



Snow Measurements

Fall 2022
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

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 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 2022-2023

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



December 30, 2021 - Heavy Snow



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



Lewiston, ID



I-90 at Snoqualmie Pass



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 14, 2022 - Heavy Snow



Unstable conditions can produce intense snow amounts.

8" to 16" East Wenatchee



Malaga, WA



Wenatchee



To our current Observers....



**THANK
YOU!**



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Community Collaborative Rain Hail and Snow Network

- NWS Partner
- Fort Collins, Colorado
- Manages sites all over North America
- Began in WA/ID 2008 - 14 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)

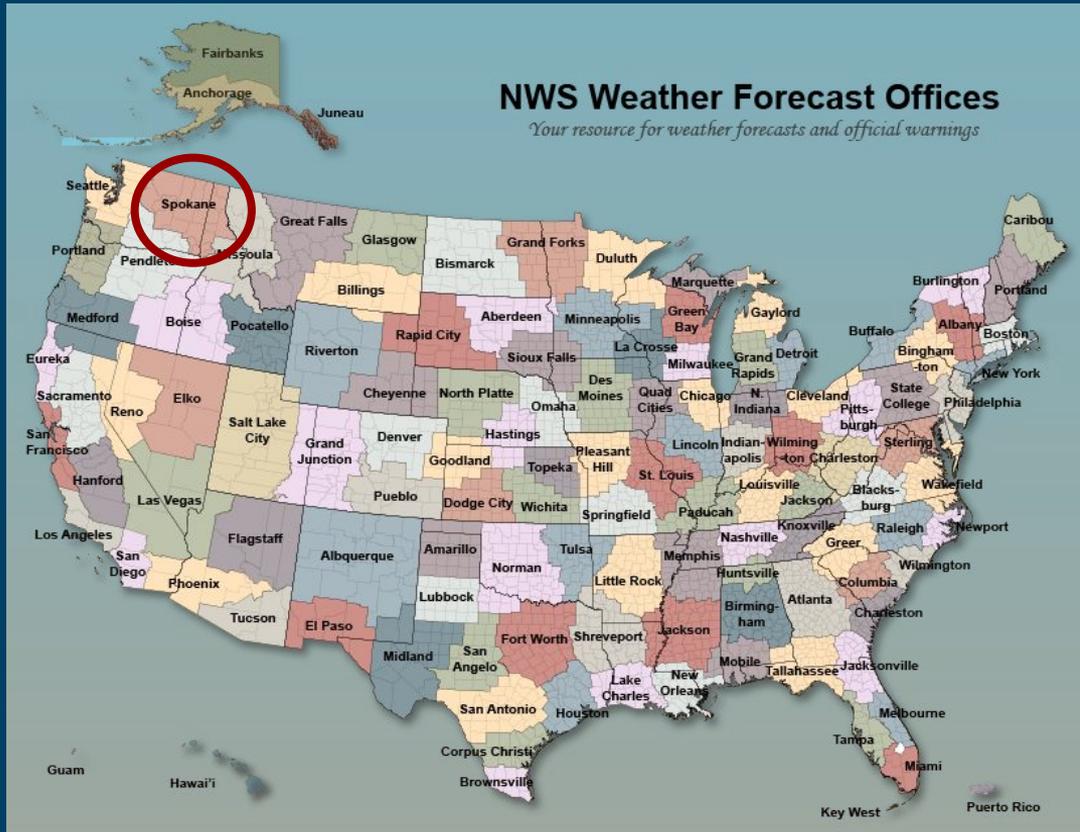


- Part of the Federal Government – Dept of Commerce
- Responsible for all weather/water Watches & Warnings
- 126 offices across the country
- Work with local agencies
- Observe & Forecast
- “Behind the Scenes”
- Decision Support
- Preparedness & Education

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

www.weather.gov/spokane

Issue watches/warnings for the protection of life and property



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Spokane, WA



NWS Tools



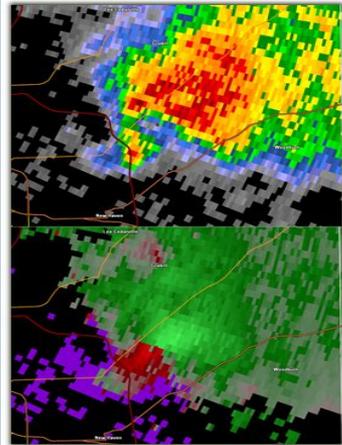
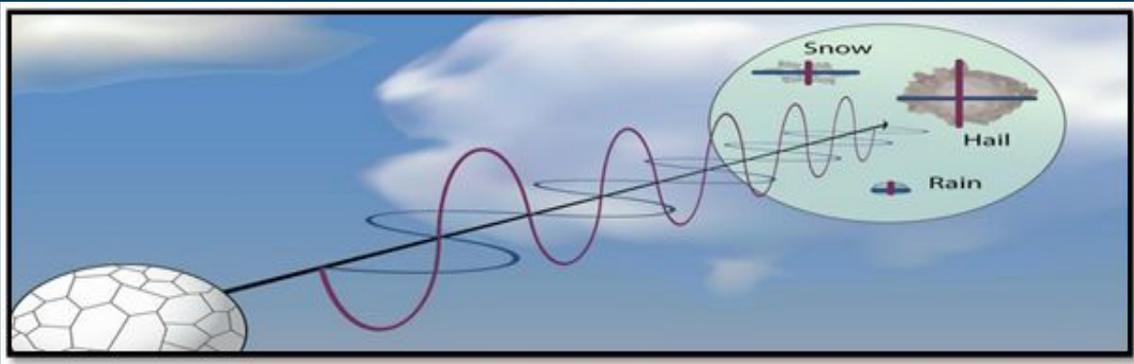
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Doppler Weather Radar



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



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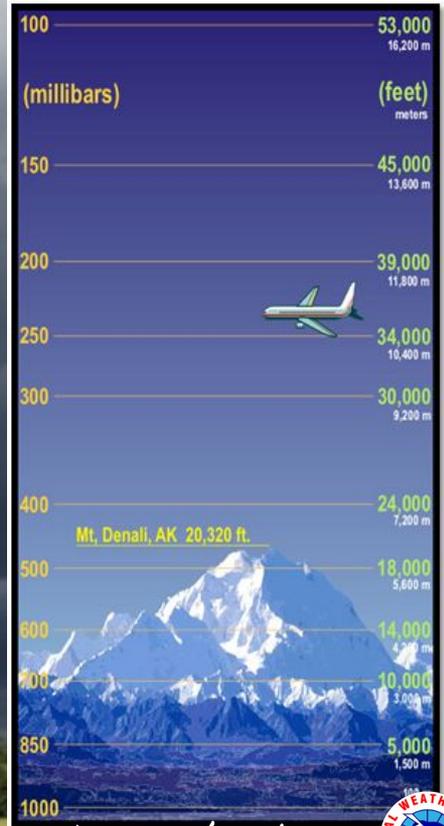
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Weather Balloon - Radiosonde



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



Weather Satellites

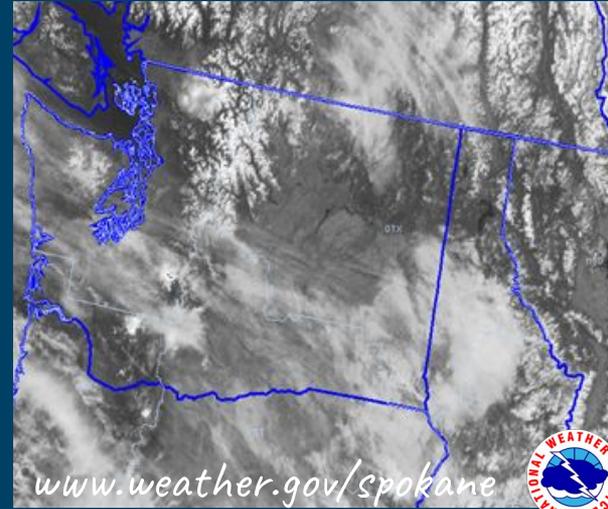
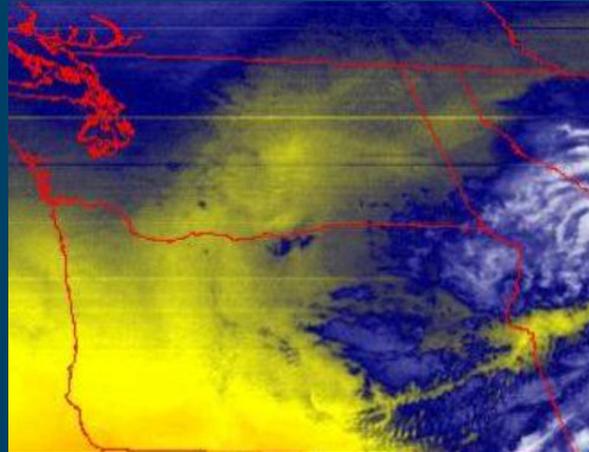
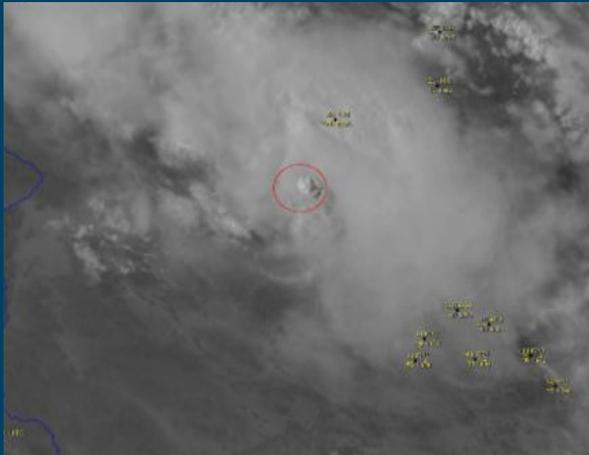
GOES 17 - 16 different channels

