



National Weather Service Update on Winter Weather Initiatives October 19, 2023

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Alex Lamers





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 Weather-Ready Nation logos. The main header reads "NATIONAL WEATHER SERVICE" and "NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION". Below this is a navigation menu with links for "Weather Hazards", "Safety Campaigns", "Ambassador", "Education", "Collaboration", "News & Events", "International", and "About". The page title is "Calendar" with a breadcrumb trail: "Weather.gov > Weather-Ready Nation > Calendar". On the right side, it says "Weather-Ready Nation National Program". A paragraph of text reads: "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".



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:

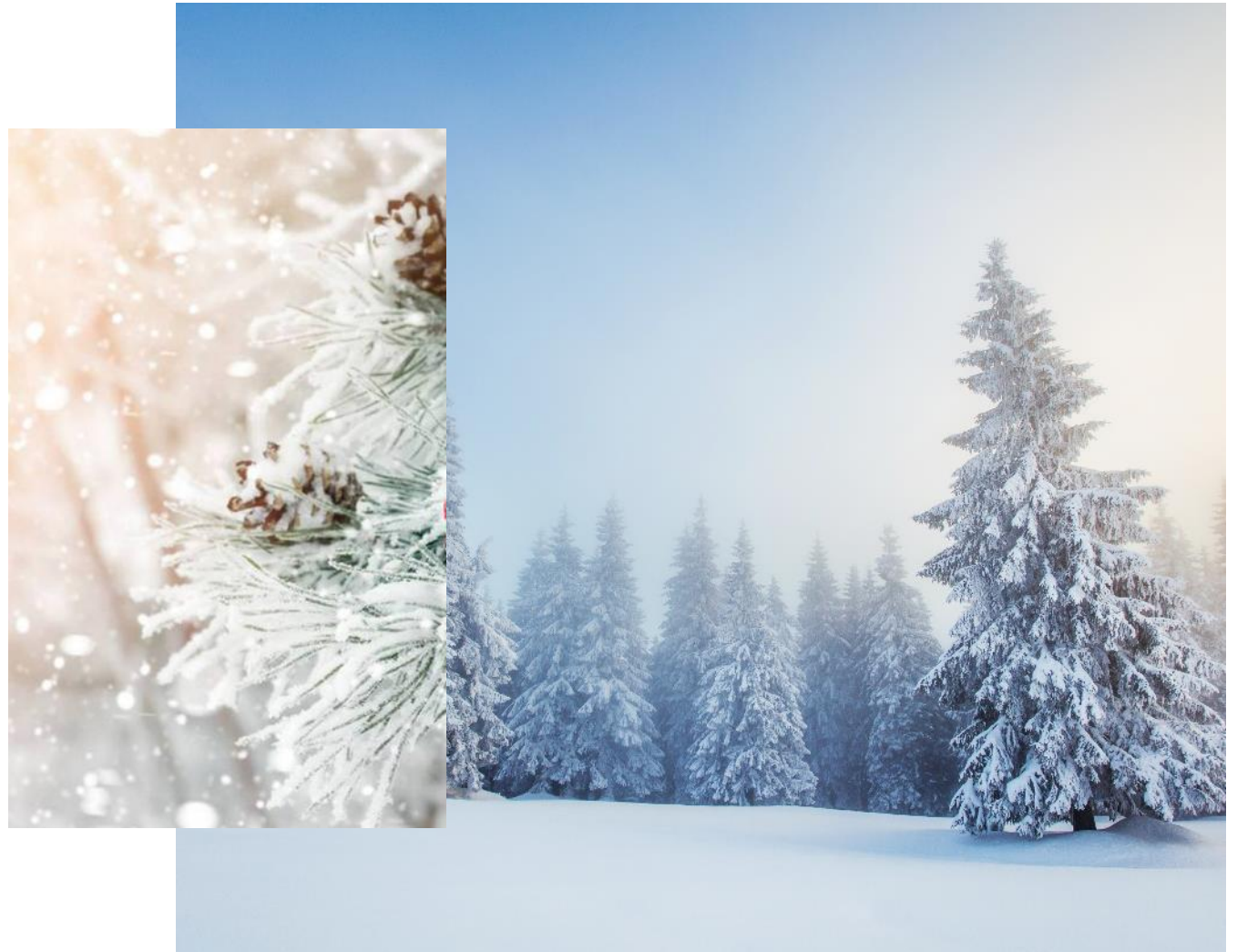
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OUTLINE

- **Winter Program and Vision Overview**
- Winter Key Messages
- **Winter Weather Outlook**
- Experimental Winter Storm Outlook
- **Modernized of Heavy Snow Watch/
Warning Criteria**
- Winter Storm Severity Index
- **Probabilistic Snow Products**
- Snow Ratio Grids
- **Impact-Based Warning tags for snow
squalls & new Local Storm Reports**
- Avalanche Weather Initiative
- **Seasonal Safety Campaign**
- Updated Outreach Materials and
Initiatives

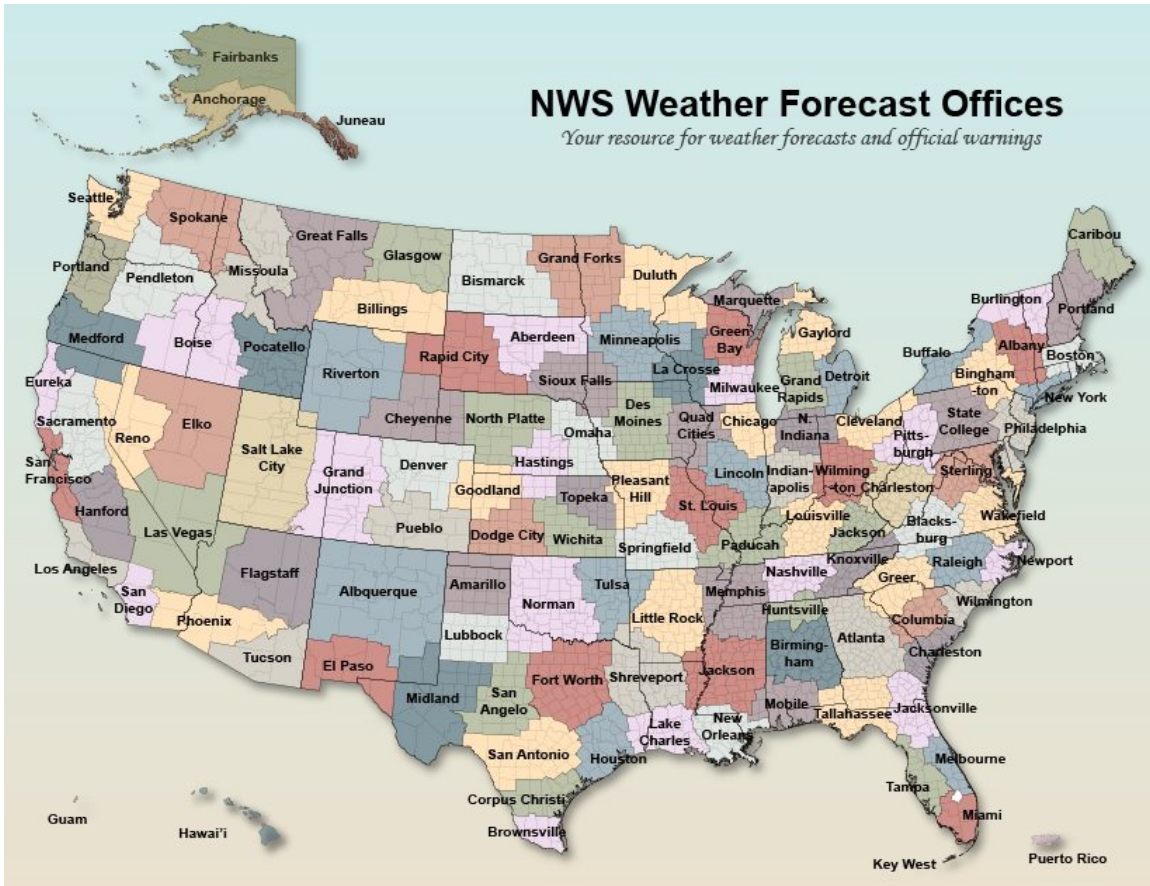


Detailed Winter Program Vision

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



WEATHER FORECAST OFFICES



Headlines & Hazards

All Official Watches, Warnings, & Advisories

Graphical Products

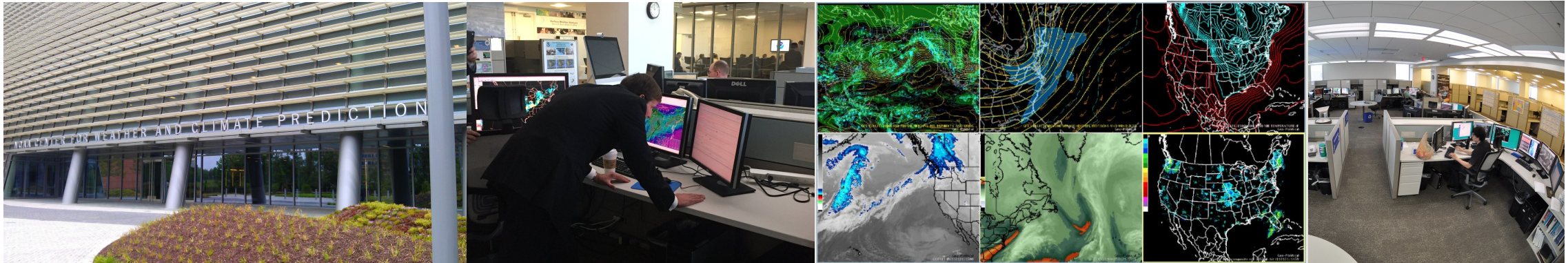
Official graphical forecasts of Snow, Ice, & Other Winter Elements

Decision Support

On-Site Support, Briefings, Emails, & Webinars to Local Partners



WEATHER PREDICTION CENTER



Graphical Products

Probabilistic heavy snow/icing guidance products for Days One, Two, and Three; Winter Weather Outlook

Text Products

Heavy snow/icing discussion (meteorological reasoning for the 24-hour probabilistic heavy snow and icing guidance)

Decision Support

Key Messages
Support to the NWS winter weather watch/warning/outlook programs

Winter Storm Outlook

Hazardous snow/ice accumulations using WFO-specific Watch/Warning criteria as a proxy threshold

Winter Storm Severity Index

Depicts potential severity of community impacts from winter storms

WINTER KEY MESSAGES

Available as a Top Story on [WPC Homepage](#)

