



Snow Measurements

Fall 2024
National Weather Service
Spokane, WA



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
- There is a phone in option as well!

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



The screenshot shows a GoToWebinar window titled "Virtual Weather Spotter Training #2" with Webinar ID: 125-215-155. The menu bar includes File, Options, View, Help, and a globe icon. The main content area displays "In Practice Mode" with a "Start" button. A dropdown menu is open, listing: Audio, Attendees: 1 of 1001 (max), Polls (0/3), Questions, Handouts: 0 of 5, and Chat. On the left and right sides of the window, there are vertical toolbars with icons for audio, video, chat, and other functions. An orange arrow icon is visible on the left toolbar.

Objectives



- Understand the importance of the Precipitation Observations
- Learn how to take accurate rain and snow reports
- Learn how to prepare and be safe during hazardous weather
- Receive the **Winter Outlook 2024-25**

Now let's look back at last year.....



Heavy Snow: January 17, 2024

Heavy Snow
Numerous Accidents
Road Closures & Slowdowns

Use
Rulers!

Sending pictures is even
better



December 16, 2022 - Rime Ice



Deposition of ice
NOT precipitation
Ice fog



NWS Spokane



Spokane Airport



December 25, 2022: Freezing Rain



Yes, Precipitation!
Rain that freezes

Measure the thickness AND
melt down the ice to measure
how much water.

Need FLAT ice thickness -
windshield
(not radial - tree branch)



To our current Observers....



THANK YOU!



NATIONAL WEATHER SERVICE
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Spokane, WA

www.weather.gov/spokane



Community Collaborative Rain-Hail and Snow Network

- NWS Partner
- Fort Collins, Colorado
- Manages sites all over North America
- Began in WA/ID 2008 - 15 years ago



What is CoCoRaHS?

CoCoRaHS is a national grassroots, non-profit, community-based, high-density precipitation network ...

... made up of volunteers of all ages and backgrounds



... who take daily measurements of precipitation right in their own backyards



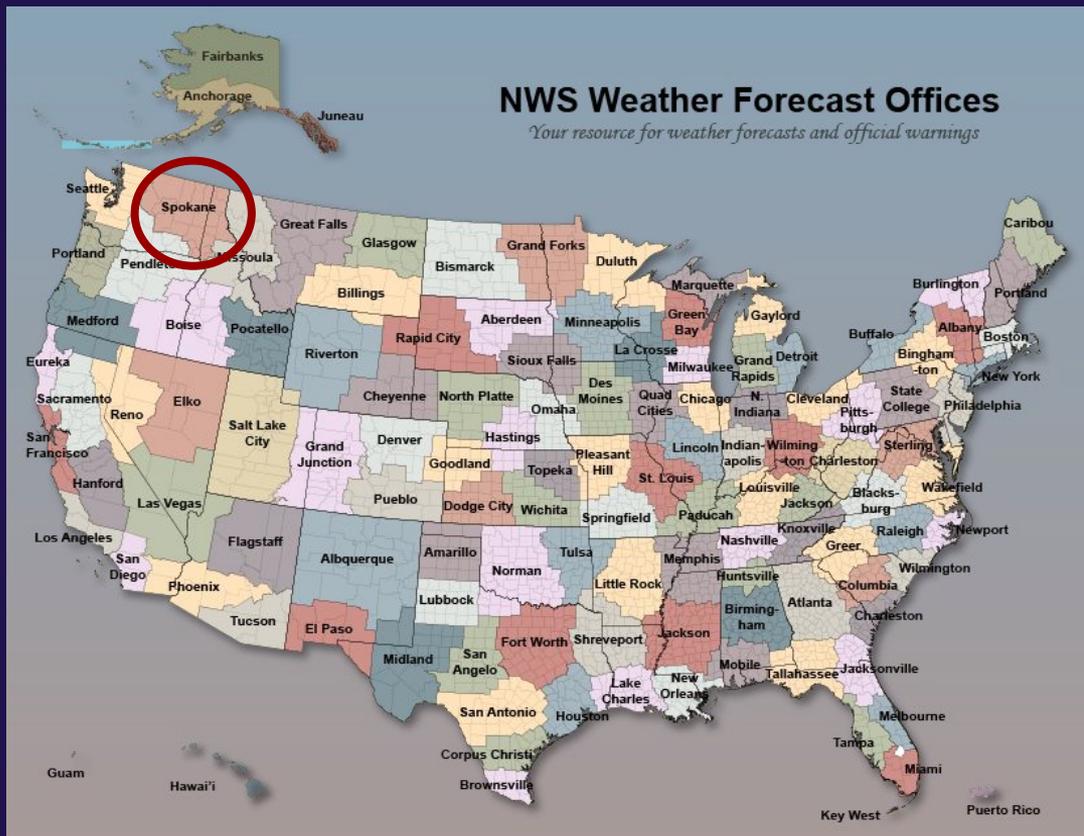
National Weather Service (NWS)

- 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



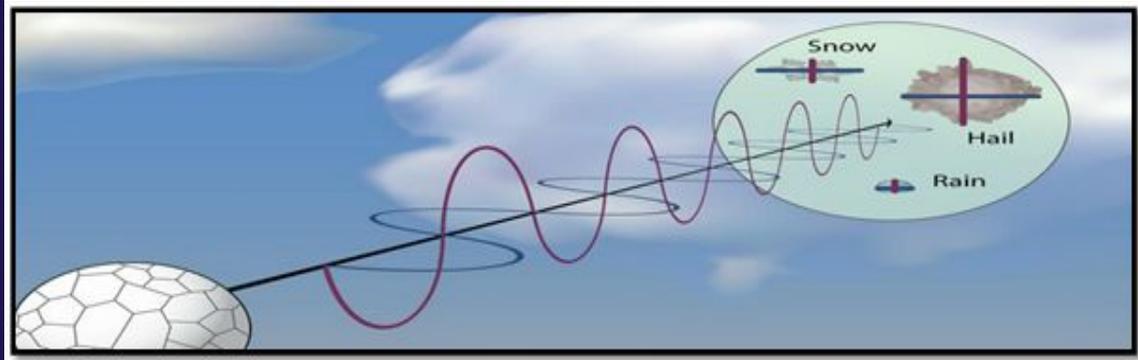
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Spokane, WA

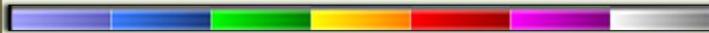
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NWS Tools: Doppler Weather Radar



Reflectivity (dBZ)



Small Particles

Light Rain, Dust, Bugs

Big Particles

Hail, Big Rain Drops

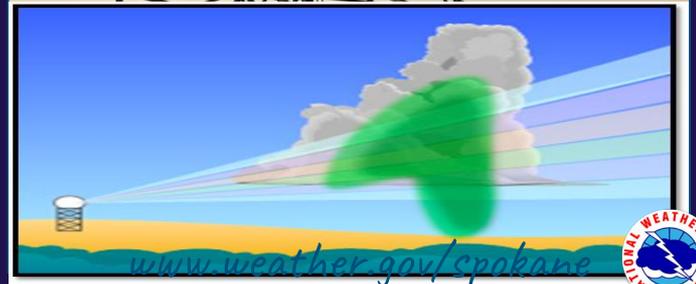
Velocity (kts)



Speed Moving Away from Radar

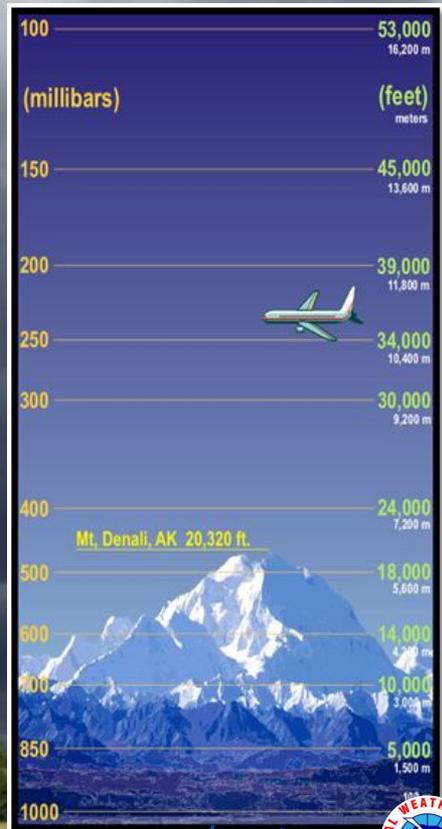
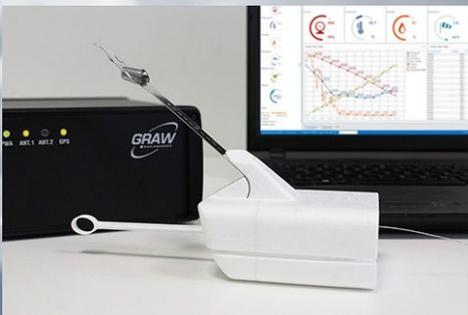


Speed Moving Toward Radar



NWS Tools: Weather Balloon - Radiosonde

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



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Spokane, WA

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NWS Tools: Weather Satellites

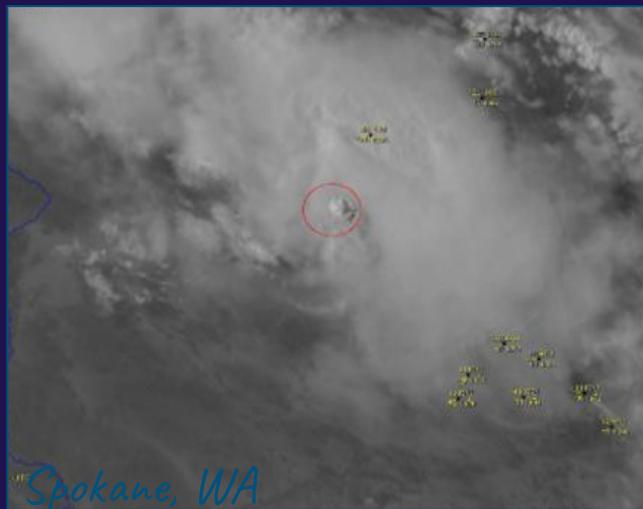
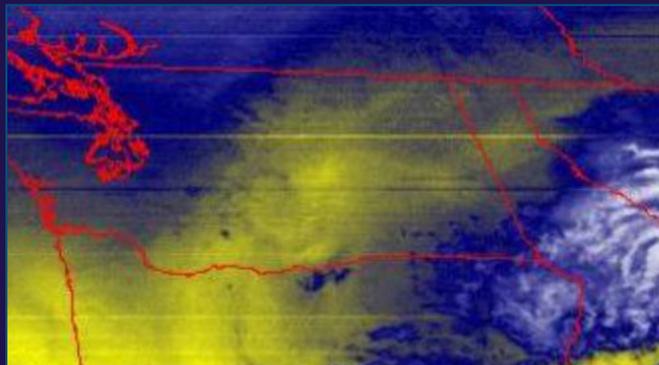
GOES 18 - 16 different channels

