

Cold Season Spotter Training for the Inland NW

Fall 2024
National Weather Service - Spokane

Christmas 2022



This is a Live Virtual Class

- Voice in Computer - no phone needed - headphones helpful
- All are in listen mode until the end

New to GoToWebinar? Here's the basics



the Menu bar

- Audio – tests your volume
- Attendees – all in attendance
- **Poll** – answer poll questions
- **Questions** – type in a question for the speaker to answer
- **Handouts** – download & print
- Chat – speaker's comments
- Click on the **Hand** to raise
- Click orange arrow to collapse window



Objectives

- Understand the roles & importance of the Weather Spotter
- Provide accurate and timely reports of hazardous weather
- Describe your community's cold season weather threats
- Learn how to prepare and be safe during hazardous weather
- Receive the Winter Outlook 2024-25

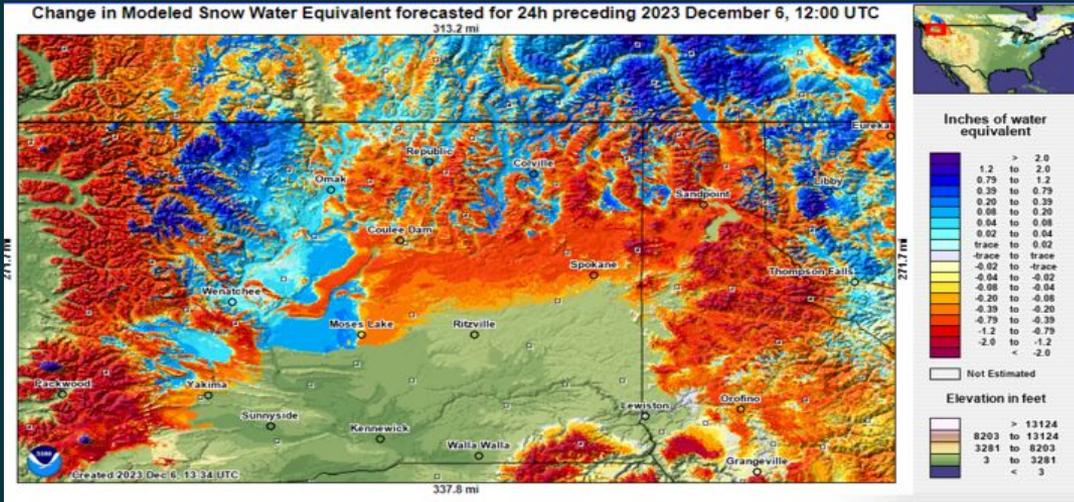
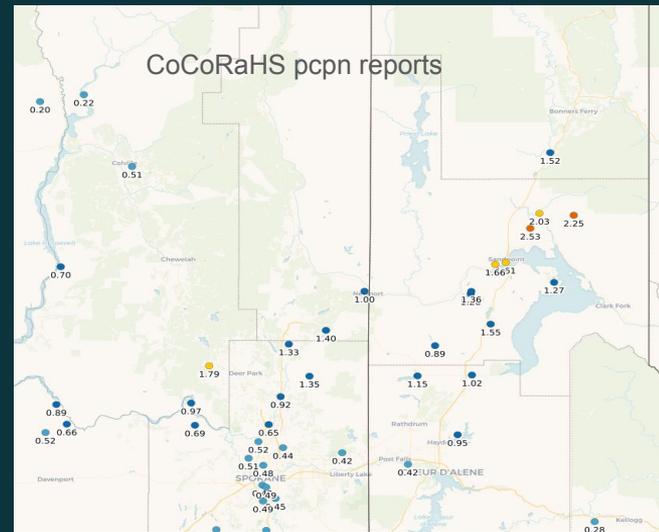
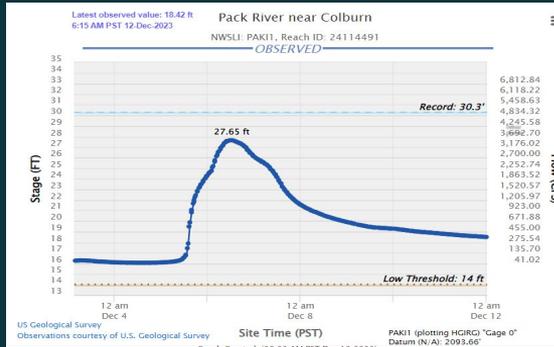
Concentration on Cold Season weather spotting and the Checklist

Now let's look back at 2023-24.....



High River Flows: December 5, 2023

Rain on Snow Event
 Rapid river flows
 Ponding of water
 Chelan County & N Idaho

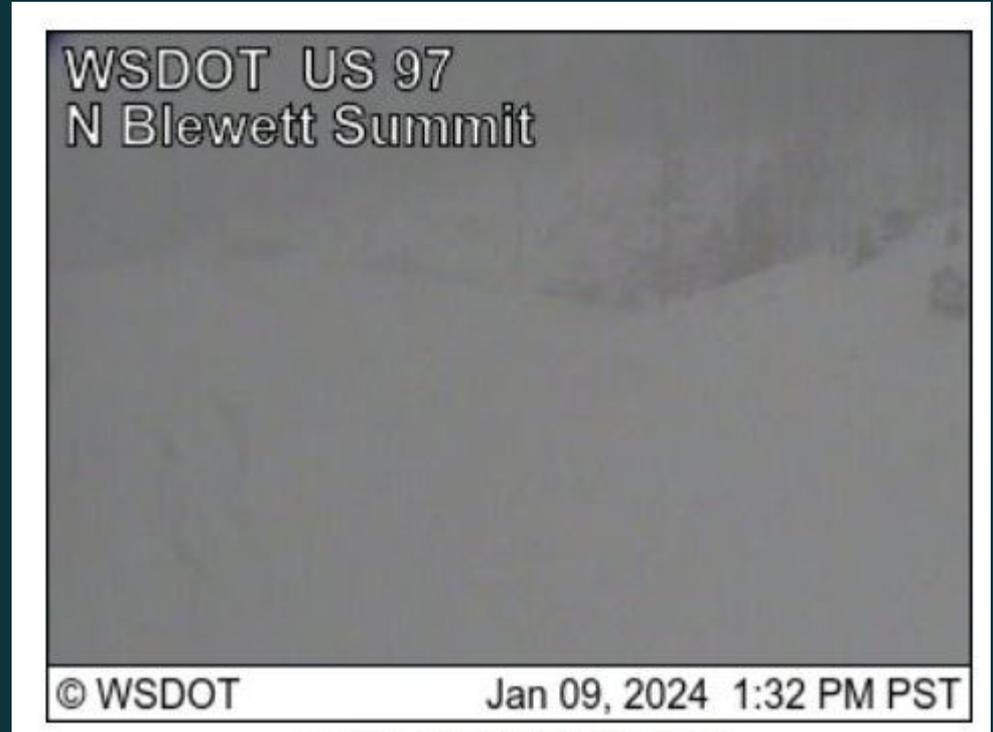


Heavy Mountain Snow: January 9, 2024

White out conditions

Heavy snow & blowing snow

Passes closed



Heavy Snow: January 17, 2024

Heavy Snow
Numerous Accidents
Road Closures & Slowdowns





**THANK YOU
Weather Spotters!**



**Eyes and Ears of the
National Weather Service
with a count of over 1200
across the Inland NW!**



NATIONAL WEATHER SERVICE
WEATHER FORECAST OFFICE • SPOKANE, WA



What is a Weather Spotter?

Weather enthusiast who volunteers time to report severe or hazardous weather

- As needed basis
- No weather equipment is necessary
- Simply call, email or send a report online
- Become the eyes and ears of the National Weather Service



National Weather Service (NWS)

MISSION

- Part of the Federal Government
 - Dept of Commerce
 - NOAA
- One of 122 offices nationwide
- Forecasts, watches, warnings, and advisories 24/7/365 operations
- 25 staff members
- At least 2-3 people per shift

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



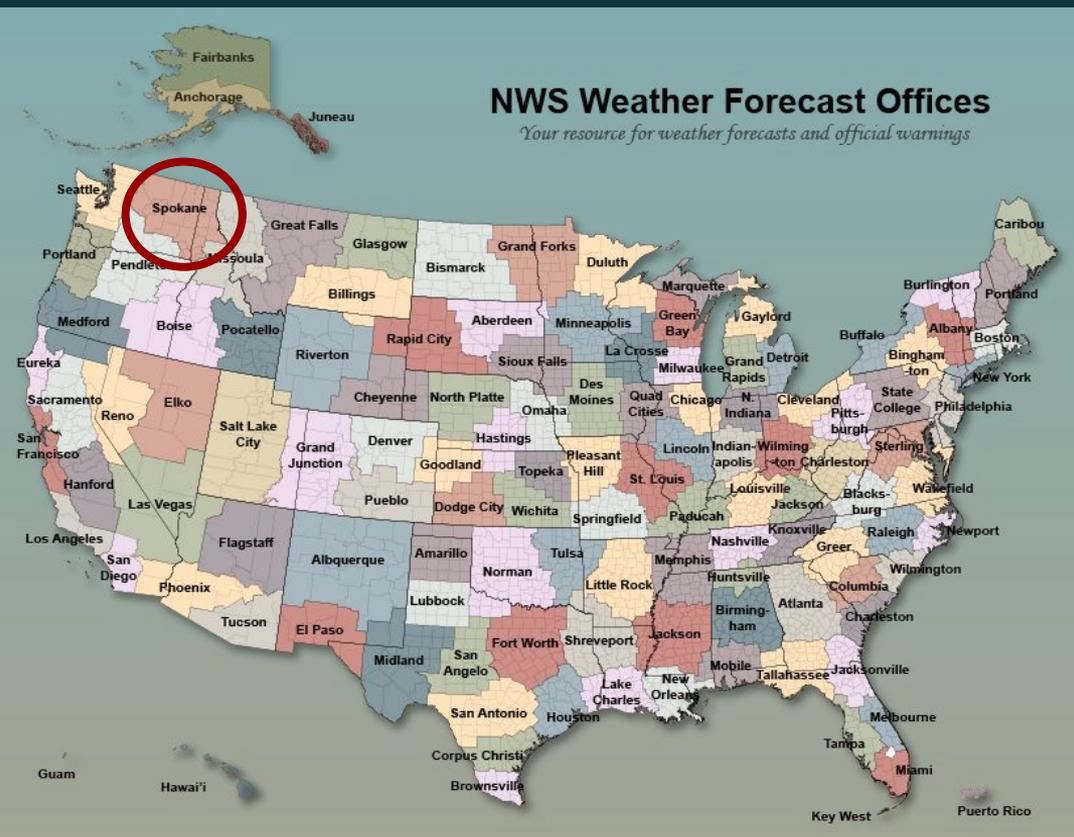
NWS Spokane Forecast and Warning Area

2 states

- 13 counties in eastern WA
- 8 counties in north Idaho

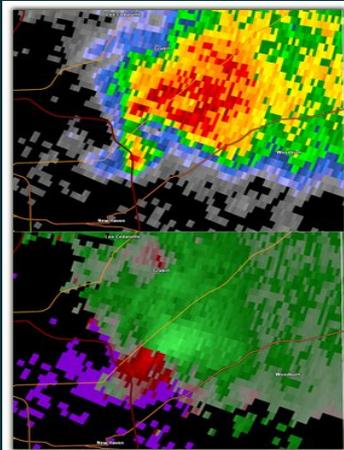
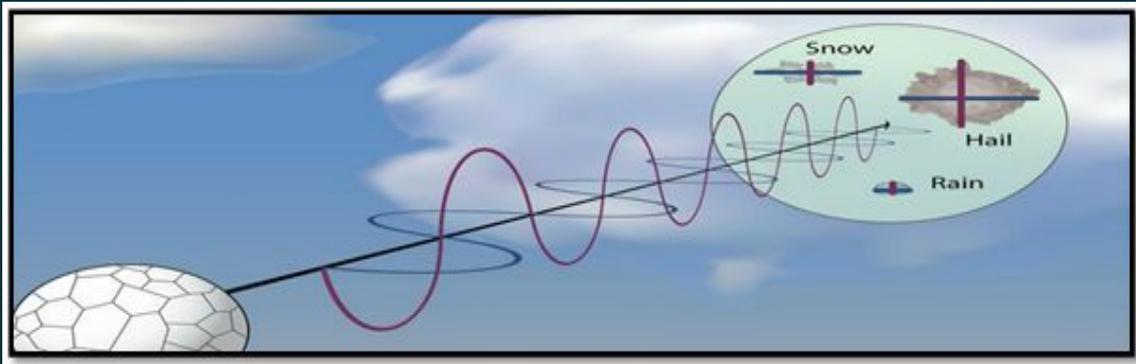
Elevations range

- 9500+ ft in the north Cascades
- 170 ft along the mid Columbia River

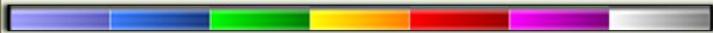


Public Forecast Zones

NWS Tools: Doppler Weather Radar



Reflectivity (dBZ)



Small Particles

Light Rain, Dust, Bugs

Big Particles

Hail, Big Rain Drops

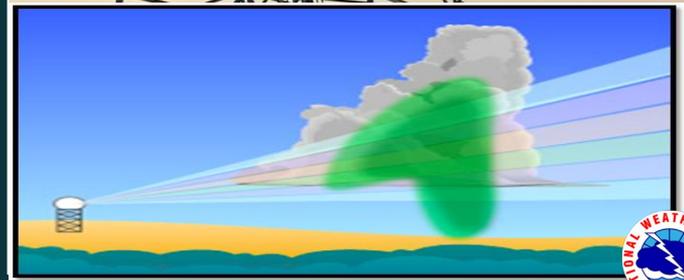
Velocity (kts)



Speed Moving Away from Radar

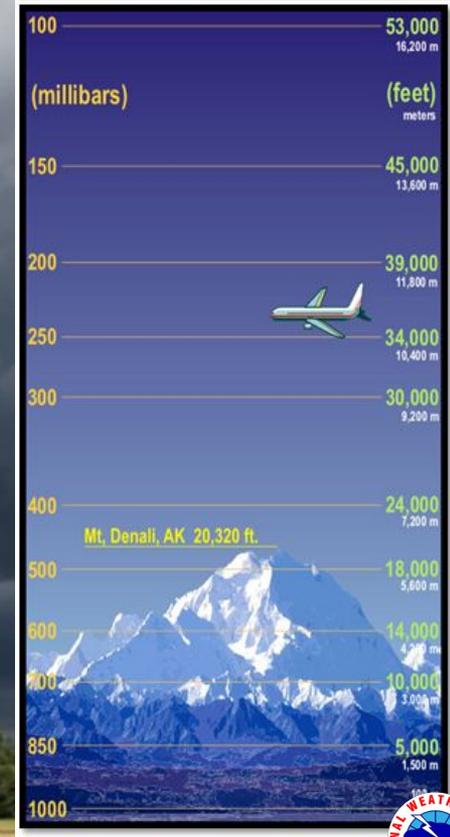


Speed Moving Toward Radar



NWS Tools: Weather Balloon - Radiosonde

Twice a day - every day
92 Upper Air sites across the U.S.
Flight time ~ 1 hour 45 min



