



National Weather Service

Update on Winter Weather Initiatives



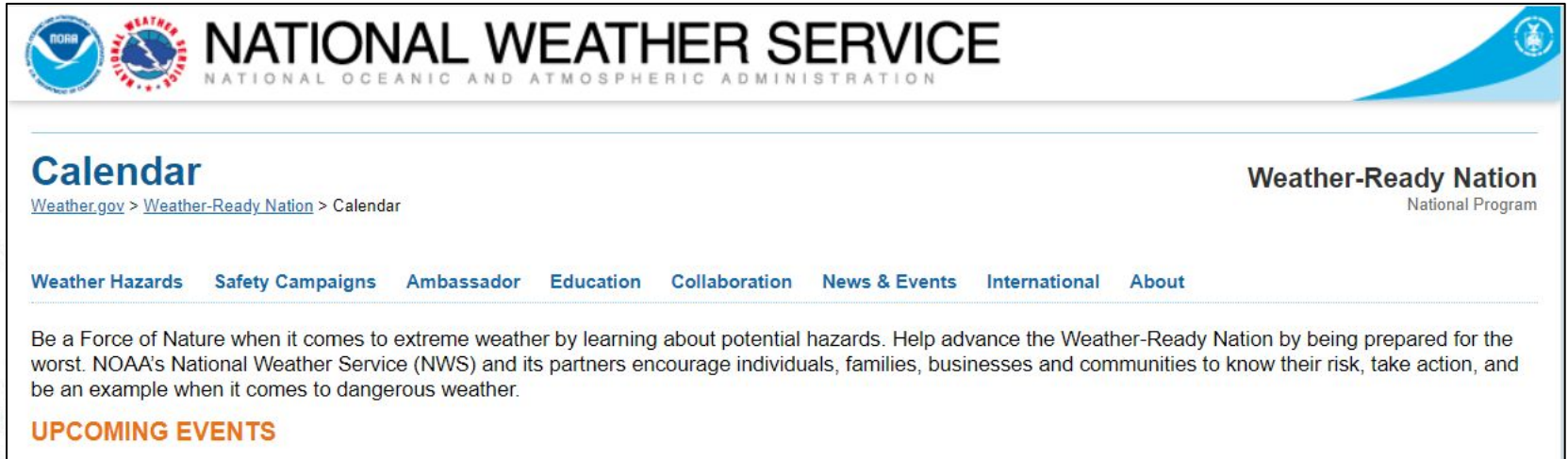
October 17, 2024

Eric Guillot, Winter Weather Program Manager, NWS Headquarters
Michael Muccilli, Winter Weather Program Coordinator, NWS Headquarters
Jon Gottschalck, Operational Prediction Branch Chief, Climate Prediction Center
Anthony Fracasso, Winter Weather Desk Lead, Weather Prediction Center



Presentation Will Be Available!

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

A screenshot of the National Weather Service website's "Weather-Ready Nation" calendar page. The page features the NOAA and National Weather Service logos at the top left, followed by the text "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 main heading 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".

NATIONAL WEATHER SERVICE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

Calendar

[Weather.gov](#) > [Weather-Ready Nation](#) > Calendar

Weather-Ready Nation
National Program

[Weather Hazards](#) [Safety Campaigns](#) [Ambassador](#) [Education](#) [Collaboration](#) [News & Events](#) [International](#) [About](#)

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.

UPCOMING EVENTS



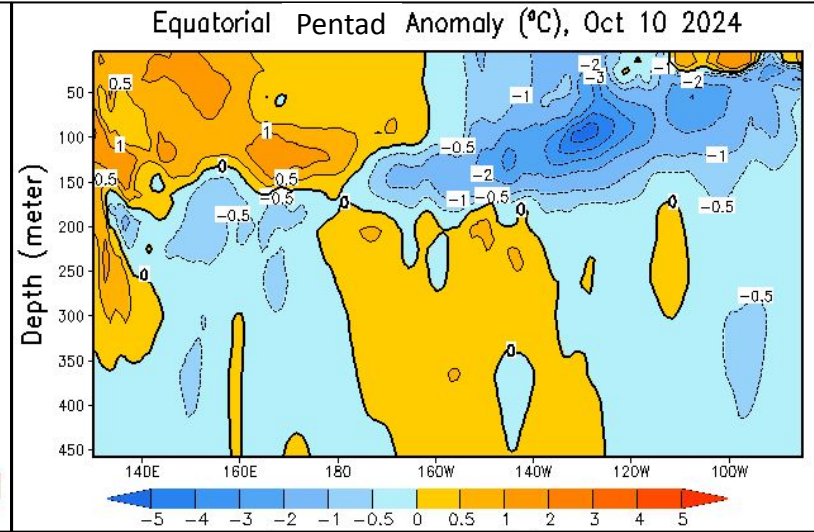
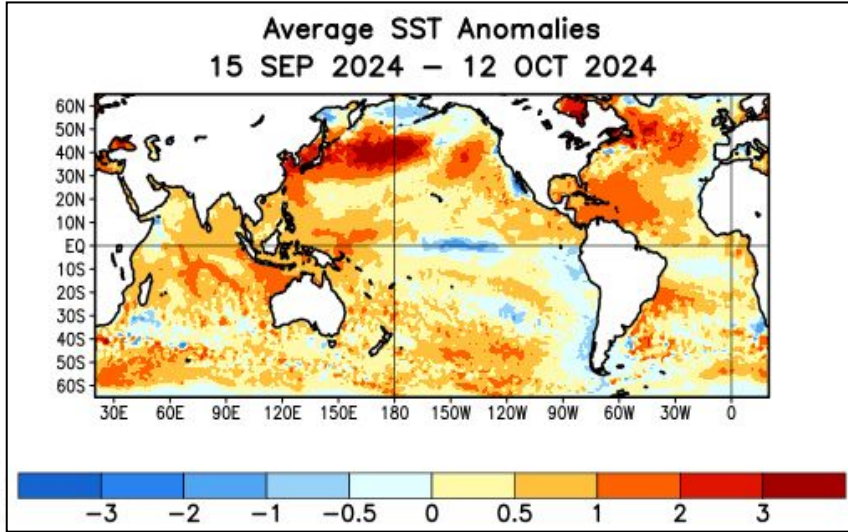
Webinar Outline



- Winter Season Outlook
- Winter Program Overview
- Winter Key Messages
- Winter Weather Outlook
- Experimental Winter Storm Outlook
- Winter Storm Severity Index
- Probabilistic Precipitation Portal
- Probabilistic Snow Products
- Snow Character Maps / Snow Ratio Grids
- Winter Hazard Products
- Snow Squall Warnings
- Exploring Enhanced-Language for High-End Storms
 - Poll Questions
- Updates on Avalanche Weather Initiative
- Wind Chill to Extreme Cold
- Updated Outreach Materials and Initiatives



Climate Conditions – Pacific Ocean



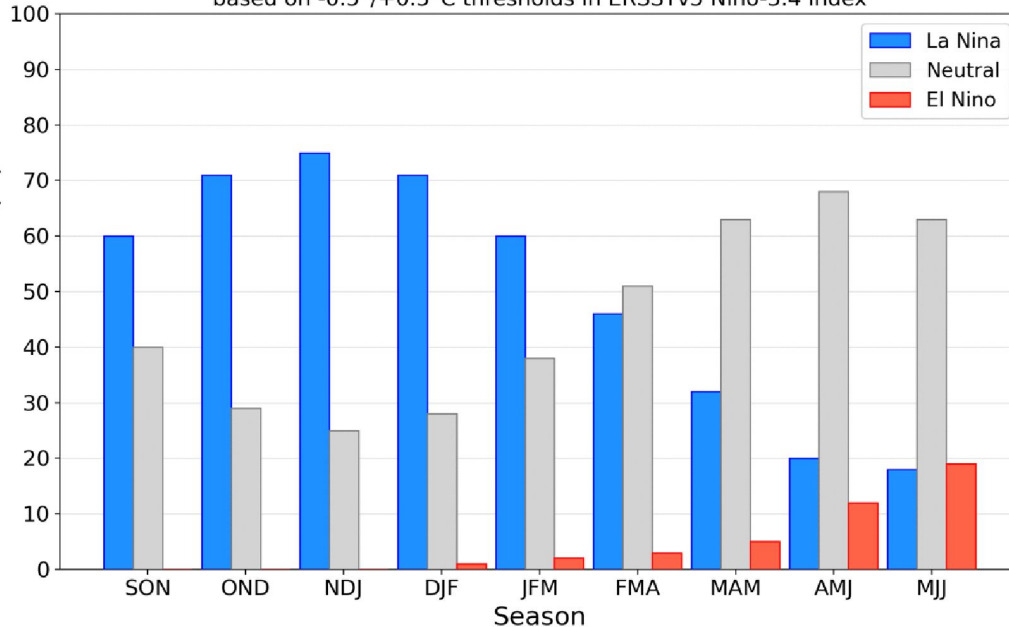
ENSO Alert System Status: **La Nina Watch**

- ✓ ENSO-neutral conditions are present based on the latest ocean and atmosphere (not shown) conditions
- ✓ Equatorial Pacific sea surface temperatures (SSTs) small region of below-normal SSTs in east central Pacific (left)
- ✓ Oceanic heat content (right) indicates a reservoir of cooler than normal ocean temperatures (blue shades) below the surface across much of the Pacific ocean

ENSO Outlook

Official NOAA CPC ENSO Probabilities (issued October 2024)

based on $-0.5^{\circ}/+0.5^{\circ}\text{C}$ thresholds in ERSSTv5 Niño-3.4 index