IR, Water Vapor & Visible

New images every 5 minutes

Aids in early detection

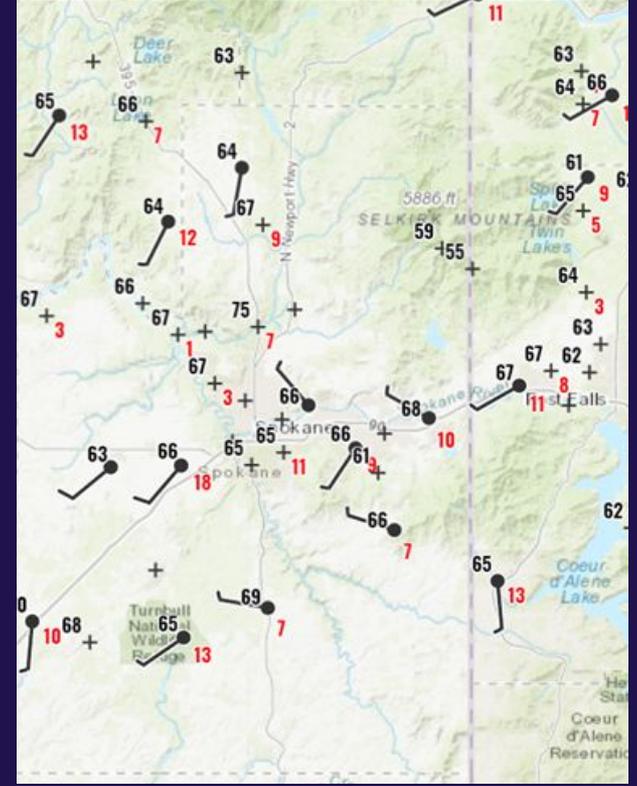
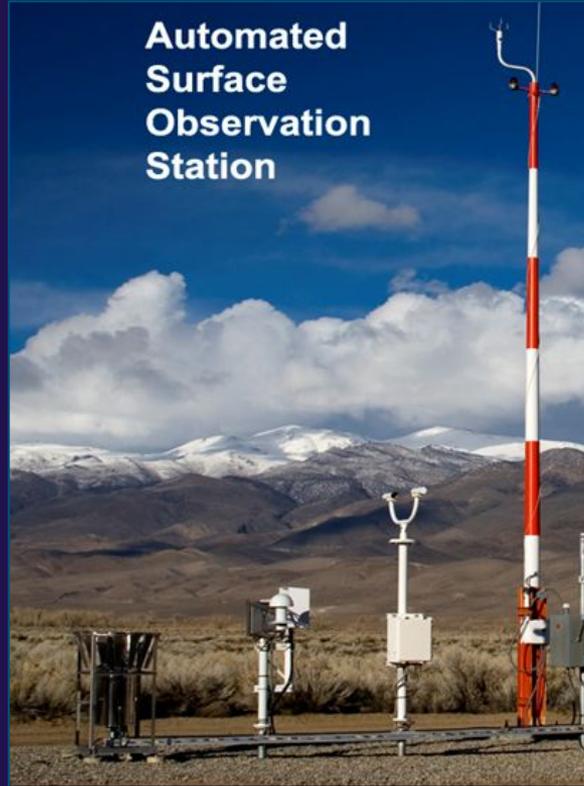
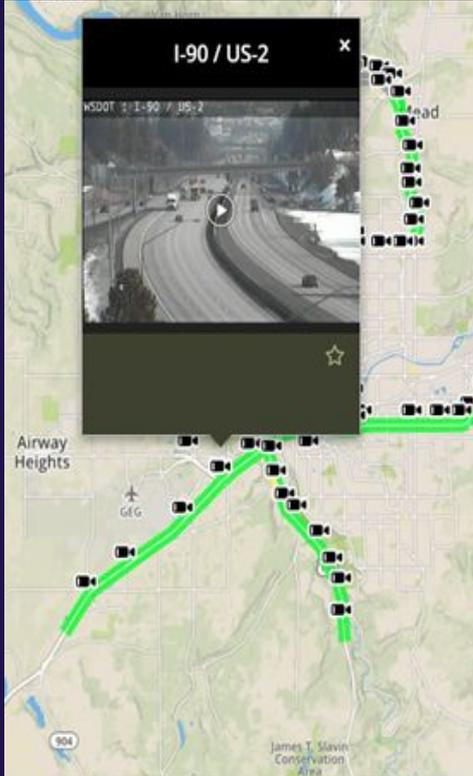
Thunderstorms & Wildfires



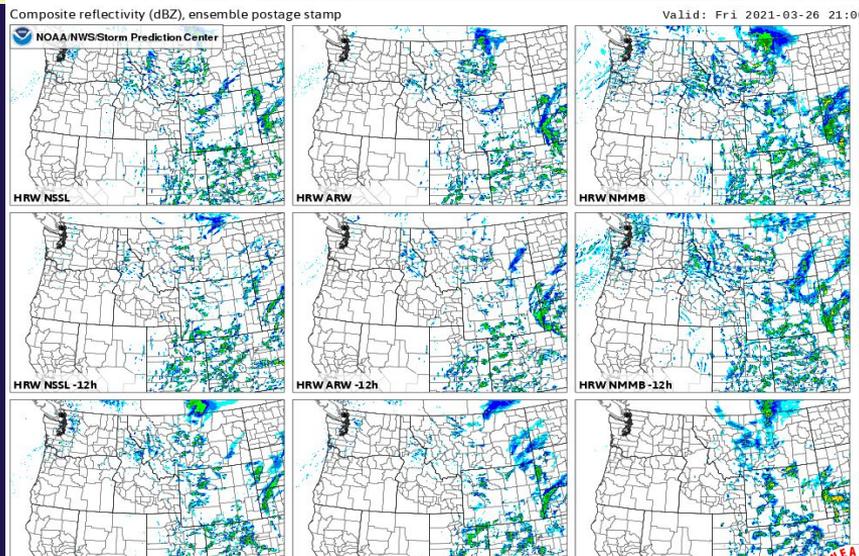
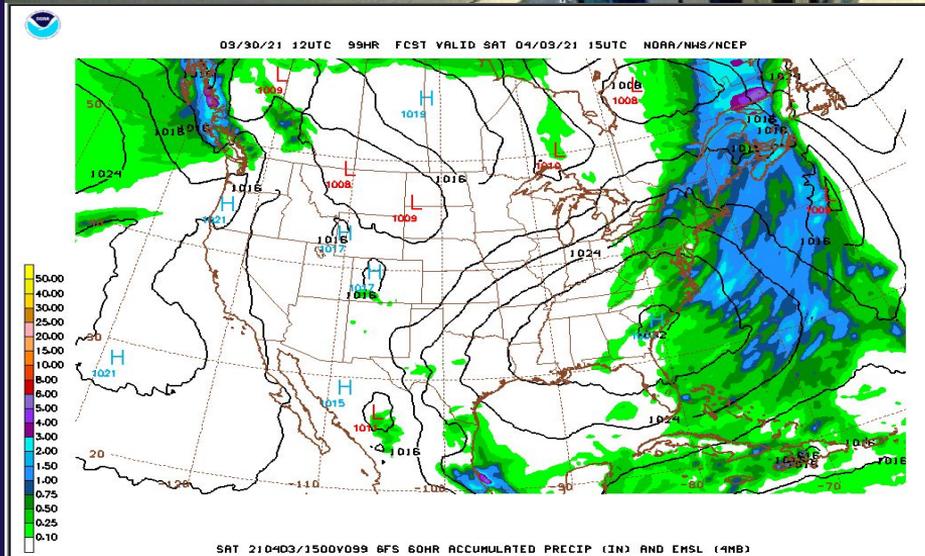
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NWS Tools: Surface Observations & Web Cams



NWS Tools: High Resolution Weather Models



We need observers! Why?

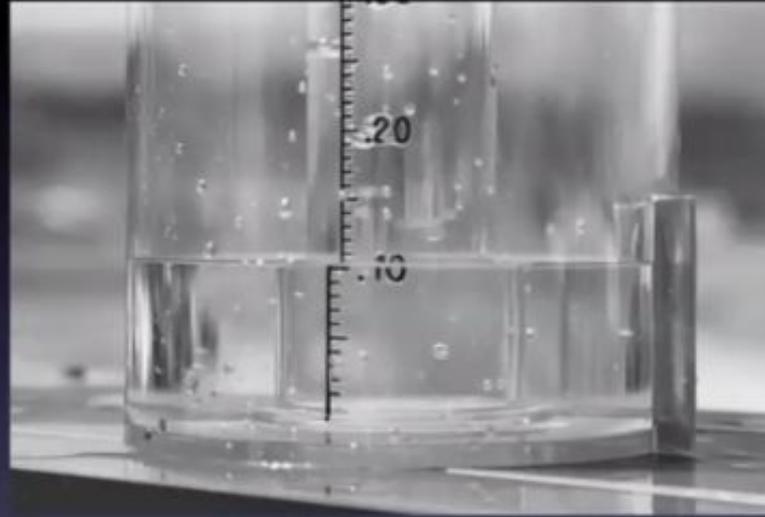


- Limitations to radar, satellite, and surface observations
- Receive **Ground Truth** on events - SNOWFALL, SNOW DEPTH
- Fill in the “holes” not seen by observations
- Understand the many micro-climates in the region
- Maximize Warning effectiveness and Lead Times
- Add Credibility to NWS Warnings -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





Who else uses CoCoRaHS observations?



1. Weather Forecasters
2. Hydrologists
3. Water management
4. Researchers
5. Agriculture
6. Climatologists
7. Insurance Industry
8. Engineering
9. Recreation
10. Many others

CoCoRaHS is critical to hazardous weather operations. We use the daily precipitation reports to produce maps, that are share with media, social media, and emergency managements partners!



CoCoRaHS - easy to report



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

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

Home | Countries | States | View Data | Maps | My Data Entry | Login

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

What is your landscape's current **CONDITION?** WET? NORMAL? DRY?
 Tell us by submitting a "CoCoRaHS Condition Report"

Reports received today 11/14/2022 as of 8:31 PM EST

Daily	Multi-day	SigWx	Hail	Condition	ET
10,985	397	9	0	34	7

24-hour Precipitation Nov 14, 2022
 4:30-9:30 am local obs time

- NA
- Zero
- Trace
- 0.00 - 0.04 in



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

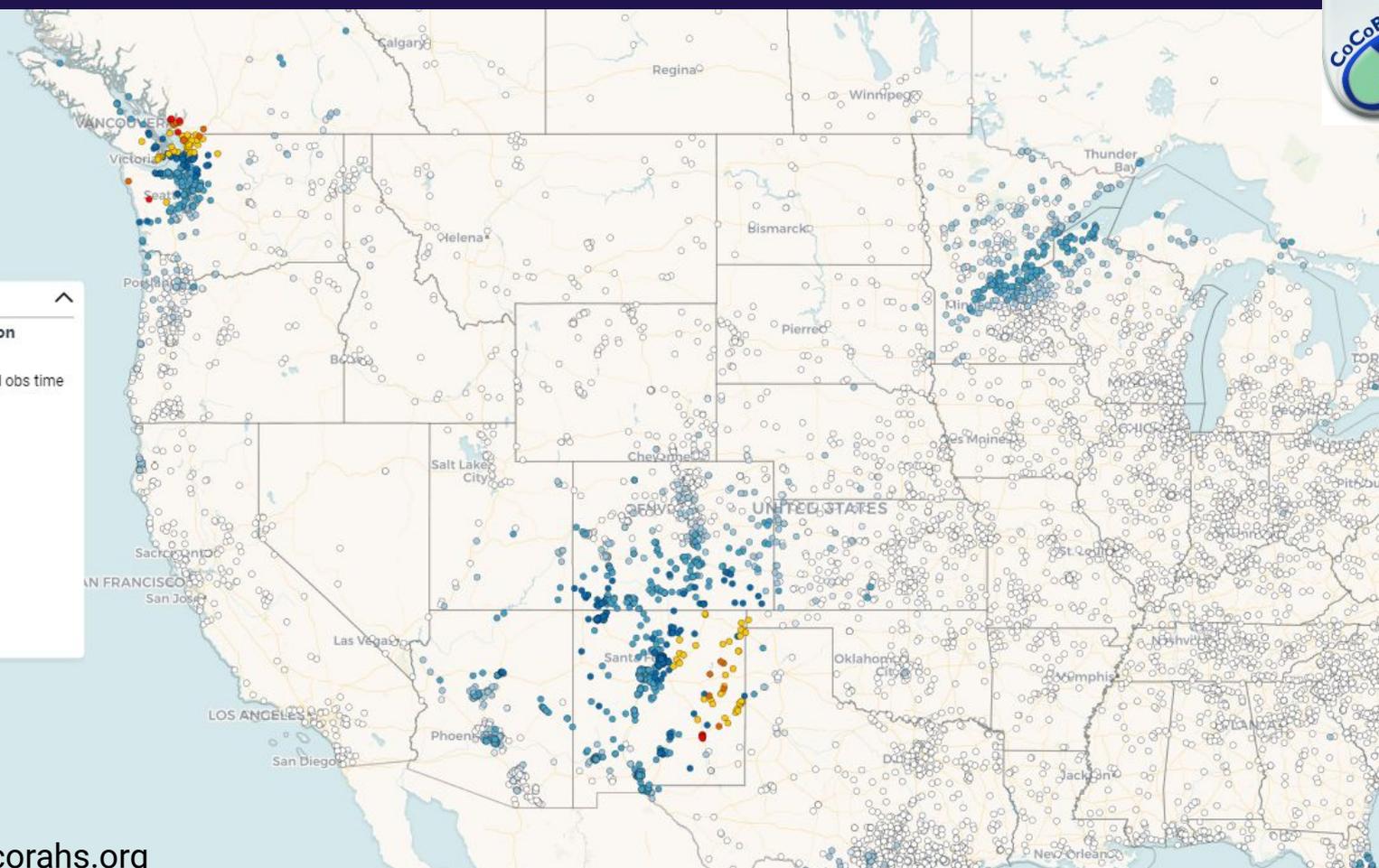




 CoCoRaHS 

24-Hour Precipitation
Oct 20, 2024
4:30 AM-9:30 AM local obs time

- NA
- Zero
- Trace
- 0.01 - 0.06 in.
- 0.07 - 0.60 in.
- 0.61 - 1.53 in.
- 1.54 - 2.62 in.
- 2.63 - 4.21 in.
- 4.22 - 7.40 in.