NWS Tools: **Weather Satellites**

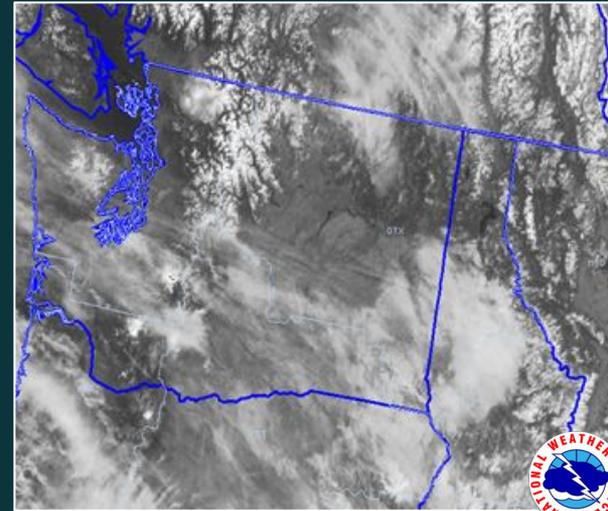
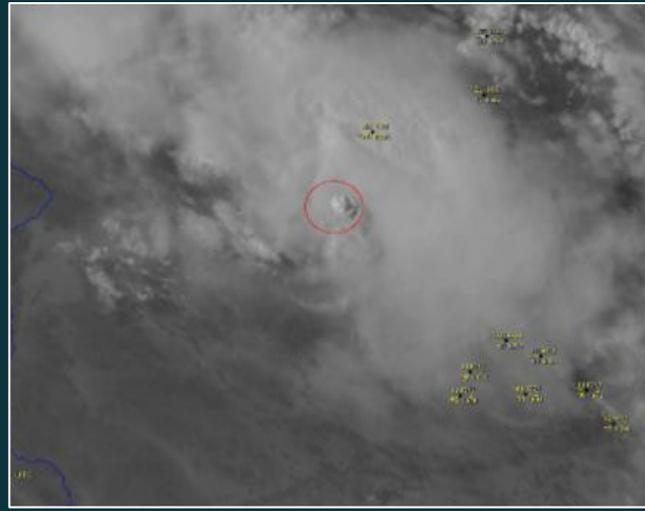
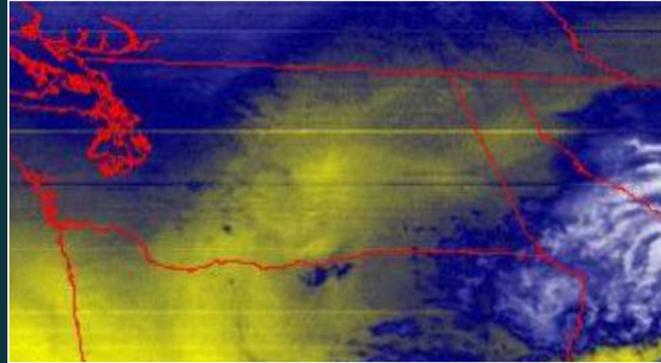
GOES 18 - 16 different channels

IR, Water Vapor & Visible

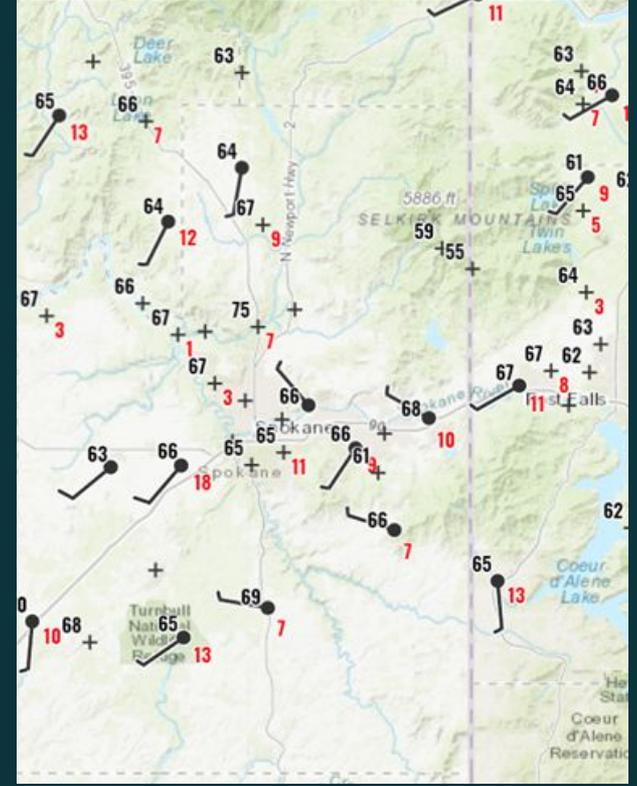
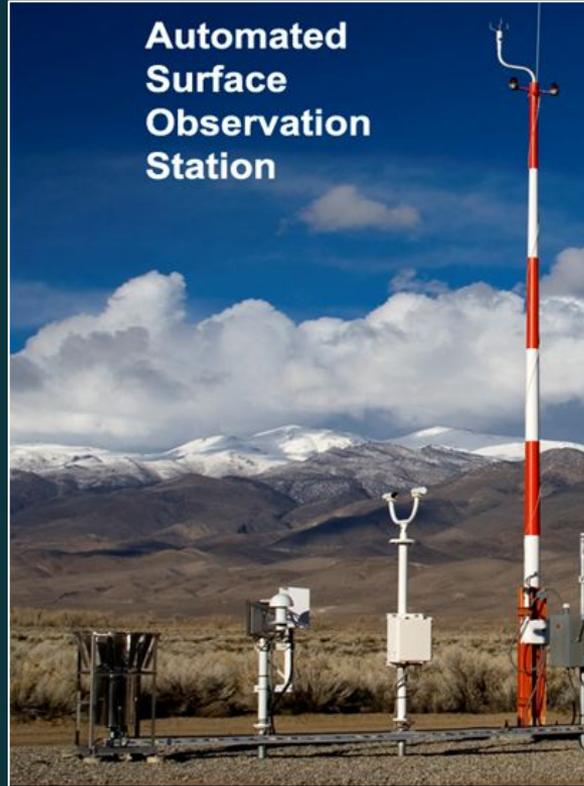
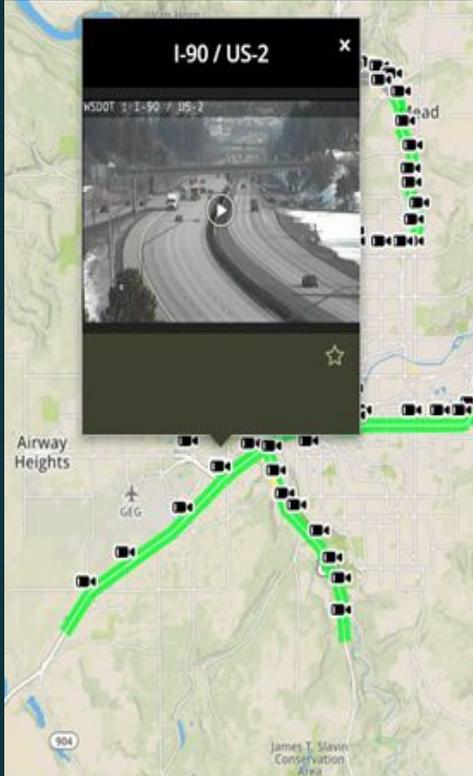
New images every 5 minutes

Aids in early detection

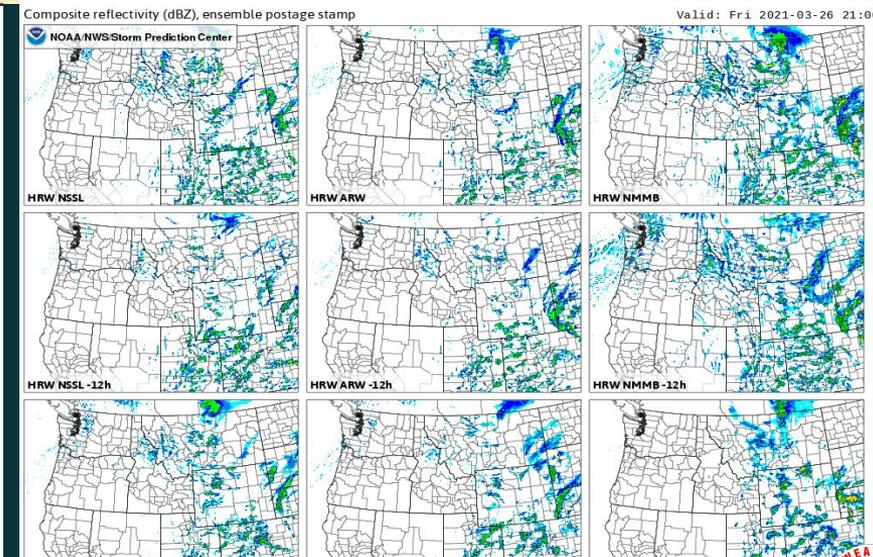
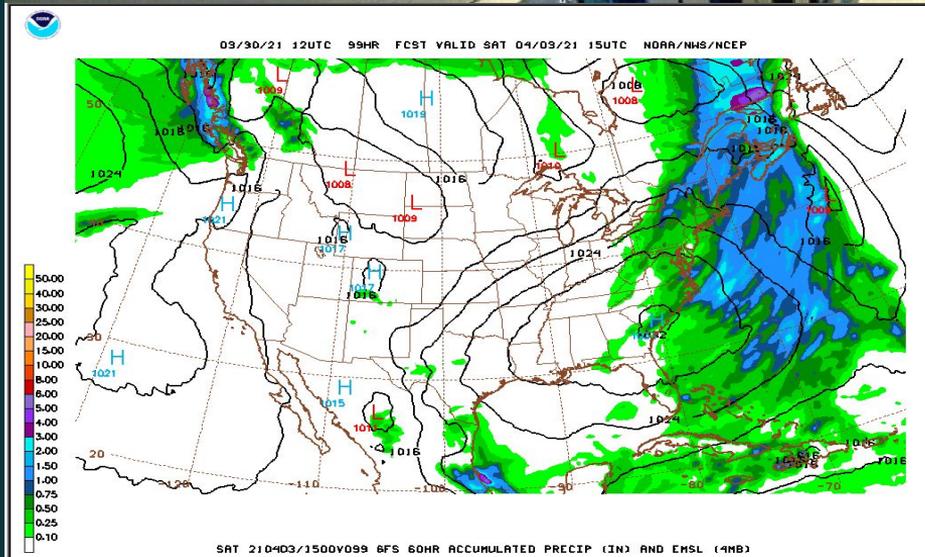
Thunderstorms & Wildfires



NWS Tools: Surface Observations & Web Cams



NWS Tools: High Resolution Weather Models



WHY DO WE TRAIN SPOTTERS?



- Limitations to radar, satellite, and surface observations
- Receive Ground Truth on events - Snow in the Methow Valley, Drizzle, Funnel Clouds!
- Fill in the “holes” not seen by observations
- Understand the many micro-climates in the region
- Maximize Warning effectiveness and Lead Times
- Add Credibility to NWS Warnings - Leads to Public Action!

#1 Poll Question

What are some tools used to monitor weather?



What's in a Spotter Report?



The checklist is titled "Inland Northwest Weather Spotter Checklist" and features the National Weather Service logo on the left and the SKYWARN logo on the right. It consists of ten horizontal bars, each with a different background color and text describing a weather event and its reporting criteria.

| Event | Reporting Criteria |
|--------------------------------|--|
| Tornado or Funnel Cloud | ANY Kind |
| Strong Winds | +40 mph/Damage (58mph severe) |
| Hail | +3/4" in diameter (1" severe) |
| Heavy Rain | +1/2" in 1 hr or +1" in 12 hrs |
| Flooding | ANY Kind |
| Mixed Precipitation | freezing rain or sleet |
| Snow | +2" below 3K ft (valleys) or +6" abv 3K ft (mntns) |
| Poor Visibility | 1/2 mile or less |
| Travel Problems | due to weather |
| Damage, Injury or Loss of life | ANY |
| Excessive Heat | ANY |
| Excessive Cold | ANY |

Specifics...Tell us the Story!

- WHO you are (Spotter ID)
- WHAT you are reporting
- WHEN did the event occur?
- WHERE did the event occur?
- Estimates of wind speeds and hail size
- Damage and injury reports
- Precipitation type/amounts - snow, freezing rain, drizzle, sleet

If unsure - report your uncertainty

Feel free to include reports while traveling and any delayed or second hand reports



HOW TO REPORT: **PHONE CALL - EASIEST!**



Dial :
**1-800-
483-4532**
Spotter ID



What:
Event you
Witnessed



Where:
Location
of event



When:
Time of
the event



HOW TO REPORT: **ONLINE**

inws.ncep.noaa.gov/report/

www.weather.gov/Spokane



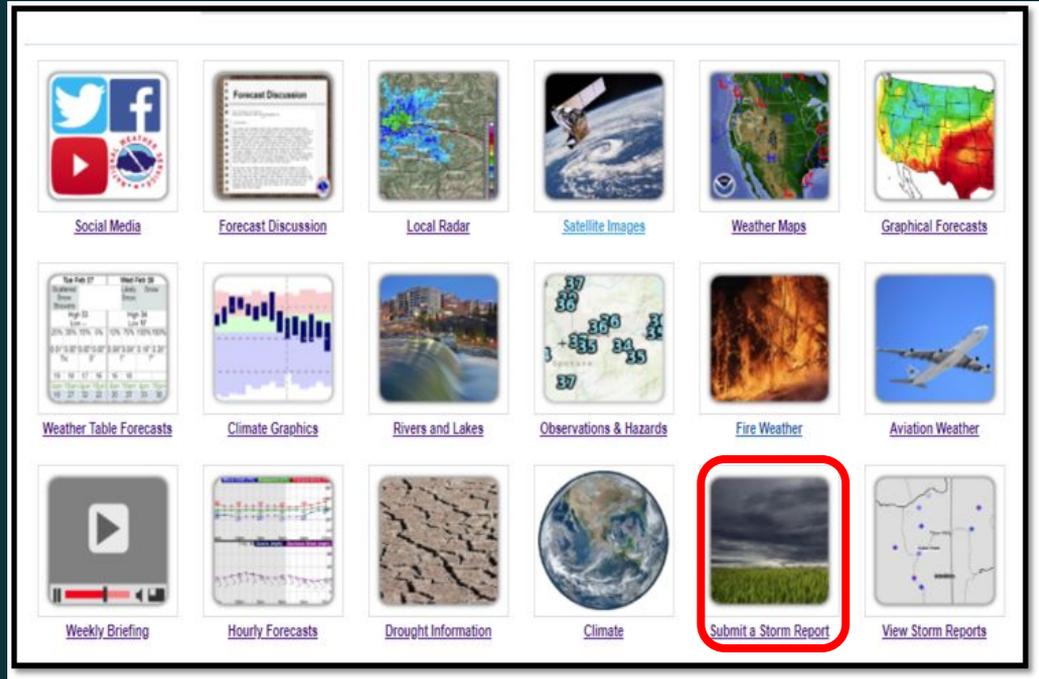
 **Storm Reports**
Alerting the NWS to local weather

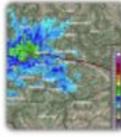
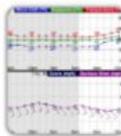
Report Type -> Details -> Location -> Review and Send

Please select a report type ▼

Back Next

[Privacy policy for weather reports](#)



-  [Social Media](#)
-  [Forecast Discussion](#)
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-  [Hourly Forecasts](#)
-  [Drought Information](#)
-  [Climate](#)
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HOW TO REPORT: **SOCIAL MEDIA**

X/Twitter

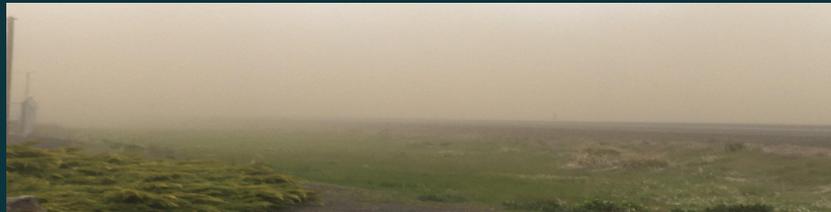


- @NWSSpokane
- #wawx & #idwx
- Share reports & pictures
- Monitored 24/7

Facebook



- NWS Spokane
- Send reports & pictures
- Monitored 24/7



HOW TO REPORT: THE mPING APP

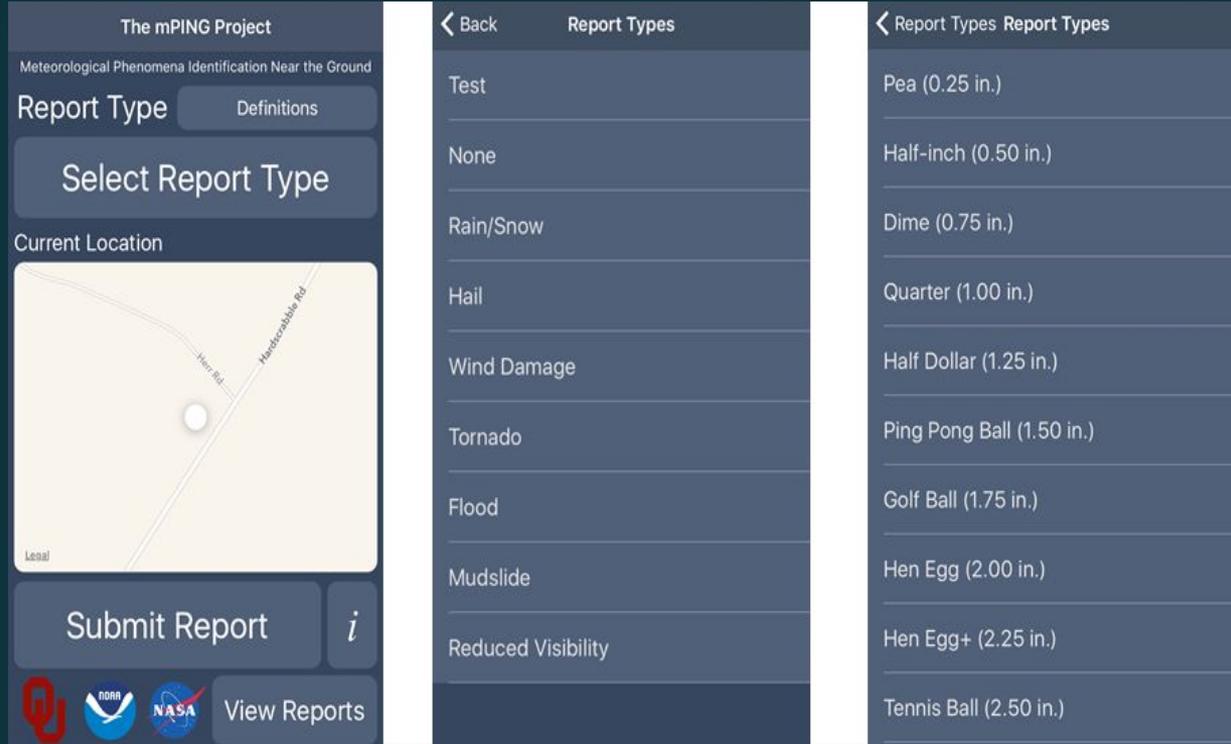
Meteorological Phenomena Identification Near the Ground

FREE APP!