IR, Water Vapor & Visible

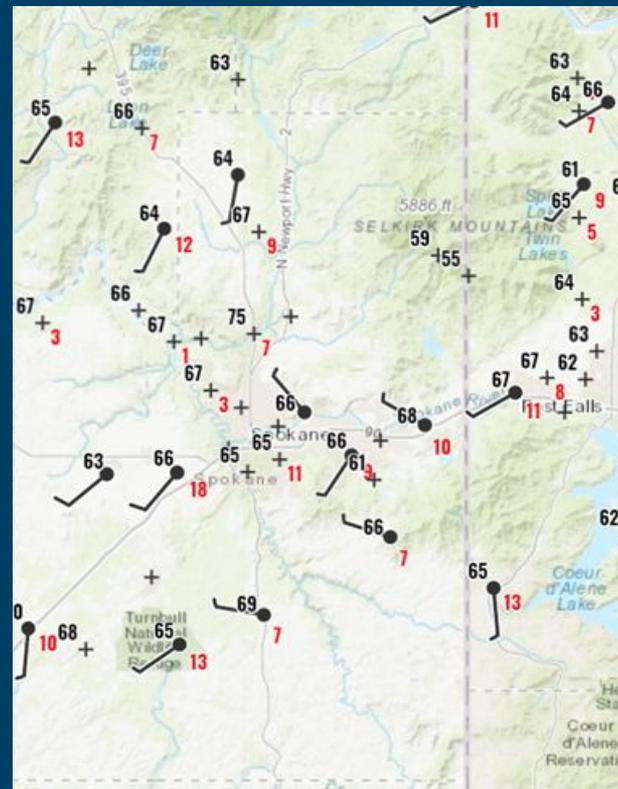
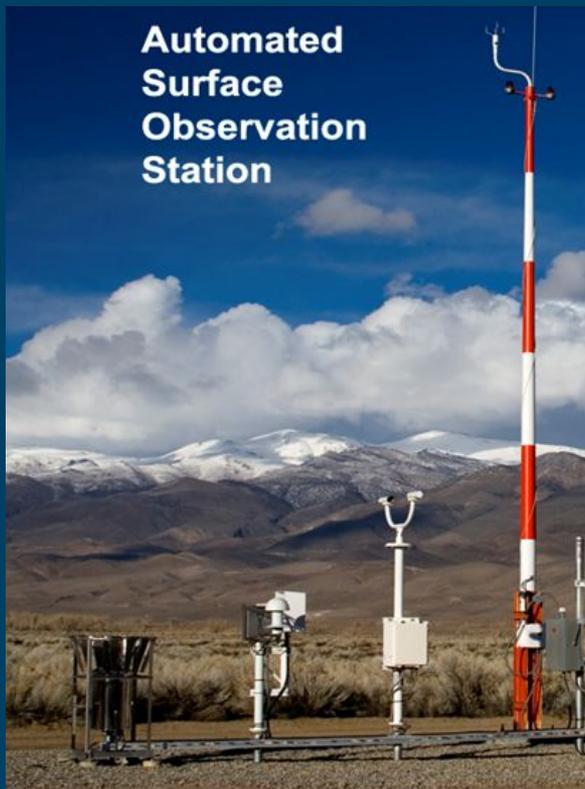
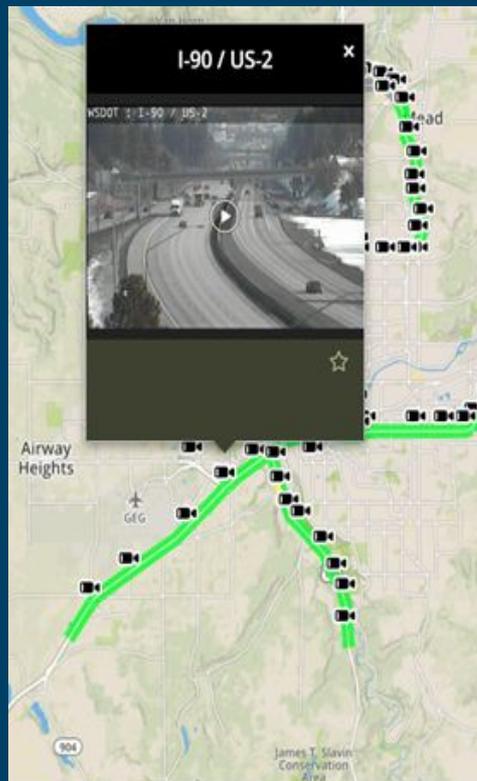
New images every 5 minutes

Aids in early detection

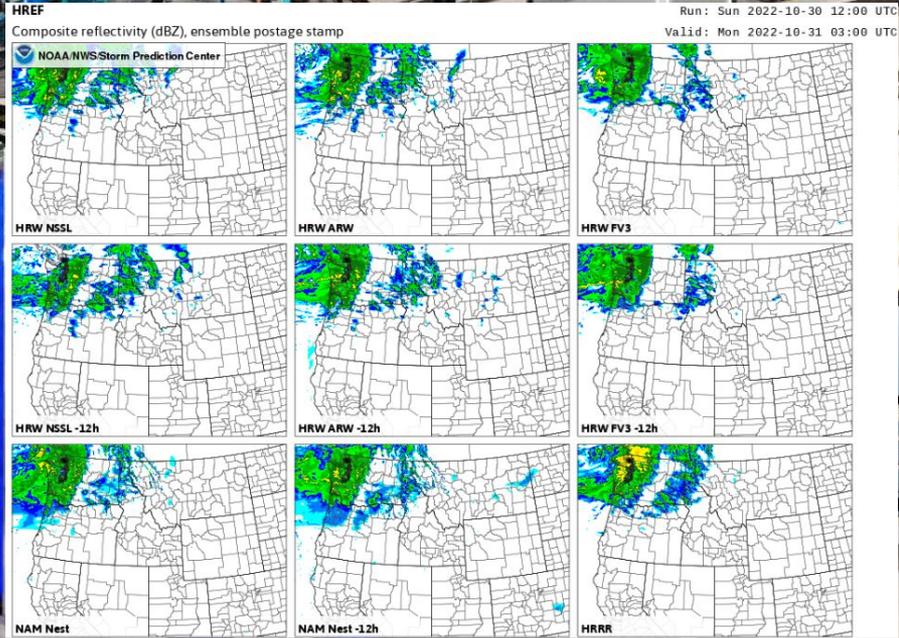
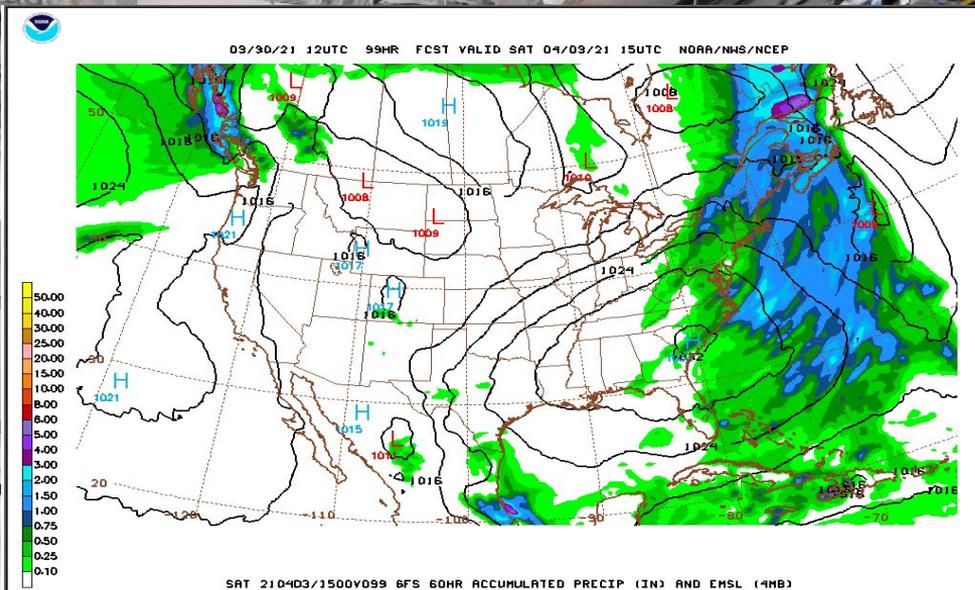
Thunderstorms & Wildfires



Surface Observations & Web Cams



High Resolution Weather Models



We need observers! Why?

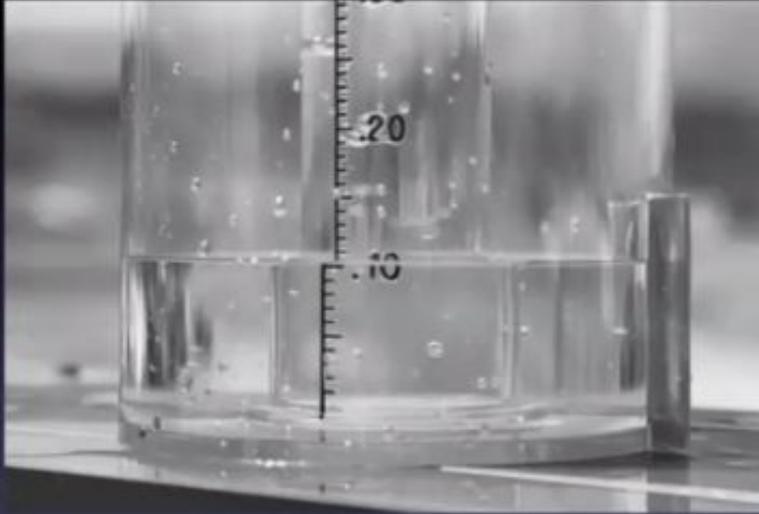


- Limitations to radar, satellite, and surface observations
- Receive Ground Truth on events
- Fill in the “holes” not seen by observations
- Understand the many micro-climates in the region
- Maximize Warning effectiveness and Lead Times
- Add Credibility to NWS Warnings - Leads to Public Action!





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 (my emphasis) to hazardous weather operations at the NWS Austin-San Antonio Weather Forecast Office. We utilize the daily precipitation reports to produce maps such as the one attached, which are used extensively by the media (directly shown on TV broadcasts), our emergency management partners (for briefing officials and planning search and recovery operations), and the general public."

Jon Zeitler – NWS Austin-San Antonio Weather Forecast Office



CoCoRaHS - easy to report



Help Observe Precipitation in your Community

www.cocorahs.org

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.

JOIN COCORAHS

TRAINING SLIDE-SHOW

Training Animations

Things to know about...