maps.cocorahs.org

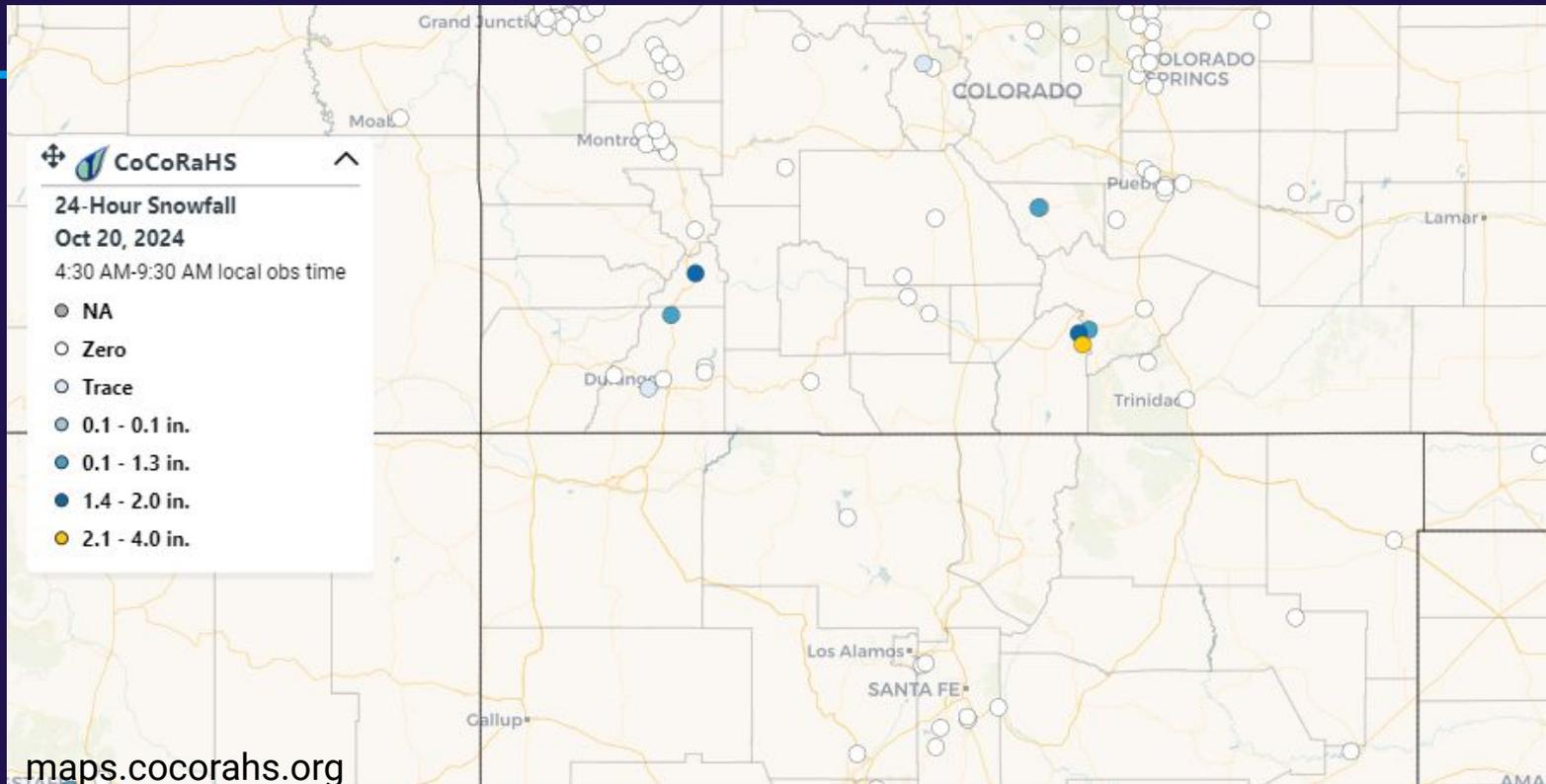


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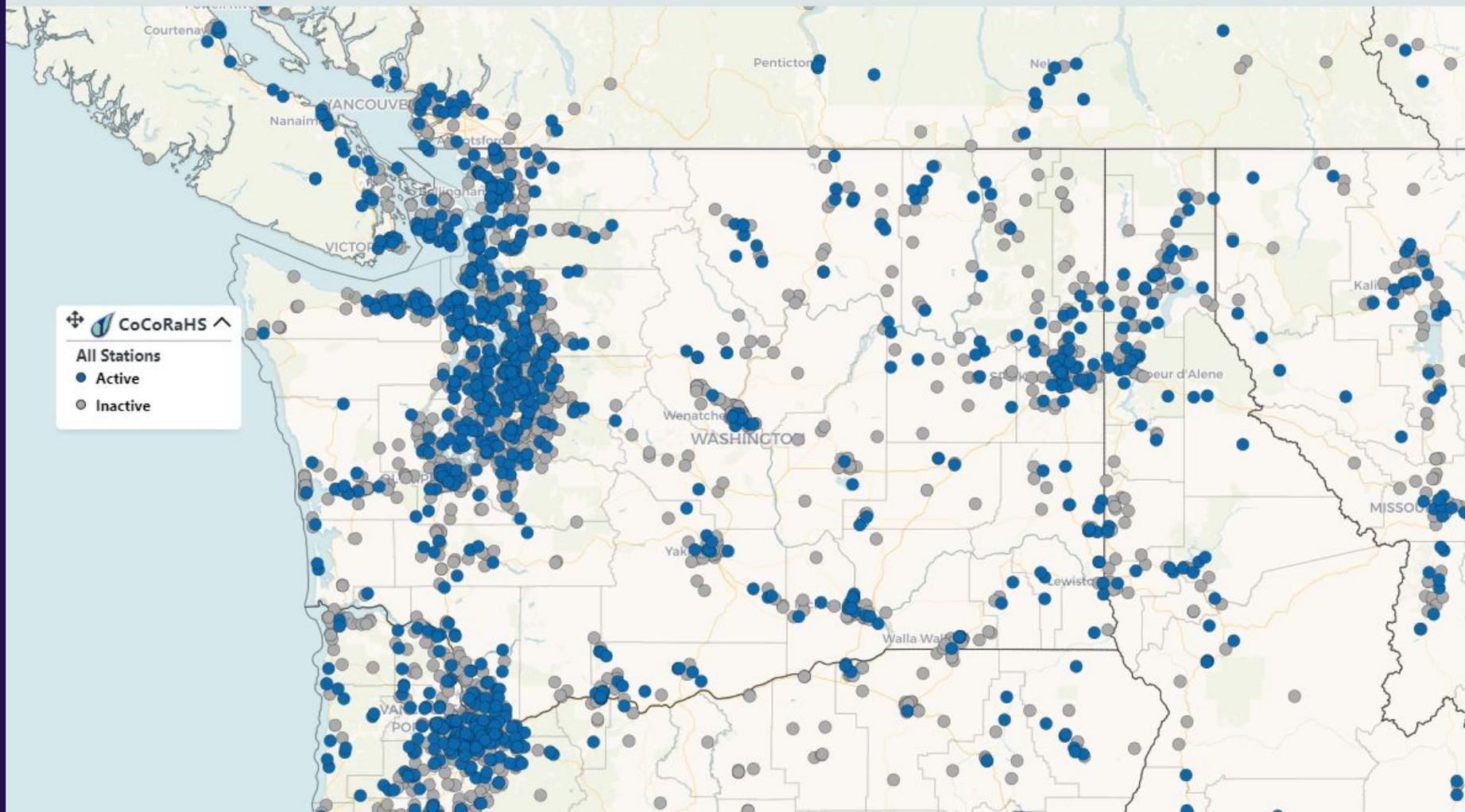
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CoCoRaHS Mapping System

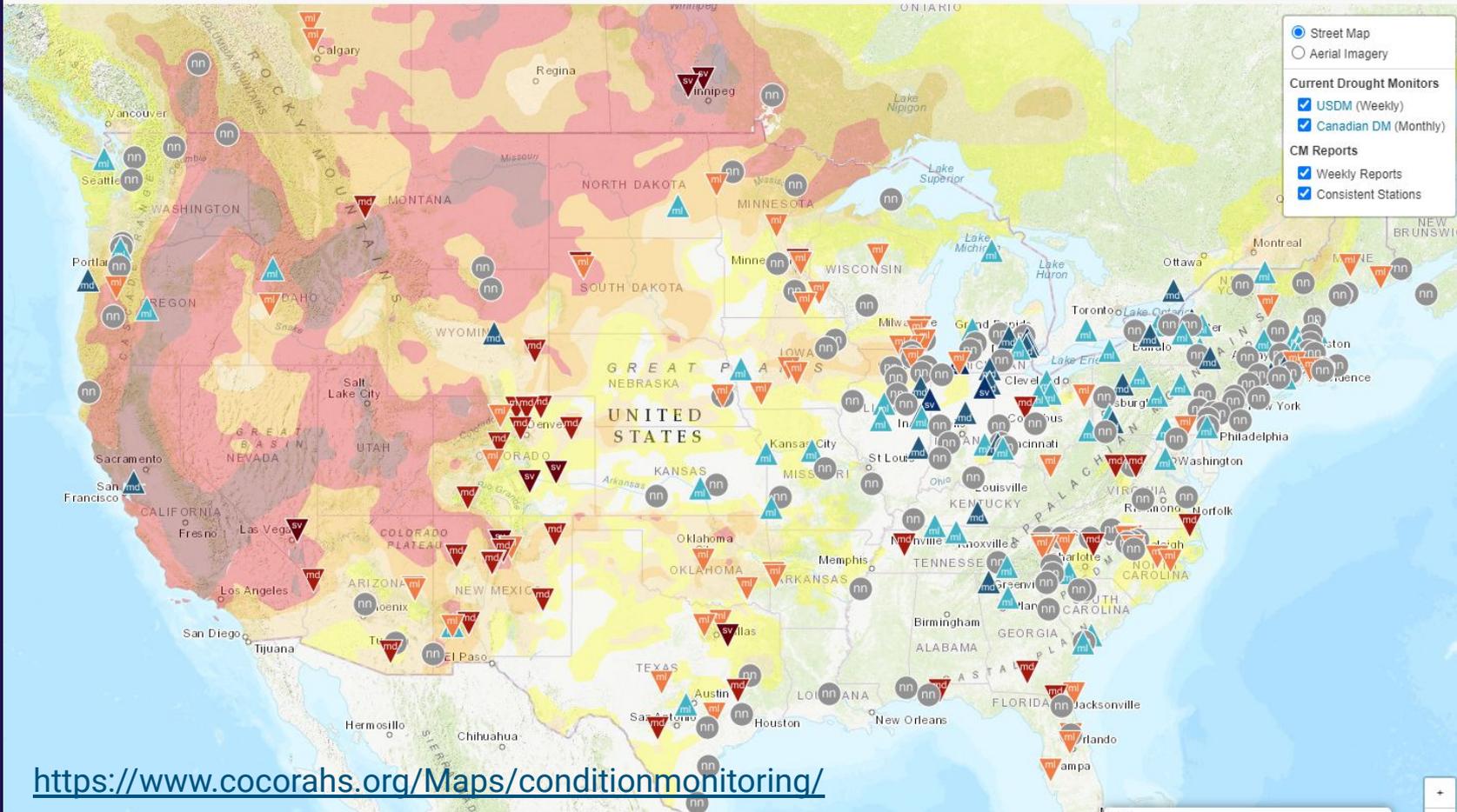


Condition Monitoring



Jump to...

Go!



Street Map
 Aerial Imagery

Current Drought Monitors

- USDM (Weekly)
- Canadian DM (Monthly)

CM Reports

- Weekly Reports
- Consistent Stations

<https://www.cocorahs.org/Maps/conditionmonitoring/>



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Spokane, WA

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Conditioning Monitoring Reporting

What to Look For

The following tables provide examples of the types of conditions you might observe during different wet or dry periods. **These lists are designed as an aid.** The first table shows the condition monitoring scale bar categories and the types of conditions that correspond to those categories. The second table organizes different types of conditions and impacts by sectors and areas of interest. Be sure to note any other observations that you think may relate to dry or wet conditions.

