

Spotter & Observer Training for the Inland Northwest

FALL 2020



National Weather Service Spokane, WA

www.weather.gov/Spokane



Welcome to the NWS Spokane Spotter Training for the Inland NW – Fall 2020.

This is a Live Virtual Class

- ▶ Voice in Computer- no phone needed - headphones helpful
- ▶ All are in listen mode
- ▶ This will be interactive class. If you have a question?
 - ▶ Chat it in the Question box
 - ▶ Raise your hand and I can unmute you to talk to all
- ▶ Time planned for poll quizzes & questions throughout the training
- ▶ Handouts are available to view, download and print
- ▶ A longer time for Q & A will be offered at 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



The poll and questions options will be used the most. Some folks were confused on how to access it. Handouts has the spotter checklist and wind scale already attached. The hand to raise should pop up below the pencil tool. It can be used to get your attention.

Agenda

- Weather Spotter Program
- Role of National Weather Service & Tools
- Weather Hazards, Safety, and How to Report
- Getting the Word Out
- Other Ways to be Involved - CoCoRaHS
- Long Range Outlook

1 Poll Question



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Agenda

To our current Weather Spotters THANK YOU!



Eyes and Ears of the National Weather Service
1,200+ Weather Spotters in the Inland NW



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First and foremost, to our current weather spotters – A big thank you. We appreciate your service, your hard work and your reports. You are the eyes and ears of the NWS. According to our records, we have over 1200 weather spotters registered across the Inland NW, although active membership is just a fraction of that.

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
- ▶ So if you are interested, stay tuned to learn more



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National Weather Service
Citizen Science



To those new to the program, weather spotters are weather enthusiasts who volunteer their time to report severe or hazardous weather. They can simply call a phone number or report online. So if you are interested, stay tuned.

New to the program?

What is CoCoRaHS?

- ▶ Community Collaborative Rain, Hail and Snow Network
 - ▶ Daily observations of rain, snow and hail
 - ▶ Rain gauge and snow ruler needed
 - ▶ Online reporting

▶ So if you are interested, stay tuned to learn more



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To those new to the program, CoCoRaHS observers volunteer to report precipitation. If interested, stay tuned.

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



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More on the National Weather Service

- * 23 Employees
 - * Meteorologists
 - * Technicians
 - * Hydrologist
 - * Administrative
- ▶ Duties
 - ▶ Observations -Weather Balloon
 - ▶ Forecasts - Out to 7 days
 - ▶ Weather Watches & Warnings
 - ▶ Staffed 24/7

NWS Spokane

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More on the NWS Spokane

Forecast area of Responsibility

- ▶ **Quite diverse** – Eastern Washington & North Idaho
 - ▶ Spans from the northern Cascades to the MT border
 - ▶ Spans from the BC border to just north of the Tri Cities

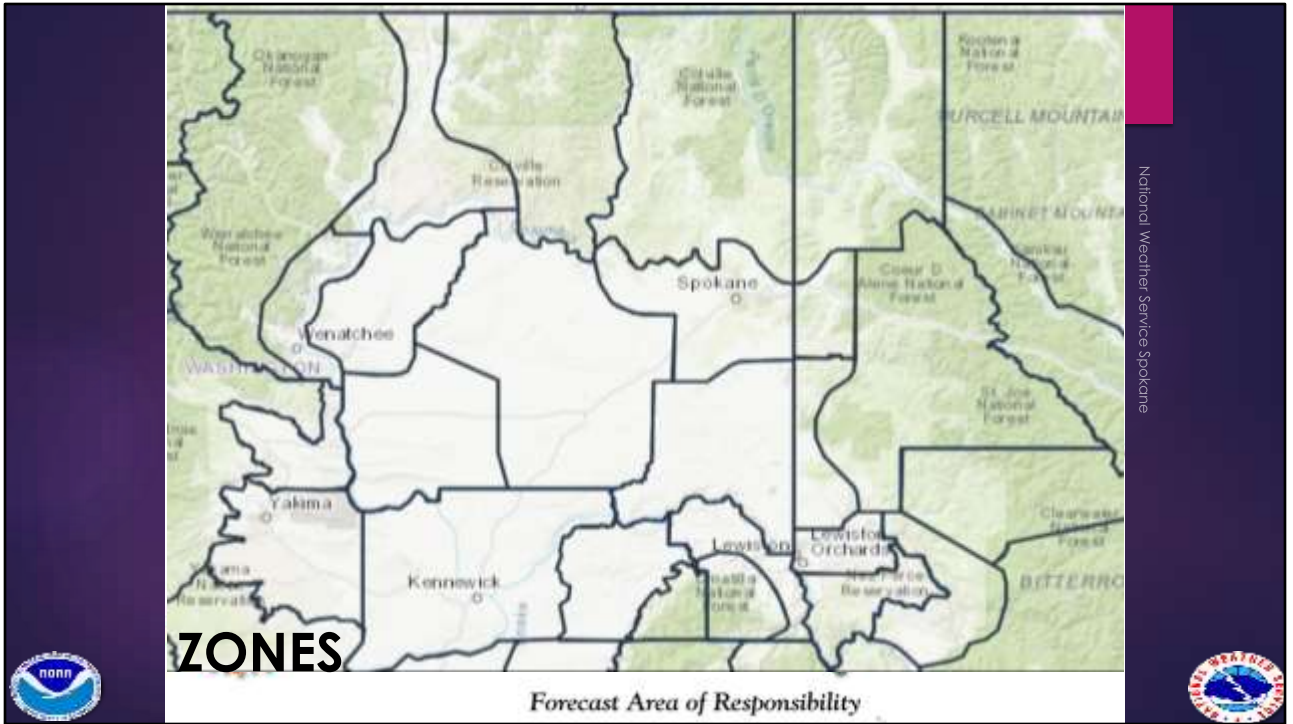
Main weather concerns change with the season & include:

- ▶ Winter storms – snow, ice, rain and wind
- ▶ Flooding – river flooding and flash flooding
- ▶ Fire weather – wind and dryness, lightning and smoke
- ▶ Thunderstorms – hail, wind, rain and lightning

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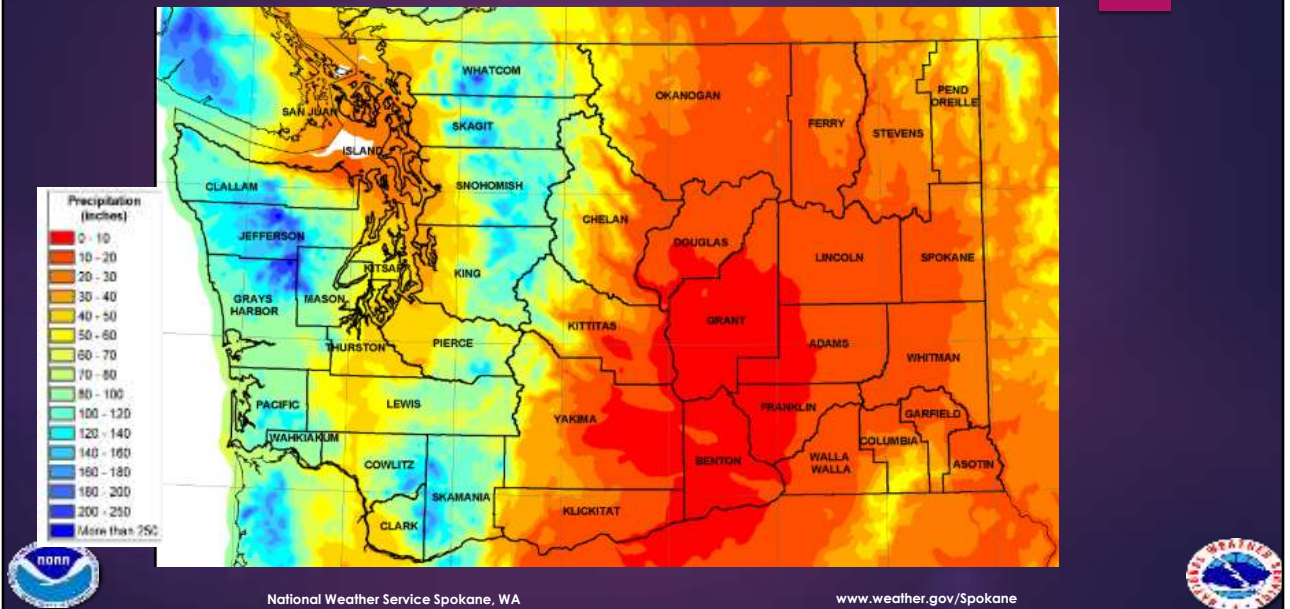


Forecast area of responsibility and main weather concerns changes with the season



Counties vs zones

Terrain Makes All the Difference



The zones are dependent on the climate areas. Terrain makes all the difference with the weather from the west side vs. the east side of the Cascades as you can see in the average annual precipitation

NWS Observations & Tools



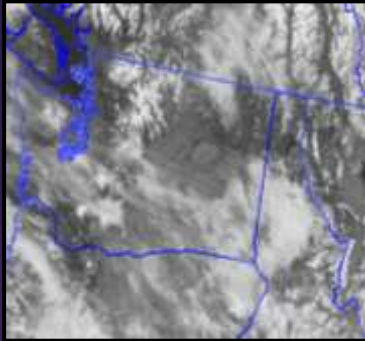
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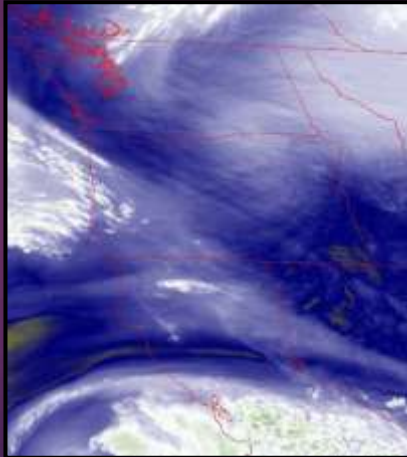
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The NWS uses various tools to observe, forecast and warning on impending severe weather – including weather balloons, satellites and radar.

