

# Cold Season Spotter Training for the Inland NW

Fall 2023  
National Weather Service - Spokane  
Robin Fox

*Christmas 2022*



**NATIONAL WEATHER SERVICE**  
NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION

*Spokane, WA*

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



# 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 2023-24

Concentration on Cold Season weather spotting and the Checklist

**Now let's look back at 2022-23.....**



# High Winds: November 4-5, 2022

## Power Outages Tree Damage

A few reports:

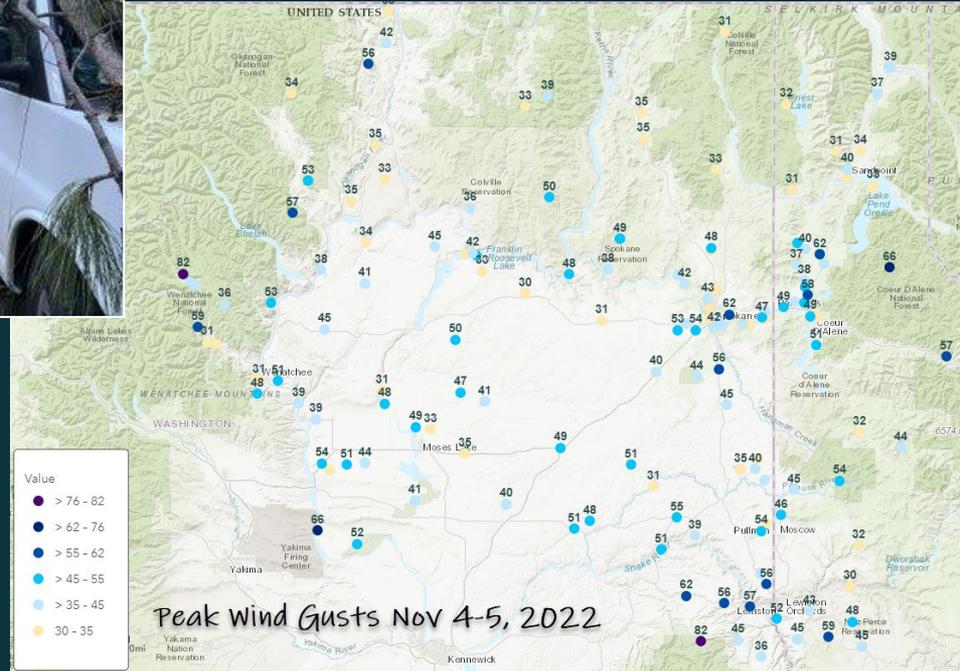
- 54 MPH Spokane Airport
- 58 MPH Coeur d'Alene
- 48 MPH Wenatchee
- 40 MPH Sandpoint
- 62 MPH Pomeroy



Spokane



Spokane



# Freezing Rain: December 24-26, 2022

Ice covered Roads  
Numerous Accidents



# Heavy Snow: December 27, 2022

## Snow Loading Roof Collapse

A few reports:

8 inches Carlton  
10 inches Mazma  
6 inches Winthrop  
5.5 inches Twisp



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# Flooding on the Palouse : December 27-28, 2022



Road closures  
Flooding of streets, parks,  
and private property



# Northeast WA Flooding : April, 2023

Road closures  
Flooding of streets,  
parks, and private  
property

Ferry and Stevens  
counties





# THANK YOU Weather Spotters!



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



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# 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)

- Part of the Federal Government – Dept of Commerce - NOAA
- Responsible for all weather/water Watches & Warnings
- Works with local agencies
- Observe & Forecast
- “Behind the Scenes”
- Decision Support
- Preparedness & Education

**Issue Weather and Water watches/warnings for the protection of life and property.**



# NWS Spokane Forecast and Warning Area

## NWS Weather Forecast Offices

*Your resource for weather forecasts and official warnings*

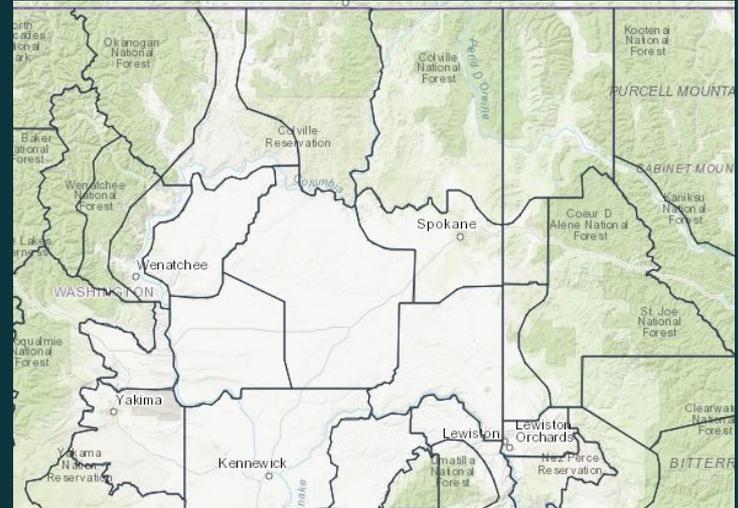


Includes 2 states

- 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



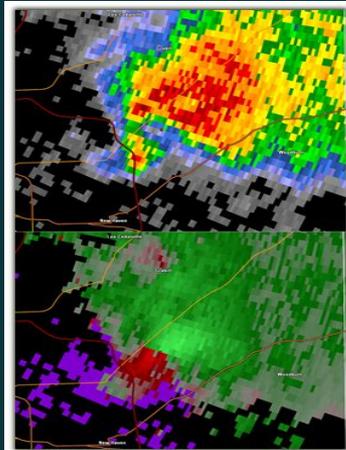
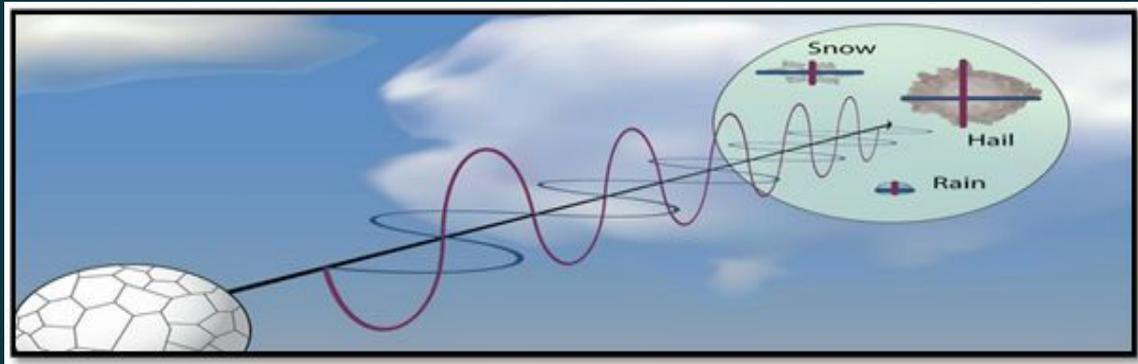
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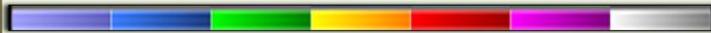
[www.weather.gov/spokane](http://www.weather.gov/spokane)



# 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**



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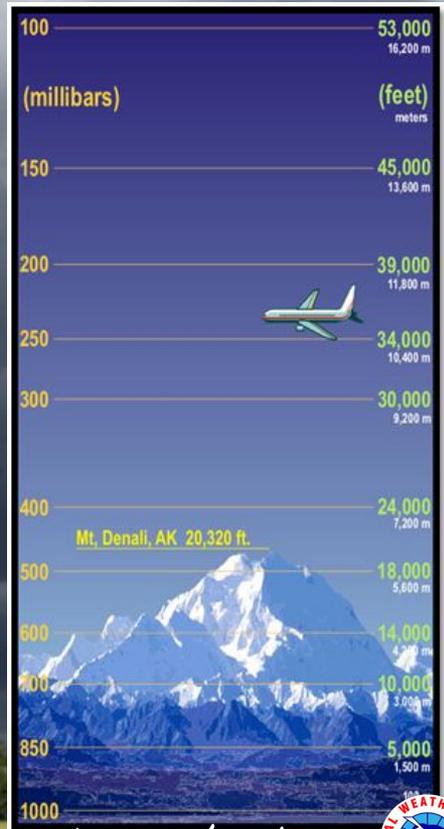
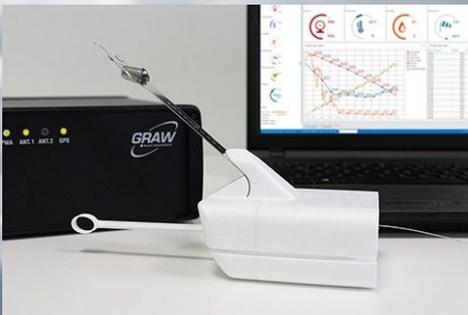
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# NWS Tools: Weather Balloon - Radiosonde

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



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# NWS Tools: Weather Satellites

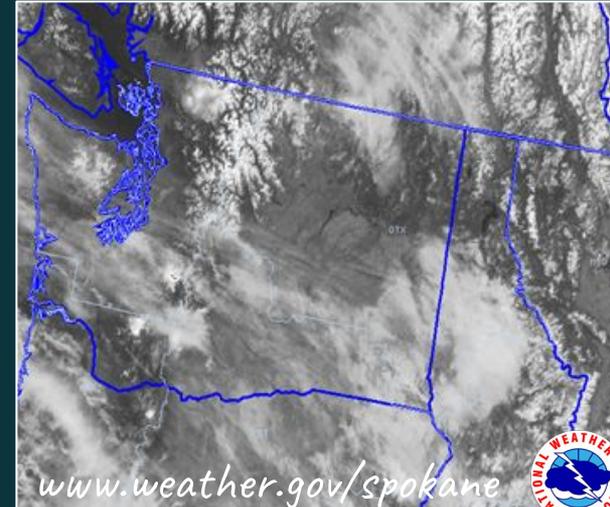
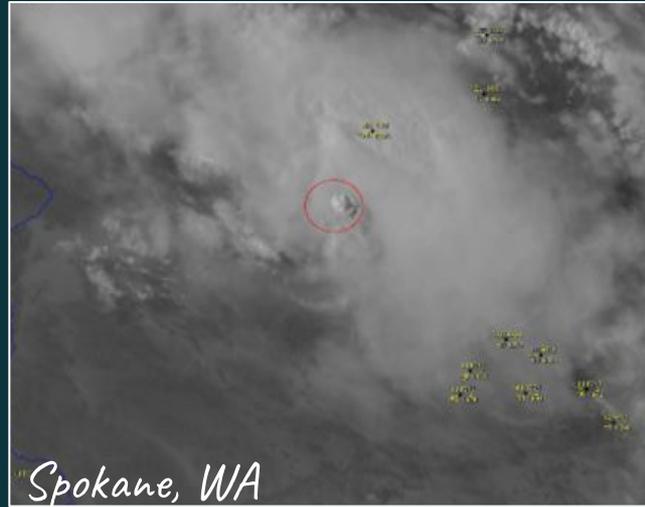
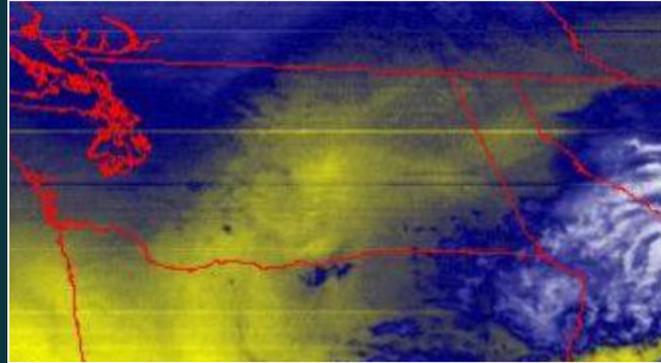
GOES 18 - 16 different channels

