



Northern Alaska Weather Spotter Training

National Weather Service Fairbanks, Alaska



What is an NWS Spotter?

A weather spotter is a trained citizen who reports hazardous weather and any impacts it's having on their community.



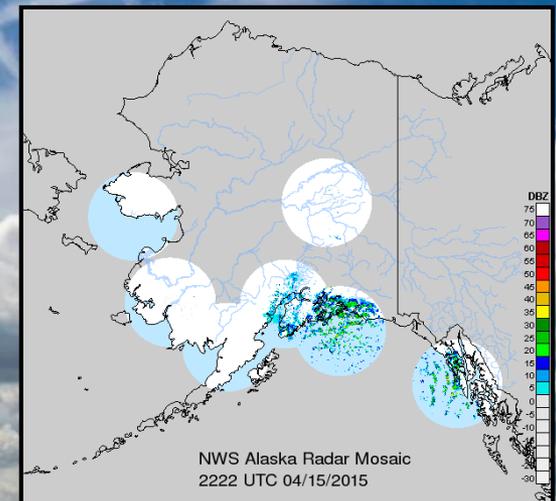
Alaska Weather Offices



Why are Weather Spotters Needed?

Automated weather observations can't detect everything!

We need weather spotters to alert forecasters to important details such as lighting, hail, waterspouts, tornadoes, ice accumulation, snowfall accumulation, and any weather impacts on your community.



Why are Weather Spotters Important?

Your Report COULD...

- Be the first indication of significant weather
- Help us decide whether or not to warn
- Add warning and forecast credibility
- Help us issue **TIMELY** and **ACCURATE** warnings that *may save lives and minimize property damage.*

What is your commitment as a Spotter?



- Pro-active calls to the NWS when you observe significant weather
- Expect an occasional call from the NWS during reasonable hours

A bright blue sky with scattered white clouds and a sun flare at the top center. The sun flare is a bright, multi-pointed starburst effect. The clouds are fluffy and white, scattered across the blue sky. The overall scene is a clear, sunny day.

Spotter Reports

What Should I Report?

- When to report:
 - Wind is damaging structures or property
 - Snowfall is heavy (at least 3” in 12 hours or less)
 - Snow and blowing snow are causing a Blizzard
 - Freezing Rain
 - Thunderstorms
 - Large Hail
 - Heavy rainfall
 - Any flooding or flash floods
 - Smoke or fog has reduced visibility to 1 mile or less
 - Volcanic Ashfall

**When you see weather that is, or potentially is,
damaging or hazardous!**

Weather Spotter Safety

- The spotter's personal safety is the primary objective of every spotter
- The spotter should obey federal, state, and local laws and directives from public safety officials
- The spotter should never put his or herself in harm's way

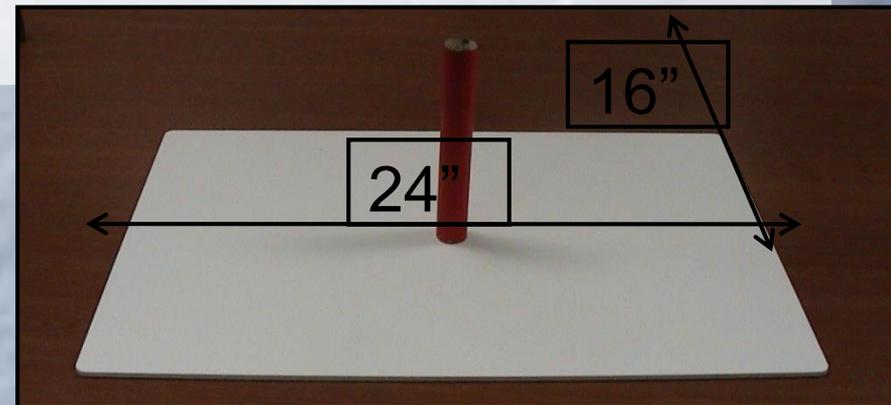




Types of Weather To Report

Snowfall Measurements

- Measure snow on a “snow board” using a ruler
 - Locate the snow board out in the open away from trees, buildings, fences, etc.
 - If you do not have snow board, an outside table will also work
- Clear off your snow board after the snow ends
 - This will ensure you accurately start from scratch when the next storm hits!



