



Alaska Weather Spotter Training

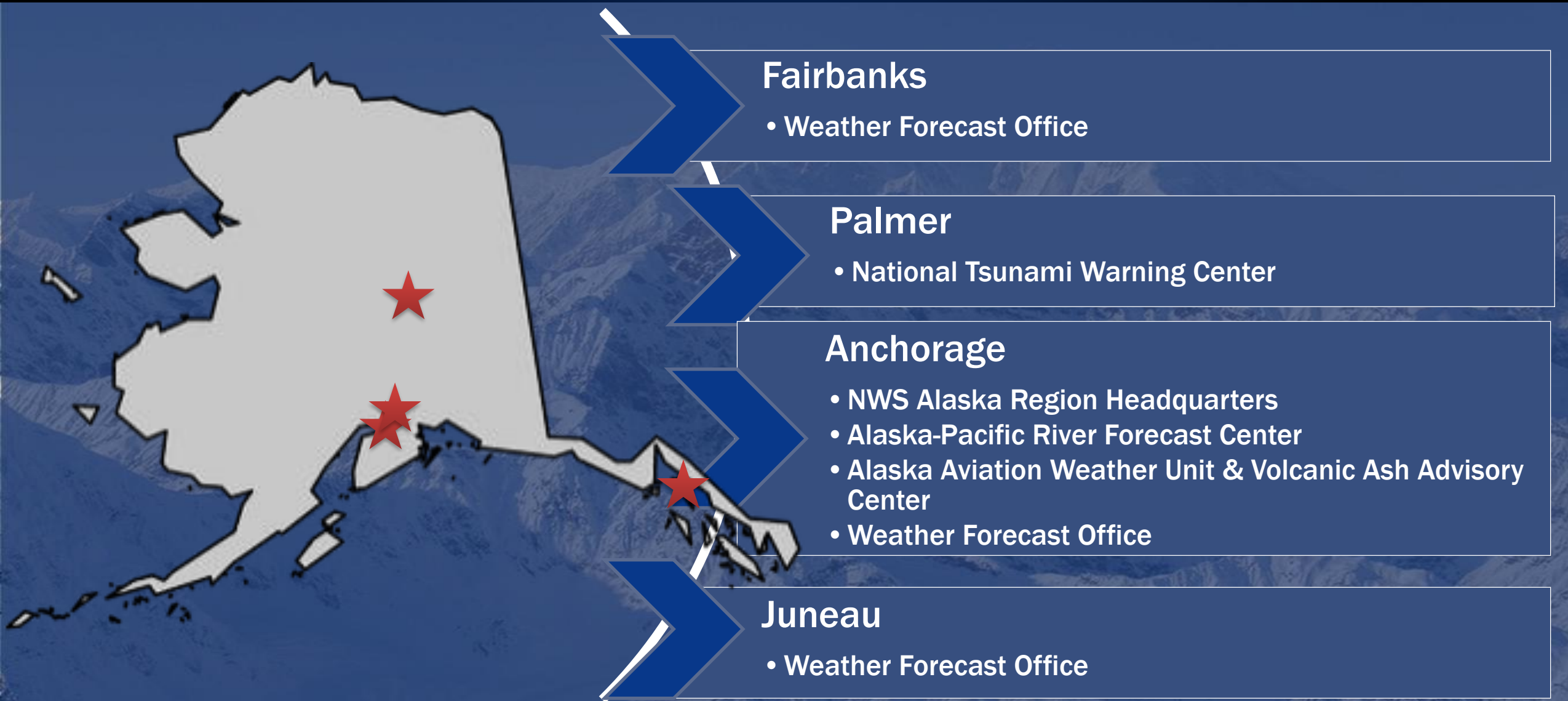


Weather Forecast Office
Anchorage



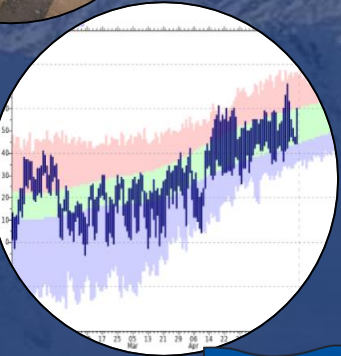
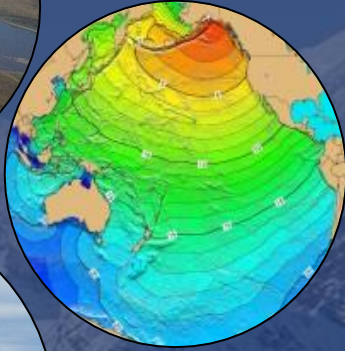


