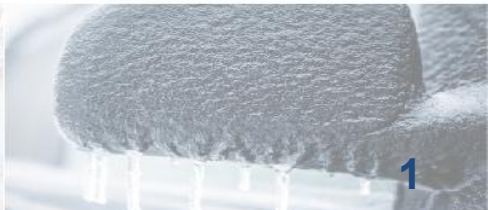


# National Weather Service Update on Winter Weather Initiatives



## Winter Partners Webinar October 18, 2022

*Sarah Perfater, Michael Muccilli, Eric Guillot, Alex Lamers*



# Winter Program Overview

- The Winter Weather Services Program is one of 11 National Service Programs in the National Weather Service (NWS). The Winter Program works with internal and external stakeholders to facilitate improvements to winter weather products and services.
- The program goals include moving toward a consistent suite of products and services that are **collaborative, probabilistic, and impact-based**.
  - NWS HQ Staff:
    - Sarah Perfater, Winter Program Manager ([Sarah.Perfater@noaa.gov](mailto:Sarah.Perfater@noaa.gov))
    - Michael Muccilli, Winter Program Coordinator for Evolving Service and Outreach ([Michael.Muccilli@noaa.gov](mailto:Michael.Muccilli@noaa.gov))
    - Eric Guillot, Winter Program Coordinator for Training and Operational Transitions ([Eric.Guillot@noaa.gov](mailto:Eric.Guillot@noaa.gov))
  - Weather Prediction Center Contact:
    - Alex Lamers, Warning Coordination Meteorologist ([Alex.Lamers@noaa.gov](mailto:Alex.Lamers@noaa.gov))



# Presentation Will Be Available!

- Presentation PDF and Recording will be available after processing
- Publicly posted at our Weather Ready Nation calendar page:
- <https://www.weather.gov/wrn/calendar>



The screenshot shows the NOAA National Weather Service website. At the top left are the NOAA and National Weather Service logos. The main header reads "NATIONAL WEATHER SERVICE" with "NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION" below it. On the right is the "Weather-Ready Nation National Program" logo. The page title is "Calendar" with a breadcrumb trail: "Weather.gov > Weather-Ready Nation > Calendar". A navigation menu includes "Weather Hazards", "Safety Campaigns", "Ambassador", "Education", "Collaboration", "News & Events", "International", and "About". A paragraph states: "Be a Force of Nature when it comes to extreme weather by learning about potential hazards. Help advance the Weather-Ready Nation by being prepared for the worst. NOAA's National Weather Service (NWS) and its partners encourage individuals, families, businesses and communities to know their risk, take action, and be an example when it comes to dangerous weather." Below this is a section titled "UPCOMING EVENTS".

# Outline

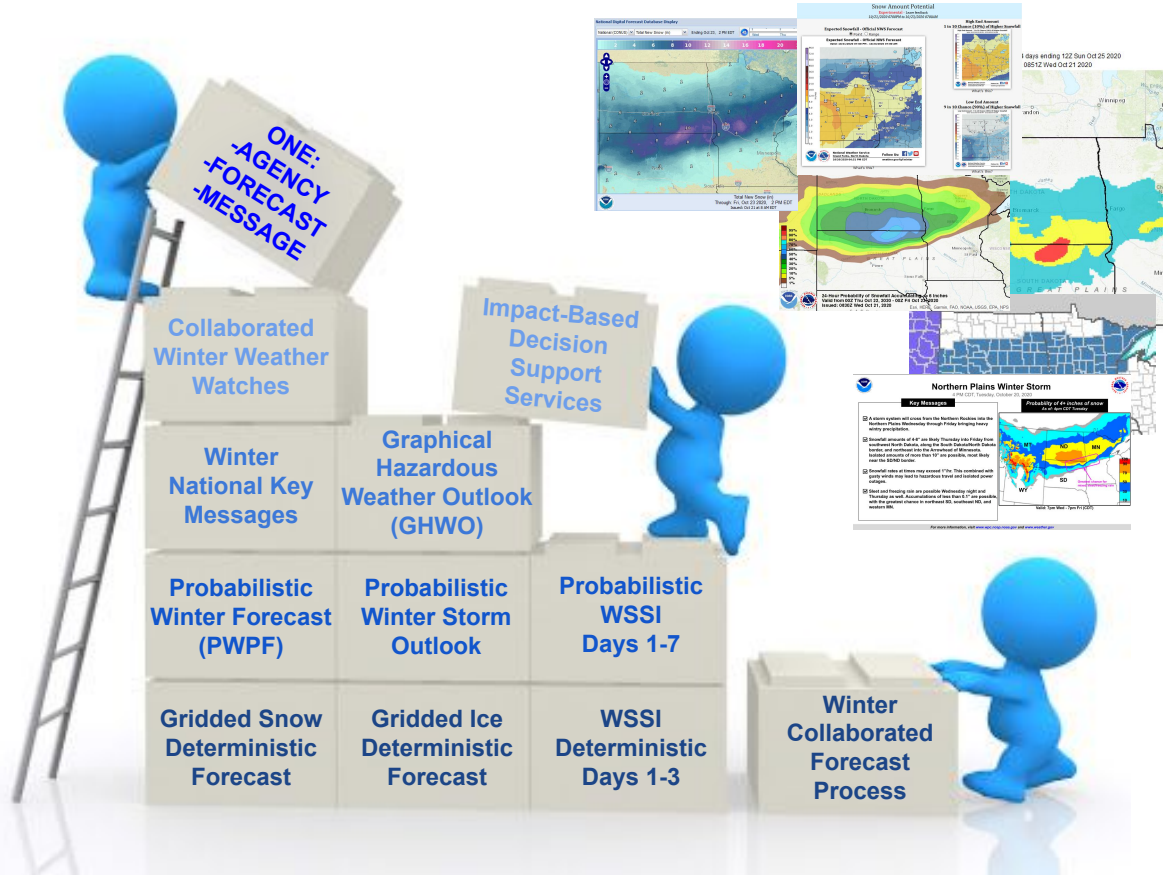
- Winter Program and Vision Overview
- Winter Key Messages
- Updated Local ProbSnow Pages/Graphics
- Winter Weather Outlook
- Lake-Effect Snow Warning Polygons
- Impact-Based Warning tags for snow squalls
- Updates on Avalanche Weather Initiative
- New Snow Ratio Grid
- Modernization of Heavy Snow Watch/Warning Criteria
- Experimental Winter Storm Outlook
- Winter Storm Severity Index
- Updated Outreach Materials and Initiatives





# Detailed Winter Program Vision

- Building blocks to **One Consistent, Collaborated, Impact-based Forecast** among the National and Local Levels
- Communicating the range of possible outcomes while still leveraging single-value forecasts for better decisions
- Engaging with partners and agency experts across the weather enterprise to continually improve the winter suite of products and services



# Winter Key Messages

## The Concept

**Key Messages for Jan 26-29 Winter Storm** Updated Jan 26, 2021 10:00 AM PST

Major winter storm moving into the West Coast this week

- Significant Impacts Expected**  
A major winter storm will bring multiple feet of heavy snow and strong winds to the Sierra Nevada and mountains of Northern California through Friday morning.
- Dangerous to Impossible Mountain Travel**  
Travel will become dangerous, and may be impossible at times, especially across mountain passes. Whiteout conditions, downed trees, and power outages are also possible in these areas.
- Snow Levels Will Start Low**  
Snow levels will start low and bring some snowfall accumulation to northern California communities near or above 500 foot elevation. Snow levels will gradually rise Wednesday and Thursday.
- Heavy Rain Expected Elsewhere in California**  
Other hazards expected to develop with this system will be very heavy rain and an increasing potential for flash flooding and possible debris flows near burn scar areas.

NWS Snowfall Forecast (inches) **Minor Moderate Heavy**

National Oceanic and Atmospheric Administration  
For more information go to: [www.wpc.ncep.noaa.gov](http://www.wpc.ncep.noaa.gov) and [www.weather.gov](http://www.weather.gov)  
Weather Prediction Center  
College Park, MD

- Key messages will highlight the agency's most essential information for upcoming winter hazards
- Available on WPC homepage and integrated into WFO & WPC messaging

## The Purpose



- Galvanize partners and media around consistent, coordinated message
- Used for High-impact scenarios that are expected to cause travel disruptions or pose a hazard to life and property and/or rare events
- **New:** Snow Squall Outbreak Awareness