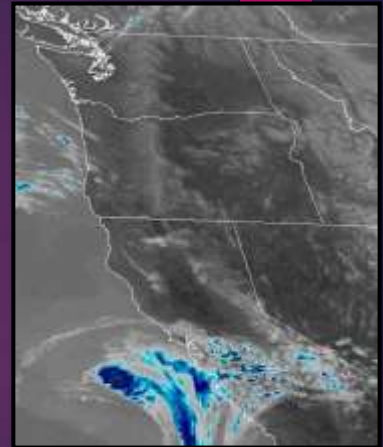
Weather Satellites – Many Channels



Visible Image



Water Vapor
Image



Infra-red
Image



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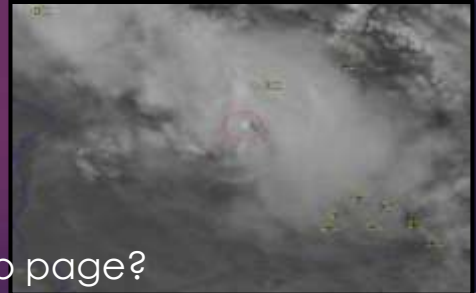
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Geostationary weather satellites are commonly used. These satellites orbit above the earth and take images of the atmosphere. They offer many channels – include visible, infra-red and water vapor

Weather Satellites

- ▶ Higher resolution pictures: GOES 17
- ▶ 16 different channels
- ▶ New images every 5 minutes
- ▶ Earlier detection:
 - ▶ Thunderstorms
 - ▶ Wild fires
 - ▶ Fog



Where to find on NWS Spokane web page?
Current conditions tab - Satellite

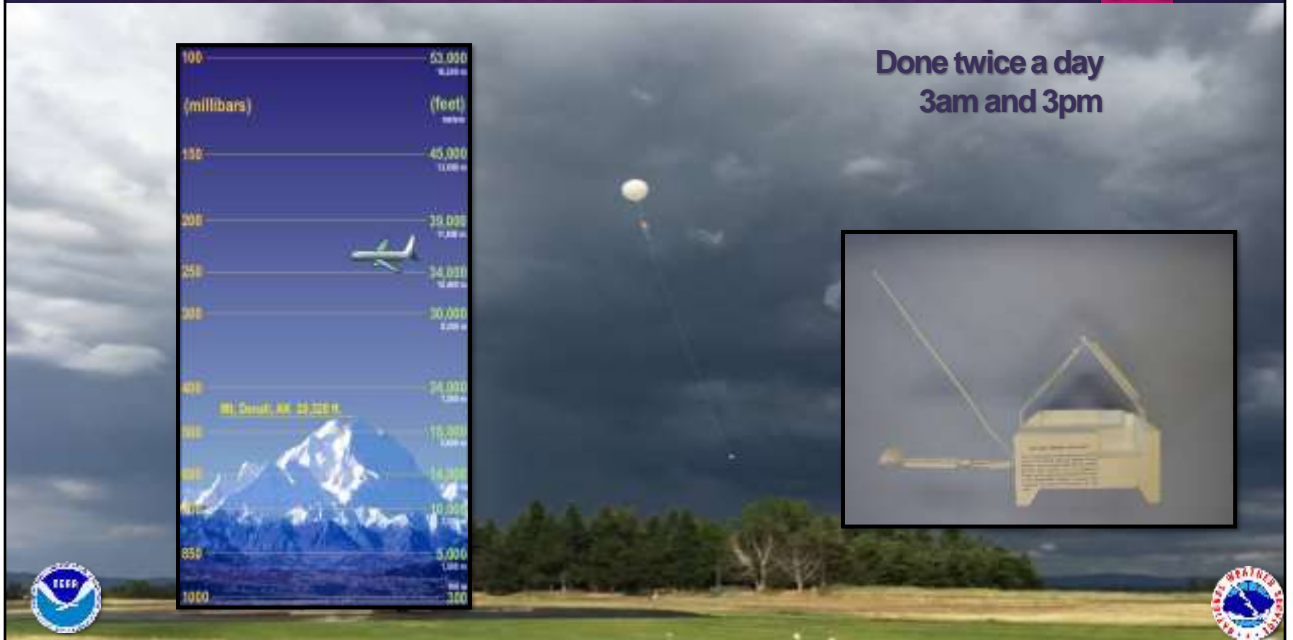


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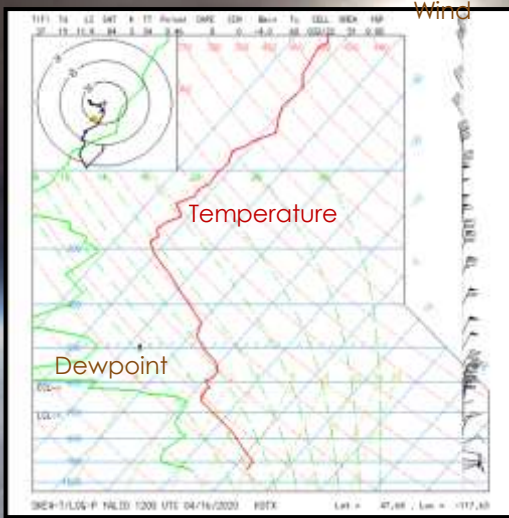
Stats on satellites. GOES 17 is now GOES west, launched in 2018. It has high resolution images.

Weather Balloon - Radiosonde



The NWS Spokane does launch weather balloons, and has done so for almost 80 years. It's done twice a day everyday.

- Twice a day; every day
- 92 Upper Air sites across the U.S.
- About 100,000 ft (~19 miles) high
- One hour and 45 minutes flight
- After the balloon pops, a parachute opens and it falls back to the earth
- Less than 20% are recovered and mailed back
- Radiosonde chart gives a profile of temperature, dewpoint, winds through a column of the atmosphere.



NWS Spokane web page:
Forecasts tab – Forecast models



Photo courtesy of Earth to Sky Calculus



Here's more stats on radiosondes

Doppler Weather Radar

Painting of the dome



Installed in 1995 – Pedestal Replacement 2019

Size of Dish – 30 ft diameter



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159 Radars across the country

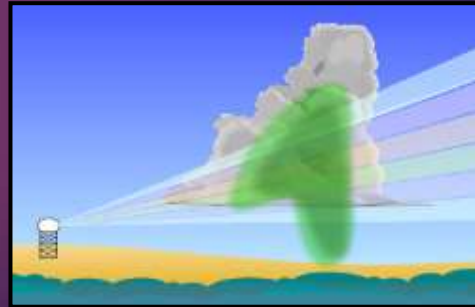
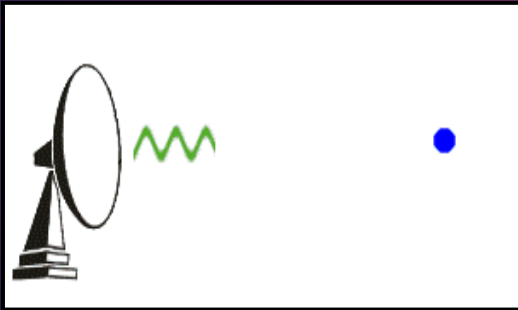
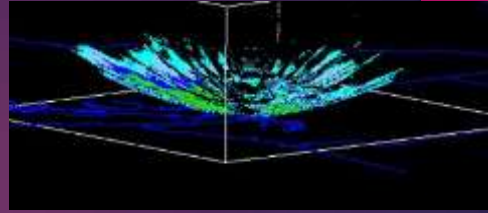
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Weather radars aid in the identification of precipitation and severe weather.