SEVERELY WET	MODERATELY WET	MILDLY WET	NEAR NORMAL	MILDLY DRY	MODERATELY DRY	SEVERELY DRY
<ul style="list-style-type: none"> • Use this category sparingly • Wet conditions have persisted for several weeks • Major flooding • Soil is saturated 	<ul style="list-style-type: none"> • Wet conditions have persisted for a few weeks, or there has been a major rainfall event • Standing water and minor flooding • Soil is very damp 	<ul style="list-style-type: none"> • Frequent precipitation for several days • Standing water is common • Soil moisture is above normal 	<ul style="list-style-type: none"> • Observed conditions normal for this time of year • This should be your default entry 	<ul style="list-style-type: none"> • Dry conditions have persisted for a few weeks • Soil is somewhat dry 	<ul style="list-style-type: none"> • Dry conditions have persisted for several weeks • Lakes and rivers are low • Water use restrictions start • Soil is very dry 	<ul style="list-style-type: none"> • Use this category sparingly • Dry conditions have persisted for months • Soil is completely dry • Water is scarce • State of Emergency

WET

DRY

Agriculture

Crops and grazing pastures will likely be green and in healthy conditions. Even with moderately wet conditions, need for irrigation may drop off noticeably. Orchard fruits and berries will likely yield larger and more plentiful fruit.

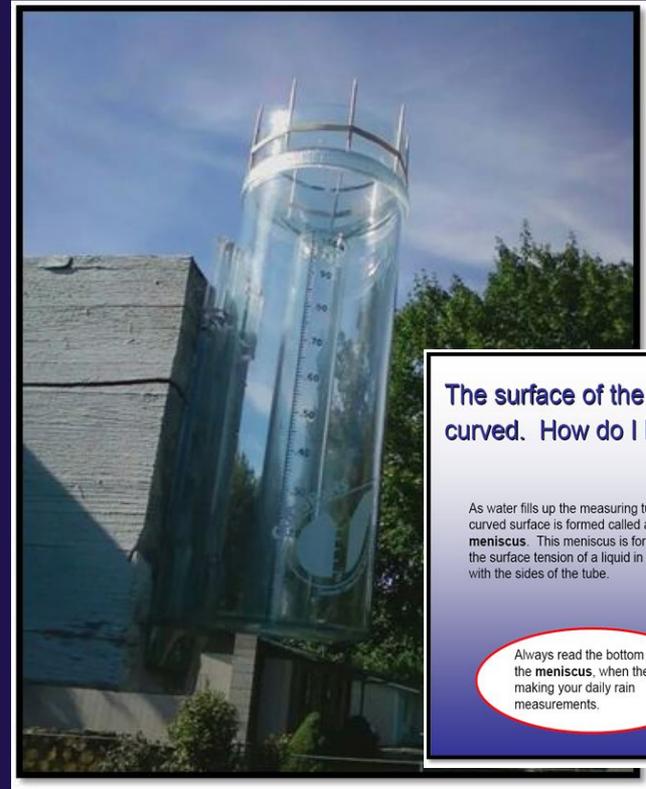
Without enough water, crops may develop late, show stunted growth, or yield smaller harvests. Irrigation systems in the interior may be strained. Livestock may be smaller or require supplemental water and feed, especially where the growth of pastureland is stunted. Ranchers may reduce their herd sizes.



Interested in CoCoRaHS? How to Start!

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.



Snow

NWS Spokane appreciates the many snow reports each year!

Yes, It can be challenging!

Before the snow flies, make sure you remove the inner tube and funnel.

MEASURING SNOW



- **Snowfall measurement is typically more difficult than rainfall**
- **Snowfall measurement takes a little more time**

Accurate and timely snowfall measurements can be extremely important to your local National Weather Service office, public works departments, media outlets, climatologists, and other scientists.



Setting up for Measuring Snow



Video Courtesy
of CoCoRaHS



Snow Tools



- **4" Diameter CoCoRaHS Rain Gauge**
 - Outer Cylinder for winter weather

Snow Board



Snow Swatter



Ruler or yardstick



Snow Measurements - 4 part observation



1. The depth of new snow (new snowfall)
2. Liquid water equivalent of new snow (either in the gauge or on the snowboard)
3. The total depth of new snow and old snow and ice at observation time
4. Snow Water Equivalent (SWE) of total snow on the ground (optional)



Snow Measurements - 4 part observation



1. The depth of new snow (new snowfall)
2. Liquid water equivalent of new snow (either in the gauge or on the snowboard)
3. The total depth of new snow and old snow and ice at observation time
4. Snow Water Equivalent (SWE) of total snow on the ground (optional)



How to Measure New Snow Depth



Snowfall: The accumulation of snow and ice in the last 24 hours- PRIOR to melting or settling.

Video Courtesy
of CoCoRaHS



Snow Measurements - Depth of new Snowfall

- Snowfall is the accumulation of new snow (and ice) in the past 24 hours prior to melting or settling.
- Use a ruler and measure on the snow board or a level spot in your yard. Do not use a ruler in your gauge to measure snowfall.
- You can measure snowfall soon as it has stops snowing, it does not need to be at the observation time.
- Report snowfall to the nearest tenth of an inch.





Precipitation Report Form

Submit Data

Station Number : CO-LR-610

Station Name : Fort Collins 3.5 SW

* Denotes Required Field

11/9/2011

* Observation Date ?

7:00

AM

* Observation Time ?

0.59

* Rain and Melted Snow to the nearest hundredth inch that has fallen in the gauge during the past 24 hours ?

Yes No

Report was taken at registered location?

Observation Notes: (This will be available to the public) ?

Snow began at 10 am and ended at 5:30 pm.

New Snowfall

6.5

Accumulation of new snow in inches to the nearest **tenth** ?

0.59

Melted value from core to the nearest **hundredth** ?

Total Snow and Ice on Ground at Observation Time

7.0

Depth of total snow and ice (new and old) in inches to the nearest **half inch** ?

0.63

Melted value from core to the nearest **hundredth** ?

Report your measurement of new snowfall to the nearest tenth of an inch

Snow Measurements - 4 part observation



1. The depth of new snow (new snowfall)
2. Liquid water equivalent of new snow (either in the gauge or on the snowboard)
3. The total depth of new snow and old snow and ice at observation time
4. Snow Water Equivalent (SWE) of total snow on the ground (optional)



Daily Precipitation When It Snows



Video Courtesy
of CoCoRaHS



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Spokane, WA

www.weather.gov/spokane



Snow Measurements - Liquid Water Equivalent



1. Swat excess snow from gauge
2. Bring outer gauge inside.
3. Fill inner gauge with warmer water
4. Pour a measured amount of warm water into the tube to melt the snow.

5. Once melted, pour contents of the snowmelt and warm water into the inner measuring tube.
6. Read the measurement, remember to subtract what you added!





Precipitation Report Form

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0.59

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Yes No

Report was taken at registered location?

Observation Notes: (This will be available to the public) ?

Snow began at 10 am and ended at 5:30 pm.

New Snowfall

6.5

Accumulation of new snow in inches to the nearest tenth ?

0.59

Melted value from core to the nearest hundredth ?

Total Snow and Ice on Ground at Observation Time

7.0

Depth of total snow and ice (new and old) in inches to the nearest half inch ?

0.63

Melted value from core to the nearest hundredth ?

Water melted from core is reported as the daily precipitation

Remember to add notes in the Comments section if needed.



Snow Measurements - 4 part observation



1. The depth of new snow (new snowfall)
2. Liquid water equivalent of new snow (either in the gauge or on the snowboard)
3. The total depth of new snow and old snow and ice at observation time
4. Snow Water Equivalent (SWE) of total snow on the ground (optional)



Measuring Total Depth and SWE



Video Courtesy
of CoCoRaHS



Snow Measurements - Total Depth

- The Total Snow = **Old Snow + New Snow**
- The average depth of snow (including old snow and ice and new snow) that remains on the ground at observation time.
- Total depth of snow can be done in a flat portion of your yard, away from drifts or snow piles.
- Take several measurements and average them
- Report Total Snow Depth to nearest half inch





Precipitation Report Form

Submit Data

Re

Station Number : CO-LR-610

Station Name : Fort Collins 3.5 SW

* Denotes Required Field

11/9/2011

* Observation Date

7:00 AM

* Observation Time

0.59

* Rain and Melted Snow to the nearest hundredth inch that has fallen in the gauge during the past 24 hours

Yes No

Report was taken at registered location?

Observation Notes: (This will be available to the public)

Snow began at 10 am and ended at 5:30 pm.

New Snowfall

6.5

Accumulation of new snow in inches to the nearest tenth

0.59

Melted value from core to the nearest hundredth

Total Snow and Ice on Ground at Observation Time

7.0

Depth of total snow and ice (new and old) in inches to the nearest half inch

0.63

Melted value from core to the nearest hundredth

Report the total depth to the nearest half inch



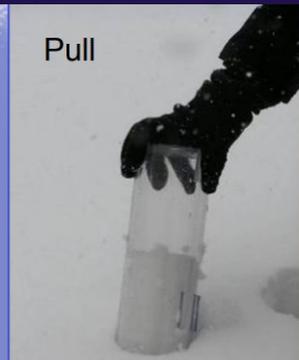
Snow Measurements - 4 part observation



1. The depth of new snow (new snowfall)
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3. The total depth of new snow and old snow and ice at observation time
4. Snow Water Equivalent (SWE) of total snow on the ground (optional)



Snow Measurements - Snow Water Equivalent



Light snow events

Once you have a core sample, melt it down with warm water and measure the liquid. Remember to subtract what you added!



Deeper snow events

SWE is important to know how much water is in the snow pack. It is usually done weekly (SWE Mondays) or when the snowpack is deep in an area.

Precipitation Report Form

Submit Data

Station Number : CO-LR-610

Station Name : Fort Collins 3.5 SW

* Denotes Required Field

11/9/2011

* Observation Date ?

7:00 AM

* Observation Time ?

0.59

* Rain and Melted Snow to the nearest hundredth inch that has fallen in the gauge during the past 24 hours ?

Yes No

Report was taken at registered location?

Observation Notes: (This will be available to the public) ?

Precipitation is amount from snow core. Poor gauge catch - not representative of what fell. Amount melted from gauge 0.29"

New Snowfall

6.5

Accumulation of new snow in inches to the nearest **tenth** ?

0.59

Melted value from core to the nearest **hundredth** ?

Total Snow and Ice on Ground at Observation Time

7.0

Depth of total snow and ice (new and old) in inches to the nearest **half inch** ?

0.63

Melted value from core to the nearest **hundredth** ?

Report the melted value to the nearest hundredth





CoCoRaHS Post It Notes

Even if there is **No New precipitation**, please send a report. Even zeros are important!

Windy conditions may lead to increased blowing and drifting. May need to take a core sample in a location more representative in your yard and not your gauge.

If snow melts as it lands, report a **Trace (T)** of snow for the day and add it to comments

If **Heavy Snow** is falling, you can send in a Storm Report (available through the web page only)





CoCoRaHS Post It Notes

What if you are **gone for a few days**? Send in a multi-day report

Freezing Rain - This is a liquid that freezes. Do not report it as snow. Meltdown what is frozen in the gage and report it as rain. Leave a note in comments section. New snowfall =0. Total Snow Depth= ice thickness.

What if you **run out of time** to finish your snow report? Put NA in the Rain and Melted snow box and leave a note in the comments box and then send in your report. You can return to the report to edit it later in the day.



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



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
- Checklist provided on weather to report

Register:
nws.spokane@noaa.gov





www.wxqa.com

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





Citizen Weather Observers Program

CWOP

Citizen Weather Observer Program

Site Contents:

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



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](#)

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

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:





Additional Training

Cocorahs.org

Slideshows Notes
Videos

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

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

6,439 daily precipitation reports received today as of 11/9/2011 3:19 PM EST

Daily Precipitation (inches x.xx)
USA
11/9/2011

JOIN COCORAHHS

TRAINING SLIDE SHOWS

Click here



The Catch



NOLAN DOESKEN'S MONTHLY COCORAHs E-MAIL MESSAGE

CoCoRaHS -- New Water Year 2025!

