

Cold Season Spotter Training for the Inland Northwest



Fall 2022
National Weather Service - Spokane

Stevens Pass - Jan 7, 2022



NATIONAL WEATHER SERVICE
NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION

Spokane, WA

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 2022-23

Concentration on Cold Season weather spotting and the Checklist

Now let's look back at 2021-22.....



High Winds: November 14-15, 2021

A few reports:

55 MPH Pomeroy

55 MPH Ephrata

45 MPH Spokane

41 MPH Colfax

42 MPH Anatone

42 MPH Wenatchee



Spokane South Hill

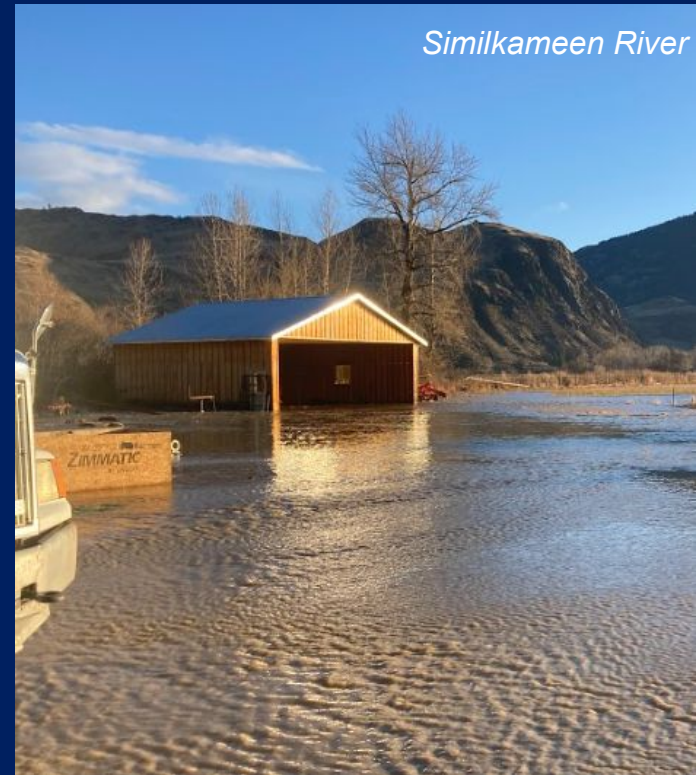


Cheney, WA



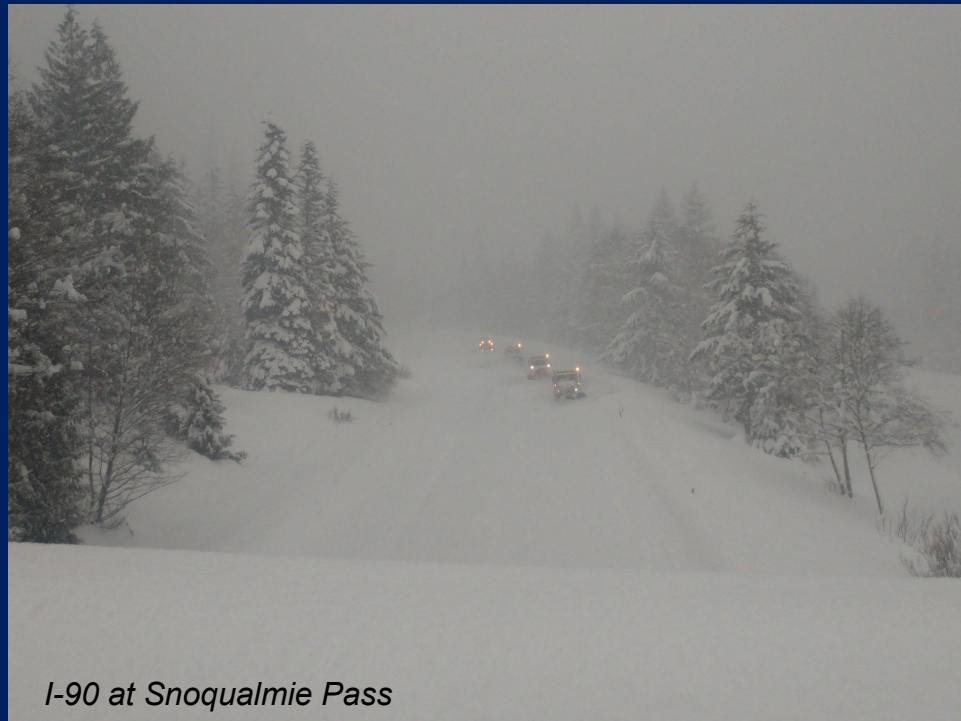
November 16-17, 2021 - River Flooding

Heavy rains in north central WA led to flooding on the Okanogan, Similkameen and Stehekin rivers



December 30, 2021 - Heavy Snow

Holiday Season snow can affect travel, especially as mountain passes close. Heavy snow also reported in the LC Valley.



January 6-7, 2022 - Heavy Snow

Heavy snow hit the region with 1-2 feet of snow.

- 18" Moyie Springs
- 13" Elmira
- 21" Tonasket
- 21" Sunnyslope
- 13" Quincy



Leavenworth, WA



Twisp, WA



April 4, 2022 - Wind, Dust and Mountain Snow

A strong storm system brought late season snow along with blustery winds across the region.

81 MPH Beverly
63 MPH Genesee
55 MPH Spokane



April 14, 2022 - Heavy Snow

Unstable conditions can produce intense snow amounts.

8 to 16" East Wenatchee



Examples of Storm Reports

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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New to the program?

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



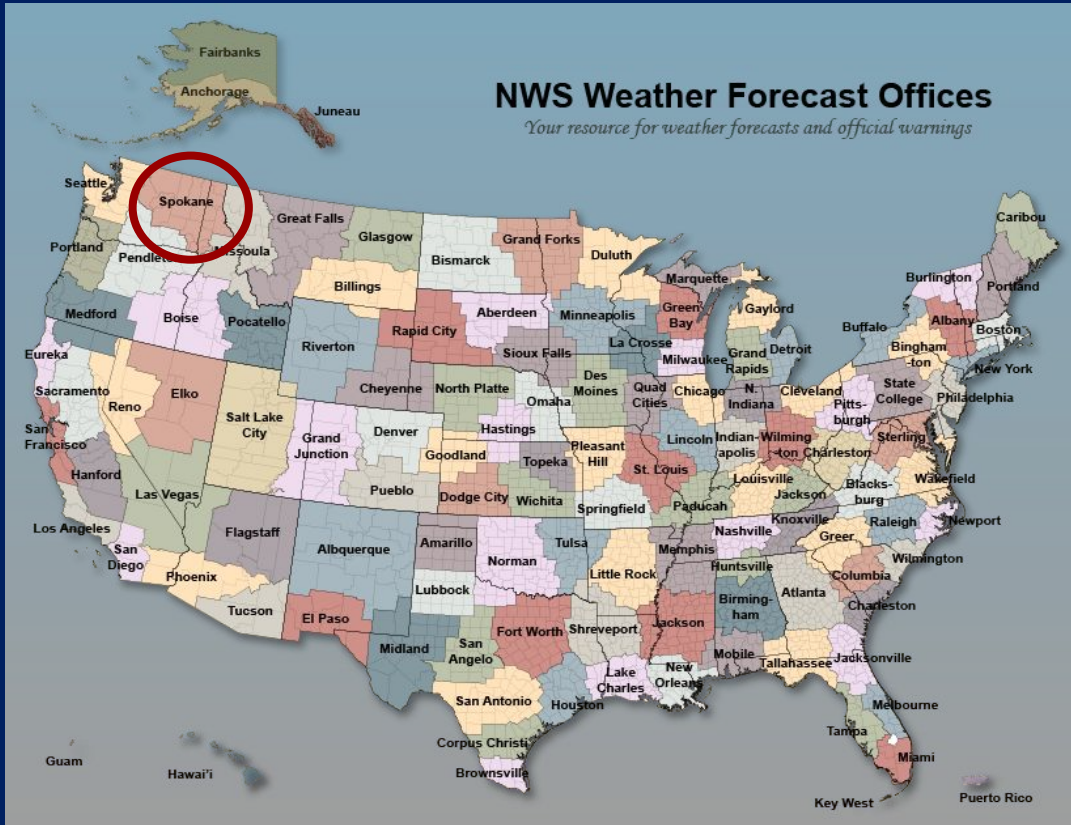
National Weather Service (NWS)

- Part of the Federal Government – Dept of Commerce
- Responsible for all weather/water Watches & Warnings
- 126 offices across the country
- 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

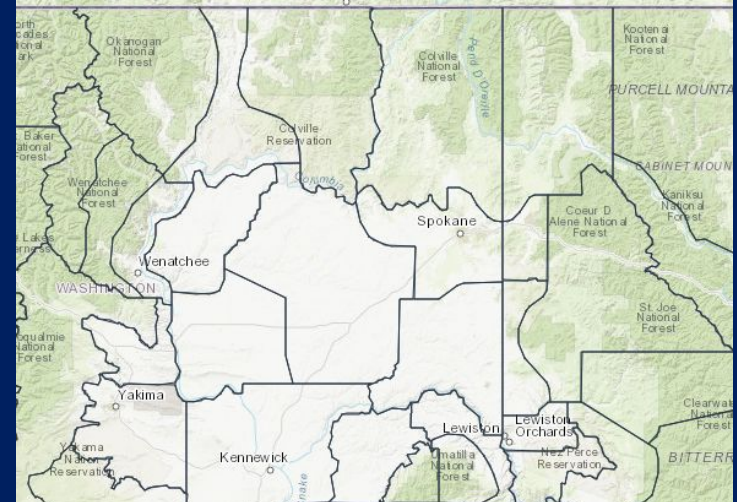


Includes 2 states

- 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

Issue watches/warnings for the protection of life and property



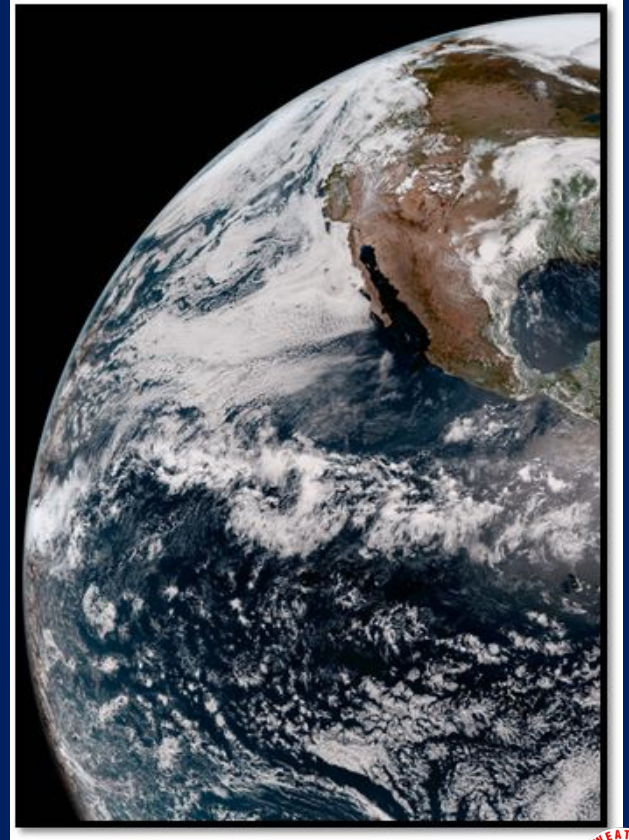
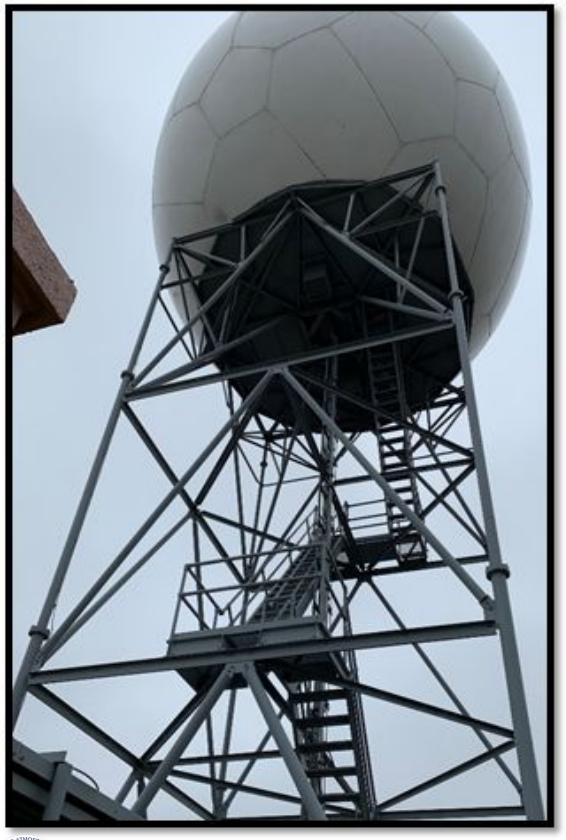
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NWS Observations & Tools



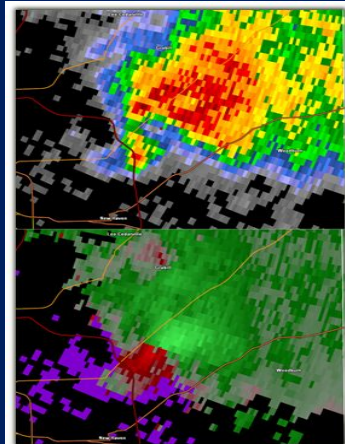
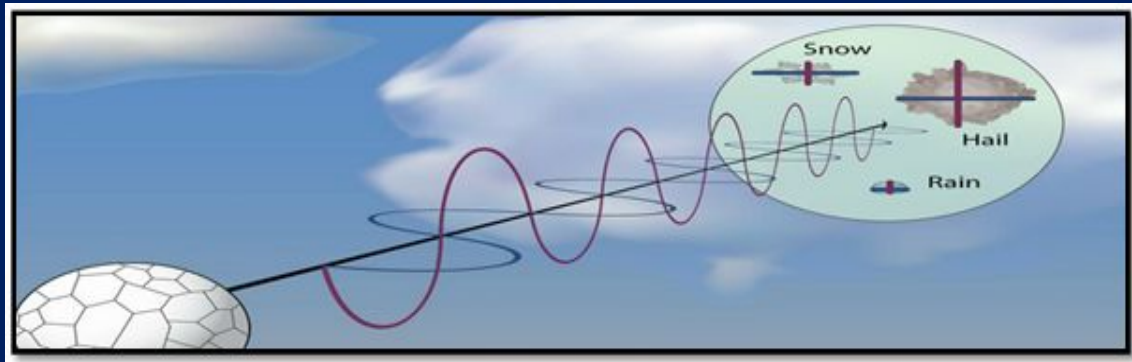
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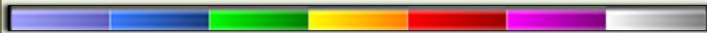
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Doppler Weather Radar