How the Weather Radar works

- ▶ Radar sends a radio signal - pulse
- ▶ Listens for a return signal
- ▶ Rotates 360 degrees = "slice"
- ▶ Multiple slices at higher elevations
- ▶ Completes a "volume scan" 4-8 min



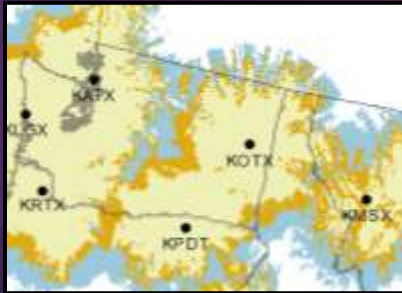
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How they work.

Weather Radar Limitations



Beam Blockage
Undercutting distant storms



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Limitations include beam blockage by terrain and undercutting distant storms.

Surface Observations & Web Cams



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Automated weather sensors give frequent reports of temperature, moisture, winds, pressure and cloud cover. Many partner agencies have them as well, including DOT and Forest service. Yet they have limitations as well. A network of web cams is also very useful, especially along heavily traveled highways.

Supercomputers & Models

High resolution models can give updated forecast data 1 to 6 hours!



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NWS has a network of supercomputers, used to ingest the various weather data and run forecast models. High resolution weather models can give new output every 1-6 hours.

Why need spotters & observers?

- Current radar & satellite limitations
- Report events not seen by radar or satellite
- Fill in the “holes” not seen by observations & web cams
- Ground Truth on events
- Goal – maximize warning effectiveness and lead times

(Coverage Below 10,000 ft)



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Google



Yet, despite all of the increase in technology, we still need weather spotters. Due to limitations in radar, satellites and observations, there are holes that need to be filled. Ground truth is needed since what we see on satellite or radar, may not be reaching the ground. The goal is to maximize warnings and lead times to product the public. So let's learn more....

#2 Poll Question



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 (mntns)

Poor Visibility: 1/2 mile or less

Travel Problems: due to weather

Damage, Injury or Loss of life: ANY

Excessive Heat: ANY

Excessive Cold: ANY

NWS Spokane: 1-800-483-4532

Logos: NOAA, SKYWARN, NWS Spokane, National Weather Service Spokane, weather.gov/Spokane

Here's the weather spotter checklist designed for the hazards across the Inland NW.

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



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Easiest way to report by phone

How Spotters Report – Just as easy Online Reports

www.weather.gov/Spokane



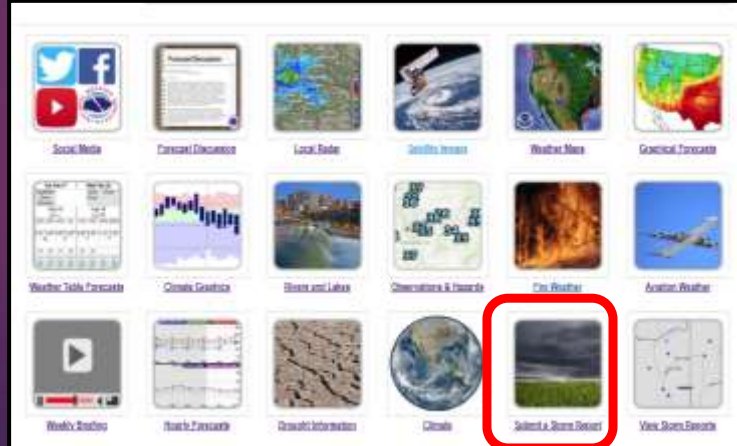
Storm Reports
Alerting the NWS to local weather

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

Please select a report type

Back Next

[Privacy policy for weather reports](#)



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Just as easy - online

Share weather data - Social Media

Twitter

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

FaceBook

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



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We are active on social media. A great way to share reports. Currently FB is locked out, but hope to revive it soon.

Share weather data - Email Photos

nws.spokane@noaa.gov



If ARES/RACES Hams, relay report to your central collection point.

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Send any pictures to our office email account.

What's in a Spotter Report

- **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**



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What is in a spotter report?

Spotter Report

This is John Ceesall, Spotter Spokane 85 calling from my home on the South Hill. There is currently a heavy snow falling with about 2" on the ground. It began about 30 minutes ago.



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A good spotter report

Spotter Report

This is Judy Sprinkles, Latah 33. It's pouring out. I was driving along Highway 95 south of town near Zeitler Rd. I saw lots of standing water on the roadway and in the ditches. There was a car that slid off the road. I plan to send you a photo of all the water in my yard!



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Another good spotter report

Spotter Report

Hi there, how are you doing? Who is this?Well hi Greg! I'm a spotter in Boundary County. It's windy here. The news says it's much worse to the south. Are we going to get another storm? I don't want to lose a tree....How long is it supposed to last?



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A spotter report that needs improvement – remember to give your location, what you're reporting and when.

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



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Emails are Important

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

- An upcoming WIDESPREAD Severe Weather Risk or Winter Storm event.
- Quarterly newsletter and upcoming training opportunities.



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Emails are very important. It's a good way to share data.

#3 Poll Question



Cold Season Hazards



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Heavy Snow



Heavy Snow!
4"+ in 12 hours

Please Report:
First Snow of the Season
Then at least 2" new snow



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Snow reports are the most common in the cold season.

What Criteria Must Be Met To Be Considered a BLIZZARD?

WIND

35 mph or greater

BLOWING SNOW

VISIBILITY

1/4 mile or less

TIME

At least 3 hours



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Blizzards are winter storms with a well defined criteria.

Wintry Mixed Precipitation

- Freezing rain or Freezing drizzle
- Sleet
- Snow to Rain OR Rain to Snow
- Ice accumulation over $\frac{1}{4}$ inch = Ice Storm Warning!



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Mixed precipitation includes freezing rain, sleet or changing precipitation.

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 27, 2019



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Strong damaging winds.

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 | 4 | 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 | 21 | Fresh breeze | Smaller trees sway. |
| 6 | 25-31 | 27 | Strong breeze | Large branches in motion. Whistling heard in overland water. 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 rattle 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. |



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Beaufort Wind scale

Heavy Rain

- Report heavy downpours or long periods of rain
- 0.50"+ in 1 hour - convective
- 1"+ in 12 hours or
- 1.5"+ in 24 hours – stratiform – a long steady rain



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We describe rain as either showery or stratiform. Showery rain some with thunderstorms. Stratiform is a long duration rain. Both can lead to flooding if too much rain falls at one time.

Flooding and Ice Jams

Rising water on rivers, streams & low lying areas



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Flooding can be a concern in the cold season when the ground is frozen and there is rain with rapid snow melt. Ice jams occur when ice breaks up on rivers and streams that were once frozen.

Mud and Debris Flows

Water-saturated rock, mud & debris moving down a slope



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Too much rain can cause mud slides and debris flows. Areas most susceptible are steep slopes or burn scars.

#4 Poll Question



Typical Winter Storm Scenarios

- 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

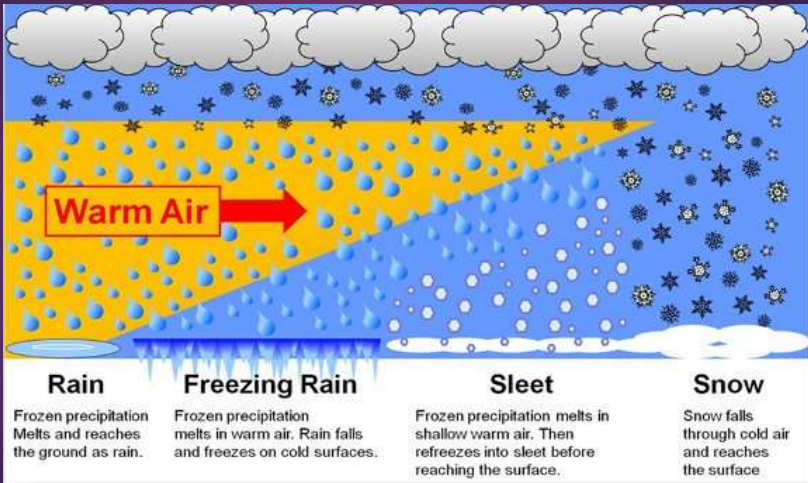


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The Vertical Temperature Profile is Critical!