How to Measure Snow

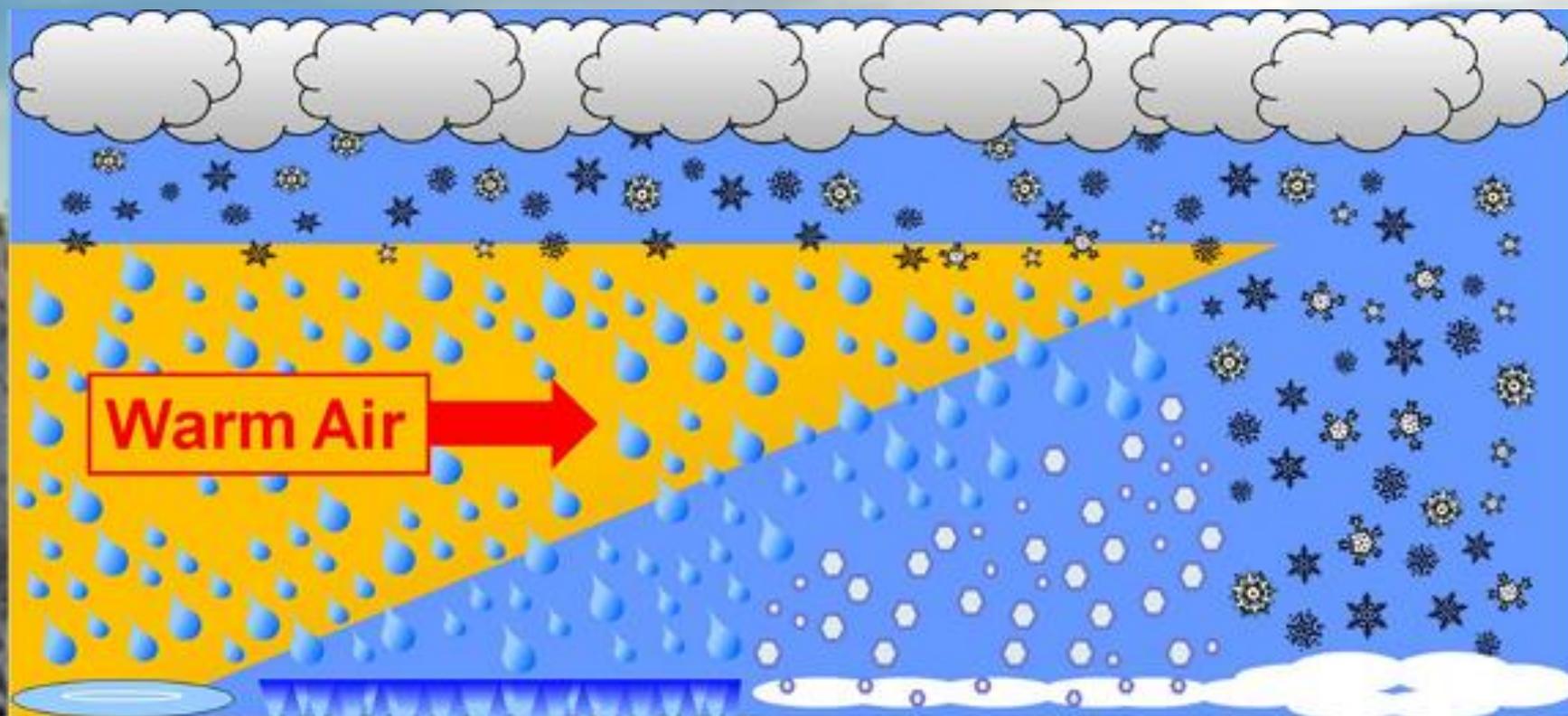
- Measure and record the snowfall since the previous snowfall observation
- Measure snow to the **nearest tenth of an inch**
- If possible measurements should be taken every 12 hours, and then once the snow has stopped falling
 - Helpful to give a grand total for the storm with your final report
- If your observation is not based on measurement, it is extremely important to indicate the report is an estimate



How to Report Snow

- In your snow report, try to include:
 - The time the snow started
 - The amount of storm total snowfall measured
 - If the snow is still falling
 - If so, is it light, moderate, or heavy snowfall currently?
 - Is the snowfall impacting visibility?
 - Is the visibility less than a $\frac{1}{2}$ mile?
 - If the report is a direct measurement or an estimate

Freezing Rain



Rain

Frozen precipitation
Melts and reaches
the ground as rain.

Freezing Rain

Frozen precipitation
melts in warm air. Rain falls
and freezes on cold surfaces.

Sleet

Frozen precipitation melts in
shallow warm air. Then
refreezes into sleet before
reaching the surface.

Snow

Snow falls
through cold air
and reaches
the surface

Why is Freezing Rain Dangerous?

- Hazardous for travelers.
 - Ice can create slick spots on roadways
 - Bridges, overpasses, and elevated roadways are especially susceptible to icing
- Freezing rain can accumulate as ice on tree branches, powerlines or any surface that is cold.
 - Can cause power outages and create hazardous conditions



How to Report Freezing Rain

- In your freezing rain report, try to include:
 - Any hazardous road conditions that are resulting from freezing rain
 - Any damage caused by the icing, including downed tree branches or powerlines
 - Estimate of the ice thickness in fractions of an inch