NWS Alaska





NWS Anchorage Programs



- Aviation
- Volcanic Ash
- Fire Weather
- Public Forecasts & Warnings
- Climate
- Marine Weather & Sea Ice
- Rivers & Hydrology

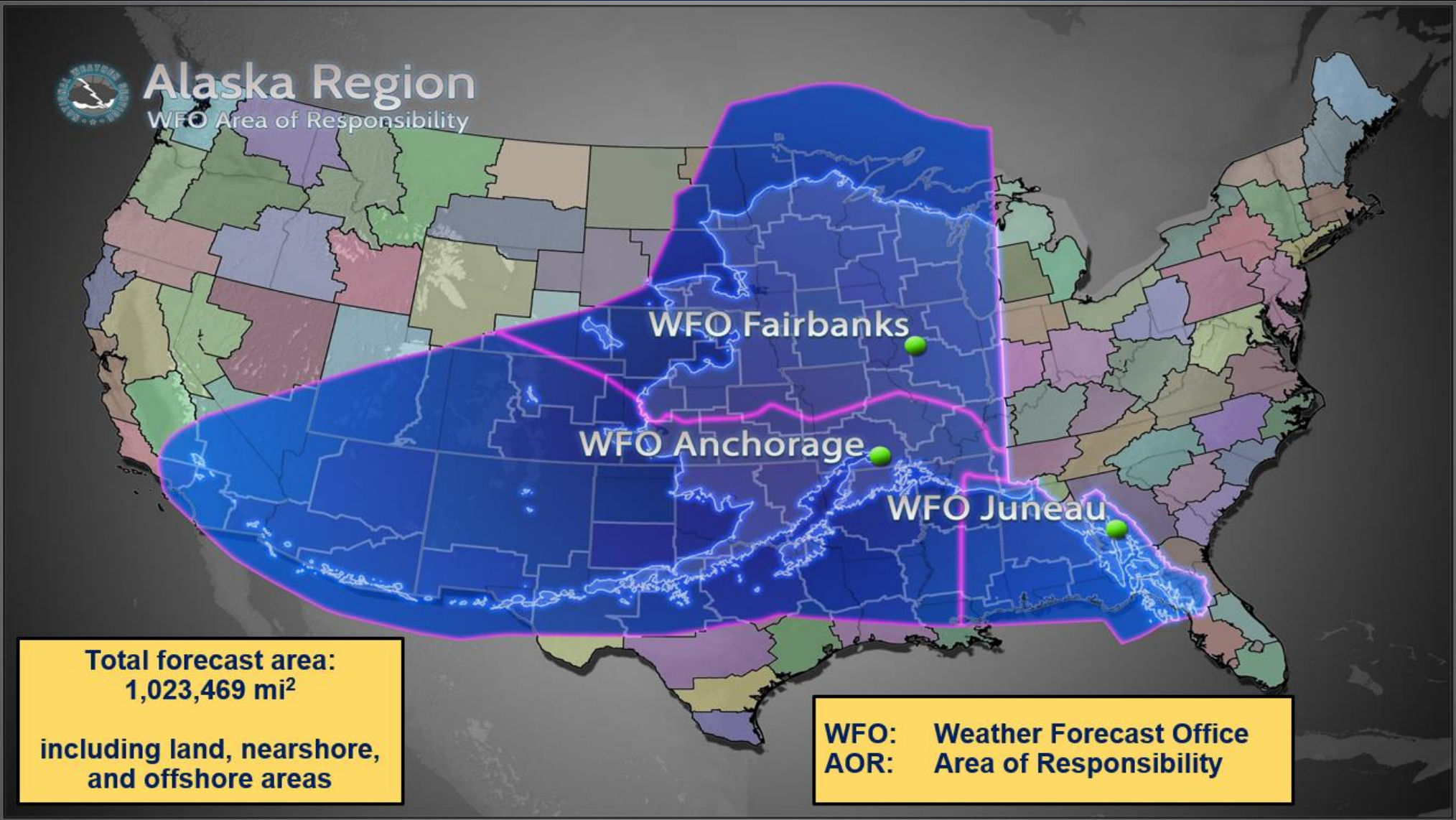


What is a National Weather Service Weather Spotter?