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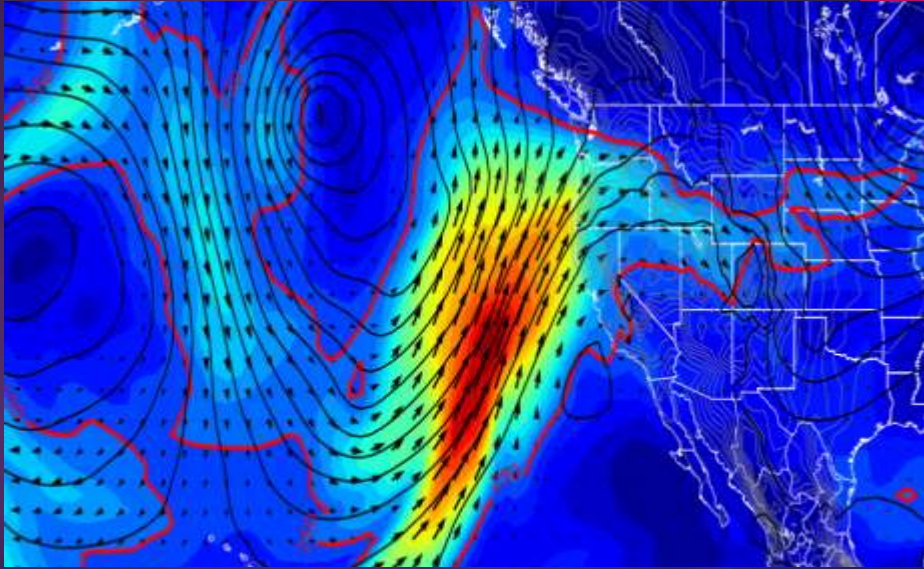
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Atmospheric Rivers

Also known as
"Pineapple"
Express

Plumes of
atmospheric
moisture –
Mild & Wet



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Atmospheric Rivers bring mild and wet weather to the region as plume of abundance atmospheric moisture.

Atmospheric River Events

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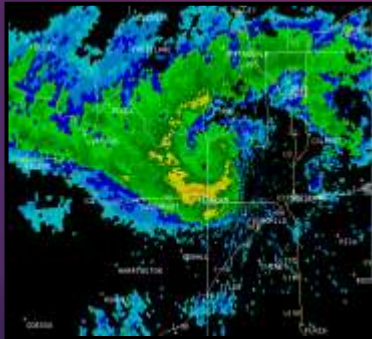


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Many atmospheric river events lead to flooding and landslides.

Small Scale Unstable Low

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



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Cold unstable airmasses can lead to snow squalls and intense snow showers.

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

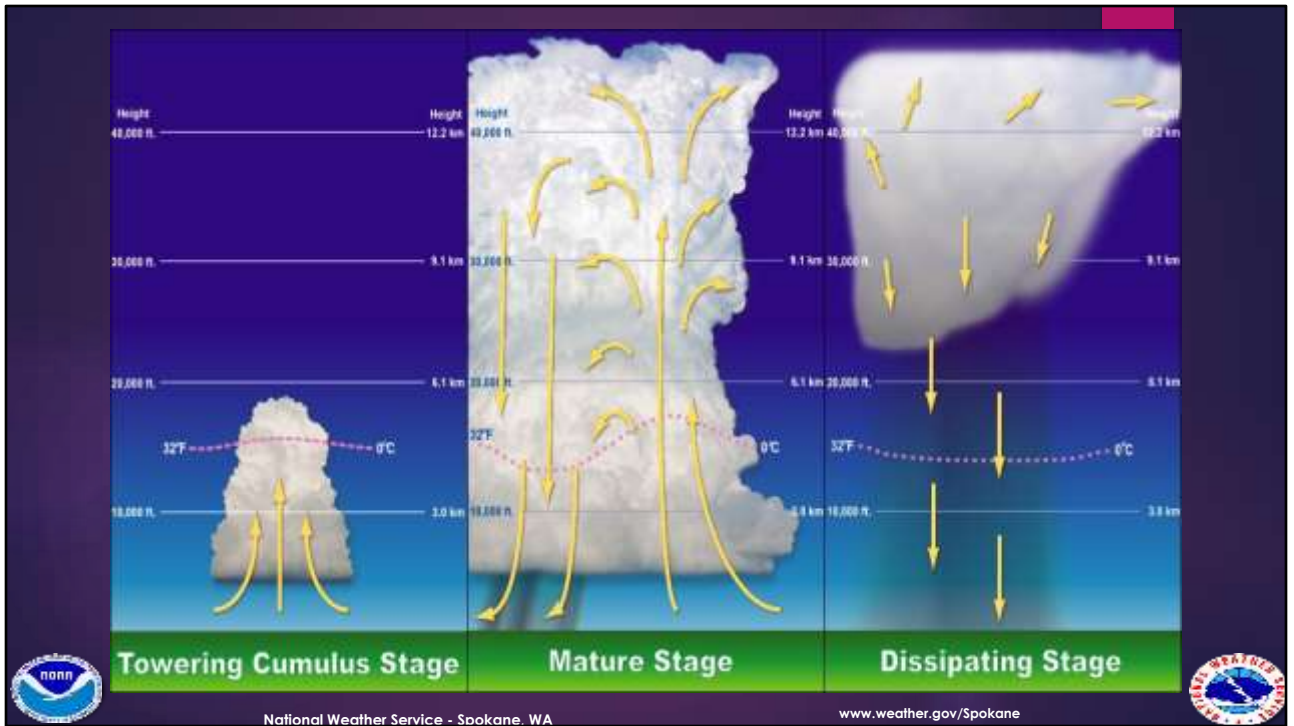


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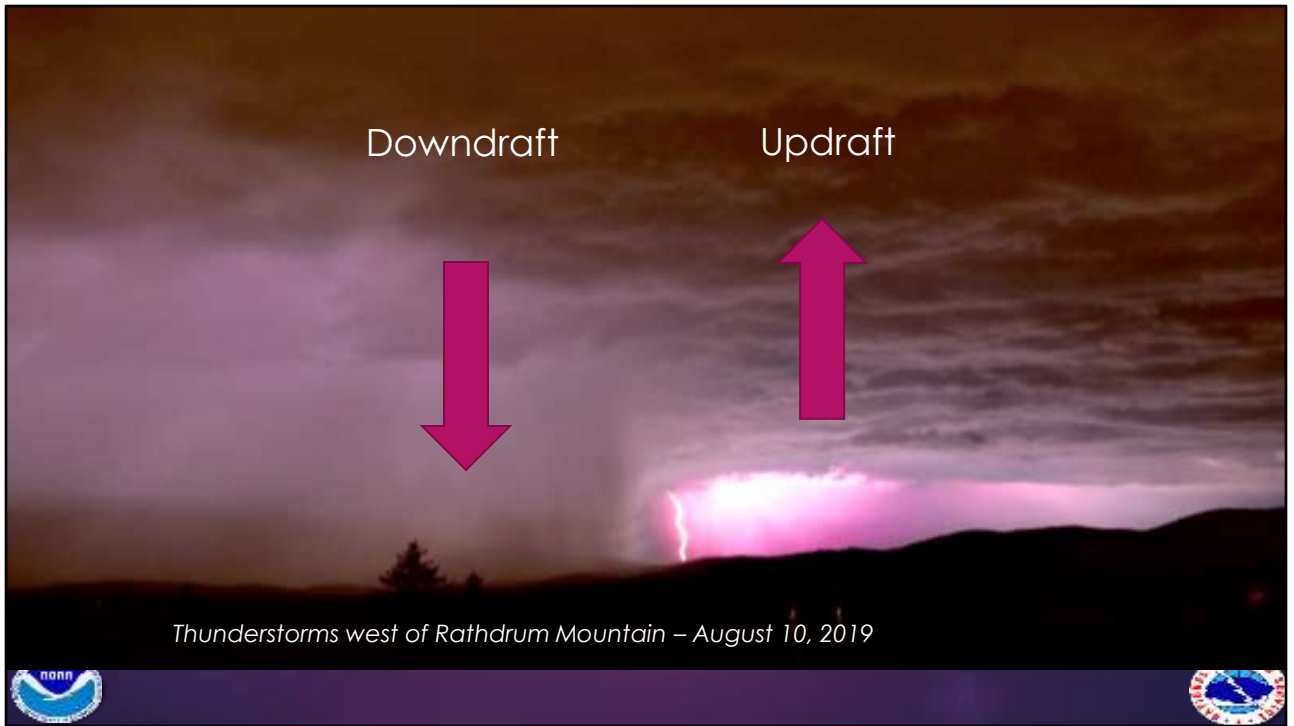
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The three ingredients for thunderstorms.



The three stages in thunderstorm development



Thunderstorms west of Rathdrum Mountain – August 10, 2019

From this thunderstorm image, can you tell the difference between the updraft and downdraft?

What is a Severe Thunderstorm?