Report everything
EXCEPT TORNADOES
OR FUNNEL CLOUDS



Reports are anonymous and
sent directly to the NWS



NATIONAL WEATHER SERVICE
WEATHER FORECAST OFFICE • SPOKANE, WA

HOW TO REPORT: **EMAIL**

nws.spokane@noaa.gov



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WEATHER FORECAST OFFICE • SPOKANE, WA



Examples of Spotter Reports

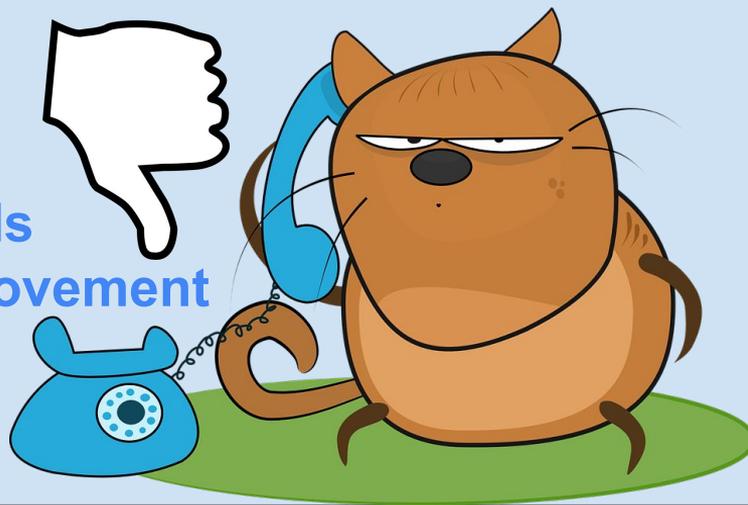
This is Bob Snowman, Spotter Lincoln 99 calling from my home in Wilbur. Freezing rain is falling with about 1/2" on the patio. Seeing lots of accidents on Highway 2. It began 1 hour ago.

Good job!



Hi there, how are you doing? Who is this? ...Well hi Mike! I'm a spotter in Ferry County. It's windy here. The news says it's much worse to the south. Are we going to get another storm? How long is it supposed to last?

Needs Improvement



Keep in Mind - We may contact you!



- As a registered weather spotter, you share your **phone number and email** with the NWS.
- If we see severe or hazardous weather near your location....
- We'll likely call and get information on what weather you are experiencing (ground truth) – especially SNOW REPORTS
- Share updates on training and newsletters

YOUR NATIONAL WEATHER SERVICE SPOKANE QUARTERLY REPORT

The Weather Watcher
Of the Inland Northwest



NATIONAL WEATHER SERVICE
WEATHER FORECAST OFFICE • SPOKANE, WA



#2 Poll Question

What is the best way to provide a spotter weather report?



Cold Season Hazards



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NEW
THIS
YEAR!

Hazard Simplification

Cold-Related Product Changes



NATIONAL WEATHER SERVICE
WEATHER FORECAST OFFICE • SPOKANE, WA



NWS is simplifying its suite of cold weather products to improve messaging of these hazards and provide better decision-making services.

What are we doing?

Wind Chill Watch/Warning/Advisory will be consolidated into the Extreme Cold Watch/Warning and Cold Weather Advisory. Hard Freeze Watch and Warning will be consolidated into the Freeze Watch/Warning.



Extreme Cold Consolidation and Renaming

Current

Upcoming

Extreme Cold Watch

Wind Chill Watch

Consolidated to



Extreme Cold Watch

Extreme Cold Warning

Wind Chill Warning

Consolidated to



Extreme Cold Warning

Wind Chill Advisory

Replaced with



Cold Weather Advisory

Freeze Consolidation

Current

Upcoming

Hard Freeze Watch

Freeze Watch

Consolidated to



Freeze Watch

Hard Freeze Warning

Freeze Warning

Consolidated to

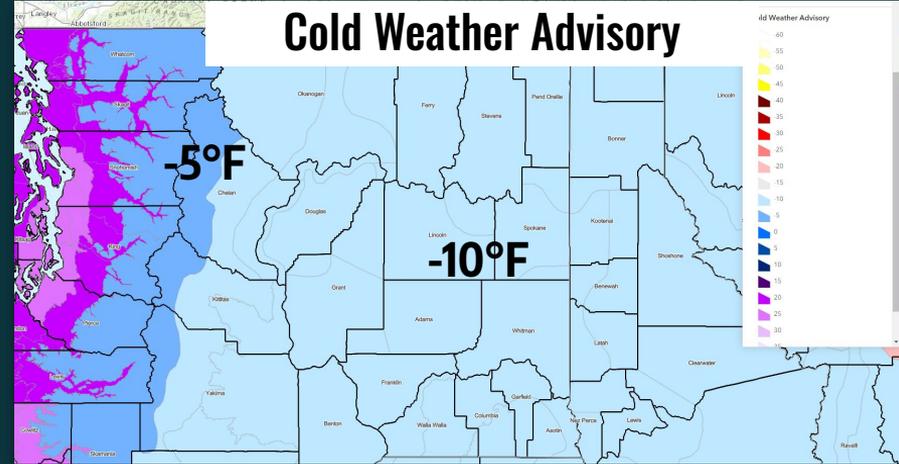
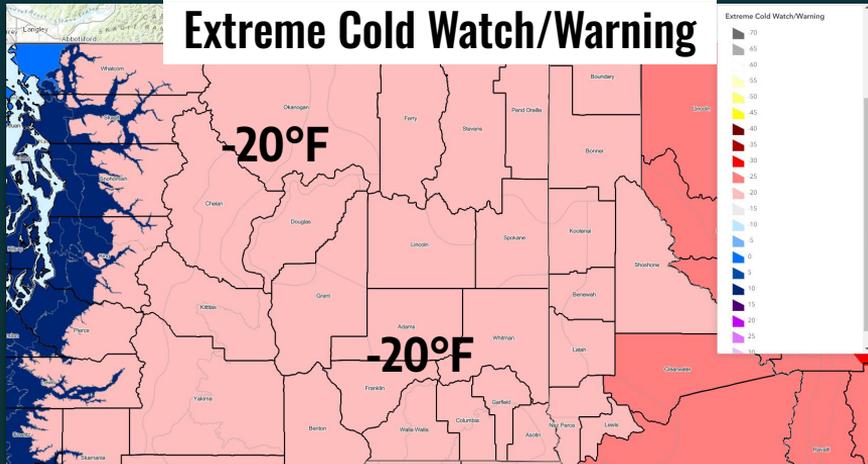


Freeze Warning

Cold-Related Product Changes

Cold Criteria - Apparent Temperature

Wind Chill is not going away, but simplification allows NWS to message cold is dangerous with or without wind.



Do you Understand NWS Terminology?

| Warning | Watch | Advisory | Outlook |
|---|---|---|---|
| Weather hazard is occurring, imminent or likely | Risk of weather hazard in the near future | Weather hazard is occurring, imminent or likely | Risk of weather hazard in the next 7 days |
| Poses a threat to life/property | Could pose a threat to life/property | Could cause significant inconvenience | Could pose a threat to life/property |
| Take Protective Action | Have a Plan of Action | Use Caution | Prepare a Plan of Action |



Heavy Snow

Please Report:

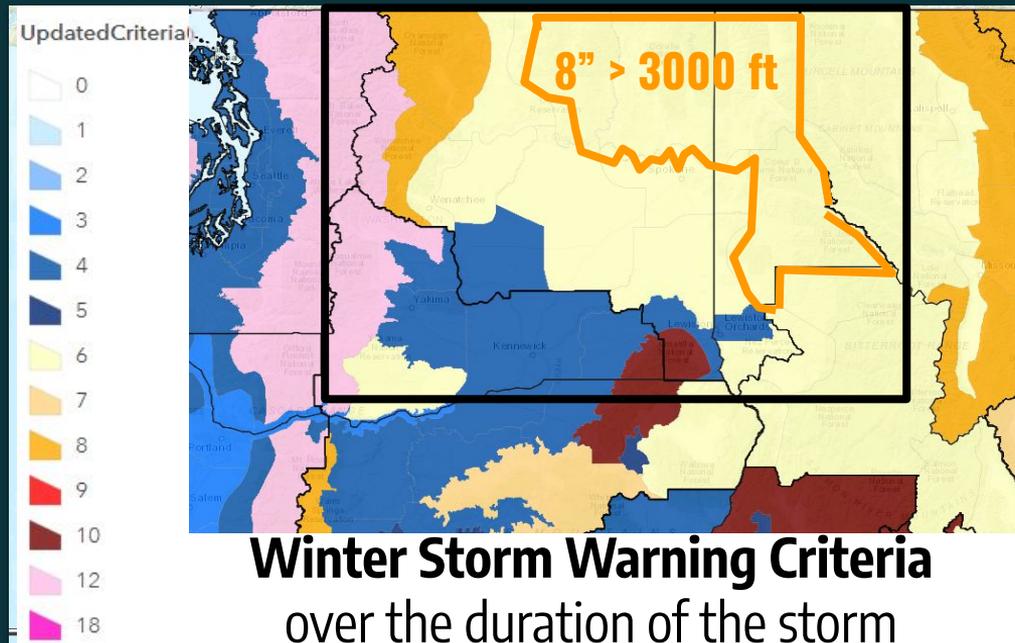
First Snow of the Season

Then at least **2" new snow** (Advisory level)



Heavy Snow!

6"+ inches during an event



Winter Storm Warning Criteria
over the duration of the storm



WHAT'S A BLIZZARD?

WEATHER.GOV/WINTER



BLOWING SNOW

35+ MPH WINDS



≤ 1/4 MI VISIBILITY

FOR 3+ HOURS



DID YOU KNOW THAT
FALLING SNOW
ISN'T NECESSARY
FOR A BLIZZARD?

A BLIZZARD THAT RESULTS FROM SNOW
THAT HAS PREVIOUSLY FALLEN
IS CALLED A GROUND BLIZZARD.

What is a

SNOW SQUALL?

Intense burst of snow and winds

Short duration (1-3 hours)

Whiteout visibility

Rapidly deteriorating road conditions



NATIONAL WEATHER SERVICE
WWW.WEATHER.GOV/SAFETY

IOWA DOT



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



SNOW SQUALLS STRIKE QUICKLY

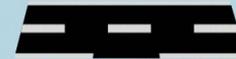


Snow Squalls: Flash Freeze

- Road temperatures often plunge to below freezing in snow squalls, even if they start out well above freezing. This can lead to flash-freezing of ice on roadways
- Road chemicals mitigate flash freeze potential on *treated* roadways
- High traffic volume promotes partial melting and refreezing of fallen snow on roadways when surface temperatures are below freezing

What is a Flash Freeze?

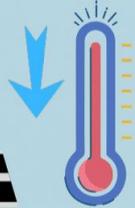
Snow Squall Along Arctic Front:



Wet Pavement

- Snow falls on pavement that is above freezing. Melts on contact

Post Frontal Air Mass:



Icy Pavement

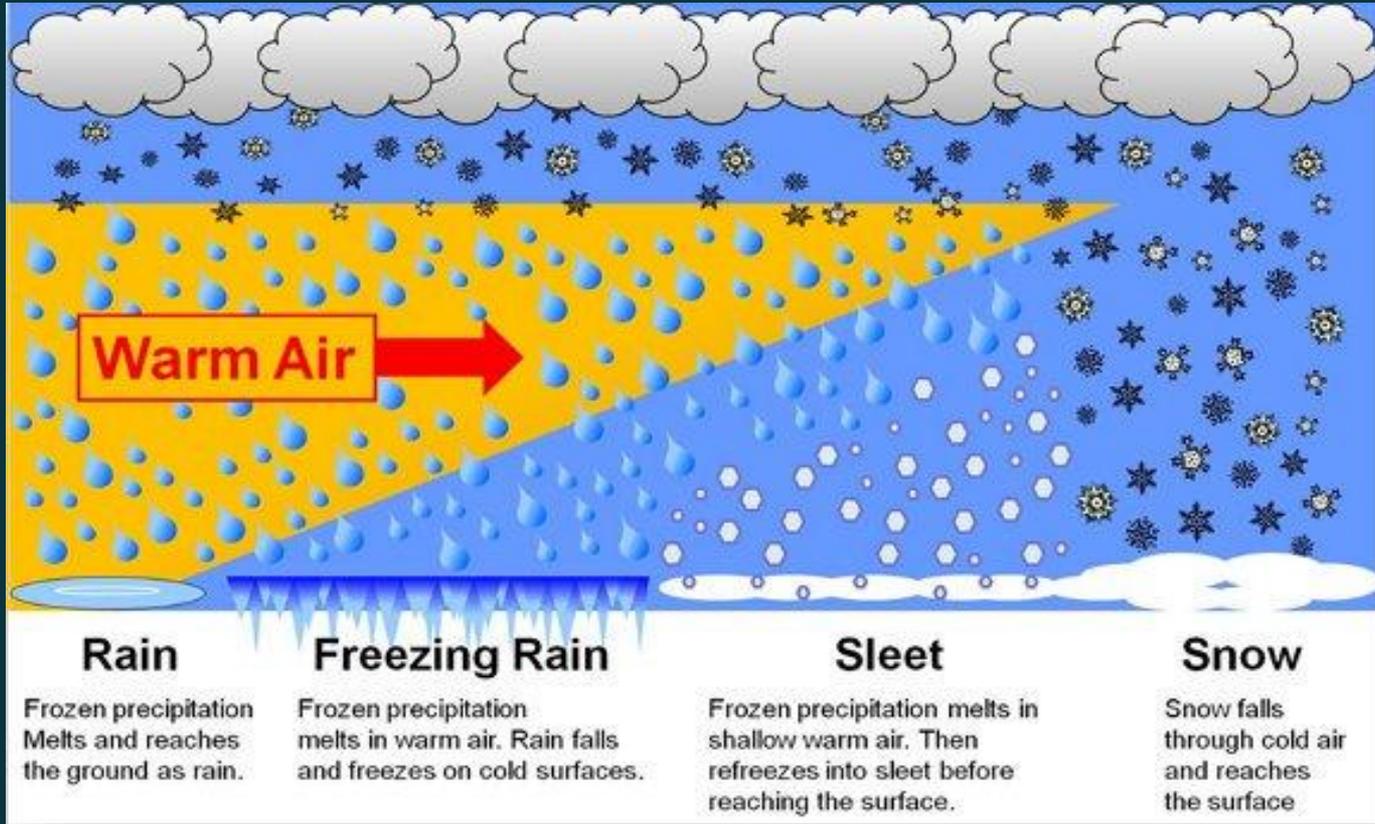
- Temperatures fall rapidly behind the squall, road temperature falls below freezing
- Water freezes forming dangerous layer of ice