A trained citizen who reports hazardous weather and any impacts being observed within their community.



Why are spotters needed?



Why are spotters needed?

Automated weather observations can't detect everything!

What about...

...ice accumulation?

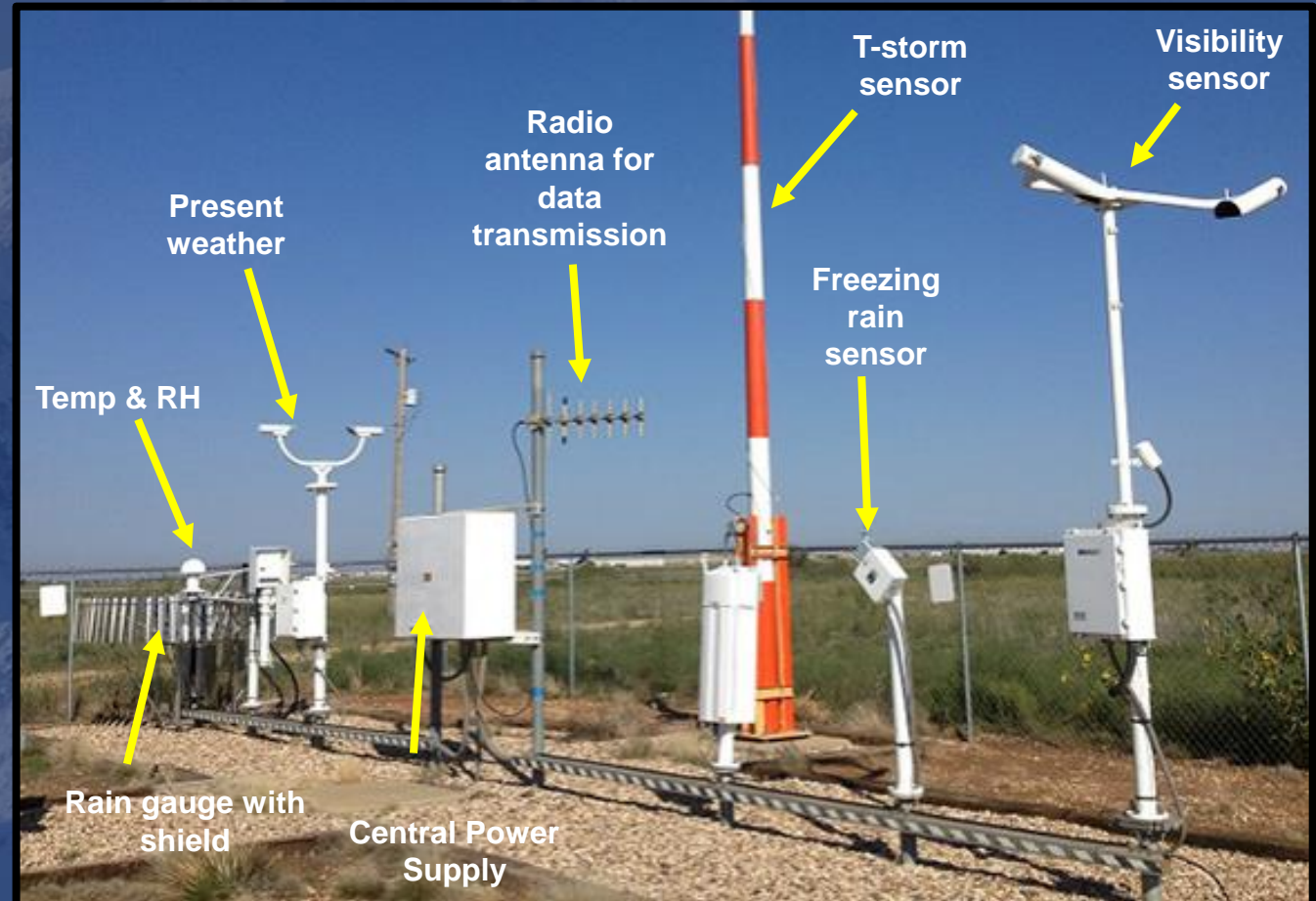
...snow accumulation?