Reflectivity (dBZ)



Small Particles

Light Rain, Dust, Bugs

Big Particles

Hail, Big Rain Drops

Velocity (kts)



Speed Moving Away from Radar

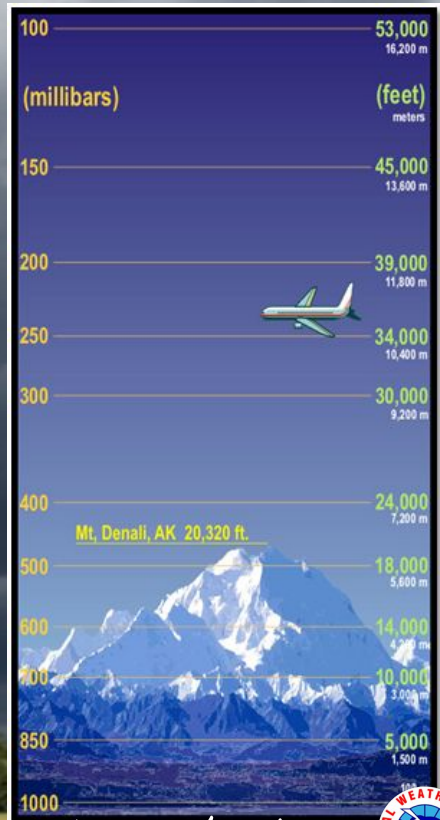
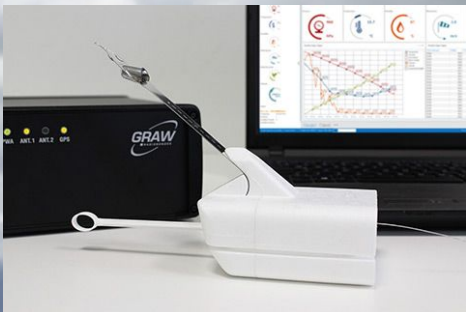


Speed Moving Toward Radar



Weather Balloon - Radiosonde

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



Weather Satellites

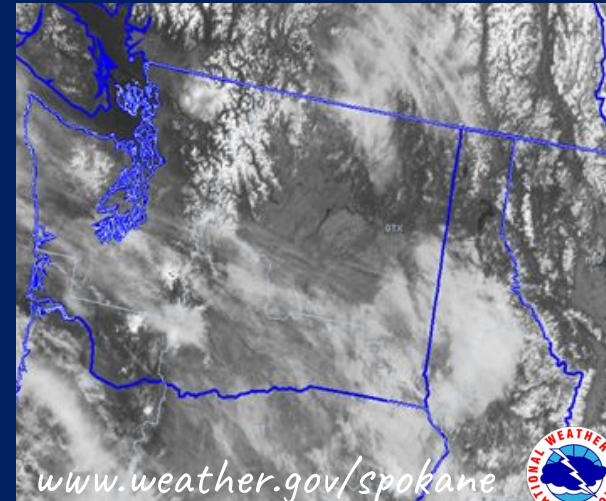
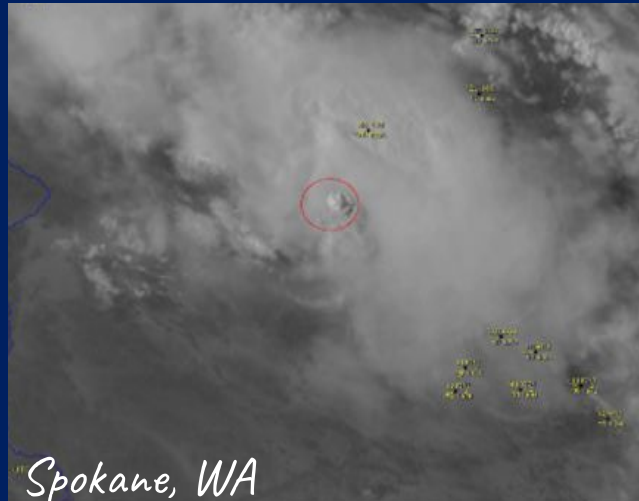
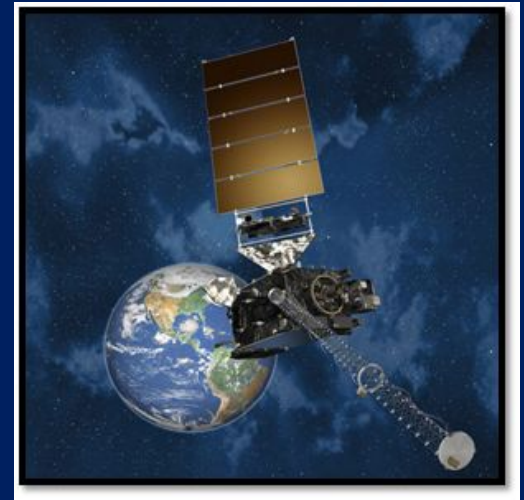
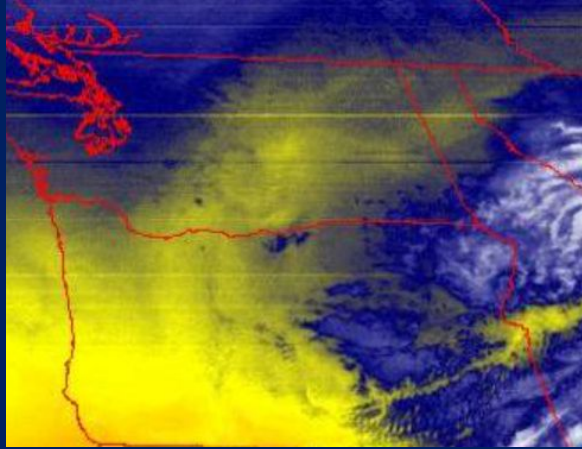
GOES 17 - 16 different channels

IR, Water Vapor & Visible

New images every 5 minutes

Aids in early detection

Thunderstorms & Wildfires



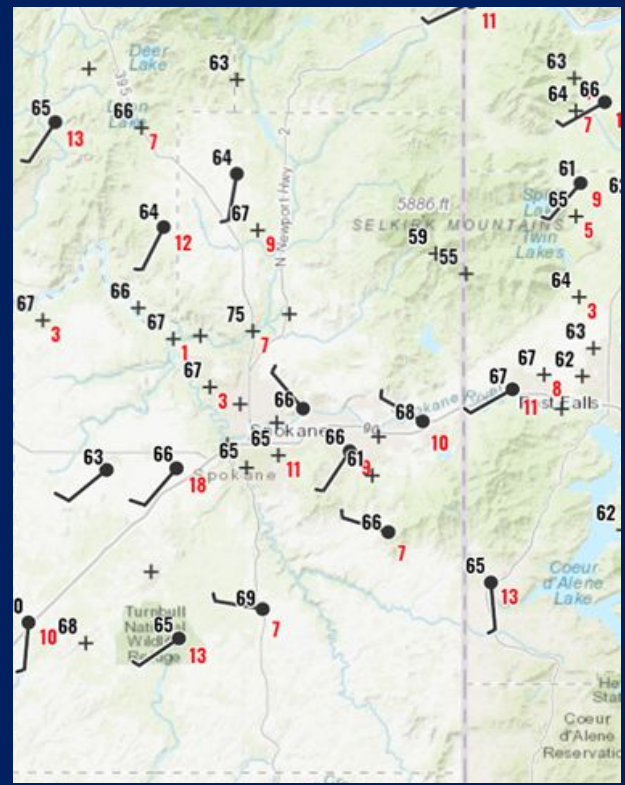
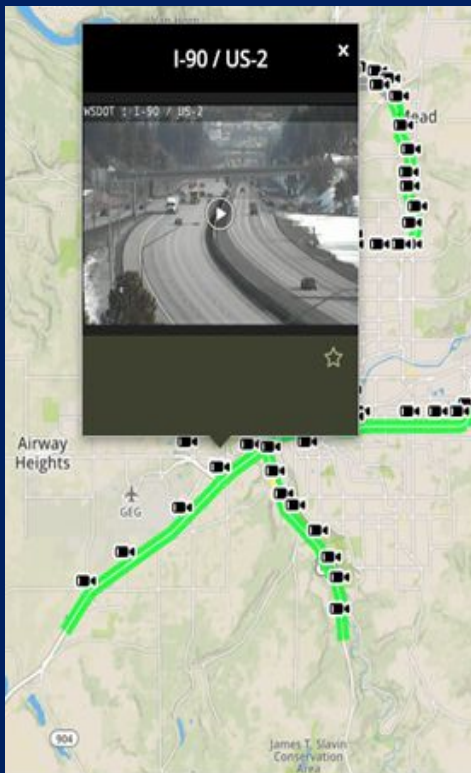
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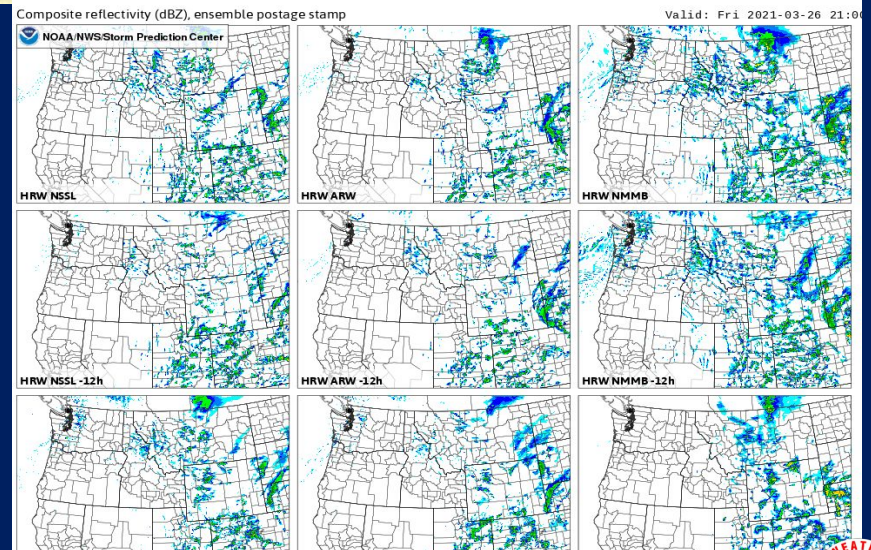
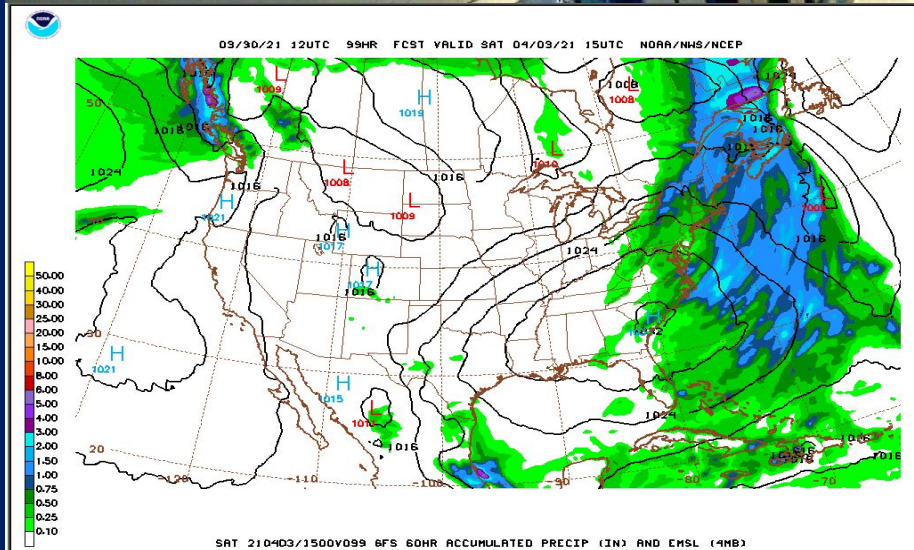
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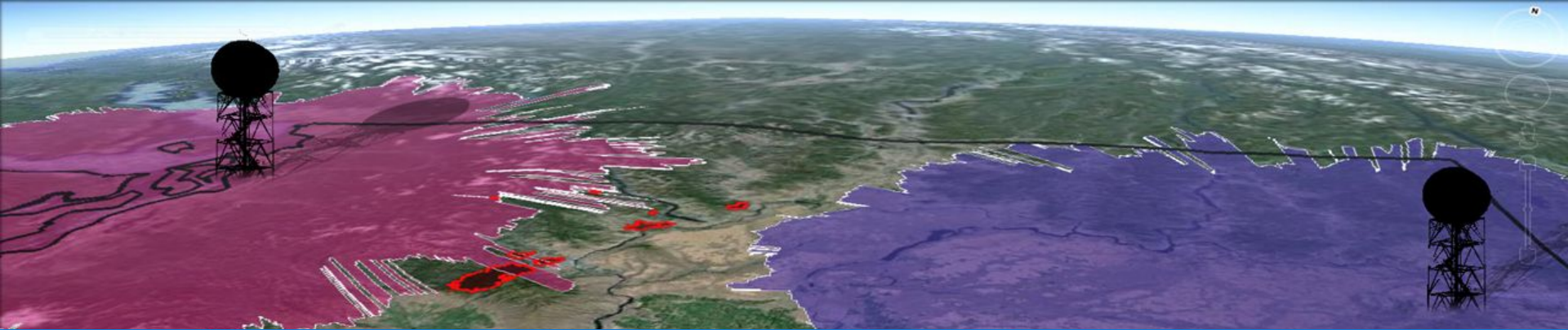
Surface Observations & Web Cams



High Resolution Weather Models



We need weather spotters! Why?



- Limitations to radar, satellite, and surface observations
- Receive Ground Truth on events
- 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

Why do we need weather spotters?