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 Major Extreme

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

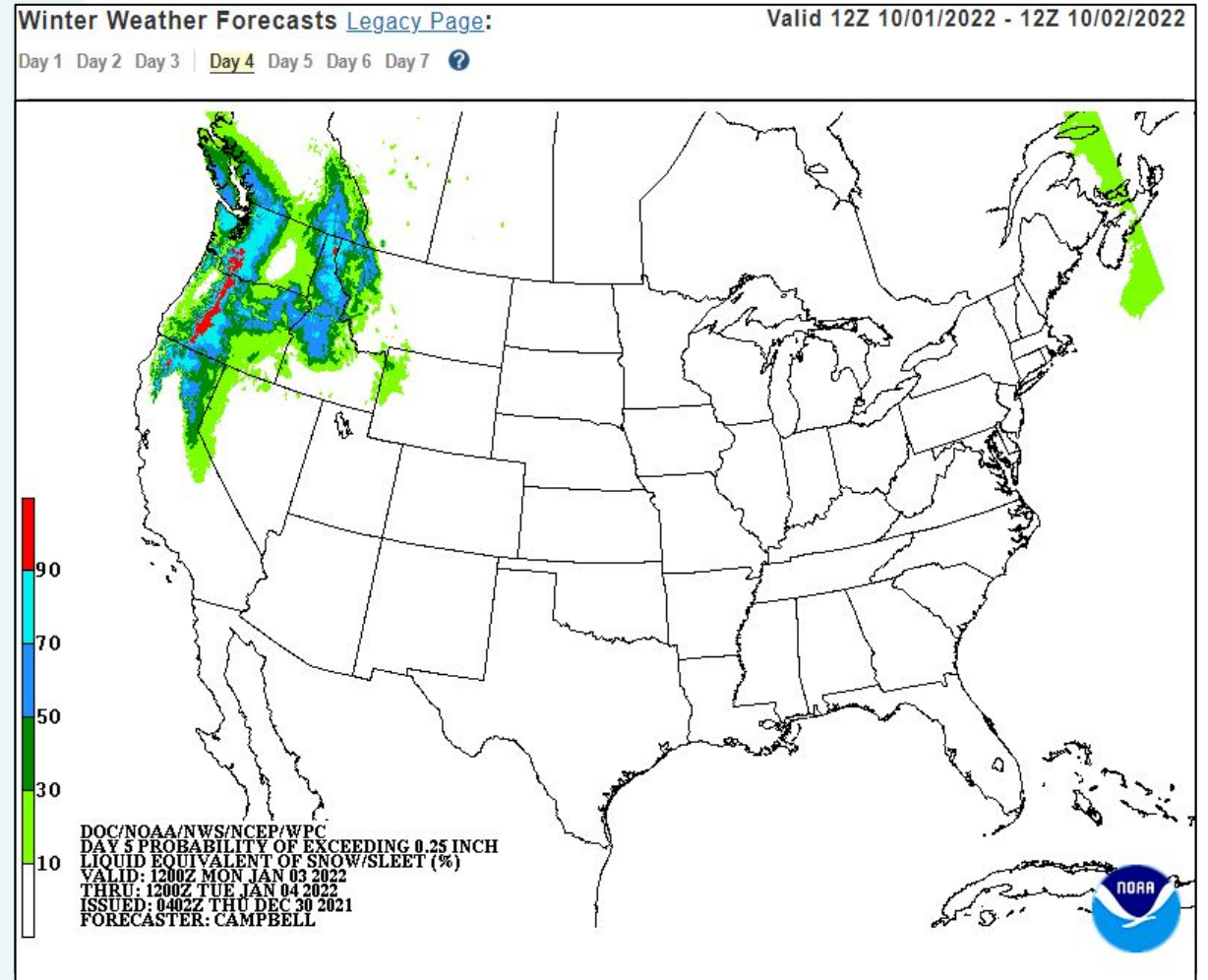
Collaboration

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

DAYS 4-7 WINTER WEATHER OUTLOOK

- **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 - 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/pwvf_d47/pwvf_medr.php

NEW: MODERNIZED HEAVY SNOW WATCH/WARNING CRITERIA

What is being changed?

- Change from 12 and 24 hour criteria to Event-based criteria
- Removal of non-meteorological discontinuities
- New interactive platform (ArcGIS)

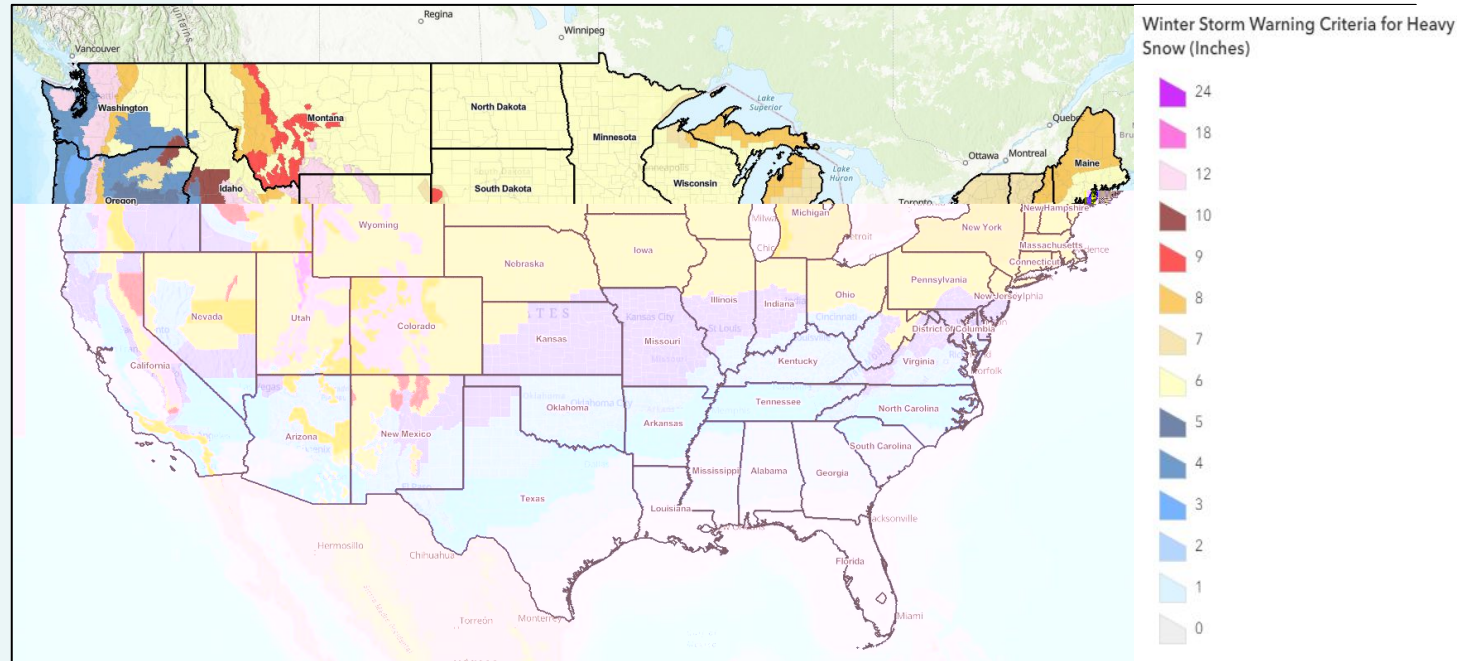
Why change?

- Improve hazard decision making, support services, collaboration, and messaging across all platforms
- Move towards issuing products on anticipated impacts
- New platform will allow for a continually-updated criteria map with greater accessibility



NEW: MODERNIZED HEAVY SNOW WATCH/WARNING CRITERIA

- NWS teams worked internally and with external partners to establish the changes to the heavy snow winter watch/warning criteria
- Mainly resulted in only minor changes (1-2”), but removed many non-meteorological boundaries and moved toward a more science-based set of criteria!
- The criteria will be **implemented this upcoming winter**. Look for outreach materials. WFOs will continue to collect feedback from core partners!
- Will inform the Experimental Winter Storm Outlook



Event-Based Heavy Snow Watch/Warning Criteria (inches)

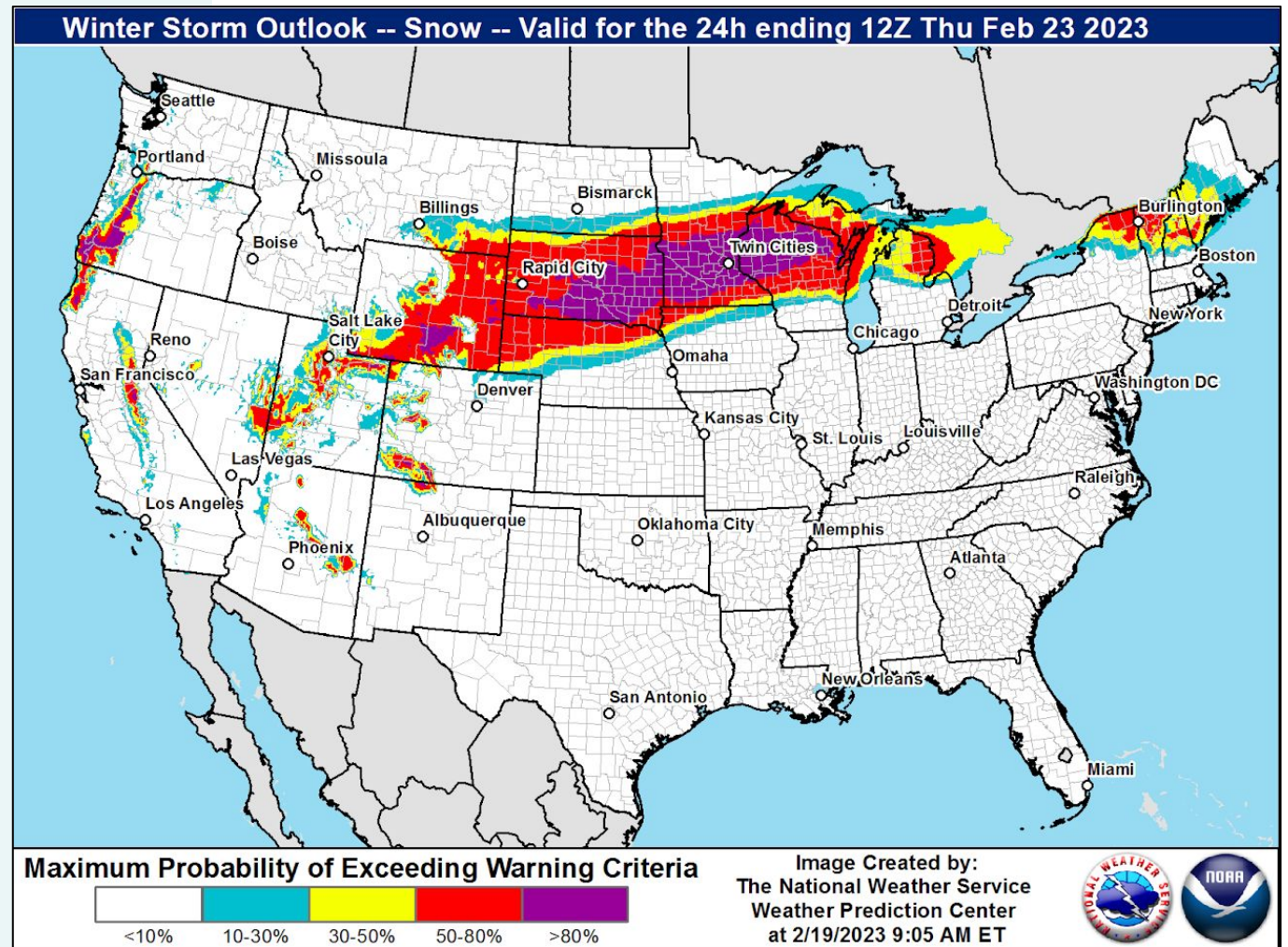
GOAL: Improve consistency in Winter Storm Watch/Warning Issuance and Public Messaging