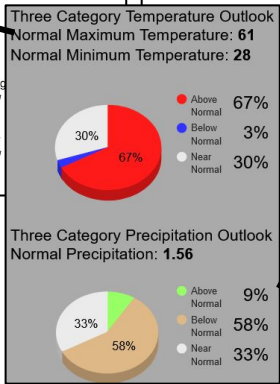
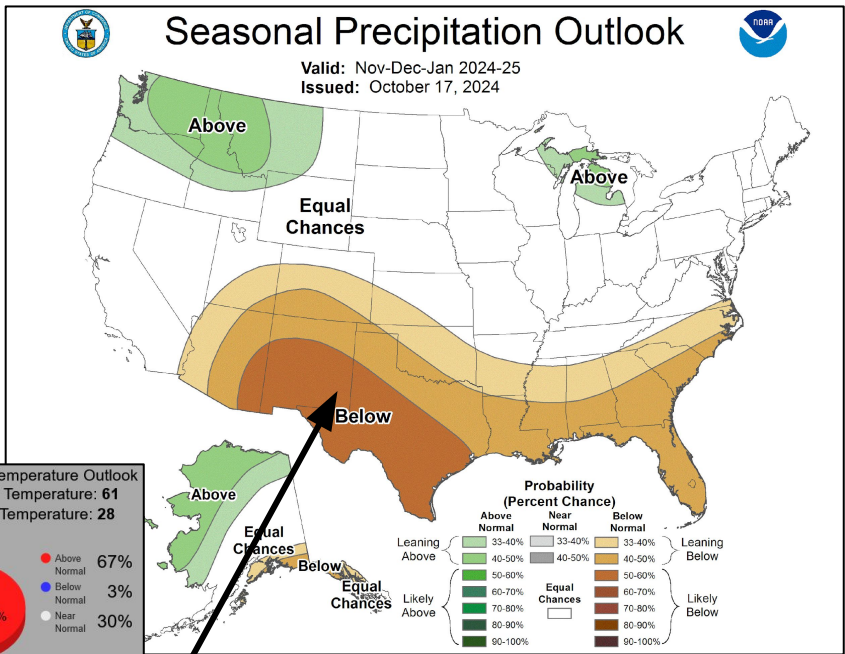
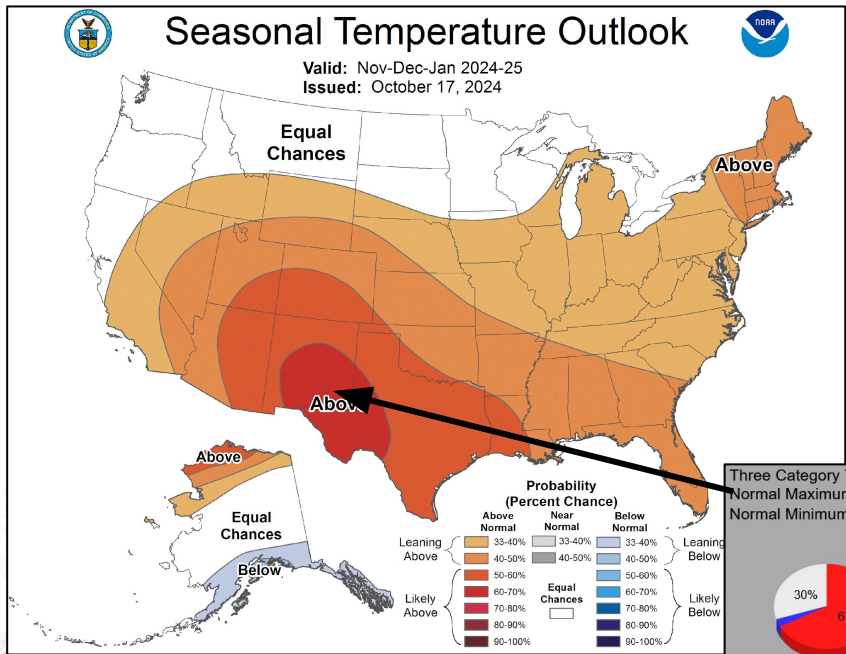


✓ ENSO Alert System Status:

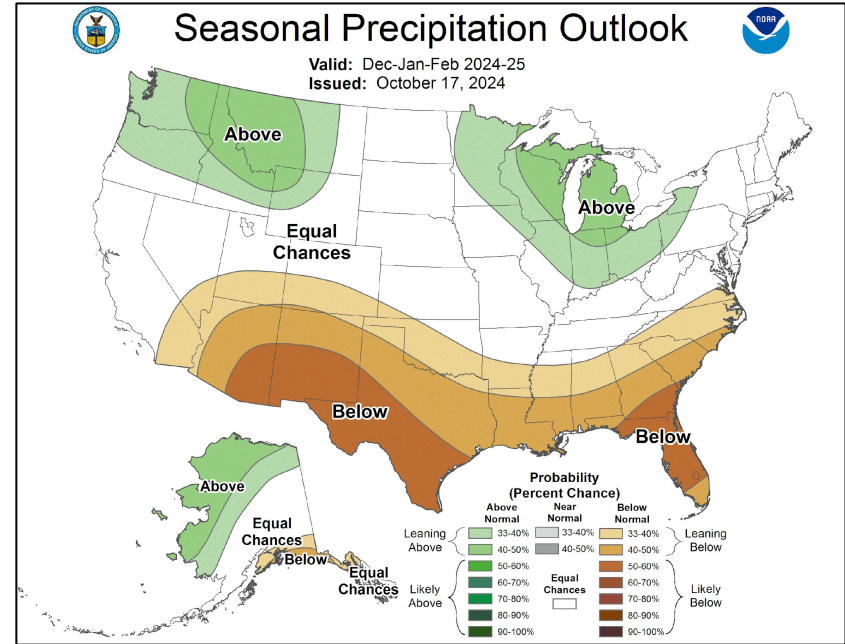
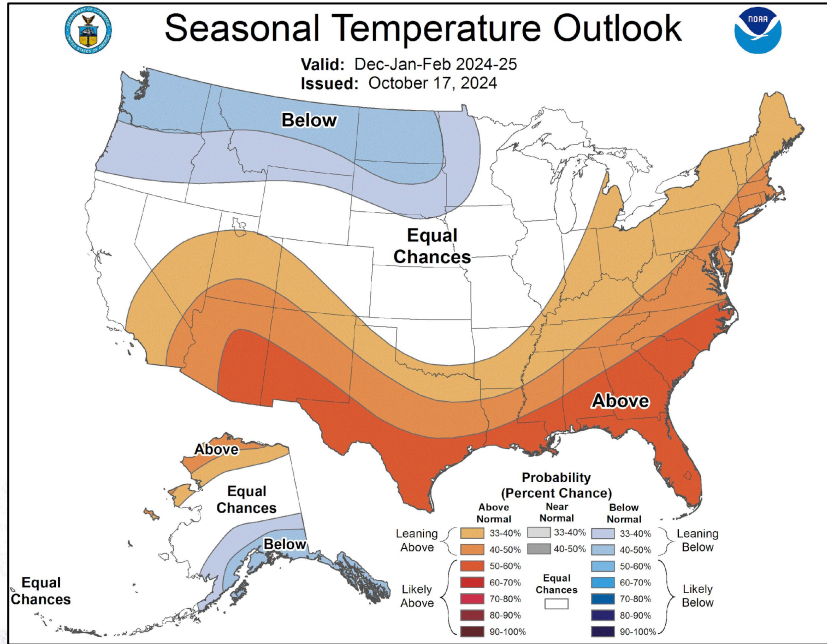
La Nina Watch

- ✓ La Nina is favored to continue develop (60%) during the Sep-Oct-Nov season (blue bars).
- ✓ The odds favor a weak, short duration La Nina event with ENSO neutral (gray bars) the most likely category by the Feb-Mar-Apr season.

Nov-Dec-Jan T/P Outlooks



Dec-Jan-Feb T/P Outlooks



To be updated at 8:30 AM November 21, 2024

https://www.cpc.ncep.noaa.gov/products/predictions/long_range/

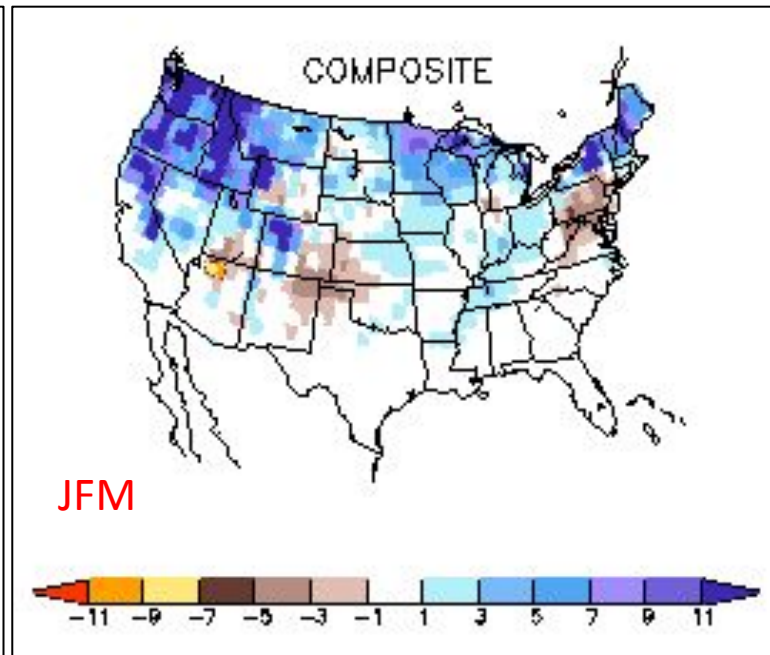
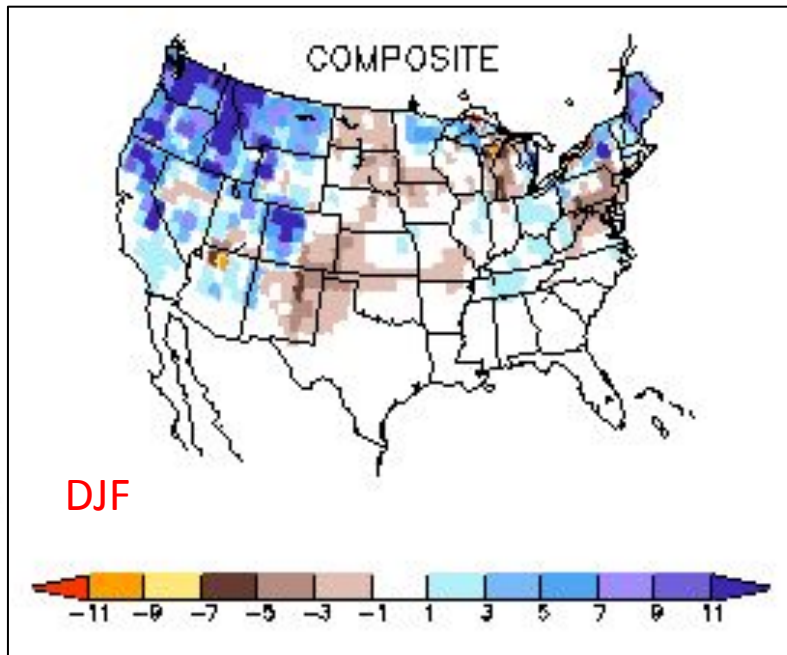