IR, Water Vapor & Visible

New images every 5 minutes

Aids in early detection

Thunderstorms & Wildfires



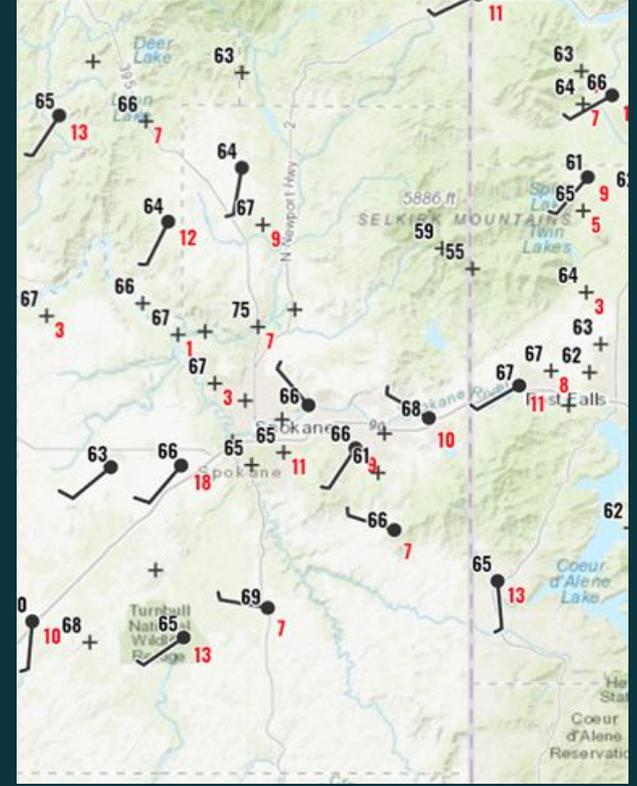
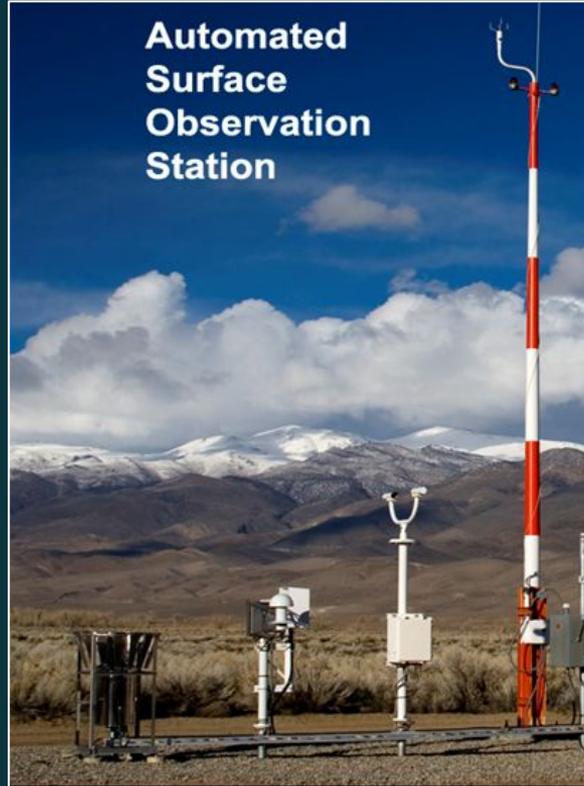
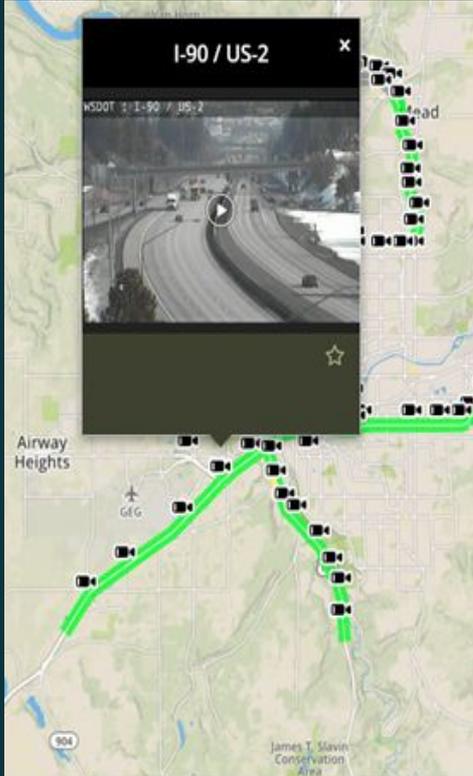
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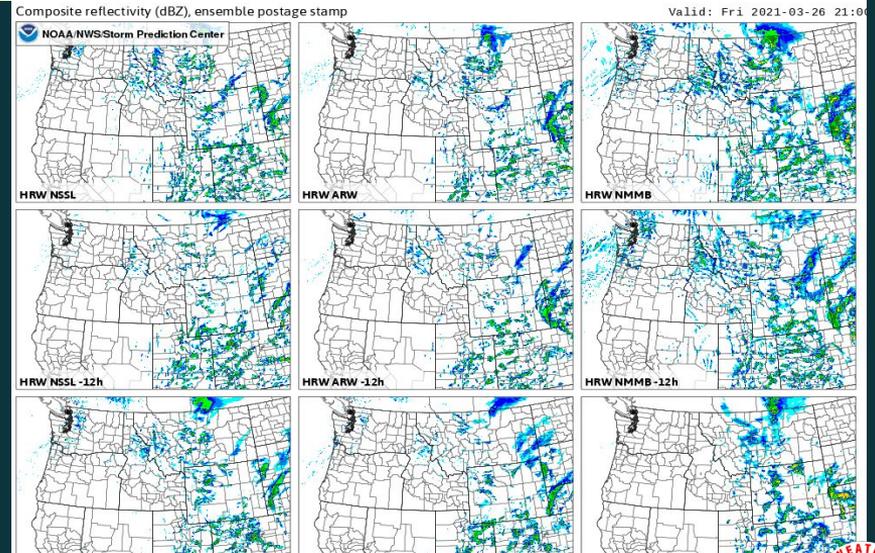
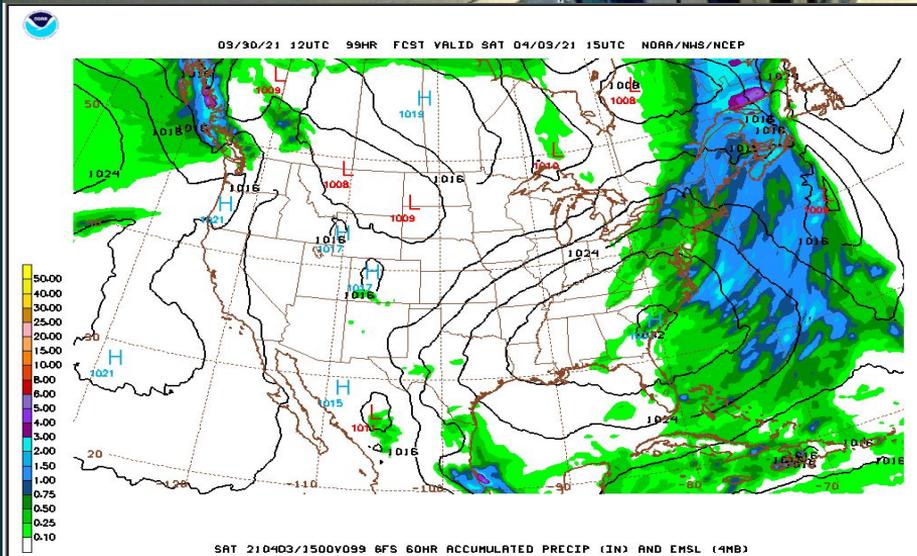
[www.weather.gov/spokane](http://www.weather.gov/spokane)



# NWS Tools: Surface Observations & Web Cams



# NWS Tools: High Resolution Weather Models



# We need weather spotters! Why?



- Limitations to radar, satellite, and surface observations
- Receive Ground Truth on events - LIGHTNING, FUNNEL CLOUDS, CLOUD TYPES
- 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!



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# #1 Poll Question

What are some tools used to monitor weather?



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# What's in a Spotter Report?



**Inland Northwest  
Weather Spotter  
Checklist**

**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 (mtns)

**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...What...and Where

*Spotter ID & Location*

- When the event began and/or ended

- Estimate of wind speed and/or hail size

- Damage and injury reports

- If unsure - report your uncertainty

- Include reports while traveling & any delayed or second hand reports



# How Spotters Report - Easiest Phone Call



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



**What:**  
Event you  
Witnessed



**Where:**  
Location  
of event



**When:**  
Time of  
the event



# How Spotters Report - Just as easy Online Reports

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



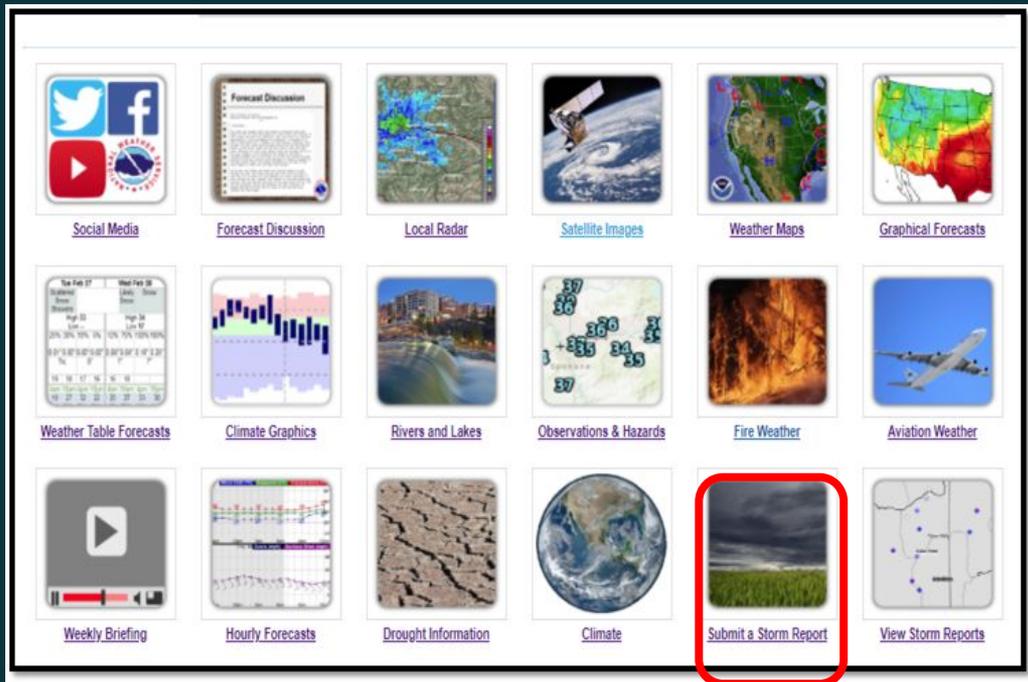
 **Storm Reports**  
Alerting the NWS to local weather