weather.gov/snow-criteria



EXPERIMENTAL WINTER STORM OUTLOOK (WSO)

- **Goal:** Display the probability of realizing hazardous snow/ice accumulations using WFO-specific Watch/Warning criteria as a proxy threshold
- **New this year:** The WSO will use the newly-established, event-based heavy snow watch/warning criteria as part of the evaluation. Please provide feedback via the survey link!
- **Underway:** Physical and Social Science evaluations of the Winter Storm Outlook are underway, led by the Winter Program, to determine changes to a future product.



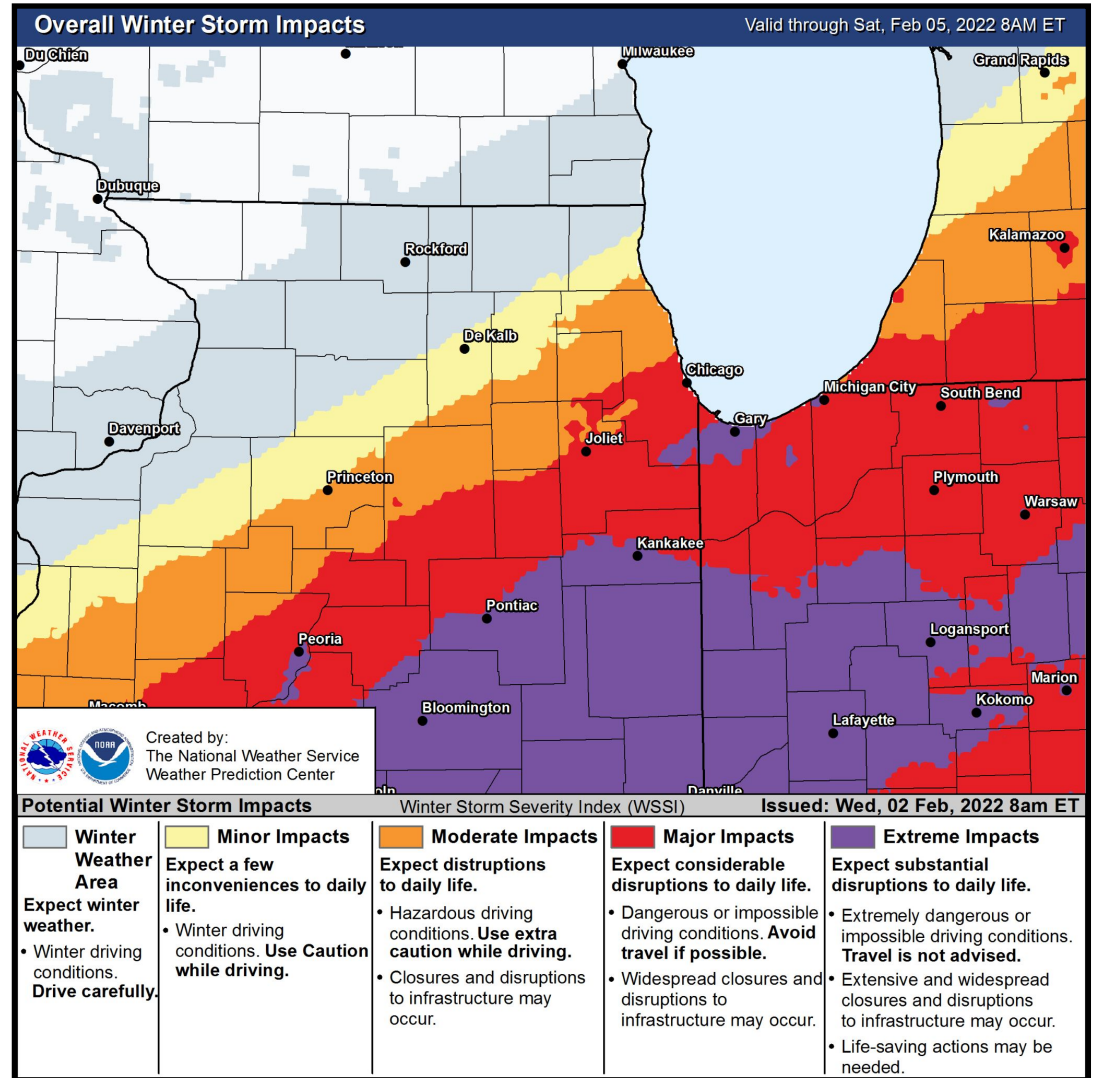
<https://www.wpc.ncep.noaa.gov/wwd/wso>

Provide Feedback:

https://www.surveymonkey.com/r/ExpWinterStormOutlook_2023-2024

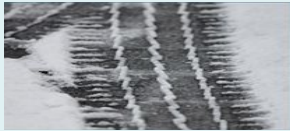
WINTER STORM SEVERITY INDEX (WSSI)

- **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 3 days, in daily increments, 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



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

WSSI - Components and 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

Winter Weather Area

Expect Winter Weather.

- Winter driving conditions. **Drive carefully.**

Minor Impacts

Expect a few inconveniences to daily life.

- Winter driving conditions. **Use caution while driving.**

Moderate Impacts

Expect disruptions to daily life.

- Hazardous driving conditions. **Use extra caution while driving.**
- Closures and disruptions to infrastructure may occur.

Major Impacts

Expect considerable disruptions to daily life.

- Dangerous or impossible driving conditions. **Avoid travel if possible.**
- Widespread closures and disruptions to infrastructure may occur.

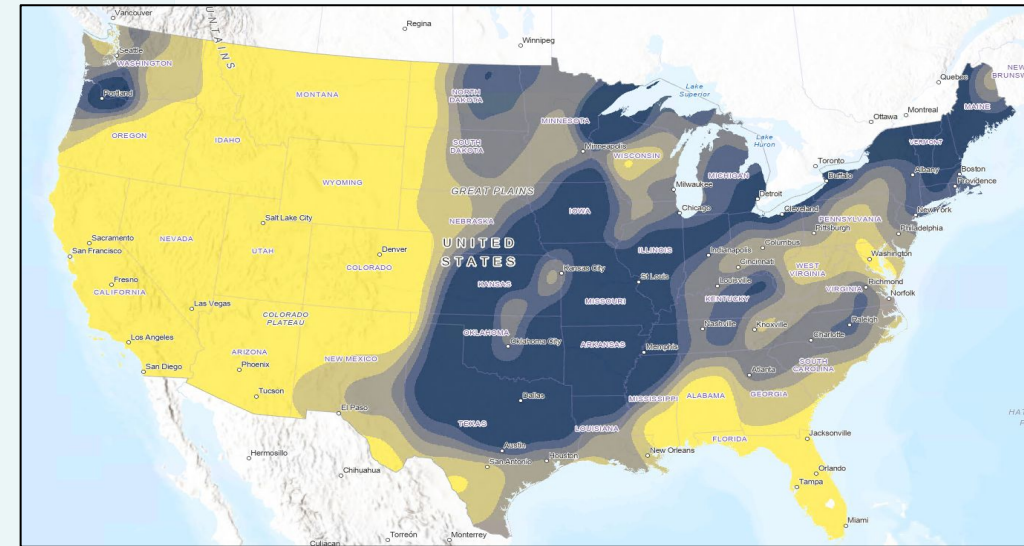
Extreme Impacts

Expect substantial disruptions to daily life.

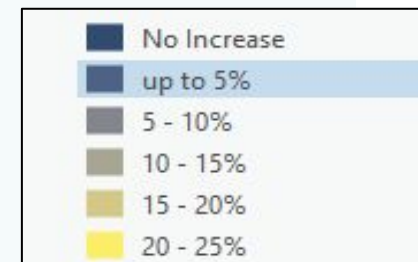
- Extremely dangerous or impossible driving conditions. **Travel is not advised.**
- Extensive and widespread closures and disruptions to infrastructure may occur.
- Life-saving actions may be needed.

WSSI - UPDATES THIS YEAR

- Non Meteorological Factors
 - Enhanced datasets for
 - Snow & ice load and regional hardiness data
 - Vegetation Index (dense vegetation for snow load component)
 - Coniferous Forest Density (eliminates non-realistic discontinuities)
 - Land Use resolution increase/smoothing (eliminates non-realistic discontinuities)
 - Updated algorithm for duration of impacts (blowing snow and ground blizzard)
- Flash Freeze and Ground Blizzard extended out to 72 hours
- Ice Accumulation Improvements
 - Updated ice & wind methodology
 - Integrated an ice climatology to introduce regionalization
 - Impact level threshold changes (Minor/Moderate → Transportation, Major/Extreme → Power Outages/Disruptions)
- Flash Freeze
 - Account for refreezing from snow melt



Ice Amount Factoring



WSSI Web Page

- 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)

WEATHER PREDICTION CENTER
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

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Winter Storm Severity Index (WSSI)

The WSSI does not depict official warnings and should always be used in context with official NWS forecasts and warnings. For a users guide and more information about the WSSI, please select from the dropdown menu below. [Click Me for Additional Information](#)

NEW Rolling 24 HR WSSI Display located [here](#)
Probabilistic WSSI (PWSSI) Display Located [here](#)

Overall Impact | Snow Amount | Snow Load | Ice Accumulation | Flash Freeze | Blowing Snow | Ground Blizzard

Overall Impact: Maximum impact from any of the components.