Factors Influencing the NOAA Winter Outlook



- ✓ Expectations of La Nina conditions during the winter months.
 - ✓ ENSO-neutral, weak La Nina and combined winter season composites
 - ✓ Statistical forecast tools linked to past, current and future values of Nino3.4 region
- ✓ Both positive and negative long-term temperature trends
- ✓ Dynamical model guidance from the NMME and C3S ensemble prediction suites (bias correction and calibrated)
- ✓ Statistical, hybrid forecast tools linked to climate predictors such as ENSO and sub-global relationships between key variables such as SLP, upper-level heights, SST and temperature
- ✓ Coastal SSTs and soil moisture conditions in some instances

La Nina Potential Typical Impacts - Snowfall

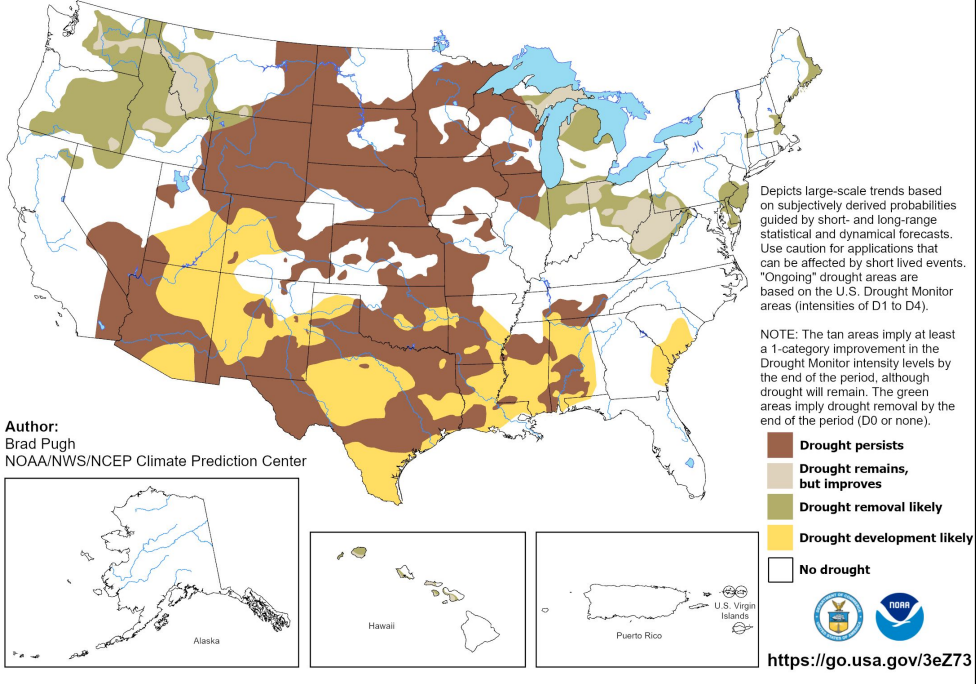


- ✓ Dec-Jan-Feb (DJF) seasonal snowfall departures from normal for La Nina events (left)
- ✓ Jan-Feb-Mar (JFM) seasonal snowfall departures from normal for La Nina events (right)

Nov-Dec-Jan Drought Outlook

U.S. Seasonal Drought Outlook Drought Tendency During the Valid Period

Valid for October 17, 2024 - January 31, 2025
Released October 17, 2024



- ✓ Anticipated conditions at the end of January 2025
- ✓ Areas of improvement or removal are forecast for parts of the Pacific Northwest and northern Rockies and Ohio Valley
- ✓ Drought development is forecast for many areas along the southern tier of the U.S.

https://www.cpc.ncep.noaa.gov/products/expert_assessment/season_drought.png

To be updated at 8:30 AM ET November 21, 2024



Take Home Messages



- ✓ Most likely a weak, short duration La Nina event for the winter 2024-2025. The coverage and degree of typical La Nina impacts is highly uncertain.
- ✓ High variability and frequent subseasonal changes likely this winter as compared to more persistent and consistent changes within the winter months.
- ✓ Above-normal temperatures are favored for the southern tier of the U.S., the eastern seaboard, north Alaska with colder than normal conditions most likely from the Pacific Northwest eastward to the northern Plains and for southern Alaska.
- ✓ Drier-than-normal conditions are favored across the southern tier of the U.S. with an enhanced likelihood of drought development by the end of the winter months.



The NWS National Winter Program

- The Winter Program is responsible for **policy** related to NWS winter products and services provided by both Weather Forecast Offices (WFOs) and National Centers.
- The Winter Program works to improve winter products and services through the **evaluation of new experimental products** , **collaboration initiatives** , **working with other NWS Headquarters Portfolios** , and by **leading teams** to address current issues with NWS winter products, services, and policy.

Winter Program Vision Statement

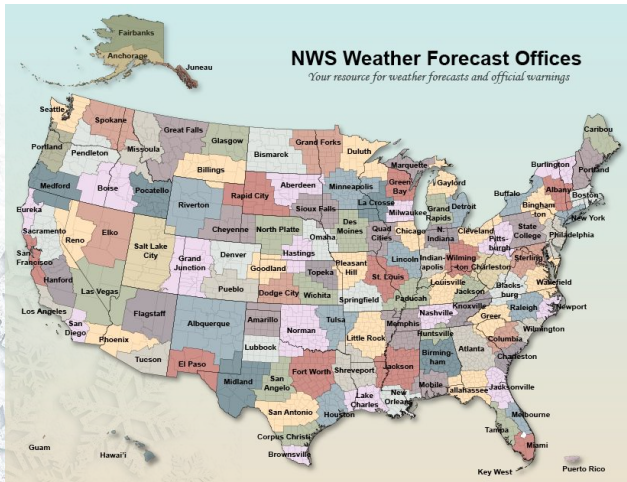
The delivery of winter forecast services that are collaborative, probabilistic, and impact-based.



How Does NWS Forecast Winter Weather?

Weather Forecast Offices (WFOs)

- There are 122 WFOs at the NWS
- Geographically distributed to provide local forecast information to the public and decision support briefings to local partners
- WFOs issue ALL winter-related Advisories, Watches, and Warnings



Weather Prediction Center (WPC)

- WPC is the primary National Center for winter weather - located in College Park, MD
- Focused on the winter weather “big picture”
- Works closely with WFOs for consistent message
- WPC specializes in longer-term (days) winter outlook and impact information



The Winter Probabilistic Data "Story"

The era of objective and probabilistic winter hazard information has arrived!

Forecast Lead Time Prior to Winter Event

7 Days

1-3 Days

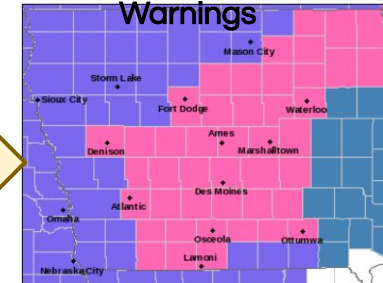
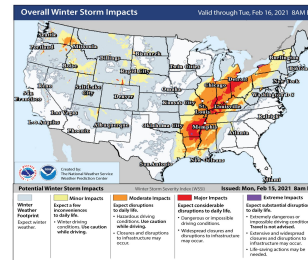
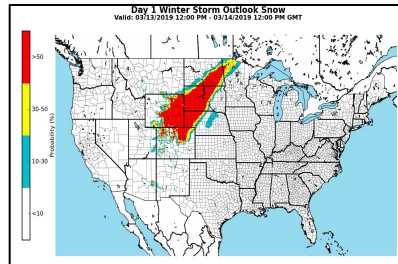
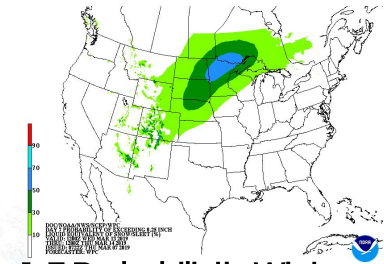
Hours

Day 4-7 Probabilistic Winter Weather Outlook &

Day 1-4 Probabilistic Winter Storm Outlook

Day 1-3 Winter Storm Severity Index

Winter Storm Watches / Winter Storm Warnings

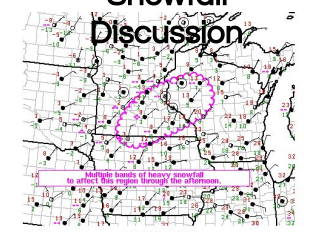
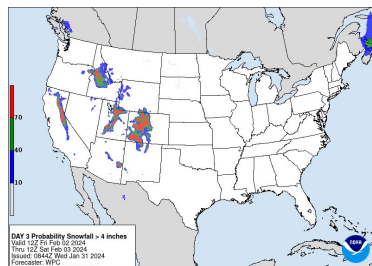
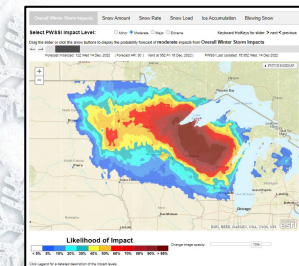