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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



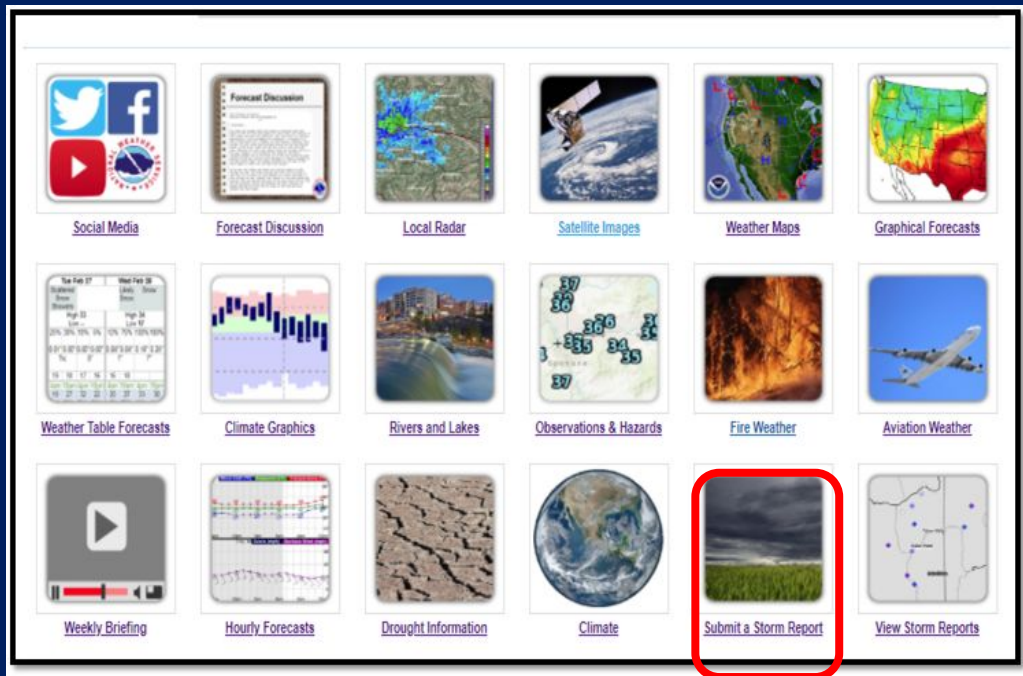
 **Storm Reports**
Alerting the NWS to local weather








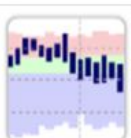





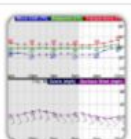




Report Type -> Details -> Location -> Review and Send

Please select a report type ▼

← Back Next →

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Share weather data - Social Media

Twitter



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



Facebook

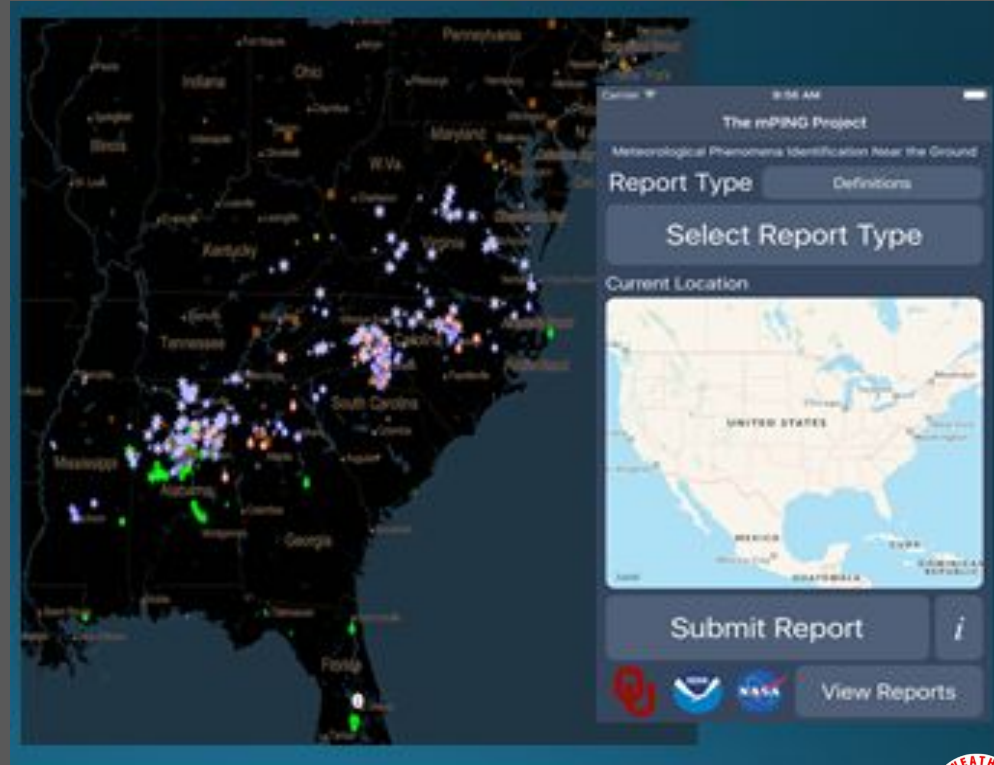


- NWS Spokane
- Send reports & pictures
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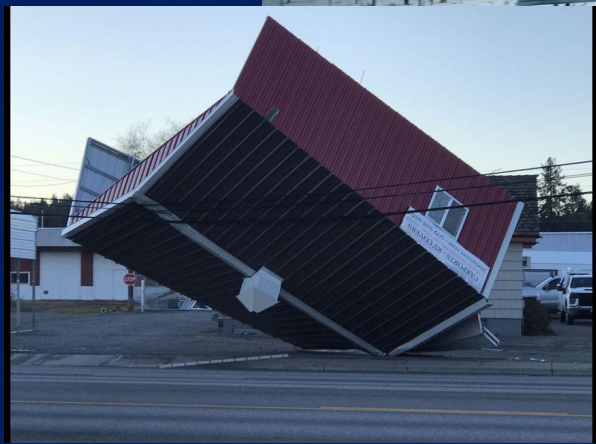
Share weather data - mPING

- 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



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Examples of Spotter Reports

This is Ben Ceesall, Spotter Whitman 18 calling from my home in Colfax. Heavy snow is falling with about 5" on the ground. It began about an hour ago.

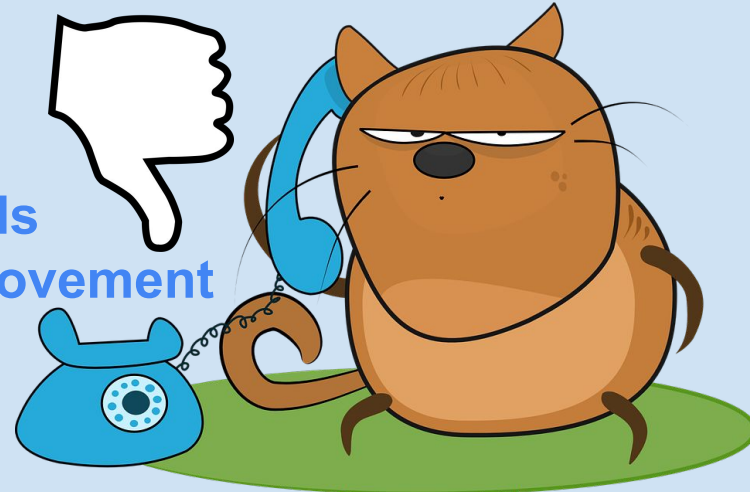


Good job!



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



Emails

It's important to keep emails current. You may receive notifications on:

- Upcoming WIDESPREAD Severe Weather or Winter Storm events.
- Quarterly newsletter and upcoming training opportunities.



#2 Poll Question

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



Cold Season Hazards



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Heavy Snow



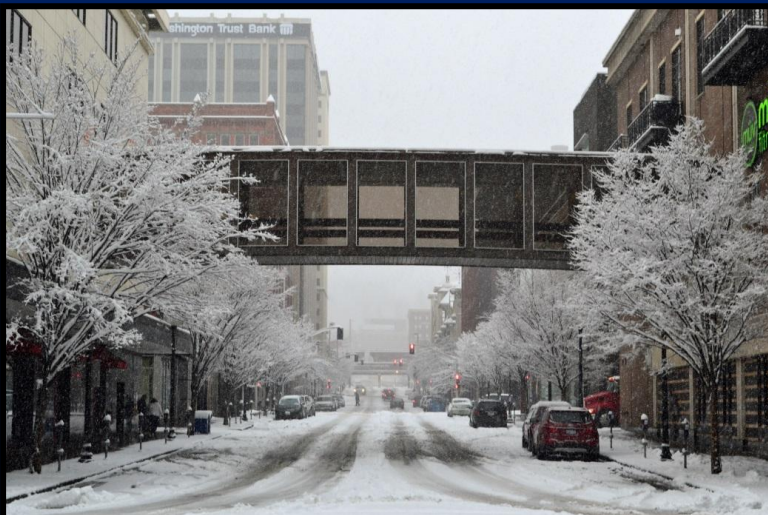
Heavy Snow!

6"+ inches during an event

Please Report:

First Snow of the Season

Then at least 2" new snow (Advisory level)



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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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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?

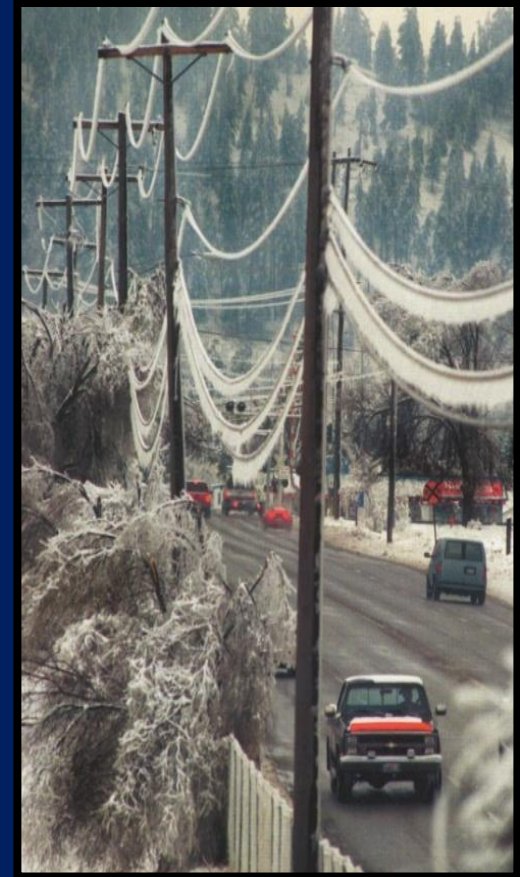
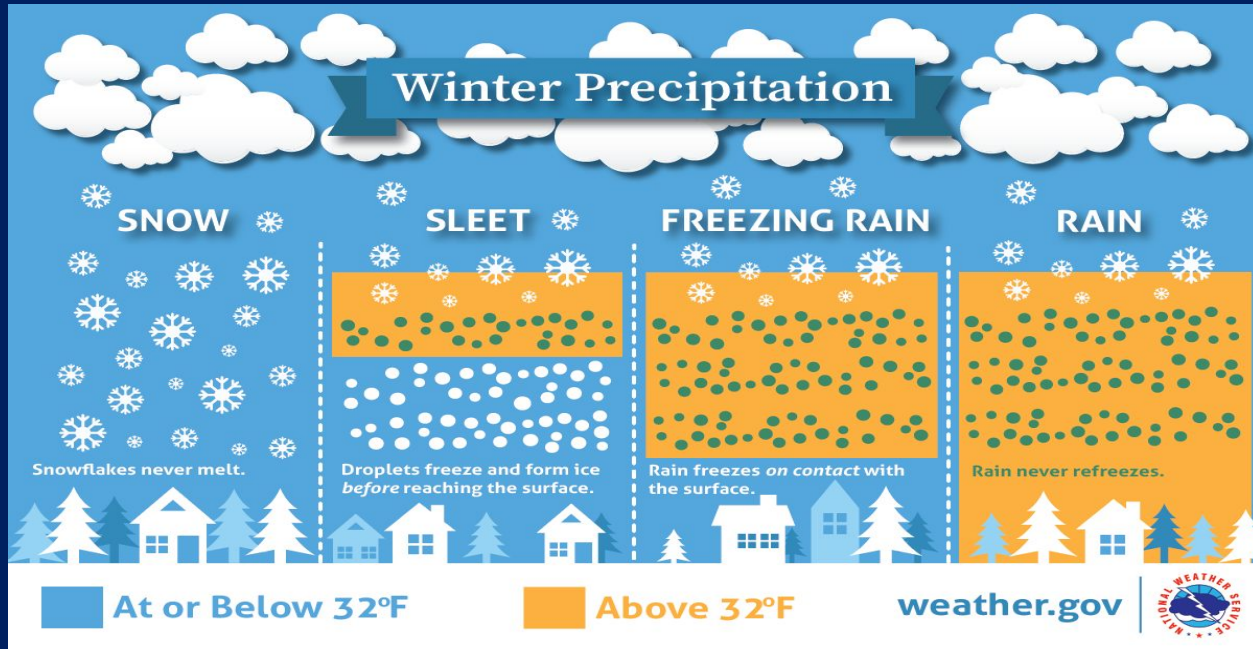
Have a way to get forecasts and warnings
Consider an alternate route or delaying travel
Stay alert for rapidly changing road conditions
Reduce speed and use low beam headlights



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 ≥ 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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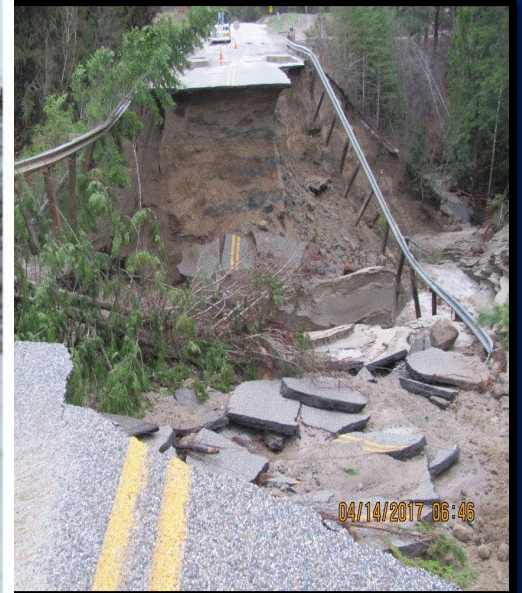
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Mud and Debris Flows