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

Please select a report type ▼

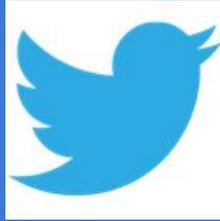
← Back    Next →

Privacy policy for weather reports



# Share weather data - **Social Media**

## Twitter



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



## Facebook

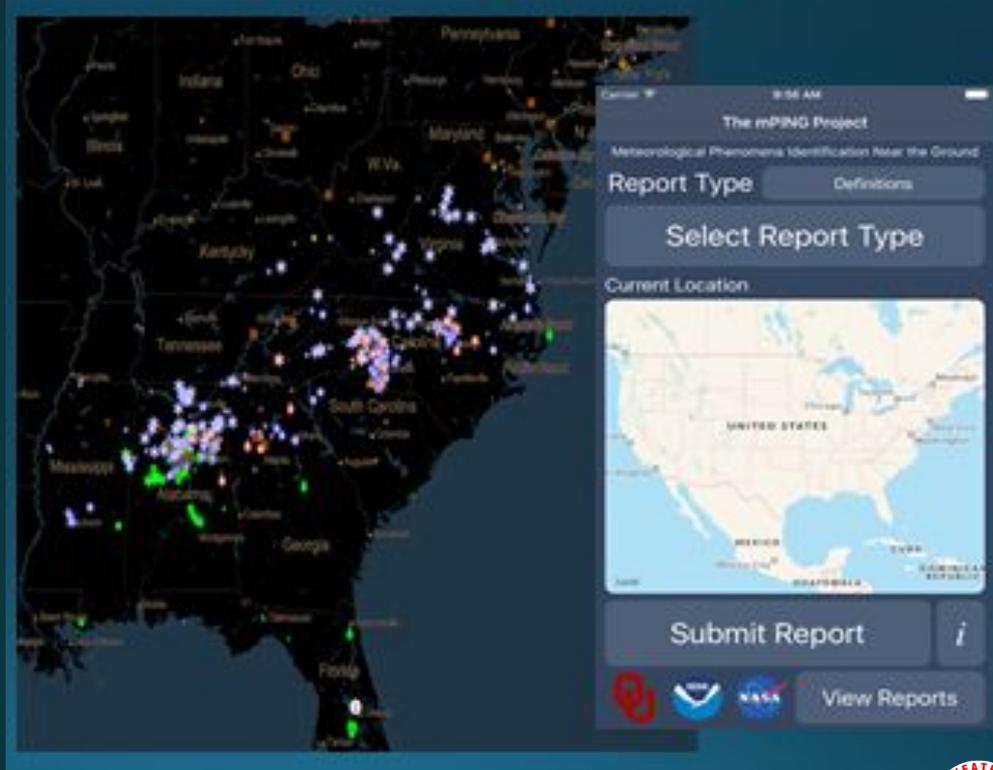


- NWS Spokane
- Send reports & pictures
- Monitored 24/7



# Share weather data - mPING

- Smartphone App
- Available on IOS and Android
- Reports sent to NWS
- Reports are anonymous
- Crowdsourcing
- Very easy to use
- Great for precipitation type!
- <https://mping.nssl.noaa.gov>



# Share weather data - Email

[nws.spokane@noaa.gov](mailto:nws.spokane@noaa.gov)



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# Examples of Spotter Reports

This is Saul Seesall, Spotter Adam 77 calling from my home in Ritzville. Freezing rain is falling with about 1/2" on the patio. Seeing lots of accidents on I-90. It began 1 hour ago.

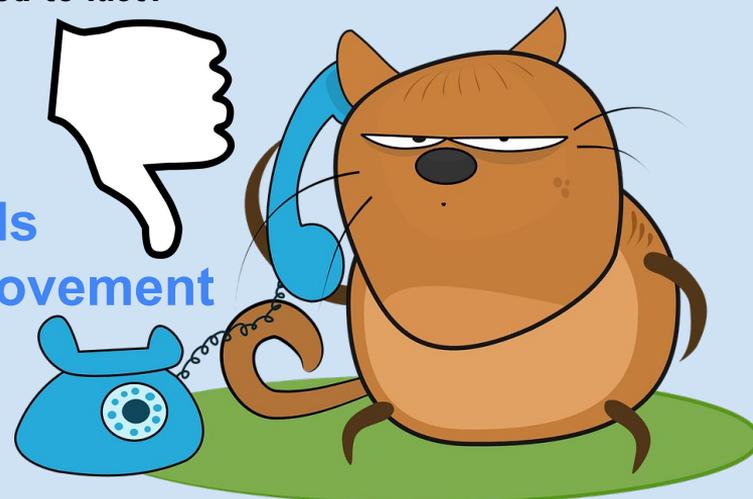


**Good job!**



Hi there, how are you doing? Who is this? ....Well hi Steve! I'm a spotter in Douglas 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



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# #2 Poll Question

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



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# Cold Season Hazards



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# Do you Understand NWS Terminology?

**Warning**

**Watch**

**Advisory**

**Outlook**

## WATCH VS WARNING

-  **WATCH:** We have the ingredients to make tacos.
-  **WARNING:** We're having tacos. **RIGHT NOW!**



**TACO WATCH**



**TACO WARNING**

**Take Protective  
Action**

**Have a Plan of  
Action**

Weather hazard  
is occurring,  
imminent or likely

Risk of weather  
hazard in the  
next 7 days



**TAQUITO ADVISORY**

**Use Caution**



**GROCERY STORE  
OUTLOOK**

**Prepare a Plan of  
Action**

# Heavy Snow



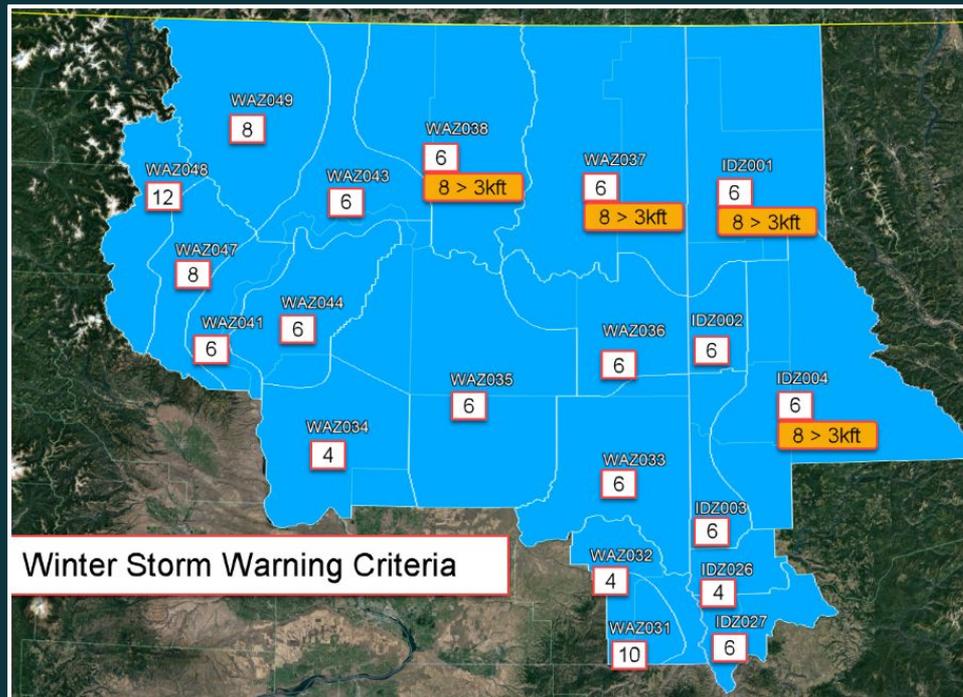
Heavy Snow!

6"+ inches during an event

## Please Report:

First Snow of the Season

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



Winter Storm Warning Criteria



# 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



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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?

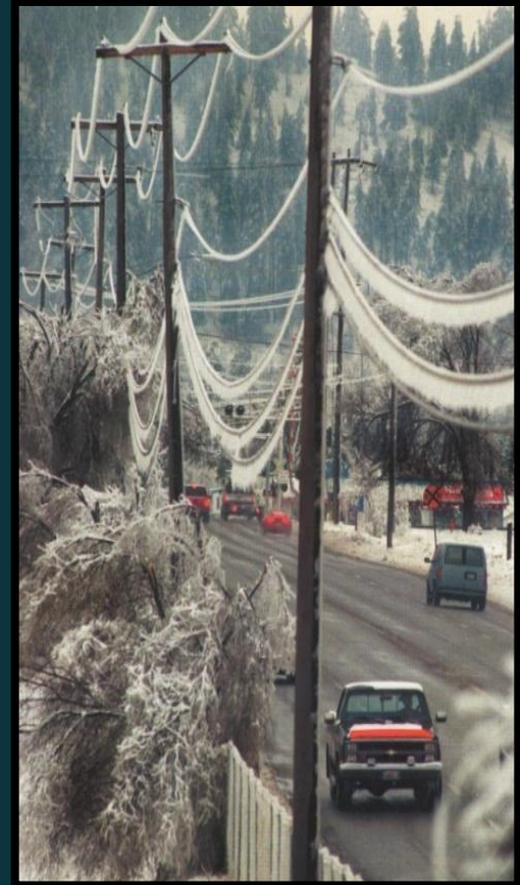
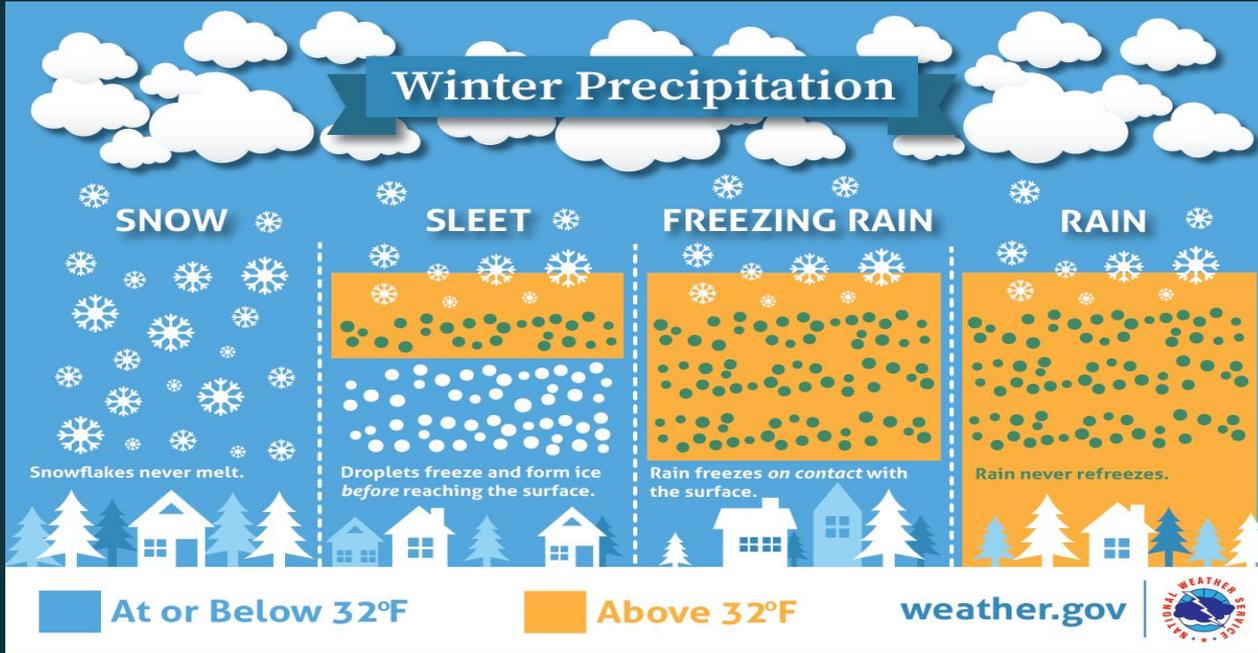
Have a way to get forecasts and warnings  
Consider an alternate route or delaying travel  
Stay alert for rapidly changing road conditions  
Reduce speed and use low beam headlights



WEATHER.GOV

# Wintry Mixed Precipitation

- Freezing rain/ drizzle, Sleet, Ice
- Ice accumulation over ¼ inch = Ice Storm Warning!