#SnowSquallSafetyPA

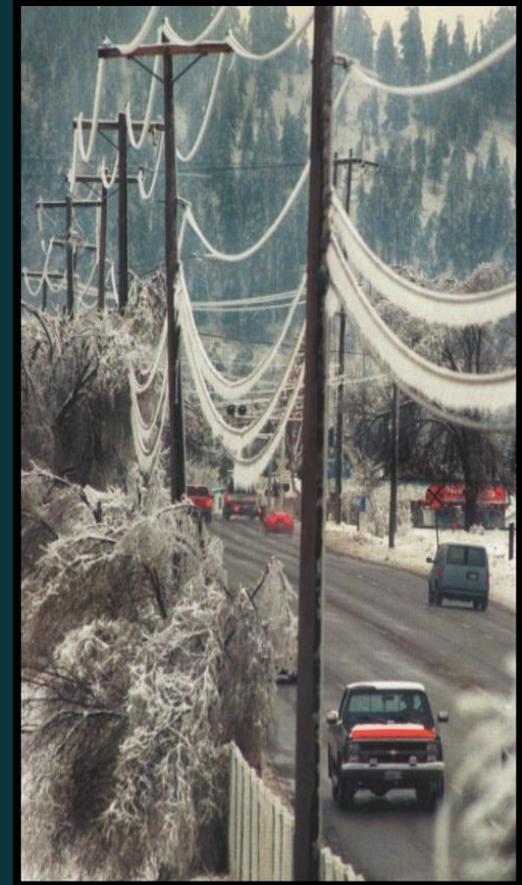
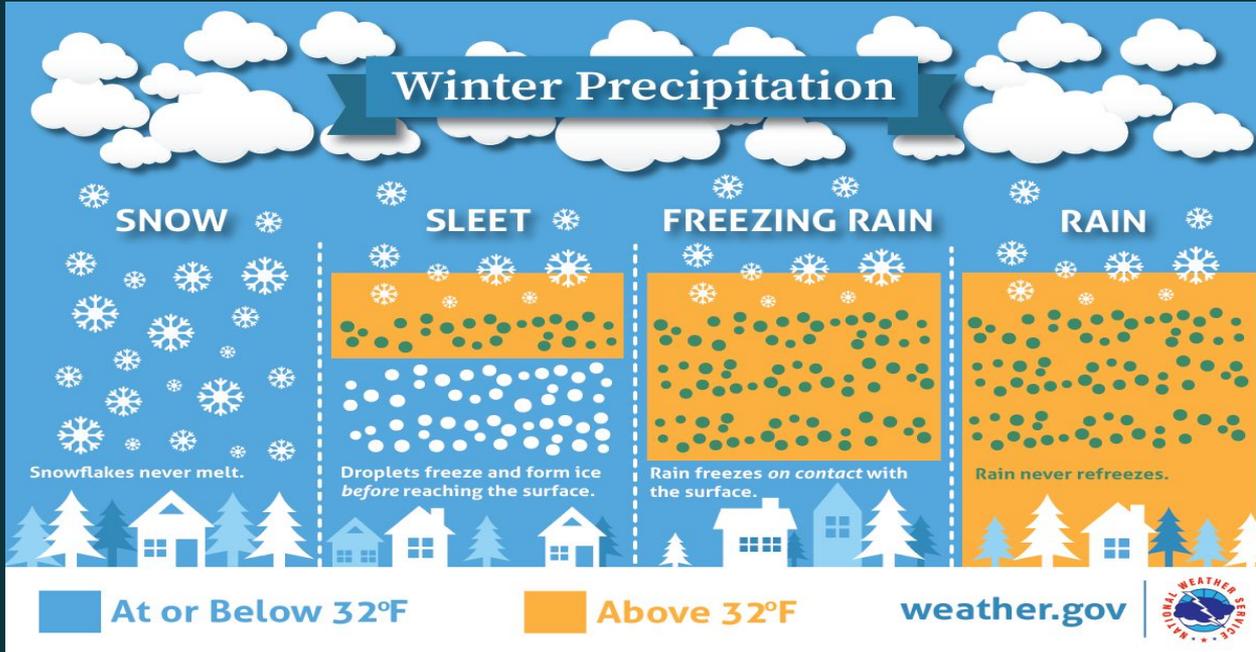


Vertical Temperature Profile is Critical!



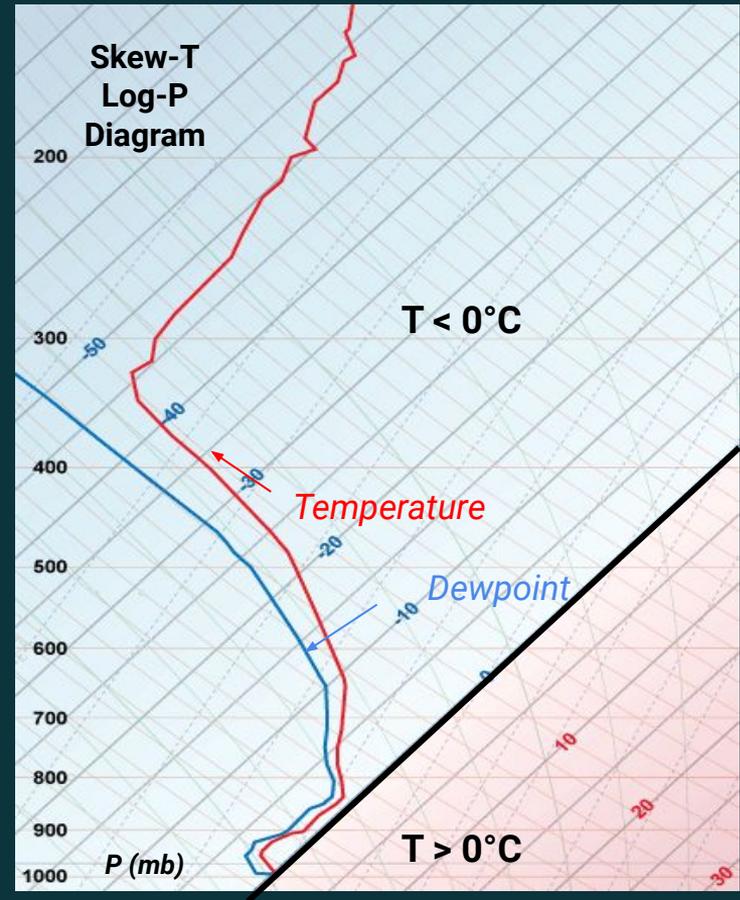
Winter Precipitation

- Freezing rain/ drizzle, Sleet, Ice
- Ice accumulation over $\frac{1}{4}$ inch = Ice Storm Warning!



Winter Precipitation: **Snow**

- Notice that the **entire atmosphere is below or near freezing** 32°F (0°C)
- This ensures that no melting occurs as the water molecules drop through the atmosphere
- If the air in the lower troposphere starts off dry and slightly warmer than freezing, evaporative cooling can change precipitation that is initially rain to snow



*Photo Credits:
NWS/JetStream*



Winter Precipitation: Sleet

- Notice that the entire atmosphere is **not below freezing**. Sleet occurs when a snowflake partially melts and then refreezes before hitting the surface
- For partial melting to occur, the maximum temperature in the “**melting layer**” is typically between 33.8°F and 37.4°F (1°C and 3°C)
- Typically the warm layer is less than 2,000 feet thick
- Sleet commonly occurs with a wintry mix of snow, freezing rain, and rain
- Rain may change to sleet through cooling processes in the lower troposphere

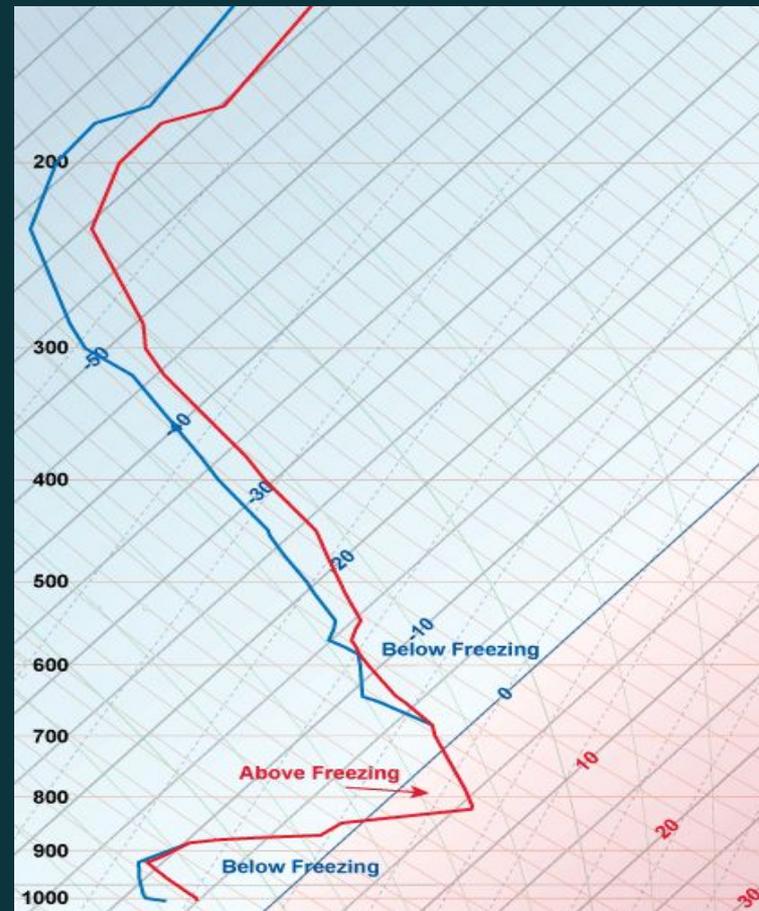


Photo Credits:
weather.gov



Winter Precipitation: **Freezing Rain**

- Notice that there is a **deep warm/melting layer** and a very shallow freezing layer just above the surface
- Freezing rain occurs when a snowflake completely melts and the surface temperature is below freezing, but the cold air near the surface is not deep enough to allow the rain to refreeze into sleet before hitting the ground
- The maximum temperature in the melting layer will typically exceed 37.4°F (3°C) causing the snowflake to completely melt and become a raindrop
- The raindrops freeze on contact with cold objects and the ground and create hazardous conditions

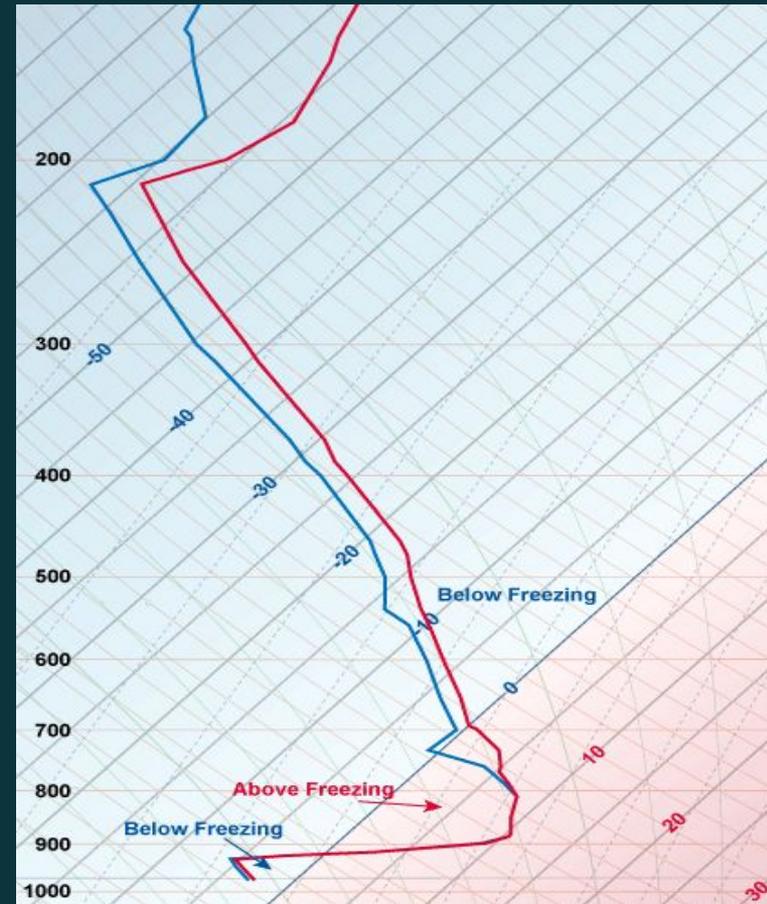


Photo Credits:
weather.gov



Strong or Damaging Winds

- Report any winds estimated to be over 40 mph
- Winds that produce any damage
- Severe/high winds \geq 58 mph



Windstorm 2015



April 4, 2022



April 27, 2019



Don't have a
weather station?

Not to worry...

Use the
Beaufort Wind Chart to
estimate wind speeds

Beaufort Wind Chart – Estimating Winds Speeds

| Beaufort Number | MPH | | Terminology | Description |
|-----------------|-------|---------|-----------------|--|
| | Range | Average | | |
| 0 | 0 | 0 | Calm | Calm. Smoke rises vertically. |
| 1 | 1-3 | 2 | Light air | Wind motion visible in smoke. |
| 2 | 4-7 | 6 | Light breeze | Wind felt on exposed skin. Leaves rustle. |
| 3 | 8-12 | 11 | Gentle breeze | Leaves and smaller twigs in constant motion. |
| 4 | 13-18 | 15 | Moderate breeze | Dust and loose paper is raised. Small branches begin to move. |
| 5 | 19-24 | 22 | Fresh breeze | Smaller trees sway. |
| 6 | 25-31 | 27 | Strong breeze | Large branches in motion. Whistling heard in overhead wires. Umbrella use becomes difficult. |
| 7 | 32-38 | 35 | Near gale | Whole trees in motion. Some difficulty when walking into the wind. |
| 8 | 39-46 | 42 | Gale | Twigs broken from trees. Cars veer on road. |
| 9 | 47-54 | 50 | Severe gale | Light structure damage. |
| 10 | 55-63 | 60 | Storm | Trees uprooted. Considerable structural damage. |
| 11 | 64-73 | 70 | Violent storm | Widespread structural damage. |



Heavy Rain

Report heavy downpours or long periods of steady rain

Give specific locations - streets and creeks

- 0.50"+ in 1 hour - convective
- 1.0" in 12 hours or 1.5"+ in 24 hours - stratiform



Flooding and Ice Jams

Rising water on rivers, streams & low lying areas



AFTER A WILDFIRE

FLASH FLOODS AND DEBRIS FLOWS

Floods and debris flows happen quickly - within minutes of rainfall. **Prepare now!**

- Be aware of your surroundings and stay informed by having multiple ways to receive watches and warnings
- Follow any evacuation or other instructions from local officials
- If you have to shelter in place, get to the highest point inside your home. **Go up, not out!**



Mud and Debris Flows

Water-saturated rock, mud & debris moving down a slope, especially near recent burn scars



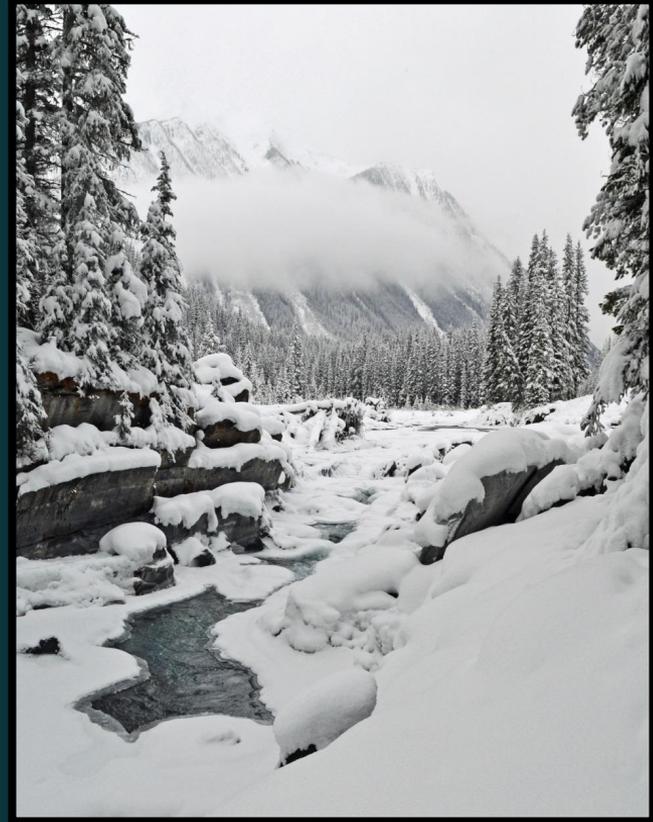
#3 Poll Question

What type of weather does NOT occur with a snow squall?