Days 1-3 | Day 1 | Day 2 | Day 3

Select Zoom Area: [CONUS] CONUS

Winter Storm Severity Index – Effective from Sat, Jan 01, 2022 09 PM ET Through Tue, Jan 03, 2022 PM ET
Last Updated: Saturday January 01, 2022 09:18 PM ET

Print Map

Potential Winter Storm Impacts	
Winter Weather Area	Expect Winter Weather. • Winter driving conditions. Drive carefully.
Minor Impacts	Expect a few inconveniences to daily life. • Winter driving conditions. Use caution while driving.
Moderate Impacts	Expect disruptions to daily life. • Hazardous driving conditions. Use extra caution while driving. • Closures and disruptions to infrastructure may occur.
Major Impacts	Expect considerable disruptions to daily life. • Dangerous or impossible driving conditions. Avoid travel if possible. • Widespread closures and disruptions to infrastructure may occur.
Extreme Impacts	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.

Download Latest WSSI in GIS Format:
[Download Data in KML](#)
[Download Data in SHP](#)
[REST Service Links](#)

NEW WSSI Static Image Archive:
[WSSI Static Image Archive Data](#)

Change image opacity: 70%

Map Overlays

NWS County Warning Areas River Forecast Center Boundaries
 FEMA Boundaries Counties Boundaries
 State Boundaries NWS Public Forecast Zones
 Urban Areas ARTCC/FIR

Select Zoom Area: [CONUS] CONUS

Retrieve Static Images

Select WSSI Element

WSSI Overall Blowing Snow Flash Freeze Ground Blizzard
 Ice Accumulation Snow Amount Snow Load

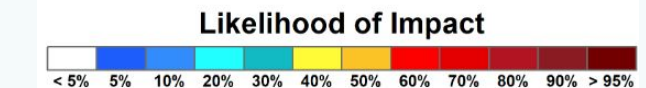
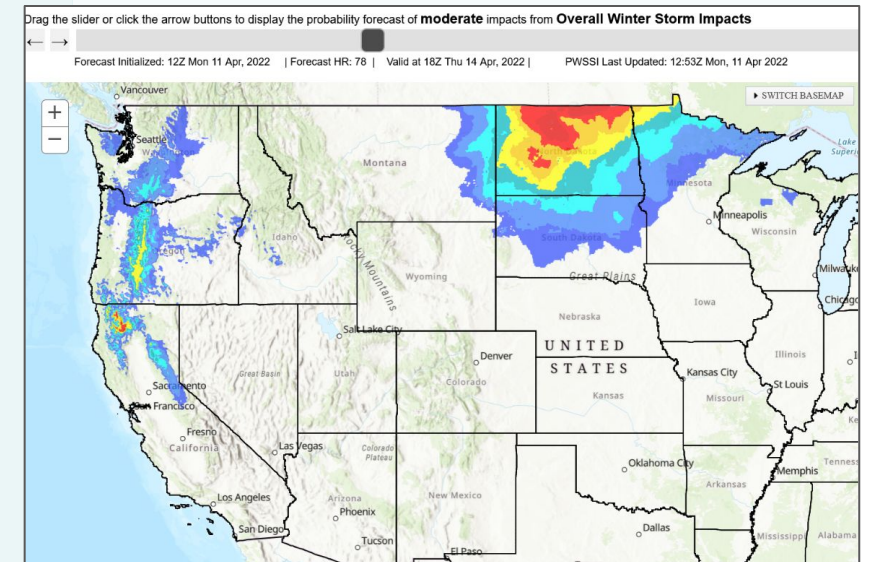
To retrieve static images please select a zoom area and WSSI element.
Please Note Static images only update at 01, 09, 13, 19 and 21 UTC

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

PROBABILISTIC WINTER STORM SEVERITY INDEX (WSSI-P)



- Depicts probability of reaching an impact level for winter hazards using the WSSI impact thresholds
- Probabilistic WSSI **will become operational** in November 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 through your local Weather Forecast Office!



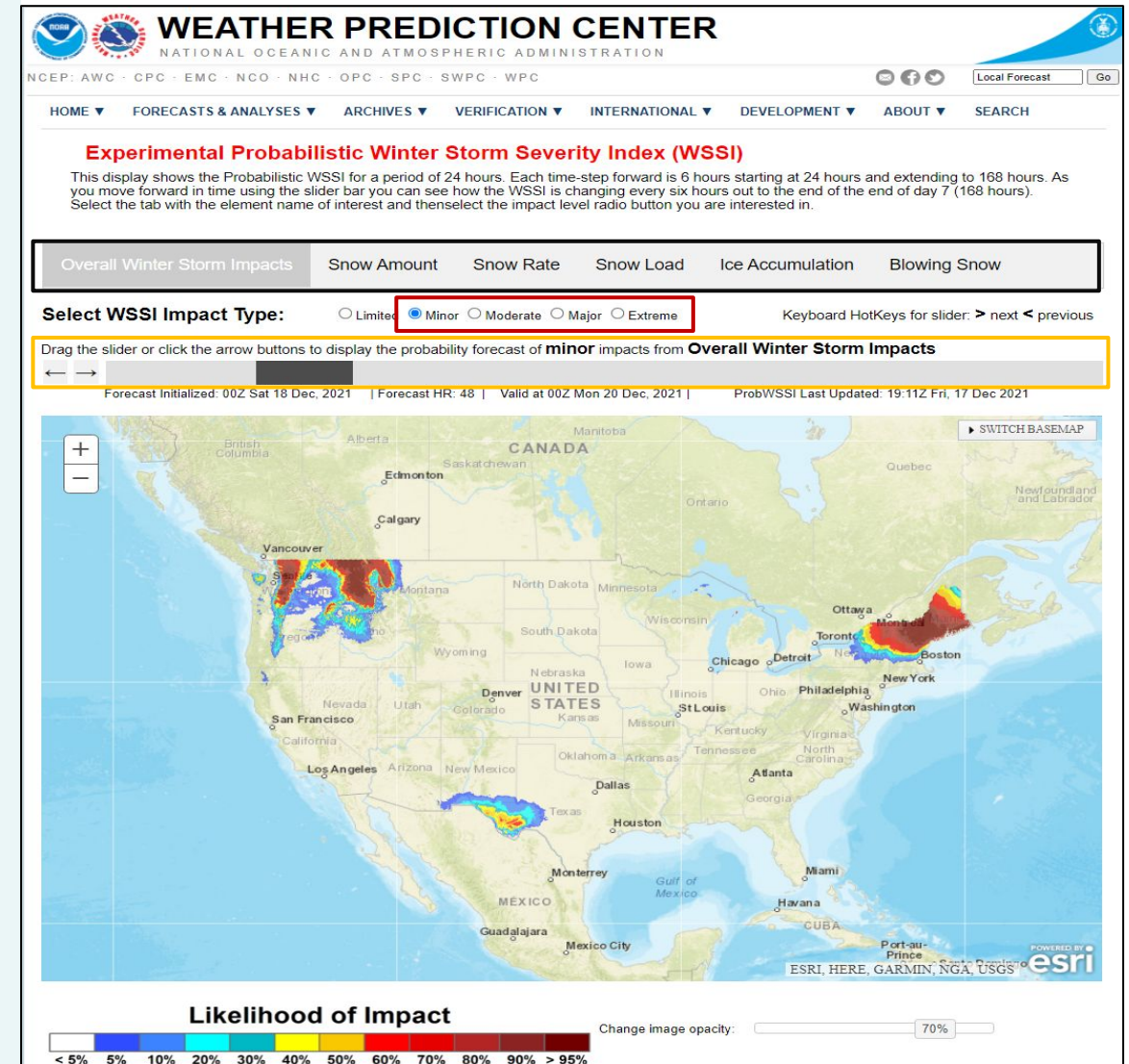
Depicts probability of reaching an impact level for winter hazards using the WSSI impact thresholds

Available here:

https://www.wpc.ncep.noaa.gov/wwd/wssi/prob_wssi.php

WSSI-P Web Page

- The WSSI-P 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.