Informs

Day 1-7 Probabilistic Winter Storm Severity Index

Day 1-3 Probabilistic Snowfall

Mesoscale Snowfall Discussion



Winter Key Messages

- **Goal:** Galvanize partners and the media around a consistent, coordinated message
- Used for high-impact storms that are expected to cause travel disruptions or pose a hazard to life and property and/or are rare events
- Collaborated among WFOs & WPC and integrated for consistent messaging
- Available on WPC website and across Social Media platforms (if active)
- **No changes this year**

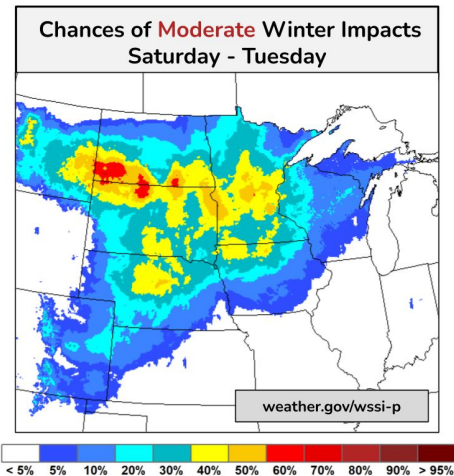


Key Messages for Northern Plains Winter Storm

Updated March 21, 2024
4:00 PM CDT

Increasing potential for heavy snow, mixed precipitation, and gusty winds Saturday - Tuesday

- **Impactful winter storm likely**
Confidence continues to increase that a large storm system will produce an area of heavy snow over the Northern Plains into the Upper Midwest along with some areas of mixed precipitation this weekend into early next week.
- **Widespread heavy snow possible**
Heavy snow is expected to overspread eastern Montana late Saturday, then expand into the Northern Plains and Upper Midwest by Sunday night. There is a high chance (>70%) of at least six inches of snow from the North Dakota/South Dakota border eastward into Minnesota and northern Wisconsin.
- **Significant impacts due to snow and wind**
A combination of heavy snow and gusty winds will likely produce areas of blowing and drifting snow along with low visibility. Travel may become hazardous late Saturday into Monday due to falling snow, with continued blowing snow into Tuesday.
- **Forecast changes anticipated**
Uncertainty remains with the timing and location of the storm track and precipitation type which will affect where the most significant impacts will occur. Keep up-to-date with the latest forecasts as the storm evolves.



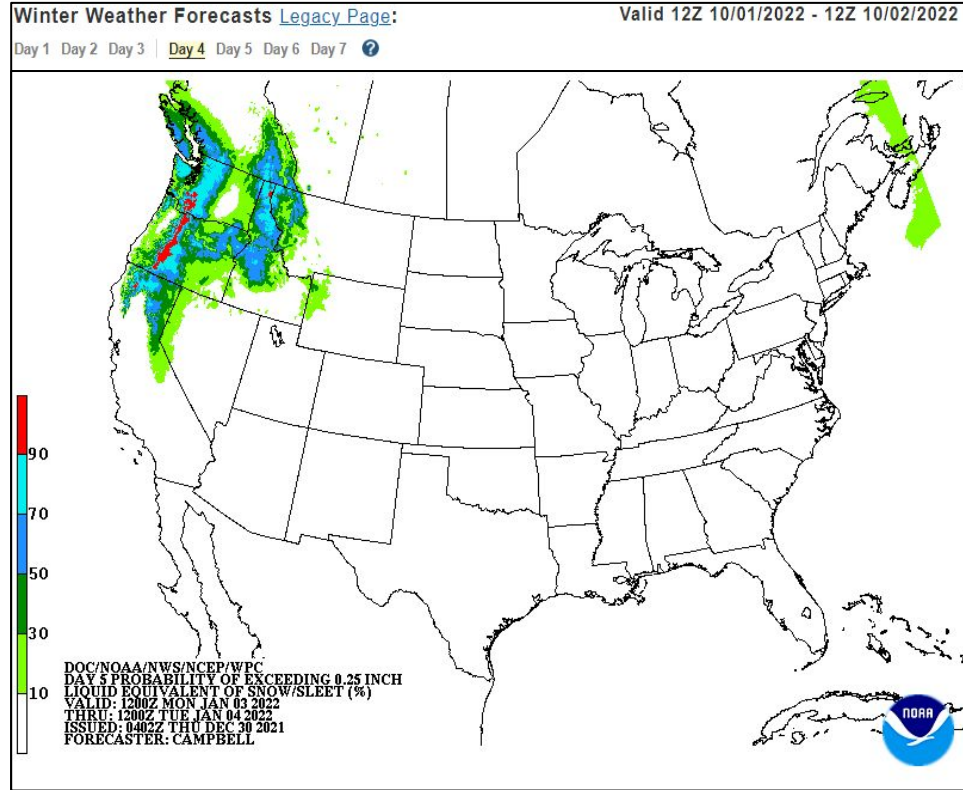
- Impacts include:**
- Hazardous driving conditions expected
 - Some disruptions and closures possible

Available here :

https://www.wpc.ncep.noaa.gov/key_messages/LatestKeyMessage_1.png
https://www.wpc.ncep.noaa.gov/key_messages/LatestKeyMessage_2.png

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 and 8 am Eastern Daylight Time)
- Four separate graphics produced twice daily showing the forecast for Days 4, 5, 6 and 7

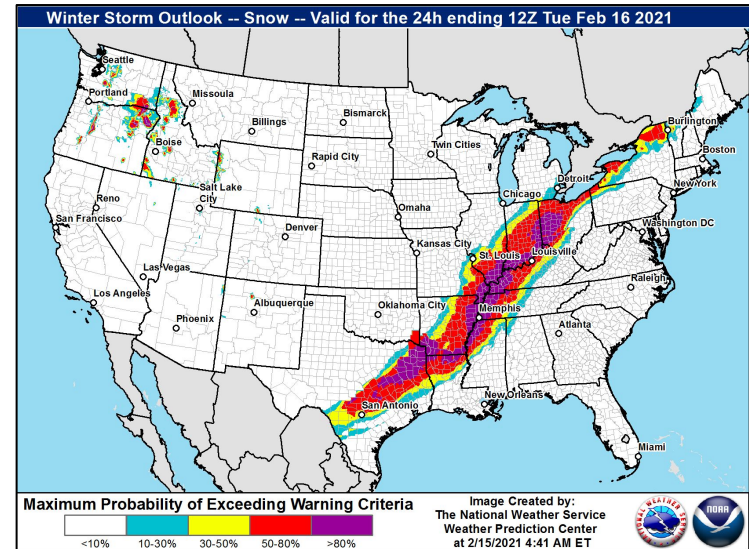


Winter Weather Outlook Page:

- **No changes this year** https://www.wpc.ncep.noaa.gov/wwd/pwpf_d47/pwpf_medr.php

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.
- 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.
- The WSO uses the event-based heavy snow watch/warning criteria as part of the evaluation (see: [weather.gov/snow-criteria](https://www.weather.gov/snow-criteria)).
- **2024 Update:** Social science focus groups have begun involving partners to determine future changes to this product, possibly incorporating WSSI-P output to create a true Days 1-7 Outlook.

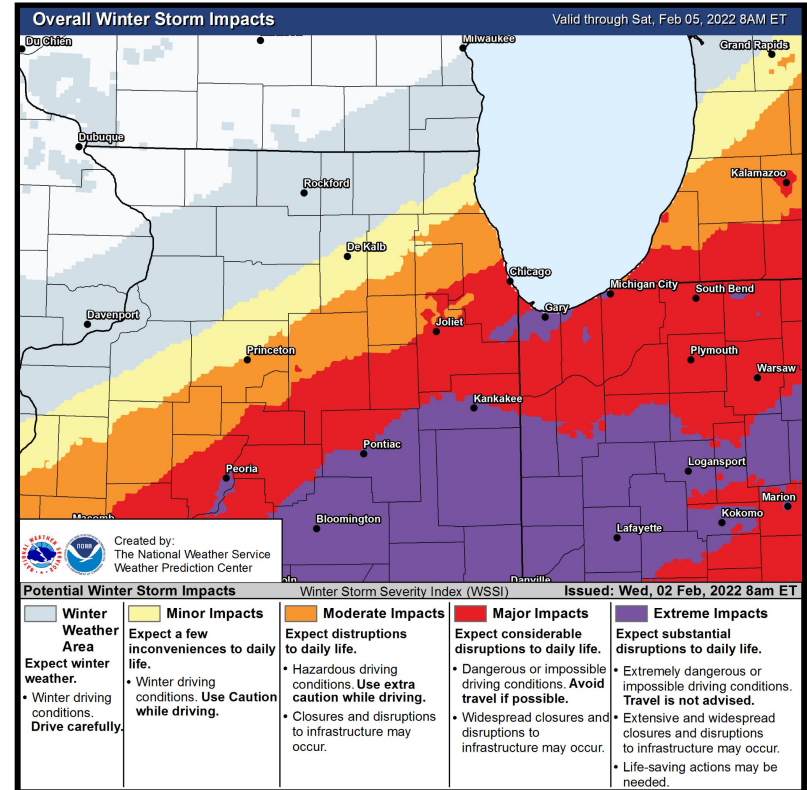


Available here :

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

Winter Storm Severity Index (WSSI)