Typical Winter Storm Scenario

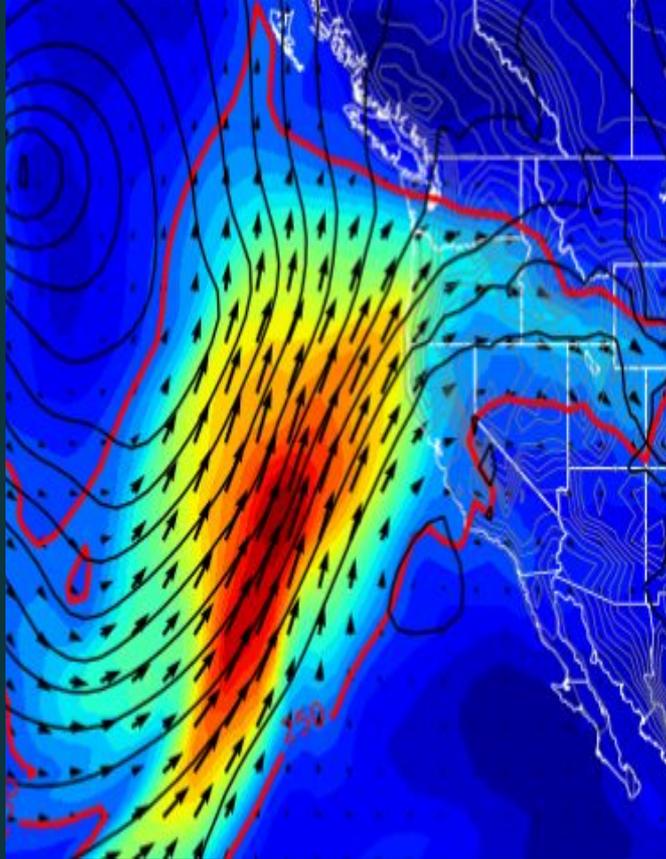
- Cold air in place over the Inland Northwest, especially in the valleys
- Warm Pacific Air overruns over the cold air
- Precipitation begins as snow, occasionally changes to rain with possible freezing rain



Atmospheric Rivers

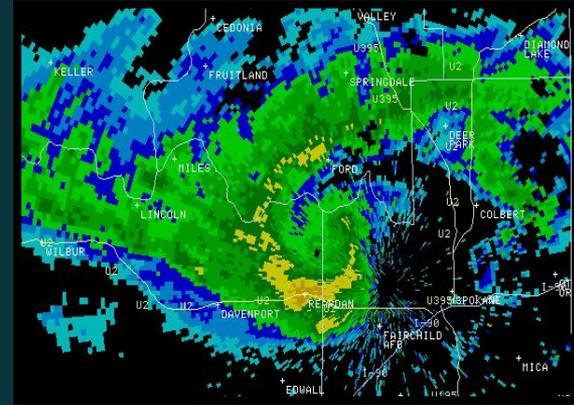
Plumes of atmospheric moisture

Mild & Wet Weather



Upper level troughs

- Cold air aloft - weak impulses
- May not be well forecast by models
- Potential for ~1 ft of snow in a short time
- Spotter play a BIG role with reports
- Can produce snow squalls



#4 Poll Question

Identify the type of precipitation.





Thunderstorm Hazards

Occur in Every Season



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WEATHER FORECAST OFFICE • SPOKANE, WA



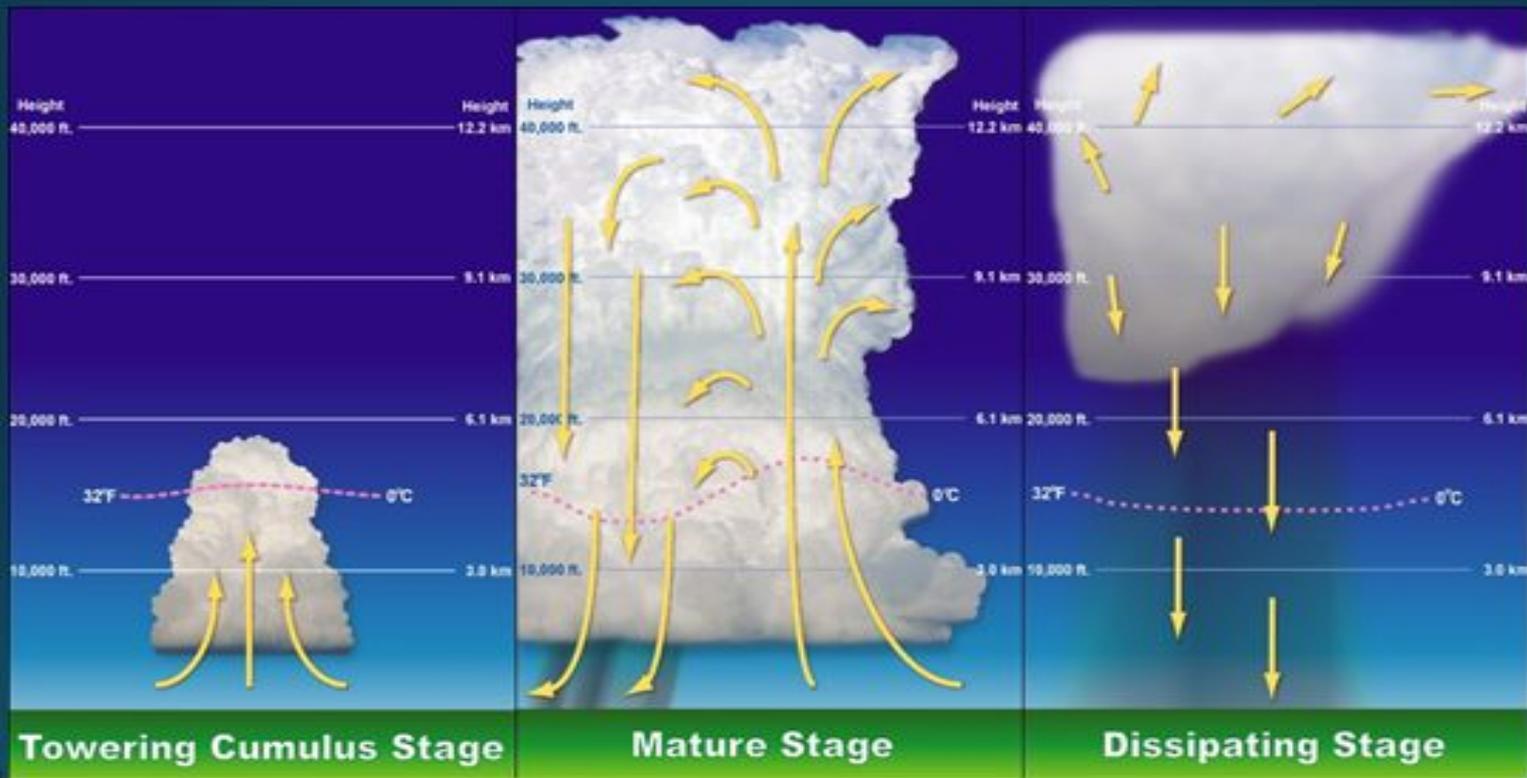
Thunderstorms Ingredients



- **Moisture** – most notably in the lower levels of the atmosphere
- **Instability** – ability of air to accelerate up when pushed
- **Lift Mechanism** – the “Push” that triggers the lift



Stages of a Thunderstorm



National Weather Service - Spokane, WA

www.weather.gov/Spokane



What is a Severe Thunderstorm?

Winds \geq 58 mph or Wind Damage



Hail $>$ 1" in diameter



Tornado



- Less than 10% of all thunderstorms are Severe
- Though Lightning is ALWAYS extremely dangerous, the amount of lightning does not make a storm SEVERE.





How to Report Hail Size



Don't Compare Hail to Marbles!
Why? Not all Marbles are Alike in Size!



Measure Hail With Common Objects



Good Examples of Comparison



| Object | Size | Object | Size |
|----------------|-------------|-------------|-------------|
| Dime/Penny | 0.75 inches | Hen Egg | 2.00 inches |
| Nickel | 0.88 inches | Tennis Ball | 2.50 inches |
| Quarter | 1.00 inches | Baseball | 2.75 inches |
| Half Dollar | 1.25 inches | Tea Cup | 3.00 inches |
| Ping Pong Ball | 1.50 inches | Grapefruit | 4.00 inches |
| Golf Ball | 1.75 inches | Softball | 4.50 inches |

What about Funnel Clouds & Dust Devils?

- Funnel clouds stay aloft attached to storm cloud
- Dust devils start at the ground and extend upward
- Tornadoes extend from storm cloud to the ground
- In doubt, check for cloud cover and debris on ground
- Take a picture and share!



Non-Supercell Tornadoes



- Landspouts are narrow, rope-like condensation funnels that reach the ground.
- Landspouts form during the towering cumulus or mature stage of a thunderstorm.
- There is no rotating updraft - spinning originates near the ground.



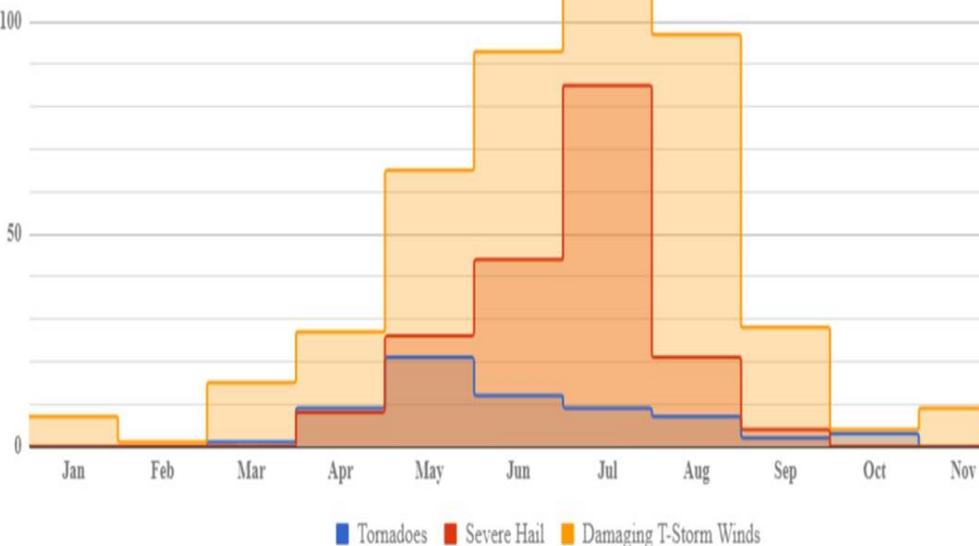
Local Severe Weather Climatology

BY MONTH

Peak month for Damaging Winds/Hail – July

Peak month for Tornadoes – May

Event had severe reports in Nov and Jan

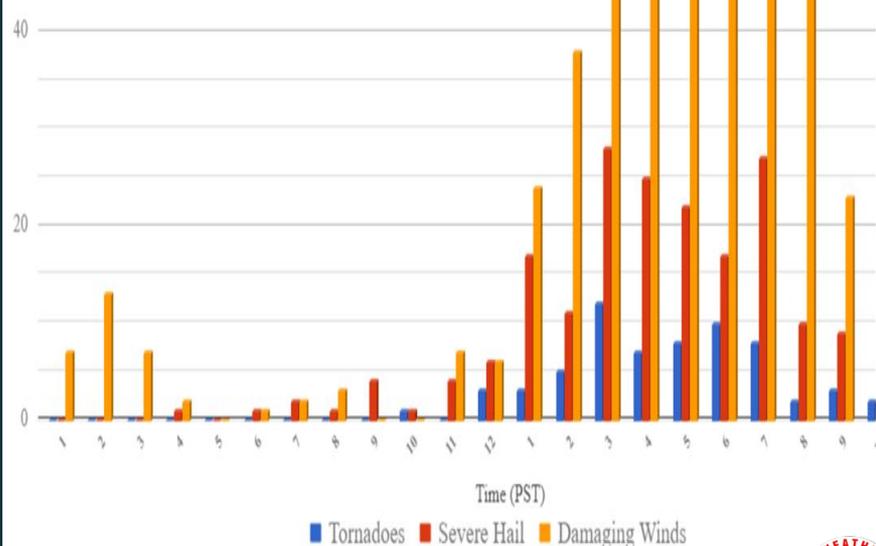


BY TIME OF DAY

Most active mid afternoon to mid evening

Less active in the morning

Still get wind reports late at night



Cloud Types

Scud clouds - ragged



Cumulus



Towering Cumulus



Stratus – stable clouds, hugs mountains



<http://australiasevereweather.com/>

Wall cloud – lowering cloud base/ rotation



#5 Poll Question

Identify this cloud.



Flood Safety

- Be alert for rising water, especially in canyons or low lying areas.
- Avoid walking or driving (at any speeds) through flood waters. A depth of 2 feet of moving water can carry away most automobiles.
- Be extra careful at night when it's hard to see.



Winter Storm Safety

- Make sure your vehicle is **winterized!** Have a winter survival kit packed with blankets, flashlight, shovel, ice scraper, food and water.
- Dress for the weather! Remember to **dress in layers.** Limit time outside to avoid hypothermia in extreme cold.
- If caught in a winter storm, stay indoors or find shelter. Stay warm and dry.



Lightning Safety

Close Enough to Hear Thunder,-
Close Enough to be Struck!

- Lightning can strike as far as 10 miles from the thunderstorm.
- More than 50% of lightning deaths occur AFTER the storm has passed

When Thunder Roars, Go Indoors

Seek Safe Shelter indoors - or vehicle if needed
Stay away from windows & doors
Don't use a corded phone or take a bath/shower



Spokane, WA April 2017



June 2019 - Spokane



Ritzville - May 2020



Spotter Safety

- Personal Safety is the Primary Objective of every spotter
- Protect You and Your Family First
- Do NOT put yourself in harm's way
 - Don't walk or drive over obstructions as flooded roads or downed power lines
 - Don't put yourself under objects that have the potential to fall or be blown over
- **ACES - Awareness, Communication, Escape Route and Safe Zones**



#5 Poll question

You're planning a trip over the Pass for the holidays.
What should you take with you?



Stay Informed - NWS Spokane Web Page

www.weather.gov/Spokane

NATIONAL WEATHER SERVICE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

HOME FORECAST PAST WEATHER SAFETY INFORMATION EDUCATION NEWS SEARCH ABOUT

Local forecast by "City, ST" or ZIP code
Enter location: [] Go

News Headlines

- [Blog - El Niño and the Winter Outlook 2023-24](#)
- [Weather Spotter Training Schedule - Register Here!](#)

MY FORECAST
Spokane WA

NWS Forecast Office Spokane, WA
Weather.gov > Spokane, WA

Spokane, WA
Weather Forecast Office

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

Rain This Week Mountain Wintry Mix Wed Night/Thu AM Air Stagnation Fall Spotter Training

Clear
45°F
7°C [Get Detailed Info](#)

This Afternoon

Mostly Cloudy
High: 45°F

Tonight

20% → 100%
Slight Chance Rain then Rain
Low: 37°F
[change location](#)

Periods of Rain Wednesday Night through the Weekend
Beneficial rains for the Inland Northwest

Central Washington: **0.50-1.00"**
(Winthrop, Omak, Wenatchee, Moses Lake)

Eastern Washington: **1.00-1.50"**
(Colville, Spokane, Ritzville, Pullman)

North Idaho: **1.25-2.50"**
(Lewiston, Kellogg, Coeur d'Alene, Sandpoint)

Don't let this happen!
Prevent the strain, clear your storm drains **before** the rain!

NATIONAL WEATHER SERVICE
OCEANIC AND ATMOSPHERIC ADMINISTRATION SPOKANE, WA
Issued: 7:59 PM - Monday, October 30, 2023

Click a location below for detailed forecast.

Winthrop • Omak • Republic • Colville • Bonners Ferry
Chelan • Coeur d'Alene • Sandpoint • Libby
Wenatchee • Moses Lake • Ritzville • Spokane
Ellensburg • Moses Lake • Ritzville • Pullman
Yakima • Connell • Pasco • Walla Walla • Lewiston • Orofino
Grandville

Last Map Update: Mon, Apr. 5, 2021 at 10:44:15 am PDT

[Watches, Warnings & Advisories](#)
There are no watches, warnings, or advisories at this time.