WIND
 ≥ 58 mph



Or



HAIL
 ≥ 1 '' in diameter



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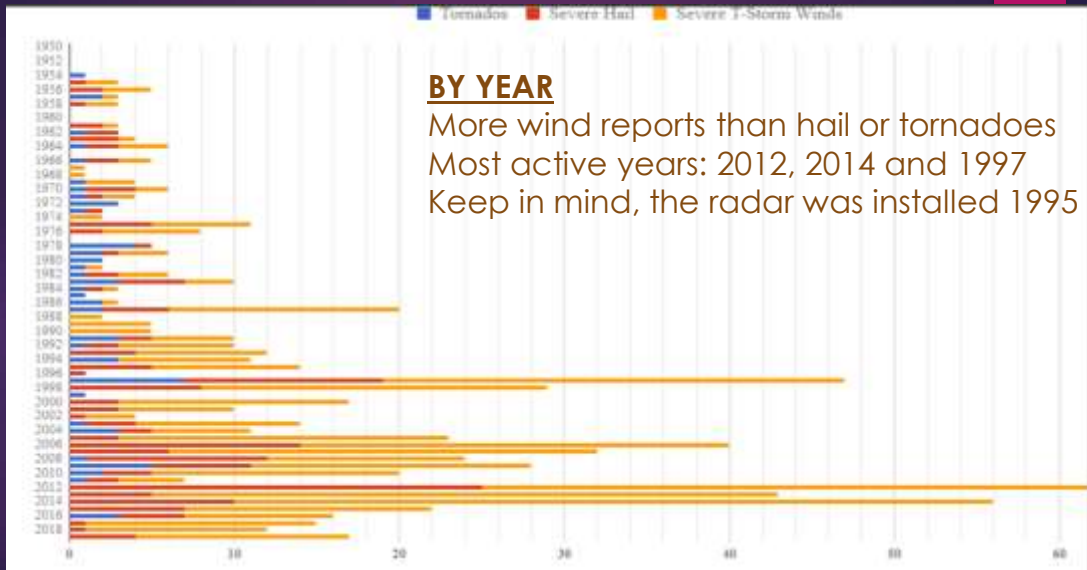


What makes a thunderstorm severe? It's the hail and wind. Same standards nationwide.

#5 Poll Question

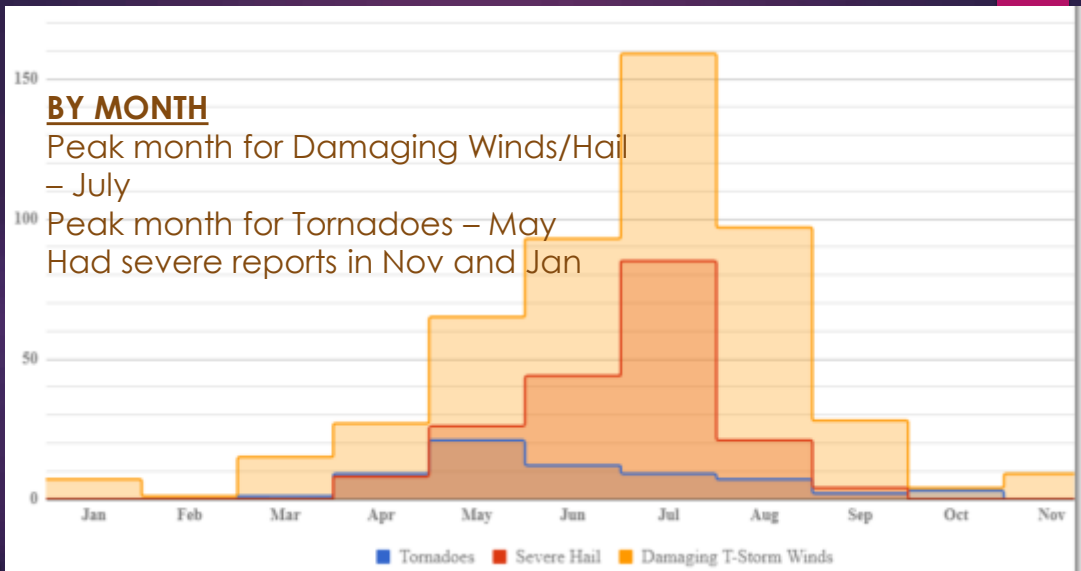


Local Severe Weather Climatology



Here's a list of all the severe weather reports across the Inland NW since 1950.

Local Severe Weather Climatology



Here's a break down of severe weather by month. Notice the trends.

Supercells....

Not your ordinary
thunderstorms



Yes – we see supercells in our region. They are rotating storms.



Here's another image of supercell and the tell-tale signs. Flanking line in the updraft region. Overshooting top looking like cauliflower head. The anvil shield of the cumulonimbus.

Cloud Types



Some clouds seen in our region. Most common winter clouds are stratus clouds. Fair weather cumulus are common as well.

Tornadoes vs Funnel Clouds

- Funnel clouds stay aloft AND Tornadoes reach the ground

In doubt, check for debris near the ground



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Funnel clouds are not the same as a tornado



"Graupel" vs. "Hail" vs. "Sleet"

What Do These Terms Mean?



Graupel



Hail



Sleet



Graupel showers are experienced in the late winter and spring. They are made up of snow pellets or snow encased in ice and look like Styrofoam balls. Hail is made up of layers of ice in showers or thunderstorms. Sleet is formed from rain drops freezing into balls of ice and not necessarily from convective clouds.

Dust Storms



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Strong winds and dry conditions can kick up dust and dirt and make it airborne, reducing visibilities. These can be called haboobs. Recently we've experienced blowing dust on I-90 just this month from strong winds.

Lightning



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Lightning comes with each thunderstorm and can be hazardous if you are caught in the storm. Research has shown the more frequent the lightning strikes, the stronger the storm.

Weather Spotter Safety

- Personal Safety - #1 priority
- Adhere to ACES concept
 - Awareness, Comms, Escape Route, & Safe Zone
- Be extra careful at night
- Never put yourself in harm's way.
 - Don't drive through flooded roadways
 - Don't travel through downed power lines
 - Don't be too near fallen objects or structures
- Stay current on the weather



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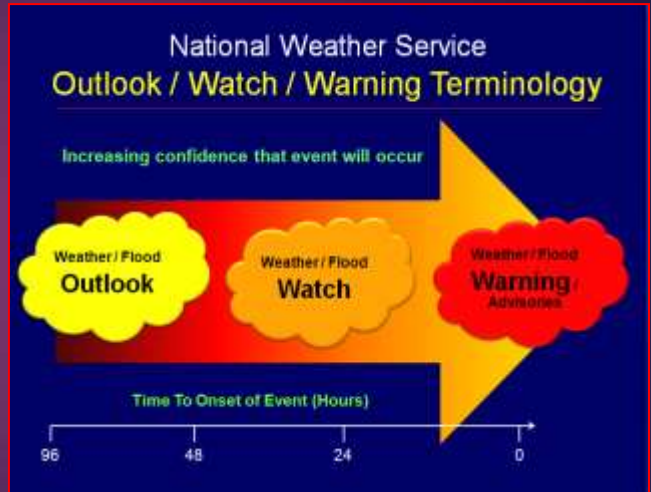
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Please remember to be safe while being a weather spotter.

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



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SPC coordinates with the local offices on spreading the word on severe thunderstorms. Based on confidence and timing, different products are issued. They include: Outlooks, Watches, Warnings and Advisories.

NWS Weather Warnings

Short Fused

- Tornadoes
- Severe Thunderstorms
- Flooding



- Snow, Ice, & Cold
- Wind
- Fire
- Freeze



Long fused



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These are the types of weather warnings issues the NWS. Those in orange are short fused warnings – lasting minutes to an hour or two. Those in blue are long fused warnings – issues for hours to a day or so.

#6 Poll Question



Stay Informed NOAA Weather Rad



Continuous operation.

Battery backup capable.

Handheld device great for
outdoor activities.

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



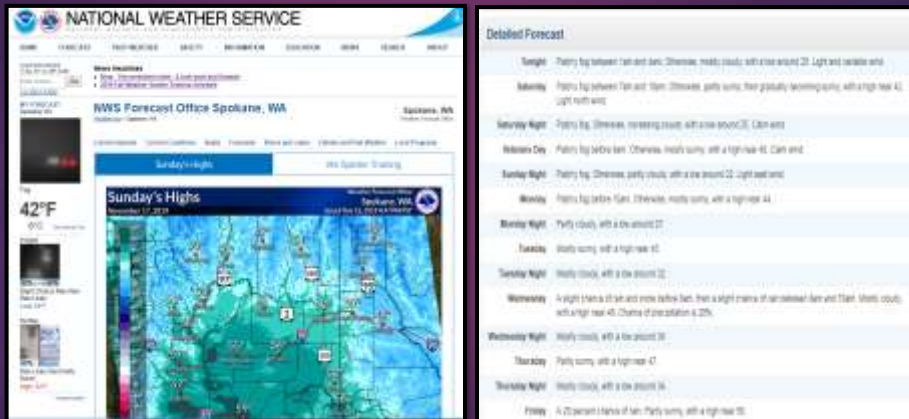
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Stay informed with NOAA weather radio for current warnings and forecasts. These work well when a transmitter is close by and can alert when a short fused warning is issued for your location.