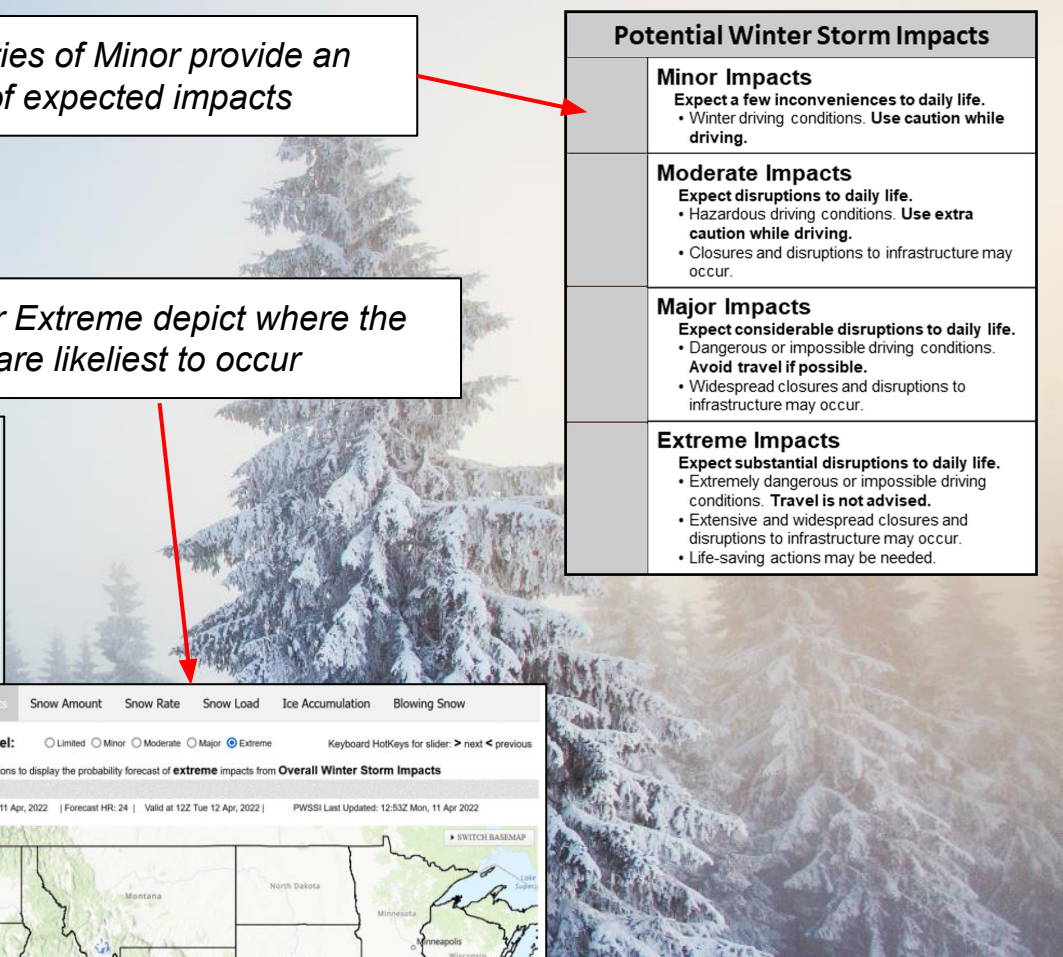
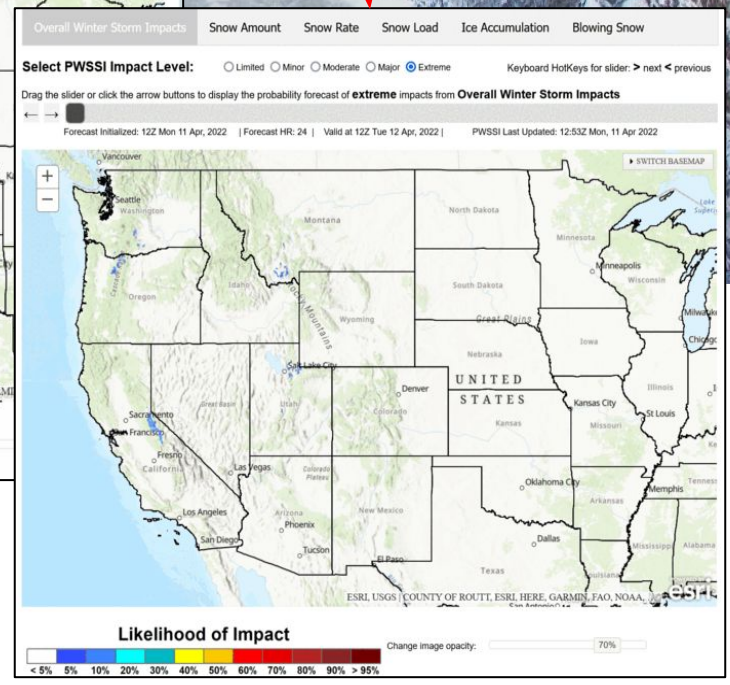
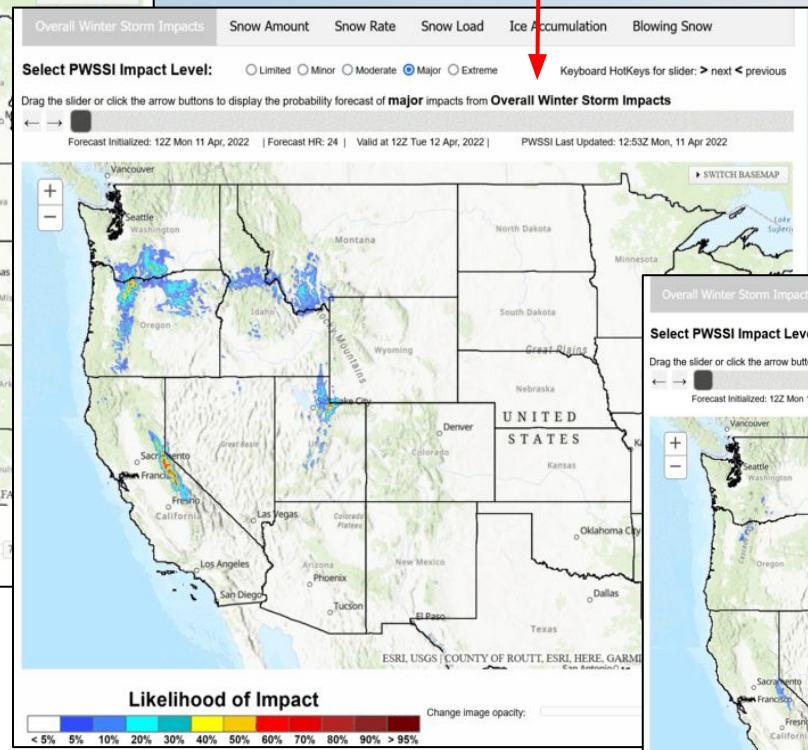
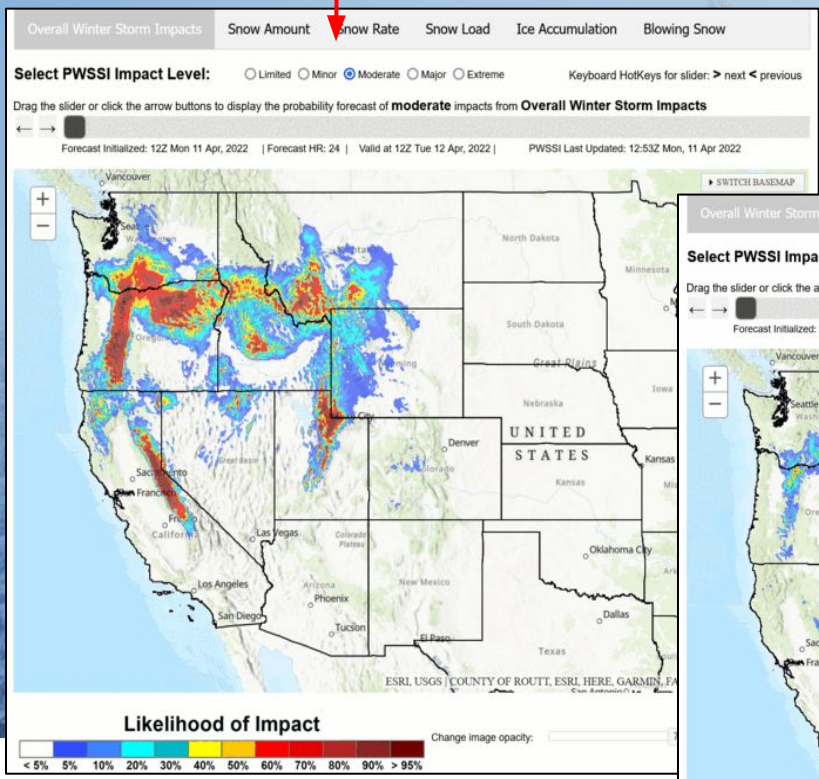


High Probabilities of Moderate show where there is likely to be disruptions to daily life

High Probabilities of Minor provide an envelope of expected impacts

High Probabilities of Major or Extreme depict where the most severe impacts are likeliest to occur

Potential Winter Storm Impacts	
Minor Impacts	Expect a few inconveniences to daily life. <ul style="list-style-type: none"> Winter driving conditions. Use caution while driving.
Moderate Impacts	Expect disruptions to daily life. <ul style="list-style-type: none"> Hazardous driving conditions. Use extra caution while driving. Closures and disruptions to infrastructure may occur.
Major Impacts	Expect considerable disruptions to daily life. <ul style="list-style-type: none"> Dangerous or impossible driving conditions. Avoid travel if possible. Widespread closures and disruptions to infrastructure may occur.
Extreme Impacts	Expect substantial disruptions to daily life. <ul style="list-style-type: none"> 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.



WSSI-P: The likelihood of realizing Moderate, Major, or Extreme Impacts from a Winter Weather Event

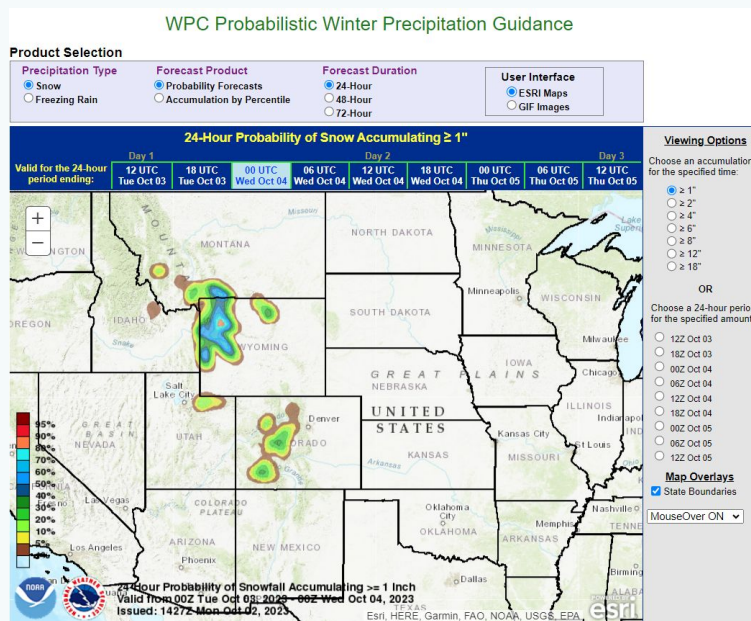


Questions so far related to....?