Zoom Out

Text Product Selector (Selected product opens in current window)
Latest Text Products Issued by OTX

| | | | | | |
|-----------------------------|-------------------------|-------------------------|----------------------------|---------------------------|-------------------------|
| Social Media | Forecast Discussion | Local Radar | Satellite Images | Weather Maps | Graphical Forecasts |
| Weather Table Forecasts | Climate Graphics | Rivers and Lakes | Observations & Hazards | Fire Weather | Aviation Weather |
| Weekly Briefing | Hourly Forecasts | Drought Information | Climate | Submit a Storm Report | View Storm Reports |

Stay Informed - Probabilities & Confidence

weather.gov/Spokane/winter

Probabilities wind gusts Eastern WA

| | > 40 mph | >50 mph | > 60 mph |
|-------------------|----------|---------|----------|
| Colville | 15% | 0% | 0% |
| Deer Park | 60% | 10% | 0% |
| Spokane (airport) | 100% | 20% | 5% |
| Pullman | 75% | 20% | 5% |
| Pomeroy | 90% | 60% | 20% |

High End Amount 1 in 10 Chance (10%) of Higher Snowfall



What's this?

Low End Amount 9 in 10 Chance (90%) of Higher Snowfall



What's this?



Stay Informed - NOAA Weather Radio

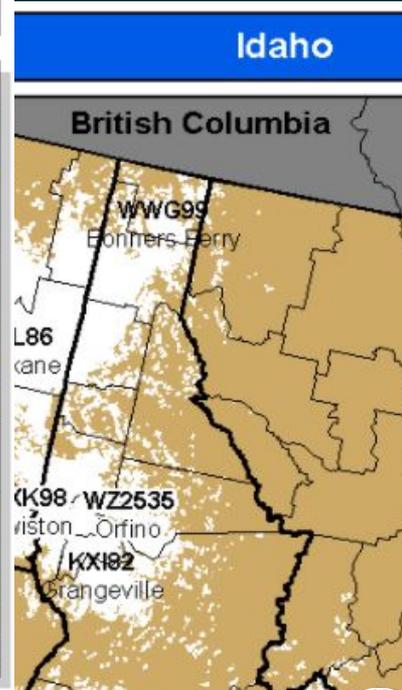
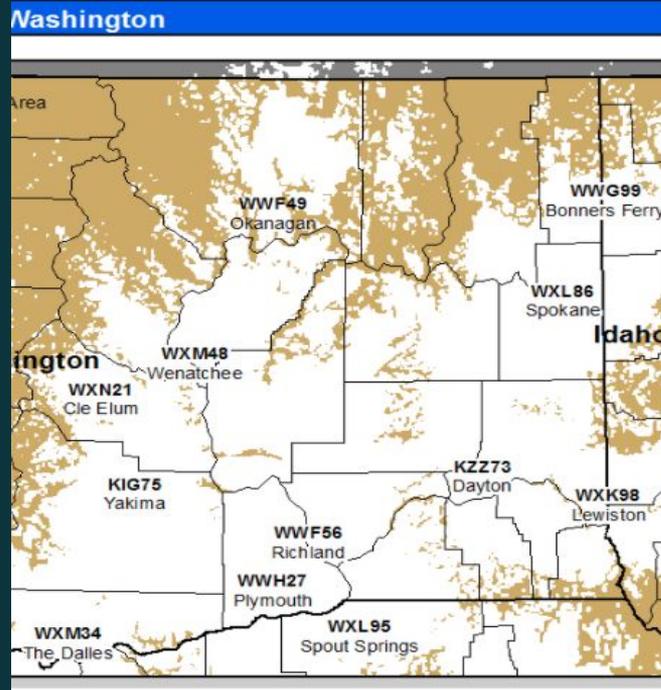


Continuous operation.

Battery backup capable.

Handheld device great for outdoor activities.

Can drive across the country and get info anywhere along path.



Stay Informed

FEMA App



Download the FEMA App Today

Get Access to:

- Weather Alerts
- Disaster Resources
- Preparedness Tips

Apple



Android



Staying Informed - On Your Phone!



Weather Warnings

- Tornado Warnings
- Flash Flooding Warnings
- Extreme Wind Warnings
- Dust Storm Warnings
- Snow Squall Warnings

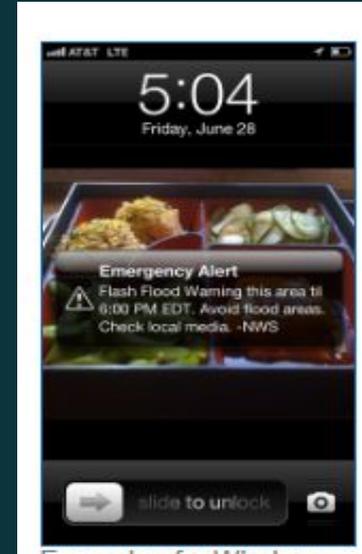
Alert Categories

Extreme Weather & Water Warnings

Local emergencies & Evacuations

AMBER Alerts

Presidential Alerts – National emergency



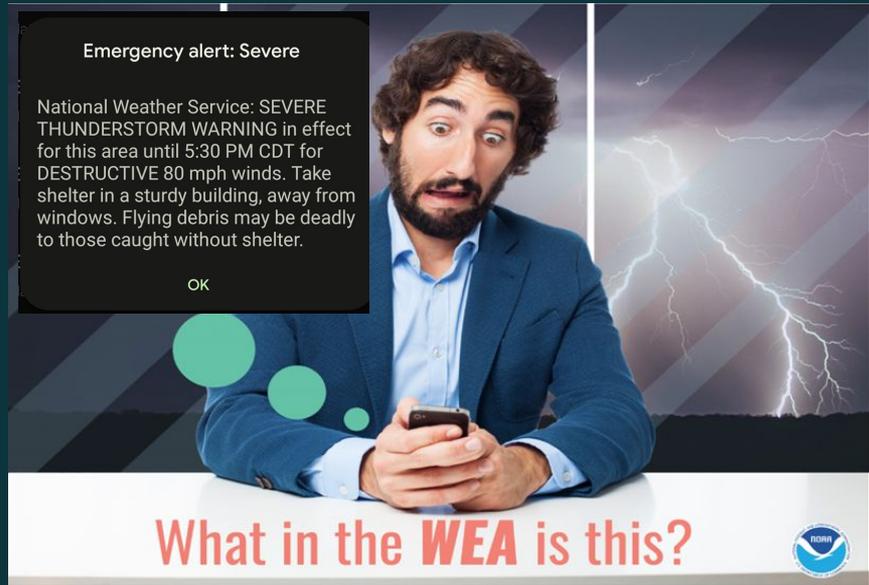
STAY INFORMED

Wireless Emergency Alerts (WEA)

WEA warns the public about dangerous weather, missing children, and other critical situations with a text-like message on your mobile device.

WEA-capable mobile devices will receive:

- Tornado Warnings (TOR)
- Severe Thunderstorm Warnings (SVR)*
- Flash Flood Warnings (FFW)**
- Extreme Wind Warnings (EWW)
- Dust Storm Warnings (DSW)
- Snow Squall Warnings (SQW)***



What in the **WEA** is this?



*Only SVRs with 80 mph wind or 2.75" diameter hail (baseball) tags will transmit over WEA!

**Only FFWs with *CONSIDERABLE* or *CATASTROPHIC* damage tags will transmit over WEA!

***Only SQWs with *CONSIDERABLE* tags will transmit over WEA!



Stay Informed - Inland NW Weather Blog

Inland Northwest Weather Blog

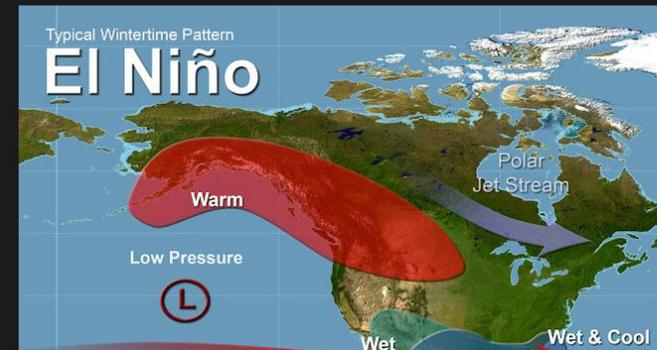
A discussion of weather and climate of the Inland Northwest.

Sunday, October 29, 2023

El Niño and the Winter Outlook 2023-24

What will this winter bring? In a previous blog post, found [here](#), we talked about how El Niño could impact our fall weather. Now we will take it a step further and examine the winter.

In case you haven't heard, there is a 100% chance of an El Niño this winter! This is guaranteed. And there is an 80% chance the event will be classified as a strong El Niño. Below is the typical pattern associated with an El Niño winter. Typically the polar jet stream stays well to our north and east while an active Pacific Jet Stream sends wet weather into the west coast (especially California). But as you'll see later that is certainly no guarantee.



Blog Archive

- ▼ 2023 (8)
- ▼ October (2)
 - El Niño and the Winter Outlook 2023-24
 - Major pattern change this week - Snow and Cold!
- ▶ September (1)
- ▶ August (1)
- ▶ May (1)
- ▶ April (2)
- ▶ March (1)
- ▶ 2022 (12)
- ▶ 2021 (17)
- ▶ 2020 (11)
- ▶ 2019 (23)
- ▶ 2018 (14)
- ▶ 2017 (11)
- ▶ 2016 (18)
- ▶ 2015 (37)
- ▶ 2014 (38)
- ▶ 2013 (15)

<https://inlandnorthwestweather.blogspot.com/>

Great Way to understand more on weather events and outlooks!



Other Ways to Get Involved

- Weather Spotter
- Join the Community Collaborative Rain, Hail, and Snow Network
- Join the Citizens Weather Observers Program



Community Collaborative Rain, Hail and Snow Network CoCoRaHS

Help Observe Precipitation in your Community www.cocorahs.org
Volunteer take readings once a day - transmit on mobile device

COMMUNITY COLLABORATIVE RAIN, HAIL & SNOW NETWORK
"Because every drop counts"

Welcome to CoCoRaHS! "Volunteers working together to measure precipitation across the nations."

Who uses CoCoRaHS Observations?

| Daily | Multi-day | SigWx | Hail | Condition | ET |
|--------|-----------|-------|------|-----------|----|
| 10,433 | 63 | 5 | 7 | 9 | 51 |

Reports received today 4/22/2020 as of 6:26 PM EDT

Daily Precipitation (inches x.xx)
USA
4/22/2020

Things to know about...

- Rain
- Hail
- Snow



Logout Precip Report Details

CO-LR-610
Fort Collins 3.5 SW
Precipitation Report

Observation Date 2015-05-13

Observation Time 07:00

Rain/Melted Snow 0.00

Trace Precip More Details

Metric Units (mm/cm)

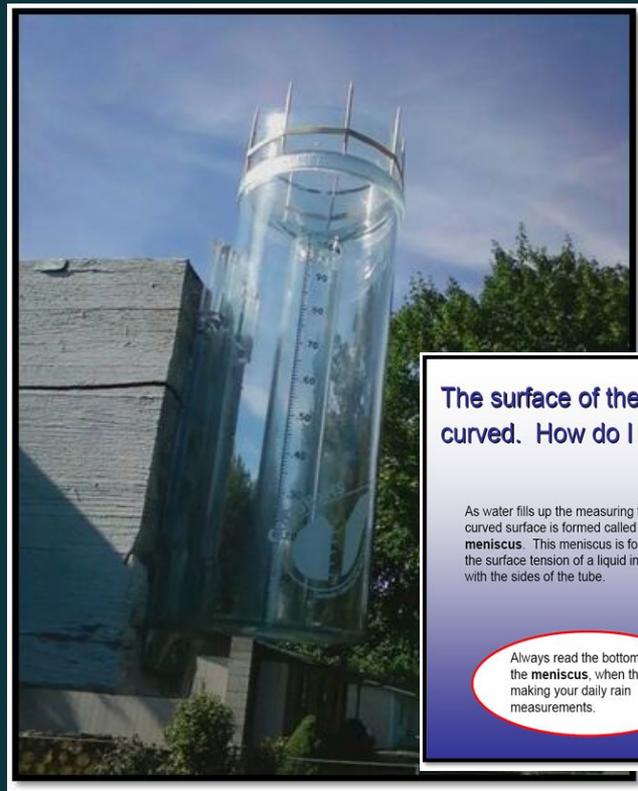
Submit

Community Collaborative Rain, Hail and Snow Network

CoCoRaHS

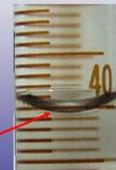
Five easy steps

1. Sign-up at on the CoCoRaHS web site
www.cocorahs.org
2. Obtain a 4" plastic rain gauge
3. View the online "training slide show"
4. Set up the gauge in a "good" location in your yard - away from trees
5. Start observing precipitation and report online daily



The surface of the water in the gauge looks curved. How do I know where to read?

As water fills up the measuring tube, a curved surface is formed called a **meniscus**. This meniscus is formed by the surface tension of a liquid in contact with the sides of the tube.



Always read the bottom of the **meniscus**, when making your daily rain measurements.



Community Collaborative Rain, Hail and Snow Network

CoCoRaHS



Weather Spotter & Observer Training

National Weather Service Spokane

- Want to learn more on winter weather?
- Training from the NWS
- Review safety & preparedness tips
- Classes are FREE & open to ALL!



Virtual Fall Training Classes

Cold Season Spotter Training

Wednesdays, Oct 16th and 30th, 2024

6:30 – 8 pm



Snow Measuring Training

Wednesday, Oct 23rd, 2024

6:30 – 8 pm

Register at [weather.gov/Spokane](https://www.weather.gov/Spokane)

See the top News Headlines!



Citizen Weather Observers Program

CWOP



www.wxqa.com

- Have a weather station and want to share data online
- Has a PC and Internet access
- Register Online & Receive a weather station ID
- Transmits data every 15 mins



Citizen Weather Observers Program

CWOP

Citizen Weather Observer Program

Site Contents:

[News](#)
[Main Page](#)
[Data Quality](#)
[Member Lists](#)
[Map/Data Displays](#)
[Ham Wx Station Info](#)
[CW Packet Checking](#)
[Weather Station Resources](#)
[Computer Security and Archive](#)



Join [CWOP](#) or [CWOP-snow](#)
[Search CWOP](#) or [shortform](#)

Related Links:

[CWOP info](#)
[APRS-IS info](#)
[findu.com info](#)
[FAQs, Forums](#)
[Solar Radiation](#)
[MADIS Program](#)
[APRSWXNET info](#)
[APRS Servers to Use](#)
[NOAA mesonet display](#)

What's going on here?

The Citizen Weather Observer Program (CWOP) is a public-private partnership with three goals: 1) to collect weather data contributed by citizens; 2) to make these data available for weather services and homeland security; and 3) to provide feedback to the data contributors so they have the tools to check and improve their data quality. In fact, the web address, wxqa.com, stands for weather quality assurance.

The [number of North American CWOP stations](#) sending data over the past several days is normally more than 7000 stations sending 50,000 to 75,000 observations every hour. The number of [world-wide citizen weather stations](#) sending data to CWOP is shown increasing over the past decade.

CWOP members send their weather data by internet alone or internet-wireless combination to the findU server and then every five minutes, the data are sent from the findU server to the NOAA MADIS server. The data undergo [quality checking](#) and then are distributed to users. There are over 800 different organizations using CWOP mesonet data. Here is a partial list:



Different programs - All useful to the NWS

Spotter

Severe Weather

No instruments
required

Event driven

[Weather.gov](https://www.weather.gov)

CoCoRaHS

Precipitation
only

Rain gauge
required

Daily
commitment

[Cocorahs.org](https://www.cocorahs.org)

CWOP

Weather data

Weather station

Daily
commitment

[Wxqa.com](https://www.wxqa.com)



Weather Spotter Resources Online

www.weather.gov/spokane

recasts

requencies

Locally Recorded Spotter Training

| | |
|---|--|
| Basic Spotter Training 2023 Notes | Advanced Spotter Training 2023 Notes |
| Fall Spotter Training 2022 Notes | Snow Measurement Training 2022 Notes |
| Basic Spotter Training 2022 Notes | Advanced Spotter Training 2022 Notes |
| Fall Spotter Training 2021 Notes | Snow Measurement Training 2021 Notes |
| Basic Spotter Training 2021 Notes | Advanced Spotter Training 2021 Notes |

National Spotter and Observer Training

| | |
|---|--------------------------------------|
| COMET MetEd | CoCoRaHS |
| SKYWARN Spotter Training - Basic | CoCoRaHS slide shows |
| Role of the SKYWARN Spotter | CoCoRaHS videos |
| SKYWARN Spotter Convective Basics | Wx Talks Webinars |



#6 Poll question

What is a good way to stay informed about hazardous weather?