## Collaboration

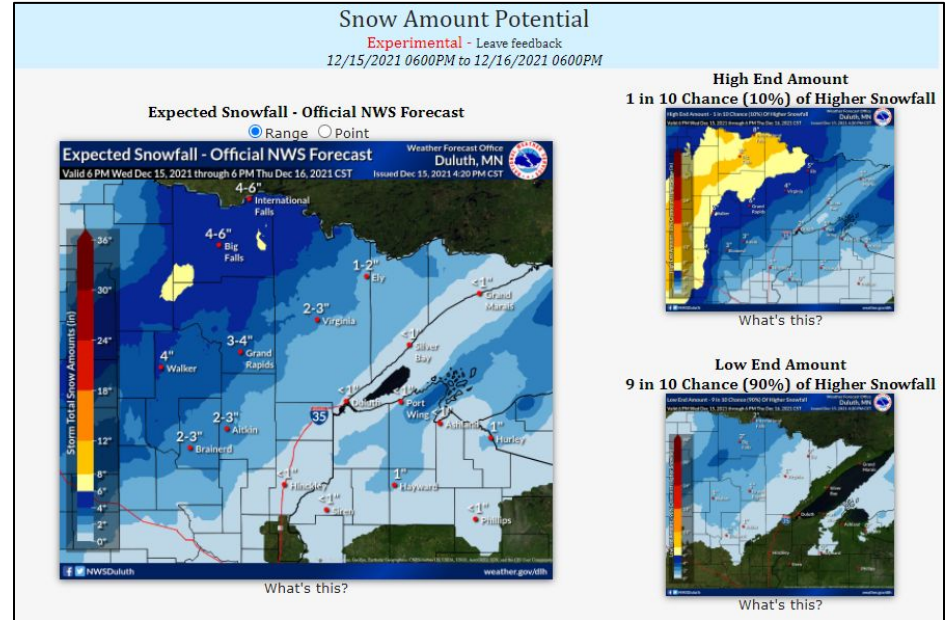
Day	Night	Description
16-17Z	-	WPC creates (day shift only)
17-19Z	-	Collaboration window
19-20Z	04-08Z	WPC updates and incorporates feedback
20-21Z	08-09Z	WPC issues key messages (included in QPFHSD text product)

- Collaboration occurs among National Centers with Regional and Local Offices
- Feedback is aggregated to ensure National and Local consistency of message
- Key Messages are only initiated during the day
- Updates may occur overnight if necessary

**NOW AVAILABLE on WPC Homepage as Top Story:** <https://www.wpc.ncep.noaa.gov/>

# Experimental WFO Probabilistic Winter Precipitation Forecast (PWPF)

- **Goal:** Provide customers and partners a range of snowfall amounts to better communicate forecast uncertainty during winter weather events on a local level.
- 61-member ensemble of forecast models
  - Expert starting point provided by WPC
  - WFOs add local knowledge
- Significant model diversity contributes to a range of possible outcomes (*check out our new ["Understanding Uncertainty"](#) explainer later in this presentation!*).
  - Experimental 10th and 90th percentile graphics are available on the National Digital Forecast Database ([NDFD](#)).



Local office Experimental PWPF page:

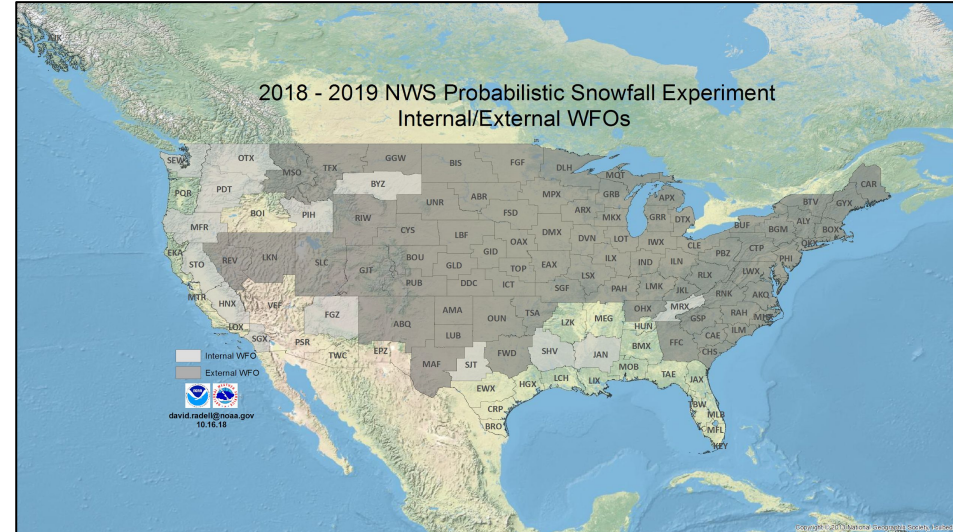
<https://www.weather.gov/btv/winter>

2022-2023 Winter Partners Webinar



# Experimental WFO Probabilistic Winter Precipitation Forecast (PWPF)

- Number of sites remains frozen as a centralized operational prototype is in development.
- We are internally testing and evaluating the prototype this upcoming season for its ability to generate and disseminate these products.
  - This will not result in a change to the current user experience at this time.

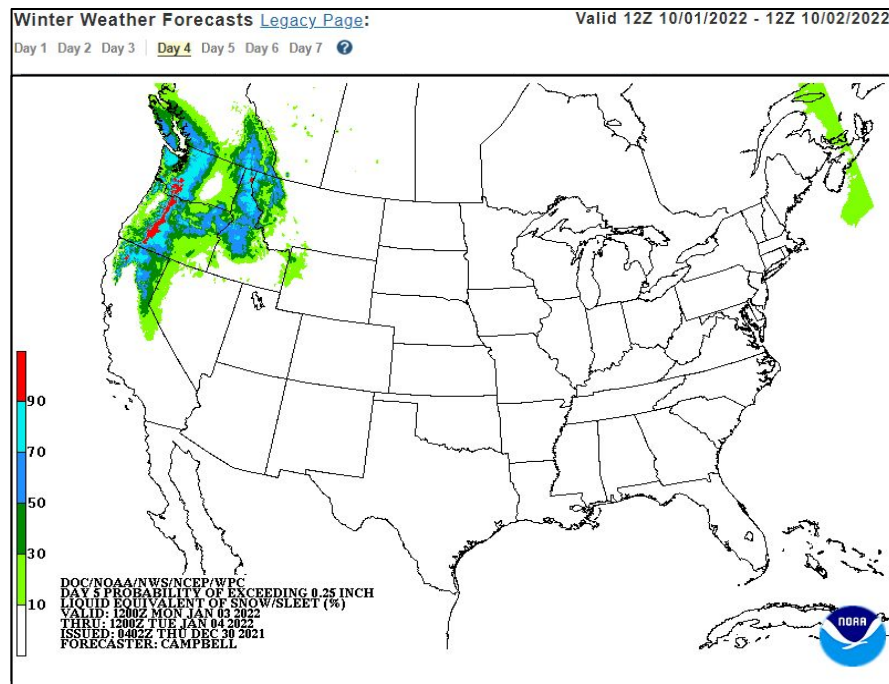


Provide feedback:

<https://www.surveymonkey.com/r/ProbWinterExp>

# WPC Days 4-7 Winter Weather Outlook (WWO)

- **Goal:** Supports advanced planning of hazardous winter weather for both internal NWS and external partners
- Web-based, graphical, probabilistic forecast depicting the probability of winter precipitation (snow & sleet) exceeding 0.25 inches (~6 mm) water equivalent over a 24-hour period (12Z–12Z, or roughly 8 am and 8 am Eastern Time)
- Four separate graphics produced twice daily showing the forecast for Days 4, 5, 6 and 7
- Available on NDFD



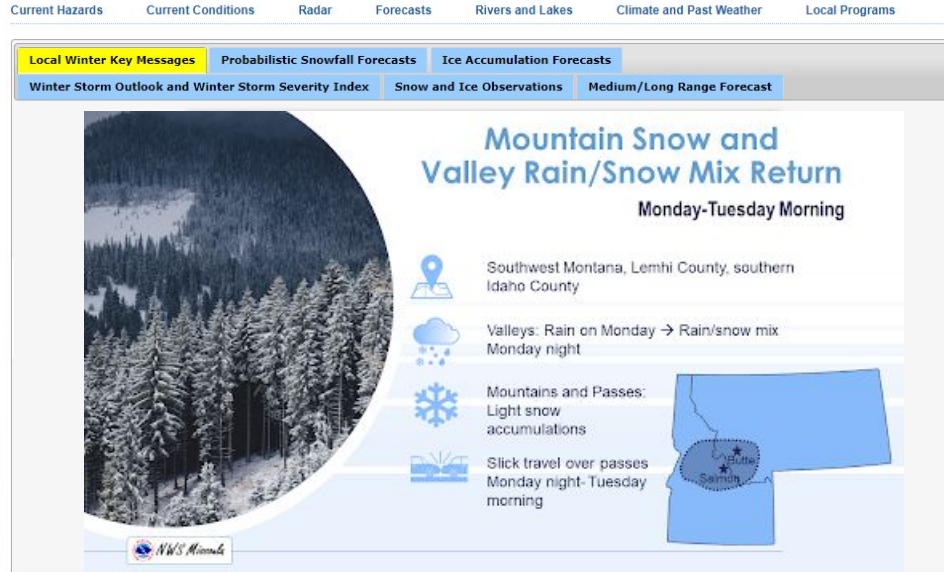
Winter Weather Outlook Page:

[https://www.wpc.ncep.noaa.gov/wwd/pwpf\\_d47/pwpf\\_medr.php](https://www.wpc.ncep.noaa.gov/wwd/pwpf_d47/pwpf_medr.php)

# WFO Winter Web Pages for Easier Navigation

- Standardized template provides more uniform tab options across offices
- Local winter key messages are highlighted
- Localized perspectives of the Winter Storm Outlook and Winter Storm Severity Index