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



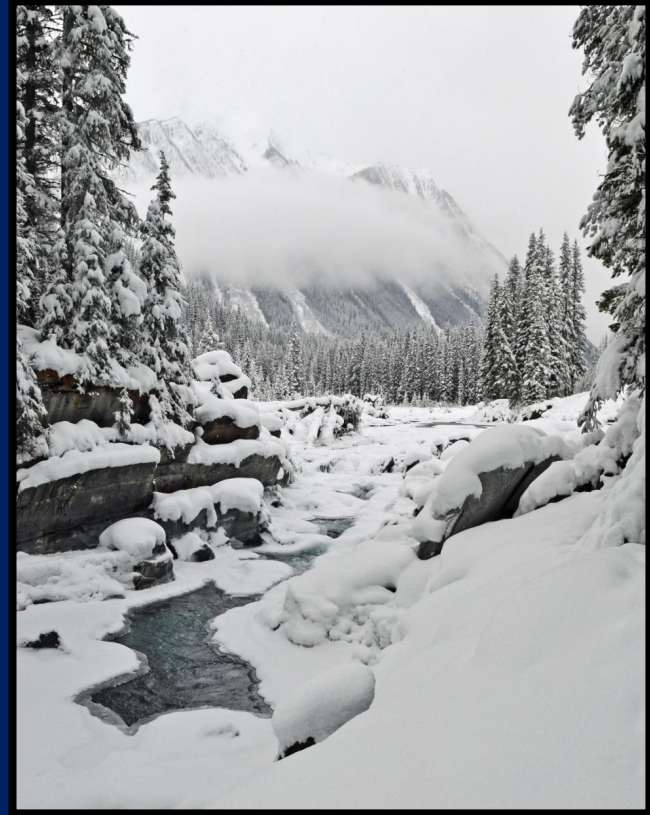
#3 Poll Question

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

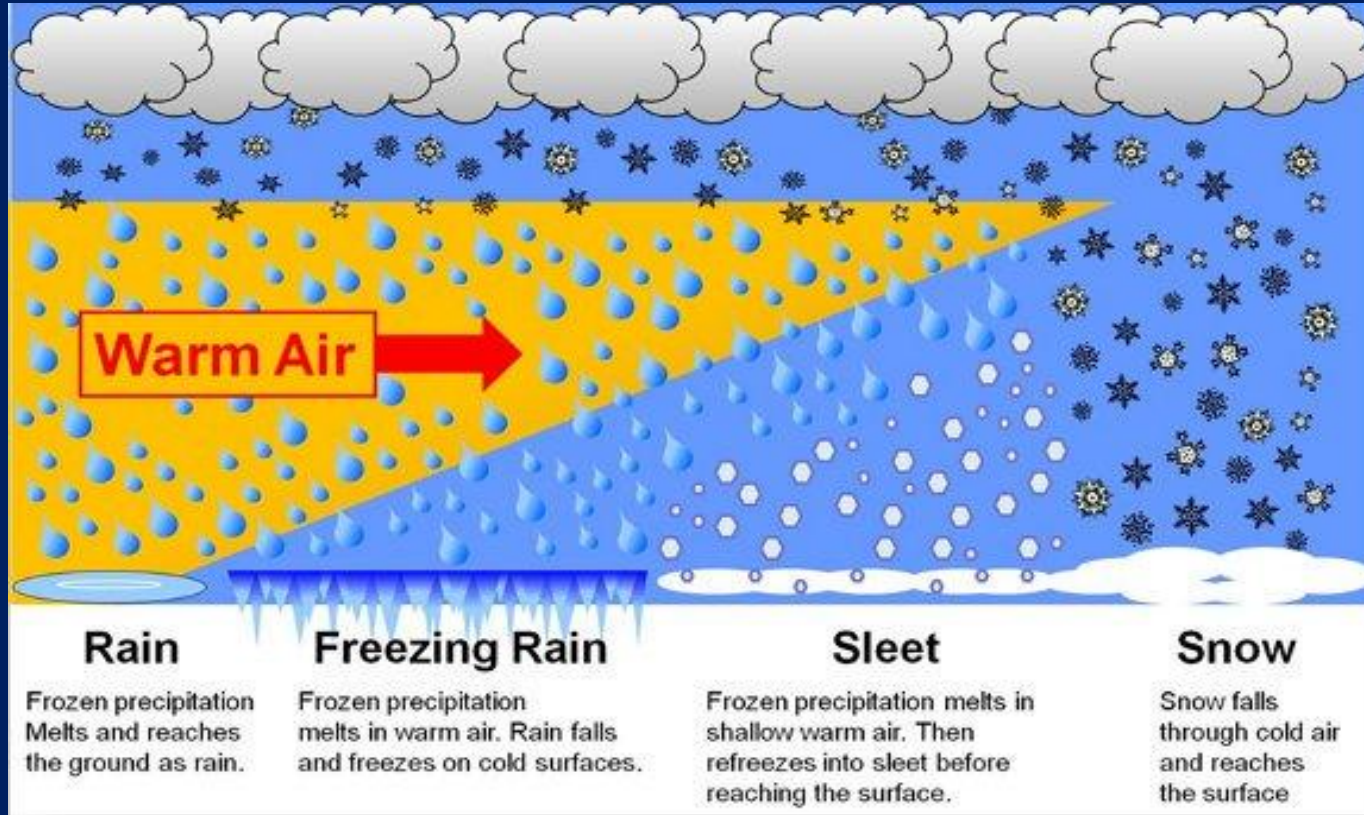


Typical Winter Storm Scenario

- 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



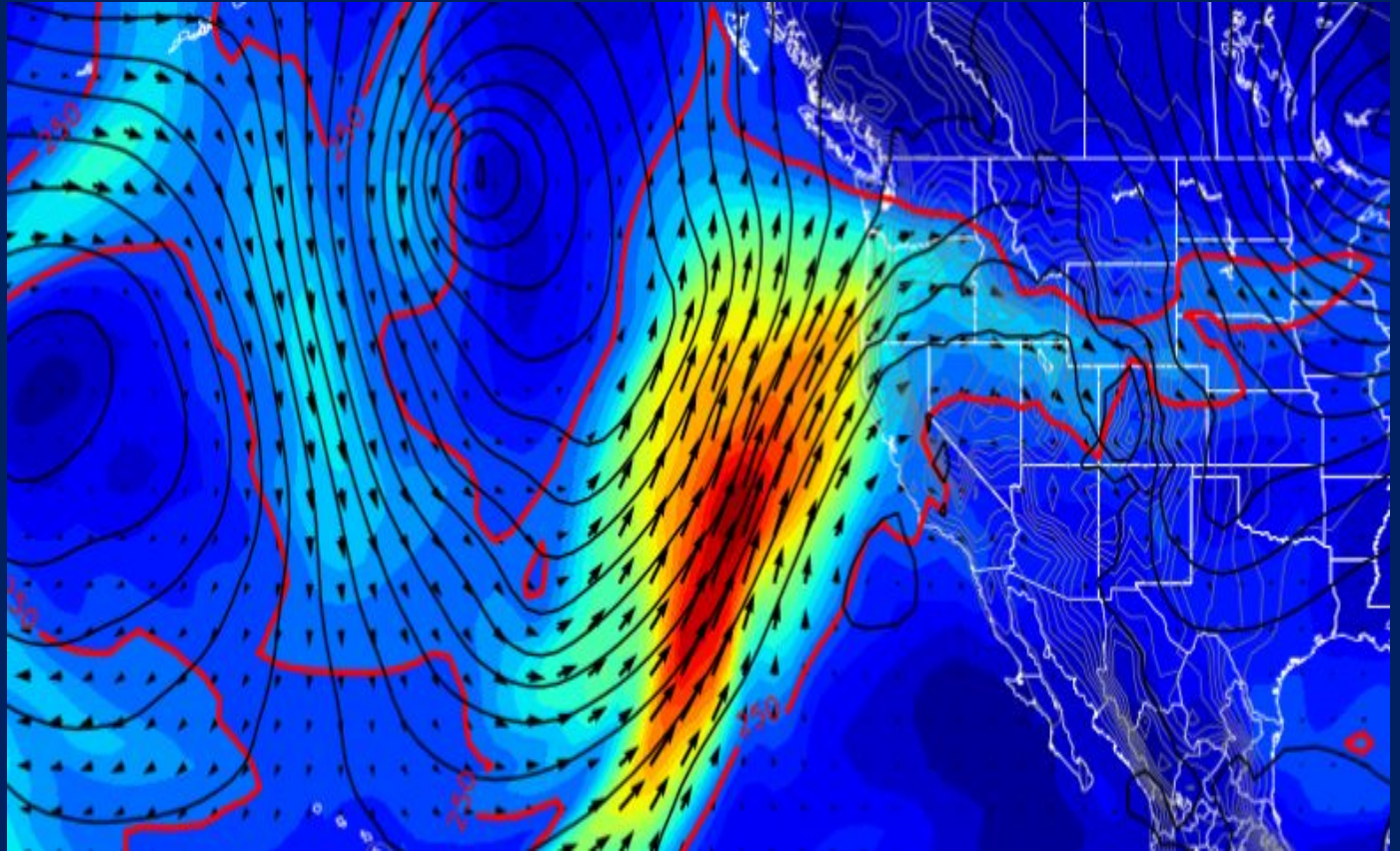
Vertical Temperature Profile is Critical!



Atmospheric Rivers

Plumes of
atmospheric
moisture

Mild & Wet
Weather



Atmospheric River Events



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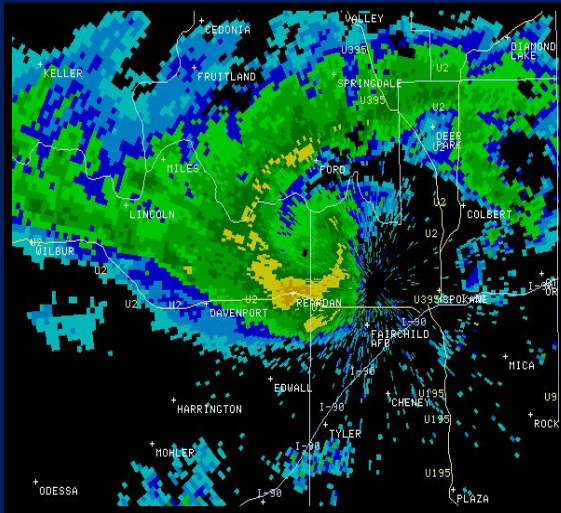
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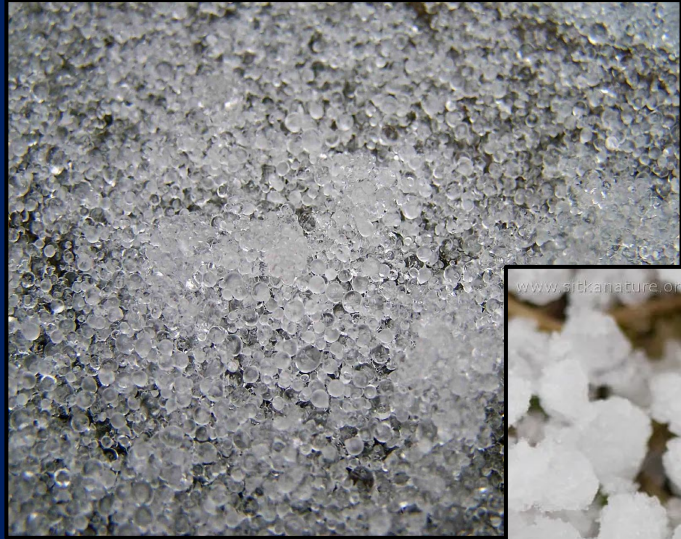


Small Scale Unstable Lows - Snow Squalls

- Develop Behind Strong Cold Fronts
- May not be well forecast by models
- Potential for ~1 ft of snow in a short time
- Spotter play a BIG role with reports



Winter Precipitation



Sleet

Graupel



Hail



#4 Poll Question

Identify the type of precipitation.



Thunderstorm Hazards

Occur in Every Season



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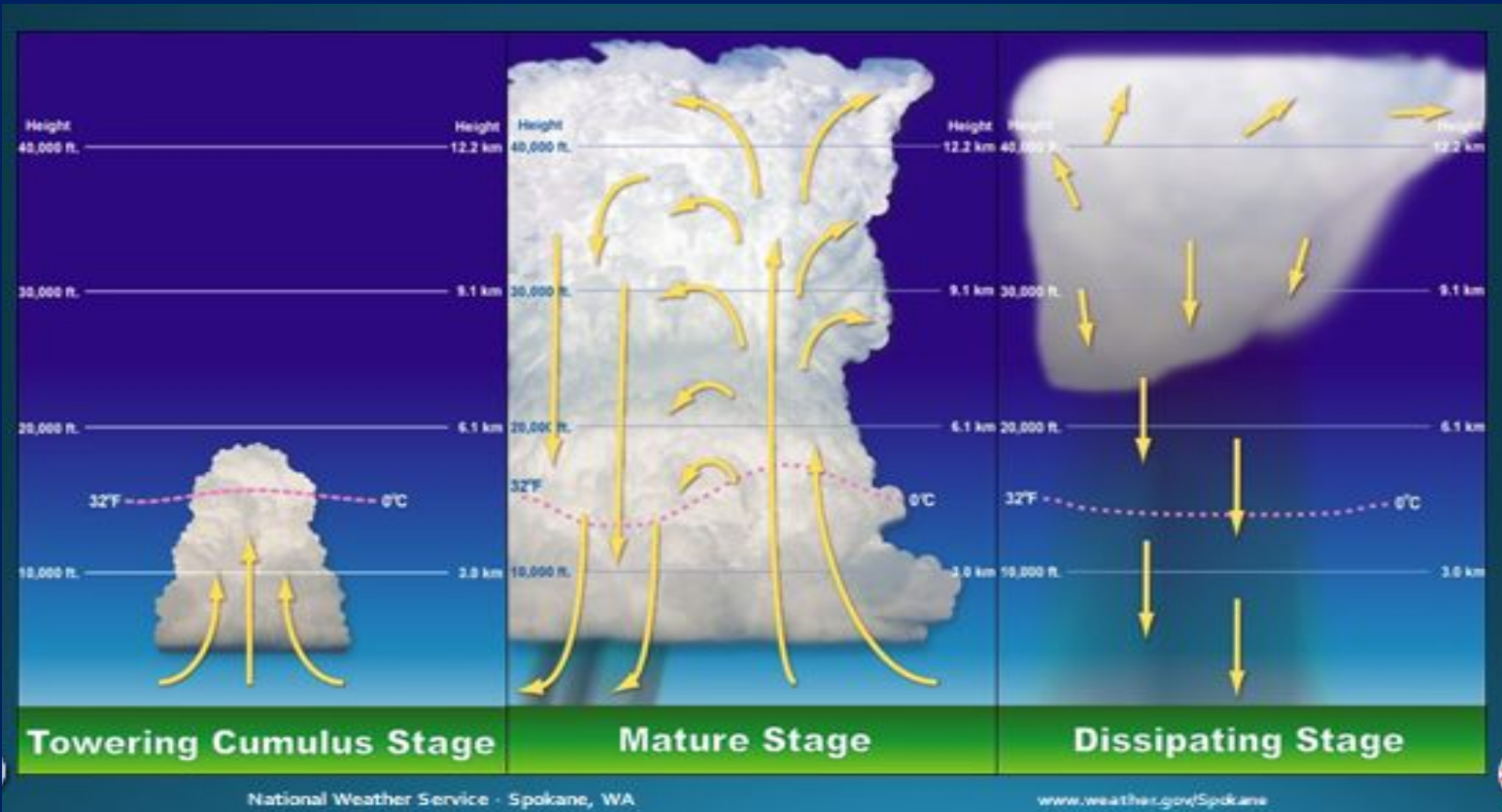
Thunderstorms Ingredients



- **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	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