**Use a ruler to measure and average the ice thickness on a branch or any other object **



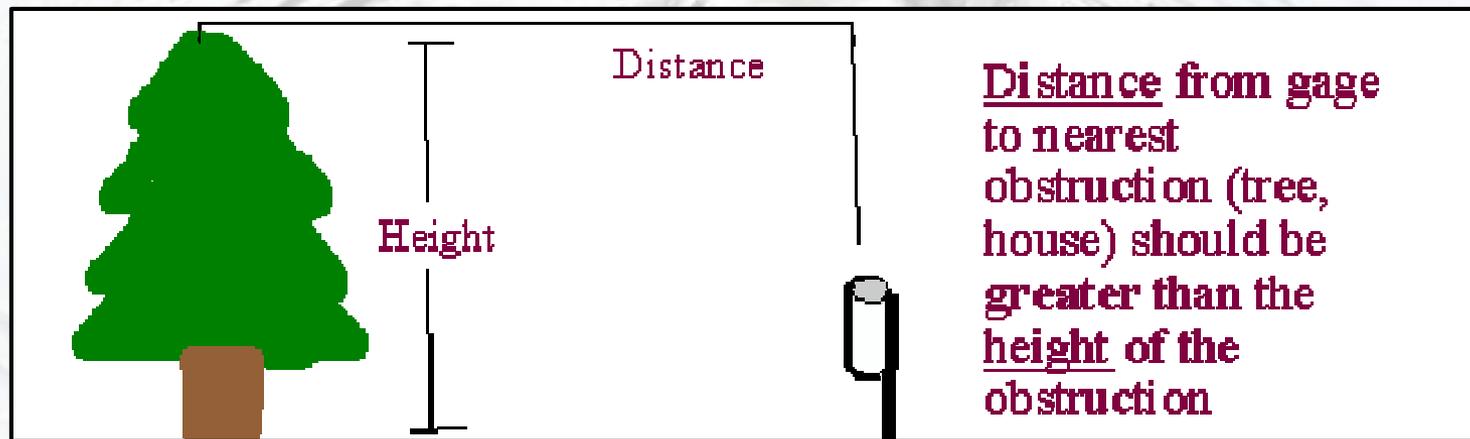
Reporting Heavy Rainfall

- Report heavy rainfall anytime, such as:
 - More than 0.50" or more in 1 hour
 - More than 0.75" or more in 3 hours
 - More than 1.00" or more in 6 hours
- Report on how long it has been raining (length of event)
- Use the plastic 4-inch diameter rain gauge to measure rainfall



Measuring Rainfall

- Use the 4-inch rain gauge
 - Install in a place that has no or few obstructions



- How to read gauge: inside cylinder-
 - Main markings (with numerals) are TENTHS of an inch
 - Minor markings (horizontal ticks) are in HUNDREDTHS of an inch

Flooding

- River Floods:
 - Occurs when river levels rise and overflow their banks and inundate areas that are normally dry.
- Flash Floods:
 - Floods that happen rapidly within 6 hours of the immediate cause (heavy rainfall, levee or dam failure)
- Causes of flooding:
 - Snowmelt
 - Ice Jam
 - Heavy rainfall



Flooding: What to report

- Report any flooding due to rain, snow-melt, or ice jams
- Roads impassable due to high water
- Any occurring or potential property damage?
- Mudslide: Roads fully or partially blocked, property destroyed/damaged
- Spring Breakup: When ice on the river is breaking up and moving