<https://www.weather.gov/prob-snow>

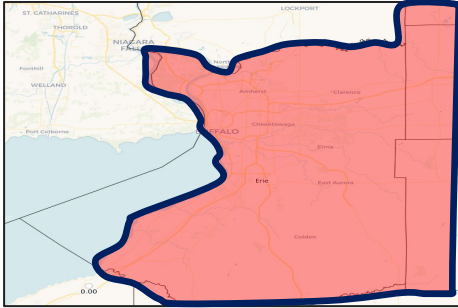


The screenshot displays the WFO Winter Web Pages interface. At the top, there are navigation tabs: Current Hazards, Current Conditions, Radar, Forecasts, Rivers and Lakes, Climate and Past Weather, and Local Programs. Below these, there are sub-tabs: Local Winter Key Messages (highlighted in yellow), Probabilistic Snowfall Forecasts, and Ice Accumulation Forecasts. Underneath, there are three more sub-tabs: Winter Storm Outlook and Winter Storm Severity Index, Snow and Ice Observations, and Medium/Long Range Forecast. The main content area features a large circular image of a snowy forest. To the right of the image, the title reads "Mountain Snow and Valley Rain/Snow Mix Return" with the subtitle "Monday-Tuesday Morning". Below the title, there are four bullet points with corresponding icons: a location pin for "Southwest Montana, Lemhi County, southern Idaho County"; a cloud with rain and snow for "Valleys: Rain on Monday → Rain/snow mix Monday night"; a snowflake for "Mountains and Passes: Light snow accumulations"; and a road with a snowflake for "Slick travel over passes Monday night-Tuesday morning". A map of Montana is shown to the right, with a red star indicating the location of Salmon. The NWS Montana logo is visible in the bottom left corner of the content area.

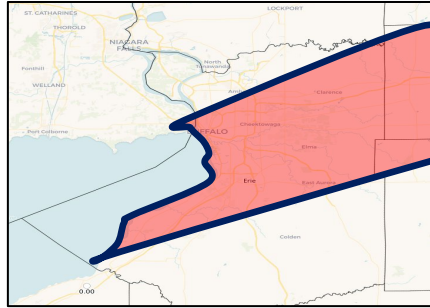


# Experimental Lake Effect Snow Warning Polygons

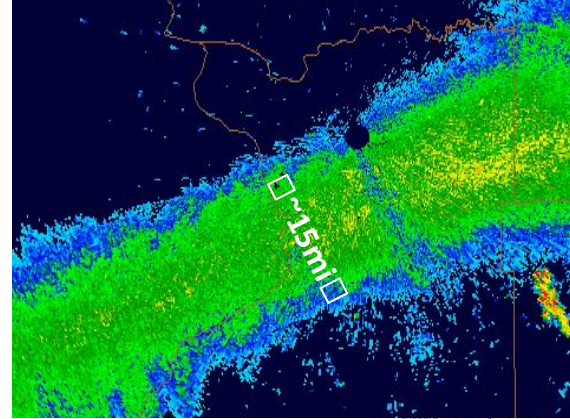
Operational Zone-Based



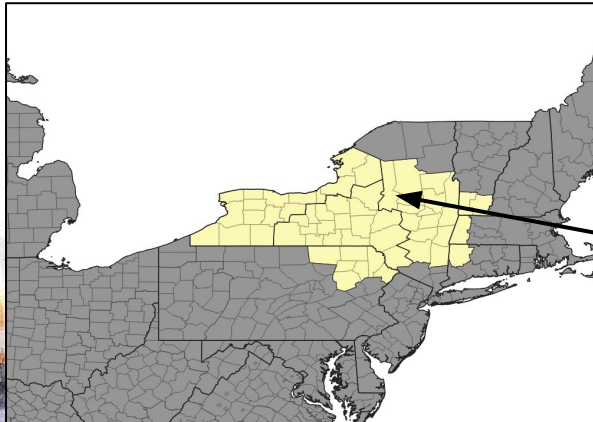
Experimental Polygon



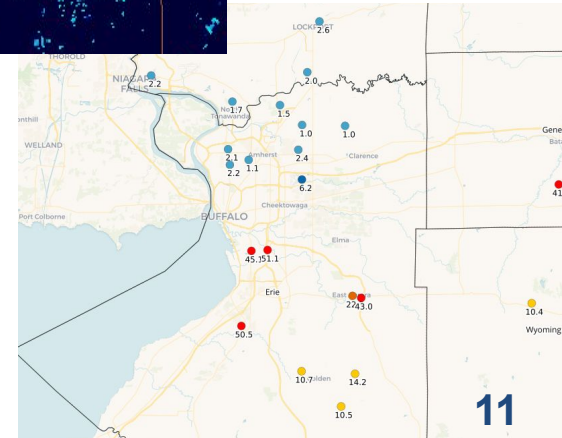
Nature of Lake Effect Snow



- Highly localized
- Significant portions of counties may not be receiving substantial, if any, snowfall
- Can be transient



Issued by Weather Forecast Offices Buffalo, Binghamton, & Albany, covering areas downwind of Lakes Ontario & Erie



# Experimental Lake Effect Snow Warning Polygons

## Benefits

- *Enhanced information:* Highlights highest impact areas
- *More precise warnings:* Reduces size of the False Alarm area
- *Increased effectiveness of the warning:* Allows for a more organized and cost-effective use of public resources to minimize the effects of these high-impact LES events

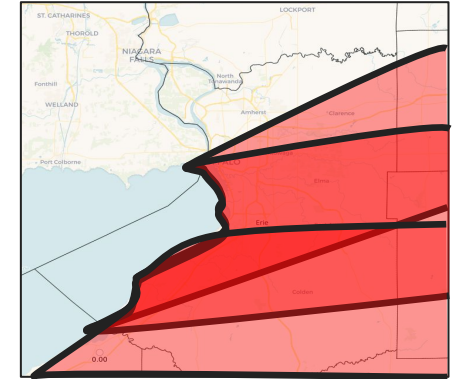
## Future Plans

Future: NWS exploring transition into experimental national GIS viewer

Note: Feedback gathered from this experiment will help NWS provide more precise watches and warnings in the future and will support a decision on the best way forward to make these polygons operational. Survey and Comment Period continues this season.

## Example

```
...LAKE EFFECT SNOW WARNING  
REMAINS IN EFFECT...  
  
* WHAT...  
* WHERE...  
* WHEN...  
  
&&  
  
Experimental content below  
COORD...4258 7825 4275 7819 4277 7864 4267 7904  
4257 7914 4238 7950 4230 7975 4199 7977 4208 7952  
4215 7936 4225 7898 4239 7861  
TIME Y17M12D10T1100Z-Y17M12D11T1100Z  
COORD...4227 7898 4228 7904 4240 7914 4241 7929  
4233 7942 4232 7954 4225 7976 4199 7977 4201 7923  
4199 7897 4199 7873 4203 7873  
TIME Y17M12D11T1100Z-Y17M12D11T1700Z  
COORD...4260 7822 4274 7805 4282 7803 4284 7820  
4277 7864 4278 7881 4274 7903 4232 7975 4223 7976  
4224 7961 4244 7887 4250 7853  
TIME Y17M12D11T1700Z-Y17M12D12T0800Z
```



## Output Options

- Interactive (ESRI) map ([https://www.weather.gov/buf/les\\_polygon](https://www.weather.gov/buf/les_polygon))
- Static graphics or GIF ([https://www.weather.gov/buf/les\\_polygonStatic](https://www.weather.gov/buf/les_polygonStatic))
- KML
- Text

# NEW: Impact-Based Warning Impact Tags for Snow Squall Warnings

## What is a Snow Squall Warning

Brief (30-60 minutes) warnings issued for short duration intense bursts of snow & wind leading to whiteout visibility & possible flash freezes on roads.

## What's New:

Up to 2 Impact-Based Warning Tags will be appended to the bottom of Snow Squall Warnings

- General (No Tag), SIGNIFICANT
- OBSERVED, RADAR-INDICATED

General: Used frequently for snow squall conditions but mitigating actions, combined with societal context, will reduce the threat to safe travel

Significant: Used only when snow squalls pose a substantial threat to safe travel, such that WEA is warranted to alert all devices in the path.

## What This Means

Before: All Snow Squall Warnings activate WEA (Wireless Emergency Alerts).