- Rain
- Hail
- Snow

Download on the App Store

Main Menu

- Home
- About Us
- Join CoCoRaHS
- Contact Us
- Donate

Resources

- FAQ / Help
- Education
- Training Slide-Shows
- Videos
- Condition Monitoring
- Evapotranspiration
- Soil Moisture
- NCEI Normals
- Volunteer Coordinators
- Hail Pad
- Distribution/Drop-off
- Help Needed
- Printable Forms
- The Catch
- Message of the Day
- Publications
- CoCoRaHS Blog
- Work Groups
- State Newsletters
- Master Gardener Guide
- State Climate Series
- March Madness
- WX-Talk Webinars



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

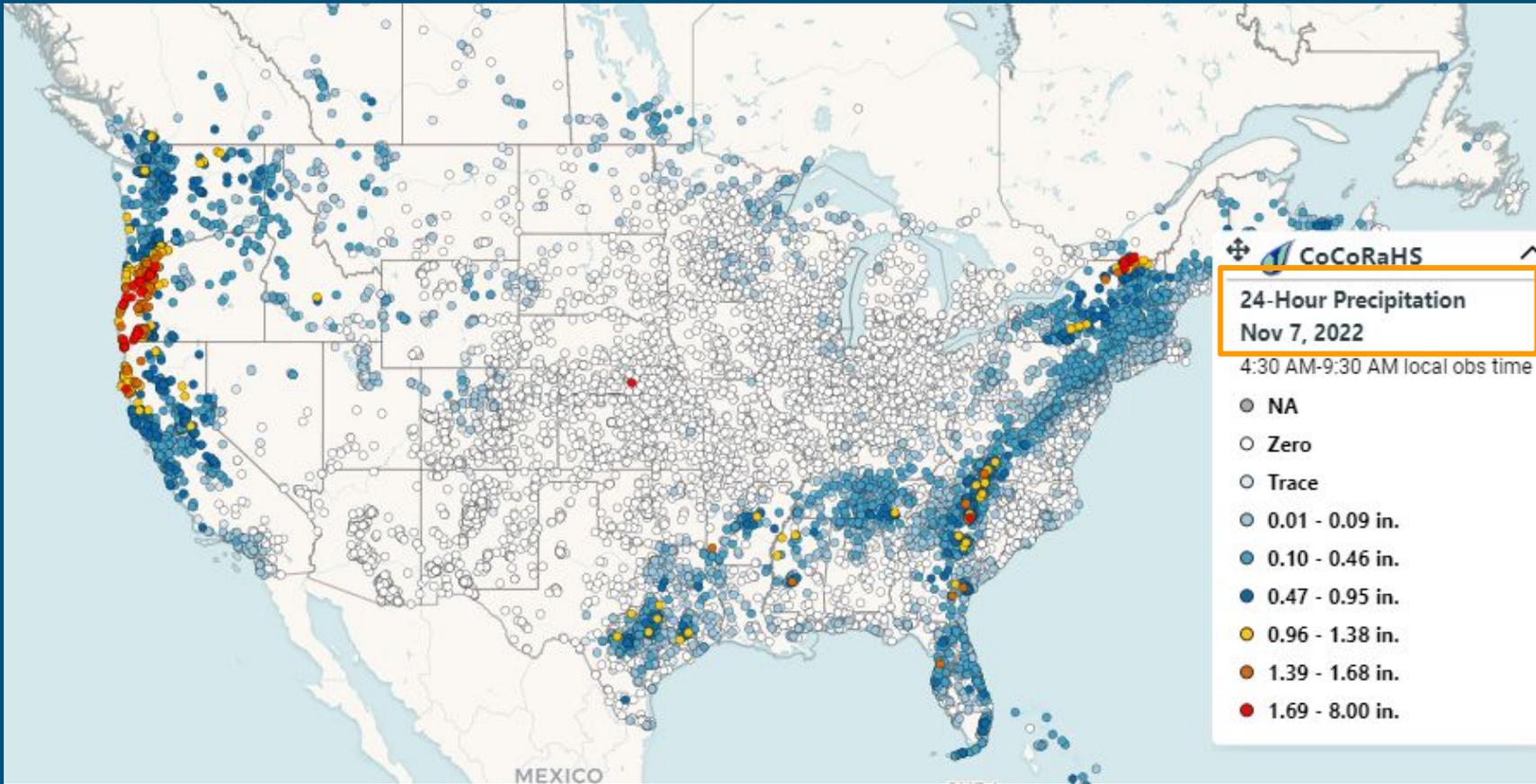


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maps.cocorahs.org



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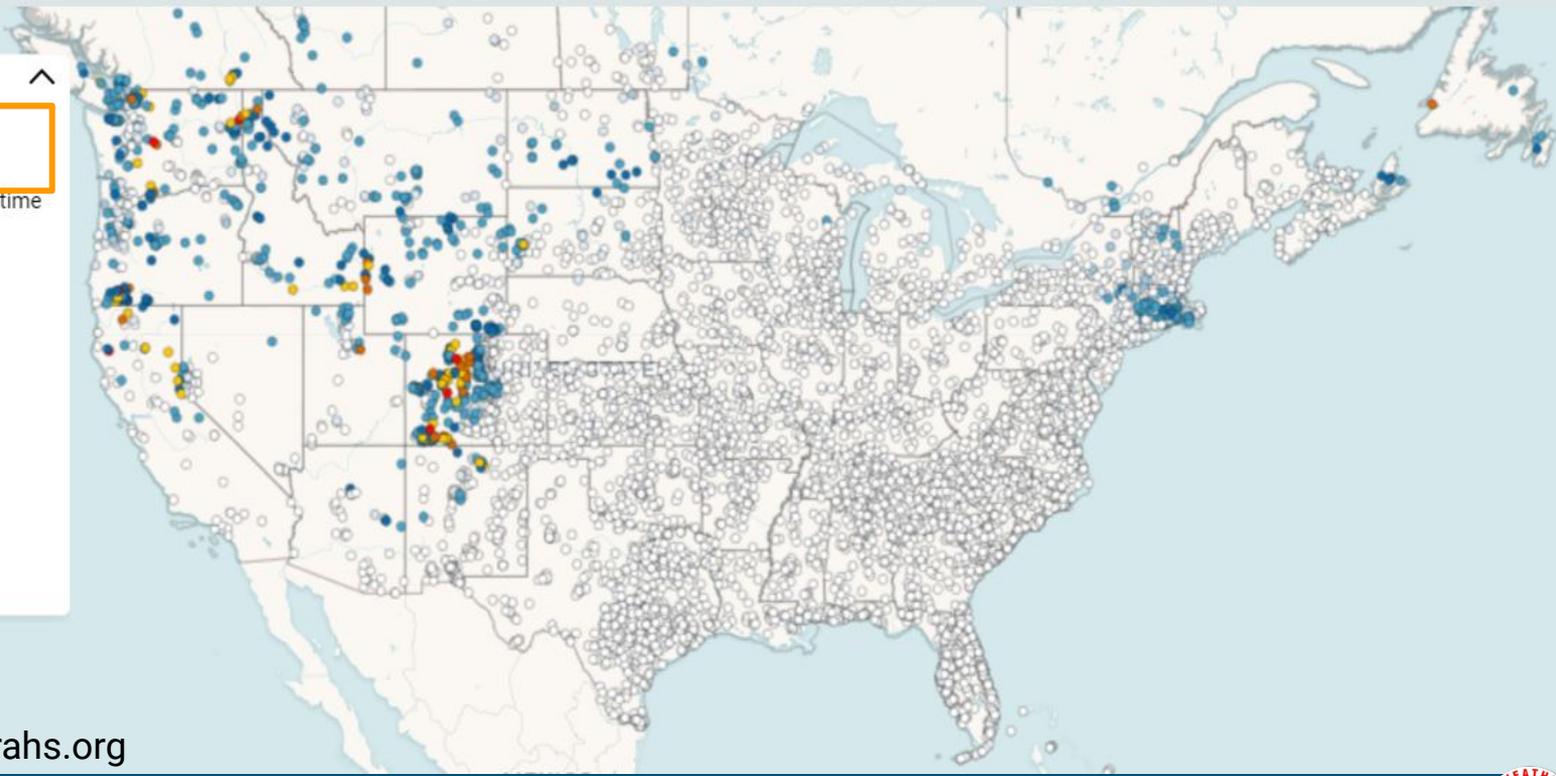
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CoCoRaHS

24-Hour Snowfall
Dec 25, 2021
4:30 AM-9:30 AM local obs time

- NA
- Zero
- Trace
- 0.1 - 0.2 in.
- 0.3 - 2.1 in.
- 2.2 - 4.7 in.
- 4.8 - 7.0 in.
- 7.1 - 9.0 in.
- 9.1 - 16.0 in.



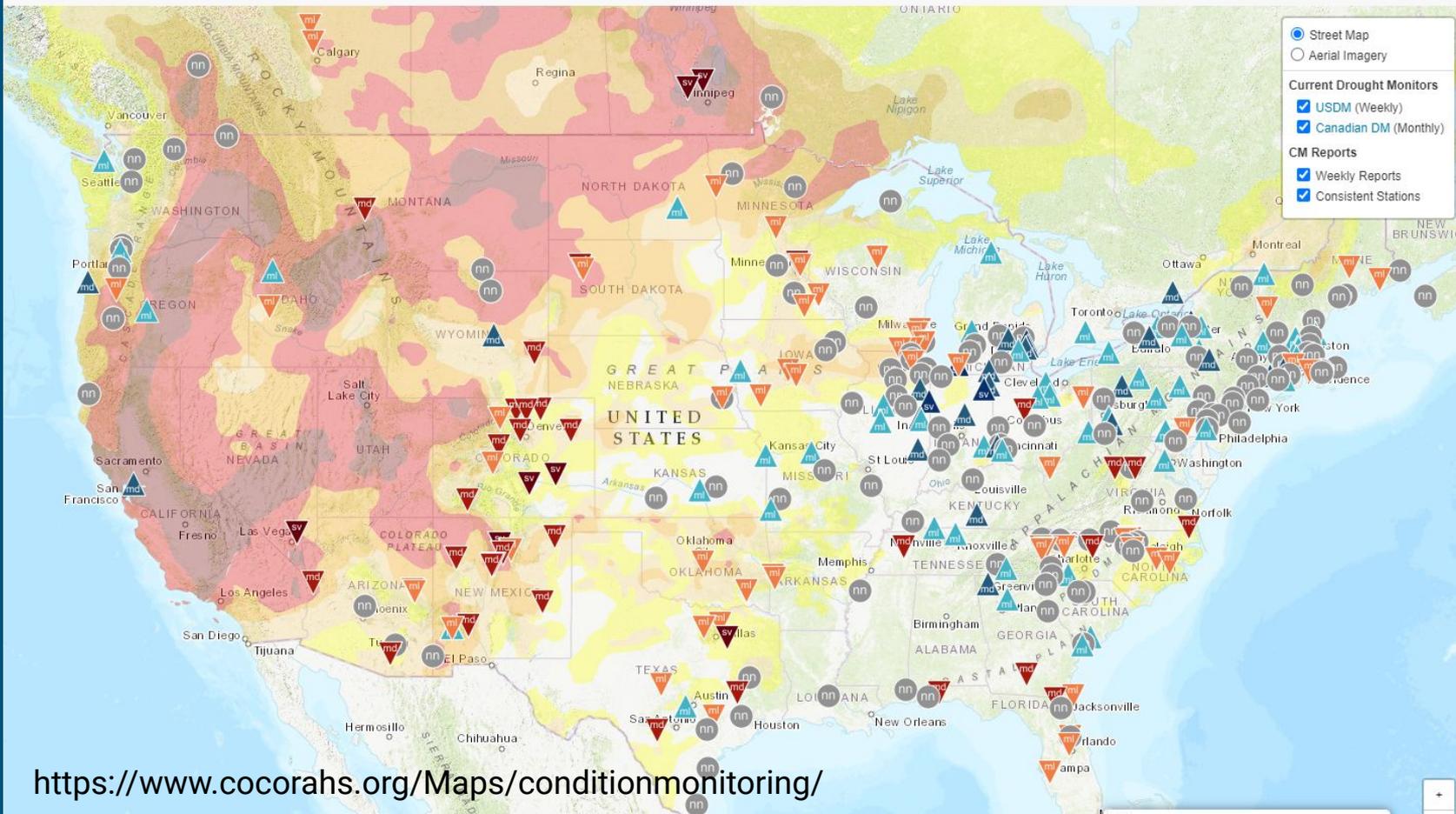
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Condition Monitoring