Winter Outlook 2024-25



NATIONAL WEATHER SERVICE
WEATHER FORECAST OFFICE • SPOKANE, WA

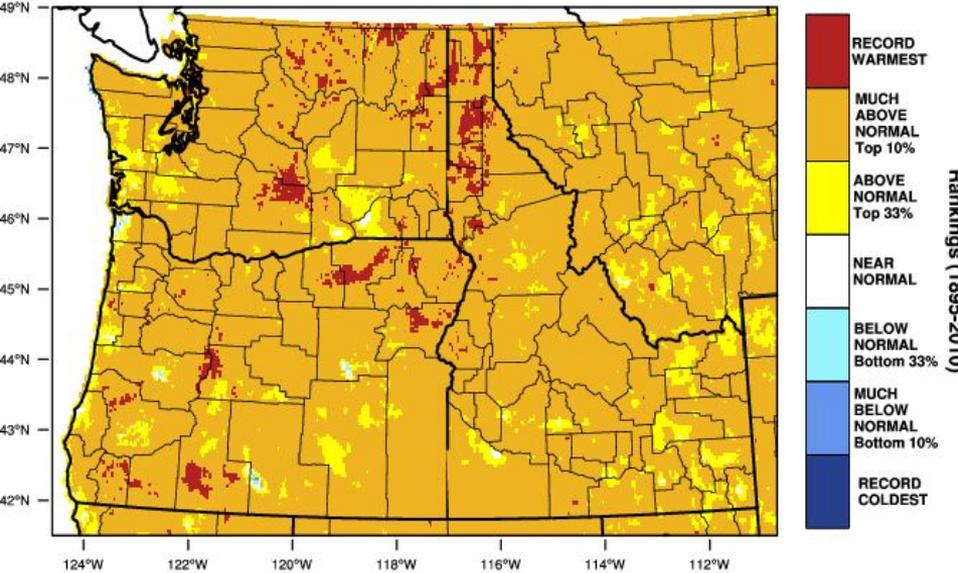


Past 3 Months

wrcc.dri.edu/

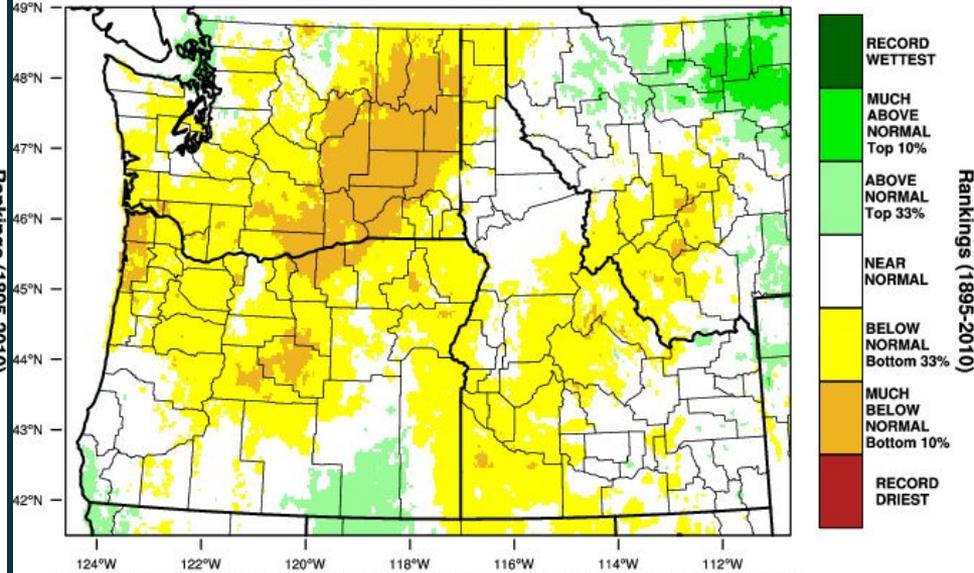
It has been **warmer** across the Inland NW with **below normal precipitation**

Pacific Northwest - Mean Temperature
July-September 2024 Percentile



WestWide Drought Tracker - U Idaho/WRCC Data Source - PRISM (Prelim), created 11 OCT 2024

Pacific Northwest - Precipitation
July-September 2024 Percentile



WestWide Drought Tracker - U Idaho/WRCC Data Source - PRISM (Prelim), created 11 OCT 2024

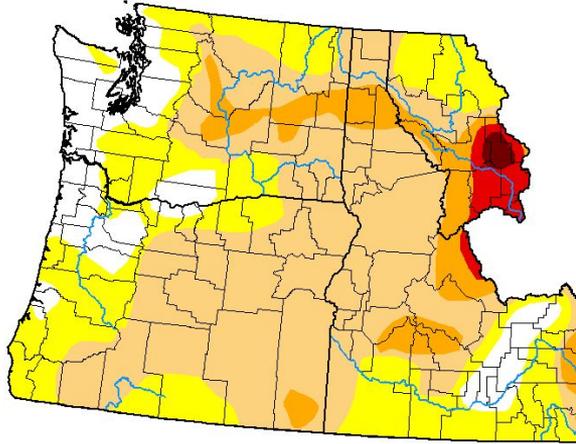
Drought Update

US Drought Monitor & Seasonal Outlook

www.cpc.noaa.gov

U.S. Drought Monitor Pacific Northwest DEWS

October 8, 2024
(Released Thursday, Oct. 10, 2024)
Valid 8 a.m. EDT



Intensity:

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

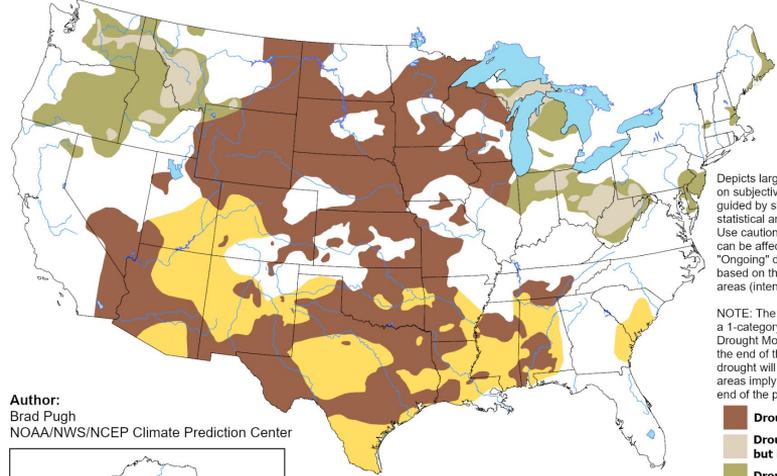
Author:

Richard Tinker
CPC/NOAA/NWS/NCEP



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

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

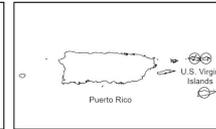
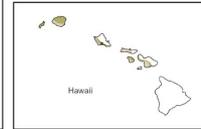


Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. *Ongoing* drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to D4).

NOTE: The tan areas imply at least a 1-category improvement in the Drought Monitor intensity levels by the end of the period, although drought will remain. The green areas imply drought removal by the end of the period (D0 or none).

- Drought persists
- Drought remains, but improves
- Drought removal likely
- Drought development likely
- No drought

Author:
Brad Pugh
NOAA/NWS/NCEP Climate Prediction Center



<https://go.usa.gov/3eZ73>



ENSO Status

ENSO Alert System Status: La Niña Watch

- **60 percent chance** for La Niña to emerge Sept–Nov and will persist through January-March 2025.
- Favors at least a **"weak" event**. A weaker La Niña implies that it would be less likely to result in conventional winter impacts, though predictable signals could still influence the forecast guidance (e.g., CPC's seasonal outlooks)

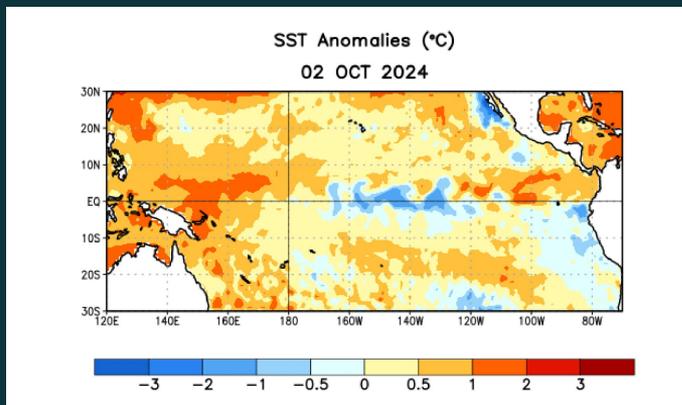


Figure 1. Average sea surface temperature (SST) anomalies (°C) for the week centered on 2 October 2024. Anomalies are computed with respect to the 1991-2020 base period weekly means. Data credit: UKMet OSTIA.

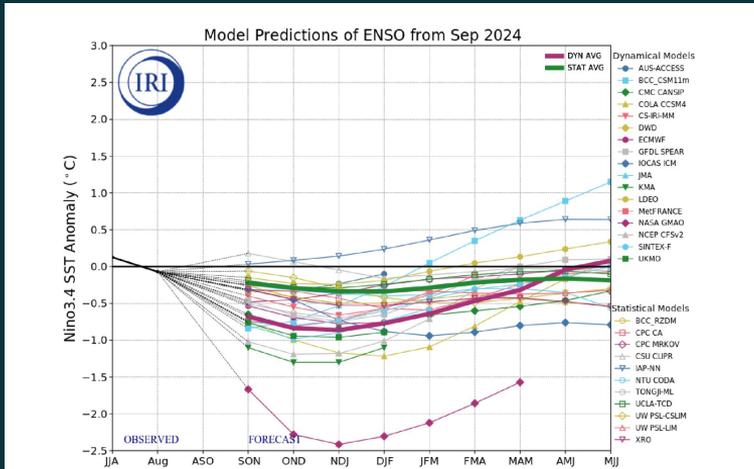


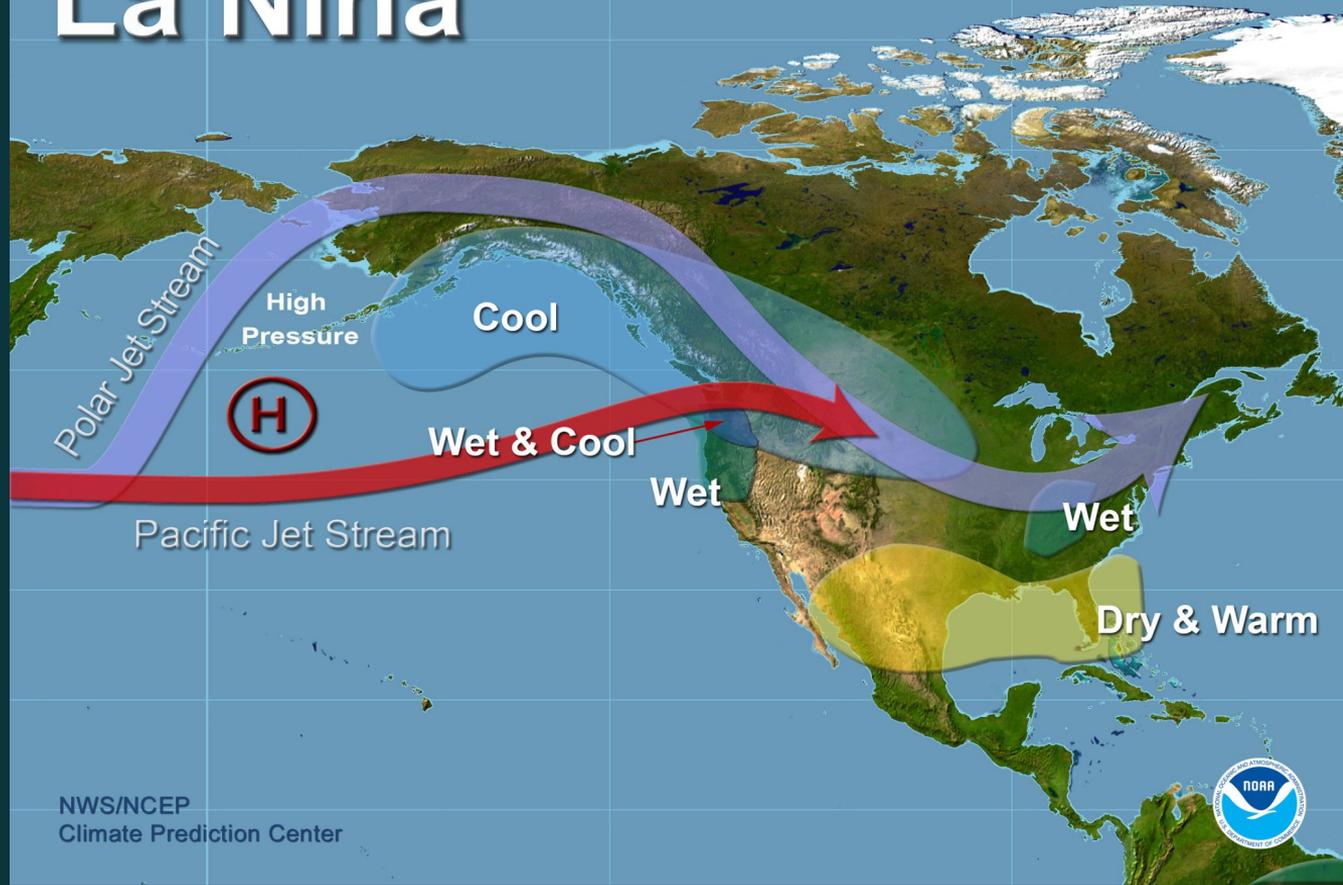
Figure 6. Forecasts of sea surface temperature (SST) anomalies for the Niño 3.4 region (5°N–5°S, 120°W–170°W). Figure updated 19 September 2024 by the International Research Institute (IRI) for Climate and Society.