After Implementation: WEA will only activate for high-end events with the SIGNIFICANT tag

```
...A SNOW SQUALL WARNING REMAINS IN EFFECT UNTIL 630 PM EST...
```

```
At 540 PM EST, a dangerous snow squall was located near Owls Head, moving east at 40 mph.
```

```
HAZARD...Flash freeze on roads and rapidly falling visibility due to intense bursts of heavy snow and gusty winds.
```

```
SOURCE...Radar indicated.
```

```
IMPACT...Dangerous and life-threatening travel conditions are expected to develop rapidly in the warning area.
```

```
Locations impacted include...  
Chazy, Mooers, Altona
```

```
PRECAUTIONARY/PREPAREDNESS ACTIONS...
```

```
Slow Down! Rapid changes in visibility and road conditions are expected with this dangerous snow squall. Be alert for sudden whiteout conditions.
```

```
&&
```

```
LAT...LON 4467 7395 4479 7419 4489 7403 4500 7380
```

```
TIME...MOT...LOC 1815Z 259DEG 51KT 4512 7345 4501
```

```
SNOW SQUALL...RADAR INDICATED
```

```
SNOW SQUALL IMPACT...SIGNIFICANT
```

```
$$
```



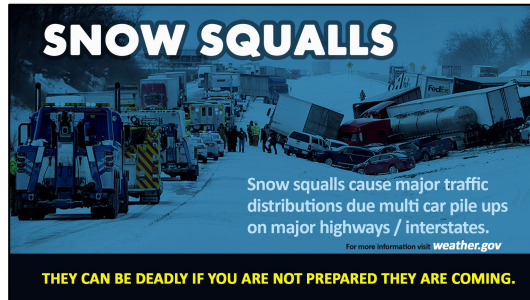
# NEW: Impact-Based Warning Impact Tags for Snow Squall Warnings

*Why make these changes:*

- Improve public response to Snow Squall Warnings
  - Allow for overnight issuance of Snow Squall Warnings to activate highway message boards & notify partners/public without WEA activation
  - Mitigate WEA over-alerting by ensuring WEA activation is reserved for high-impact events

For more information, see the fact sheet:

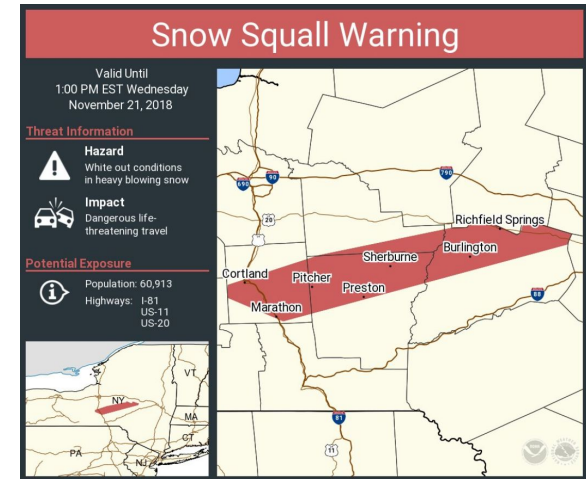
<https://www.weather.gov/media/safety/Snow-Squall-IBW.pdf>



*When is Implementation?*

Begins **November 7th** at 25 WFOs, with implementation at the remaining offices through **February 2023**

A tracking website will be available for partners and the public.



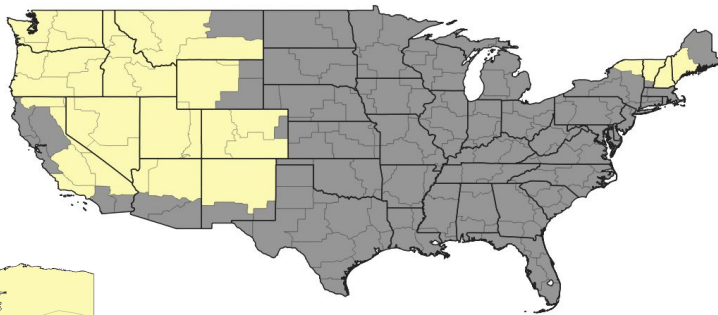
# Updates: Avalanche Weather Initiative

## Avalanche Weather Guidance

- **Operational this season**
- Provides partners & public with forecast weather parameters critical to prediction of avalanche conditions, risk, mitigation, & recovery.
- Forecast Elements may include: temperatures, weather, probability of precipitation, snowfall, liquid or snow-water equivalent, ice accumulation, snow level, winds, & cloud cover.
- A forecast discussion may also be included.
- Changes for this year include, an optional extension to Day 7 and the optional inclusion of Probabilistic Snowfall Forecasts.

...Mount St. Helens...

Date Time (LT)	Friday 09/23							Saturday 09/24				
	06 6a	09 9a	12 12	15 3p	18 6p	21 9p	00 12	03 3a	06 6a	09 9a	12 12	15 3p
Cloud Cover	SC	FW	SC	SC	SC	SC	SC	SC	FW	SC	SC	SC
Cloud Cover (%)	40	15	30	30	40	40	35	30	25	25	30	30
Temperature	40	44	49	51	49	45	45	44	44	49	55	57
Max/Min Temp					51				44			
Wind Dir	W	NW	W	W	NW	W	NW	NW	NW	NW	S	SW
Wind (mph)	8	4	4	6	5	5	8	8	5	2	3	4
Wind Gust (mph)	20			16			19	17				
Precip Prob (%)	10	5	10	10	10	10	10	10	10	5	5	0
Precip Type												
12 Hour QPF					0.00				0.00			
12 Hour Snow					0.0				0.0			
Low End Snow					0.0				0.0			
High End Snow					0.0				0.0			
12 Hour Ice					0.00				0.00			
Snow Level (kft)	8.5	8.5	9.5	10.0	10.0	10.0	10.0	10.0	9.6	10.5	11.0	11.0



Offices that produce the AVG in Yellow. If you are an avalanche partner, **work with your WFO** for more information or to set up forecast areas.



# Updates: Avalanche Weather Initiative

## Experimental WFO Avalanche Weather Web Pages

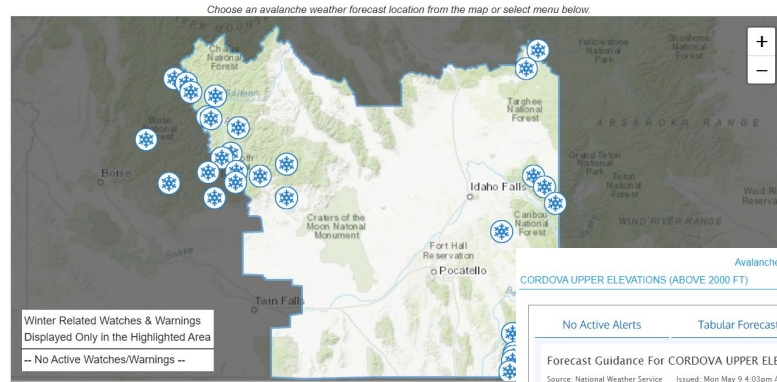
- Avalanche weather web pages are critical sources of information for partners & public to easily obtain avalanche products & information.
- Includes: NWS weather alerts, avalanche center avalanche alerts, clickable points or polygons, relevant weather discussion, precipitation summary tables, a tabular & graphical forecast, & a local content section.
- Feedback from last winter was very positive & experimental web page will be expanded & available for comment and review through **April 30, 2023 at 17 WFOs (shown in yellow).**

Available November 1st:

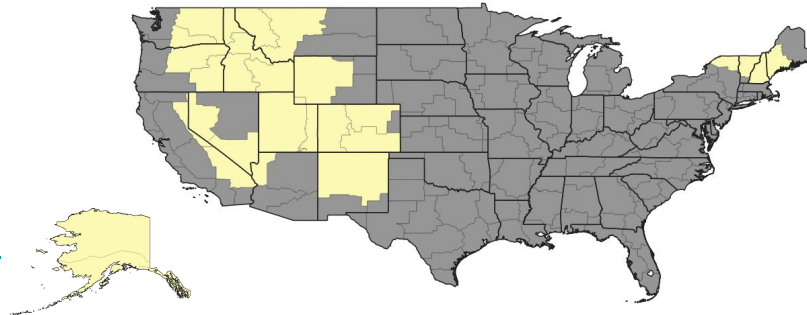
<https://www.weather.gov/slc/AvalancheWeather>

Feedback:

<https://www.surveymonkey.com/r/wfoavalanchewebpages2022-2023>



Avalanche Weather Forecast For: [Select a Forecast Location](#)





# *Questions so far related to....?*

*Program Vision*

*Key Messages*

*Local PWPF*

*Local Winter Pages*

*Lake Effect Snow Polygons*

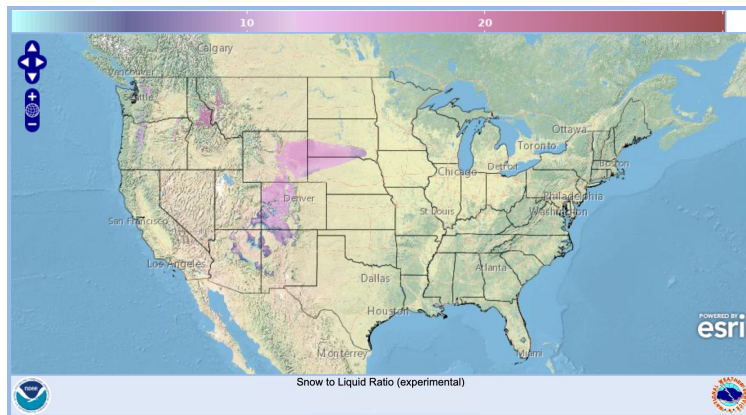
*Snow Squall IBW Tagging*

*Avalanche Initiatives*



# NEW: Snow Ratio Grid in National Digital Forecast Database (NDFD)

- A division of the 6-hour QPF forecast grid and the Snow Amount forecast grid yields this Snow Liquid Ratio (SLR) grid.
- Assists forecasters with distinguishing between heavy, wet snow and light, fluffy snow in their forecasts, which will enhance decision support messaging to emergency managers and key partners.
- This product is already available at CONUS WFOs, and it will be available in Alaska/Hawaii starting on November 30th.