# 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!**



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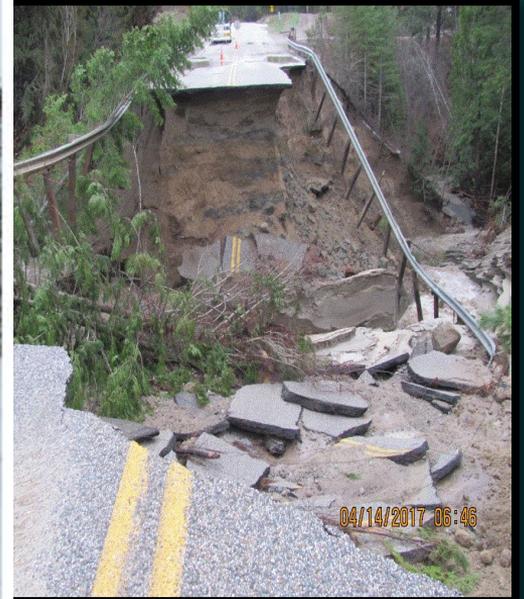
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# Mud and Debris Flows

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



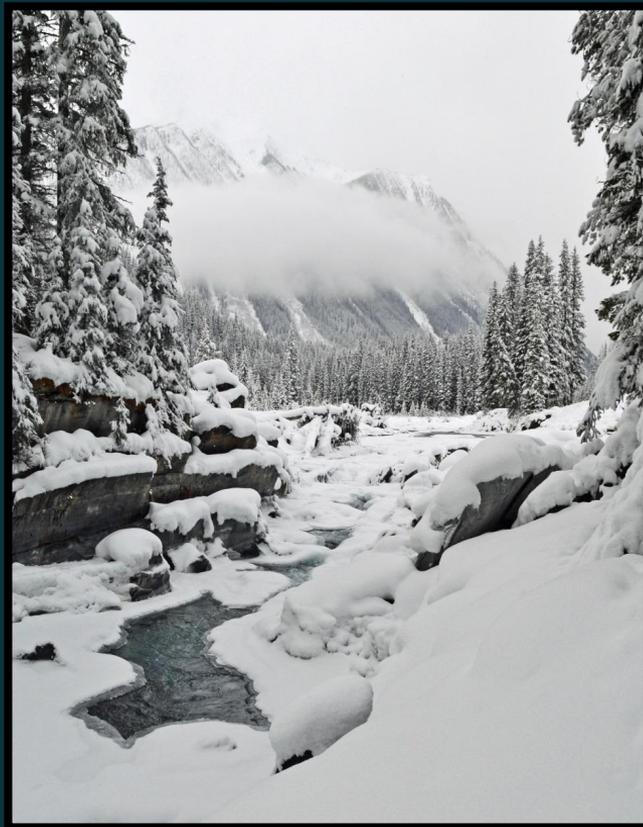
# #3 Poll Question

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

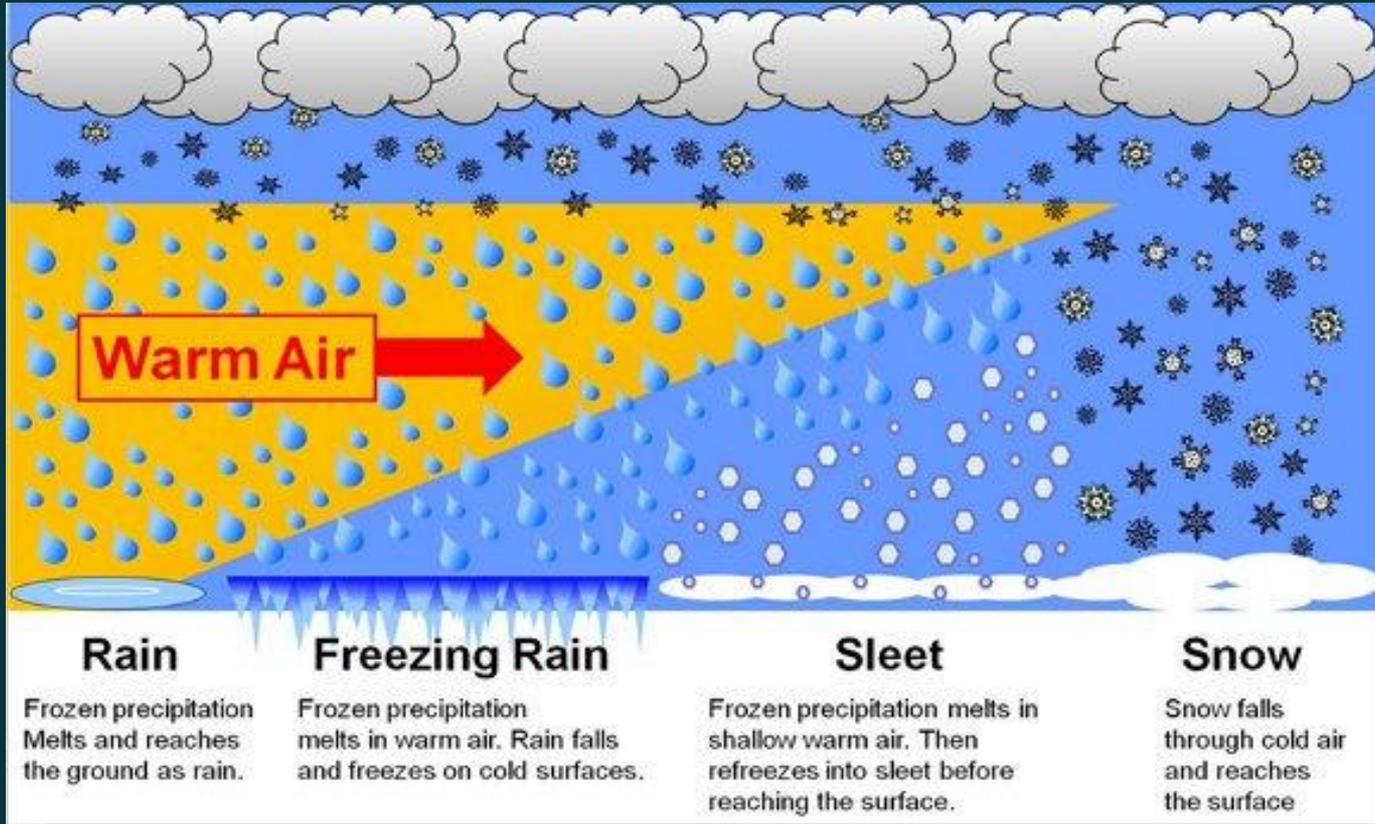


# Typical Winter Storm Scenario

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



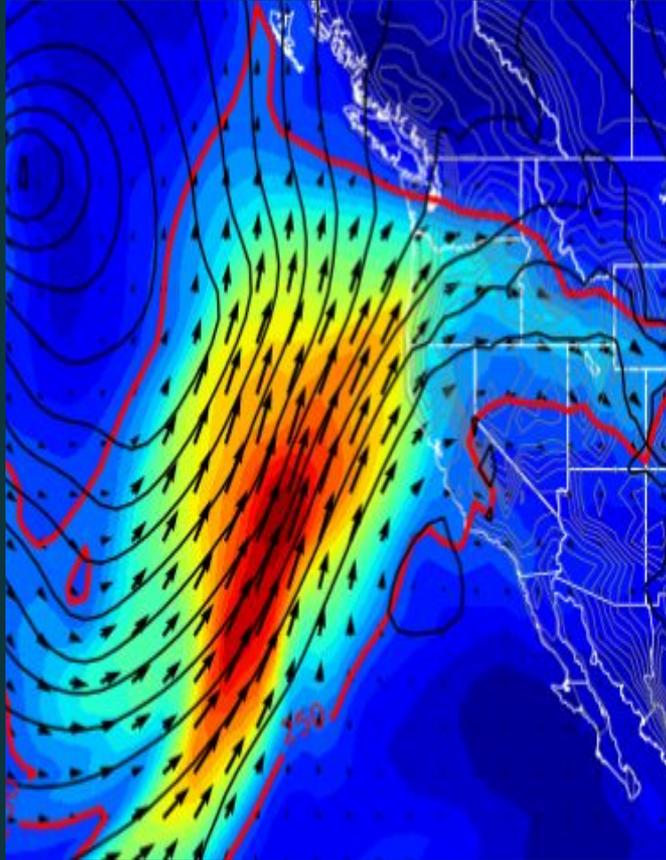
# Vertical Temperature Profile is Critical!



# Atmospheric Rivers

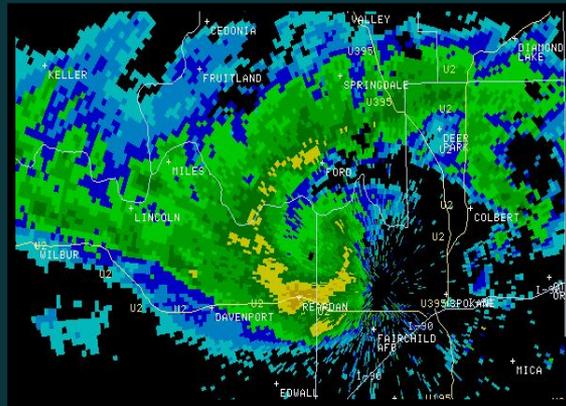
Plumes of  
atmospheric  
moisture

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



# Winter Precipitation



Sleet



Graupel



Hail



# #4 Poll Question

Identify the type of precipitation.



# Thunderstorm Hazards

Occur in Every Season



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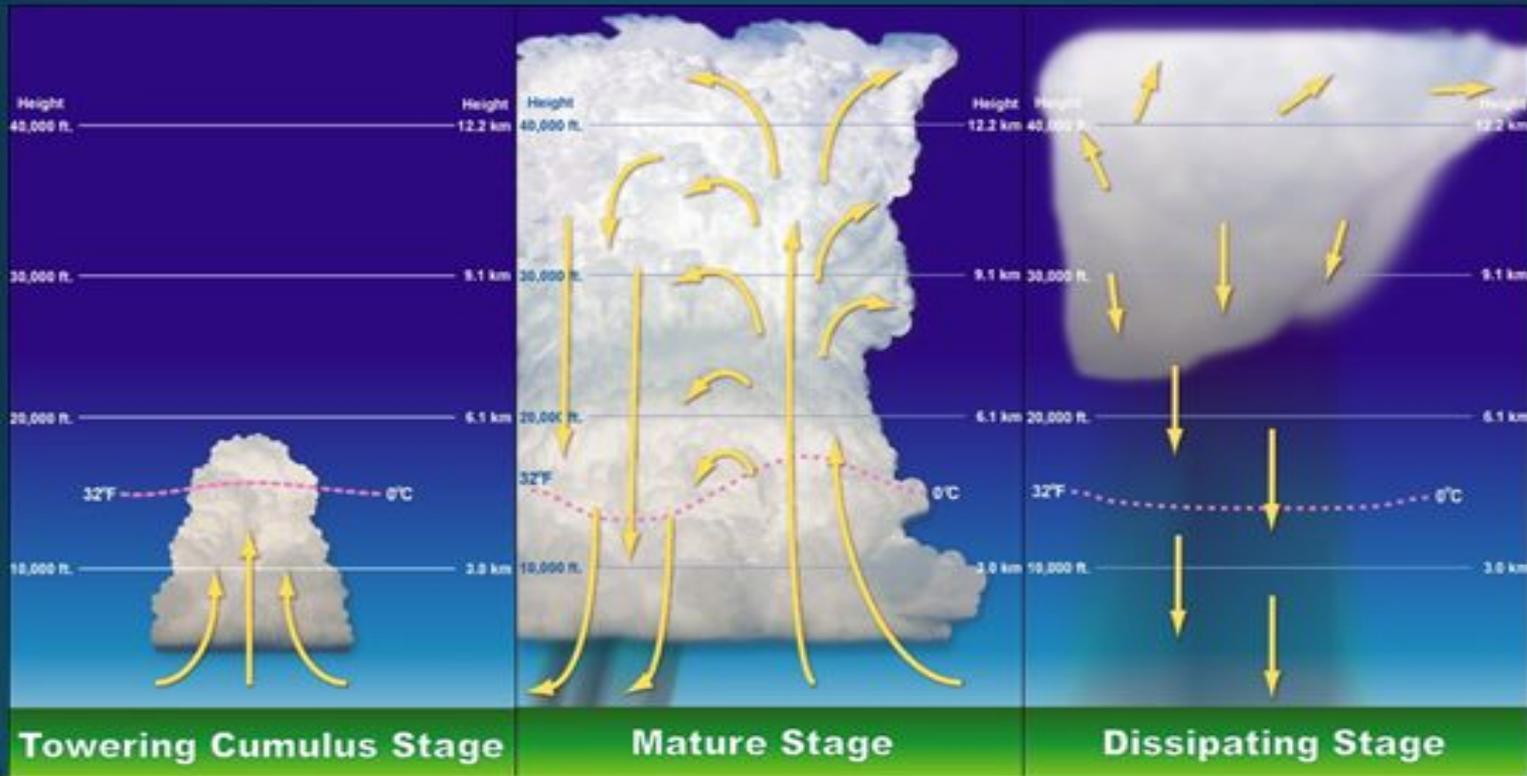
# Thunderstorms Ingredients



- **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



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# 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
Dime/Penny	0.75 inches
Nickel	0.88 inches
Quarter	1.00 inches
Half Dollar	1.25 inches
Ping Pong Ball	1.50 inches
Golf Ball	1.75 inches

Object	Size
Hen Egg	2.00 inches
Tennis Ball	2.50 inches
Baseball	2.75 inches
Tea Cup	3.00 inches
Grapefruit	4.00 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!