Program Vision
Key Messages
Winter Weather Outlook
Winter Storm Outlook
Watch/Warning Criteria
Winter Storm Severity Index
Probabilistic Winter Storm Severity Index

PROBABILITY OF WINTER PRECIPITATION (PWPF)

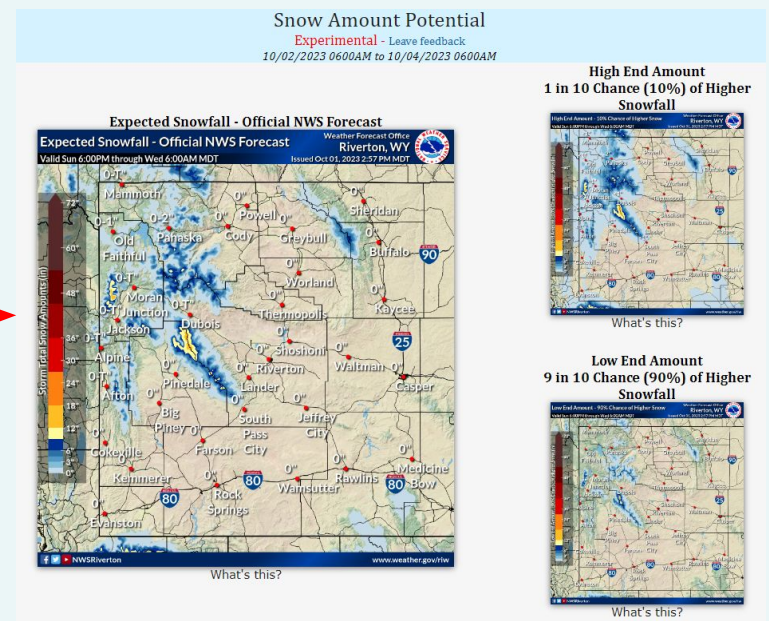
WPC National Product



61-member ensemble of forecast models
Expert starting point provided by WPC

https://www.wpc.ncep.noaa.gov/pwpf/wwd_accum_probs.php

WFO Local Product

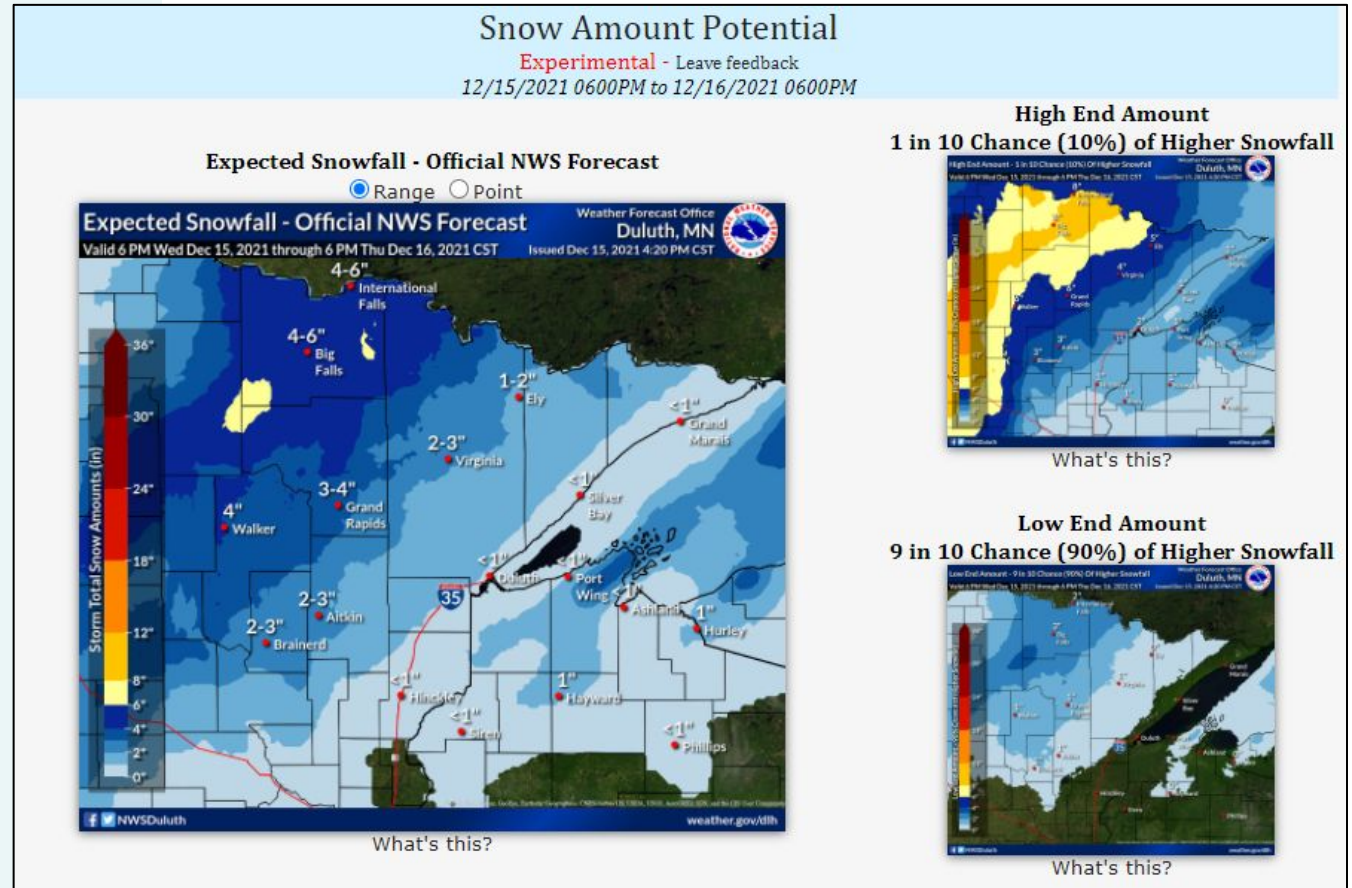


WFOs add local knowledge and create graphics

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

EXPERIMENTAL LOCAL PWWF

- **Goal:** Provide customers and partners a range of snowfall amounts to better communicate forecast uncertainty during winter weather events on a local level.
- Significant model diversity contributes to a range of possible outcomes (*check out our “[Understanding Uncertainty](#)” explainer later in this presentation!*).
 - Experimental 10th and 90th percentile graphics are available on the National Digital Forecast Database ([NDFD](#)).

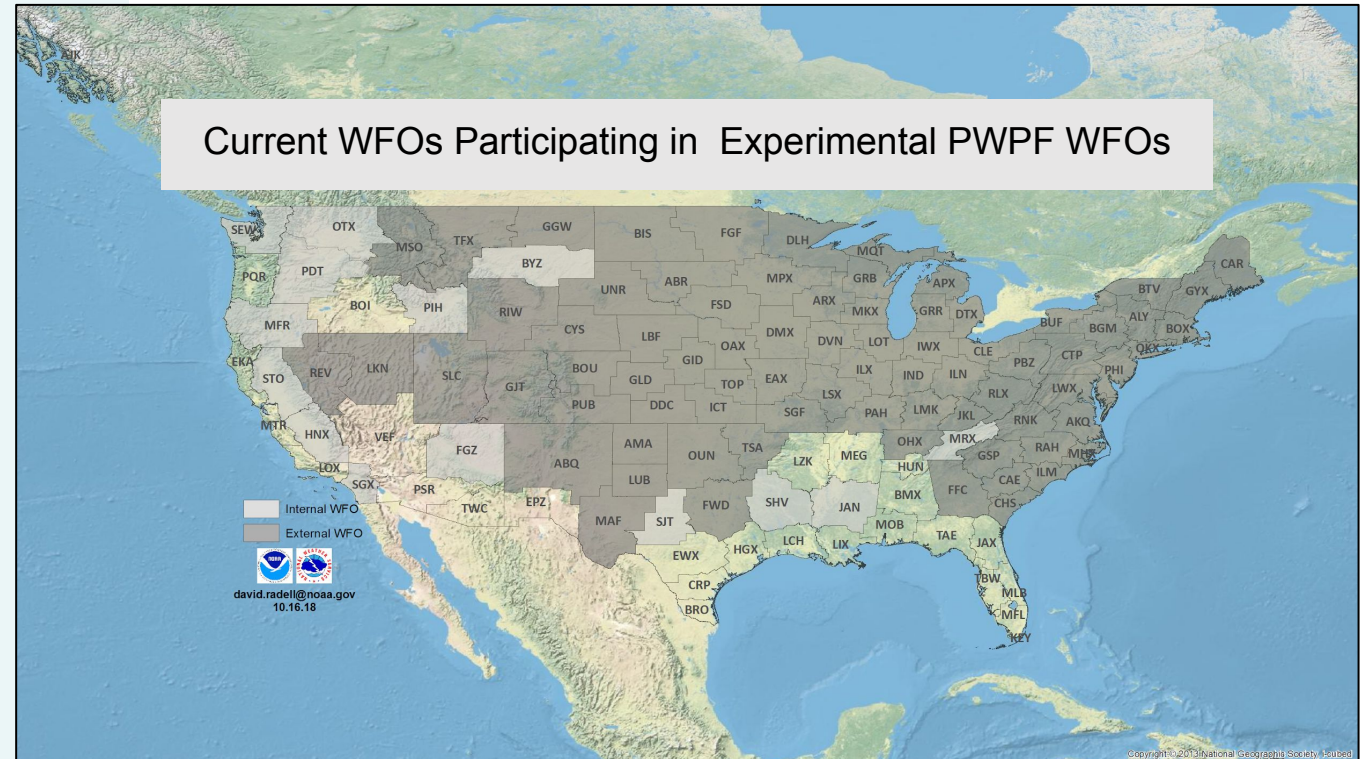


Local office Experimental PWWF page:
<https://www.weather.gov/btv/winter>



EXPERIMENTAL LOCAL PWPF

- Number of sites remains frozen as a centralized operational prototype is in development.
- We are internally developing, testing and evaluating the prototype this upcoming season for its ability to generate and disseminate these products.