<https://digital.mdl.nws.noaa.gov/>

Provide Feedback:

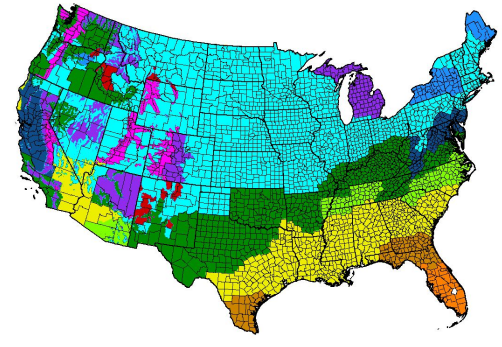
<https://www.surveymonkey.com/r/NDFDSnowRatioGrids2022-2023>



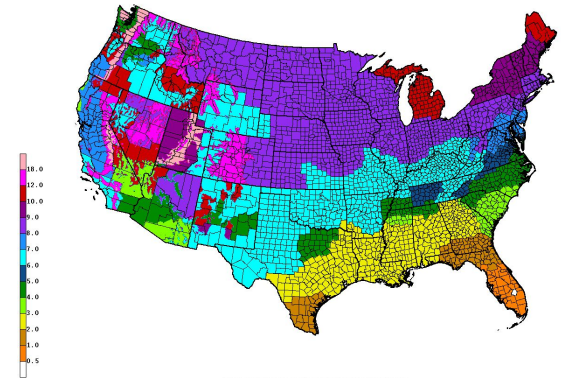
# Modernizing Heavy Snow Watch/Warning Criteria

## Why change our existing criteria?

- NWS Weather Forecast Offices inconsistently apply event-based, 12 hr, 24 hr, and even more than one to determine appropriate snow criteria thresholds for winter storm watches and warnings
- Some offices consider climatology, though some do not
- Lack of criteria continuity across the county warning areas can create **timing and geospatial challenges with collaboration, coordination and public messaging** with respect to winter storms
- Agency-wide, we continue to work toward **issuing products and services based on anticipated impacts**, and not singularly dependant upon exceeding criteria thresholds



Current 12 hr Heavy Snow Criteria



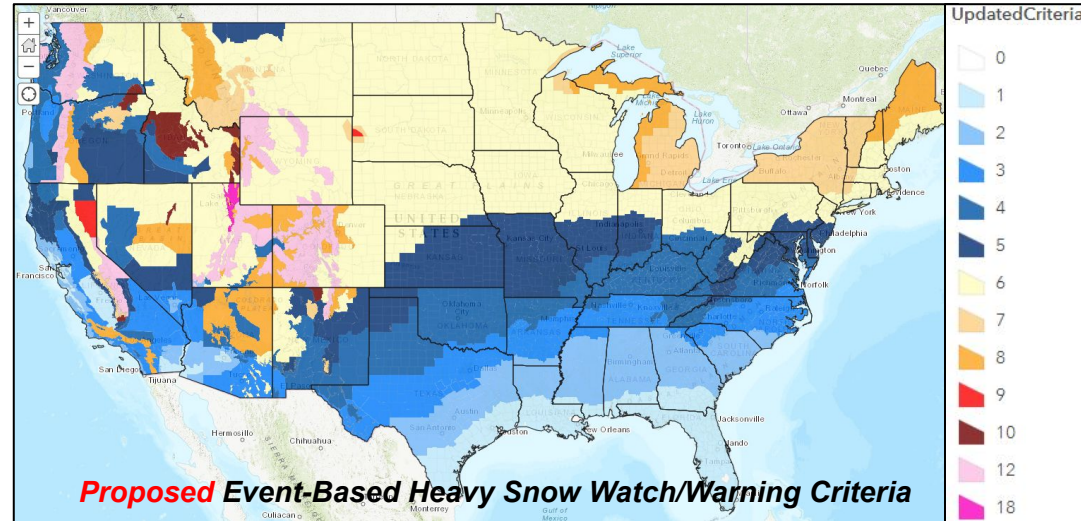
24 HR WINTER STORM WARNING SNOW FALL CRITERIA

Current 24 hr Heavy Snow Criteria



# Modernizing Heavy Snow Watch/Warning Criteria

- Our NWS Region representatives created local teams that worked internally as well as with external partners to establish the changes to the heavy snow winter watch/warning criteria
- The vast majority of zones only results in a 1 or 2 inch change, but with this small change, we remove many non-meteorological boundaries and move toward a more science-based set of criteria
- The proposed criteria will be **evaluated this upcoming winter** with the goal of finalizing and implementing the changes prior to the winter of 2023-2024. WFOs will be collecting feedback from core partners.

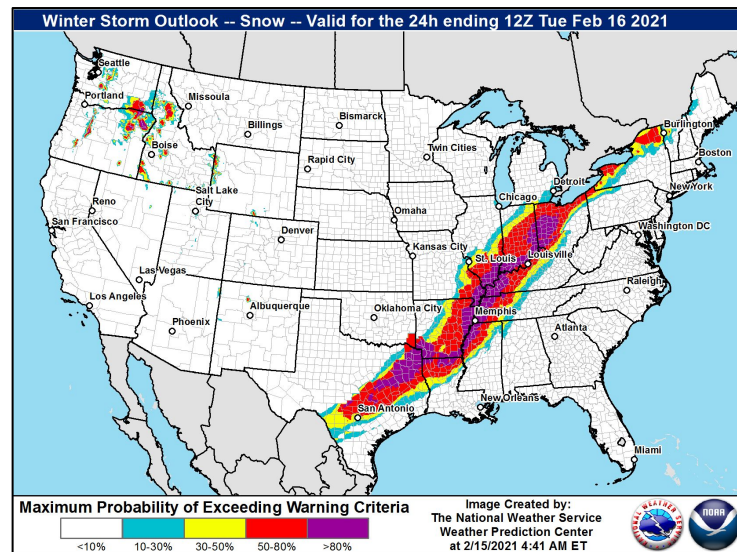


**GOAL:** Improve consistency in Winter Storm Watch/Warning Issuance and Public Messaging



# Experimental Winter Storm Outlook

- The Experimental Winter Storm Outlook (WSO) displays the probability of realizing hazardous snow/ice accumulations using WFO-specific Watch/Warning criteria as a proxy threshold.
- Provides a Days 1-4 “Outlook” product in the winter program, serving to unify both external messaging and internal collaboration for consistent and collaborative Winter Storm Watch issuance.
- One of a few key factors considered in the issuance of Winter Storm Watches, as meeting certain thresholds for warning criteria triggers enhanced coordination between WPC & affected WFOs.
- **New this year:** The WSO will use the aforementioned proposed, event-based heavy snow watch/warning criteria as part of the evaluation. Please provide feedback via the survey link!



<https://www.wpc.ncep.noaa.gov/wwd/wso>

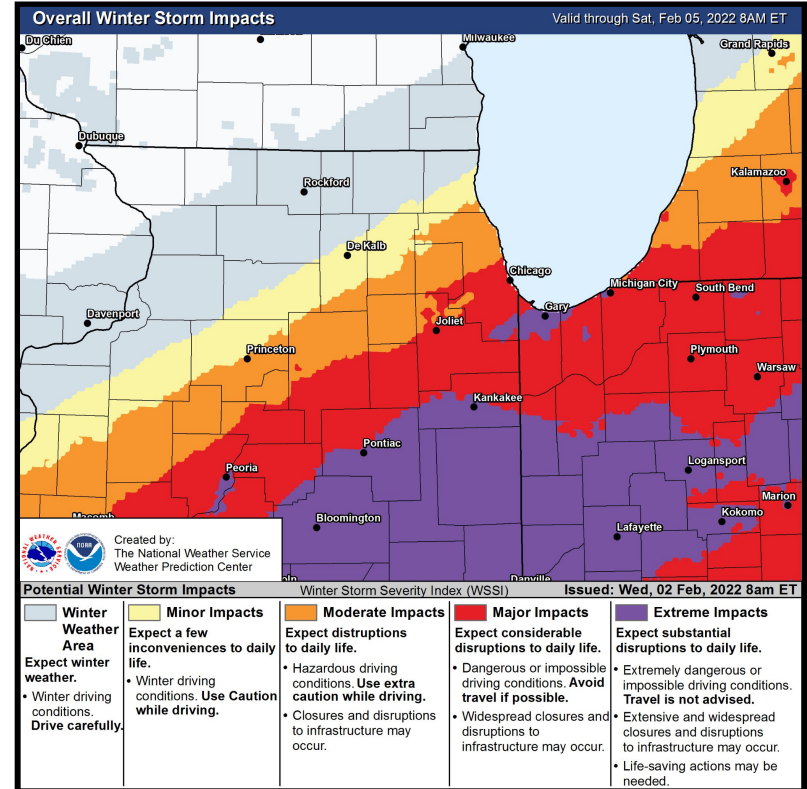
Provide Feedback:

<https://www.surveymonkey.com/r/winterstormoutlook2022-2023>

# Winter Storm Severity Index (WSSI)

## Deterministic WSSI Updates

- **Goal:** Forecast the potential severity of community impacts from winter storms throughout the contiguous United States, including tree damage, property damage, transportation impacts, and disruptions to daily life
- Provides winter storm impact information out to 72 hours, and in 24 hour intervals Includes meteorological & non-meteorological factors
- Five levels of impact provided, updated every 2 hours
- Summary graphic is a composite of the maximum impact from any of the six components
  - **New this year:** updated impact definitions, new static images for the CONUS, State and WFO perspectives, and the elimination of the limited category. A new Winter Weather Area depicting where NWS forecasts are expecting winter weather is now included.