- **Goal:** Forecast the **severity** of community impacts from winter storms throughout the contiguous United States, including tree damage, property damage, transportation impacts, and disruptions to daily life
- The WSSI provides output for Days 1-3 (and also in 24 hour intervals)
- The WSSI is updated every two hours and incorporates the local snowfall forecast into its output
- The summary graphic is a composite of the maximum impact from any of the six components
- **No changes this year**, the 2023 update included:
 - Introduction of an ice climatology
 - Ice accumulation improvements
 - Updated ice and wind impact methodology
 - Impact-level threshold changes
 - Introduction of a snow load climatology
 - Flash Freeze & Ground Blizzard extended to 72 hours



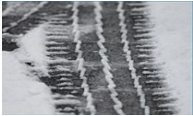
Available here: www.weather.gov/wssi

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



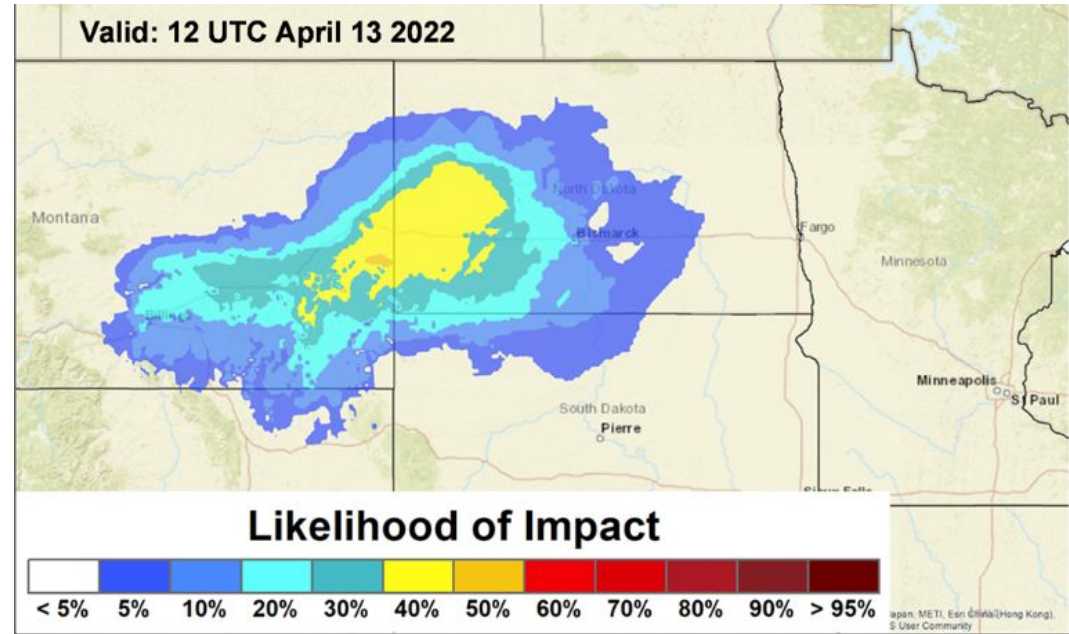
Snow Amount

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

Potential Winter Storm Impacts	
	Winter Weather Area Expect Winter Weather. <ul style="list-style-type: none"> Winter driving conditions. Drive carefully.
	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.

Impact definitions

- **Goal:** Forecast the *probability* of reaching community impact from winter storms throughout the continental United States using the WSSI impact thresholds
- Produces five different levels of impact probabilities for Snow Amount, Snow Rate, Snow Load (heaviness), Ice Accumulation, and Blowing Snow
- The WSSI-P provides output for Days 1-7 in six hour intervals and is updated four times a day.
- **No changes this year, became Operational in December 2023**

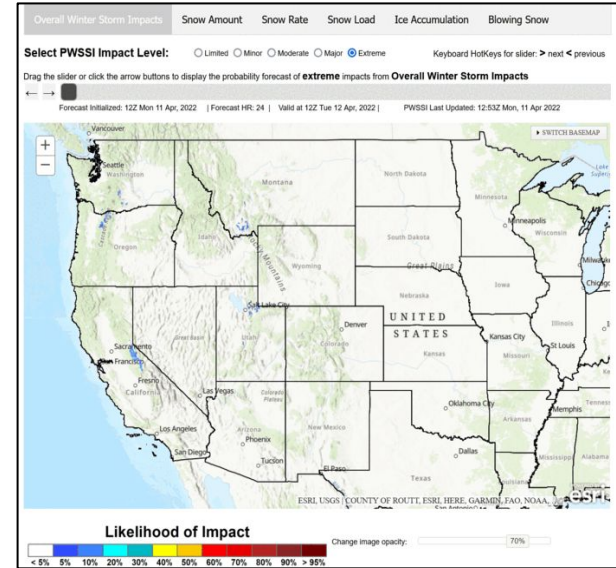
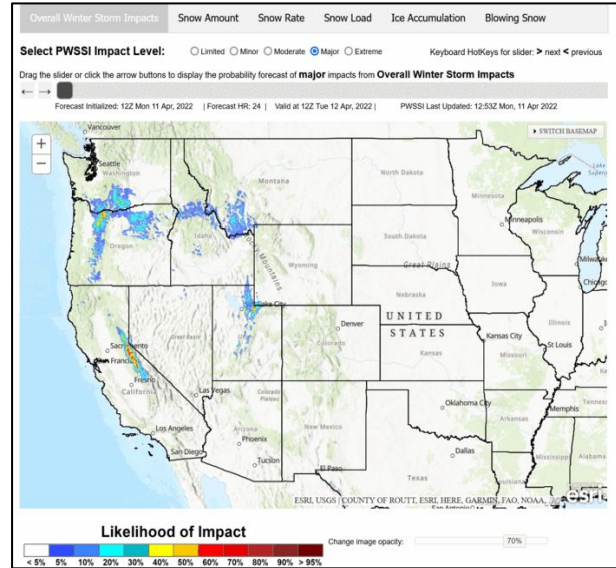
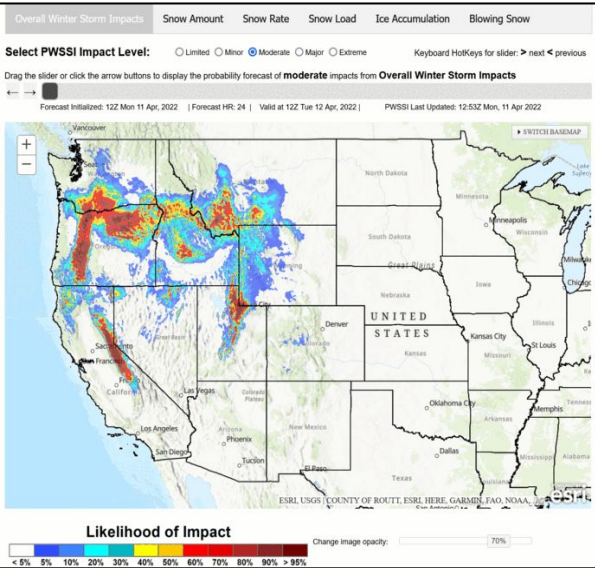


High Probabilities of Minor provide an envelope of expected impacts

Available here :

<https://www.weather.gov/wssi-p>

Example of WSSI-P Impact Probabilities for a Winter Storm



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

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

IDSS = Putting It All Together

Conveying Potential Impacts for a Heavy Snow Event: December 9-11, 2021

Key Messages for Dec 9-11 Winter Storm

Updated December 10, 2021 2:30 PM CST

Significant snowfall and impacts from the Rockies through the Upper Midwest and Great Lakes

- Significant winter storm will continue**
A strong low pressure system will track across the Central Plains today to the Upper Midwest and Great Lakes tonight into Saturday.
- Heavy snow will expand into the Upper Midwest and Great Lakes through Saturday morning**
Total accumulations of 8-14 inches of snow with locally higher amounts are expected from southeastern SD through the Upper Midwest and into the U.P. of Michigan.
- Widespread impacts to travel and infrastructure**
All forms of travel will become dangerous as heavy snow rates reaching 2"/hr and strong winds create near whiteout conditions at times. The heavy and wet snow may produce scattered power outages.

Additional Snowfall Forecast

National Oceanic and Atmospheric Administration
For more information go to: www.wpc.ncep.noaa.gov and www.weather.gov

NWS Twin Cities

@NWSTwinCities

Here's the latest Winter Storm Severity Index. Major impacts from falling snow are expected across southern MN into central WI late Fri morning into Fri night. If you have flexible travel plans, it would be best to move them to early Fri or wait until Sat. #mnwx #wiwx

2:04 PM - Dec 9, 2021 - TweetDeck

mSP MSP Airport

@mspairport

With 11"+ of snow recorded at MSP, there have been more than 60 cancellations so far this morning.

Check here for the latest flight information before you head to #mspairport.

ow.ly/n5ZF50H8omo

9:30 AM - Dec 11, 2021

WSSI:
NWS forecasts + non-meteorological datasets (tree canopy, population density, etc) to convey potential IMPACTS such as tree damage, property damage, transportation impacts, and other disruptions to daily life

Potential Winter Storm Impacts

No Impacts	Moderate Impacts
Limited Impacts	Major Impacts
Minor Impacts	Extreme Impacts

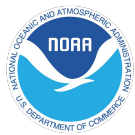
FOX 9

Live COVID-19 News Weather Sports Contests

300+ crashes, including semi pileup on I-35 in Faribault

The Minnesota State Patrol reported 321 crashes from 6 a.m. Friday to noon Saturday, 311 vehicles off the road and 21 jackknifed semis. Twenty-six of those crashes had injuries and one was fatal.