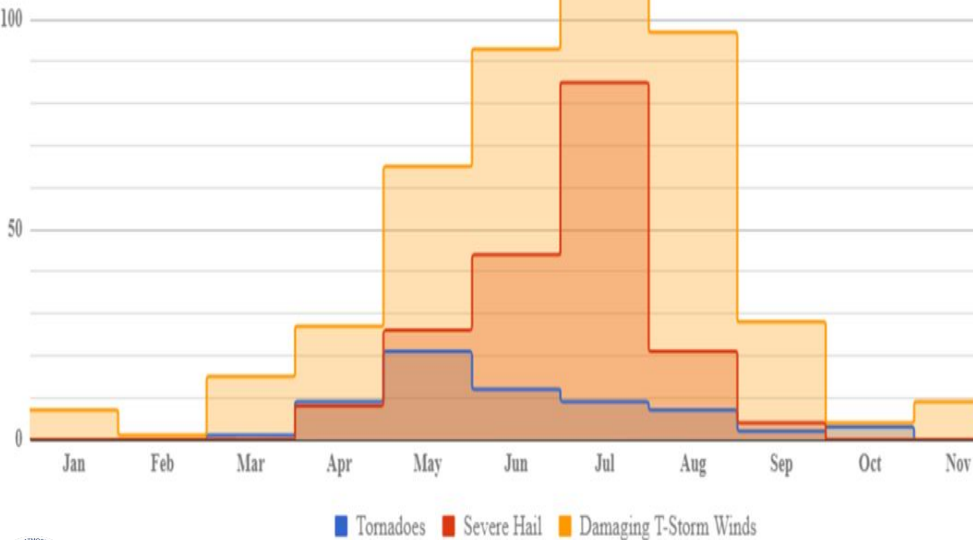
Local Severe Weather Climatology

BY MONTH

Peak month for Damaging Winds/Hail – July

Peak month for Tornadoes – May

Event had severe reports in Nov and Jan

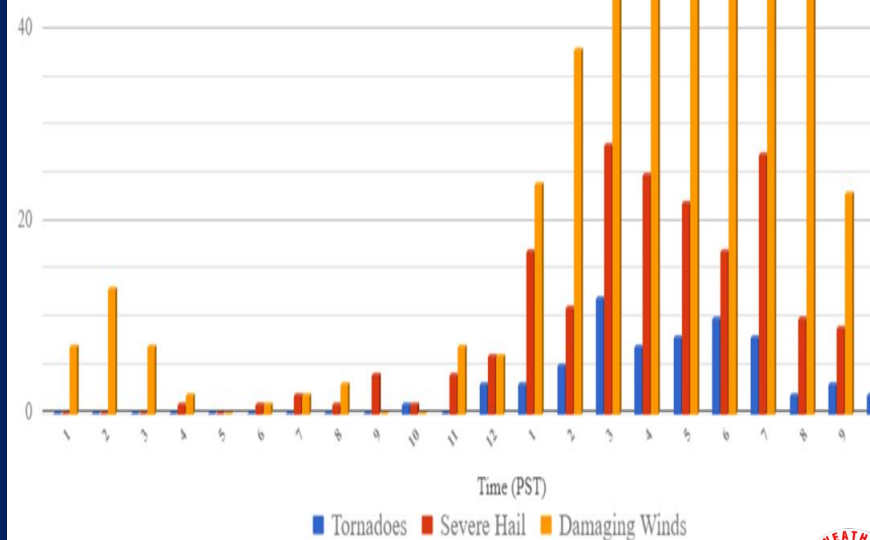


BY TIME OF DAY

Most active mid afternoon to mid evening

Less active in the morning

Still get wind reports late at night



Cloud Types

Towering Cumulus



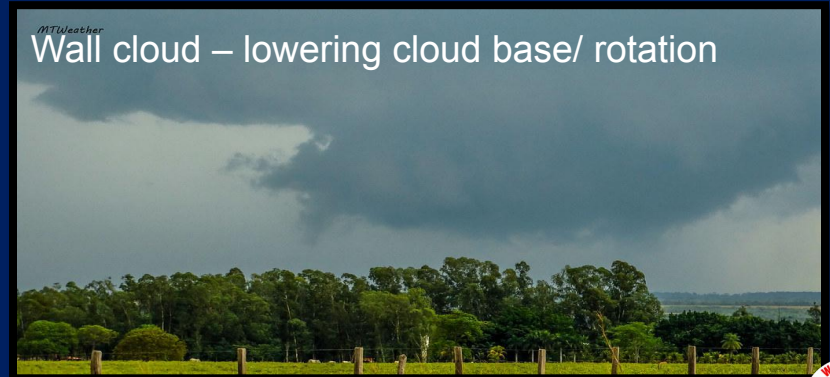
Cumulus



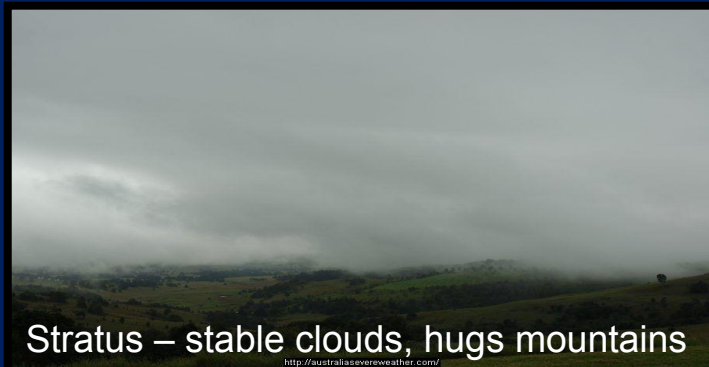
Scud clouds - ragged



Wall cloud – lowering cloud base/ rotation



Stratus – stable clouds, hugs mountains



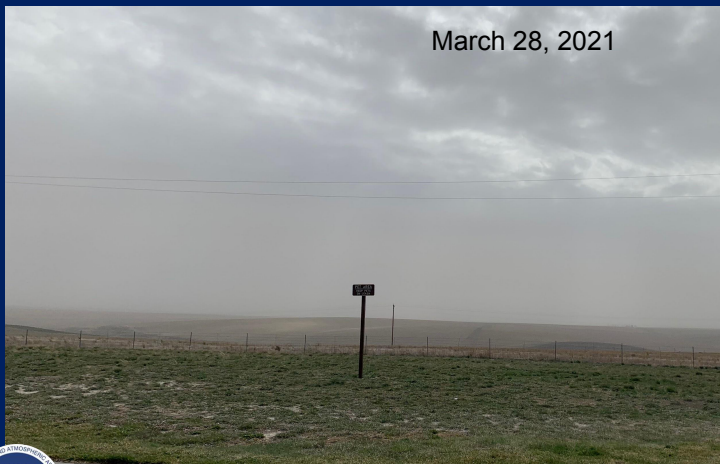
What about Funnel Clouds & Dust Devils?

- 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!



Dust Storm Safety

- Prolonged dry spell + strong winds + plowed fields
- Sudden reduction in visibility
- Also called Haboobs
- If widespread, can lead to air quality issues
- If driving, best to pull over to the side of the road and wait.



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 before the big winter storm arrives. 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!

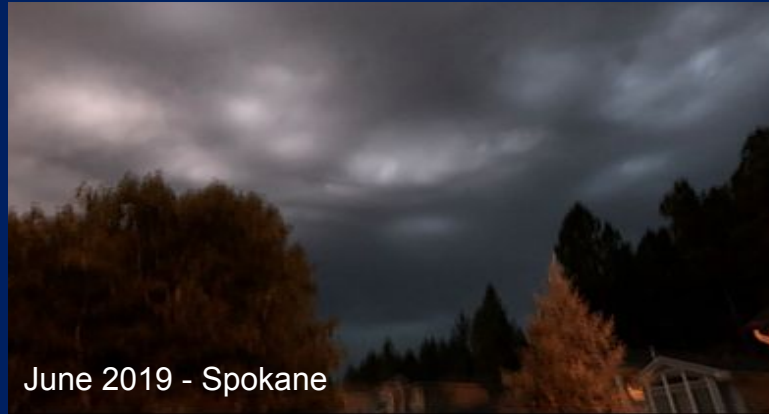
- Lightning can strike as far as 10 miles from the thunderstorm.
- More than 50% of lightning deaths occur AFTER the storm has passed

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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NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION

Spokane, WA

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**



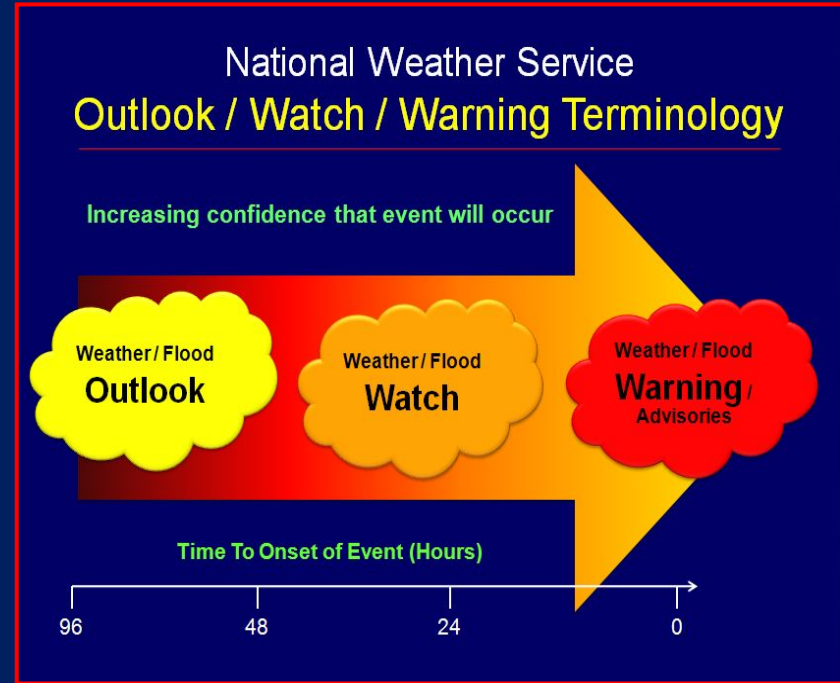
#5 Poll question

You encounter a flooded roadway.
What's the safest thing to do?



Stay Informed - NWS Terminology

- **Watch:** Severe weather is favorable, but not imminent. **GET READY!**
- **Warning:** Severe weather is here or coming soon. **ACT NOW!**
- **Advisory:** Minor nuisance or inconvenient weather is here or coming soon



NWS Weather Warnings

- Tornadoes
- Severe Thunderstorms
- Flooding
- Snow, Snow Squalls, Ice, & Cold
- Wind
- Fire
- Freeze
- Dust
- Heat



Stay Informed - Probabilities & Confidence

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%

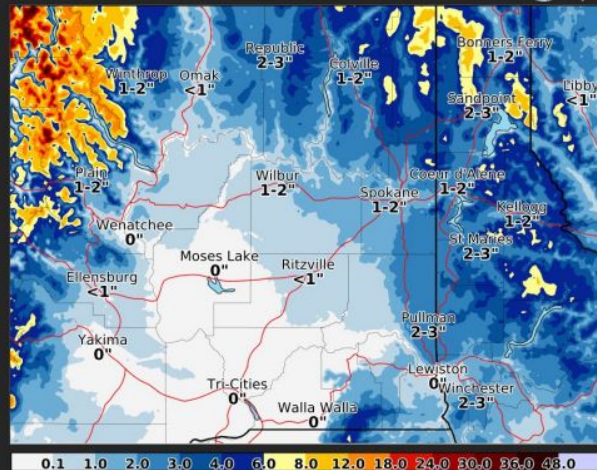
Expected Snowfall Thur night thru Fri morning

Accumulating snow
will melt quickly
during the day
Friday due to the
wind and
temperatures in
the 40s



Expected Snowfall - Official NWS Forecast

11/03/2022 11:00 AM - 11/04/2022 05:00 PM PDT



Stay Informed

NOAA Weather Radio

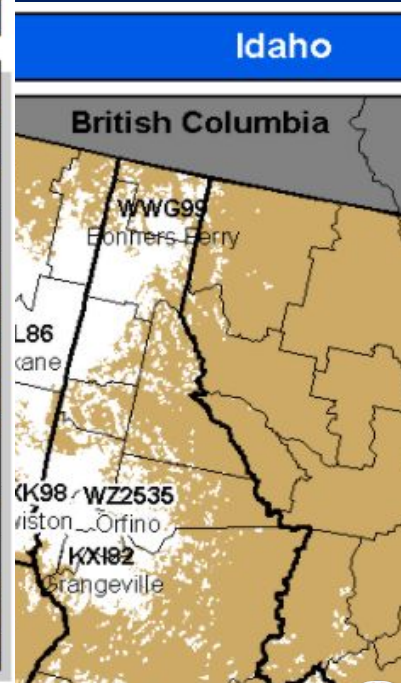
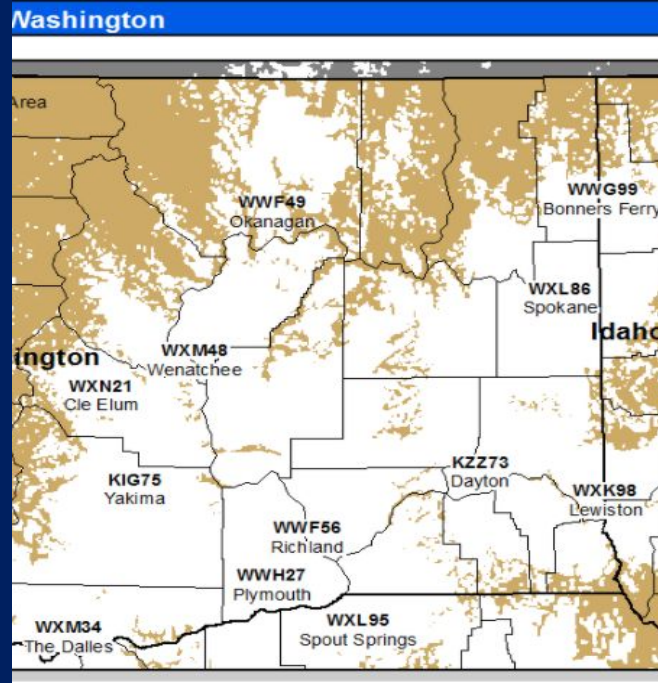


Continuous operation.

Battery backup capable.

Handheld device great for outdoor activities.

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



Stay Informed

NWS Spokane Web Page

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

- Fall 2022 Weather Spotter & Observer Training Schedule - Register Here!
- Fall Edition of the Weather Watcher Newsletter

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

Click a location below for detailed forecast.

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

Zoom Out

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

Snow Showers TUE-WED

Where: Mountain Passes on Tuesday expanding into Valleys of NE WA and N ID Wednesday AM

What: Brief snowfall on roadways & grassy surfaces

Impacts: Mountain passes could become slick with wintry travel after dark

54°F
12°C [Get Detailed info](#)

This Afternoon
 40% Chance Rain
High: 57°F

Tonight
 80% Rain
Low: 38°F [change location](#)

NWS Spokane

Click a location below for detailed forecast.

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

Zoom Out

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

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Stay Informed On your Smartphone

mobile.weather.gov



mobile.weather.gov National Weather Service
Zip, City or Place Go! [List of locations: Owings Mills MD, Spring City PA, Corpus Christi TX, 5 Miles WSW Corpus Christi, Naval Air S...]

mobile.weather.gov National Weather Service
Victoria tx Go!

mobile.weather.gov National Weather Service
2 Miles SW Victoria TX
Outlook/Statement in Effect
Current Conditions: Victoria, Victoria Regional Airport 70 °F Partly Cloudy
Forecast: This Afternoon Mostly Sunny, Tonight Arise Fog then 20% Precip, Tomorrow Slight Chance

mobile.weather.gov National Weather Service
2 Miles SW Victoria TX
Outlook/Statement in Effect
AirDrop, Message, Mail, Reminders, Add to Notes, Twitter, Copy, Open in News, Add to Home Screen, Print, HP ePrint

Weather
Smart Weather, RadarScope, Corpus Weather, CoCoIRF00..., Clear Day, mPNG, MetaWeather, Wind Meter, WindAlert

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



Staying Informed On Your Phone!