Provide feedback:

https://www.surveymonkey.com/r/WinterWeatherProbabilisticExperiment_2023-2024



WFO Winter Web Pages for Easy Navigation


Current Hazards Current Conditions Radar Forecasts Rivers and Lakes Climate and Past Weather Local Programs


Local Winter Key Messages Probabilistic Snowfall Forecasts Ice Accumulation Forecasts


Winter Storm Outlook and Winter Storm Severity Index Snow and Ice Observations Medium/Long Range Forecast


Mountain Snow and Valley Rain/Snow Mix Return



Monday-Tuesday Morning

 Southwest Montana, Lemhi County, southern Idaho County

 Valleys: Rain on Monday → Rain/snow mix Monday night

 Mountains and Passes: Light snow accumulations

 Slick travel over passes Monday night- Tuesday morning



- 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

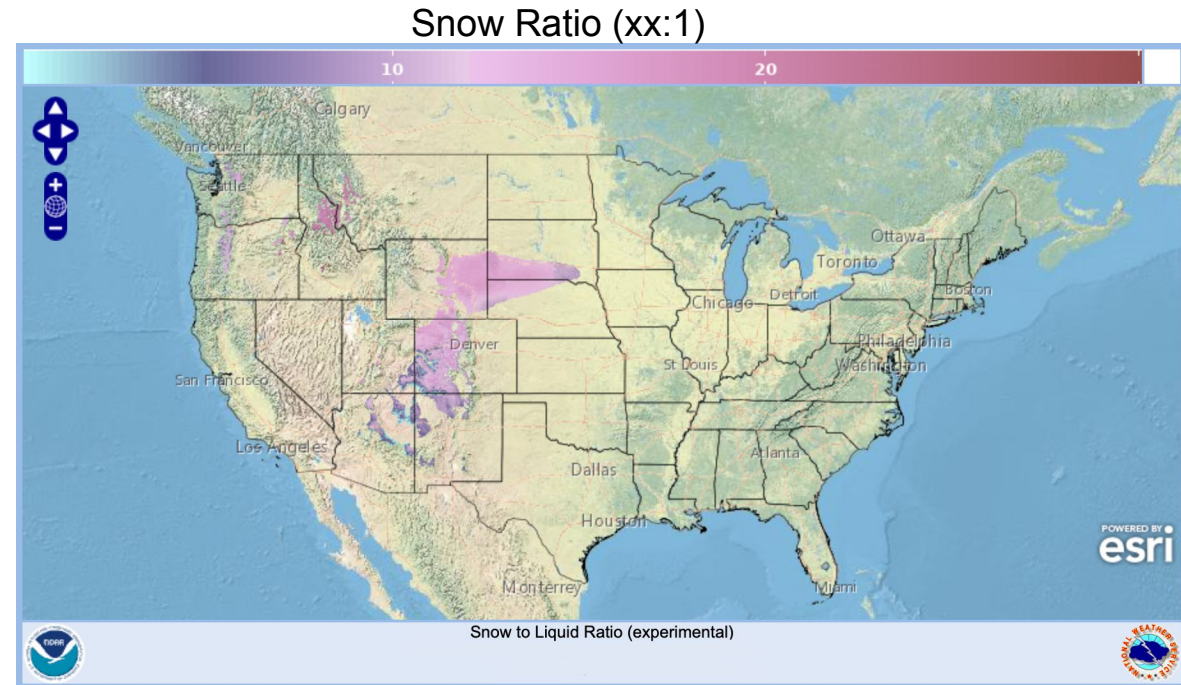


Experimental Snow Ratio Grid in National Digital Forecast Database (NDFD)

- The NWS creates a 6-hour QPF forecast grid and a Snow Amount forecast grid, therefore we use these to create a Snow Ratio Grid

$$\text{Snow Ratio} = \frac{\text{Snow Amount}}{\text{QPF}}$$

- Assists forecasters with distinguishing between heavy, wet snow and light, fluffy snow
- Enhances decision support messaging to emergency managers, key partners, and the public (see next slide).

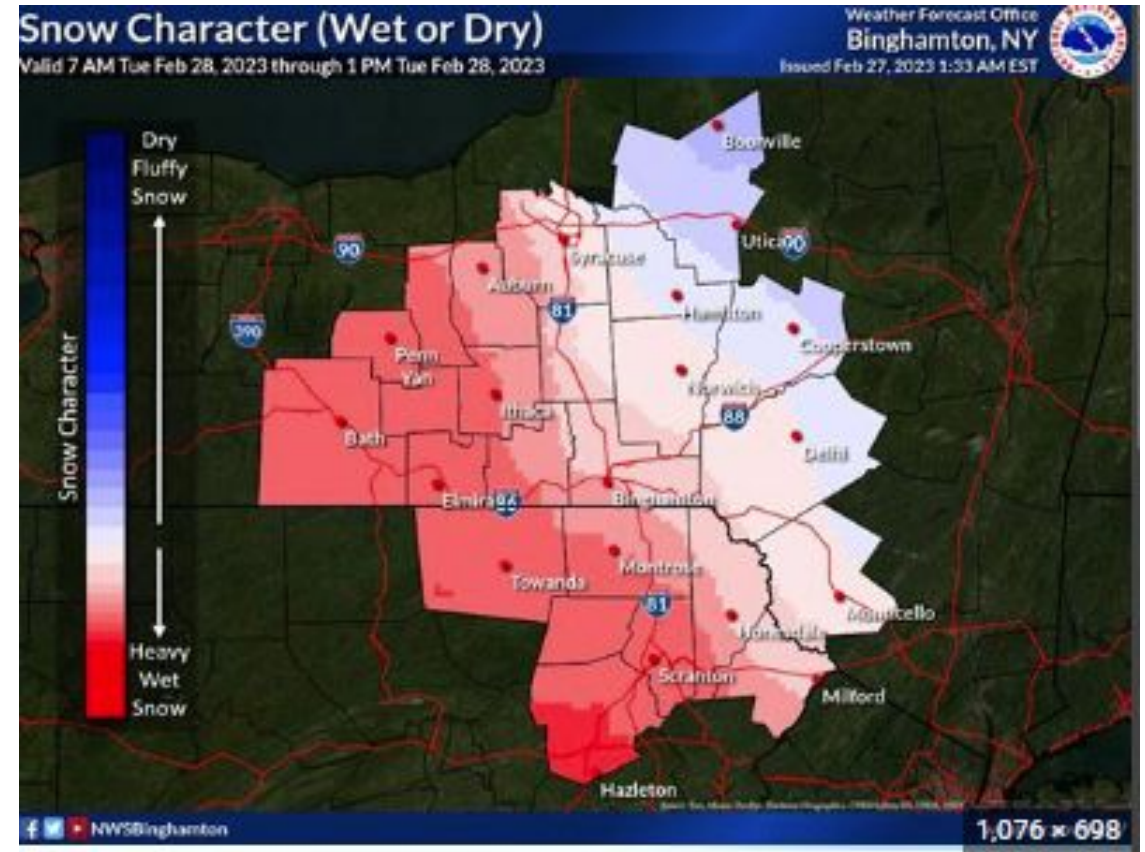


Example of Snow Ratio Grid from NDFD Viewer

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

NEW: Snow Character Map from WFOs

- Snow Ratios can be interpreted to glean useful information:
 - $< 10:1$ = a heavy, wet snow
 - $> 15:1$ = a dry, powdery snow
- This season, some WFOs will be creating “Snow Character” maps on their local Winter web pages under the “Other Snow/Ice Information” tab.
- By using snow ratio as a basis, a wet vs. dry snow map can be created for a winter weather event. In this example:
 - Southern areas can expect a “heavier, wet snow”
 - Northern areas can expect a “drier, fluffier snow.”
- Heavier snows are more difficult to shovel or plow, while drier snows are more easily blown by wind and can cause reduced visibility.



Example of Snow Character Map from WFO Binghamton, NY

Flat vs. Radial Ice



- Ice accretion from freezing rain can be measured two different ways:
 - “Flat ice” is ice measured on an elevated flat surface, such as on a table or plank
 - “Radial ice” is ice measured on a round surface, such as on a tree branch or dowel
- NWS currently forecasts only elevated flat ice, but is investigating the possibility of modifying that policy in the future
- We’d like to ask a few poll questions to this group to assist this effort

Ice accretion examples of both flat ice (top) and radial ice (right). Photos courtesy of CoCoRaHS.

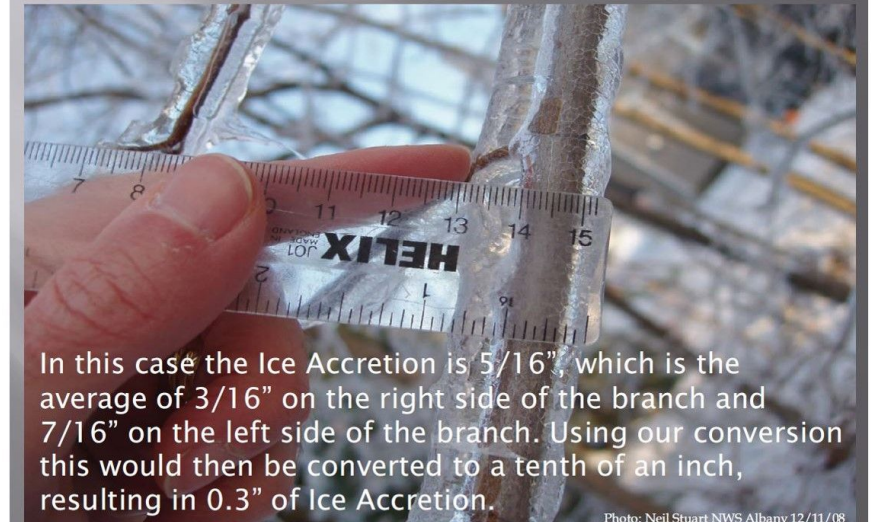
ICE ACCRETION EXAMPLES



In this case the Ice Accretion measured from the top of the metal post is 0.5”.

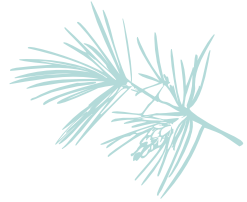
Photo: Neil Stuart NWS Albany 1/15/07

ICE ACCRETION EXAMPLES



In this case the Ice Accretion is $\frac{5}{16}$ ”, which is the average of $\frac{3}{16}$ ” on the right side of the branch and $\frac{7}{16}$ ” on the left side of the branch. Using our conversion this would then be converted to a tenth of an inch, resulting in 0.3” of Ice Accretion.

Photo: Neil Stuart NWS Albany 12/11/08



Freezing Rain Ice Accretion Poll Questions

Poll Question #1

Based on your needs, which type of ice measurement or forecast (flat or radial) would help you most with your decision making?

- a) Flat ice (such as on a table)
- b) Radial ice (such as around a tree branch)
- c) Both
- d) I'm not sure



Poll Question #2

What amount of ice prompts you to initiate a decision or action?

- a) Trace (light glaze)
- b) 0.1 inches
- c) 0.25 inches
- d) 0.5 inches or greater
- e) Ice amounts do not affect my decision making



Poll Question #3

Which is most important for your decision making: ice accumulation amounts, or the anticipated impacts?

- a) Only ice amounts are important
- b) Only the impacts are important
- c) Both are equally important
- d) Ice amounts are more important, but I need to know both
- e) Ice impacts are more important, but I need to know both



Impact-Based Warning 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.

```
...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
$$
```

What This Means

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

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



Impact-Based Warning 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

Implementation began last winter at a select group of WFOs, with national implementation for this winter.

For more information, see the fact sheet:

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

Snow Squall Warning

Valid Until
1:45 PM MST Wednesday
February 22, 2023

Threat Information

Hazard
White out conditions in heavy blowing snow

Impact
Dangerous life-threatening travel

Potential Exposure

Population: 11,027
Highways: US-34
US-40

This is a life threatening situation! Delay or avoid travel!