Output available here: [www.weather.gov/wssi](http://www.weather.gov/wssi)



# WSSI - Components & Scale



## Ground Blizzard

Indicates the potential travel-related impacts of strong winds interacting with pre-existing snow cover



## Flash Freeze

Indicates the potential of flash freezing during or after precipitation events.



## Blowing Snow

Indicates the potential disruption due to blowing and drifting snow



## Ice Accumulation

Indicates potential infrastructure impacts due to combined effects and severity of ice and wind



## Snow Load

Indicates potential infrastructure impacts due to the weight of snow



## Snow Amount

Indicates potential impacts due to the total amount of snow or snow accumulation rate

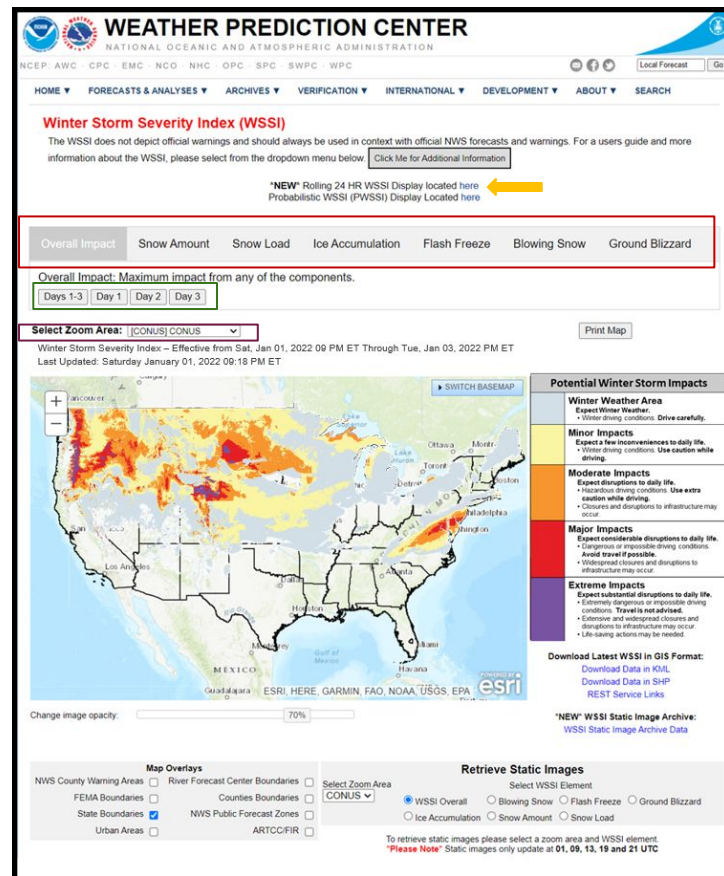
Potential Winter Storm Impacts	
	<b>Winter Weather Area</b> <b>Expect Winter Weather.</b> <ul style="list-style-type: none"> <li>• Winter driving conditions. <b>Drive carefully.</b></li> </ul>
	<b>Minor Impacts</b> <b>Expect a few inconveniences to daily life.</b> <ul style="list-style-type: none"> <li>• Winter driving conditions. <b>Use caution while driving.</b></li> </ul>
	<b>Moderate Impacts</b> <b>Expect disruptions to daily life.</b> <ul style="list-style-type: none"> <li>• Hazardous driving conditions. <b>Use extra caution while driving.</b></li> <li>• Closures and disruptions to infrastructure may occur.</li> </ul>
	<b>Major Impacts</b> <b>Expect considerable disruptions to daily life.</b> <ul style="list-style-type: none"> <li>• Dangerous or impossible driving conditions. <b>Avoid travel if possible.</b></li> <li>• Widespread closures and disruptions to infrastructure may occur.</li> </ul>
	<b>Extreme Impacts</b> <b>Expect substantial disruptions to daily life.</b> <ul style="list-style-type: none"> <li>• Extremely dangerous or impossible driving conditions. <b>Travel is not advised.</b></li> <li>• Extensive and widespread closures and disruptions to infrastructure may occur.</li> <li>• Life-saving actions may be needed.</li> </ul>

**Updated impact definitions**

# WSSI: Webpage

- Clickable tabs
  - Loads WSSI components upon click
  - Day Period tabs
- Rolling 6-Hr Data Viz Option
  - Allow users to visualize the impact levels progression through time versus viewing per calendar day
  - 24-hour forecast period with the start time advancing every 6 hours (i.e. 18Z to 18Z, 00Z to 00Z, etc.)
- Zoom-to-WFO Drop-down Box
- Print map button
  - Creates a PDF of the map with your specifications
- Variety of basemaps via Basemap dropdown button
- Ability to browse static images
- Links to download GIS data (REST Service, SHP and KML)

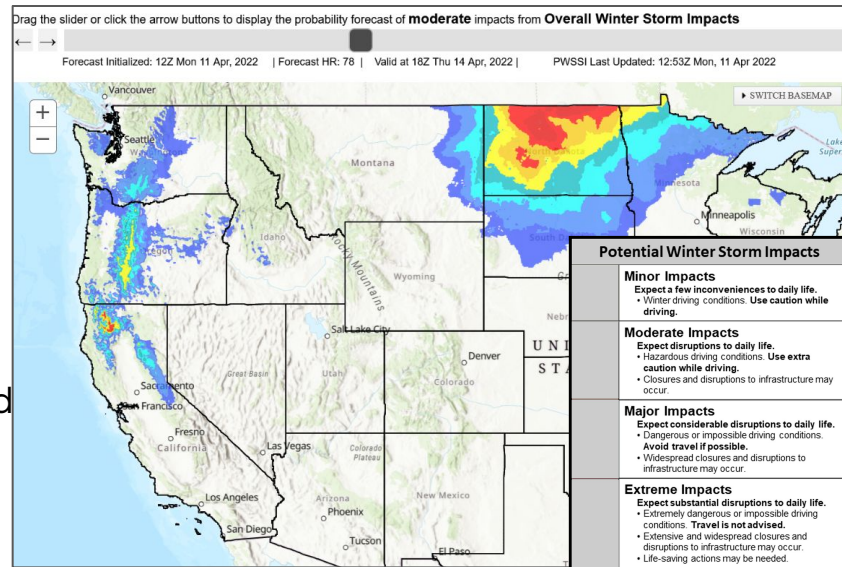
[www.weather.gov/wssi](http://www.weather.gov/wssi)



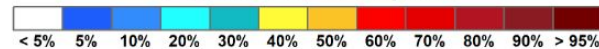
# Probabilistic Winter Storm Severity Index (pWSSI)



- Probabilistic WSSI is now experimentally public-facing to support messaging of potential impacts of winter storms from Days 1-7
- Robust social science research applied to impact definitions, aligned with the deterministic WSSI, to effectively communicate the likelihood of winter storm severity
- Public training material available to improve understanding and usability among a broad base of users
- Please provide feedback!



## Likelihood of Impact



Depicts probability of reaching an impact level for winter hazards using the WSSI impact thresholds

Available here:

[https://www.wpc.ncep.noaa.gov/wwd/wssi/prob\\_wssi.php](https://www.wpc.ncep.noaa.gov/wwd/wssi/prob_wssi.php)