Stay Informed NWS Spokane Web Page



The screenshot displays the National Weather Service website for Spokane, WA. The page features a navigation bar at the top with links for Home, Forecast, and other services. Below the navigation bar, there is a section for "NWS Forecast Office Spokane, WA" and a "Sunday's Highs" section with a temperature of 42°F. A weather map is visible, showing the current weather conditions for the region. To the right of the map is a "Detailed Forecast" section, which provides a day-by-day forecast from Sunday to Friday, including temperature ranges and weather conditions.

| Day | Forecast |
|-----------------|--|
| Sunday | Partly fog between rain and sun. Otherwise, mostly cloudy with a low around 20. Light and variable wind. |
| Sunday Night | Partly fog between rain and sun. Otherwise, mostly cloudy with a low around 20. Light and variable wind. |
| Monday | Partly fog between rain and sun. Otherwise, mostly cloudy with a high near 43. Light north wind. |
| Monday Night | Partly fog. Otherwise, increasing clouds with a low around 33. Clear wind. |
| Tuesday | Partly fog between rain and sun. Otherwise, mostly sunny with a high near 43. Clear and light north wind. |
| Tuesday Night | Partly fog. Otherwise, partly cloudy with a low around 32. Light northeast wind. |
| Wednesday | Partly fog between rain. Otherwise, mostly sunny with a high near 44. |
| Wednesday Night | Partly cloudy with a low around 31. |
| Thursday | Mostly sunny with a high near 43. |
| Thursday Night | Mostly cloudy with a low around 32. |
| Friday | A night shower of rain and snow before sun, then a slight chance of rain between late and 11am. Mostly cloudy with a high near 45. Chance of precipitation is 25%. |
| Friday Night | Mostly cloudy with a low around 30. |
| Saturday | Partly sunny with a high near 47. |
| Saturday Night | Mostly cloudy with a low around 34. |
| Sunday | A 20 percent chance of rain. Partly sunny with a high near 39. |



National Weather Service - Spokane, WA

www.weather.gov/Spokane



NWS web page is great way to stay informed online. There is a map that highlights the current weather products out for the region. Plus the map is clickable to get an individual forecast for your area.

Stay Informed On Your Phone

Mobile.weather.gov



National Weather Service



Mobile.Weather.gov
Smart Phone Enabled



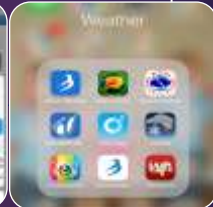
Type in desired location
Hit 'Go'



Up pops current
conditions, hazards, and
forecast



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



Home Screen



www.weather.gov/Spokane



You can stay informed on your phone. Just go to mobile.weather.gov, request your location and add to homescreen.

Staying Informed On Your Phone!

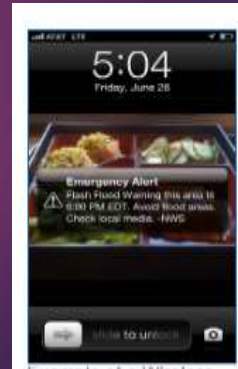


Weather Warnings

- ▶ 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



National Weather Service Spokane



Your phone can pick up Wireless Emergency Alerts for several extreme weather warnings.

Other Ways to Get Involved

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



National Weather Service - Spokane, WA

www.weather.gov/Spokane



We covered much of what is needed to be a weather spotter. Now we will discuss other ways to get involved.

Love the snowy & rainy days?
Want to join a team of volunteer
precipitation observers?

Join CoCoRaHS Today!

(Community Collaborative Rain Hail and Snow Network)

It takes four easy steps!

1. Register



2. View online training



3. Purchase rain gauge
& snow ruler



4. Record and report
observations



Learn more and register at cocorahs.org



Join the Community Collaborative Rain Hail and Snow Network.

Community Collaborative Rain, Hail and Snow Network

www.cocorahs.org

<https://maps.cocorahs.org/>

Who uses CoCoRaHS Observations?

| Units | Multi-day | Rain | Hail | Cold/Frost | ET |
|--------|-----------|------|------|------------|----|
| 10,035 | 80 | 1 | 0 | 10 | 31 |

24-hour Precipitation
Nov 5, 2020
10:51 am EDT

- RA
- HA
- F
- 0.00 - 0.01 in
- 0.01 - 0.21 in
- 0.21 - 0.50 in
- 0.50 - 0.91 in
- 0.91 - 1.25 in
- 1.25 - 2.25 in

Cocorahs – measuring precipitation plus there is a great map to display the reports for the entire country.


Rain Measurements

- Getting a Rain Gauge – www.weatheryourway.com
- Set it up in an open area, preferably away from trees
- Reading a Rain Gauge



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 the making your daily rain measurements.

National Weather Service Spokane



Rain measurements are quite straight forward. You will need a standard 4" rain gauge that you can get online. Then read it & report daily, even report zeros.

Snow Measurements

- **Snowfall:**
New snow in tenths of an inch
- **Snow water equivalent (SWE):** Melted snow
- **Snow depth:**
Total of new & old snow on the ground



Snow measurements get a bit more involved. This includes: snowfall, melted down snow in the gauge and snow depth (total snow on the ground). There are great videos available on the cocorahs web site to assist you.

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



National Weather Service - Spokane, WA

www.weather.gov/Spokane



If you have a weather station and can hook it up online, consider joining the CWOP program. It's a great way of sharing weather data from your location.

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-nomr](#)
[Search CWOP](#) or [shortform](#)

Related Links:

[CWOP info](#)
[APRS-IS info](#)
[findu.com info](#)
[FAQs/Forums](#)
[Solar Radiation](#)
[MADIS Program](#)
[APRSWNET 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:](#)



Here is what the CWOP web page looks like to get details.

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



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www.weather.gov/Spokane



As you can see there are different programs, at different levels and they are all useful to the NWS



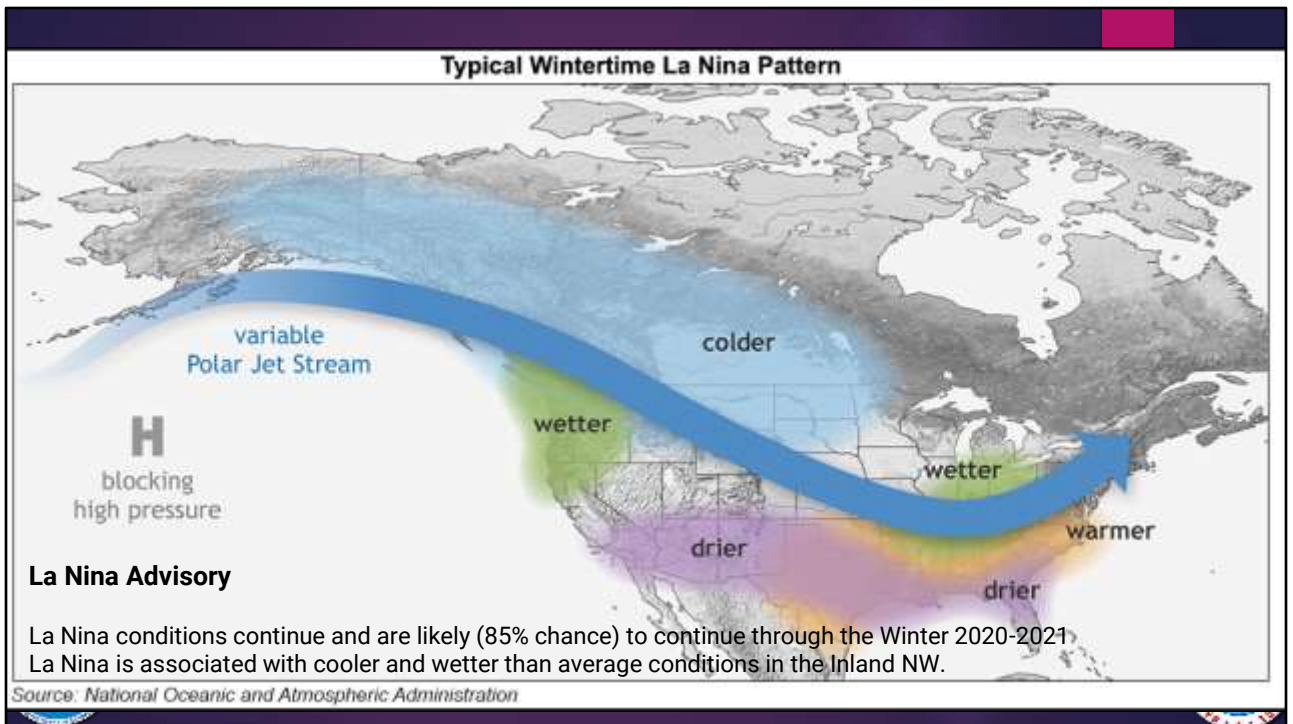
Winter Outlook 2020-2021



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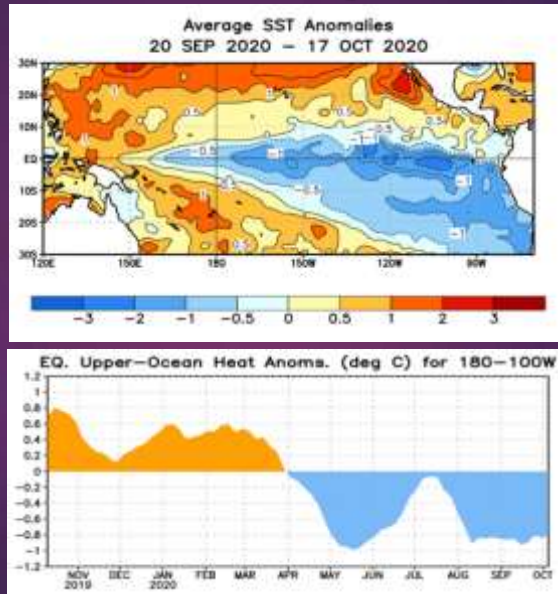


La Nina conditions continue and are likely (85% chance) to continue through the Winter 2020-2021
 La Nina is associated with cooler and wetter than average conditions in the Inland NW.