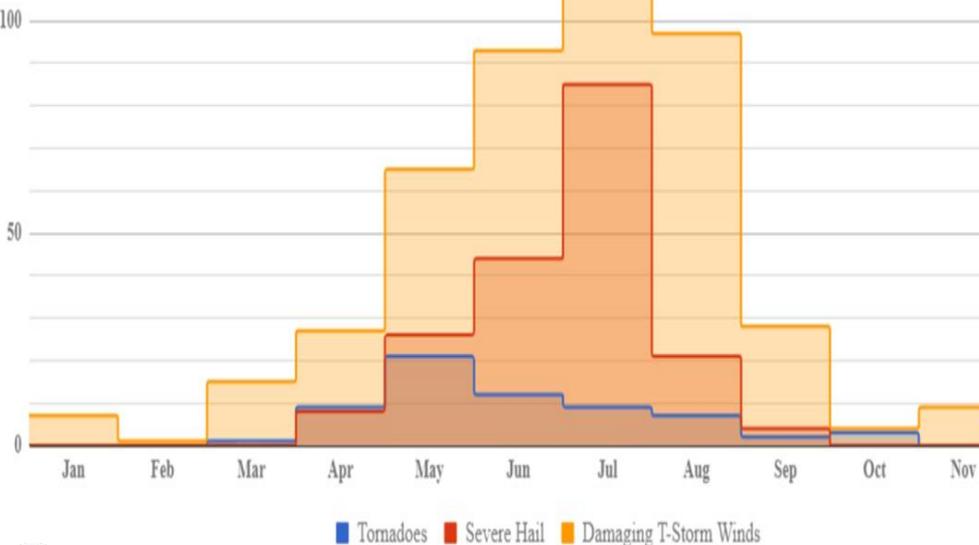
# Local Severe Weather Climatology

## BY MONTH

Peak month for Damaging Winds/Hail – July

Peak month for Tornadoes – May

Event had severe reports in Nov and Jan

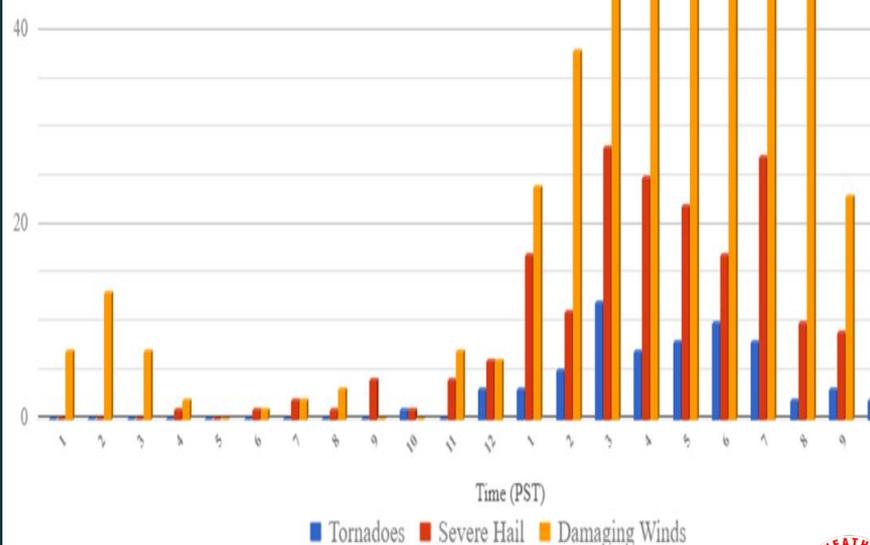


## BY TIME OF DAY

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



Wall cloud – lowering cloud base/ rotation



# #5 Poll Question

Identify this cloud.



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# 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



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*Spokane, WA*

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



# 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?



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# Stay Informed - NWS Spokane Web Page

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

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HOME FORECAST PAST WEATHER SAFETY INFORMATION EDUCATION NEWS SEARCH ABOUT

Local forecast by "City, ST" or ZIP code  
Enter location...  [Location Help](#)

**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**  
METEOROLOGICAL AND AIR QUALITY ADMINISTRATION SPOKANE, WA  
Issued: 7:59 PM - Monday, October 30, 2023

Click a location below for detailed forecast.

Watches, Warnings & Advisories  
There are no watches, warnings, or advisories at this time.

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

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



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



# Stay Informed - Probabilities & Confidence

[weather.gov/Spokane/winter](http://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

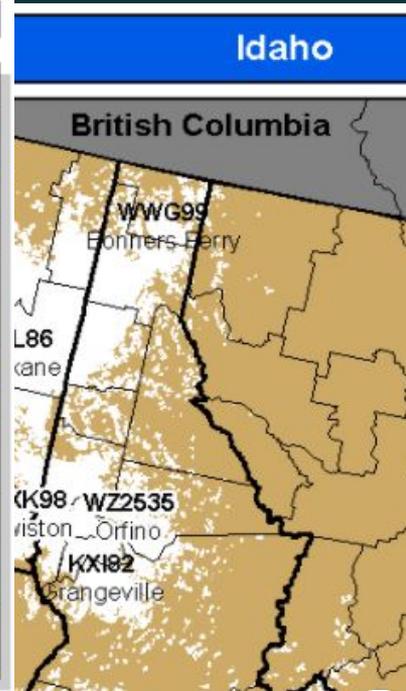
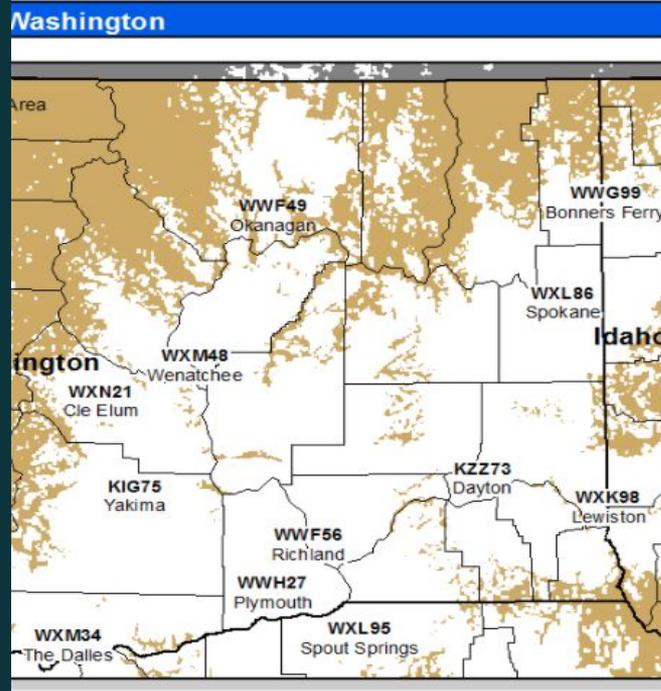


Continuous operation.

Battery backup capable.

Handheld device great for outdoor activities.

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



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Spokane, WA

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



# Stay Informed - On your Smartphone

[mobile.weather.gov](http://mobile.weather.gov)



Mobile.Weather.gov  
Smart Phone Enabled

Type in desired location  
Hit 'Go'

Up pops current  
conditions, hazards, and  
forecast

Can add this website to  
your 'Home' screen for  
quick access

Home Screen



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Spokane, WA

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



# Staying Informed - On Your Phone!



## Weather Warnings

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

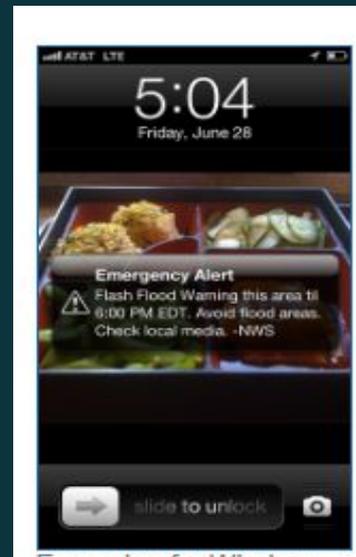
## Alert Categories

Extreme Weather & Water Warnings

Local emergencies & Evacuations

AMBER Alerts

Presidential Alerts – National emergency



# Stay Informed - Inland Nw Weather Blog

## Inland Northwest Weather Blog

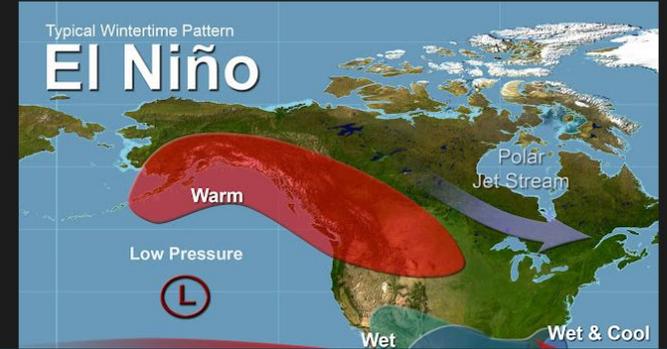
A discussion of weather and climate of the Inland Northwest.

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!



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Spokane, WA

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



# Stay Informed - Disaster Kits & Plans

## Be Prepared



## Do you have a KIT?



Preparedness means being equipped with the supplies you may need during an emergency or disaster.

Keep them in an emergency kit you can use at home or take with you in case of an evacuation.



# 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](http://www.cocorahs.org)  
 Volunteer take readings once a day - transmit on mobile device

**CoCoRaHS 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

- Trace
- 0.00 - 0.12
- 0.13 - 0.24
- 0.25 - 0.44
- 0.45 - 0.59
- 0.61 - 0.84
- 1.05 - 2.10
- 2.17 - 2.39

**Things to know about...**

- Rain
- Hail
- Snow

Download on the App Store  
 ANDROID APP ON Google Play



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

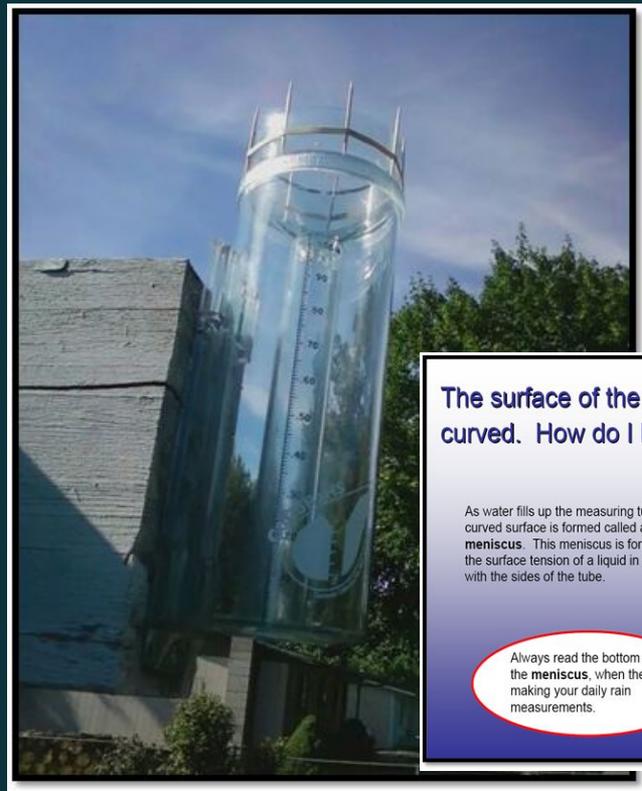


# Community Collaborative Rain, Hail and Snow Network

## CoCoRaHS

### Five easy steps

1. Sign-up at on the CoCoRaHS web site  
[www.cocorahs.org](http://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.