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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The Catch



NOLAN DOESKEN'S MONTHLY COCORAHHS E-MAIL MESSAGE

CoCoRaHS -- New (Water) Year Resolution - 18,000 Daily Reports

Fort Collins, Colorado -- September 27, 2022

Early autumn greetings to all. We continue to see a hefty number of new sign ups, and this coming Thursday we are on track to cross four million daily reports since January 1. Today we saw a large influx of new volunteers in Alaska (two, actually, but for Alaska that's a big day). Close to two dozen new volunteers signed up recently in Vermont. Texas continues to add new rain gaugers -- many recruited through the Texas Master Naturalist organization.

The National Weather Service is often listed as the referral source for many of our volunteers, but in recent weeks, "friends, family and co-workers" seem to dominate. Regardless of where or how you found out about CoCoRaHS, we're glad you did, and we're glad you're here with us.



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NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION

Spokane, WA

YOUR NATIONAL WEATHER SERVICE SPOKANE QUARTERLY REPORT

The Weather Watcher of the Inland Northwest

www.weather.gov/Spokane



VOL XXVII,
SEPTEMBER



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Editor's Notes

Days are getting shorter and the summer heat will soon be a thing of the past. It's time to enjoy the changing foliage of fall and cool crisp days. Yet it won't be long before colder weather grips the region with freezing temperatures, ice and snow. It's time to prepare your household and vehicle for the changing seasons. September is National Preparedness month.

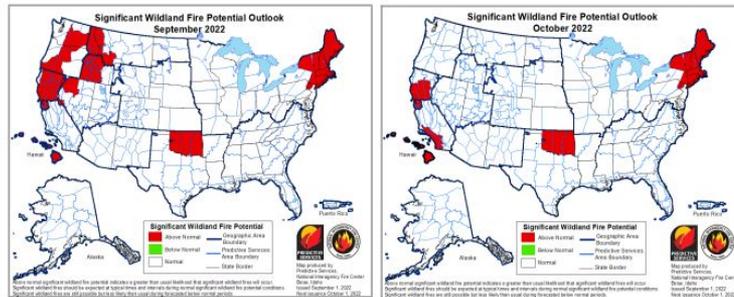
The Autumn Equinox arrives on Thursday, September 22nd at 6:30 am PDT. This marks the equal time between day and night. After this date, expect shorter day hours and longer nights. The upcoming full moons include: Harvest

Arrival of the Fire and Smoke Season

The wildfire season may have had a slow start this year, but it ramped up quickly by August after the heat, lightning, and dry, breezy winds. So far, there have been at least 14 wildfires across the Inland NW with around 50,000 acres burned across eastern Washington and north Idaho. Initially the grasses and rangeland were the first to see the fires. Now that the timber at the higher elevations have dried out, wildfires have developed there as well. The number of local and regional wildfires have brought waves of smoke and degraded [air quality](#) across the Inland NW. ☀

Significant Fire Outlook—September and October

Above normal fire potential remains through September as dry conditions prevail with rounds of breezy winds. Wetter and cooler conditions should limit significant fire potential by October.



Fall Seasonal Outlook ~ La Niña Advisory

The NWS Climate Prediction Center's three month outlook for September thru November 2022 leans toward above-normal precipitation for the northwest half of Washington, while equal

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Emails



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

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

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!

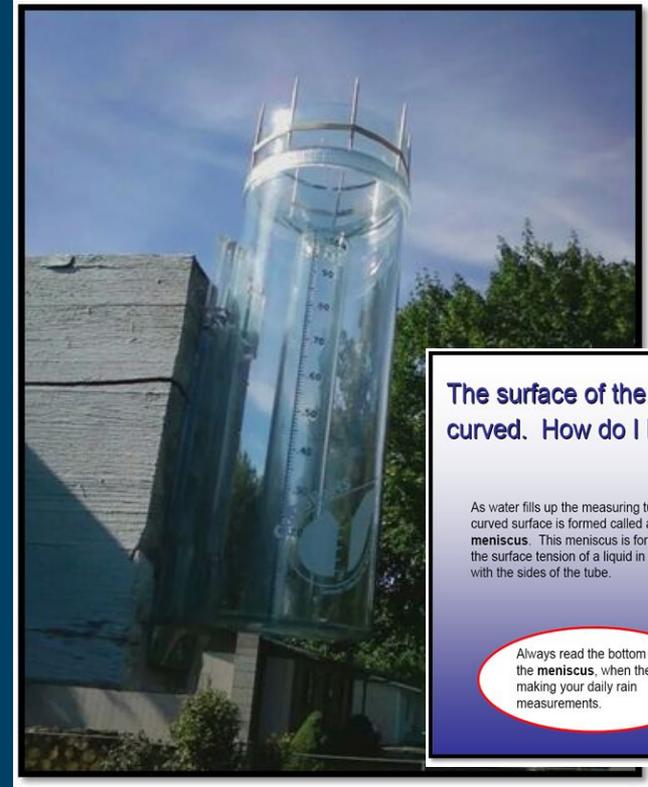
A blue rectangular banner with white text. The top line reads 'SWE MONDAYS' in bold, uppercase letters. Below it is the question 'What's your Snow Water Equivalent?' in a cursive font. The next line says 'Report the water content of your "snow on the ground" each Monday' in a smaller, sans-serif font. The bottom line reads 'The "Total SWE Monday" Habit . . . Please give it a try!' in a bold, sans-serif font.



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



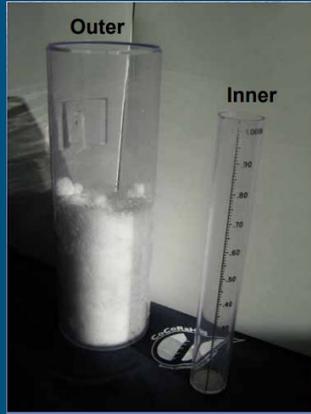
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Snow Measurements - Liquid Water Equivalent



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!



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Yes No

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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



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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)
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 - Snow Water Equivalen