Interstate 35 near Faribault was blocked by crash involving multiple semis during the snowfall on Friday, Dec. 10, 2021. (MnDOT)



The Probabilistic Precipitation Portal

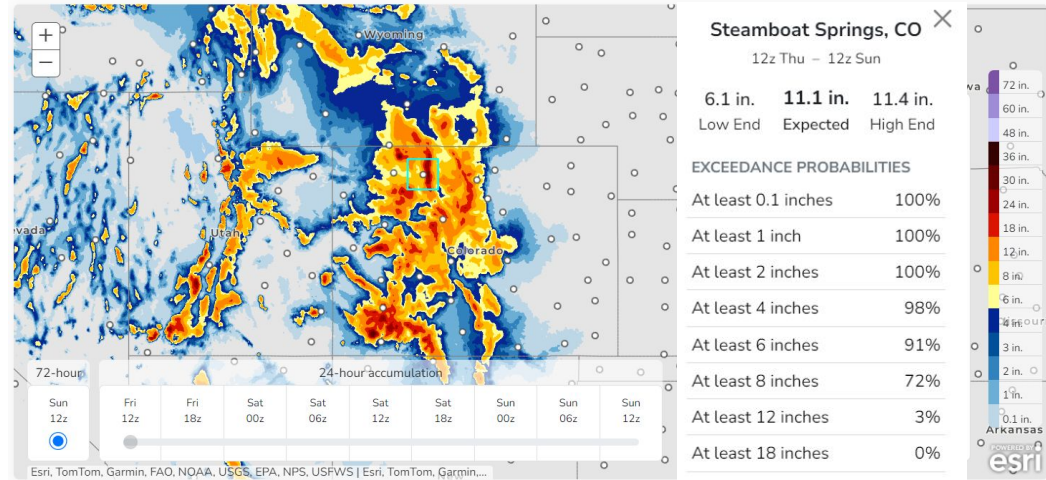


- **Goal:** A website to view probabilistic snow and liquid precipitation forecasts for the entire CONUS for the next 72 hours.
- Probabilities generated:
 - Expected Amount - the official forecast amount of snow
 - Low End Amount - 90% chance of receiving xx inches of snow
 - High End Amount - 10% chance of receiving xx inches snow
 - Exceedance Probabilities - chances of receiving at least 0.1, 1, 2, 4, 6, 8, 12, and 18 inches of snow
- **2024 Update:** The PPP is expected to reach Experimental status and become public-facing in November 2024

Expected Amount of Snowfall

72-hour accumulation: 12z Thu, Feb 1 to 12z Sun, Feb 4

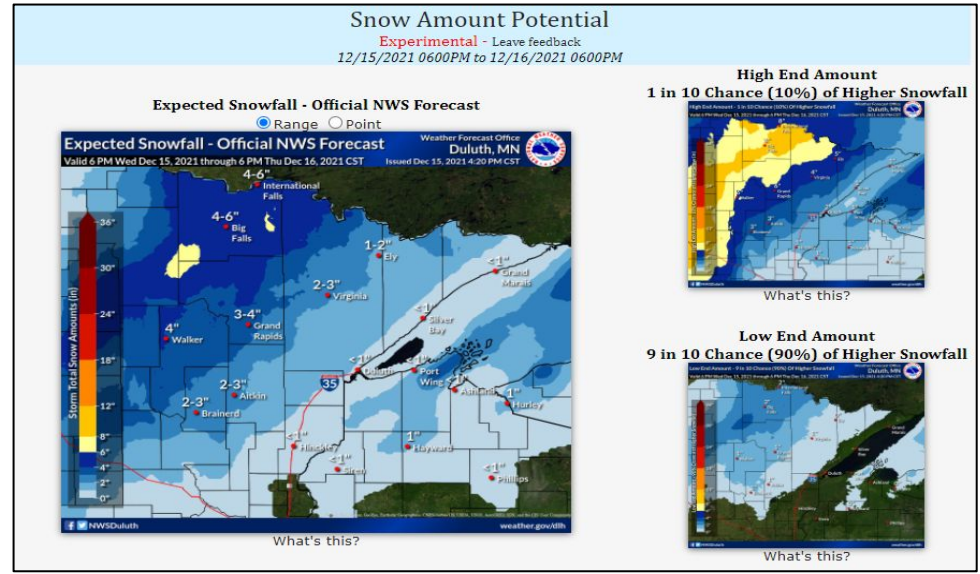
12z Thu, Feb 1, 2024 Forecast Cycle



The PPP uses a 61-member ensemble to create its probabilities

Experimental Local Snowfall Probabilities

- **Goal:** Provide customers and partners a range of snowfall amounts to better communicate forecast uncertainty during winter weather events on a local level.
- This provides the same information as the PPP, but at a more localized level for WFOs and local partners
- Each WFO displays these products on their local winter web pages
- **2024 Update:** Will be available for all CONUS locations for the first time



Local office Experimental pages:
<https://www.weather.gov/prob-snow/>

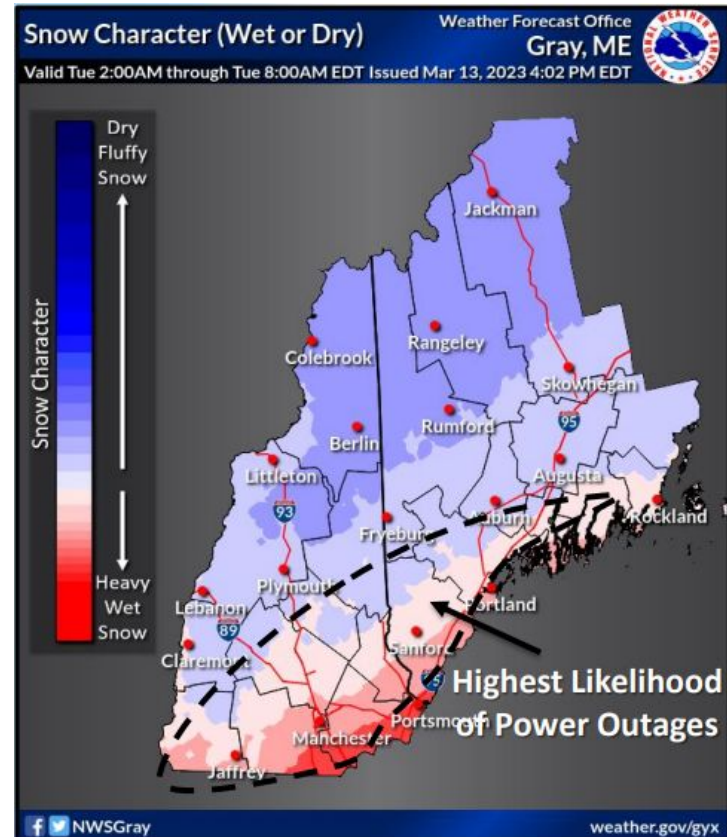


Experimental Snow Character Maps



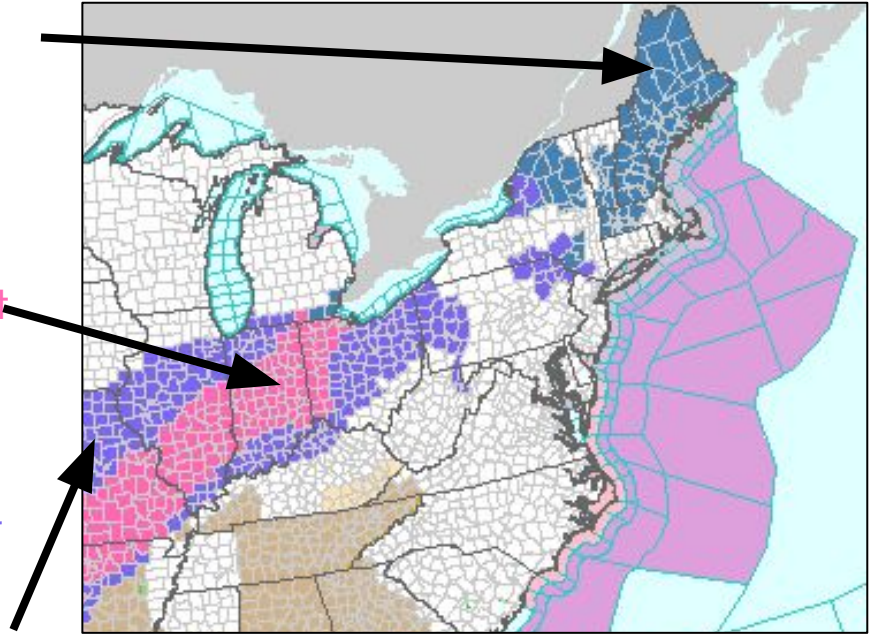
- **Goal:** Display the consistency of snow (dry/fluffy or heavy/wet) to better inform partners and the public regarding potential hazardous impacts
- Maine WFOs have been using these graphics for years, and the Winter Program is advocating for more WFOs to begin incorporating them on their local website or use them in partner briefings.
- These graphics are able to be made for the Lower 48 states and also Alaska. The underlying data can be accessed through the National Digital Forecast Database (NDFD) under "Snow-to-Liquid Ratio."
- **2024 Update:** More WFOs continue to bring these maps online

Available here :
<https://digital.weather.gov>



Winter Hazard Products

- **Winter Storm Watch:** Conditions are favorable ($\geq 50\%$ confidence) for a winter weather event to meet or exceed locally defined criteria or cause severe impacts.
- **Winter Storm Warning:** A winter weather event is expected ($\geq 80\%$ confidence) to meet or exceed locally defined criteria or cause severe impacts.
- **Winter Weather Advisory:** A winter weather event is expected to cause impacts, but will not exceed warning criteria or reach high enough severity levels to warrant a warning.