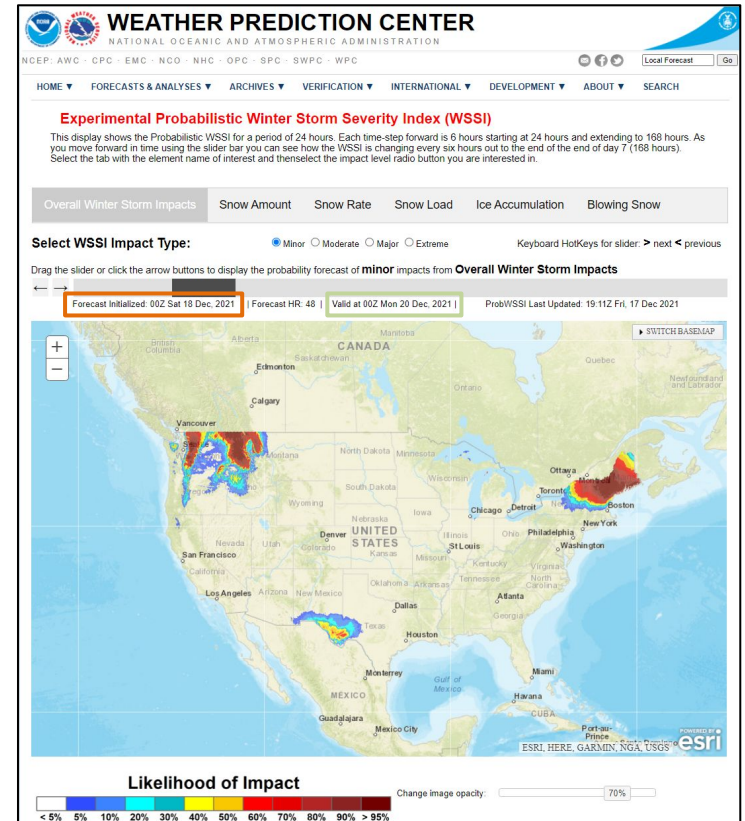


# Probabilistic Winter Storm Severity Index (pWSSI)

- The PWSSI forecasts are rolling 24h probabilistic impact forecasts from 24h through 168h using a 6h cadence
  - This means every time step represents a 24h period moving forward six hours at a time.
- The “Forecast Initialized” time indicates the beginning of the time period for this forecast. In this example 00Z Fri 18 Dec 2021
- The “Valid at” time indicates the end of that forecast period.
  - For example, the image here depicts a 48-hour forecast valid 00Z Mon December 20, 2021
  - This covers the period from 00Z Saturday December 18th through 00Z Monday, December 20th.
  - The next time step, (forecast hour 54) would cover 06Z Saturday December 20th through 06Z Monday December 20th, with a valid time of 06Z Monday Dec 20th.

Please provide feedback!

[https://www.surveymonkey.com/r/ExpProbabilisticWSSI\\_2022-2023](https://www.surveymonkey.com/r/ExpProbabilisticWSSI_2022-2023)



# Probabilistic Winter Storm Severity Index (pWSSI)

- The PWSSI web page has several interactive mechanisms that work together to produce the image overlay on the web map.
- Each image depicts a likelihood of impact, ranging from 5% to >95%, for a component and impact level.
- Default option shown when the page loads is the likelihood of Moderate impacts from the Overall Winter Storm components.

● Click a component tab to view the impact forecast for each component or the Overall Winter Storm Impacts tab to view the combined greatest threat.

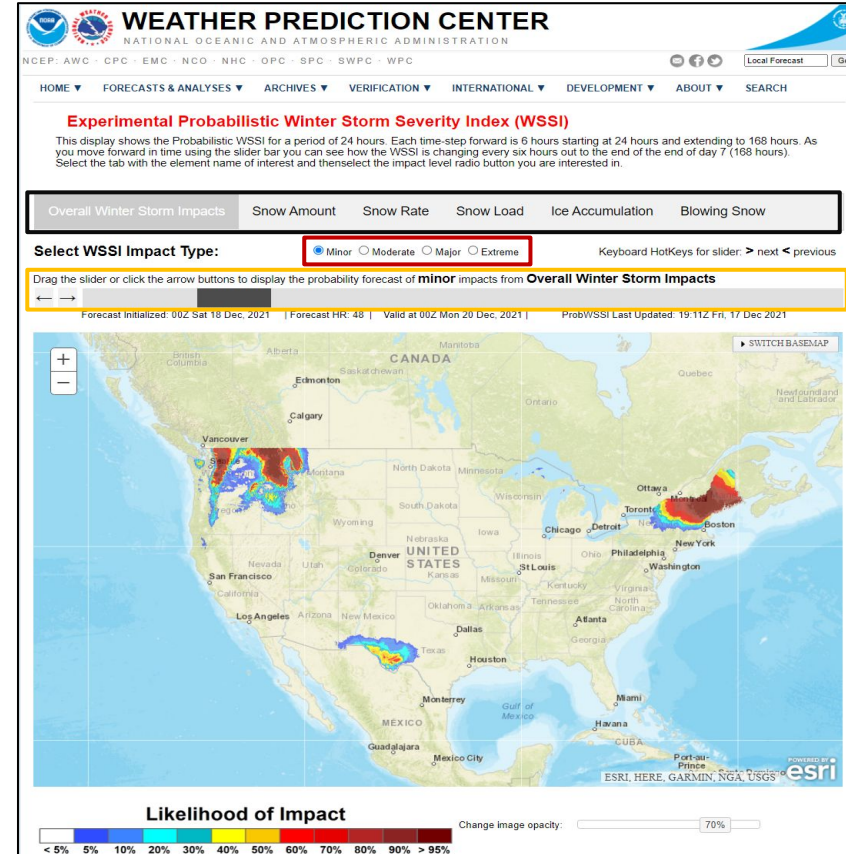
● Component options are: Overall Winter Storm Impacts, Snow Amount, Snow Rate, Snow Load, Ice Accumulation, and Blowing Snow.

● Select a WSSI Impact Level radio button for the level of impact

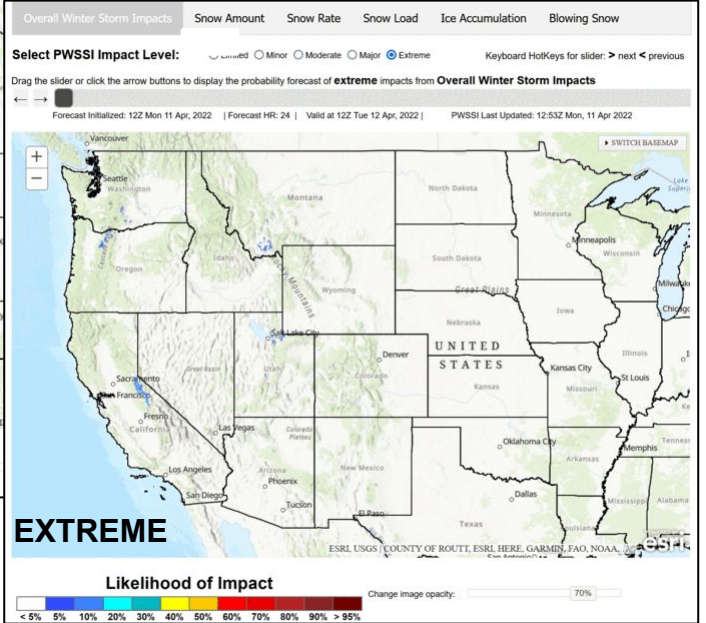
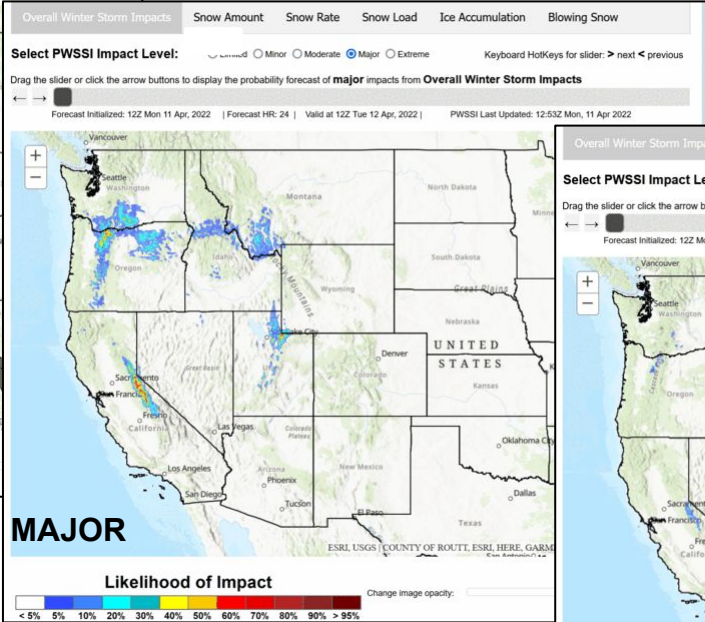
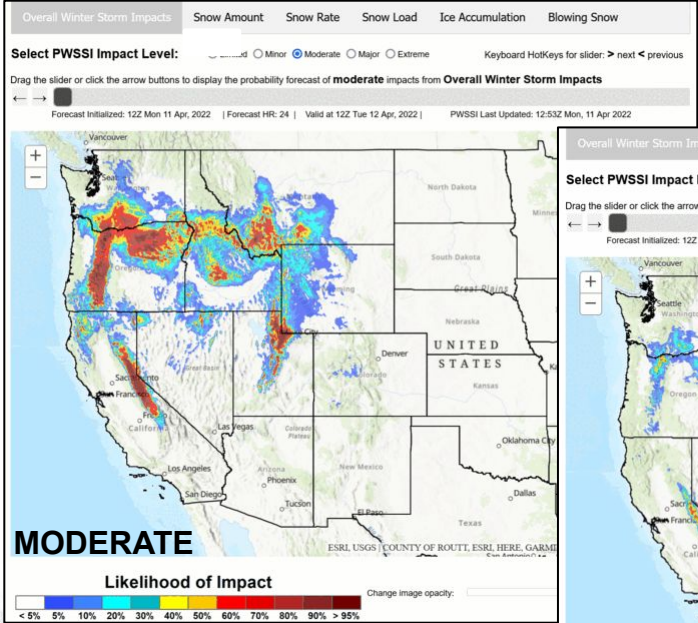
Impact types include: Minor, Moderate, Major, Extreme

● The slider bar controls the forecast time.