Slide



Lift



Flip



Push down



Turn



Pull

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



Citizen Weather Observers Program CWOP



Register: 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





Additional Training

Cocorahs.org

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

Slideshows

Notes

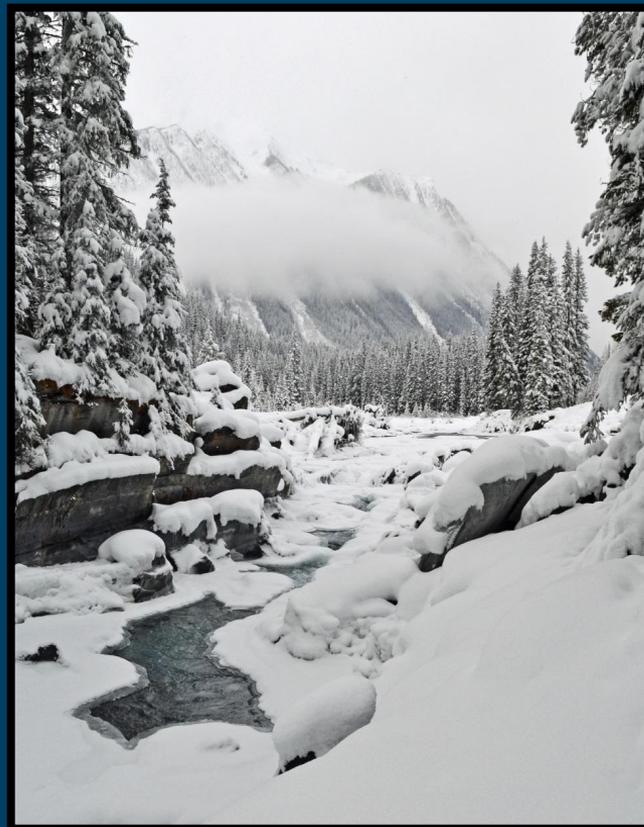
Videos



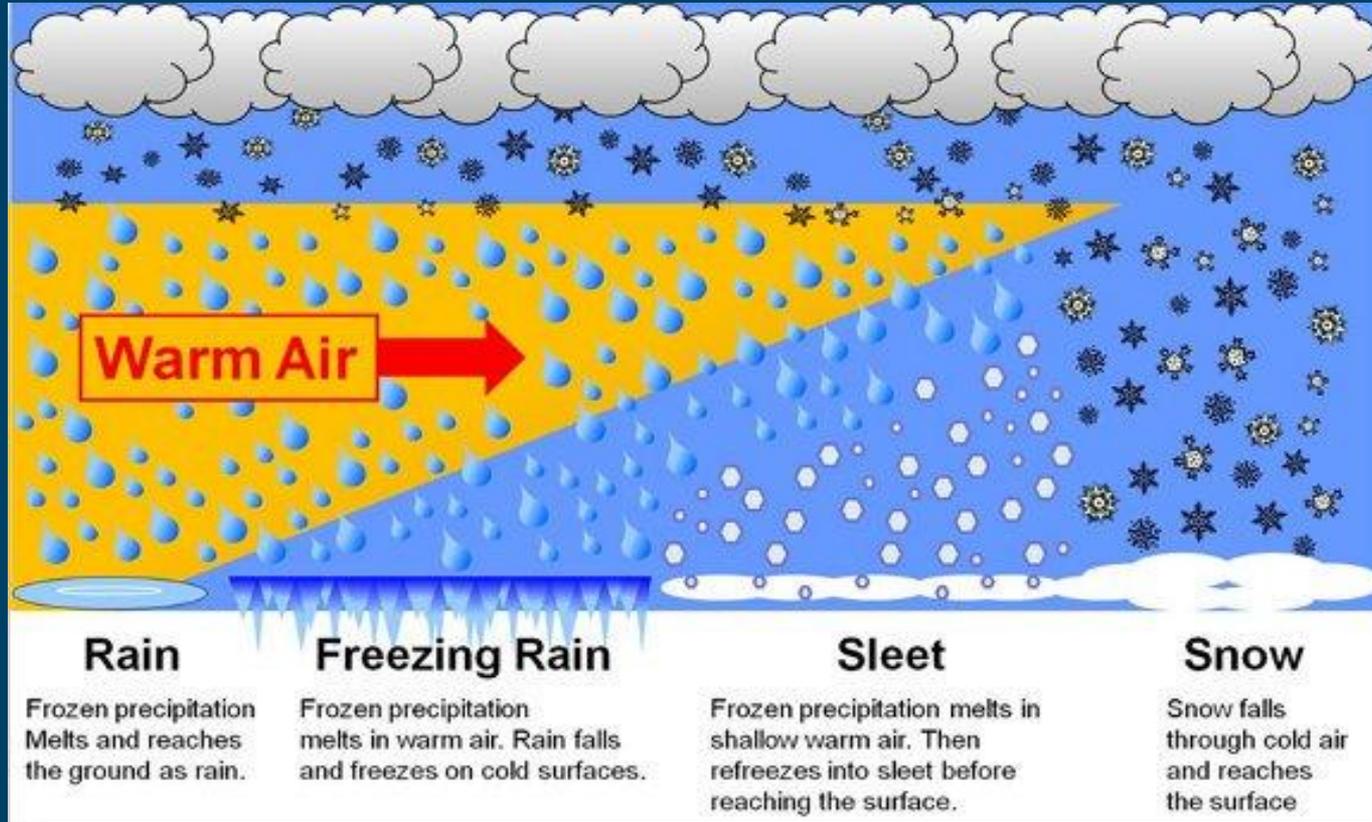
Typical Winter Storm Scenario



- 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

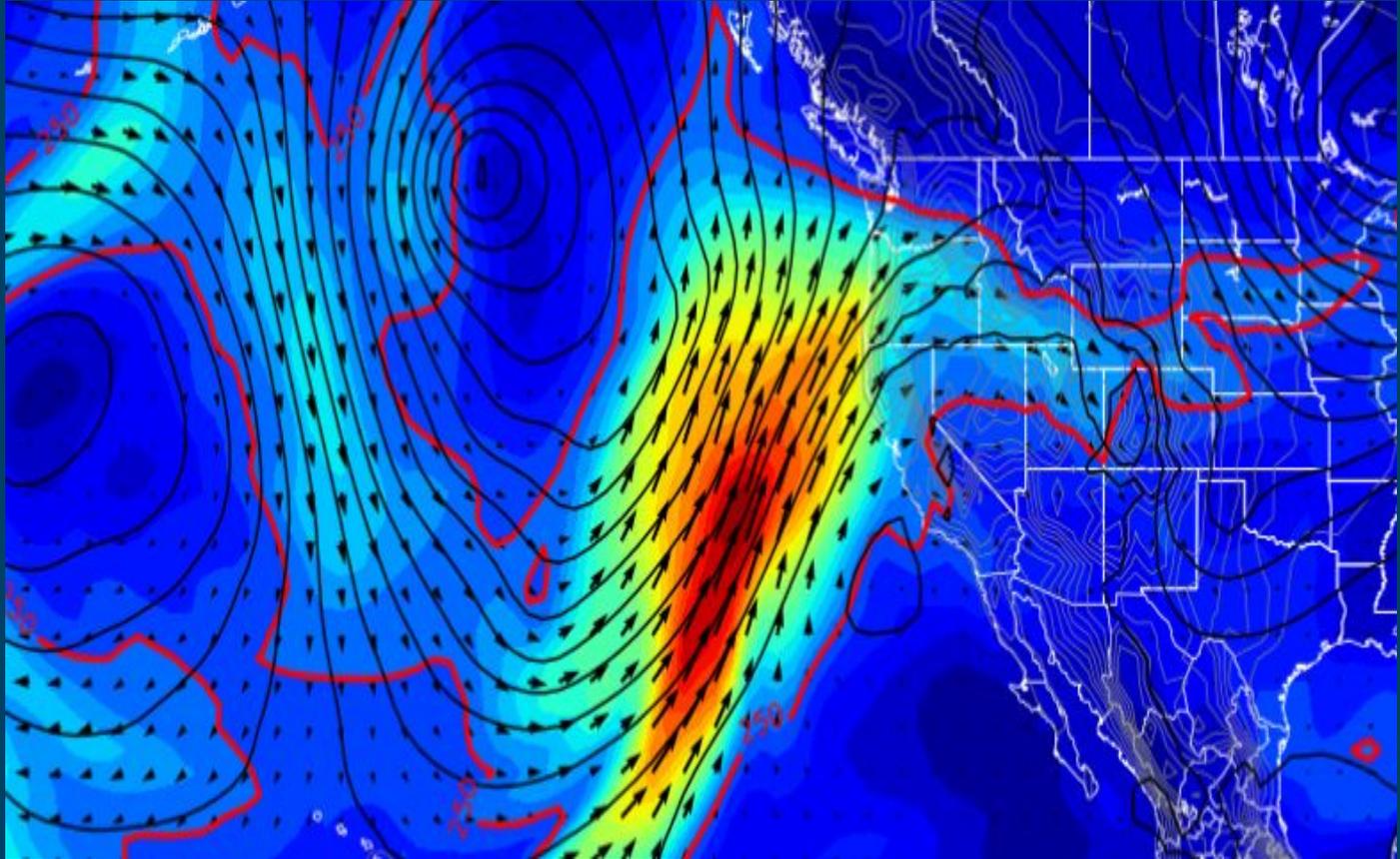


Atmospheric Rivers



Plumes of
atmospheric
moisture

Mild & Wet
Weather



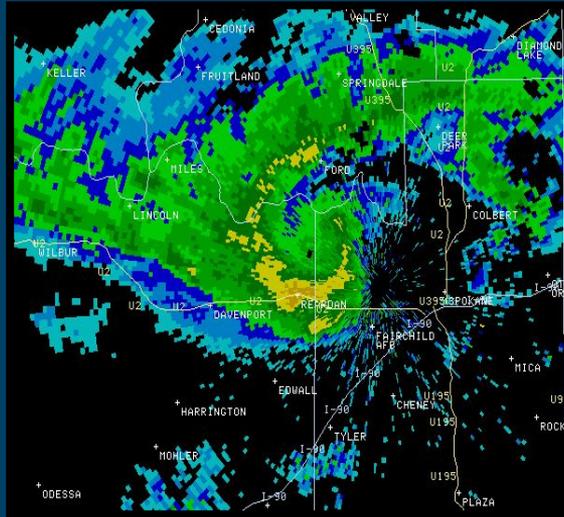
Atmospheric River Events



Small Scale Unstable Lows



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



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**

Pullman, May 2020



Spokane, Jan 2021



Moscow, April 2019



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!](#)

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

Cloudy & Dry Cold Temps Breezy Thursday Spotter Training

NWS Spokane
Forecast Nov 14 - 19, 2022.

Cold Temperatures This Week

High temperatures 30° - 40°
Low temperatures 8° - 25°

ISSUED: Nov 14, 2022
[Show Caption](#)



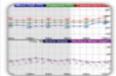
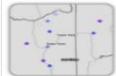
Click a location below for detailed forecast.



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

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

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

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



Stay Informed On your Smartphone

mobile.weather.gov



mobile.weather.gov National Weather Service

Zip, City or Place 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
Issued 3:46 PM CST

Current Conditions
Victoria, Victoria Regional Airport
Issued 3:46 PM CST
70 °F
Wind SE @ 10 mph
Dew Point 60 °F
17% Hum
Partly Cloudy

Forecast
Issued 3:46 PM CST
This Afternoon Mostly Sunny
Tonight Arise Fog then 20%
Tuesday Slight Chance 20%

mobile.weather.gov National Weather Service

2 Miles SW Victoria TX

Outlook/Statement in Effect
Issued 3:46 PM CST

AirDrop. Share instantly with people nearby. If they join on AirDrop from Control 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 Home Add to Home Screen Print HP ePrint

Cancel

Weather

Smart Weather RadarScope
CoCoRaHS... Clear Day mPING
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

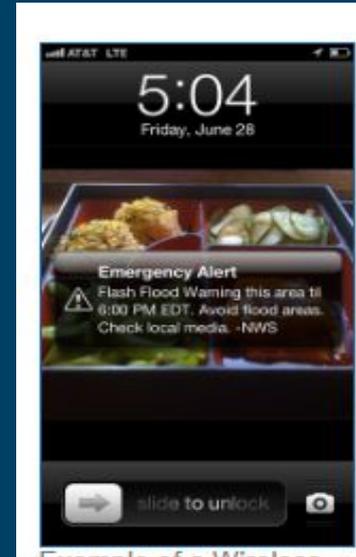
Alert Categories

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.

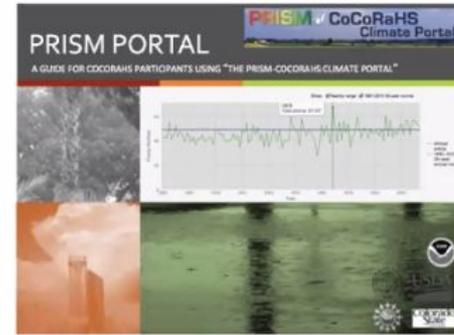
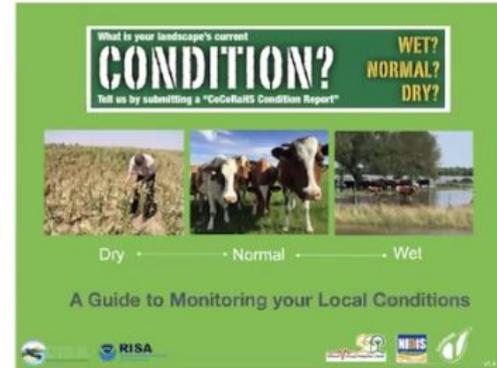
Keep them in an emergency kit you can use at home or take with you in case of an evacuation.