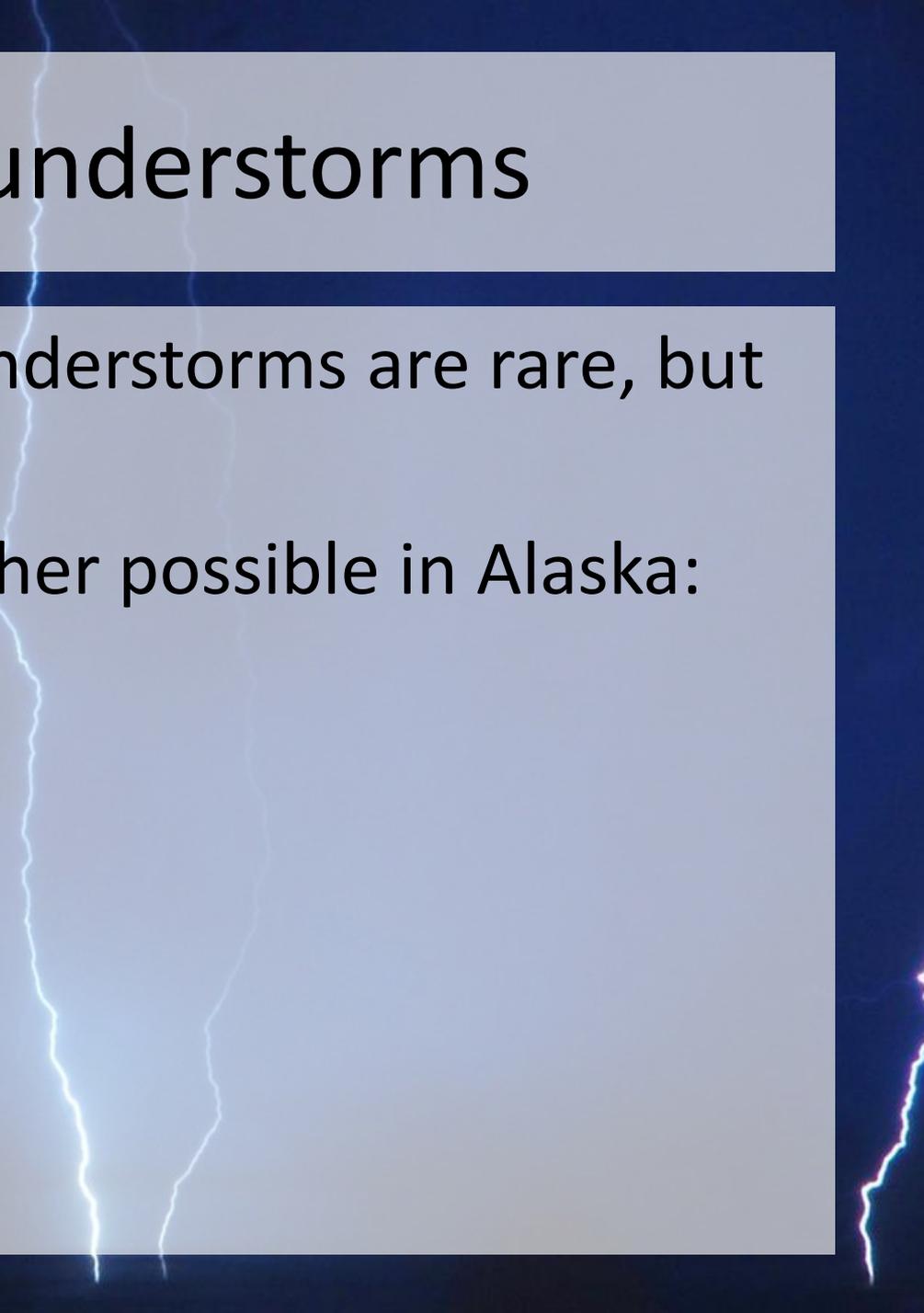


Wind

- Report high winds, especially if they are damaging trees or property.
- Try to include the location and type of wind damage in the report.

<1 mph	= Calm, smoke rises vertically.
1-3 mph	= Direction of wind shown by smoke drift not by wind vanes.
4-7 mph	= Wind felt on face; leaves rustle, vanes moved by wind.
8-12 mph	= Leaves and small twigs in constant motion; wind extends light flag.
13-18 mph	= Raises dust and loose paper, small branches moved.
19-24 mph	= Small trees with leaves begin to sway.
25-31 mph	= Large branches in motion; whistling heard in overhead wires; umbrellas used with difficulty
32-38 mph	= Whole trees in motion; inconvenience felt walking against wind.
39-46 mph	= Twigs break; wind impedes walking; light objects (lawn furniture) tossed.
47-54 mph	= Branches snap; loose shingles removed; minor damage to sheds/barns.
55-63 mph	= Small trees uprooted, structural damage can occur.
64-72 mph	= Large trees uprooted; widespread damage to structures.
>72 mph	= Hurricane Force: Trees snapped, extensive destruction.

Severe Thunderstorms



- In Alaska, severe thunderstorms are rare, but do occur.
- Types of severe weather possible in Alaska:
 - Cold air funnels
 - Excessive lightning
 - Weak Tornadoes
 - Small Hail
 - Gusty winds
 - Microbursts

Severe Thunderstorm Criteria

- By definition a severe thunderstorm produces at least one of the following:
 - Hail at least 1" in diameter
 - Wind gusts of at least 58 mph
 - A tornado



Hail



Pea-size: $\frac{1}{4}$ inch

Dime-size: $\frac{1}{2}$ inch

Penny-size: $\frac{3}{4}$ inch

Quarter-size: 1 inch (severe thunderstorm)

DO NOT reference marbles!

Ice Pellets or Hail?

- Ice pellets are clear and smooth, mostly seen in winter or early spring
- Hail has a white stone-like appearance, always from thunderstorms or showers



Tornadoes

- Violently rotating column of air extending from cloud base to ground
 - The rotating, tornadic condensation cloud edges will be fairly “smooth”
- Rare in Alaska, but can happen and have been reported
- There are a lot of tornado look-a-likes that have a ragged looking appearance



Funnel Clouds

- A rotating, finger-like appendage extending from the cloud base
- Does not make contact with the ground