Fort Collins, Colorado -- October 18, 2024

Thanks to everyone for seeing us all through another year of tracking precipitation. The two hurricanes in the past three weeks, Helene and Milton, produced devastation across the southeast U.S. Many CoCoRaHS observers are in the areas impacted by the storms, helping document the precipitation and other weather conditions. Our hearts sink every time storms like this hit, because we know that many of our observers will be affected. We know that with Helene and Milton, a number of our observers suffered catastrophic damage to their property and had their lives turned upside down. Others were without power, water, and internet for a significant period of time, and some still are. Some of their experiences are noted in the comments of observations they submitted.

The Weather Watcher Of the Inland Northwest

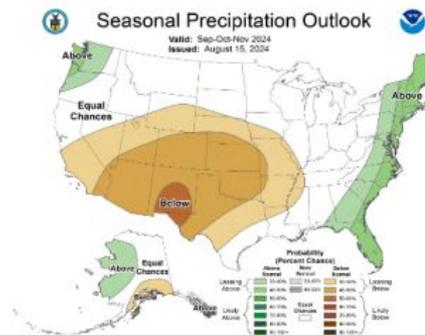
www.weather.gov/Spokane

September 2024

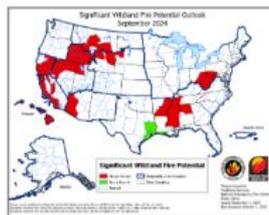


Fall Outlook 2024

The Climate Prediction Center [CPC Seasonal Outlook](#) for September-November 2024 is leaning toward equal chances to slightly above normal temperatures and equal chances to slightly above normal precipitation for the Inland NW.



As for fire season, the threat should be decreasing. The [National Interagency Coordination Center](#) suggests that the Wildland Fire Potential Outlook will be near normal for September- November 2024.



Emails & Phone Numbers



It's important to keep your contact information current. You may receive notifications on:

- Upcoming WIDESPREAD Severe Weather or Winter Storm events.
- Requests for SWE reports
- Training updates

A blue rectangular graphic with white text. At the top, it says 'SWE MONDAYS' in large, bold, white capital letters. Below that, in a white cursive font, it asks 'What's your Snow Water Equivalent?'. Underneath, in a smaller white sans-serif font, it says 'Report the water content of your "snow on the ground" each Monday'. At the bottom, in a white sans-serif font, it says 'The "Total SWE Monday" Habit . . . Please give it a try!'.

SWE MONDAYS
What's your Snow Water Equivalent?
Report the water content of your "snow on the ground" each Monday
The "Total SWE Monday" Habit . . . Please give it a try!



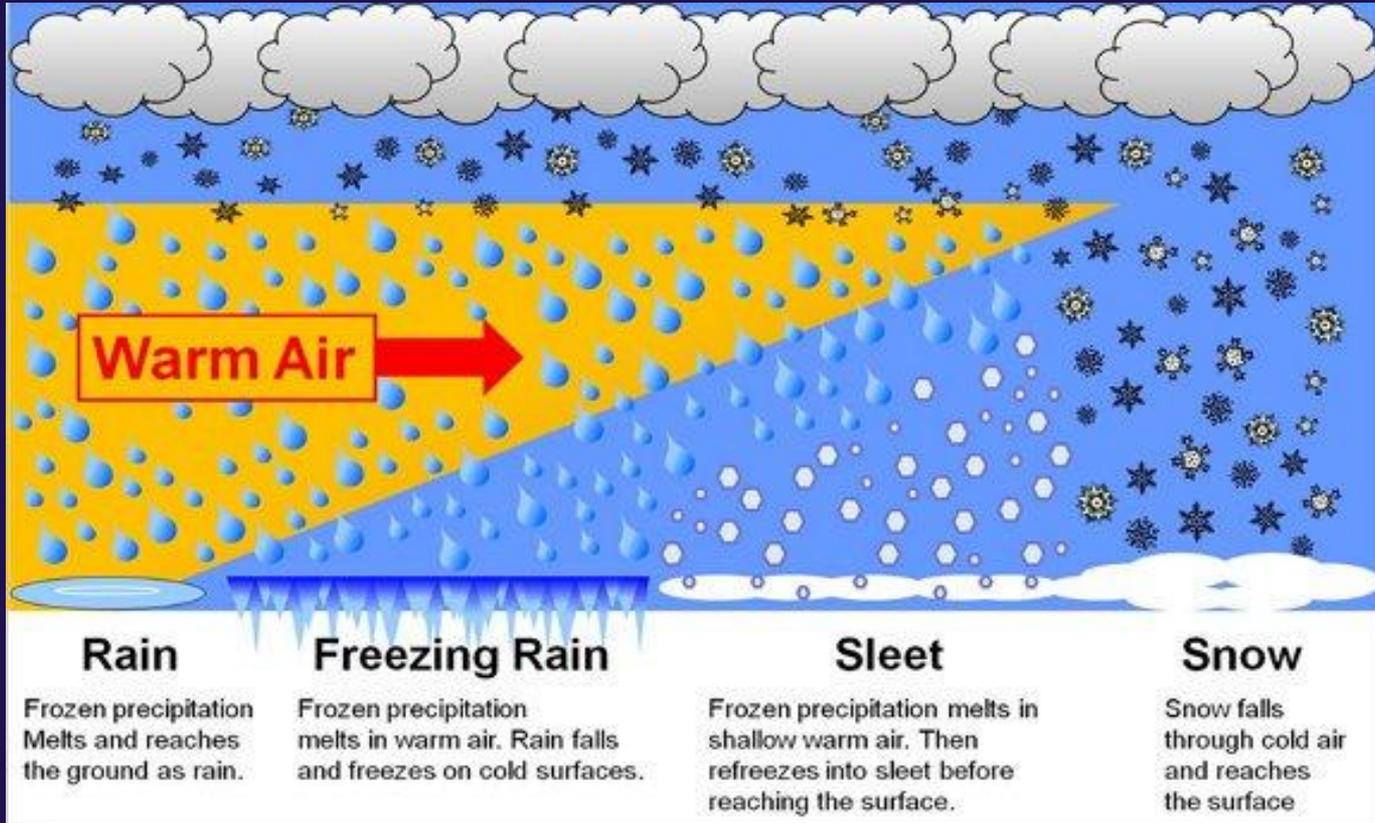
Typical Winter Storm Scenario



- 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



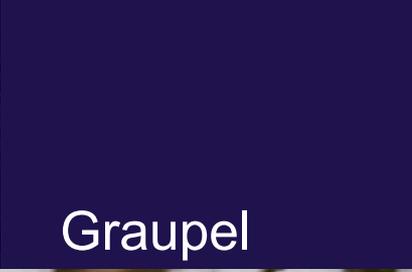
Vertical Temperature Profile is Critical!



Winter Precipitation



Sleet



Graupel



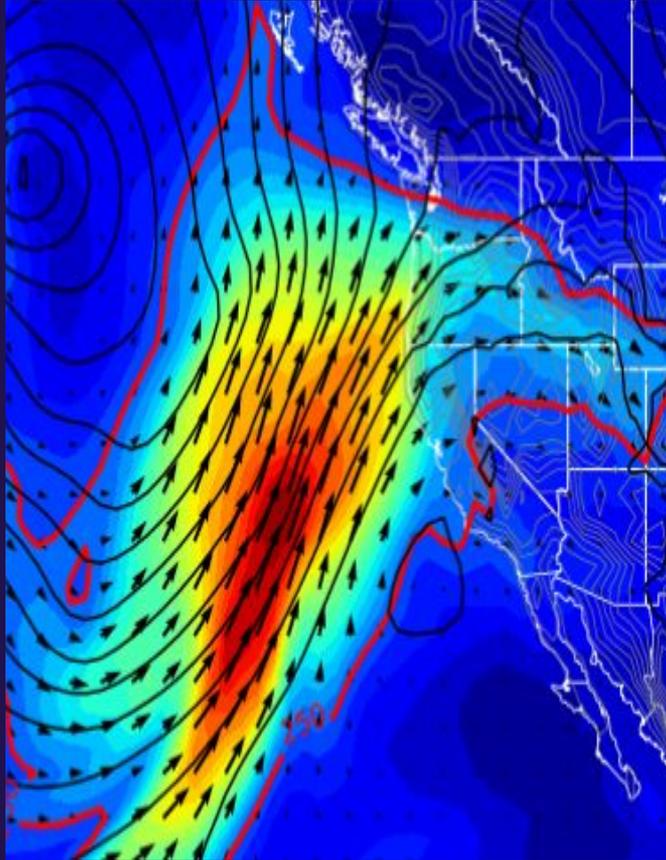
Hail



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



What is a

SNOW SQUALL?

Intense burst of snow and winds

Short duration (1-3 hours)

Whiteout visibility

Rapidly deteriorating road conditions



NATIONAL WEATHER SERVICE
WWW.WEATHER.GOV/SAFETY

IOWA DOT



QUESTIONS AND ANSWERS ABOUT SNOW SQUALLS

WWW.WEATHER.GOV/SAFETY



WHAT ARE THEY?

Quick intense bursts of snow
Accompanied by strong gusty winds
Short-lived, typically less than 3 hours
Normally occur during the day

WHAT ARE THE IMPACTS?

Rapidly reduced visibility
Treacherous travel conditions
Potential for chain-reaction accidents



WHAT'S A SNOW SQUALL WARNING?

Warning is usually 30-60 minutes in length
Issued for small areas where snow squalls are expected
Similar to a Tornado or Severe Thunderstorm Warning



HOW CAN YOU STAY SAFE?

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



WEATHER.GOV

Safety



- Personal Safety is the Primary Objective of every observer
- 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**



Spokane Valley Dec 2021



Spokane Dec 2021



Stay Informed NWS Spokane Web Page www.weather.gov/Spokane



NATIONAL WEATHER SERVICE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

HOME FORECAST PAST WEATHER SAFETY INFORMATION EDUCATION NEWS SEARCH ABOUT

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

MY FORECAST
Coeur D'Alene ID
NA

72°F
22°C [Get Detailed info](#)

This Afternoon

Partly Sunny
High: 72°F

Tonight

30% → 60%
Chance Rain then Rain Likely
Low: 52°F [change location](#)

News Headlines

- Cold Season Spotter & Observer Training Schedule - Register Here!
- Little change to drought over the Inland NW yet wetter outlook favored

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

Mild and Wet then Dry and Cold Spotter Training

Mild Weekend then Cooler
Today and Sunday

- ✓ Highs 60s to lower 70s
- ✓ Increasing clouds
- ✓ Rain over mountains especially at Cascade Crest

Next Week

- ✓ Light rain Sunday night into Monday
- ✓ Dry and cooler Tuesday into Thursday
- Lows in the 20s and 30s

NATIONAL WEATHER SERVICE
Issued: 6:27 AM - Saturday, October 16, 2024
[Show Caption](#)

Click a location below for detailed forecast.

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

Watches, Warnings & Advisories

There are no watches, warnings, or advisories at this time.

Text Product Selector (Selected product opens in current window)

Latest Text Products Issued by OTX ▼

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



Stay Informed On your Smartphone

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



mobile.weather.gov National Weather Service
Zip, City or Place Go! Go!
Owings Mills MD
Spring City PA
Corpus Christi TX
5 Miles WSW Corpus Christi, Naval Air S...
Edit List
Full Site FAQ Site Info Feedback

mobile.weather.gov National Weather Service
Victoria tx Go!
Owings Mills MD
Spring City PA
Corpus Christi TX
5 Miles WSW Corpus Christi, Naval Air S...
Edit List
Full Site FAQ Site Info Feedback

mobile.weather.gov National Weather Service
2 Miles SW Victoria TX
Outlook/Statement in Effect
Updated 3:46 PM CDT
Current Conditions
Victoria, Victoria Regional Airport
Updated 3:46 PM CDT
70 °F
Wind SE @ 10 mph
Dew Point 60 °F
17% Hum
Partly Cloudy
Forecast
Updated 3:46 PM CDT
This Afternoon Mostly Sunny
Tonight Arise Fog then 20%
Tuesday Slight Chance 20%
Full Site FAQ Site Info Feedback

mobile.weather.gov National Weather Service
2 Miles SW Victoria TX
Outlook/Statement in Effect
Updated 3:46 PM CDT
AirDrop. Share instantly with people nearby. If they join on AirDrop from Central Center on iOS, or from Finder on the Mac, you'll see their names here. Just tap to share.
Message Mail Reminders Add to Notes Twitter
Copy Open in News Add to Home Screen Print HP ePrint
Cancel
Full Site FAQ Site Info Feedback

Weather
Smart Weather RadarScope
CoCoRaHS... Clear Day mPING
MataWeather 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



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Spokane, WA

www.weather.gov/spokane



Staying Informed On Your Phone!