Weather Warnings

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

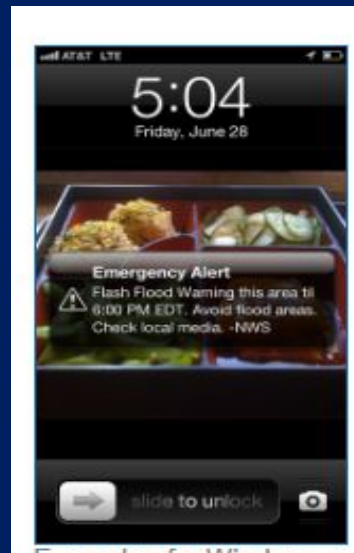
Alert Categories

Extreme Weather & Water Warnings

Local emergencies & Evacuations

AMBER Alerts

Presidential Alerts – National emergency



Stay Informed

Be Prepared - Disaster Kits and Disaster Plans



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

Volunteer take readings once a day - transmit on mobile device

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

Home | Countries | States | View Data | Maps | My Data | My Account | Admin | Logout

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

Who uses CoCoRaHS Observations?

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

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

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

Legend:
 Trace
 0.00 - 0.12
 0.13 - 0.24
 0.25 - 0.44
 0.45 - 0.59
 0.61 - 0.94
 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)

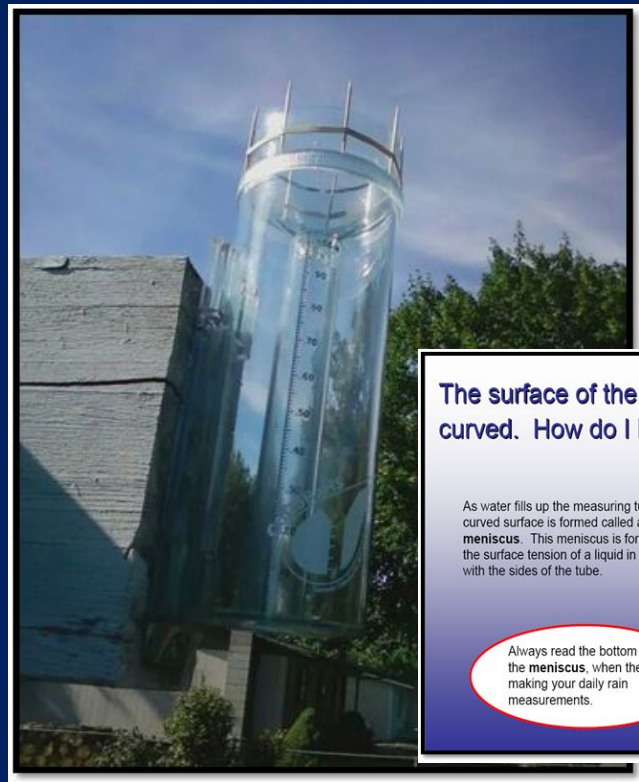
Submit



Community Collaborative Rain, Hail and Snow Network - CoCoRaHS

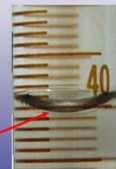
Five easy steps

1. Sign-up at on the CoCoRaHS web site www.cocorahs.org
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



- 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



Citizen Weather Observers Program

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](#)

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[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

CoCoRaHS

Precipitation
only

Rain gauge
required

Daily
commitment

Cocorahs.org

CWOP

Weather data

Weather station

Daily
commitment

Wxqa.com



Weather Spotter Resources Online

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



Spotter Resource Page

[Send Spotter Reports](#)

This website is an easy method to send spotter reports online through your computer! You have to be a registered weather spotter for the Inland Northwest to gain access to the system.

[Online Weather Spotter Sign Up Form](#) - New

[Weather Spotter Sign up Form](#)

[Virtual Training - Nov 2020](#) [Notes](#)

[Weather Spotter Checklist](#)

[Virtual Training - April 2020](#) [Notes](#)

[Ways to be a Weather Volunteer](#)

[Virtual Training - Dec 2019](#) [pdf](#)

[Latest NWS Storm Reports](#)

[Training Schedule](#) - NEW Spring '21

[Weather Watcher Newsletter](#)

Additional ONLINE Training

<u>Spotter Training through COMET MetEd</u>	<u>CoCoRaHS</u>
<u>SKYWARN Spotter Training - Basic</u>	<u>CoCoRaHS slide shows</u>
<u>Role of the SKYWARN Spotter - Applications</u>	<u>CoCoRaHS videos</u>
<u>SKYWARN Spotter Convective Basics - Intermediate</u>	<u>Wx Talks Webinars</u>



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#6 Poll question

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



Winter Outlook 2022-2023



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www.weather.gov/spokane



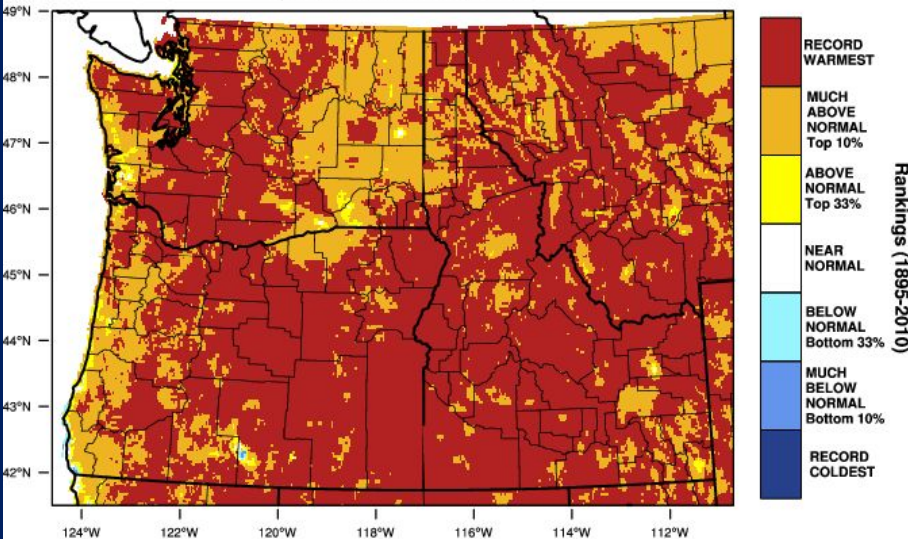
Past 90 Days

wrcc.dri.edu/

It has been warmer and somewhat drier across the Inland NW

Pacific Northwest - Mean Temperature

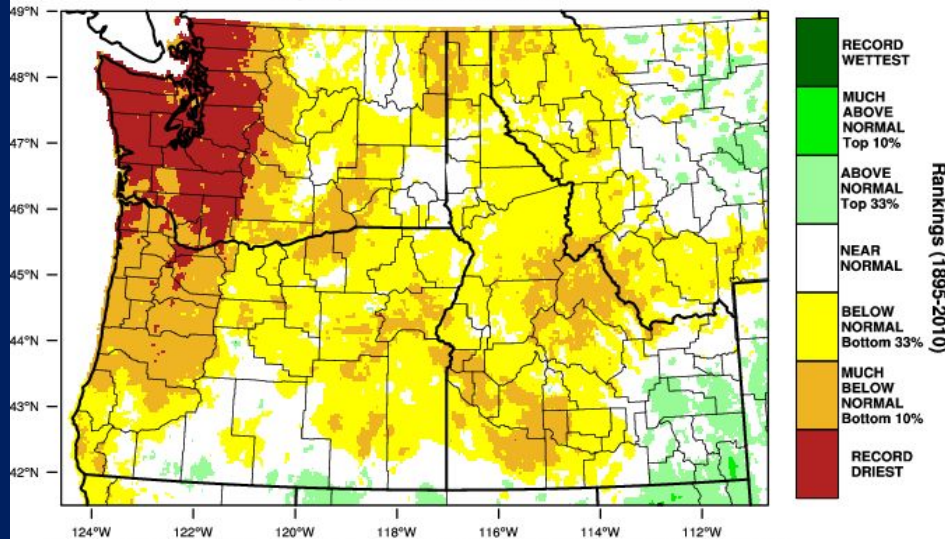
July-September 2022 Percentile



WestWide Drought Tracker - U Idaho/WRCC Data Source - PRISM (Prelim), created 16 OCT 2022

Pacific Northwest - Precipitation

July-September 2022 Percentile



WestWide Drought Tracker - U Idaho/WRCC Data Source - PRISM (Prelim), created 16 OCT 2022

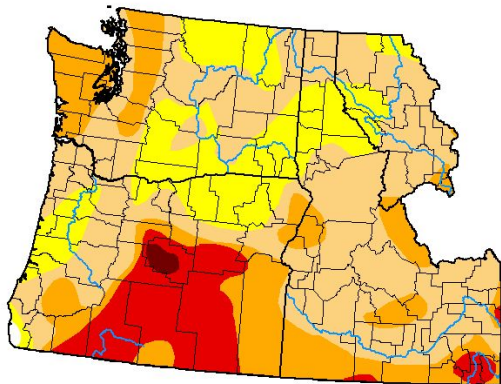


Drought Update

US Drought Monitor & Seasonal Outlook

www.cpc.noaa.gov

U.S. Drought Monitor Pacific Northwest DEWS



October 25, 2022
(Released Thursday, Oct. 27, 2022)
Valid 8 a.m. EDT

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.16	99.84	79.32	32.83	11.86	0.50
Last Week 10-18-2022	0.16	99.84	78.91	31.82	11.86	0.50
3 Months Ago 07-26-2022	42.88	57.12	39.53	23.96	12.39	0.63
Start of Calendar Year 01-04-2022	15.92	84.08	75.97	48.26	22.13	6.50
Start of Water Year 09-27-2022	2.06	97.94	62.50	24.12	11.86	0.50
One Year Ago 10-26-2021	7.19	92.81	90.83	84.57	53.07	18.63

Intensity:



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:

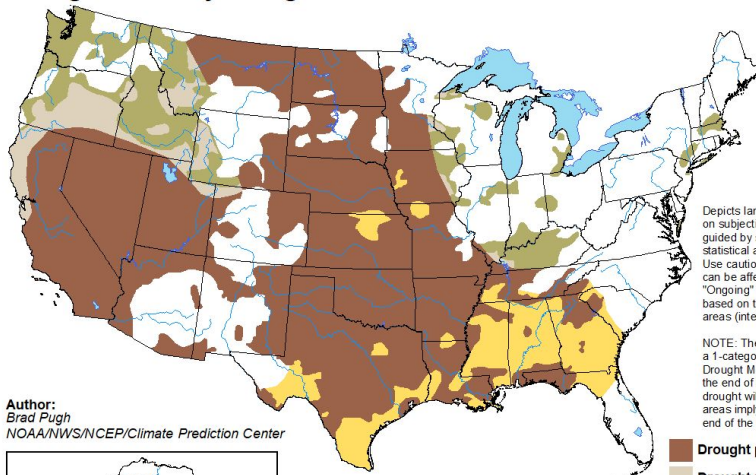
Adam Hartman
NOAA/NWS/NCEP/CPC



droughtmonitor.unl.edu

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

Valid for October 20, 2022 - January 31, 2023
Released October 20, 2022

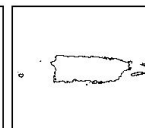
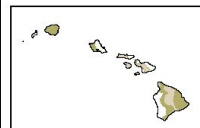
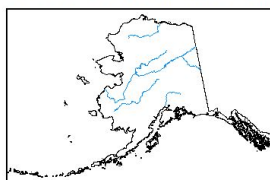


Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. "Ongoing" drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to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

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



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



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Spokane, WA

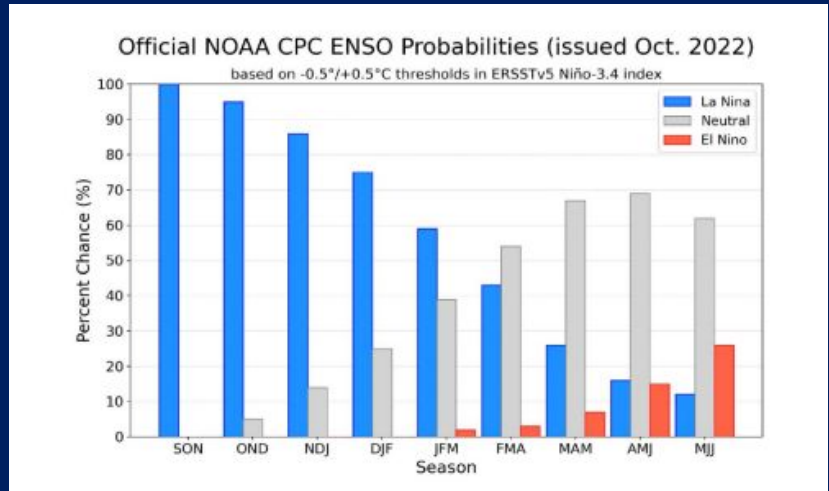
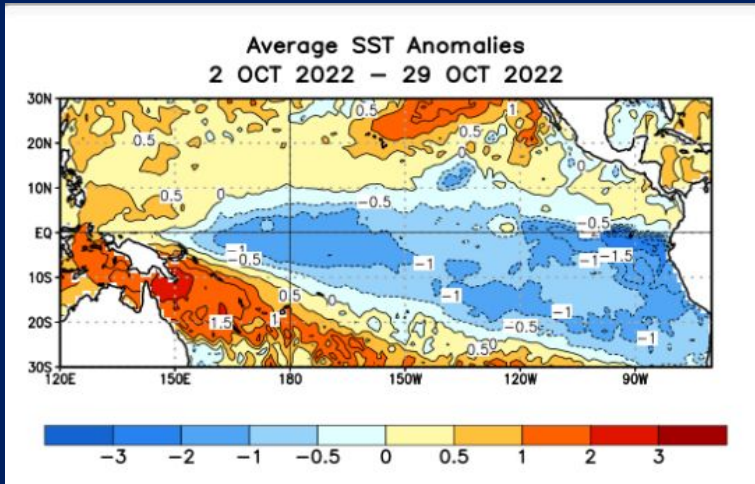
www.weather.gov/spokane