Scud Clouds

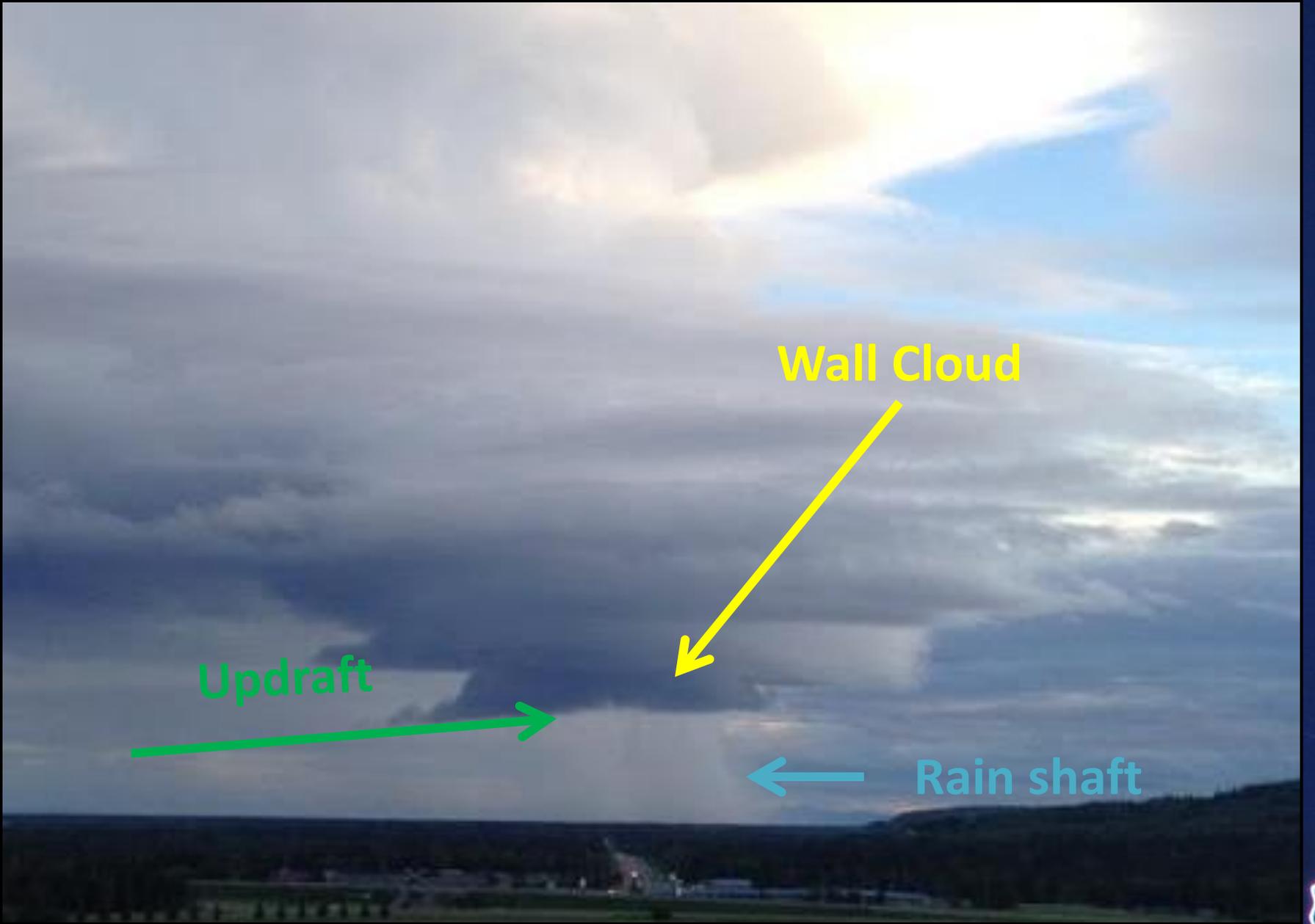


Scud clouds may look like funnel clouds, but are not. Scud clouds are raggedy in appearance and do not rotate.

Wall Cloud

- Cloud lowering beneath rain-free base
- Marks the updraft at thunderstorm base





Wall Cloud

Updraft

Rain shaft

Microburst/Downburst

- Dry air aloft mixes with falling rain to produce cooling through evaporation
 - Cool air sinks... the cooler the air, the stronger the winds
 - Any melting hail will add cooling and strengthen winds
 - Difficult to warn for due to their small size and short lifetime



Dust Devils

- Most likely in the late Spring and early Summer
- Very short-lived
- Form at the ground, unlike funnel clouds
- Can damage outbuildings and weakly constructed structures



Volcanic Ashfall

- North and west of the Alaska Range, volcanic ash that reaches the ground is normally a very minimal amount
- Measuring Volcanic Ashfall:
 - Use a snow board
 - After measuring the depth on the snow board, remove ash by a gentle water washing (don't brush dry)





Spotter Registration and Procedures

Spotter Registration



Spotter Registration Form
National Weather Service Forecast Office
Fairbanks, Alaska



(If this is refresher training for you and no information below has changed, just complete #1.)

1. Name:
2. Phone Number:
3. Email:
4. Elevation:
5. Physical Address:
6. Mailing Address (if different from Physical Address):
7. Topography (in valley, on hill top, on NE side of hill):
8. Times of the day when you can be contacted by the NWS for a spotter observation (Normally, the spotter calls into us their observation during critical weather)?
9. What type of equipment do you already have?
10. NWS Spotter ID
 - a. A 6-digit numeral (NWS assigns)
 - b. A location name (NWS approves)
 - c. Amateur Radio ID:

Version: February 5, 2016

- Please fill out the Spotter registration form
- Having received your registration info, we'll email you:

A certificate which includes:

- The name of your site
- Spotter number (XXX-ZZZ)

What Should I Report?

- When to report:
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**When you see weather that is, or potentially is,
damaging or hazardous!**



Northern Alaska Weather Spotter Guide

Provided by: National Weather Service, Fairbanks
www.weather.gov/fairbanks



To Report Observations:

Call: (907) 458-3708 or Email: fairbanks.weather@noaa.gov

My Spotter ID:

My Spotter #:

When Spotter Observations are needed:

Damaging Dust Devils



Funnel Clouds or Tornadoes



Is it rotating?

Heavy Rain fall

more than...