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 2022-2023



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NATIONAL OCEANIC & ATMOSPHERIC ADMINISTRATION

Spokane, WA

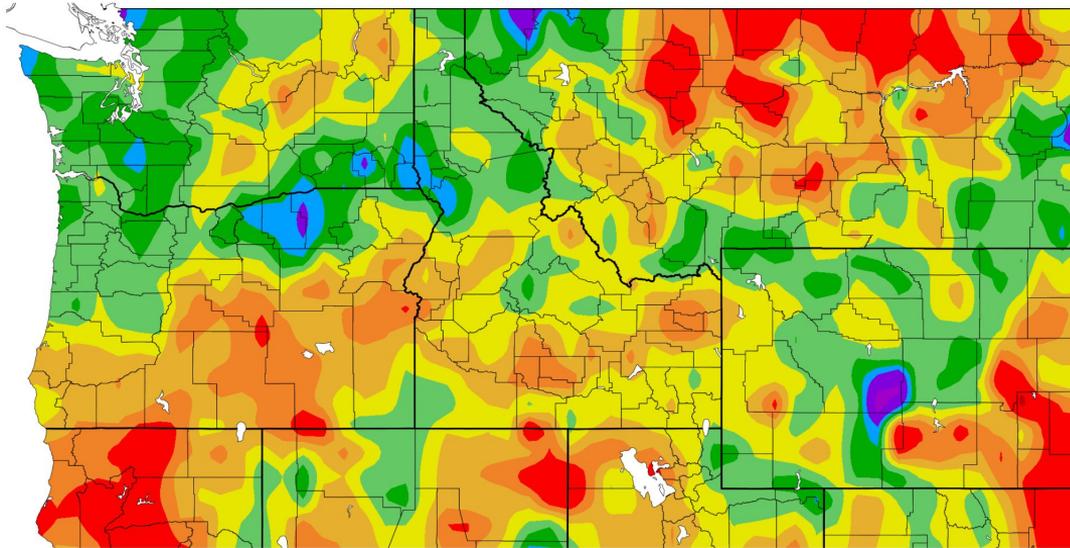
www.weather.gov/spokane



Water Year 2021- 2022...



Percent of Normal Precipitation (%)
10/1/2021 – 9/30/2022



Generally, not too bad!
We have made progress
from our record 2021 dry
spring and hot and dry
summer.



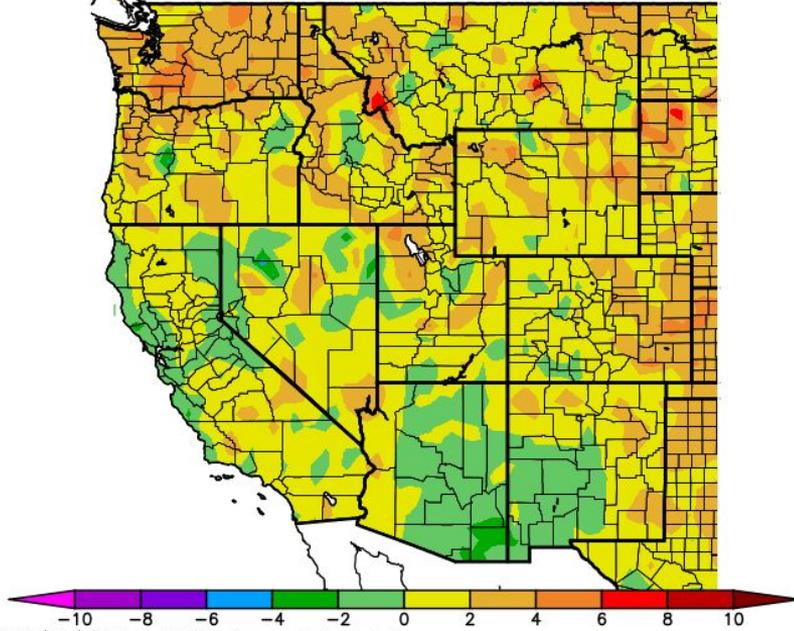
Fall 2022...

wrcc.dri.edu/

Now in Water Year 2022, temperatures trending cooler to near normal and Precipitation trending wetter than normal!

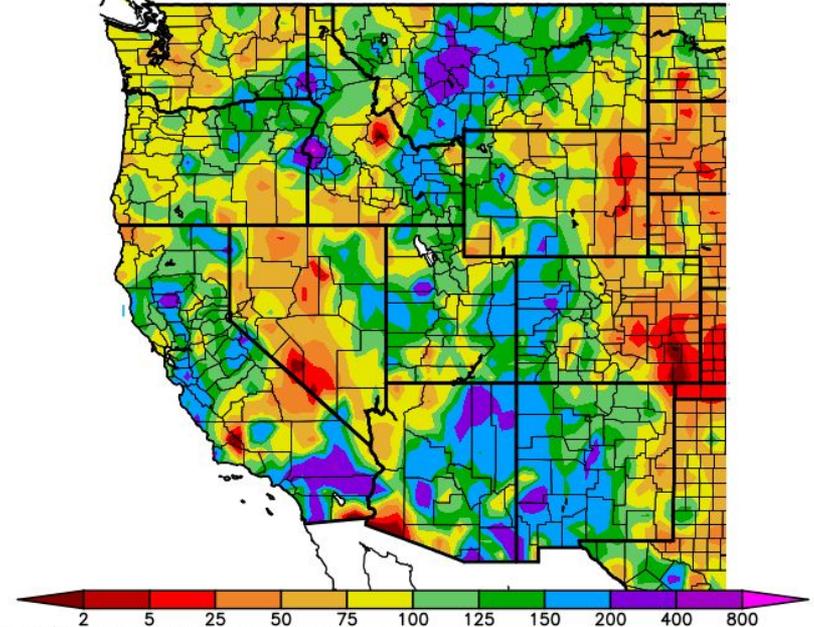


Ave. Temperature dep from Ave (deg F)
9/15/2022 – 11/13/2022



Generated 11/14/2022 at WRCC using provisional data.
NOAA Regional Climate Centers

Percent of Average Precipitation (%)
9/15/2022 – 11/13/2022



Generated 11/14/2022 at WRCC using provisional data.
NOAA Regional Climate Centers



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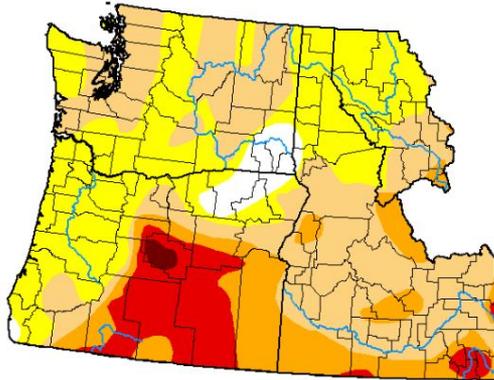
Drought Update

US Drought Monitor & Seasonal Outlook



U.S. Drought Monitor Pacific Northwest DEWS

November 8, 2022
(Released Thursday, Nov. 10, 2022)
Valid 7 a.m. EST



	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	3.66	96.32	82.02	24.87	10.24	0.50
Last Week 11-01-2022	0.16	99.84	82.11	31.42	11.86	0.50
3 Months Ago 08-09-2022	44.08	55.92	37.98	23.82	12.03	0.50
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 11-09-2021	8.96	91.04	89.36	81.10	44.62	13.88

Intensity:

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

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

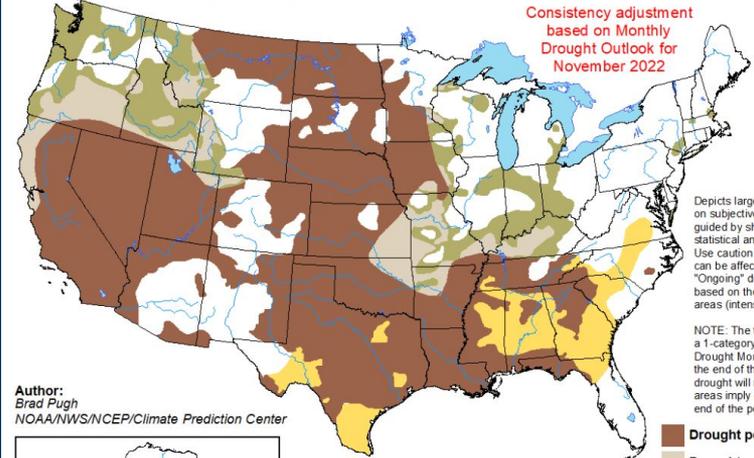
Author:
Brian Fuchs
National Drought Mitigation Center