Sea Surface Temperatures

National Weather Service Spokane

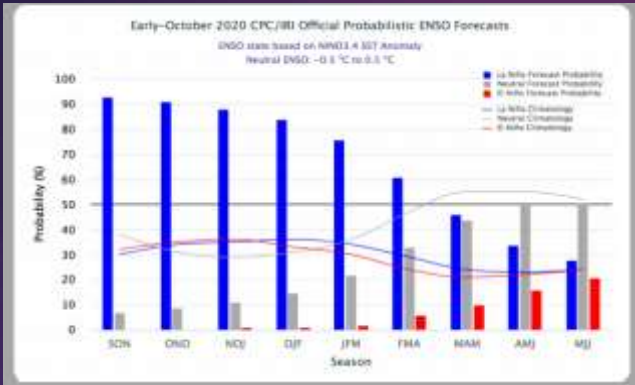
La Nina is associated with cooler than normal sea surface temperatures along the equator in the central Pacific Ocean.



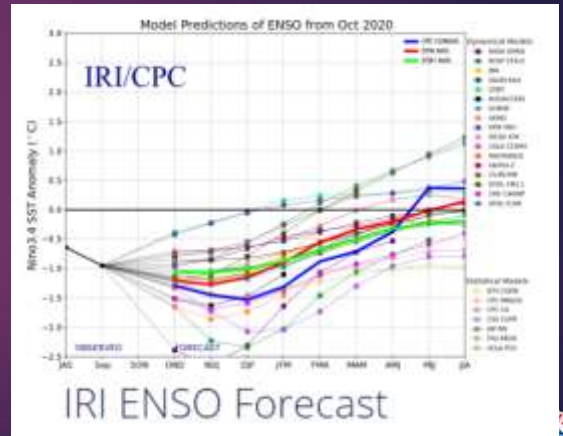
These cooler than normal SSTs conditions have been developing for about the last 6 months.



ENSO Seasonal Forecasts



La Niña is likely through the Winter 2020-2021 with a 60% chance continuing through the Spring 2021.

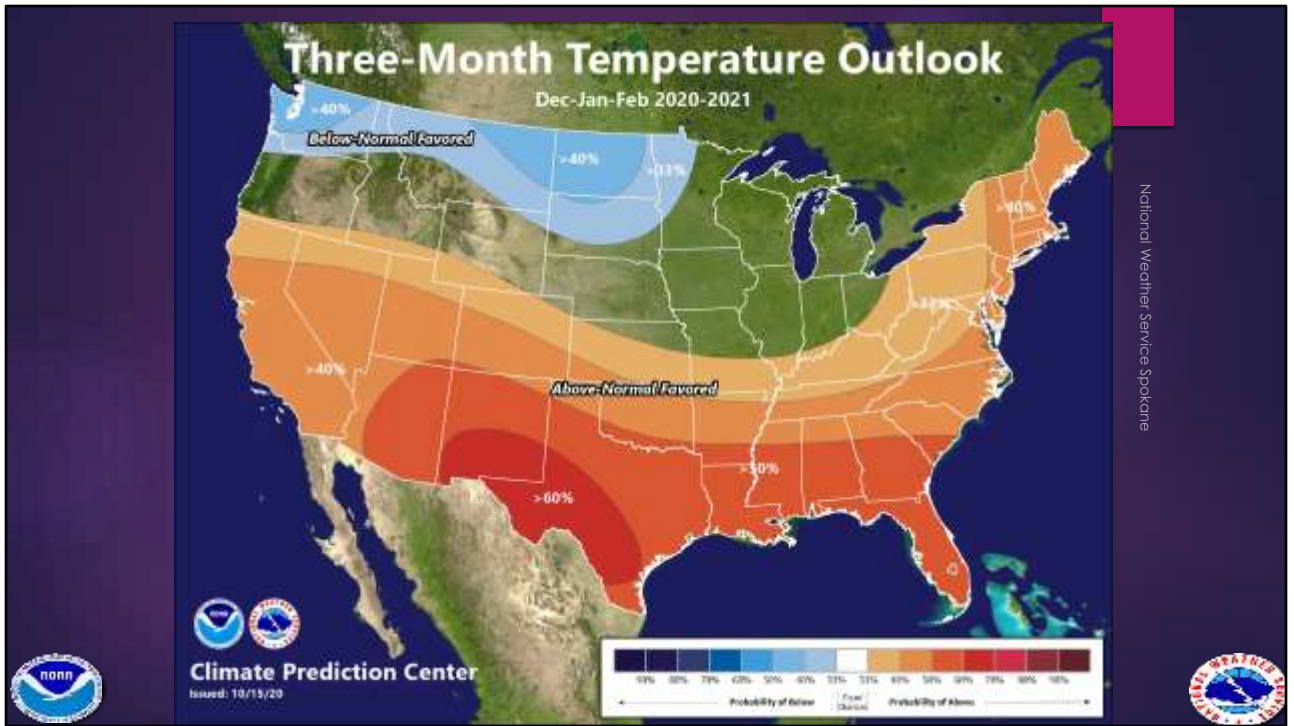


National Weather Service Spokane, WA

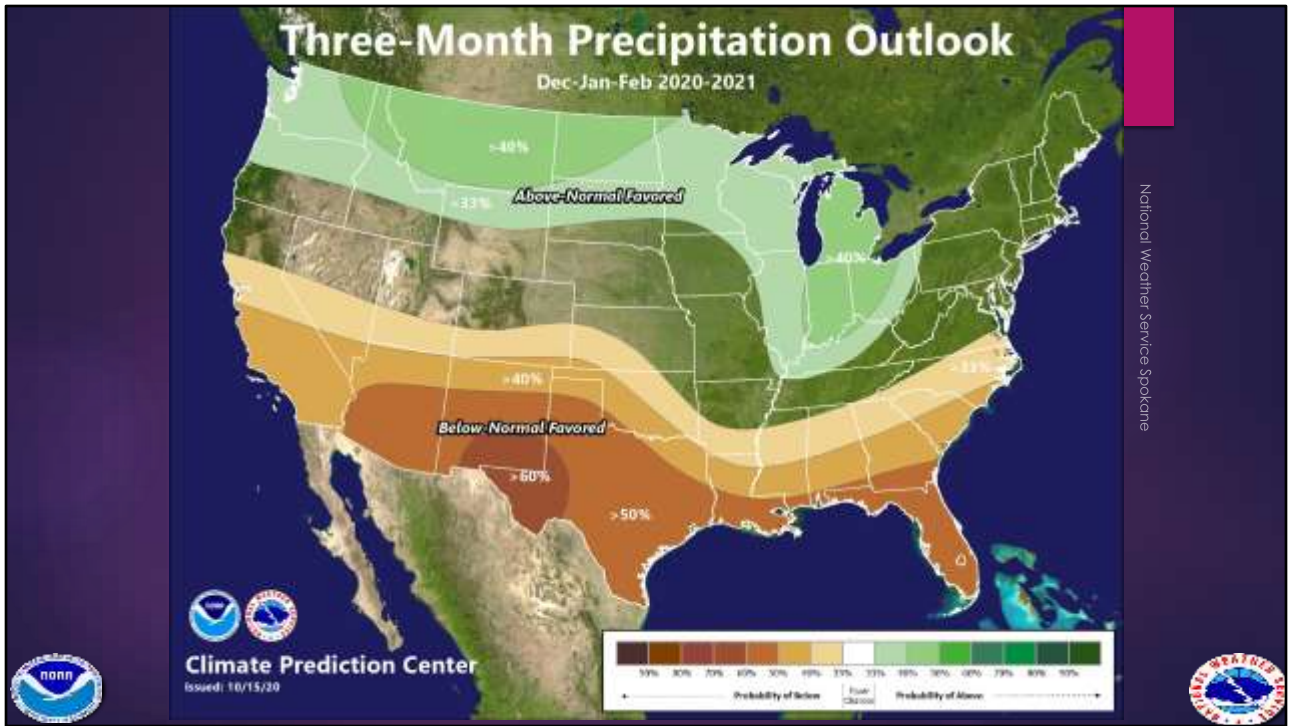
www.weather.gov/Spokane



The climate models are leaning toward La Niña conditions.