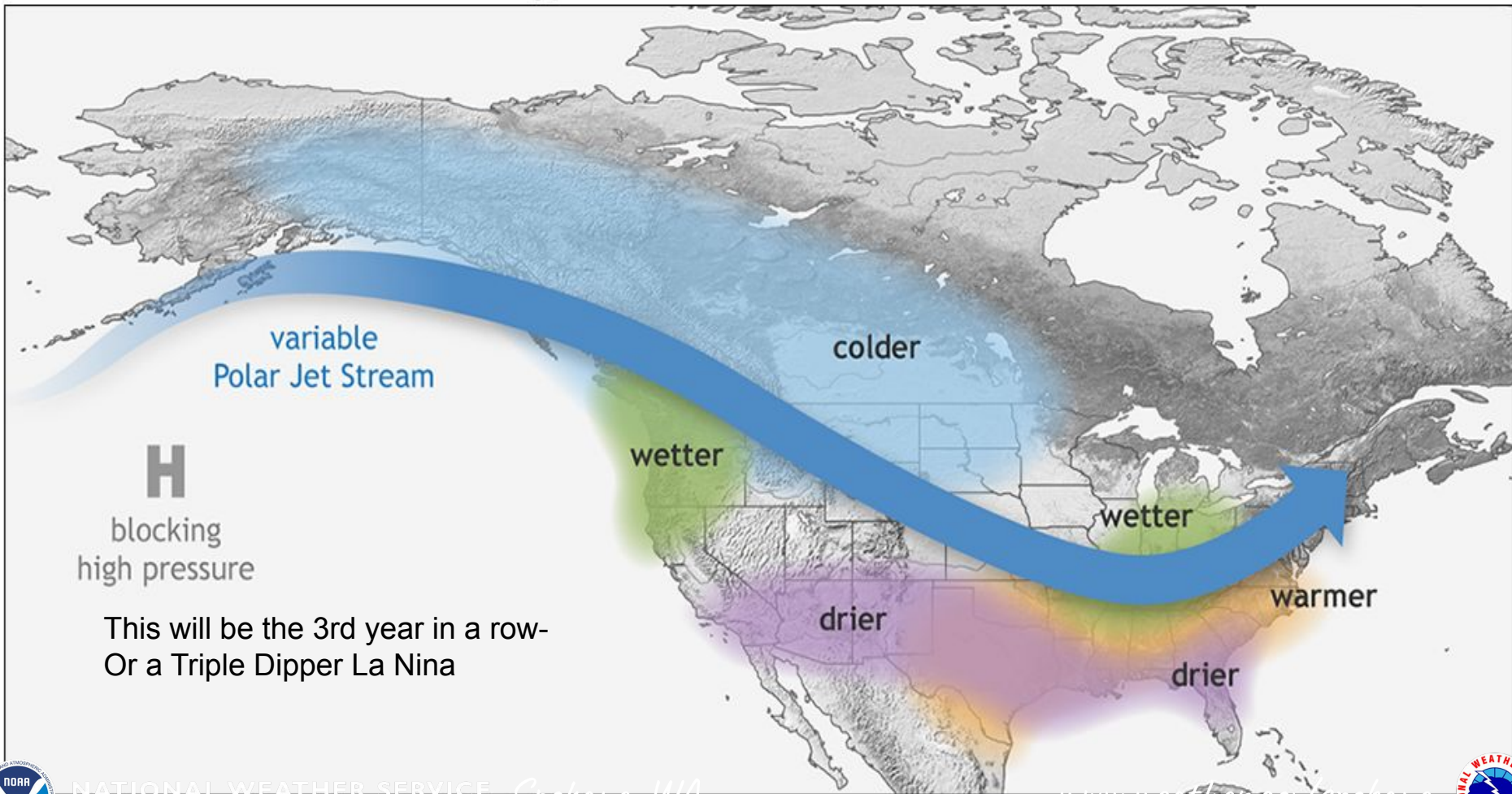
La Nina Status

ENSO Alert System Status: La Niña Advisory

- Equatorial sea surface temperatures (SSTs) remain near-to-below average across most of the Pacific Ocean.
- La Niña conditions continue and are expected to persist especially from Spring 2023 in the Northern Hemisphere.



Typical Wintertime La Nina Pattern

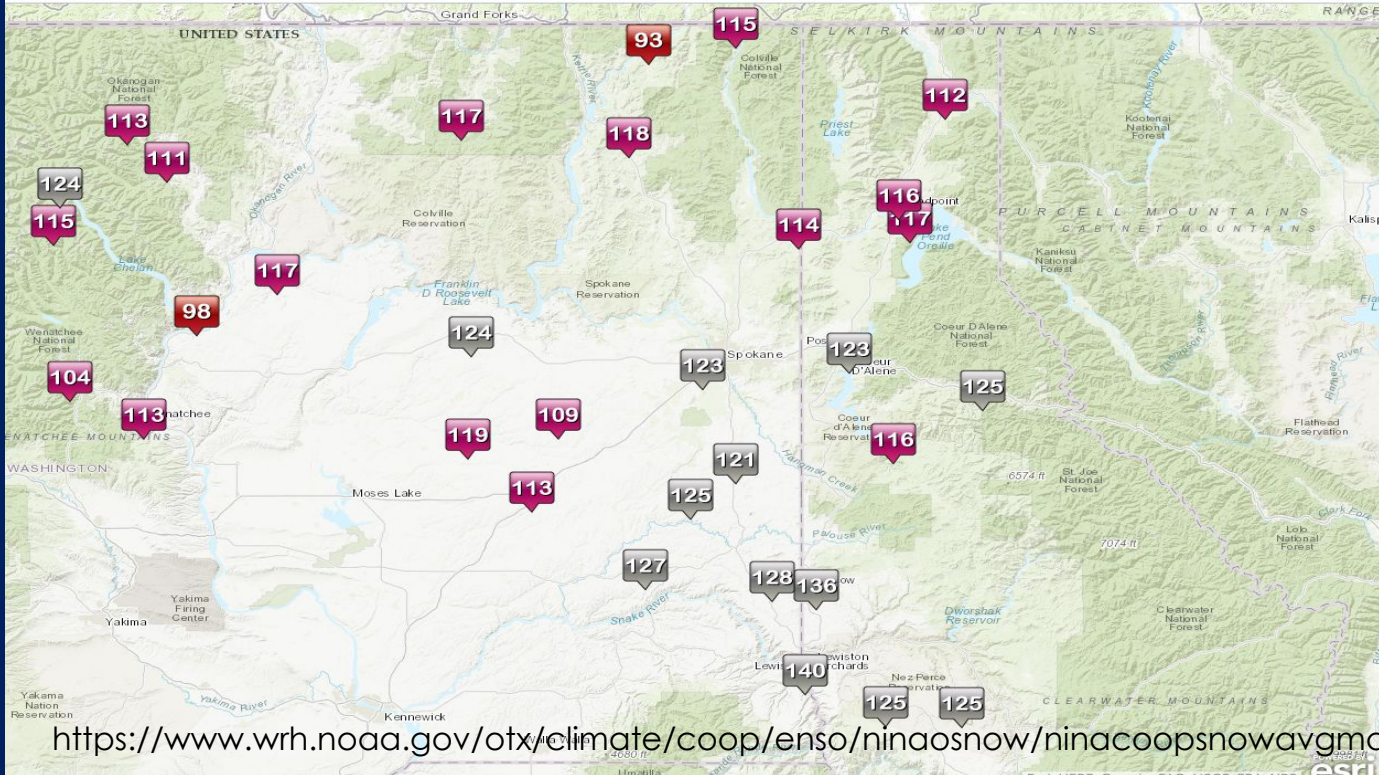


Interactive La Nina Snow Climatology

NWS Spokane Coop Observed, La Nina Snow Climatology

Percent of Normal Snowfall

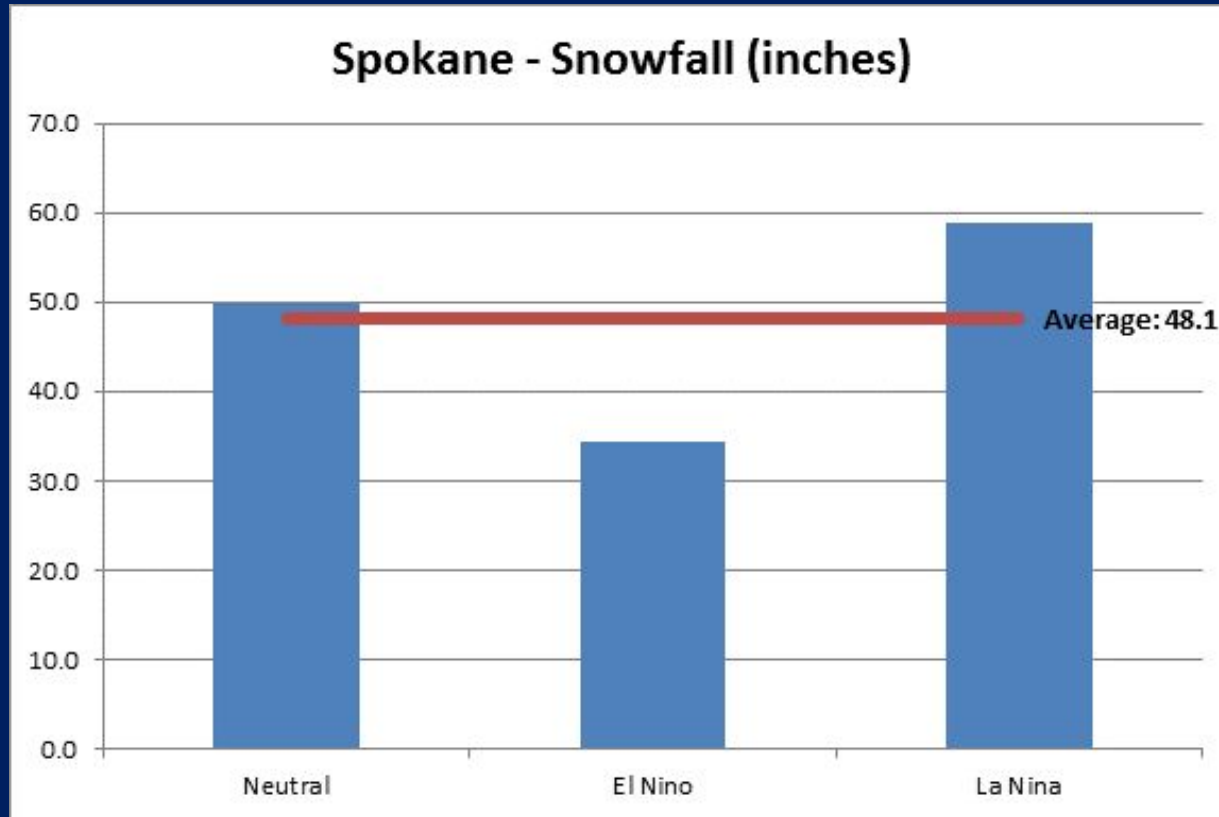
Click on a point or right sidebar for the full details.



- Bonnars Ferry - Avg. 71 in., Pct. Norm. 112%
- Boundary Dam - Avg. 67 in., Pct. Norm. 115%
- Chief Joseph Dam - Avg. 33 in., Pct. Norm. 117%
- Chelan - Avg. 31 in., Pct. Norm. 98%
- Coeur d'Alene - Avg. 63 in., Pct. Norm. 123%
- Colville - Avg. 56 in., Pct. Norm. 118%
- Harrington - Avg. 30 in., Pct. Norm. 109%
- Holden Village - Avg. 316 in., Pct. Norm. 115%
- Kellogg - Avg. 67 in., Pct. Norm. 125%
- La Crosse - Avg. 22 in., Pct. Norm. 127%
- Leavenworth - Avg. 94 in., Pct. Norm. 104%
- Lewiston - Avg. 22 in., Pct. Norm. 140%
- Moscow - Avg. 67 in., Pct. Norm. 136%
- Mazama - Avg. 134 in., Pct. Norm. 113%
- Newport - Avg. 72 in., Pct. Norm. 114%
- Nez Perce - Avg. 52 in., Pct. Norm. 125%
- Northport - Avg. 59 in., Pct. Norm. 93%
- Odessa - Avg. 18 in., Pct. Norm. 119%
- Priest River - Avg. 92 in., Pct. Norm. 117%
- Pullman - Avg. 46 in., Pct. Norm. 128%
- Republic - Avg. 60 in., Pct. Norm. 117%
- Rosalia - Avg. 31 in., Pct. Norm. 121%
- Ritzville - Avg. 22 in., Pct. Norm. 113%
- Sandpoint - Avg. 81 in., Pct. Norm. 116%
- Spokane - Avg. 59 in., Pct. Norm. 123%
- St. John - Avg. 25 in., Pct. Norm. 125%
- St. Maries - Avg. 65 in., Pct. Norm. 116%
- Stebekin - Avg. 161 in., Pct. Norm. 124%
- Wenatchee - Avg. 29 in., Pct. Norm. 113%
- Wilbur - Avg. 31 in., Pct. Norm. 124%
- Winchester - Avg. 113 in., Pct. Norm. 125%
- Winthrop - Avg. 77 in., Pct. Norm. 111%

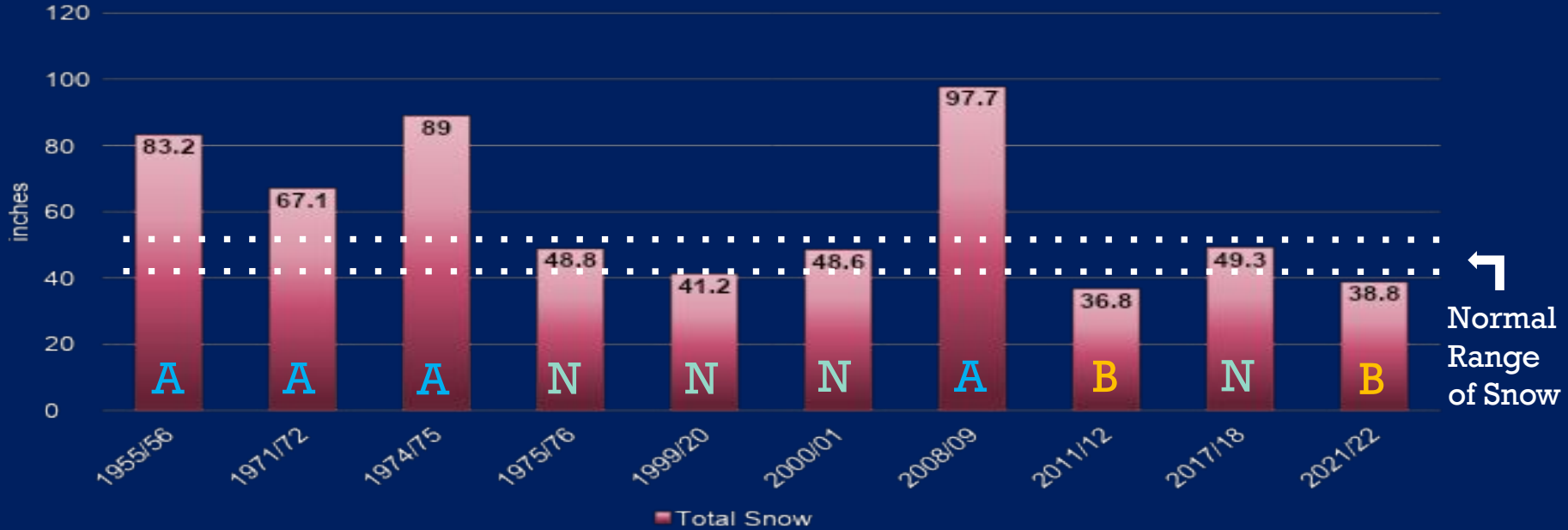


From previous slide
(Points are clickable - bring up chart)