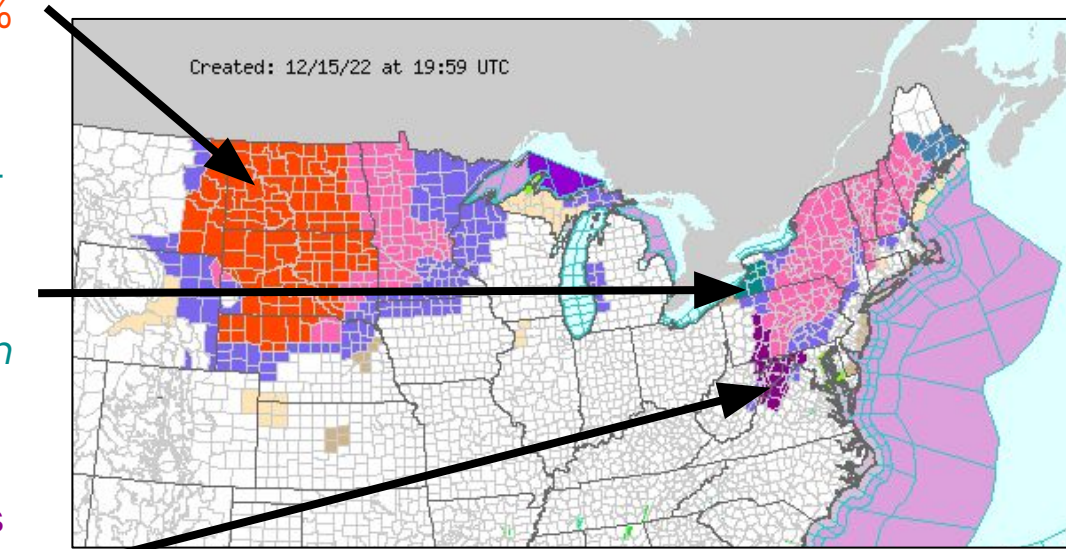


Example Hazard Map

Snow Criteria Map: [weather.gov/snow-criteria](https://www.weather.gov/snow-criteria)

Winter Hazard Products

- **Blizzard Warning:** Sustained or frequent wind gusts ≥ 35 mph and visibility $\leq \frac{1}{4}$ mile in snow or blowing snow is expected ($\geq 80\%$ confidence) to last for ≥ 3 hours.
- **Lake Effect Snow Warning:** Lake Effect Snow is expected ($\geq 80\%$ confidence) to meet or exceed locally defined warning criteria or cause severe impacts. *Used in the Northeast US only.*
- **Ice Storm Warning:** Ice accumulation is expected ($\geq 80\%$ confidence) to meet or exceed locally defined ice amount criteria or cause severe impacts.



Example Hazard Map

Snow Squall Warnings and IBW Tags

- Snow Squall Warnings (SQW) are issued for intense and short duration periods of heavy snowfall, gusty winds, and reduced visibilities, possibly to whiteout.
- Improvements with its messaging to decision makers and to the public continues
- Impact Based Warning (IBW) tags have been implemented to better convey a snow squall's impact:
 - No tag (General SQW) indicates snow squall conditions are expected, however mitigating actions & societal factors will reduce threat to safe travel (i.e. overnight)
 - A "SIGNIFICANT" tag indicates an intense snow squall with a substantial threat to safe travel is expected
 - This will trigger a Wireless Emergency Alert (WEA)

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

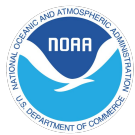
This is a life threatening situation! Delay or avoid travel!

Map labels: Grand Lake, Granby, Tabernash, Fraser, Winter Park

Inset map labels: WY, NE, CO

What This Means

WEA will ONLY activate for high-end events with the "SIGNIFICANT" tag



Exploring Enhanced-Language for High-End Winter Storms



- NWS is exploring enhanced-language for high-end winter storms
- Public comment period ran from 6/10/24 to 9/10/24 via [Public Notification Statement 24-43](#) to allow forecasters to add “Particularly Dangerous Situation” language to certain Blizzard and Ice Storm Warnings if conditions are unusually extreme
- Need to balance potential overuse with the need to message life-threatening conditions - could even possibly trigger a WEA

...BLIZZARD WARNING REMAINS IN EFFECT UNTIL 7 AM EST SUNDAY...

* THIS IS A PARTICULARLY DANGEROUS SITUATION.

* WHAT...Blizzard conditions and very heavy lake effect snow will produce life threatening conditions. Storm total snow accumulations of 4 to 5 feet across the Buffalo Metro area, and 1 to 3 feet in surrounding areas. Winds gusting as high as 70 mph. Wind chills as cold as 15 to 25 below zero.

* WHERE...Niagara, Orleans, Erie, and Genesee counties.

* WHEN...Until 7 AM EST Sunday.

* IMPACTS...EXTREMELY DANGEROUS BLIZZARD CONDITIONS ARE EXPECTED. Travel will be impossible in the lake effect snow band. Areas of blowing snow will produce zero visibility. Very strong winds will cause extensive tree damage and power outages. The cold wind chills as low as 25 below zero could cause frostbite on exposed skin in as little as 30 minutes.

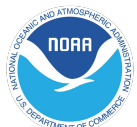
PRECAUTIONARY/PREPAREDNESS ACTIONS...

Strong winds will cause significant blowing and drifting snow, frequently reducing visibilities to zero. Travel is strongly discouraged.



Enhanced-Language for High-End Winter Storms Poll Questions





Poll Question #1



Current Blizzard Warning

...BLIZZARD WARNING REMAINS IN EFFECT UNTIL 7 AM EST SUNDAY...

- * WHAT...Blizzard conditions and very heavy lake effect snow will produce life threatening conditions. Storm total snow accumulations of 4 to 5 feet across the Buffalo Metro area, and 1 to 3 feet in surrounding areas. Winds gusting as high as 70 mph. Wind chills as cold as 15 to 25 below zero.
- * WHERE...Niagara, Orleans, Erie, and Genesee counties.
- * WHEN...Until 7 AM EST Sunday.
- * IMPACTS...Travel will be impossible in the lake effect snow band. Areas of blowing snow will produce zero visibility. Very strong winds will cause extensive tree damage and power outages. The cold wind chills as low as 25 below zero could cause frostbite on exposed skin in as little as 30 minutes.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Strong winds will cause significant blowing and drifting snow, frequently reducing visibilities to zero. Travel is strongly discouraged.

Proposed Option for Blizzard Warning

...BLIZZARD WARNING REMAINS IN EFFECT UNTIL 7 AM EST SUNDAY...

*** THIS IS A PARTICULARLY DANGEROUS SITUATION.**

- * WHAT...Blizzard conditions and very heavy lake effect snow will produce life threatening conditions. Storm total snow accumulations of 4 to 5 feet across the Buffalo Metro area, and 1 to 3 feet in surrounding areas. Winds gusting as high as 70 mph. Wind chills as cold as 15 to 25 below zero.
- * WHERE...Niagara, Orleans, Erie, and Genesee counties.
- * WHEN...Until 7 AM EST Sunday.
- * IMPACTS...**EXTREMELY DANGEROUS BLIZZARD CONDITIONS ARE EXPECTED.** Travel will be impossible in the lake effect snow band. Areas of blowing snow will produce zero visibility. Very strong winds will cause extensive tree damage and power outages. The cold wind chills as low as 25 below zero could cause frostbite on exposed skin in as little as 30 minutes.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Strong winds will cause significant blowing and drifting snow, frequently reducing visibilities to zero. Travel is strongly discouraged.

1) Does the optional wording in the Blizzard Warning provide better information to help you make more informed decisions?

A) Yes

B) No

C) Unsure



Poll Question #2



Current Ice Storm Warning

...ICE STORM WARNING REMAINS IN EFFECT UNTIL 6 PM CST TUESDAY...

* WHAT...Significant icing expected. Total ice accumulations up to one half of an inch, with some areas receiving up to three quarters of an inch. Winds gusting as high as 45 mph.

* WHERE...Barnes, Cass, Ransom, Sargent and Richland Counties.

* WHEN...Until 6 PM CST Tuesday.

* IMPACTS...Power outages and tree damage are likely due to the ice. Travel could be nearly impossible. This will be a locally damaging icing event.

* ADDITIONAL DETAILS...Highest ice accumulations are expected to the west of Fargo and Wahpeton.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Travel is strongly discouraged. If you must travel, keep an extra flashlight, food and water in your vehicle in case of an emergency. Prepare for possible power outages.

The latest road conditions for North Dakota can be found at travel.dot.nd.gov and for Minnesota at 511mn.org, or by calling 5 1 1 in either state.

Proposed Option for Ice Storm Warning

...ICE STORM WARNING REMAINS IN EFFECT UNTIL 6 PM CST TUESDAY...

* THIS IS A PARTICULARLY DANGEROUS SITUATION.

* WHAT...Significant icing expected. Total ice accumulations up to one half of an inch, with some areas receiving up to three quarters of an inch. Winds gusting as high as 45 mph.

* WHERE...Barnes, Cass, Ransom, Sargent and Richland Counties.

* WHEN...Until 6 PM CST Tuesday.

* IMPACTS...EXTREMELY DANGEROUS ICING CONDITIONS ARE EXPECTED. Power outages and tree damage are likely due to the ice. Travel could be nearly impossible. This will be a locally damaging icing event.

* ADDITIONAL DETAILS...Highest ice accumulations are expected to the west of Fargo and Wahpeton.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Travel is strongly discouraged. If you must travel, keep an extra flashlight, food and water in your vehicle in case of an emergency. Prepare for possible power outages.

The latest road conditions for North Dakota can be found at travel.dot.nd.gov and for Minnesota at 511mn.org, or by calling 5 1 1 in either state.

1) Does the optional wording in the Ice Storm Warning provide better information to help you make more informed decisions?

A) Yes

B) No

C) Unsure

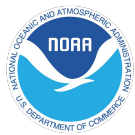


Poll Question #3



3) Should the NWS implement the wording for Blizzard and Ice Storm Warnings when conditions are unusually extreme?