0.50" in 1 hour
0.75" in 3 hours
1.00" in 6 hours



Heavy Snowfall

(anytime)

3" in 12 hours or less



Freezing Rain or Freezing Drizzle

Estimate the amount of ice accumulation on the road or surface (fraction of an inch)



Strong Winds (35 mph or stronger)

How to Estimate Wind Speed:

Speed

30-40 mph
40-50 mph
50-65 mph
65-80 mph
80-100 mph

Effect

Large trees in motion; whistling in overhead utility lines
Whole trees in motion; garbage cans/similar items blown over
Twigs/Small branches break off tree; Damage to fences/shingles
Large branches break off of trees; shallow rooted trees uprooted
Extensive tree/roof damage; trailer homes overturned



Volcanic Ash

Place snowboard outside when expecting volcanic ashfall.

Flooding

(swollen rivers due to rain, snow-melt or ice jam blockage)

Roads impassable due to high water

Streams or rivers overflowing their banks, any occurring or potential property damage?

Mudslides: Roads fully or partially blocked, property destroyed/damaged

Breakup: The FIRST occurrence when ice on the river is breaking up and moving.

Low Visibilities

1 mile or less

(please try to estimate)

Blowing Snow, Fog, or Smoke

SMOKE FOG

Hail

(any size, any time!)

Reference hail by coin size and not by marbles!



Reporting Procedures

- **By Phone:**

- Call 24/7 **NWS Fairbanks: 458-3708**
- State: “This is spotter (your spotter ID or spotter #)”
- Then give us the information...

- **By Email:**

- Address: fairbanks.weather@noaa.gov
- Subject Line: Spotter ID or Spotter #
- Then type in your report...

Reporting Procedures

- **What** weather element
- **How much**
- **How long/when**
- **Impacts** (obstruction, damage, injury, death observed or known)
- **WHERE**
 - If your observation was NOT made at your home, be sure to give your location!!

Reporting Procedures: **Examples**

What – **How Much** – **How Long** – **Impacts**
Snow Event

“**Five inches** of **snow** has fallen **since 4 AM**.
I’ve heard that 3-4 vehicles have slide off
the road.”

Reporting Procedures: **Examples**

What – **How Much** – **How Long** – **Impacts**

Wind Event

“I observed (or estimated) **wind gusts to 45 mph in the last 15 minutes**. Several trees were toppled and now our power is out.”

Reporting Procedures: **Examples**

What – **How Much** – **How Long** – **Impacts**

Funnel Cloud

“I am looking at a **funnel cloud now** just south of Murphy Dome. It’s showing **rotation** and **in the last 5 minutes** it has been **extending down toward land.**”

Reporting Procedures: **Examples**

What – **How Much** – **How Long** – **Impacts**

Tornado

“A **tornado** **is** touching down about a quarter mile to the east and I see some **shingles being ripped off an old shed.**”

Reporting Procedures: **Examples**

What – **How Much** – **How Long** – **Impacts**

Large Hail

“Hailstones the **size of a nickel** fell **about 10 minutes ago**. **They just stopped**. The stones covered my car with small dents.”

Reporting Procedures: **Examples**

What – **How Much** – **How Long** – **Impacts**
Rain

“**In the last hour** I received **0.63 inches** of **rain**. **Water is running onto the road from overflowing ditches.**”

Reporting Procedures: **Examples**

What – **How Much** – **How Long** – **Impacts**
Rain

“**In the last hour** I received **0.63 inches** of **rain**. **Water is running onto the road from overflowing ditches.**”

Reporting Procedures: **Examples**

What – How Much – How Long – Impacts **Freezing Rain**

“Freezing rain has been falling the last 30 minutes. I estimated there’s one-sixteenth of an inch of glaze on the road and sidewalk. The motorists I see are all moving at slow speeds and some are sliding.”

... and later on:

“Freezing rain ended 15 minutes ago. I measure one-eighth of an inch.”