# Citizen Weather Observers Program

## CWOP



[www.wxqa.com](http://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



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*Spokane, WA*

*[www.weather.gov/spokane](http://www.weather.gov/spokane)*



# 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](http://Weather.gov)

## CoCoRaHS

Precipitation  
only

Rain gauge  
required

Daily  
commitment

[Cocorahs.org](http://Cocorahs.org)

## CWOP

Weather data

Weather station

Daily  
commitment

[Wxqa.com](http://Wxqa.com)



# Weather Spotter Resources Online

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

- Latest radar & satellite images
- Current watches, warnings & forecasts
- Latest NWS Storm Reports
- Maps of NOAA Weather Radio frequencies
- Current & Past Newsletters
- Spotter Guide
- Additional training resources -

## MetEd



### Locally Recorded Spotter Training

<a href="#">Basic Spotter Training 2023 Notes</a>	<a href="#">Advanced Spotter Training 2023 Notes</a>
<a href="#">Fall Spotter Training 2022 Notes</a>	<a href="#">Snow Measurement Training 2022 Notes</a>
<a href="#">Basic Spotter Training 2022 Notes</a>	<a href="#">Advanced Spotter Training 2022 Notes</a>
<a href="#">Fall Spotter Training 2021 Notes</a>	<a href="#">Snow Measurement Training 2021 Notes</a>
<a href="#">Basic Spotter Training 2021 Notes</a>	<a href="#">Advanced Spotter Training 2021 Notes</a>

### National Spotter and Observer Training

<a href="#">COMET MetEd</a>	<a href="#">CoCoRaHS</a>
<a href="#">SKYWARN Spotter Training - Basic</a>	<a href="#">CoCoRaHS slide shows</a>
<a href="#">Role of the SKYWARN Spotter</a>	<a href="#">CoCoRaHS videos</a>
<a href="#">SKYWARN Spotter Convective Basics</a>	<a href="#">Wx Talks Webinars</a>



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# #6 Poll question

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



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# Winter Outlook 2023-24



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



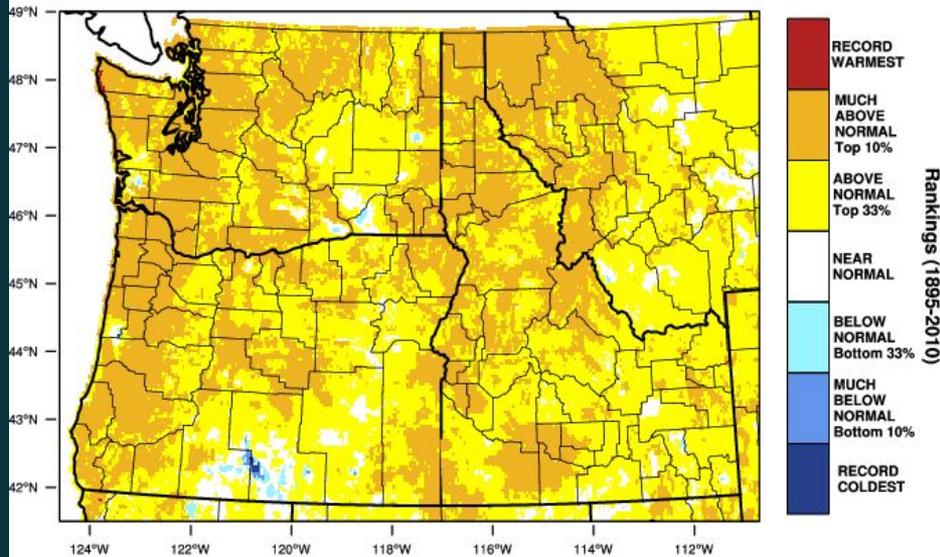
# Past 90 Days

[wrcc.dri.edu/](http://wrcc.dri.edu/)

It has been **warmer** across the Inland NW with near **seasonal precipitation**

### Pacific Northwest - Mean Temperature

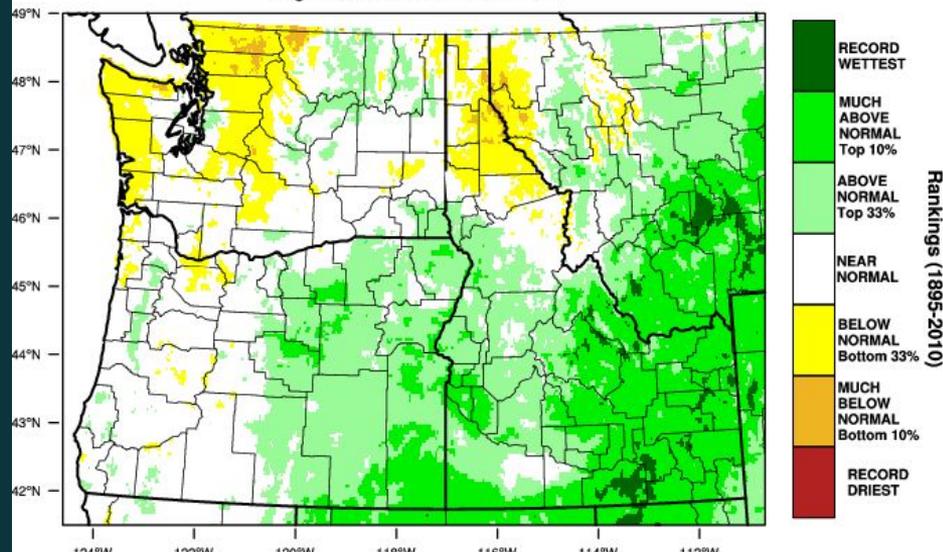
August-October 2023 Percentile



WestWide Drought Tracker - U Idaho/WRCC Data Source - PRISM (Prelim), created 2 NOV 2023

### Pacific Northwest - Precipitation

August-October 2023 Percentile



WestWide Drought Tracker - U Idaho/WRCC Data Source - PRISM (Prelim), created 2 NOV 2023



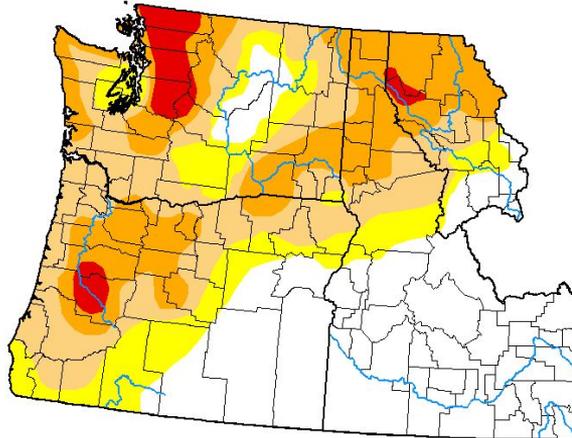
# Drought Update

## US Drought Monitor & Seasonal Outlook

[www.cpc.noaa.gov](http://www.cpc.noaa.gov)

### U.S. Drought Monitor Pacific Northwest DEWS

October 24, 2023  
(Released Thursday, Oct. 26, 2023)  
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>

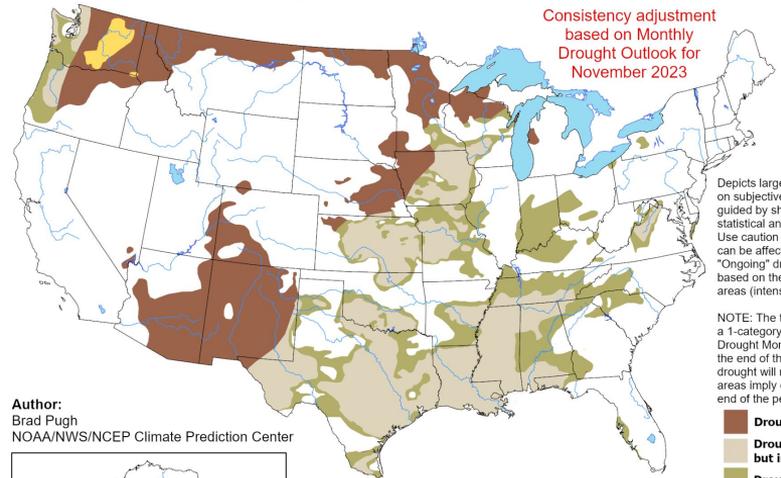
**Author:**  
Rocky Billotta  
NCEI/NOAA



[droughtmonitor.unl.edu](http://droughtmonitor.unl.edu)

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

Valid for November 1, 2023 - January 31, 2024  
Released October 31, 2023



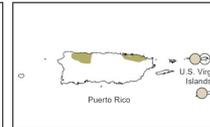
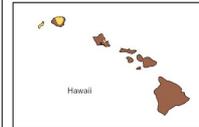
Consistency adjustment  
based on Monthly  
Drought Outlook for  
November 2023

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>



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Spokane, WA

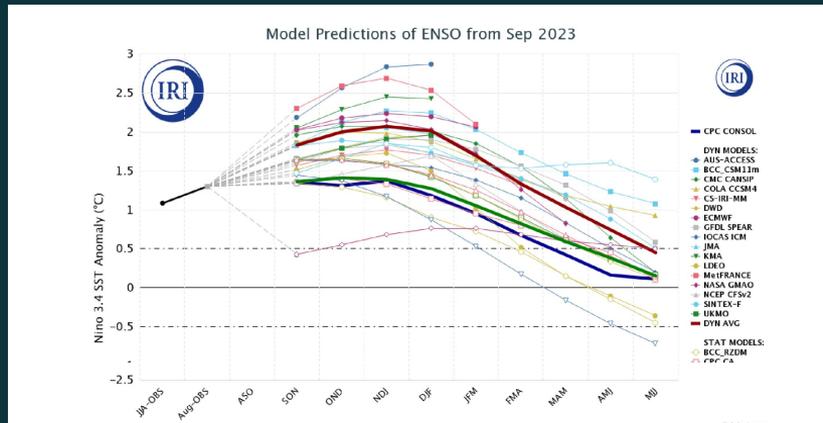
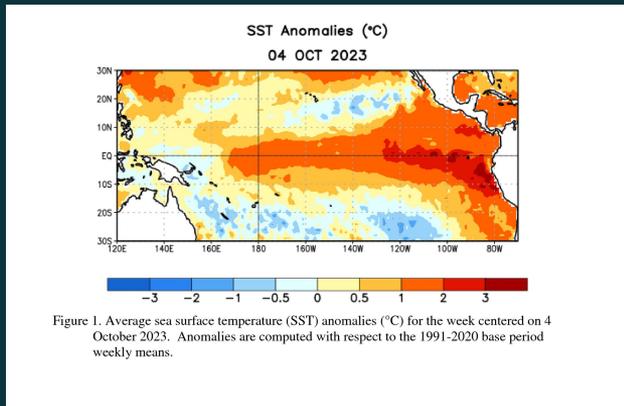
[www.weather.gov/spokane](http://www.weather.gov/spokane)