CONSECUTIVE LA NINA WINTERS SPOKANE SNOWFALL



Above Normal (A) = 4

Normal (N) = 4

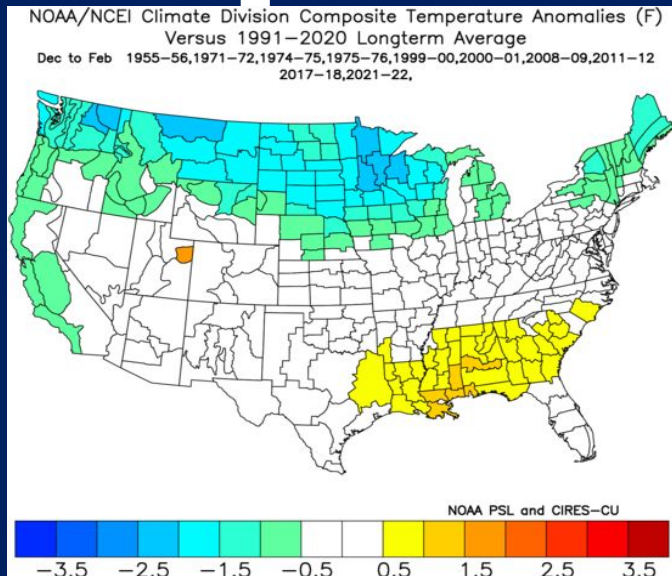
Below Normal (B) = 2



ANALOG YEARS CONSECUTIVE LA NINA WINTERS

(1955/56, 1971/72, 1974/75, 1975/76, 1999/00, 2000/01, 2008/09, 2011/12, 2017/18, 2021/22)

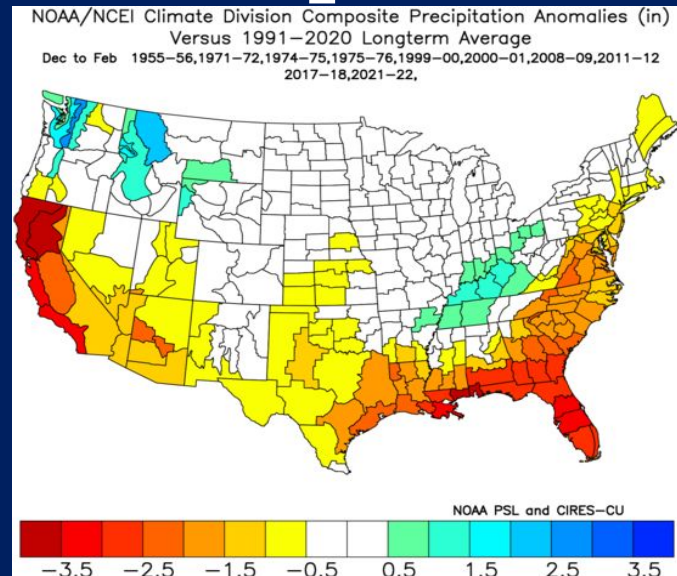
Temperature



Cooler

(Indicative of more arctic intrusions)

Precipitation



Near Normal

(Indicative of stronger northwest flow)



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Spokane, WA

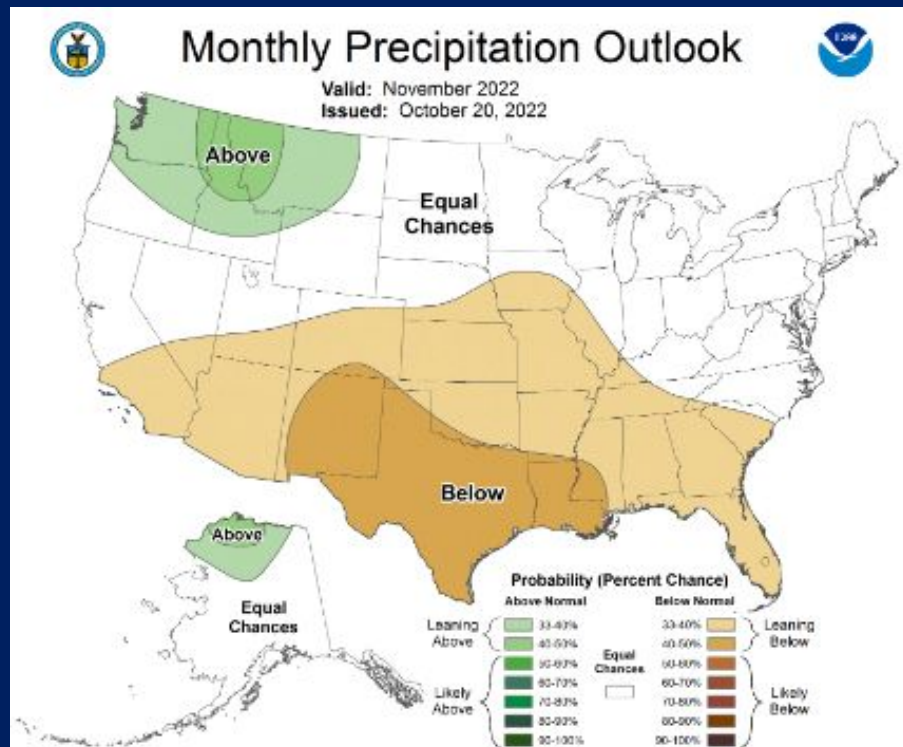
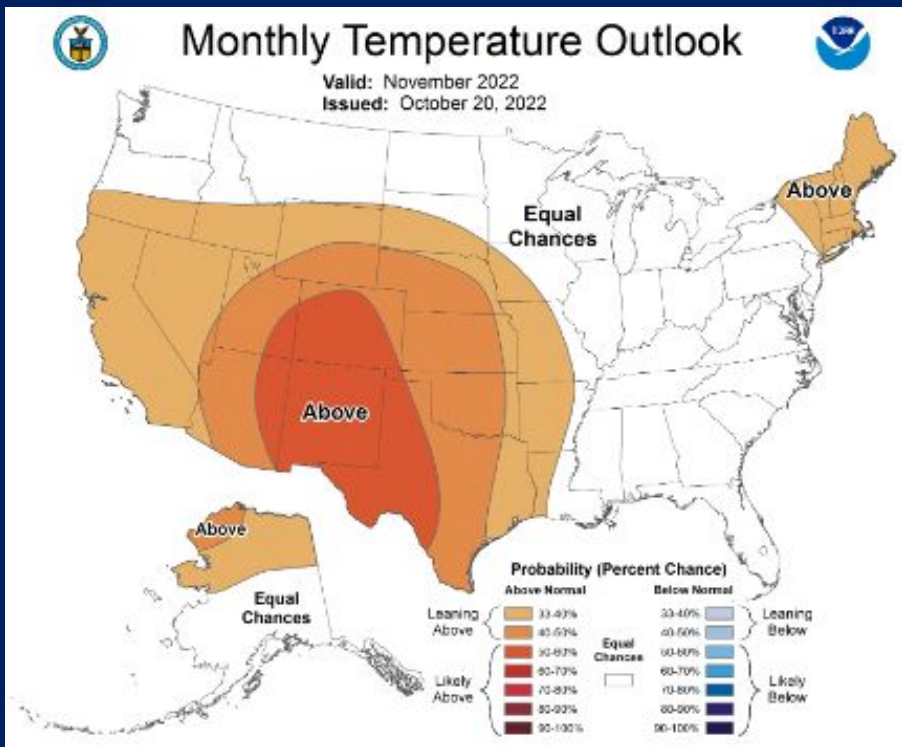
www.weather.gov/spokane



One Month Outlook

November

www.cpc.noaa.gov



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Spokane, WA

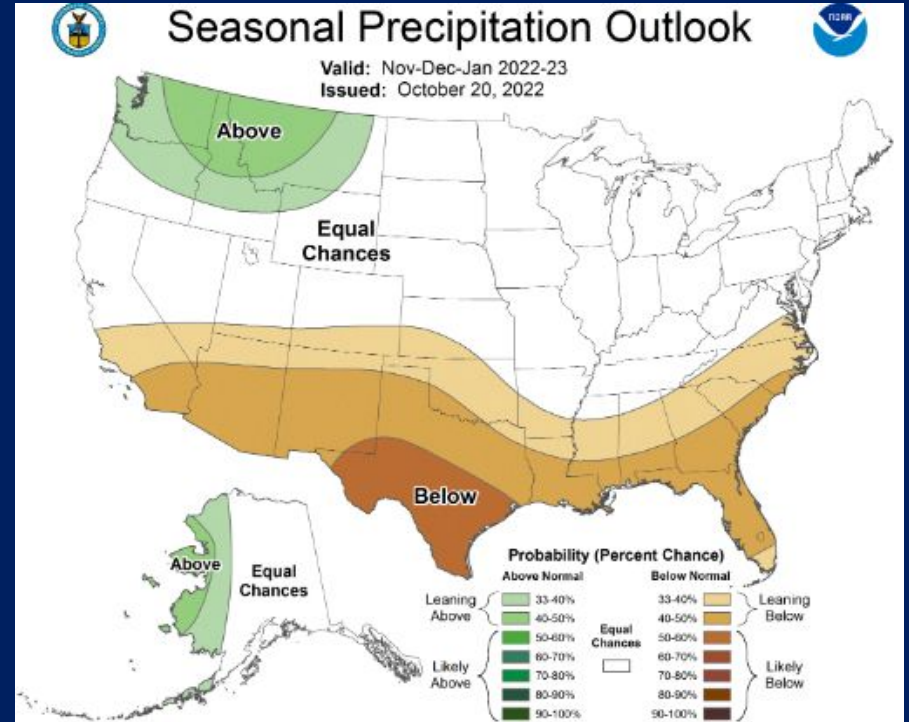
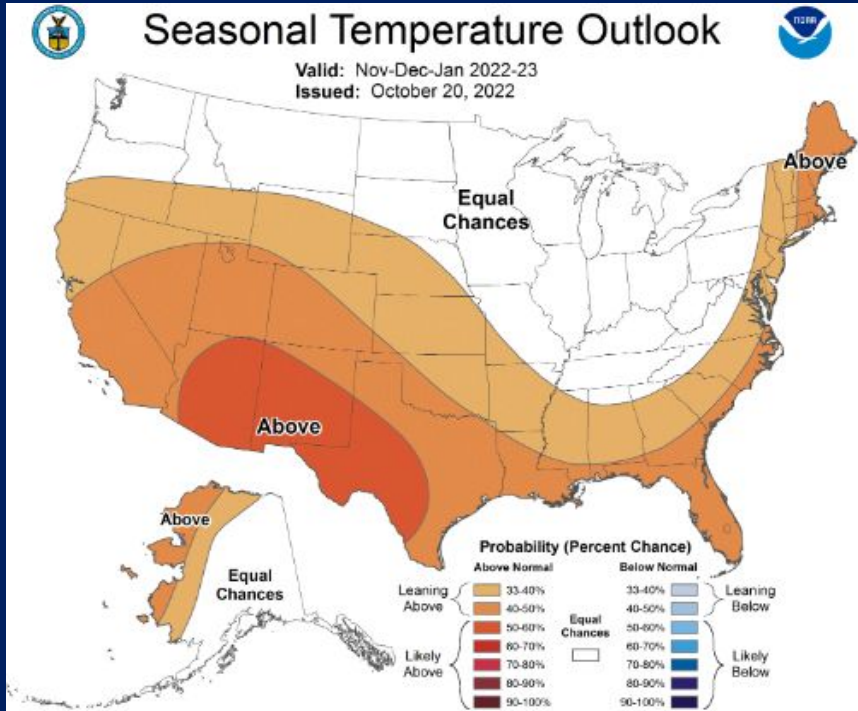
www.weather.gov/spokane



Three Month Outlook

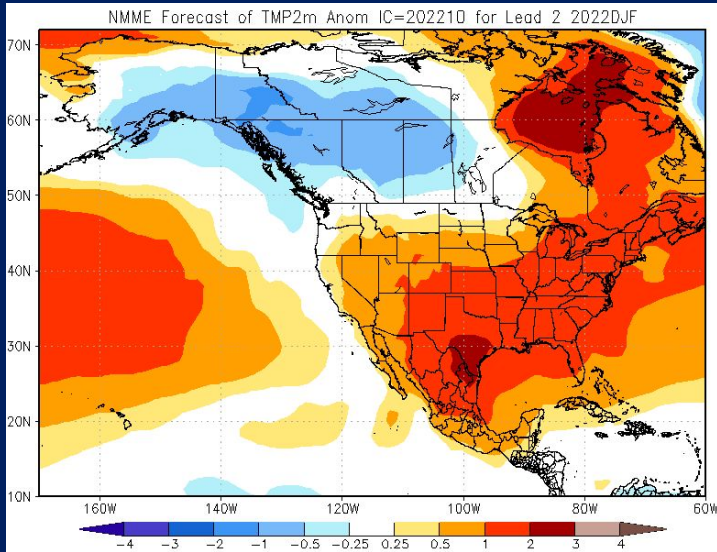
November through January

www.cpc.noaa.gov

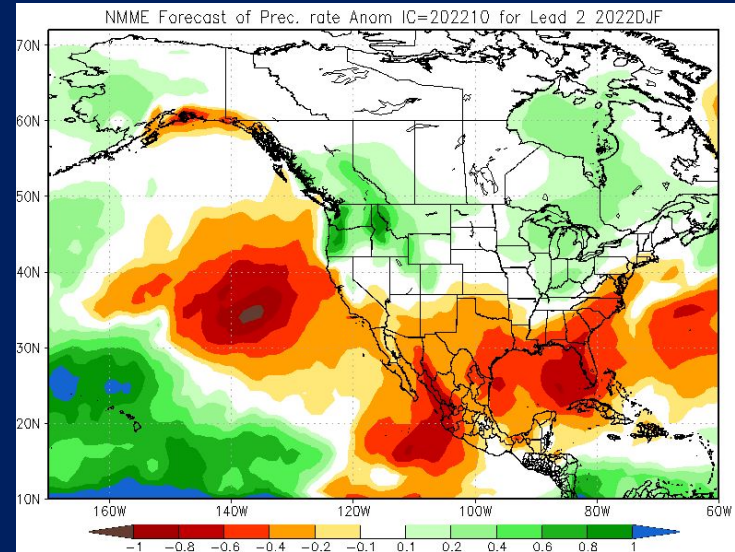


NMME Climate Model Forecast December - February

Temperature



Precipitation



Key Points – Winter Outlook

- Drought continues improve over portions of Washington and north Idaho with removal of drought likely.
- La Nina favored for the upcoming winter - Triple Dipper!
 - Winter outlook - favors elevated odds of cooler and wetter than normal.
- Winter is coming...Anticipate storms with snow, ice, rain and wind





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



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Spokane, WA

www.weather.gov/spokane