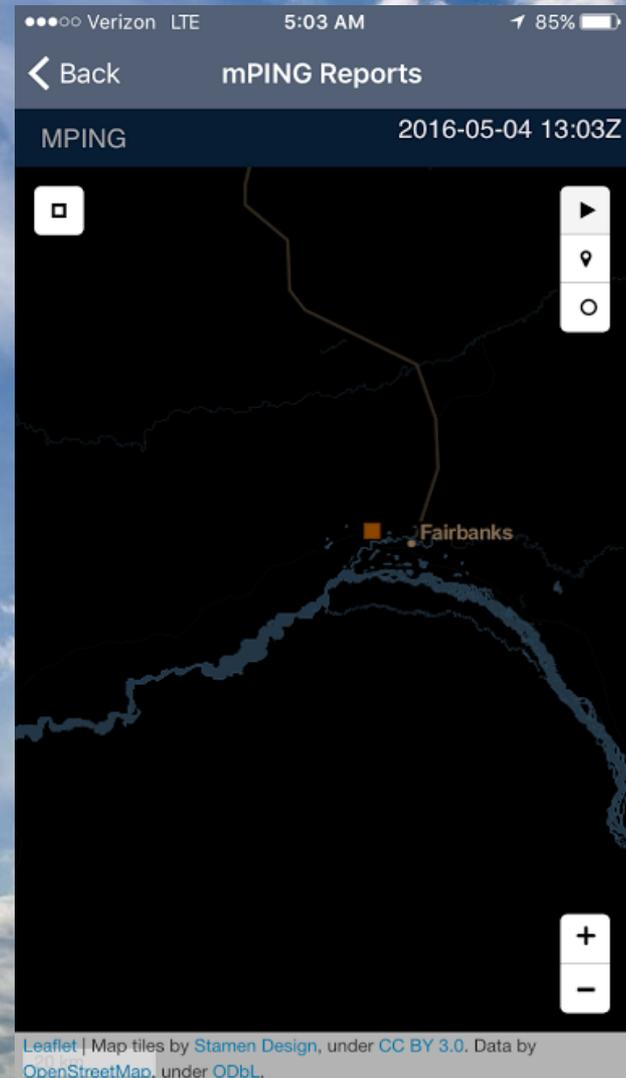
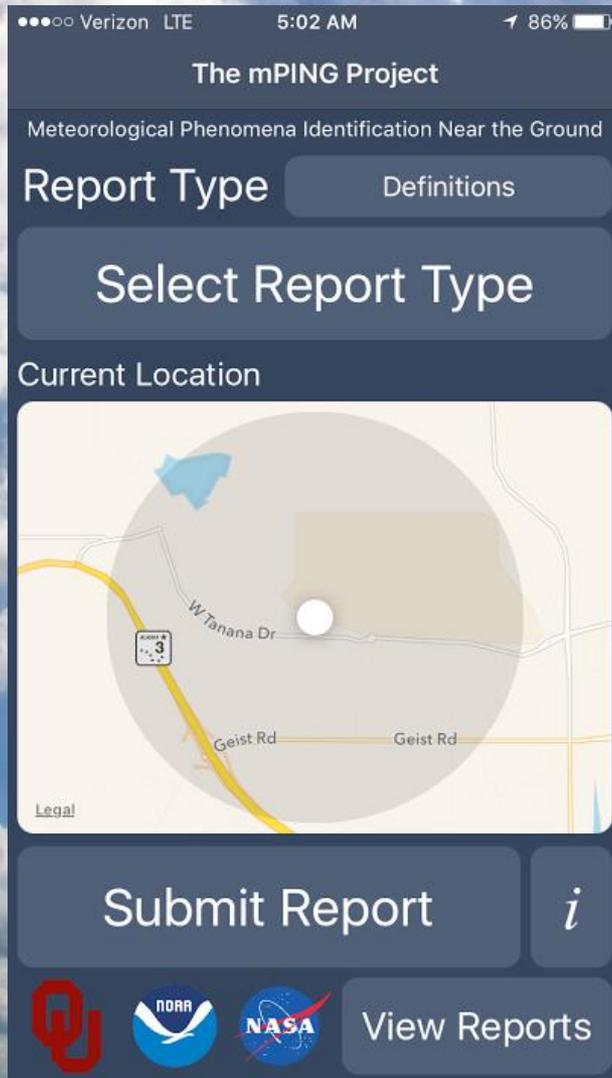
Reporting Procedures: **Examples**

What – **How Much** – **How Long** – **Impacts**

Flooding

“The **Wilderness River** **is flooding** the Dalton Highway. One of the two lanes has become impassable **in the last 15 minutes.**”

mPING



mPING

- **Meteorological Phenomena Identification Near the Ground**
- Available as an app for Android and Apple phones
- Reports are geocoded
- Types of reports:
 - Precipitation type (Snow, Rain, Freezing Rain)
 - Hail
 - Wind damage
 - Tornado
 - Flood
 - Mudslide
 - Reduced Visibility

We are on Facebook and Twitter!



NWS Fairbanks on Social Media

Follow us on Twitter

[@NWSFairbanks](https://twitter.com/NWSFairbanks)

Like us on Facebook

facebook.com/NWSAlaska



Scan to follow us on Twitter



Scan to like us on Facebook

Visit our webpage for the latest forecast:
weather.gov/fairbanks

We are on Instagram too!



NWS Fairbanks is now on **Instagram!**

Follow us at...



This is currently a prototype effort to determine utility of Instagram for the NWS and its customers

Our website: www.weather.gov/afg

NATIONAL WEATHER SERVICE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

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

News Headlines

- [Fairbanks North Star Borough becomes a National Weather Service StormReady Community!](#)
- [Get ready for fall weather with preparedness tips from the National Weather Service](#)
- [NW's Fairbanks is now on Instagram!](#)

NWS Forecast Office : Fairbanks, AK
[Weather.gov > Fairbanks, AK](#)

Fairbanks, AK
Weather Forecast Office

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Quick Zoom: [Alaska Statewide](#) | [Southcentral](#) | [Fairbanks](#) | [Western](#) | [Central/Northern](#) | [Juneau/Southeast](#) | Disable Mouse Scroll

Land Hazards

- Warning
- Watch
- Advisory
- Special Wx

Marine Hazards

- Hvy Frzg Spray
- Huff Free Wind
- Storm Warning
- Gale Warning
- Small Crtf Adv

Hover over a zone

Cities: [on](#) | [off](#) - Legend: [on](#) | [off](#)

[Alaska TV Weather Maps](#) [Satellite](#) [Graphical Forecast](#) [Hour by Hour Forecast](#) [Decision Support Page](#) [Space Weather](#)

[Fire](#) [Ship](#) [Map](#) [Social Media Dashboard](#) [Sun](#)

Visit Our Mobile Friendly Forecast Page!