Advance or retreat the dark gray slider or click the arrow buttons, or use the > to go forward in time or the < key to go back in time.



# Probabilistic Winter Storm Severity Index (pWSSI)



Potential Winter Storm Impacts	
<b>Minor Impacts</b>	Expect a few inconveniences to daily life. • Winter driving conditions. Use caution while driving.
<b>Moderate Impacts</b>	Expect disruptions to daily life. • Hazardous driving conditions. Use extra caution while driving. • Closures and disruptions to infrastructure may occur.
<b>Major Impacts</b>	Expect considerable disruptions to daily life. • Dangerous or impossible driving conditions. Avoid travel if possible. • Widespread closures and disruptions to infrastructure may occur.
<b>Extreme Impacts</b>	Expect substantial disruptions to daily life. • Extremely dangerous or impossible driving conditions. Travel is not advised. • Extensive and widespread closures and disruptions to infrastructure may occur. • Life-saving actions may be needed.

The likelihood of realizing **Moderate, Major, or Extreme** Impacts from a Winter Weather Event





# NWS Winter Seasonal Safety Campaign

- NWS Winter Seasonal Safety Campaign launches on December 1 (first day of meteorological winter)
- Contains content on winter hazards including infographics, social media plans, presentations and videos
- Encourage partners to use and share this information
- See: [https://www.weather.gov/wrn/winter\\_safety](https://www.weather.gov/wrn/winter_safety)



**QUESTIONS AND ANSWERS ABOUT SNOW SQUALLS**  
WWW.WEATHER.GOV/SAFETY

**WHAT ARE THEY?**  
Quick intense bursts of snow  
Accompanied by strong gusty winds  
Short-lived, typically less than 3 hours  
Normally occur during the day

**WHAT ARE THE IMPACTS?**  
Rapidly reduced visibility  
Treacherous travel conditions  
Potential for chain-reaction accidents

**WHAT'S A SNOW SQUALL WARNING?**  
Warning is usually 30-60 minutes in length  
Issued for small areas where snow squalls are expected  
Similar to a Tornado or Severe Thunderstorm Warning

**HOW CAN YOU STAY SAFE?**  
Have a way to get forecasts and warnings  
Consider an alternate route or delaying travel  
Stay alert for rapidly changing road conditions  
Reduce speed and use low beam headlights

WEATHER.GOV

# Updated Outreach Materials

**After the Winter Storm:  
POWER OUTAGE**

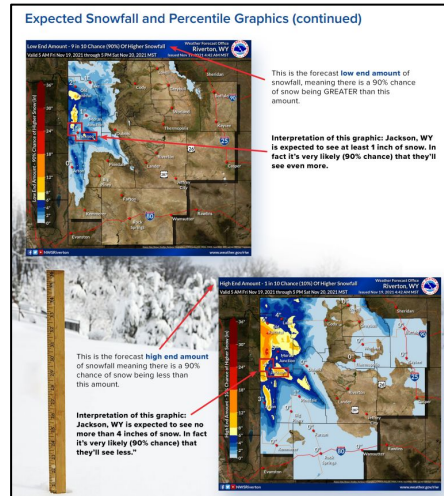
**Be careful with heat sources**  
Candles and space heaters are a fire risk. Also stay warm by bundling up and keeping doors closed, placing towels in cracks.


**Practice portable generator safety**  
Use outdoors, at least 20 feet away from doors/windows/garages to avoid carbon monoxide poisoning. Follow instructions on proper use.

**Check on neighbors**  
Once your family is safe, check on your neighbors and make sure they are OK.




weather.gov 



weather.gov/winter 

## MANTENIÉNDOSE CALIENTE CUANDO NO HAY ELECTRICIDAD



- Cierre las persianas o cortinas para mantener algo de calor.
- Cierre los cuartos para evitar perder calor.
- Vista capas de ropa holgada, liviana, y caliente.
- Coma y tome líquido. La comida provee energía para calentar su cuerpo. Evite cafeína y alcohol.
- Ponga toallas o sábanas en las aperturas debajo de las puertas.

Probabilistic Snowfall Resources: <https://www.weather.gov/prob-snow>

Snow Squall IBW Tag Resources: <https://www.weather.gov/media/safety/Snow-Squall-IBW.pdf>

Winter Storm Severity Index Resources: [www.weather.gov/wssi](http://www.weather.gov/wssi) (top of page)





# NOAA: The Great Outdoors

- Feature on weather safety while recreating outdoors
- Discusses outdoor risks, with the winter edition focusing on Extreme Cold & Exposure, Avalanche Danger, Winter Storms, & Ice Safety
- Will include fundamental actions to take and safety content for sharing




## CAUGHT OUTDOORS IN A WINTER STORM?

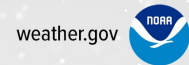
 **Find shelter!** If there's no shelter, build a lean-to or snow cave for protection. Build a fire for heat.

 **Cover exposed body parts,** and try to stay dry. This will help protect against hypothermia.

 **Melt snow for drinking water.** Avoid eating un-melted snow, which can lower body temperature to deadly levels.

 **Exercise occasionally.** Move limbs, fingers, and toes vigorously to keep you warm.

**KNOW BEFORE YOU GO!**  
Avoid being caught in a storm by checking the forecast before venturing out.

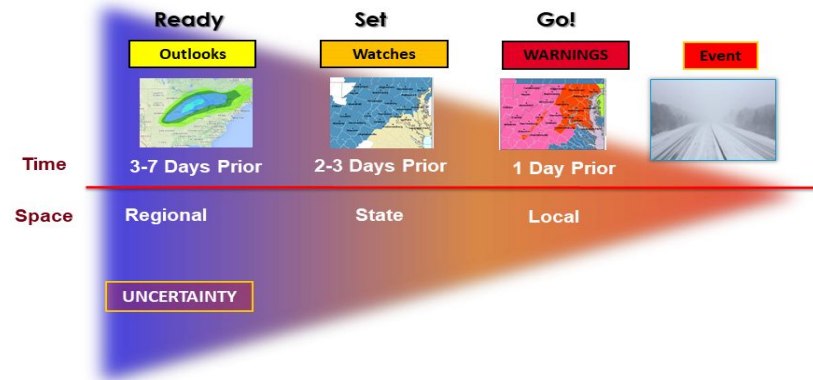


<https://www.noaa.gov/explainers/great-outdoors-weather-safety>

# Winter Program Vision

*Accurate, consistent, and actionable forecasts save lives and property*

- Collaborative Forecast Process
- Consistent Messaging
- Probabilistic Impact Information Drives Messaging







# Update on Winter Weather Initiatives



## Contributors:

David Novak  
Greg Carbin  
Jim Nelson  
Josh Kastman  
Michael Muccilli  
Tony Fracasso  
Alex Lamers  
Jeff Waldstreicher  
Eric Guillot  
Greg DeVoir

## Links:

**WPC PWWF page:**

[https://www.wpc.ncep.noaa.gov/pwvf/wwd\\_accum\\_probs.php](https://www.wpc.ncep.noaa.gov/pwvf/wwd_accum_probs.php)

**Local office Experimental PWWF page:**

<https://www.weather.gov/btv/winter>

**Operational WSSI:**

[www.weather.gov/wssi](http://www.weather.gov/wssi)

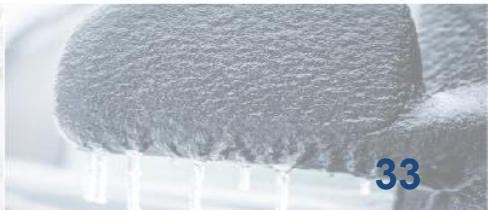
**Experimental pWSSI:**

[https://www.wpc.ncep.noaa.gov/wwd/wssi/prob\\_wssi.php](https://www.wpc.ncep.noaa.gov/wwd/wssi/prob_wssi.php)

**Experimental WSO:**

<https://www.wpc.ncep.noaa.gov/wwd/wso>

Questions? [Sarah.Perfater@noaa.gov](mailto:Sarah.Perfater@noaa.gov)



# Presentation Will Be Available!

- Presentation PDF and Recording will be available after processing
- Publicly posted at our Weather Ready Nation calendar page:
- <https://www.weather.gov/wrn/calendar>



The screenshot shows the NOAA National Weather Service website. At the top left are the NOAA and National Weather Service logos. The main header reads "NATIONAL WEATHER SERVICE" with "NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION" below it. On the right is the "Weather-Ready Nation National Program" logo. The page title is "Calendar" with a breadcrumb trail: "Weather.gov > Weather-Ready Nation > Calendar". A navigation menu includes "Weather Hazards", "Safety Campaigns", "Ambassador", "Education", "Collaboration", "News & Events", "International", and "About". A paragraph states: "Be a Force of Nature when it comes to extreme weather by learning about potential hazards. Help advance the Weather-Ready Nation by being prepared for the worst. NOAA's National Weather Service (NWS) and its partners encourage individuals, families, businesses and communities to know their risk, take action, and be an example when it comes to dangerous weather." Below this is a section titled "UPCOMING EVENTS".