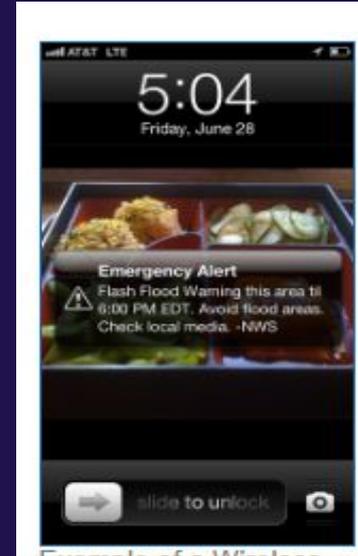
Alert Categories

Extreme Weather & Water Warnings

Local emergencies & Evacuations

AMBER Alerts

Presidential Alerts – National emergency



Weather Warnings

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



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Spokane, WA

www.weather.gov/spokane



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!



NATIONAL WEATHER SERVICE
NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION

Spokane, WA

www.weather.gov/spokane



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.

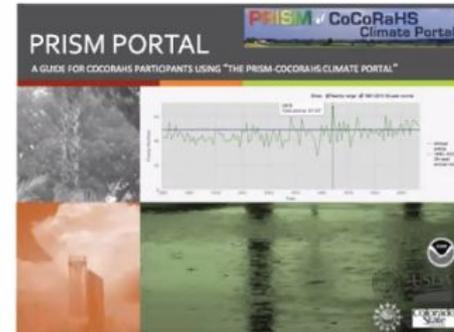
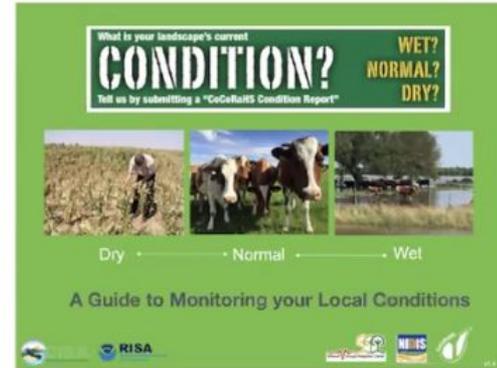
Keep them in an emergency kit you can use at home or take with you in case of an evacuation.



Introduce your observers to our wealth of learning products



Training Animations



Climate Records



After 100 reports, your site becomes a climate site!

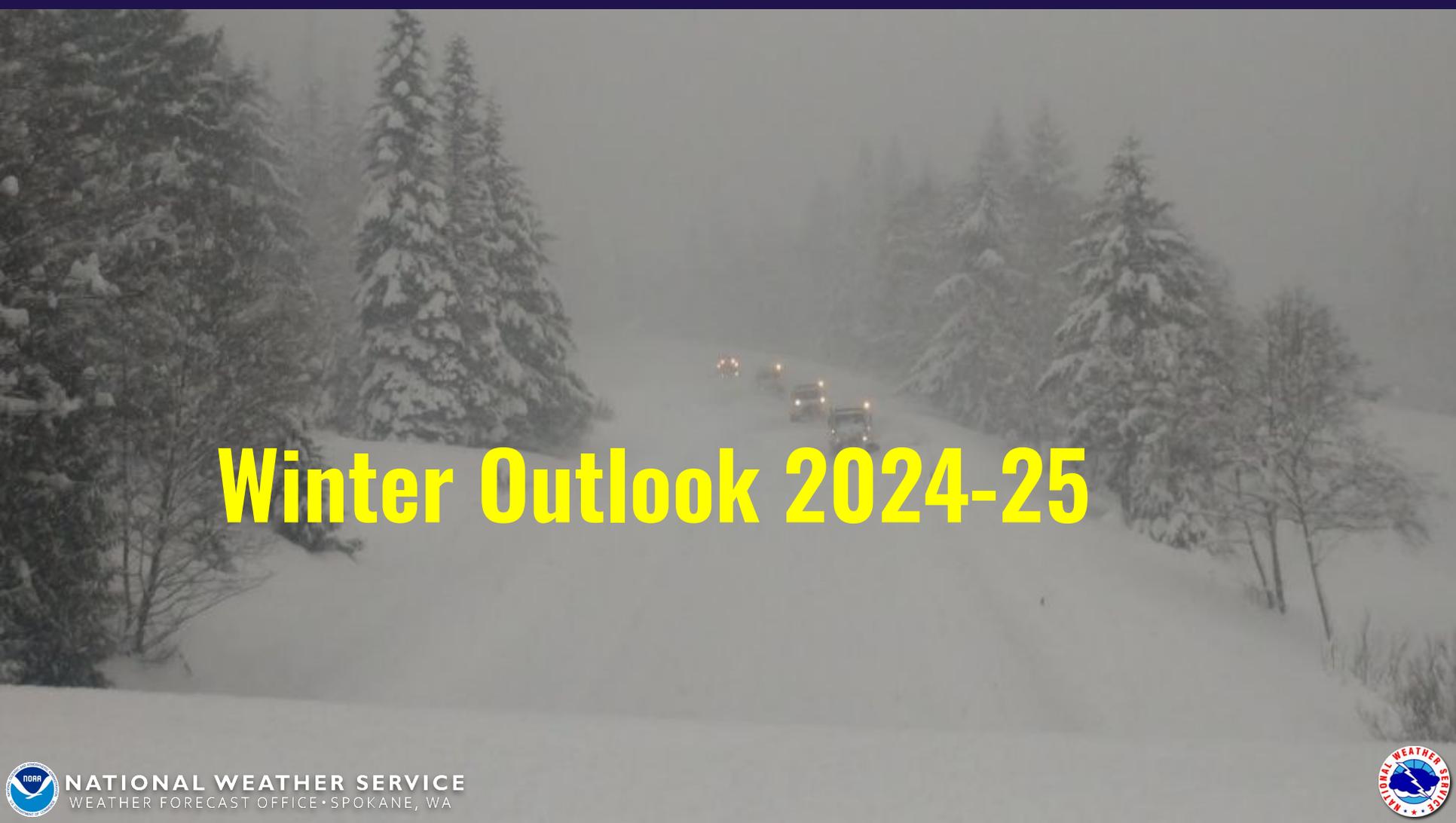
Water Year reports are available each year

First time, CoCoRaHS stations have been incorporated into the new Climate normals. -
NCEI Normals (5448 CoCoRaHS stations)

2008 Water Year Report	2009 Water Year Report	2010 Water Year Report	2011 Water Year Report
2012 Water Year Report	2013 Water Year Report	2014 Water Year Report	2015 Water Year Report
2016 Water Year Report Certificate	2017 Water Year Report Certificate	2018 Water Year Report Certificate	2019 Water Year Report Certificate
2020 Water Year Report Certificate	2021 Water Year Report Coming Soon	Current Water Year Report	

***National Centers for
Environmental
Information (NCEI)***





Winter Outlook 2024-25



NATIONAL WEATHER SERVICE
WEATHER FORECAST OFFICE • SPOKANE, WA



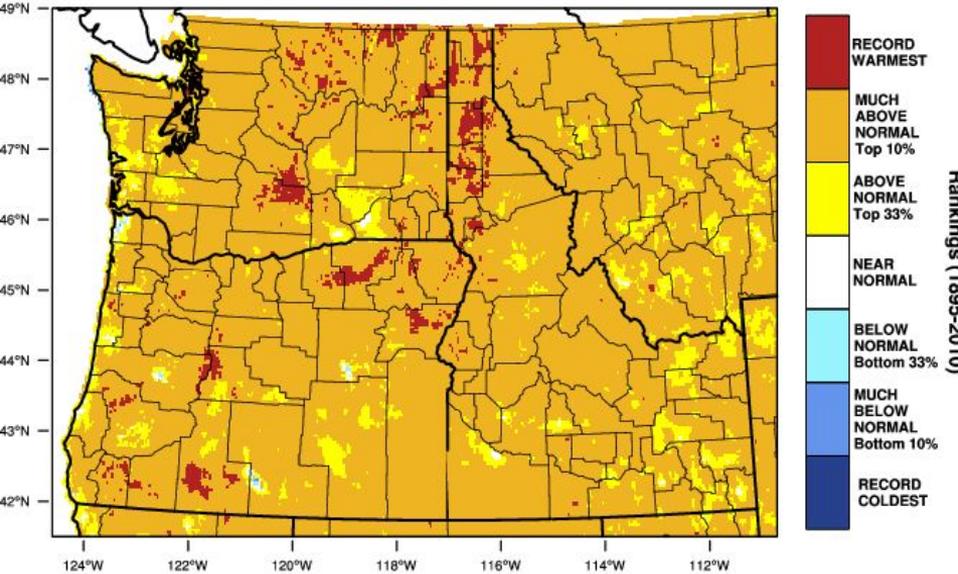
Past 3 Months

wrcc.dri.edu/

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

Pacific Northwest - Mean Temperature

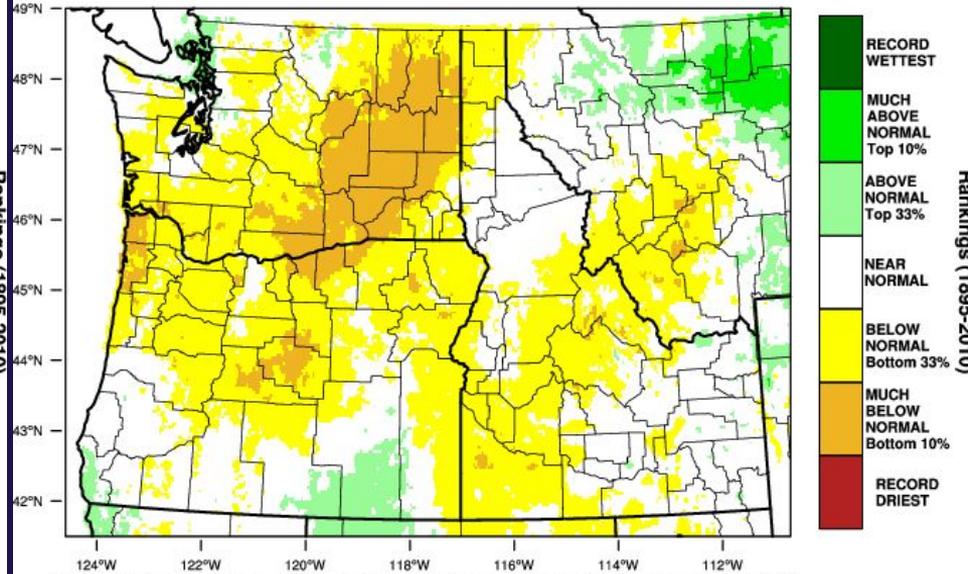
July-September 2024 Percentile



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

Pacific Northwest - Precipitation

July-September 2024 Percentile



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



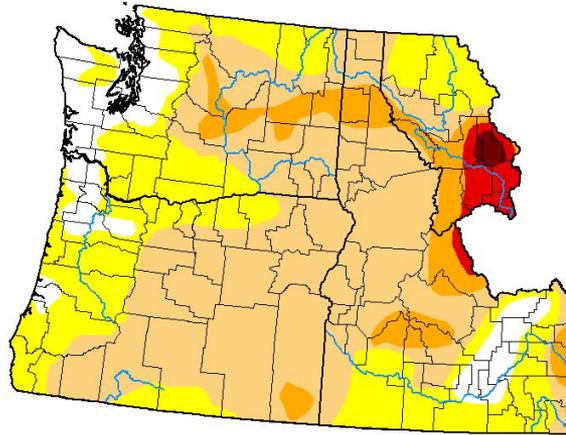
Drought Update

US Drought Monitor & Seasonal Outlook

www.cpc.noaa.gov

U.S. Drought Monitor Pacific Northwest DEWS

October 15, 2024
(Released Thursday, Oct. 17, 2024)
Valid 8 a.m. EDT



Intensity:

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

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

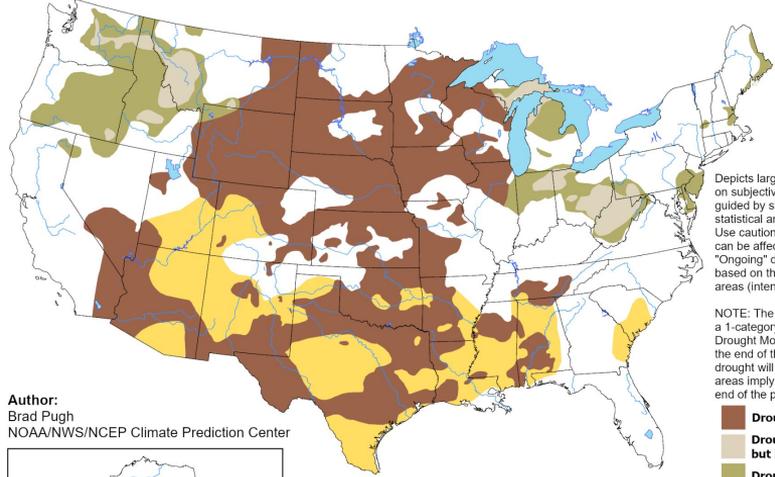
Author:
Brian Fuchs
National Drought Mitigation Center



droughtmonitor.unl.edu

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

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

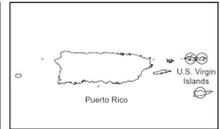
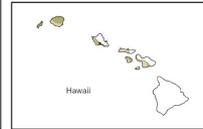


Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. *Ongoing* drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to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

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

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

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



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



ENSO Status

ENSO Alert System Status: La Niña Watch

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

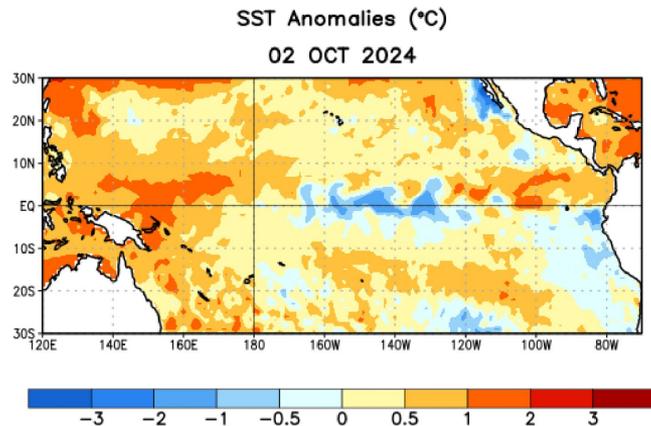


Figure 1. Average sea surface temperature (SST) anomalies (°C) for the week centered on 2 October 2024. Anomalies are computed with respect to the 1991-2020 base period weekly means. Data credit: UKMet OSTIA.

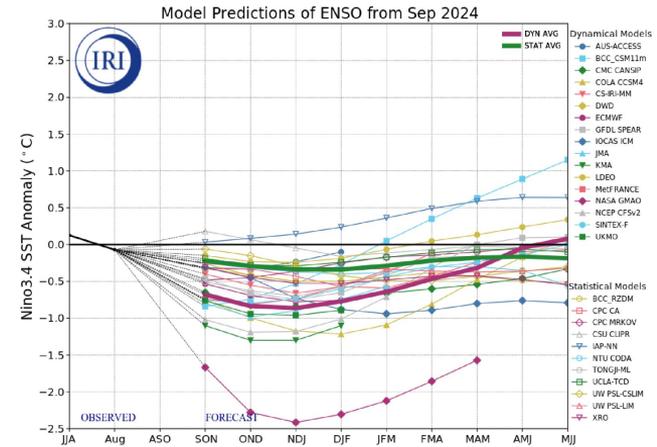


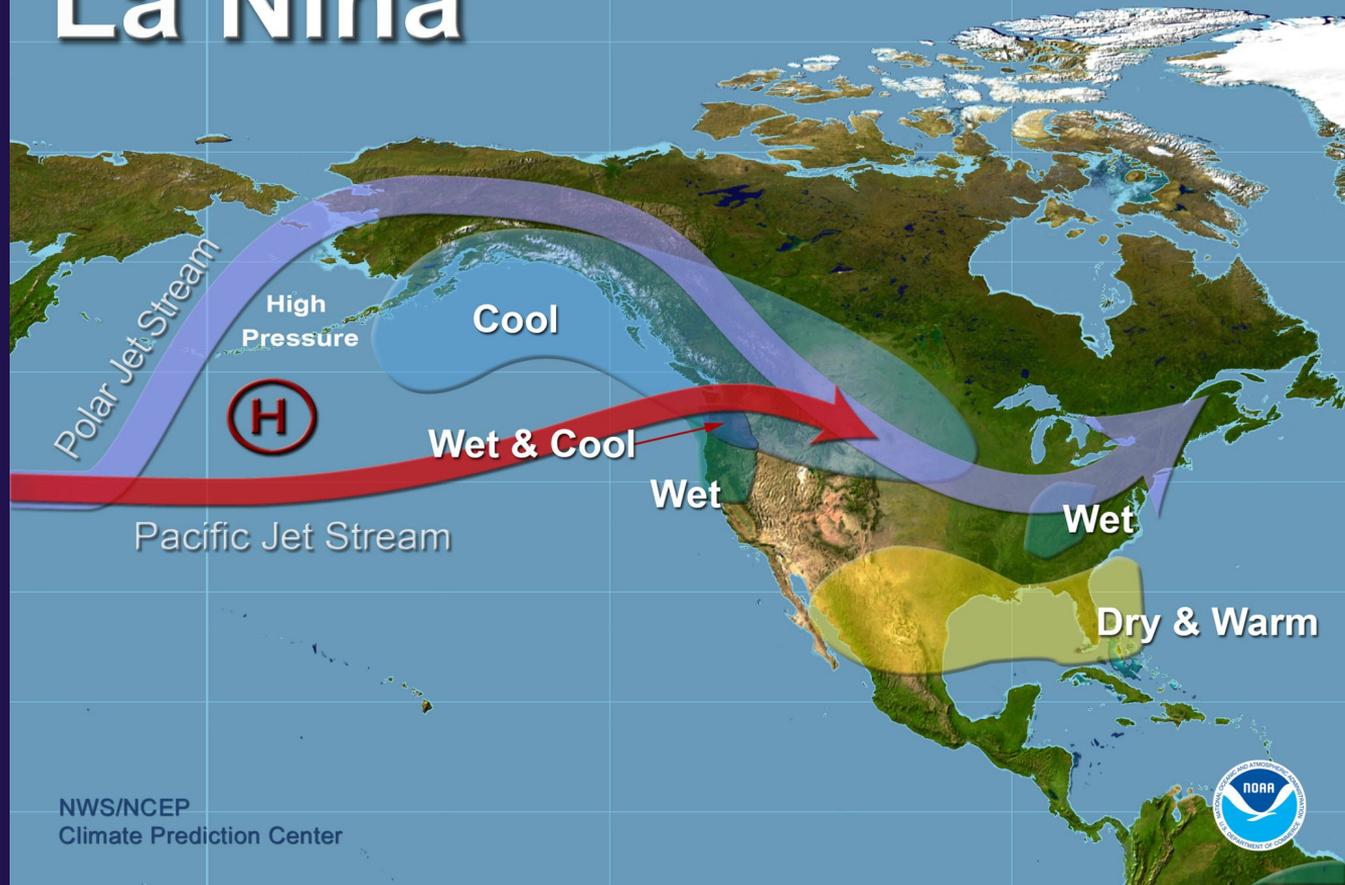
Figure 6. Forecasts of sea surface temperature (SST) anomalies for the Niño 3.4 region (5°N–5°S, 120°W–170°W). Figure updated 19 September 2024 by the International Research Institute (IRI) for Climate and Society.



“Typical” La Niña Atmospheric Setup

Typical Wintertime Pattern

La Niña



NWS/NCEP
Climate Prediction Center



NATIONAL WEATHER SERVICE
WEATHER FORECAST OFFICE • SPOKANE, WA





ANALOG YEARS

STRONG EL NINO → LA NINA WINTERS

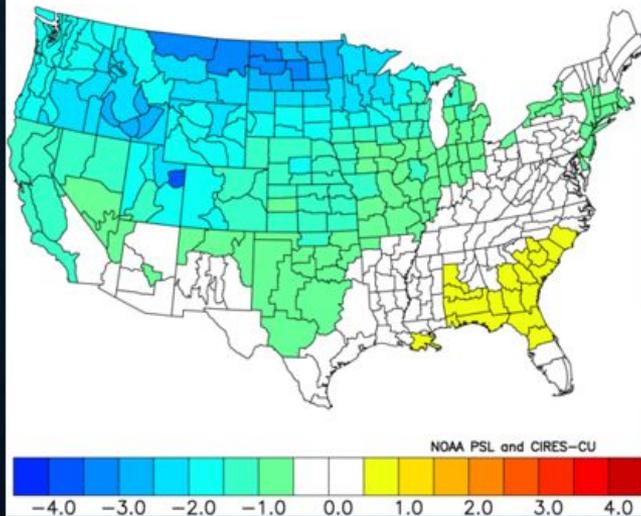
(1964/65, 1973/74, 1983/84, 1988/89, 1998/99, 2010/11, 2016/17)

Seven best fit winter seasons going back to year 1950

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

Temperature

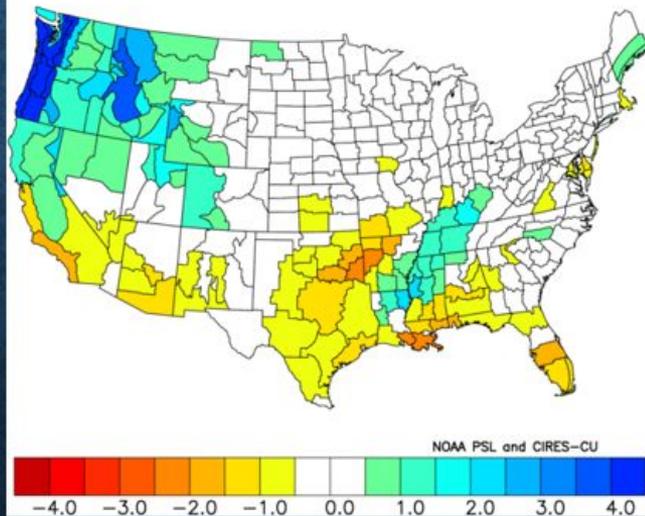
NOAA/NCEI Climate Division Composite Temperature Anomalies (F)
Dec to Feb 2016-17, 2010-11, 1998-99, 1988-89, 1983-84, 1973-74, 1964-65
Versus 1991-2020 Longterm Average



Colder Winters

Precipitation

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



Wetter Winters

Interactive El Niño Snow Climatology

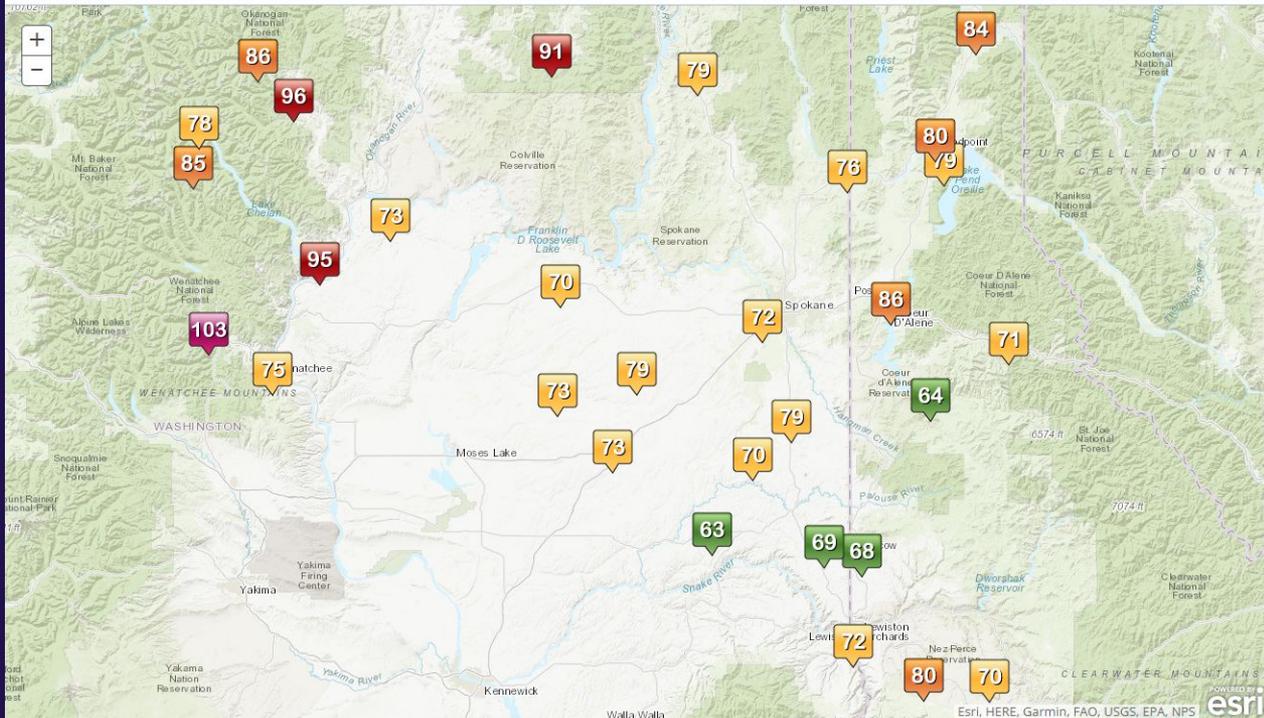
<https://www.wrh.noaa.gov/otx/climate/coop/enso/ninaosnow/ninocoopsnowavgmap.php>