- A) Yes, but only for Blizzard Warnings**
- B) Yes, but only for Ice Storm Warnings**
- C) Yes, for both Blizzard and Ice Storm Warnings**
- D) No, the current Blizzard and Ice Storm Warning verbiage is sufficient**



Avalanche Weather Initiative

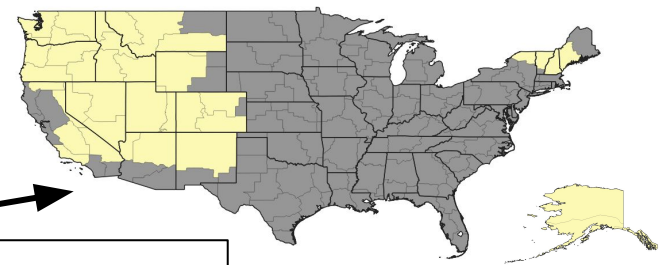


Avalanche Weather Guidance

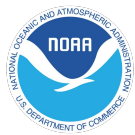
- Provides partners & public with forecast weather parameters critical to prediction of avalanche conditions, risk, mitigation, & recovery.
- Forecast Elements may include: temperature, weather, probability of precipitation, snowfall, liquid or snow-water equivalent, ice accumulation, snow level, winds, & 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	18	21	00	03
	6a	9a	12	3p	6p	9p	12	3a	6a	9a	12	3p	6a	9a	12	3p
Cloud Cover	SC	FW	SC	SC	SC	SC	SC	SC	FW	SC	SC	SC	SC	SC	SC	SC
Cloud Cover (%)	40	15	30	30	40	40	35	30	25	25	30	30	30	30	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



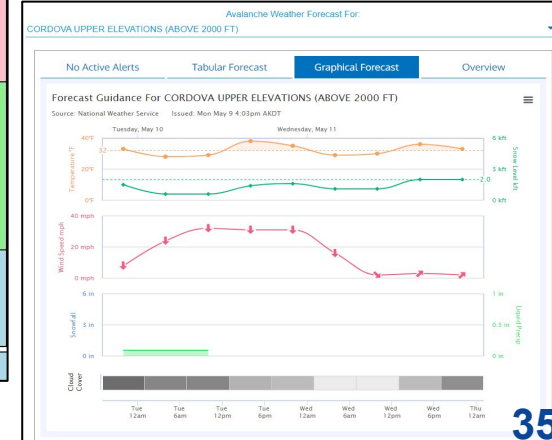
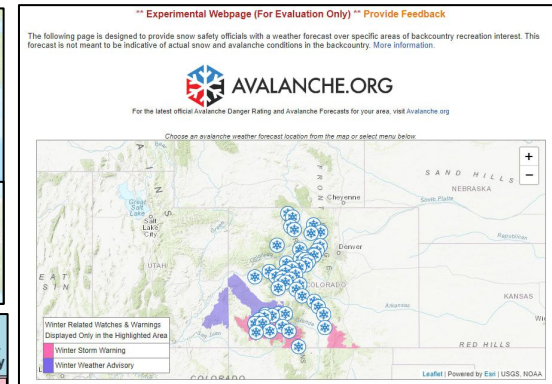
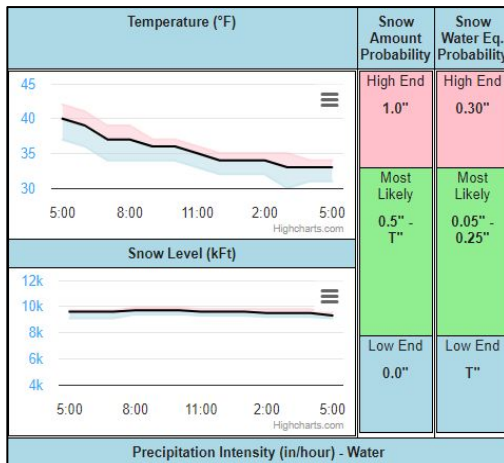
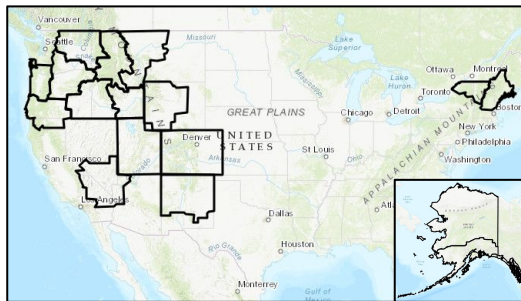
Experimental Avalanche Weather Web Pages

- 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
- **2024 Update: Optional Probabilistic Display**

Feedback:

https://www.surveymonkey.com/r/ExpStandardizedWFOAvalancheWeatherWebpage_2024-202

www.weather.gov/wrh/AvalancheWeather



Wind Chill → Extreme Cold

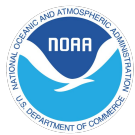
As of October 1, 2024, the NWS simplified its suite of cold weather products to improve messaging of these hazards and provide better decision support services

Extreme Cold Consolidation and Renaming



Why Do This?

- Emphasizes that **cold is dangerous**, regardless of wind
- **Simplifies messaging** by using a single product type
- Develops **new, consistent guidance** that is based on climatology and adjusted for impacts



NWS Winter Safety Content

- NWS Winter Seasonal Safety Campaign launches on December 1 (first day of meteorological winter)
 - https://www.weather.gov/wrn/winter_safety
 - Contains content on winter hazards, including infographics, social media plans, presentations and videos
 - Encourage partners to use and share this information
- NOAA: The Great Outdoors: Feature on weather safety while recreating outdoors
 - <https://www.noaa.gov/explainers/great-outdoors-weather-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

weather.gov 

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

 AVALANCHE.ORG
weather.gov 

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

 <p>People</p> <p>Minimize time outdoors. Prepare for power outages. Check on elderly & other vulnerable people to make sure they're ok.</p>	 <p>Pets</p> <p>Keep your pets warm, dry & indoors as much as possible. Ensure their food & water doesn't freeze. Limit outside time & keep them bundled up.</p>	 <p>Pipes</p> <p>Insulate pipes if possible. Open up sink cabinets to expose pipes to heated air. Disconnect hoses & turn off water to sprinklers.</p>	 <p>Plants</p> <p>Know their temperature thresholds. If possible, cover them before the cold weather sets in to help retain some heat.</p>
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weather.gov 



NWS Educational/Outreach Materials

- Educational & outreach materials on winter products
- Probabilistic Snowfall Resources: <https://www.weather.gov/prob-snow>
- Snow Squall Warning Resources: <https://www.weather.gov/media/safety/Snow-Squall-IBW.pdf>
- Winter Storm Severity Index Resources: www.weather.gov/wssi (top of page)
- Probabilistic Winter Storm Severity Index: www.weather.gov/wssi-p (top of page)
- Extreme Cold Slides & Webinar: <https://www.weather.gov/wrn/calendar>
- **Coming Soon: Probabilistic Precipitation Portal**

Probabilistic Winter Storm Severity Index (WSSI-P)

The WSSI-P is an online weather prediction tool that provides likelihoods of winter weather impacts. It is intended for use alongside official NWS forecasts, providing more information to enable enhanced preparedness and decision making.

HOW DOES IT WORK?
The WSSI-P displays a range of winter weather impact probabilities over a geographic area. These different likelihoods (the chances of impacts happening) are shown as percentages represented by colors.

IMPACT LEVELS
Results can be selected for different impact levels: **Minor, Moderate, Major, Extreme.** In the three-graphic example shown, minor impacts are the most likely to occur.

COMPONENTS
In addition to showing Overall Winter Storm Impacts, the WSSI-P can display the impact likelihoods of individual storm components: **Snow Amount, Snow Rate, Snow Load, Ice Accumulation, and Blowing Snow.**

WSSI and WSSI-P
The deterministic WSSI is based on the official NWS forecast. The WSSI-P can be used in conjunction to get expected, best case, and worst case scenarios.

EXTREME COLD WATCH

An Extreme Cold Watch is issued when dangerously cold air, with or without wind, is possible.

Check the forecast, and be prepared in case a Warning is issued.

Be Prepared

EXTREME COLD WARNING

An Extreme Cold Warning is issued when dangerously cold air, with or without wind, is expected.

Conditions could lead to frostbite or hypothermia. Limit time outside, dress in layers, and cover up exposed skin.

Take Action!

weather.gov

2024 Annual Winter Partners Webinar

Expected Snowfall and Percentile Graphics (continued)

Low End Amount - 9 in 10 Chance (90%) Of Higher Snowfall
Valid 5 AM Fri Nov 19, 2021 through 5 PM Sat Nov 20, 2021 MST
Weather Forecast Office: Riverton, WY
Issued Nov 19, 2021 4:42 AM MST

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.

High End Amount - 1 in 10 Chance (10%) Of Higher Snowfall
Valid 5 AM Fri Nov 19, 2021 through 5 PM Sat Nov 20, 2021 MST
Weather Forecast Office: Riverton, WY
Issued Nov 19, 2021 4:42 AM MST

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."



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Important Links

NWS Key Messages

https://www.wpc.ncep.noaa.gov/key_messages/LatestKeyMessage_1.png
https://www.wpc.ncep.noaa.gov/key_messages/LatestKeyMessage_2.png

Days 4-7 Winter Weather Outlook

https://www.wpc.ncep.noaa.gov/wwd/pwvf_d47/pwvf_medr.php

Experimental Winter Storm Outlook

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

Winter Storm Severity Index

www.weather.gov/wssi

Probabilistic Winter Storm Severity Index

<https://www.weather.gov/wssi-p>

Local Probabilistic Snow

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

Avalanche Weather

www.weather.gov/wrh/AvalancheWeather

NDFD Products:

<https://digital.weather.gov>



Presentation Will Be Available!



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



The screenshot shows the top portion of the 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. Below the header is a navigation menu with links for "Weather Hazards", "Safety Campaigns", "Ambassador", "Education", "Collaboration", "News & Events", "International", and "About". The main content area features the heading "Calendar" and a breadcrumb trail: "Weather.gov > Weather-Ready Nation > Calendar". A paragraph of text encourages users to be a force of nature by learning about hazards and taking action. Below this is a section titled "UPCOMING EVENTS".