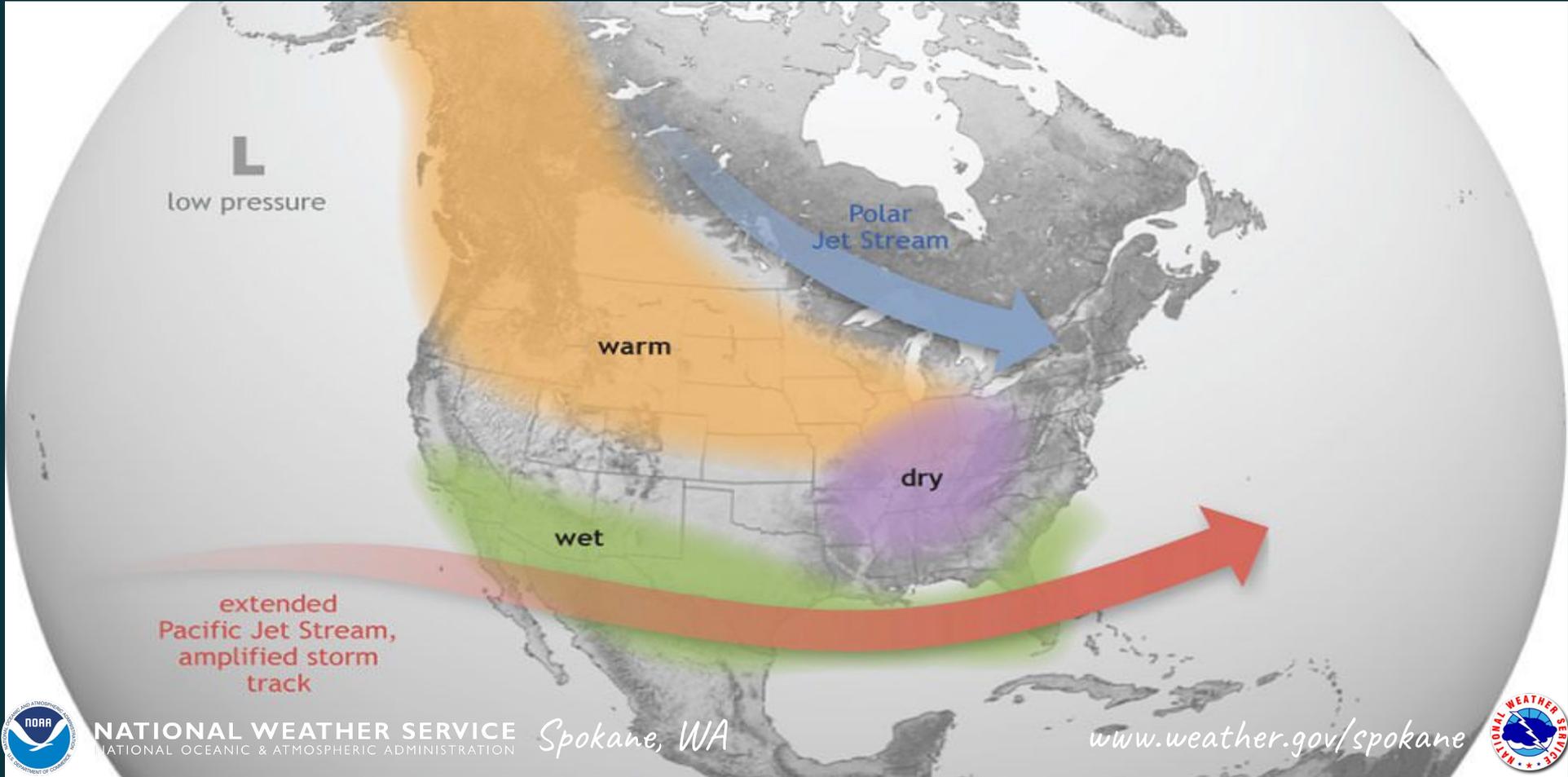
# ENSO Status

ENSO Alert System Status: **El Niño Advisory**

- **El Niño is present** and is **anticipated to continue** through the Northern Hemisphere spring (with an 80% chance during March-May 2024).
- Favors at least a **"strong" event** with a 75-85% chance through November-January ( $\geq 1.5^{\circ}\text{C}$  for the seasonal average in Niño-3.4). There is a 3 in 10 chance of a "historically strong" event that rivals 2015-16 and 1997-98 (seasonal average  $\geq 2.0^{\circ}\text{C}$ ). Stronger El Niño events increase the likelihood of El Niño-related climate anomalies, but do not necessarily equate to strong impacts locally.



# What is El Niño? How does it affect the weather?



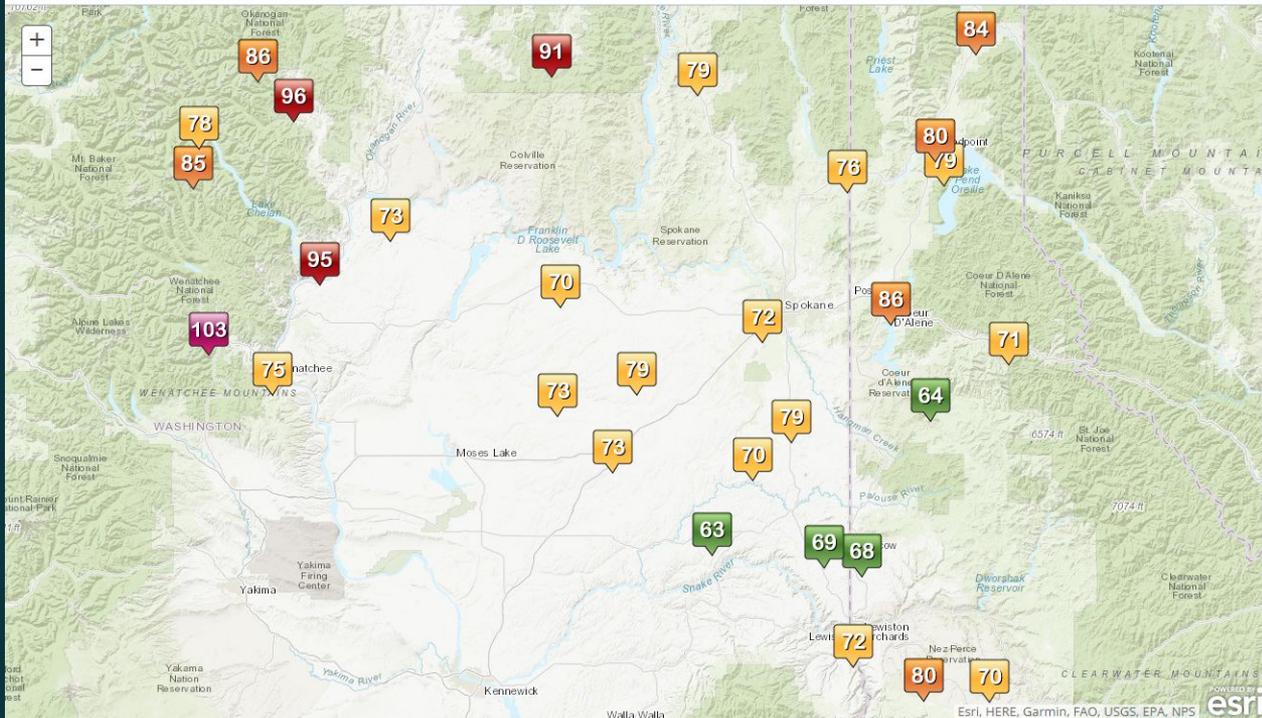
# Interactive El Niño Snow Climatology

<https://www.wrh.noaa.gov/otx/climate/coop/enso/ninaosnow/ninocoopsnowavgmap.php>

## NWS Spokane Coop Observed, El Niño Snow Climatology

Percent of Normal Snowfall

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



- [Bonners Ferry - Avg. 53 in., Pct. Norm. 84%](#)
- [Boundary Dam - Avg. 46 in., Pct. Norm. 80%](#)
- [Chief Joseph Dam - Avg. 21 in., Pct. Norm. 73%](#)
- [Chelan - Avg. 30 in., Pct. Norm. 95%](#)
- [Coeur d'Alene - Avg. 44 in., Pct. Norm. 86%](#)
- [Colville - Avg. 37 in., Pct. Norm. 79%](#)
- [Harrington - Avg. 22 in., Pct. Norm. 79%](#)
- [Holden Village - Avg. 232 in., Pct. Norm. 85%](#)
- [Kellogg - Avg. 38 in., Pct. Norm. 71%](#)
- [La Crosse - Avg. 11 in., Pct. Norm. 63%](#)
- [Leavenworth - Avg. 94 in., Pct. Norm. 103%](#)
- [Lewiston - Avg. 11 in., Pct. Norm. 72%](#)
- [Moscow - Avg. 34 in., Pct. Norm. 68%](#)
- [Mazama - Avg. 101 in., Pct. Norm. 86%](#)
- [Newport - Avg. 48 in., Pct. Norm. 76%](#)
- [Nez Perce - Avg. 29 in., Pct. Norm. 70%](#)
- [Northport - Avg. 43 in., Pct. Norm. 67%](#)
- [Odessa - Avg. 11 in., Pct. Norm. 73%](#)
- [Priest River - Avg. 63 in., Pct. Norm. 79%](#)
- [Pullman - Avg. 25 in., Pct. Norm. 69%](#)
- [Republic - Avg. 46 in., Pct. Norm. 91%](#)
- [Rosalia - Avg. 20 in., Pct. Norm. 79%](#)
- [Ritzville - Avg. 14 in., Pct. Norm. 73%](#)
- [Sandpoint - Avg. 56 in., Pct. Norm. 80%](#)
- [Spokane - Avg. 34 in., Pct. Norm. 72%](#)
- [St. John - Avg. 14 in., Pct. Norm. 70%](#)
- [St. Maries - Avg. 36 in., Pct. Norm. 64%](#)
- [Stehkin - Avg. 101 in., Pct. Norm. 78%](#)
- [Wenatchee - Avg. 20 in., Pct. Norm. 75%](#)
- [Willbur - Avg. 17 in., Pct. Norm. 70%](#)
- [Winchester - Avg. 72 in., Pct. Norm. 80%](#)
- [Winthrop - Avg. 66 in., Pct. Norm. 96%](#)



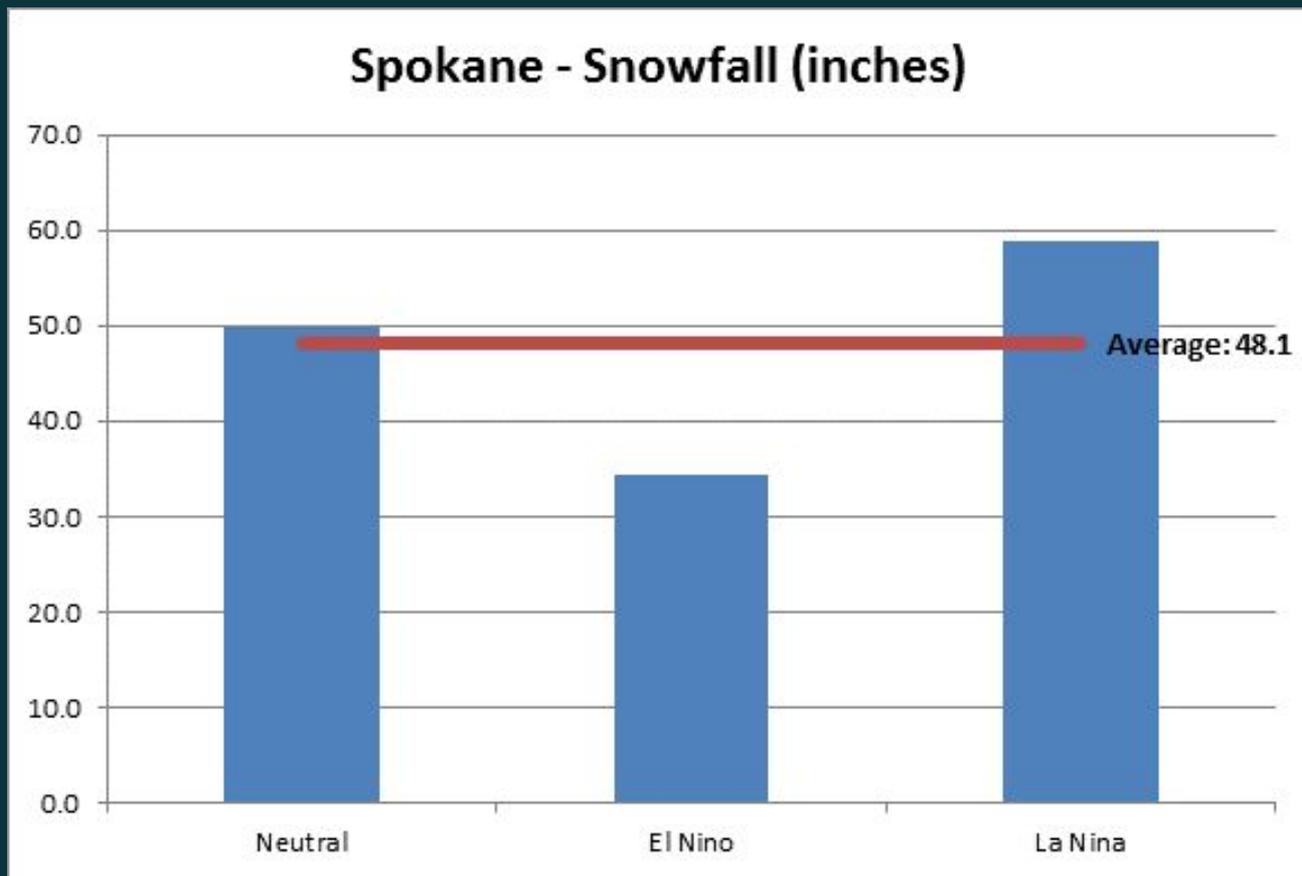
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Spokane, WA