droughtmonitor.unl.edu

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

Valid for November 1, 2022 - January 31, 2023
Released October 31, 2022



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

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



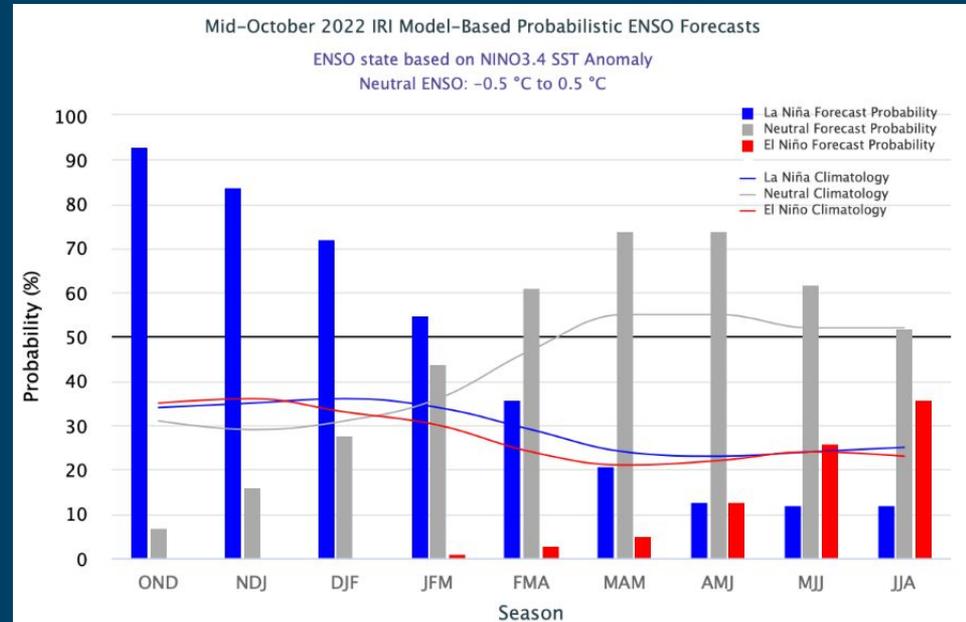
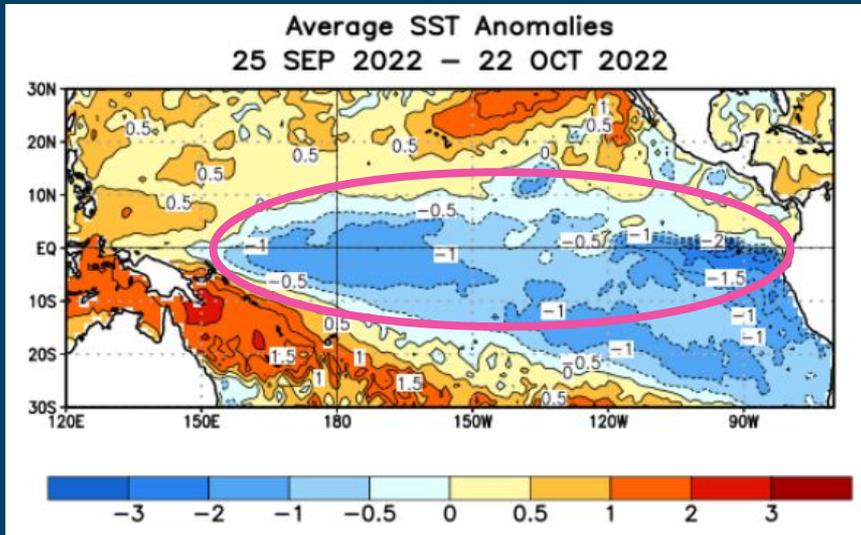
<http://go.usa.gov/3eZ73>



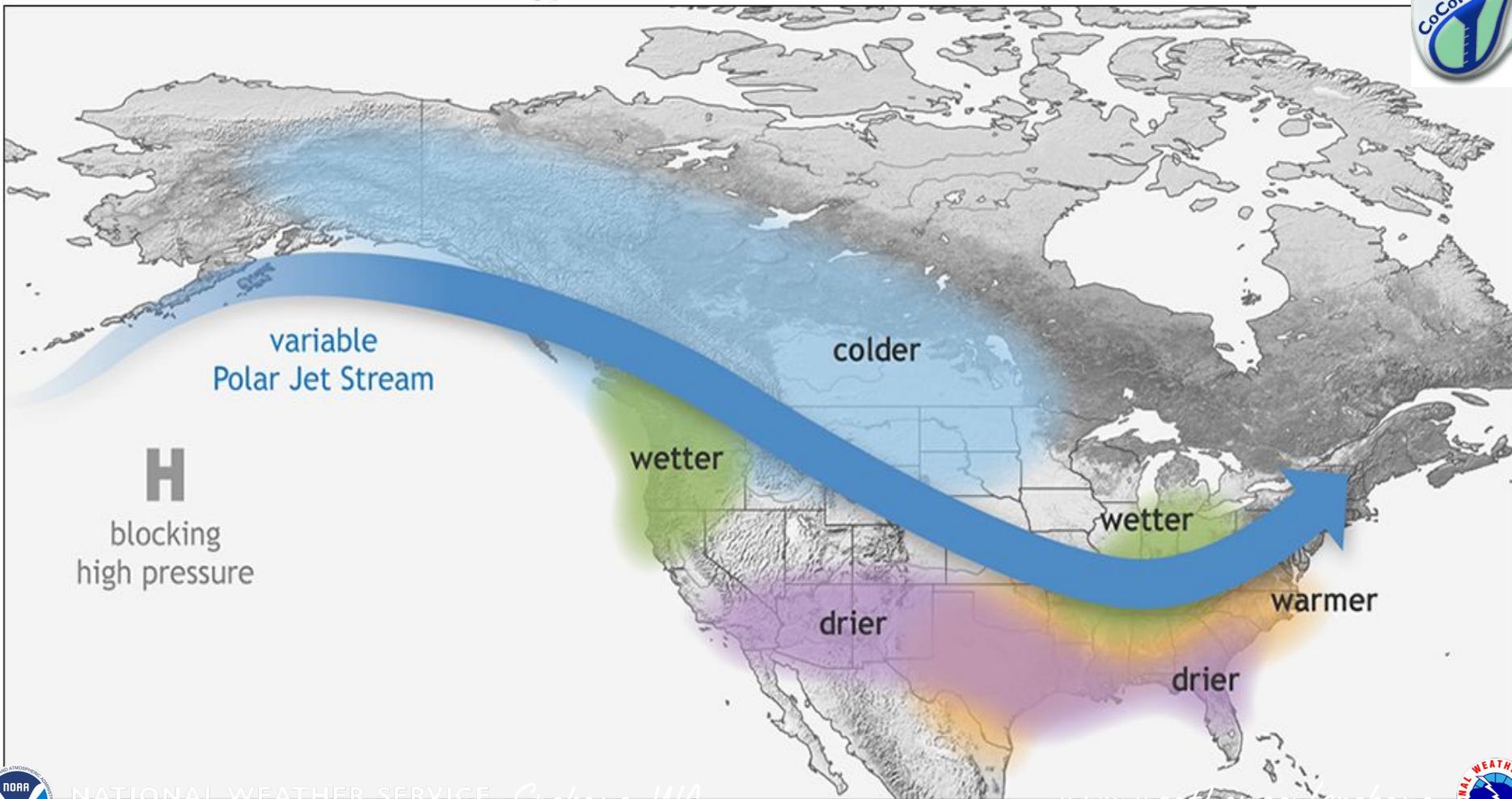
La Nina Continues...

- Equatorial sea surface temperatures (SSTs) are below average across most of the Pacific Ocean.
- La Niña conditions will persist especially now through February 2023 in the Northern Hemisphere.