Grand Lake
Granby
Tabernash
Fraser
Winter Park

WY NE CO

NWS Boulder

Updated Local Storm Reports

What is a Local Storm Report (LSR):

- NWS-generated report of weather phenomenon or weather-related damage
- Often relays information from Trained Skywarn Spotters, Emergency Management Officials, Broadcast Media, or other trusted sources
- Used to keep partners & the public informed as an event is ongoing & for post-event verification

Winter LSRs:

Measurements -

Snow, Freezing Rain, Sleet

Impacts -

Snow/Ice Damage*, Blizzard, Snow Squall*, Avalanche

** indicates new for this season*

0253 PM 02/27/2022	Snow Squall	Plattsburgh Intl Arpt Clinton	44.65N NY	73.47W ASOS
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Heavy snow with one quarter mile visibility and winds gusting to 32 knots.

0700 AM 04/19/2022	Snow M6.5 inch	Saranac Clinton	44.64N NY	73.74W CoCoRaHS
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24-hour snowfall.



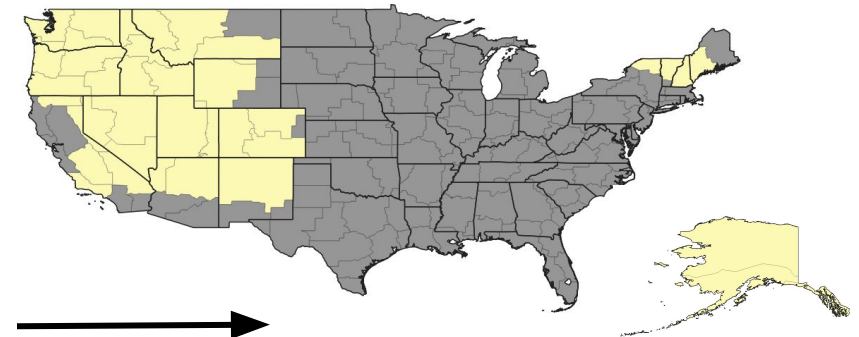
AVALANCHE WEATHER INITIATIVE

Avalanche Weather Guidance

- Provides partners & public with forecast weather parameters critical to prediction of avalanche conditions, risk, mitigation, & recovery.
- Forecast Elements may include: temperature, weather, probability of precipitation, snowfall, liquid or snow-water equivalent, ice accumulation, snow level, winds, & cloud cover.
- Optional:
 - Forecast Discussion
 - Long Term Extension to Day 7
 - Probabilistic Snowfall Forecasts.

...Mount St. Helens...

Date	Friday 09/23							Saturday 09/24				
Time (LT)	06	09	12	15	18	21	00	03	06	09	12	15
	6a	9a	12	3p	6p	9p	12	3a	6a	9a	12	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.

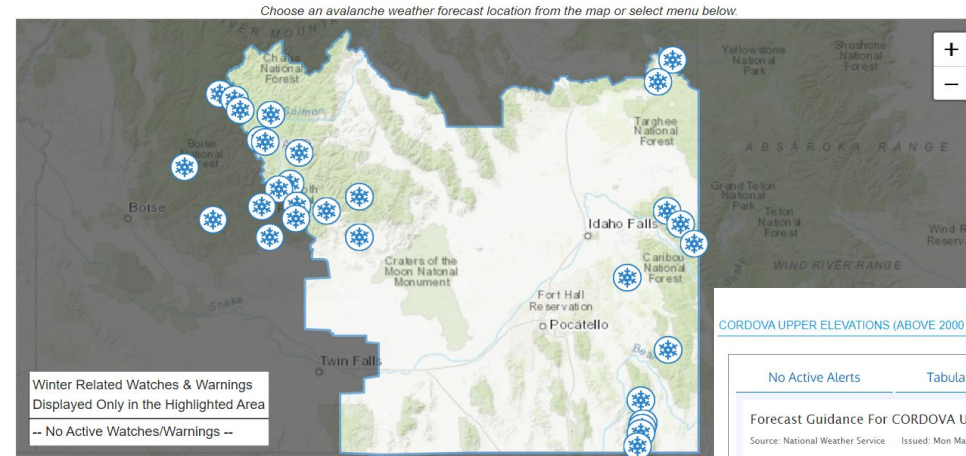
AVALANCHE WEATHER INITIATIVE

Experimental Avalanche Weather Web Pages

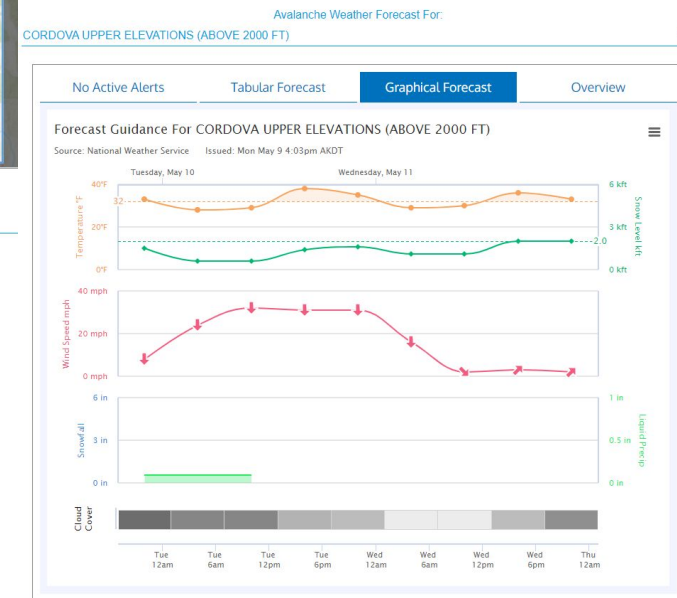
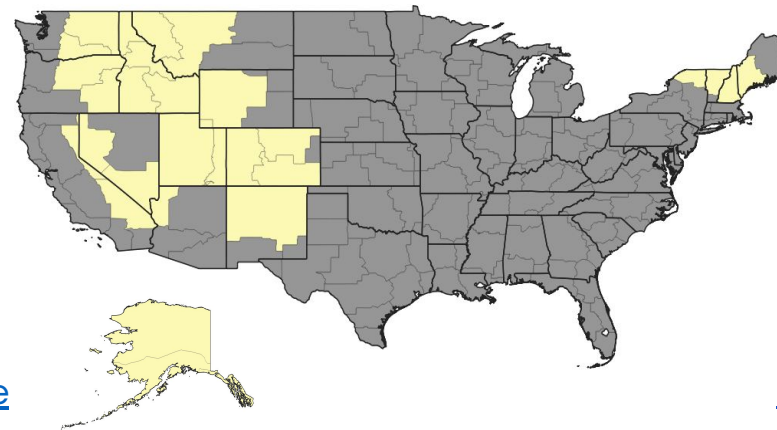
- Critical sources of information for partners & public to easily obtain avalanche weather products & information
- Includes: NWS weather alerts, avalanche center avalanche alerts, clickable points or polygons, relevant weather discussion, precipitation summary tables, a tabular & graphical forecast, & a local content section

Feedback:

https://www.surveymonkey.com/r/ExpStandardize_dWFOAvalancheWeatherWebpage_2023_2024



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



www.weather.gov/slc/AvalancheWeather



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





PROTECT YOURSELF FROM SNOW SQUALLS

 **If a Snow Squall Warning is issued, delay travel.**
If you're already driving, safely exit the road at the next opportunity.

If you cannot exit the road in time:

 **Slow down,**
but avoid slamming the brakes

 **Turn on your lights**
(low-beam headlights & hazards)

 **Pull over safely to the side of the road,**
and when safe, quickly exit your vehicle and move as far away from the road as possible



AVALANCHE Safety Tips

- **Get the Forecast** from your local avalanche center for current snowpack conditions
- **Get the Training:**
avalanche.org/avalanche-education
- **Get the Gear** and learn how to use it:
 - **Transceiver** to transmit general location under snow
 - **Probe** to pinpoint exact location under snow
 - **Shovel** to dig out your partner
 - **Airbag Pack** to increase your chances of staying near the surface of an avalanche



Updated Outreach Materials

Protect People, Pets, Pipes, & Plants from cold weather



People

Minimize time outdoors.
Prepare for power outages.
Check on elderly & other vulnerable people to make sure they're ok.



Pets

Keep your pets warm, dry & indoors as much as possible.
Ensure their food & water doesn't freeze.
Limit outside time & keep them bundled up.



Pipes

Insulate pipes if possible.
Open up sink cabinets to expose pipes to heated air.
Disconnect hoses & turn off water to sprinklers.

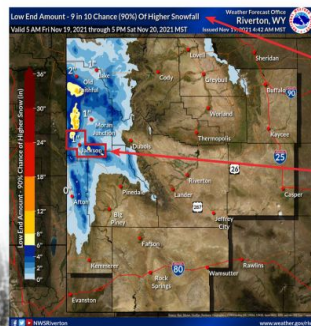


Plants

Know their temperature thresholds.
If possible, cover them before the cold weather sets in to help retain some heat.

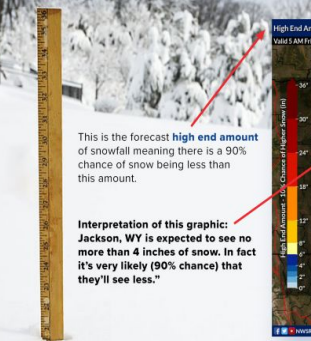


Expected Snowfall and Percentile Graphics (continued)



This is the forecast low end amount of snowfall, meaning there is a 90% chance of snow being GREATER than this amount.

Interpretation of this graphic: Jackson, WY is expected to see at least 1 inch of snow. In fact it's very likely (90% chance) that they'll see even more.



This is the forecast high end amount of snowfall meaning there is a 90% chance of snow being less than this amount.

Interpretation of this graphic: Jackson, WY is expected to see no more than 4 inches of snow. In fact it's very likely (90% chance) that they'll see less."

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 (top of page)
- **Coming Soon: Probabilistic WSSI & Modernized Criteria**



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.

weather.gov 

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

THANK YOU

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LINKS:

WPC PWPf page:

https://www.wpc.ncep.noaa.gov/pwpf/wwd_accum_probs.php

Local office Experimental PWPf page:

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

Operational WSSI:

www.weather.gov/wssi

WSSI-P:

https://www.wpc.ncep.noaa.gov/wwd/wssi/prob_wssi.php

Experimental WSO:

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



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 Weather-Ready Nation 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".