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

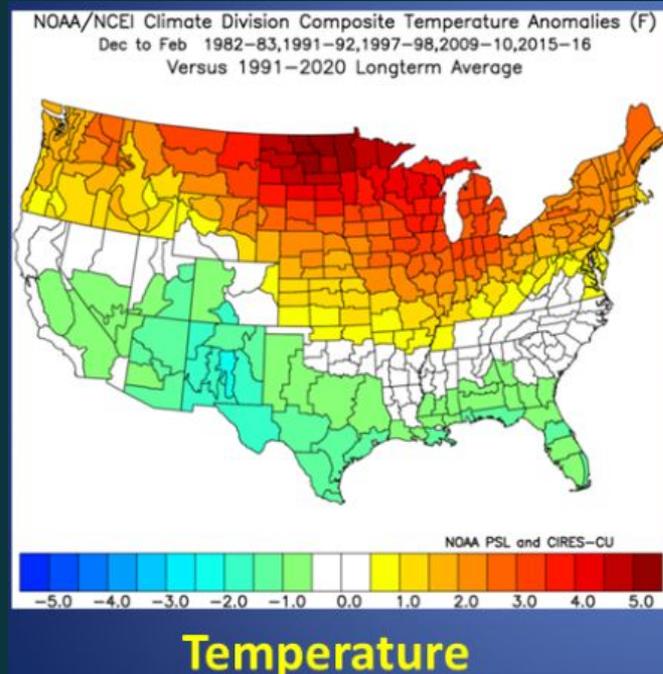


# Clickable Points

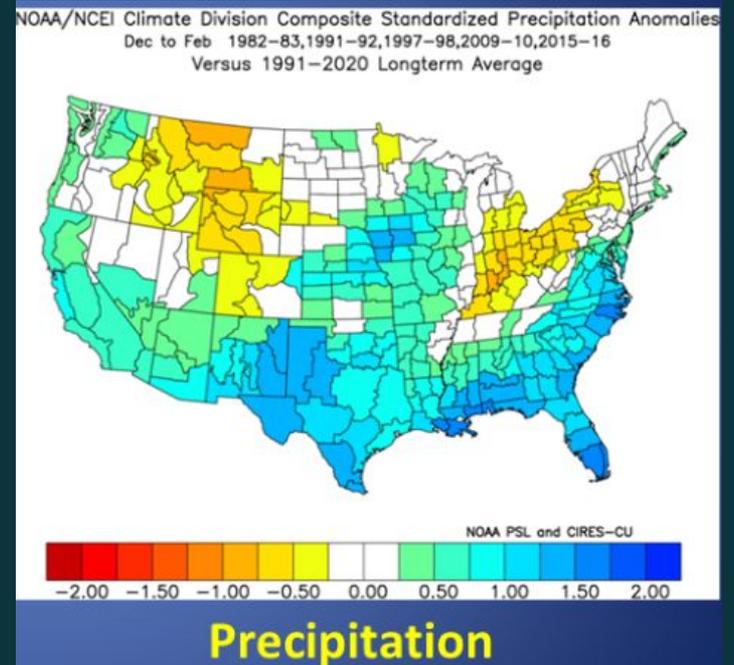


# Strong El Niño Composites

Based on past events: 1982-83, 1991-92, 1997-98, 2009-10, 2015-16



**Warmer**



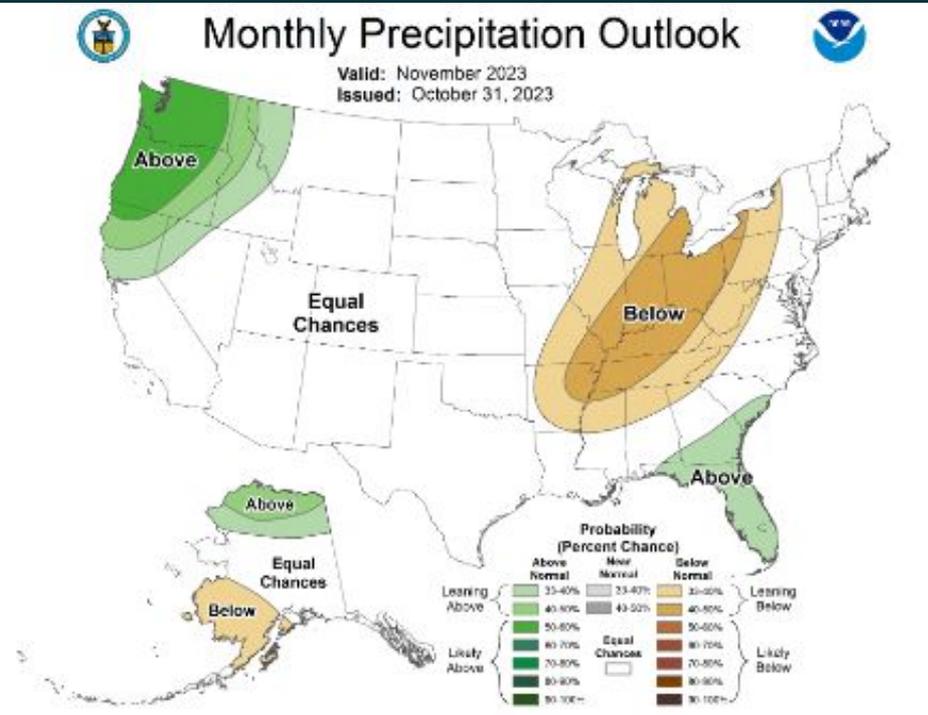
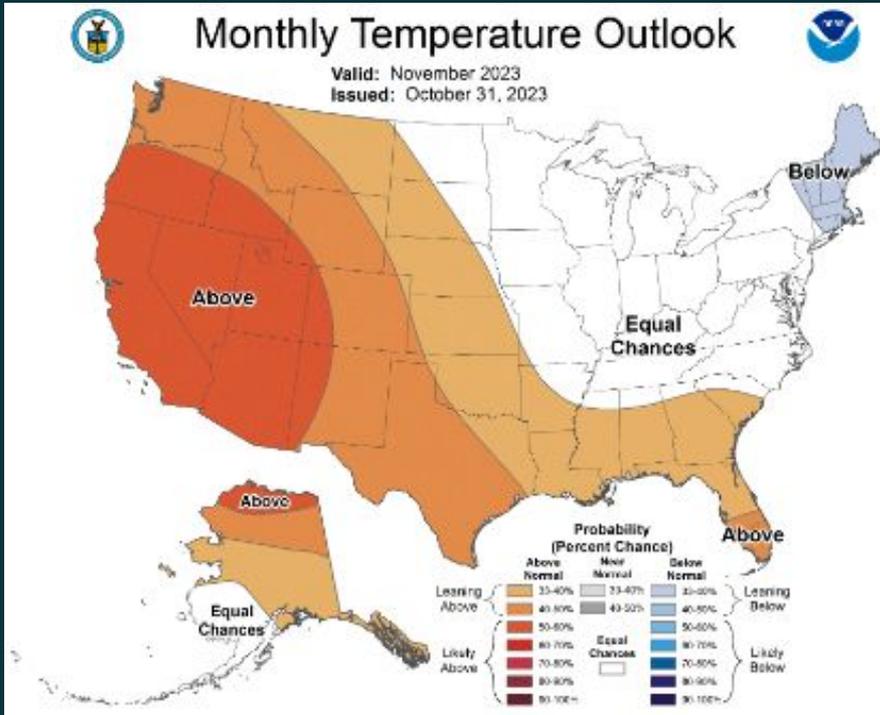
**Variable**



# One Month Outlook

## November

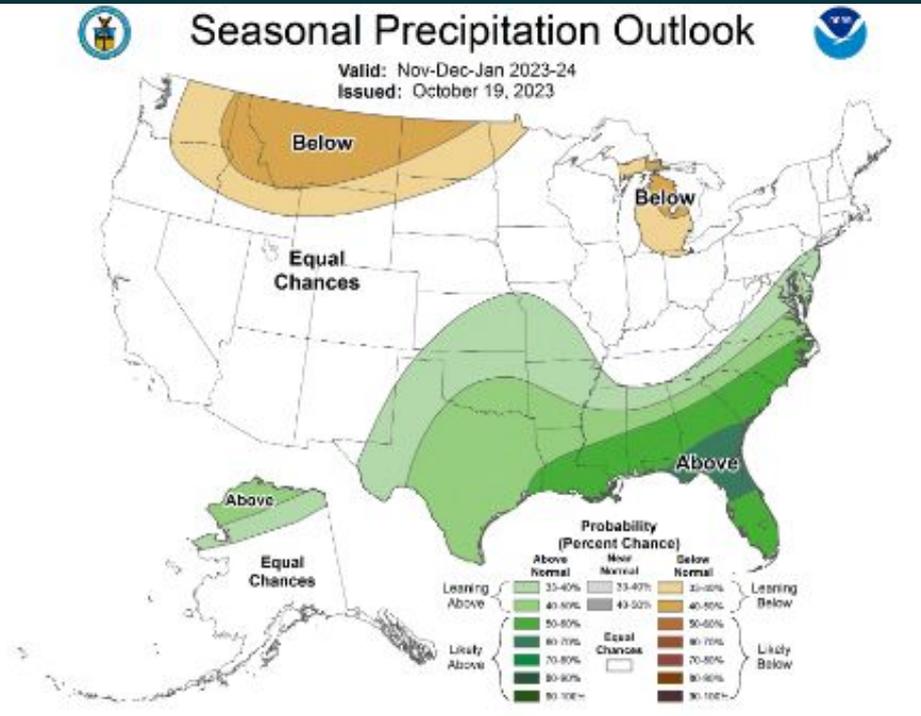
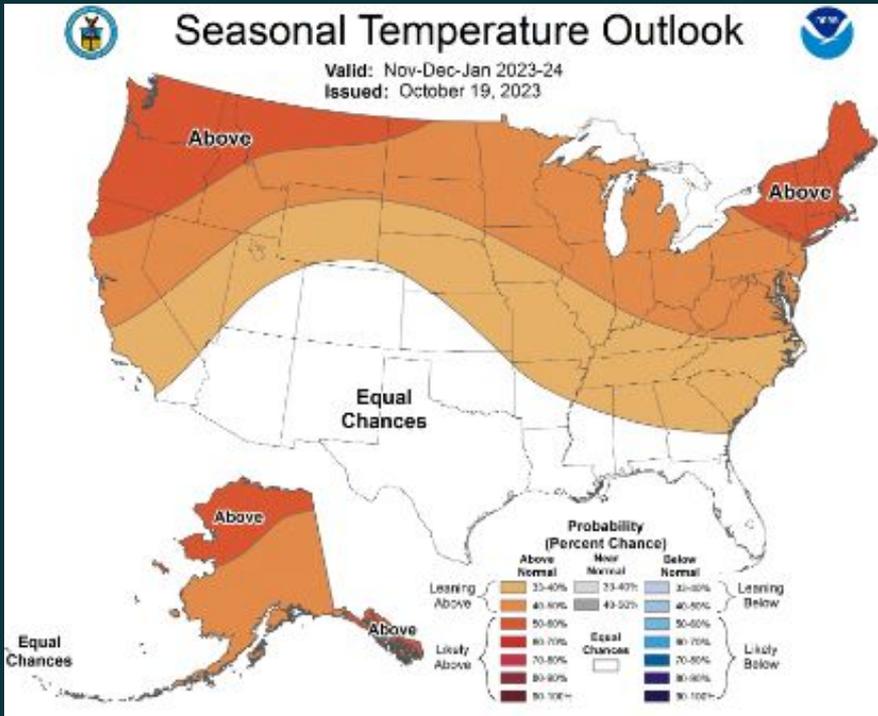
[www.cpc.noaa.gov](http://www.cpc.noaa.gov)



# Three Month Outlook

November through January

[www.cpc.noaa.gov](http://www.cpc.noaa.gov)



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Spokane, WA

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



# Key Points - Winter Outlook

- Drought continues and will likely expand and persist through the winter
- Trending wet for November and then drier for the rest of winter season, yet milder overall
- Winter is coming...Anticipate storms with snow, ice, rain, and wind





# NWS + Weather Spotters = Saved Lives

[nws.spokane@noaa.gov](mailto: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



NATIONAL WEATHER SERVICE  
NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION

Spokane, WA

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