www.cpc.noaa.gov



Typical Wintertime La Nina Pattern



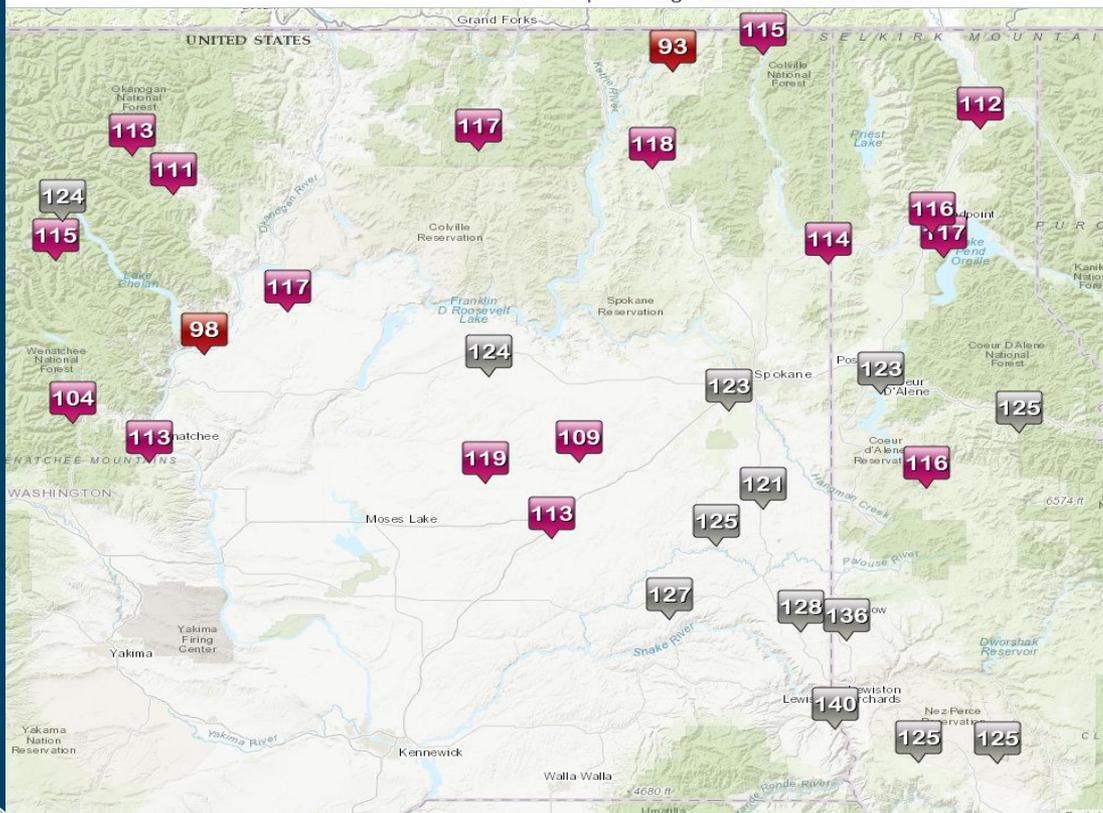
Interactive La Nina Snow Climatology



NWS Spokane Coop Observed, La Nina Snow Climatology

Percent of Normal Snowfall

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



<https://www.wrh.noaa.gov/otx/climate/>



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Spokane, WA

www.weather.gov/spokane



3rd Consecutive La Nina



The only other winters to
have a third La Nina in a row
was

1975-1976

2000-2001



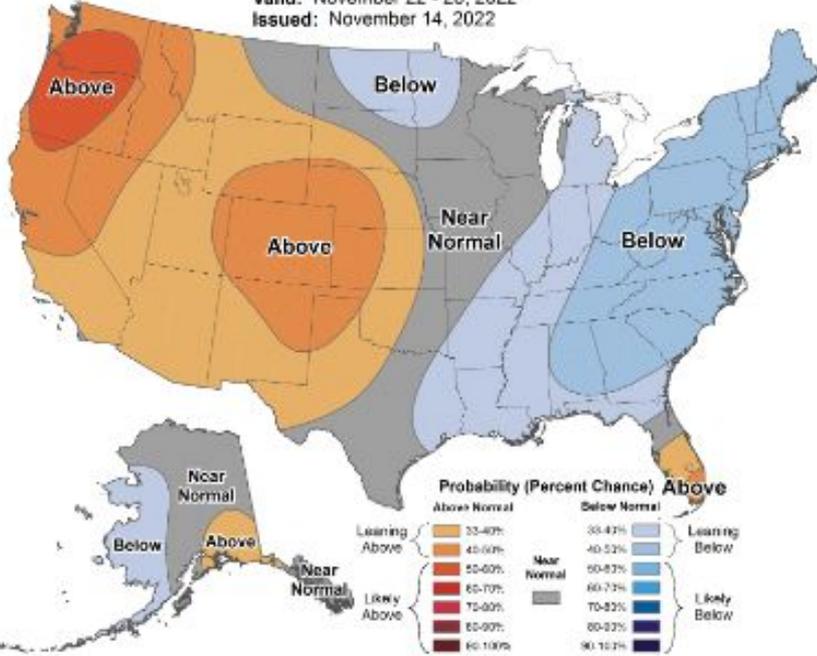
8-14 Day Outlook

www.cpc.noaa.gov



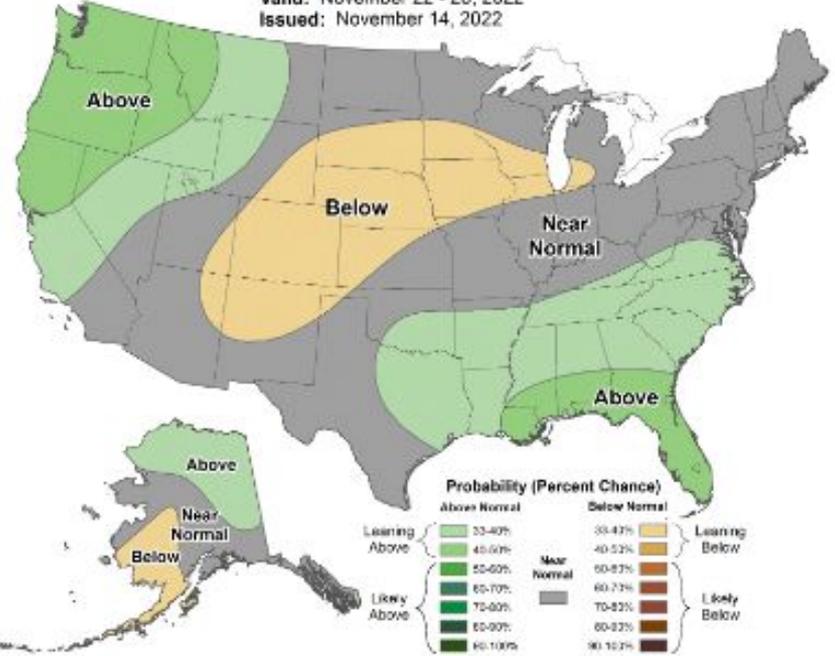
8-14 Day Temperature Outlook

Valid: November 22 - 28, 2022
 Issued: November 14, 2022



8-14 Day Precipitation Outlook

Valid: November 22 - 28, 2022
 Issued: November 14, 2022



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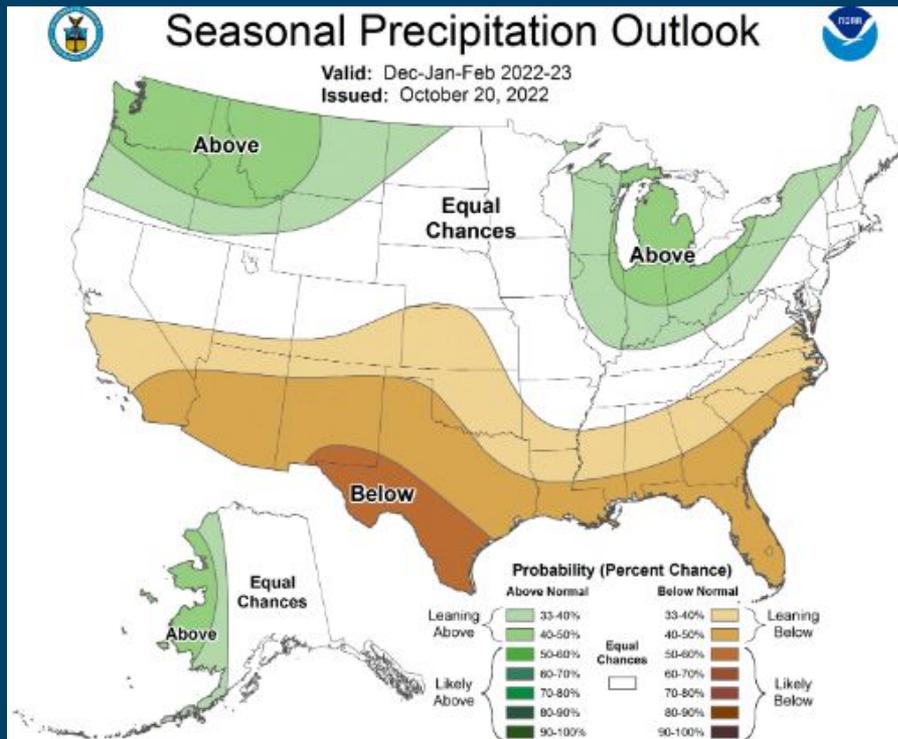
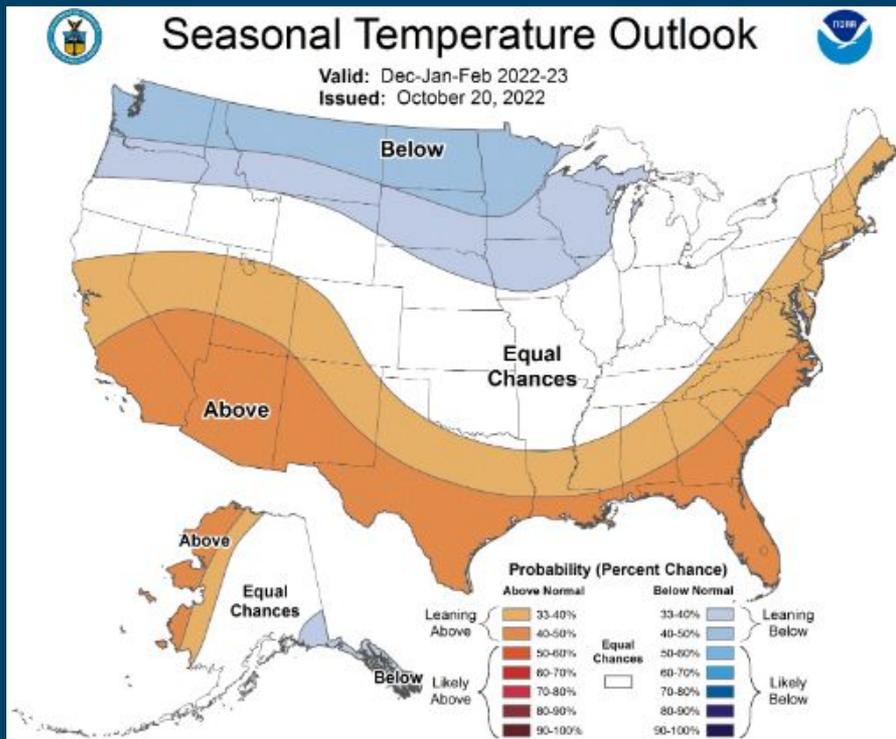
www.weather.gov/spokane



Three Month Outlook

December through February

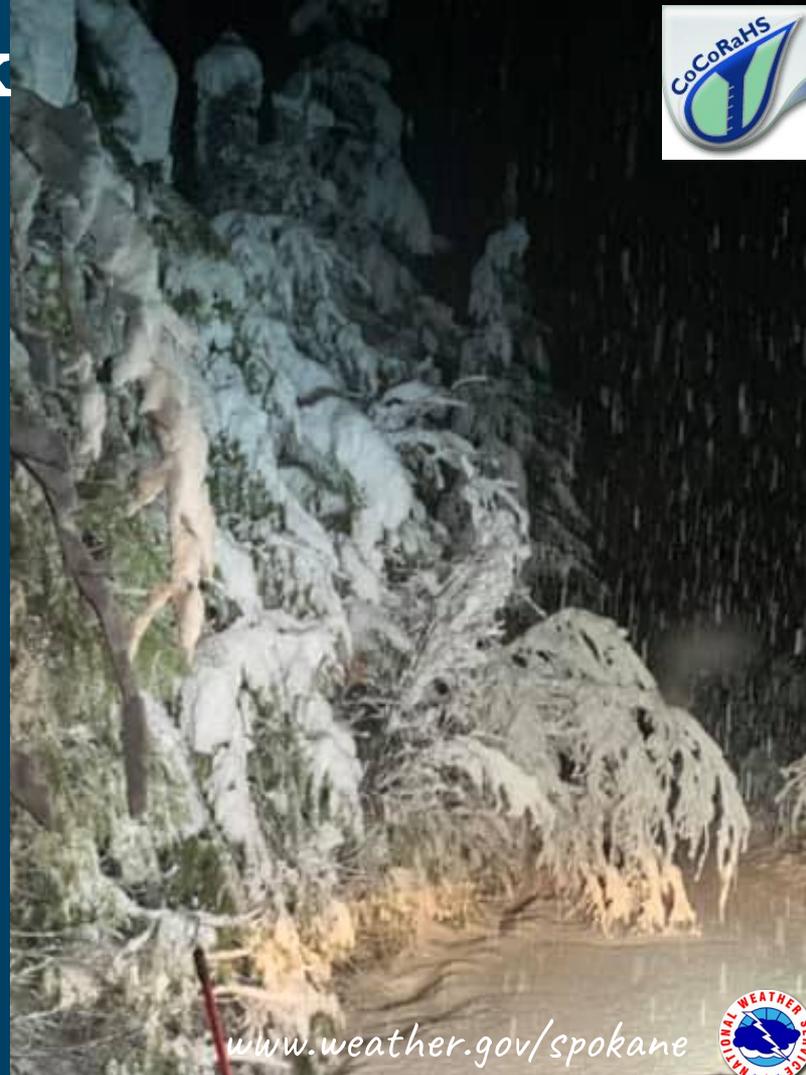
www.cpc.noaa.gov





Key Points – Winter Outlook

- La Nina will continue through the upcoming winter
 - Winter outlook - Elevated odds of cooler, wetter & snowery than normal
- Winter is HERE! Anticipate more storms with snow, ice, rain and wind, but not one storm makes a season.
- We look forward to your reports!





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



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Spokane, WA

www.weather.gov/spokane

