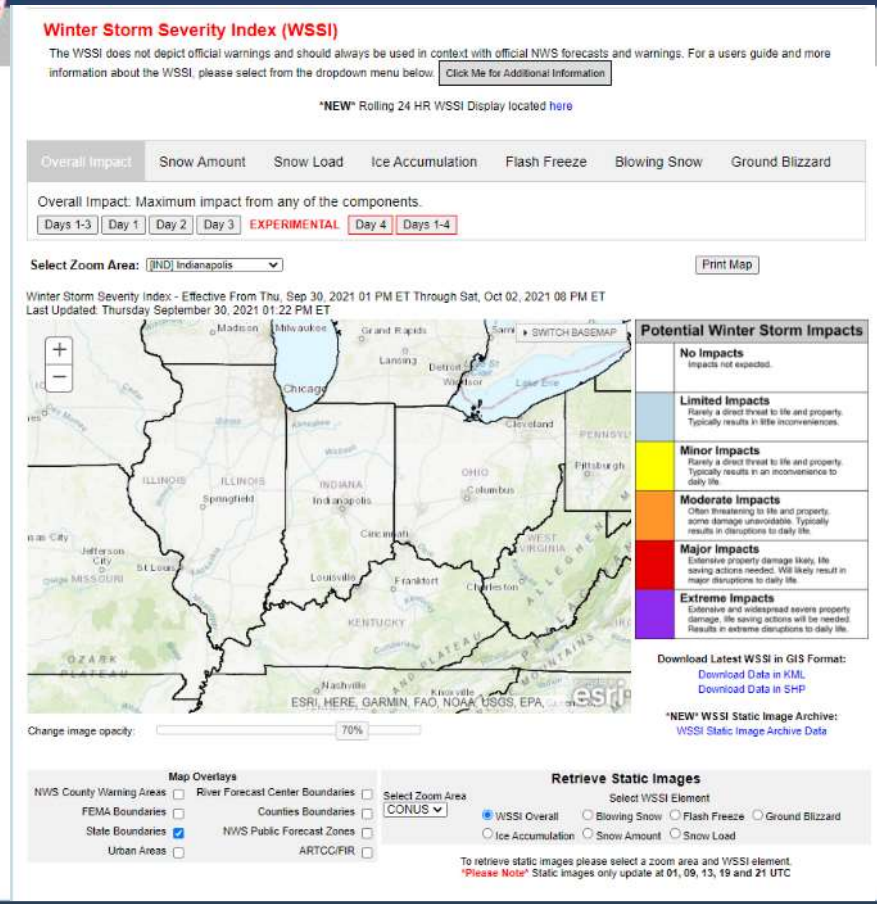
Location	Snow Amount Potential			Chance of Seeing More Snow Than							
	Low End Snowfall	Expected Snowfall	High End Snowfall	>=0.1"	>=1"	>=2"	>=4"	>=6"	>=8"	>=12"	>=18"
Columbus, IN	0	<1	<1	62%	7%	0%	0%	0%	0%	0%	0%
Frankfort, IN	<1	1	3	95%	65%	28%	1%	0%	0%	0%	0%
Muncie, IN	<1	1	2	92%	55%	15%	0%	0%	0%	0%	0%
Kokomo, IN	<1	1	3	92%	65%	30%	2%	0%	0%	0%	0%
Seymour, IN	0	<1	<1	46%	0%	0%	0%	0%	0%	0%	0%
Vincennes, IN	0	<1	<1	41%	3%	0%	0%	0%	0%	0%	0%
Bedford, IN	0	<1	<1	59%	4%	0%	0%	0%	0%	0%	0%
Anderson, IN	<1	1	2	90%	56%	18%	0%	0%	0%	0%	0%
Indianapolis, IN	0	<1	2	81%	43%	11%	0%	0%	0%	0%	0%
Crawfordsville, IN	<1	<1	3	90%	62%	31%	3%	0%	0%	0%	0%
Shelbyville, IN	0	<1	1	69%	16%	0%	0%	0%	0%	0%	0%
Lafayette, IN	<1	1	3	88%	62%	28%	1%	0%	0%	0%	0%
Terre Haute, IN	0	<1	2	71%	32%	6%	0%	0%	0%	0%	0%

Back to top

www.wpc.ncep.noaa.gov/



www.wpc.ncep.noaa.gov/



WSSI Component	Purpose
Snow Amount Index	Impact to transportation from total amount of snow and snowfall rate
Snow Load Index	Impact from weight of snow and potential damage to trees and powerlines
Blowing Snow Index	Impact of blowing and drifting snow on transportation
Ground Blizzard Index	Impact of pre-existing snow combined with very strong winds on transportation
Flash Freeze Index	Impact on transportation in situations where temperature falls rapidly below freezing during or just after precipitation
Ice Accumulation Index	Impact of ice accumulation on transportation and also tree and powerline damage

Winter Storm Timeline Review

4-7 Days

- Focused on general overview, trends and storm potential
- Hazardous Weather Outlook, Forecast Discussions

1-3 Days

- Increasing confidence as storm track becomes clearer (watches if needed)
- Confidence, probabilistic, & potential amount graphics created & updated frequently

0-36 hours

- Fine tune forecast & narrow down details
- Warnings & advisories if needed with details on location and timing
- Situation Reports, Social media posts, graphics and updates

After Event

- Data collection/quality control of reports & finalize snowfall maps
- Post summary information on local NWS webpages

Weather Ready Nation Ambassadors

IT'S NOT ENOUGH TO KNOW THE WEATHER... WE MUST PREPARE FOR IT!

Building a Weather-Ready Nation is a team effort!

A Weather-Ready Nation understands the dangers of extreme weather, water, and climate events, and responds with wise decisions that save lives and prevent economic losses.

Your organization can help build a Weather-Ready Nation as an Ambassador!

Take the next step:

www.weather.gov/wrn

@WRNAmbassadors

AMBASSADOR™

WRN

WEATHER-READY NATION

READY

RESPONSIVE

RESILIENT

NOAA

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

U.S. DEPARTMENT OF COMMERCE

How to Contact us

Thanks for Attending. Questions?

- Call us @ 1-800-499-2133

- Social Media
  - Twitter - @NWSIndianapolis
  - Facebook – @NWSIndianapolis
    - Hashtags - #INwx #NWSIND

- Email photos with details to: nws.Indianapolis@noaa.gov

Sam.Lashley@noaa.gov - Warning Coordination Meteorologist NWS Indianapolis