Winter temperature outlook

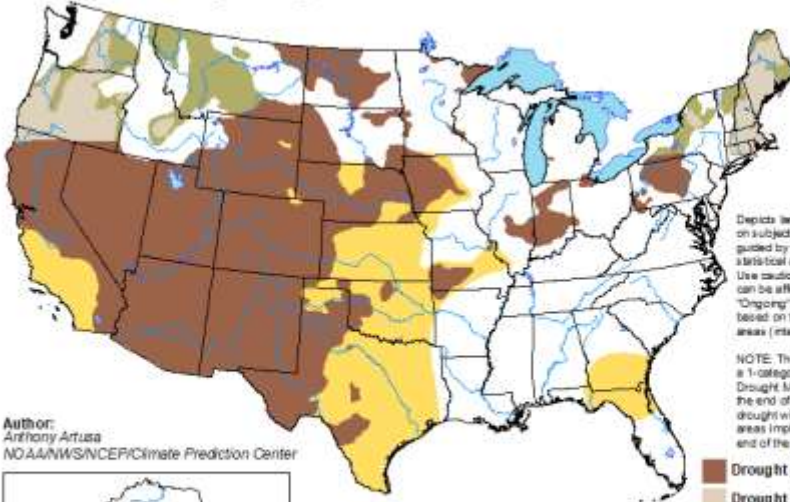


Winter precipitation outlook

U.S. Seasonal Drought Outlook

Drought Tendency During the Valid Period

Valid for October 15, 2020 - January 31, 2021
Released October 15, 2020



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 (intensity 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).

Author:
Anthony Artusa
NOAA/NWS/NCEP/Climate Prediction Center



- Drought persists
- Drought remains but improves
- Drought removal likely
- Drought development likely



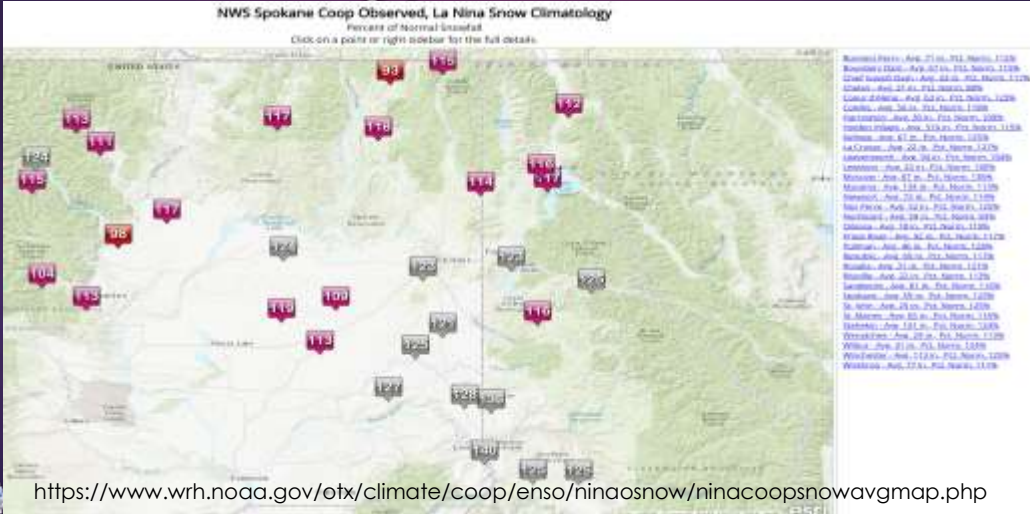
<http://go.usa.gov/3eZ73>

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Seasonal drought outlook

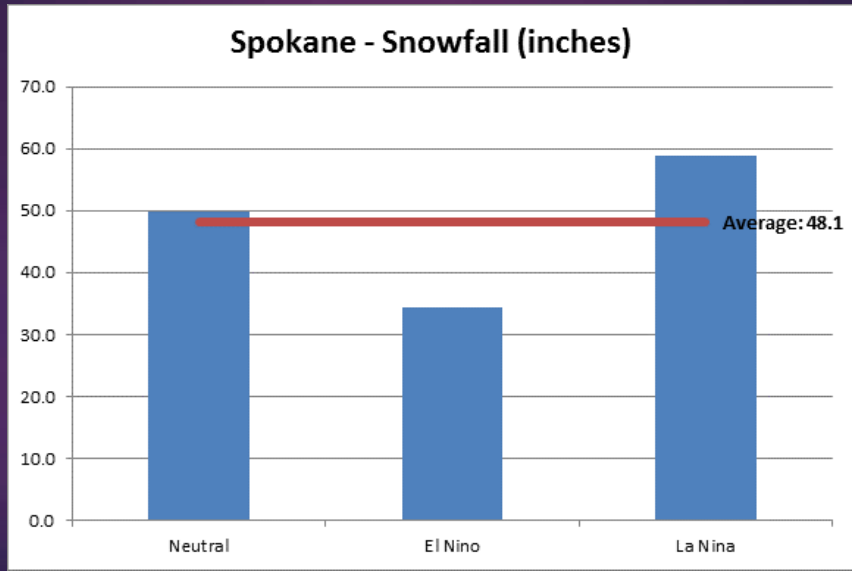
Interactive La Nina Snow Climatology



National Weather Service Spokane

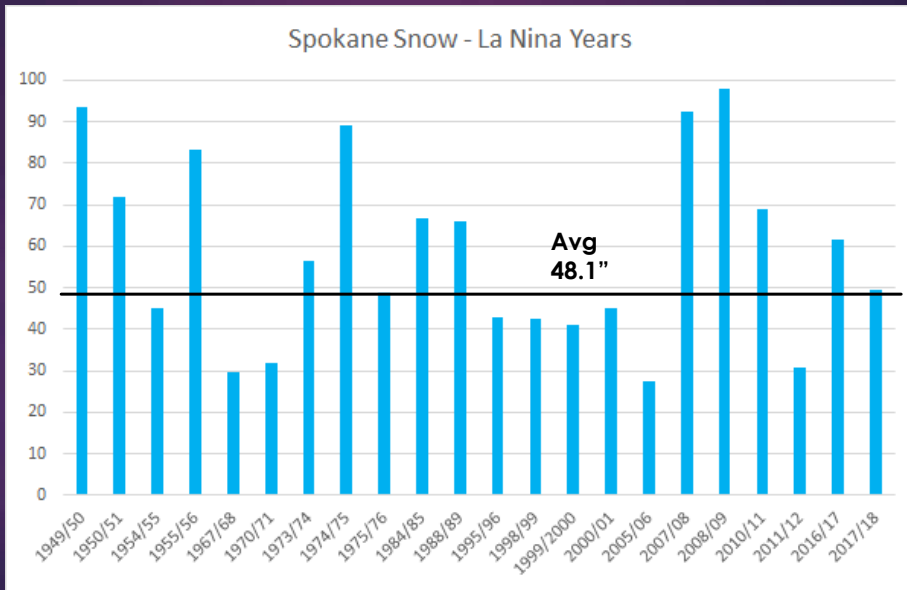
Local studies have shown a greater probability of snow during La Nina winters.

Spokane Snow by ENSO Pattern



Here is a comparison of winter seasonal snowfall compared to Neutral years, El Nino years and La Nina years.

Spokane La Nina Snowfall by season



National Weather Service Spokane



But keep in mind, not every La Nina season experiences above normal snowfall.

Flooding during La Nina Years



National Weather Service Spokane



Here's a list of river basins that experience flooding during La Nina years.

Water Supply Outlook

National Weather Service Spokane



Key Points – Winter Outlook

- ▶ **La Nina conditions expected through the Winter 2020-2021**
 - ▶ Increased odds of above normal snow
 - ▶ Increased odds of cooler than normal temperatures especially in the later half of winter
 - ▶ Drought conditions to improve
- ▶ **Water Supply Forecast look normal to above normal**
 - ▶ Chance of flooding on main-stem and smaller rivers due to any prolonged or intense precipitation events
- ▶ **Anticipate winter storms with snow, ice, rain and wind**



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La Nina Year (2017-18)



A tree leans against a home at 505 South Miller St. in Wenatchee during the wind storm.
World photo by Dan Sauter

Strong winds in Wenatchee – Jan 27, 2018



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Here are some events from past La Nina years.

La Nina Year (2011-12)



Flooding in north Idaho near Naples – May 3, 2018



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Here are some events from past La Nina years.

La Nina Year 2008-09



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Snow in Spokane – Dec 2008



Here are some events from past La Nina years.



Thank You for attending!

Any questions? Email
robin.fox@noaa.gov

Any questions? Here's my email if you would like to contact me. Thank you!

Congratulations!!!

You have now completed Basic Weather Spotting



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You will receive a Spotter Certificate in the next 1-2 weeks.

Remember

*NWS + Weather Spotters = **Saved Lives***

1-800-483-4532

Thank You!



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