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%](#)



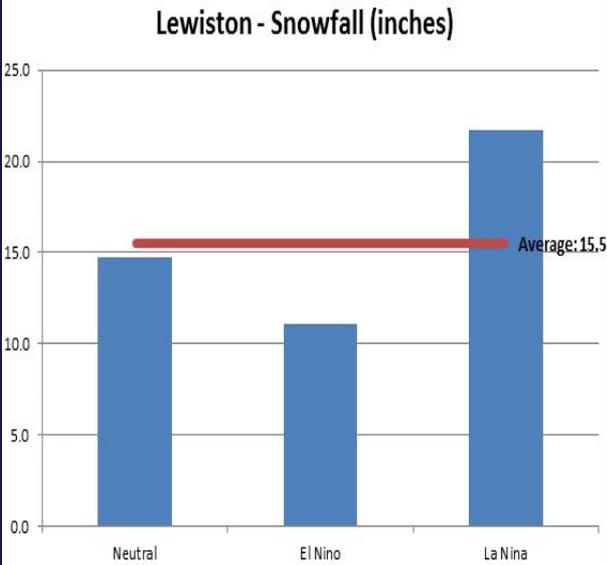
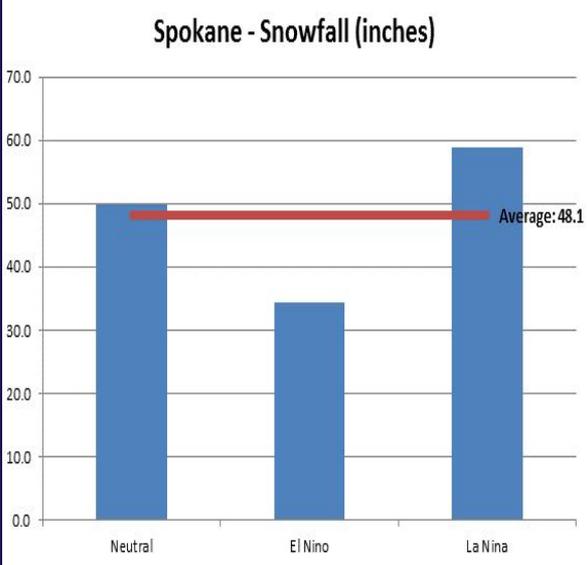
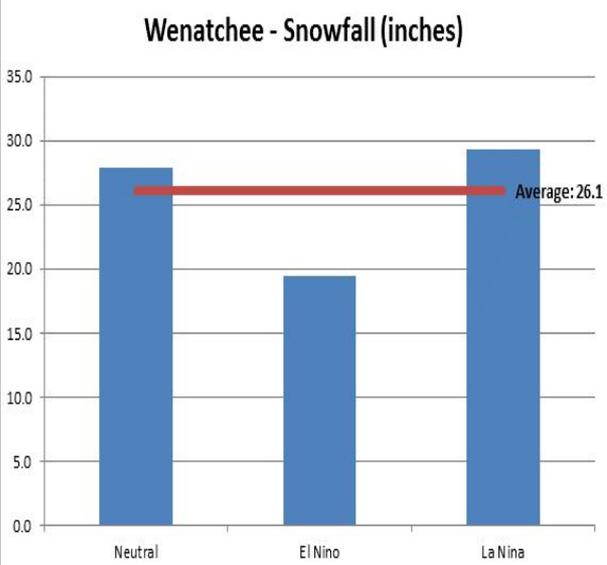
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NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION

Spokane, WA

www.weather.gov/spokane



Snow Sites - Clickable Points



One Month Outlook November

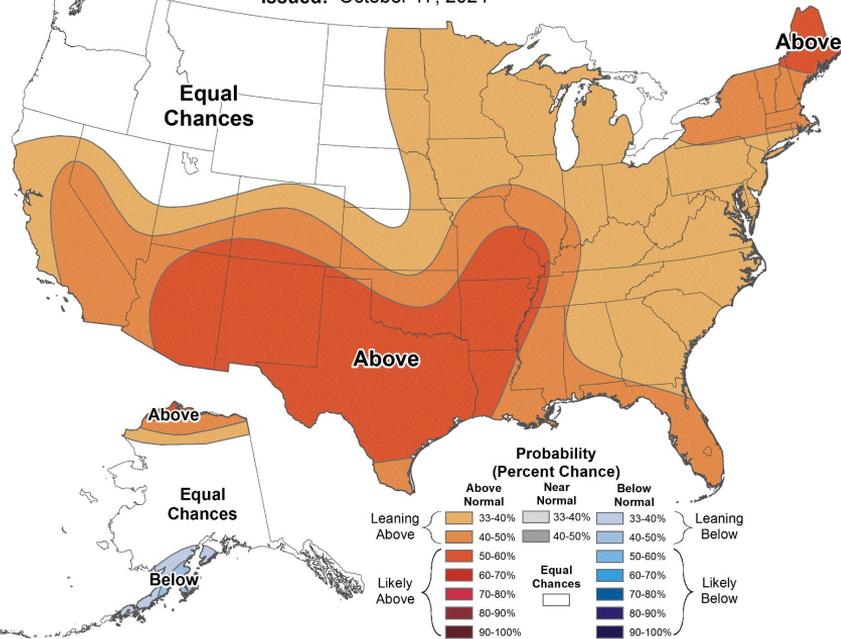
www.cpc.noaa.gov



Monthly Temperature Outlook



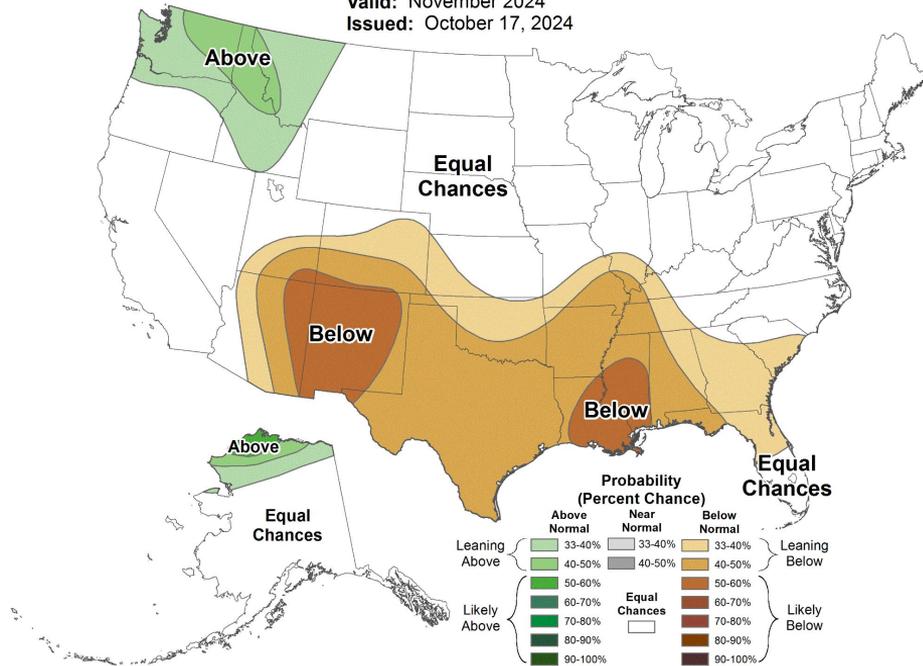
Valid: November 2024
Issued: October 17, 2024



Monthly Precipitation Outlook



Valid: November 2024
Issued: October 17, 2024



Three Month Outlook

November - January

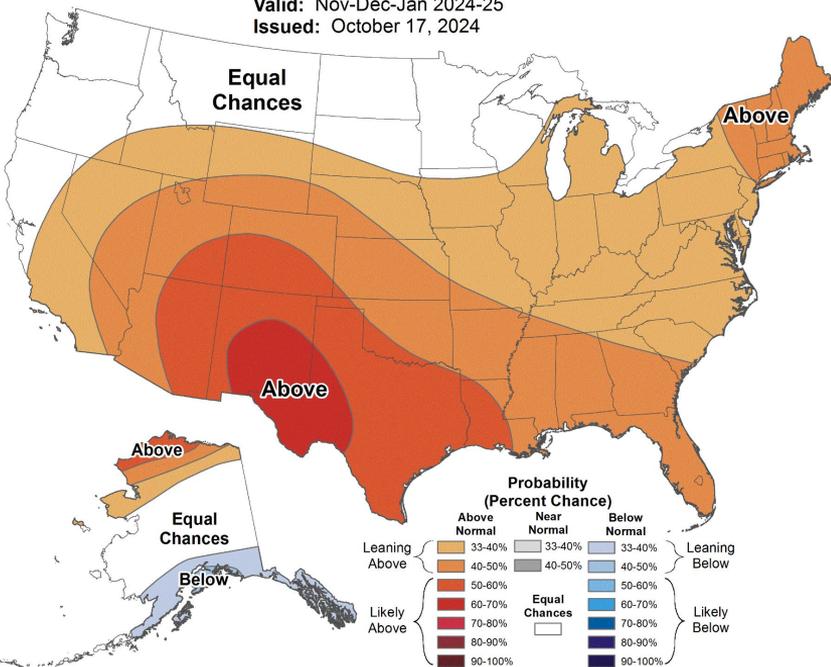
www.cpc.noaa.gov



Seasonal Temperature Outlook



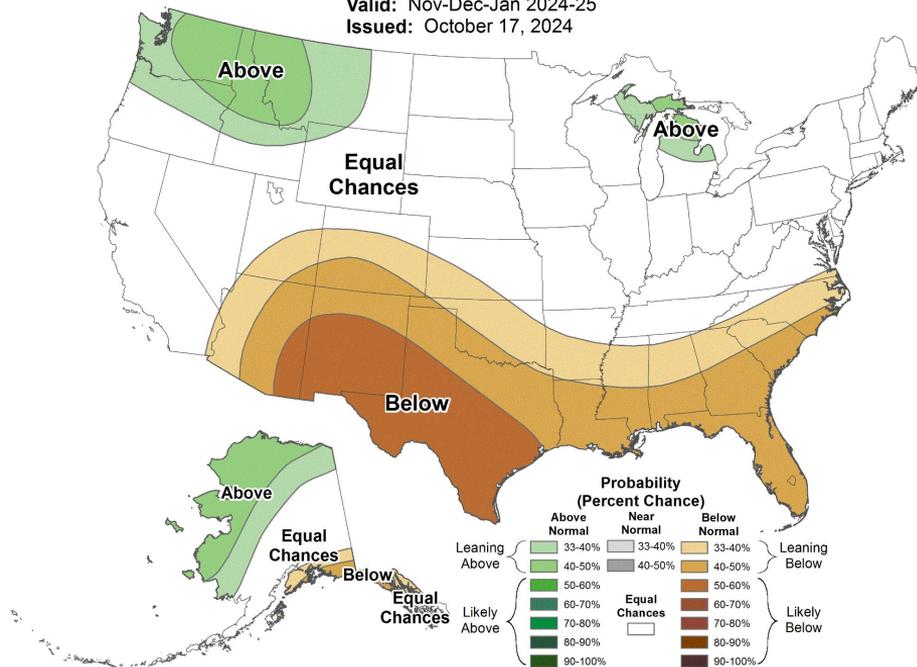
Valid: Nov-Dec-Jan 2024-25
 Issued: October 17, 2024



Seasonal Precipitation Outlook



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



Key Points – Winter Outlook

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





nws.spokane@noaa.gov

THANK YOU!

What's Next?

Visit cocorahs.org

- Register if you want to join
- Review training videos and slides
- Check out the latest precipitation maps

Any Questions?

Unmute yourself to talk



NATIONAL WEATHER SERVICE
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Spokane, WA

www.weather.gov/spokane