“Typical” La Niña Atmospheric Setup

Typical Wintertime Pattern

La Niña



NWS/NCEP
Climate Prediction Center





ANALOG YEARS

STRONG EL NINO → LA NINA WINTERS

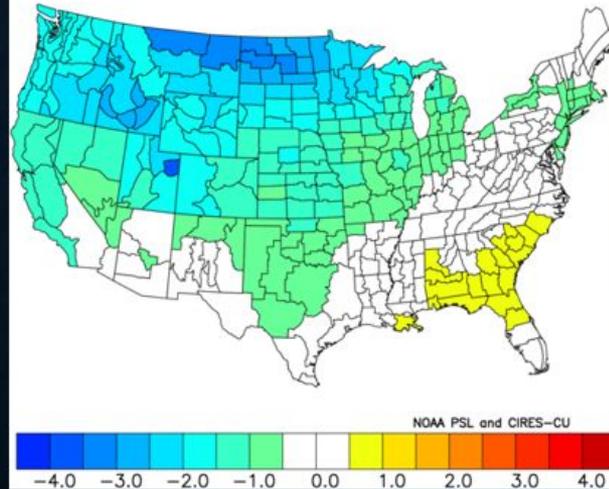
(1964/65, 1973/74, 1983/84, 1988/89, 1998/99, 2010/11, 2016/17)

Seven best fit winter seasons going back to year 1950

- 1964/65
- 1973/74
- 1983/84
- 1988/89
- 1998/99
- 2010/11
- 2016/17

Temperature

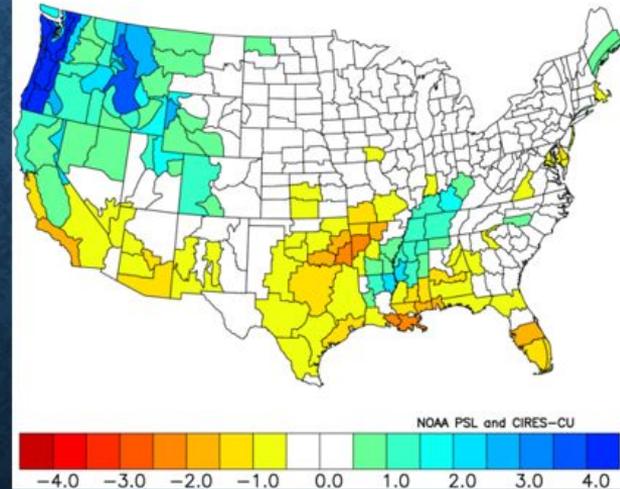
NOAA/NCEI Climate Division Composite Temperature Anomalies (F)
Dec to Feb 2016-17, 2010-11, 1998-99, 1988-89, 1983-84, 1973-74, 1964-65
Versus 1991-2020 Longterm Average



Colder Winters

Precipitation

NOAA/NCEI Climate Division Composite Precipitation Anomalies (in)
Dec to Feb 2016-17, 2010-11, 1998-99, 1988-89, 1983-84, 1973-74, 1964-65
Versus 1991-2020 Longterm Average



Wetter Winters

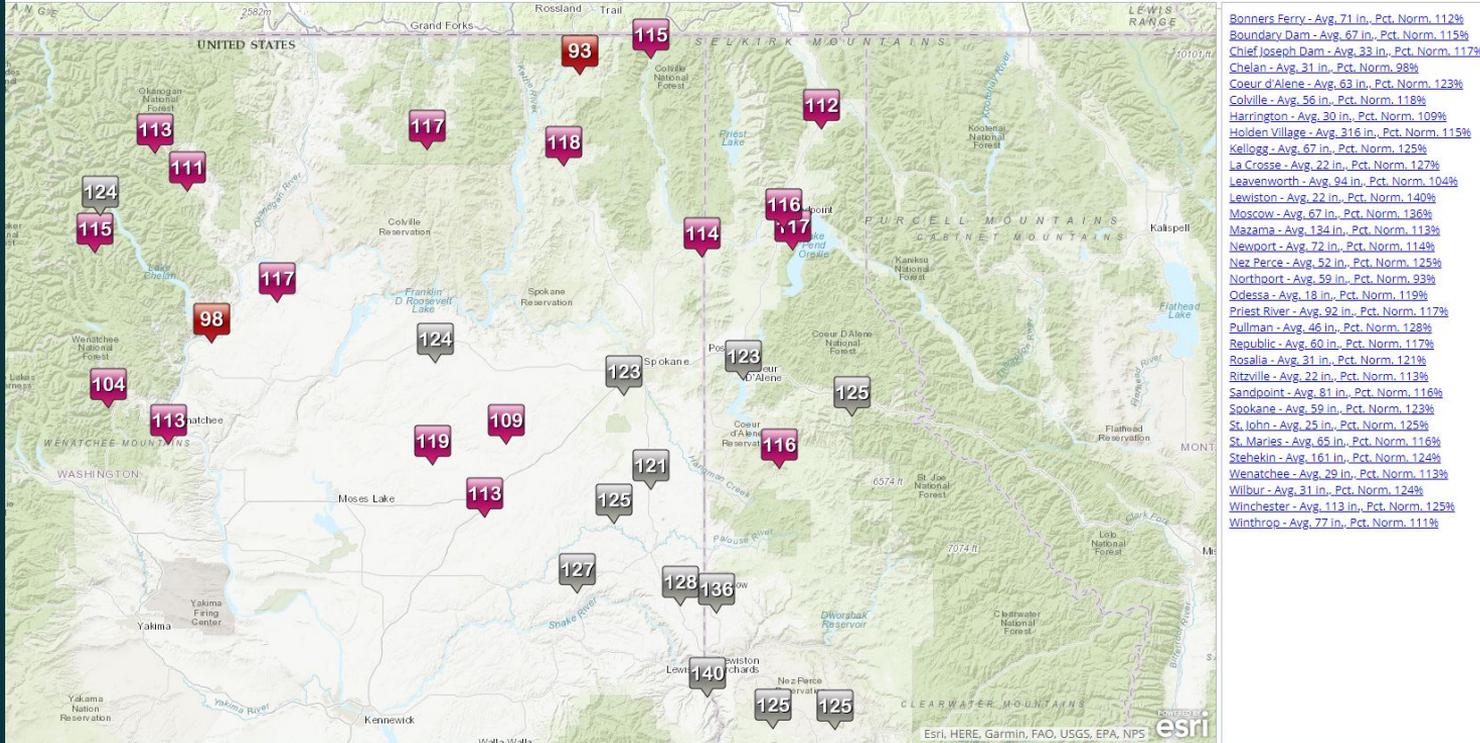
Interactive La Niña Snow Climatology

www.wrh.noaa.gov/otx/climate/coop/enso/ninaosnow/ninacoopsnowavgmap.php

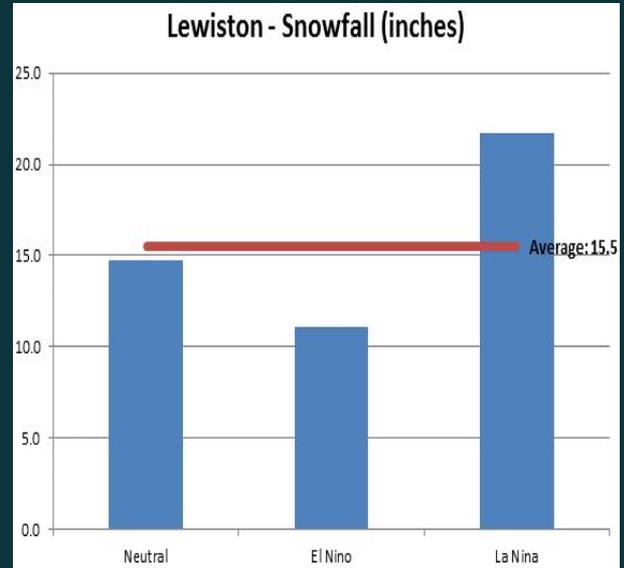
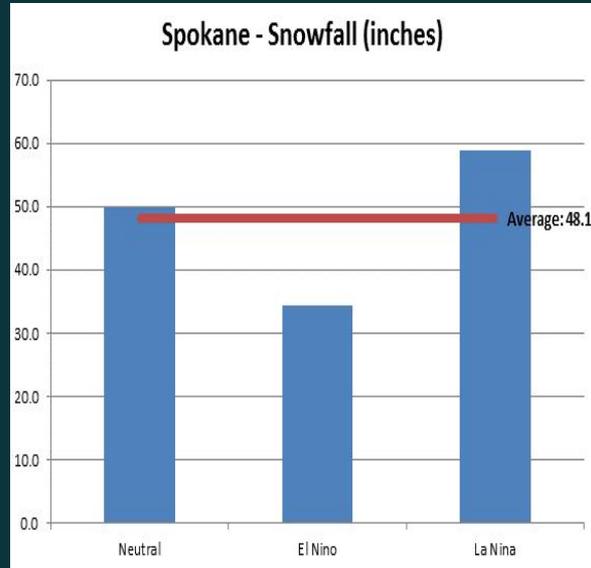
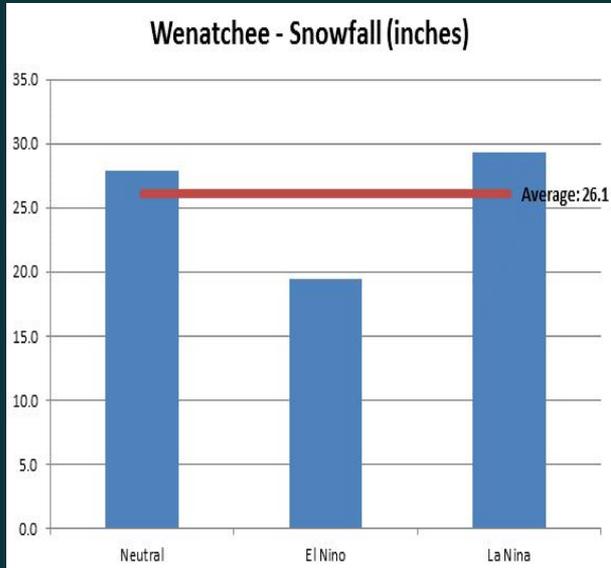
NWS Spokane Coop Observed, La Nina Snow Climatology

Percent of Normal Snowfall

Click on a point or right sidebar for the full details.



Clickable Points



One Month Outlook

November

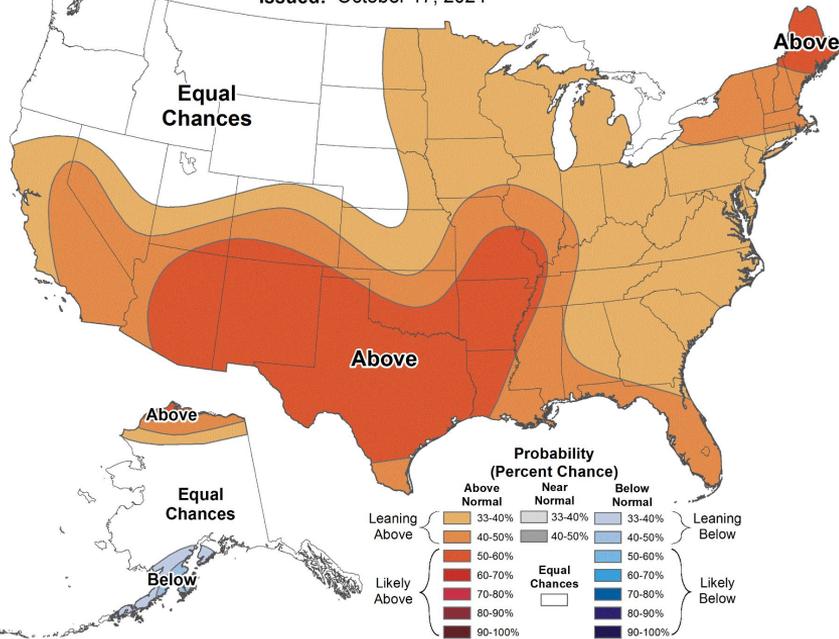
www.cpc.noaa.gov



Monthly Temperature Outlook



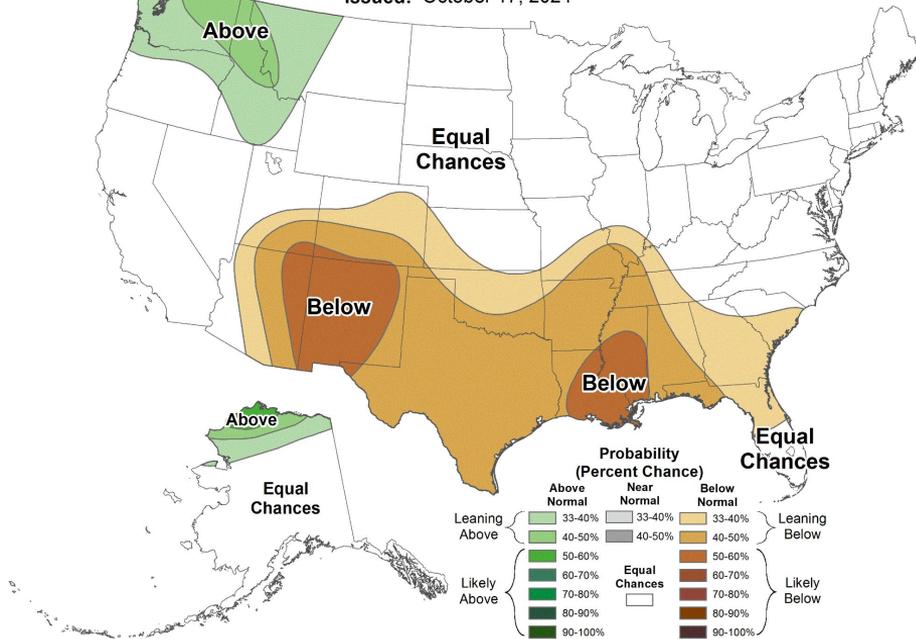
Valid: November 2024
Issued: October 17, 2024



Monthly Precipitation Outlook



Valid: November 2024
Issued: October 17, 2024



Three Month Outlook

November through January

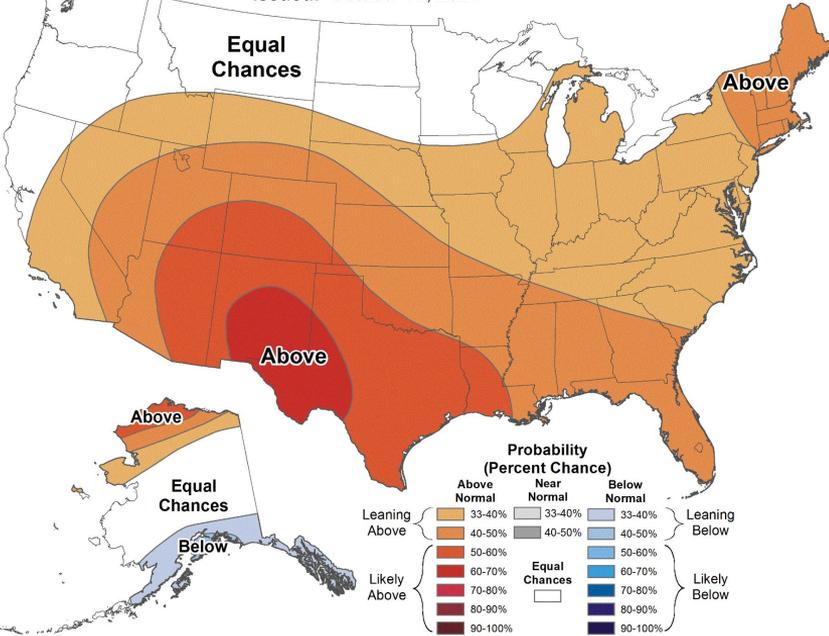
www.cpc.noaa.gov



Seasonal Temperature Outlook



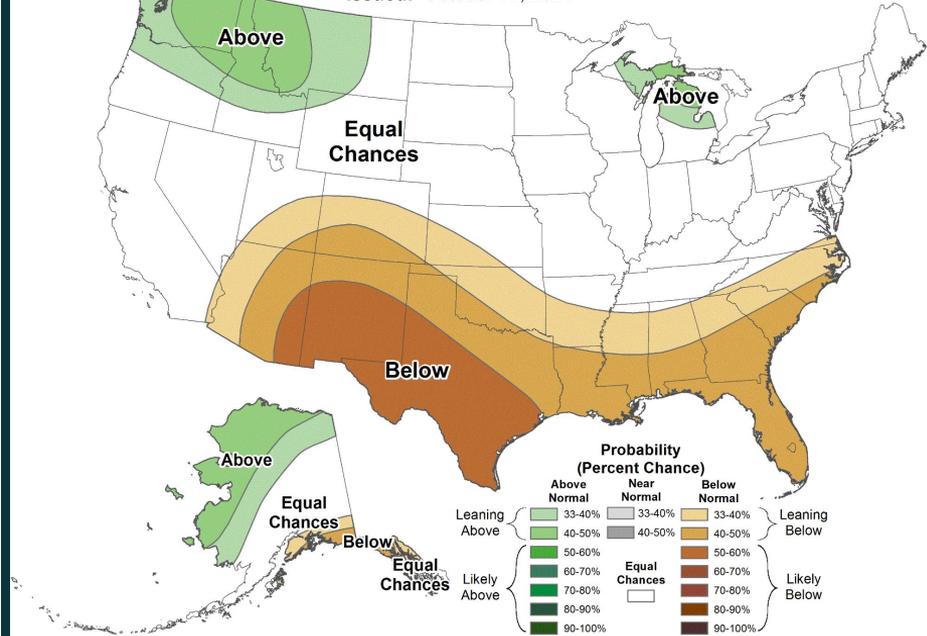
Valid: Nov-Dec-Jan 2024-25
Issued: October 17, 2024



Seasonal Precipitation Outlook



Valid: Nov-Dec-Jan 2024-25
Issued: October 17, 2024



Key Points – Winter Outlook

- La Niña - She's on her way
- Fall should remain mild with seasonal precipitation
- Trending wetter and cooler than normal for the later half of the winter
- La Niña favors higher stream flows, drought improvements, increased snowpack, and a risk of floods





NWS + Weather Spotters = Saved Lives

nws.spokane@noaa.gov

THANK YOU!

What's Next?

You will receive a follow-up email

- register as a weather spotter
- Spotter ID
- Spotter training certificate

Any Questions?

Unmute yourself to talk