<http://innovation.srh.noaa.gov/NWSwidget>

Fully **Adaptive** forecast page for computers, tablets & smartphones

The collage consists of four smartphone screenshots. The first screenshot shows an iPhone home screen with various app icons. The NWS widget icon is circled in red, and a red arrow points to it. The second screenshot shows the widget's main interface with a search bar and current weather for Lawton, Oklahoma. The third screenshot shows a detailed 7-day forecast with icons for sunny, clear, and sunny conditions. The fourth screenshot shows a radar and satellite view of the region.

Time	Condition	High	Low
Today	Sunny	69°F	-
Tonight	Clear	-	41°F
Saturday	Sunny	76°F	-

Save as a widget on your phone!

Spotter Program Page

www.weather.gov/afg/spotter

NWS Fairbanks Spotter Program

[Weather.gov](#) > [Fairbanks, AK](#) > NWS Fairbanks Spotter Program

Fairbanks, AK
Weather Forecast Office

[Current Hazards](#) [Current Conditions](#) [Radar](#) [Forecasts](#) [Rivers and Lakes](#) [Climate and Past Weather](#) [Local Information](#)

NWS Fairbanks Volunteer Spotter Program

[Spotter Training](#)

[What and How to Report](#)

[Spotter Resources](#)

[Spotter Q & A](#)

Spotter Training

The NWS Fairbanks is looking for volunteer weather spotters in Interior Alaska, the North Slope, and Western Alaska from Scammon Bay to Point Hope.

Volunteer weather spotters are able to help their community and surrounding communities by reporting to the NWS thunderstorms, hail, heavy rainfall, strong winds, heavy snow, freezing rain, river and coastal flooding, etc. Most of the time a weather spotter will provide a report to us by phone, internet, or ham radio. There may be times where we will call you in the event we feel that something unexpected is happening in your area or to ask further questions on a report that you already gave to us.

To become an official NWS spotter, you receive free certified training conducted by the NWS. The spotter training covers how to make and send a spotter report, and provides all spotters with a common "weather language" to identify and describe weather events and ice and snow conditions. It is important that each spotter describes the same weather in the same way. This allows the NWS to incorporate your reports directly into their forecasting and warning system. The training is about a one hour presentation, with additional time for questions. If you are unable to travel to a training session, we can make other arrangements including online training. The training is good for two years.

If you are interested in becoming a spotter, click on this [link](#) and fill out the form. For additional information about our spotter program contact Lindsay Tardif-Huber by [email](#) or by phone at (907)458-3708.

What happens after I fill out the [spotter signup form](#)? We will contact you to arrange storm spotter training. Once you have had storm spotter training, we will issue a certificate with your spotter location ID and number. Remember, training is good for two years.

Storm Report Page

http://www.srh.noaa.gov/StormReport_new/SubmitReport.php?site=AFG

 **NATIONAL WEATHER SERVICE**
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

Submit a **Storm Report**
to the National Weather Service Fairbanks, AK

Local detailed forecast by "City, ST" or ZIP code

This interface is intended to be used solely for the relay of storm information to the NWS. Other comments or information should be sent to the National Weather Service Fairbanks, AK.

1. Event Location
Enter date/time/location of event. Please reference to major roadway or intersection for events within town/cities.

Date:
Time:
Place:



Click on the map to set your location for the report.

2. Event Type (Select all that apply)

- Dense Fog
- Flood
- Hail
- High Wind Speed
- Tornado/Funnel Cloud
- Wind Damage
- Heavy Snow
- Snow
- Freezing Rain/Icing

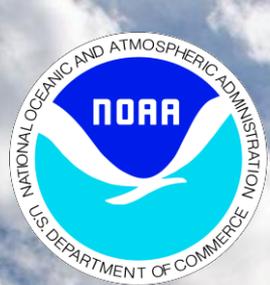
3. Additional Details
Provide any additional information that you feel is pertinent to your submission (500 characters maximum).

You may also pass along additional information by e-mailing them to the National Weather Service Fairbanks, AK separately. (WFO AFG)

4. Contact Information
VOLUNTARY and WILL NOT be distributed.

Your Name: Spotter id (if assigned): Email address: Phone number:

Observer Profile:



Questions?

Thanks for joining our team!
If you have questions later, please don't hesitate
to contact:

Ed Plumb
Service Hydrologist &
Acting Warning Coordination Meteorologist
edward.plumb@noaa.gov

OR

Lindsay Tardif-Huber
NWS Fairbanks Storm Spotter Program Lead
lindsay.tardif-huber@noaa.gov
Phone: (907) 458-3708