...hail?

...waterspouts?

...tornadoes?

...weather related damages?

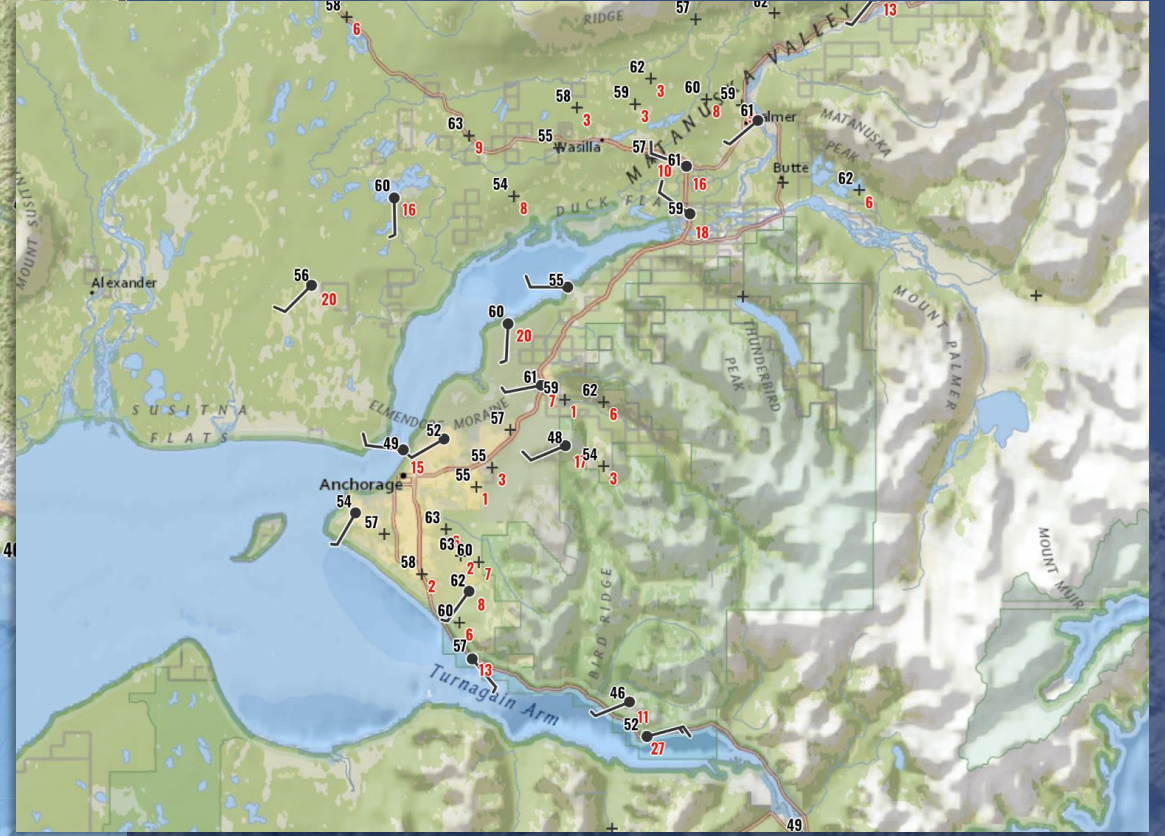
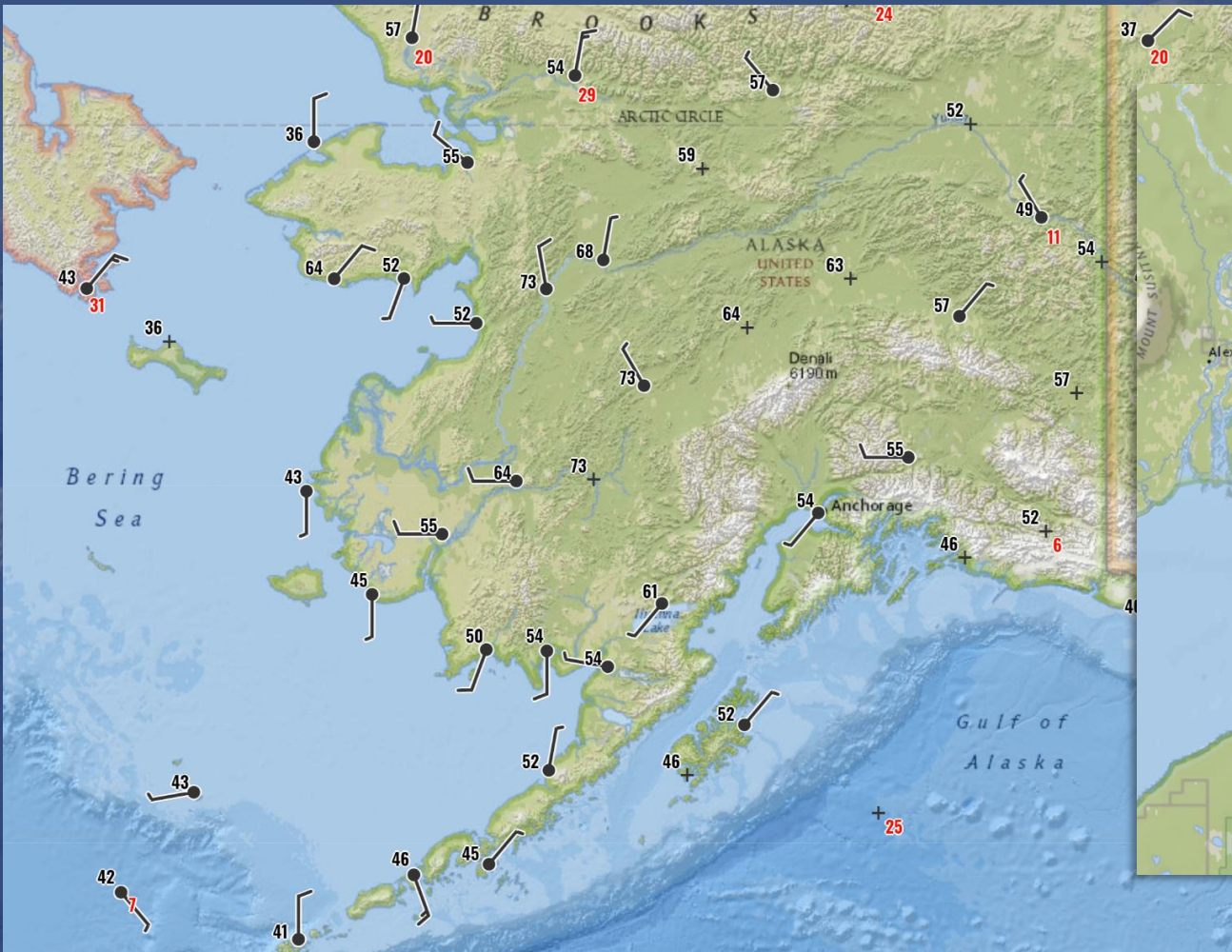




Why are spotters needed?



Surface observations are few and far in between





Why are spotters needed?



Only 7 radars in the entire state!

Biorka Island (JNU) – PACG

Pedro Dome (FBX) – PAPD

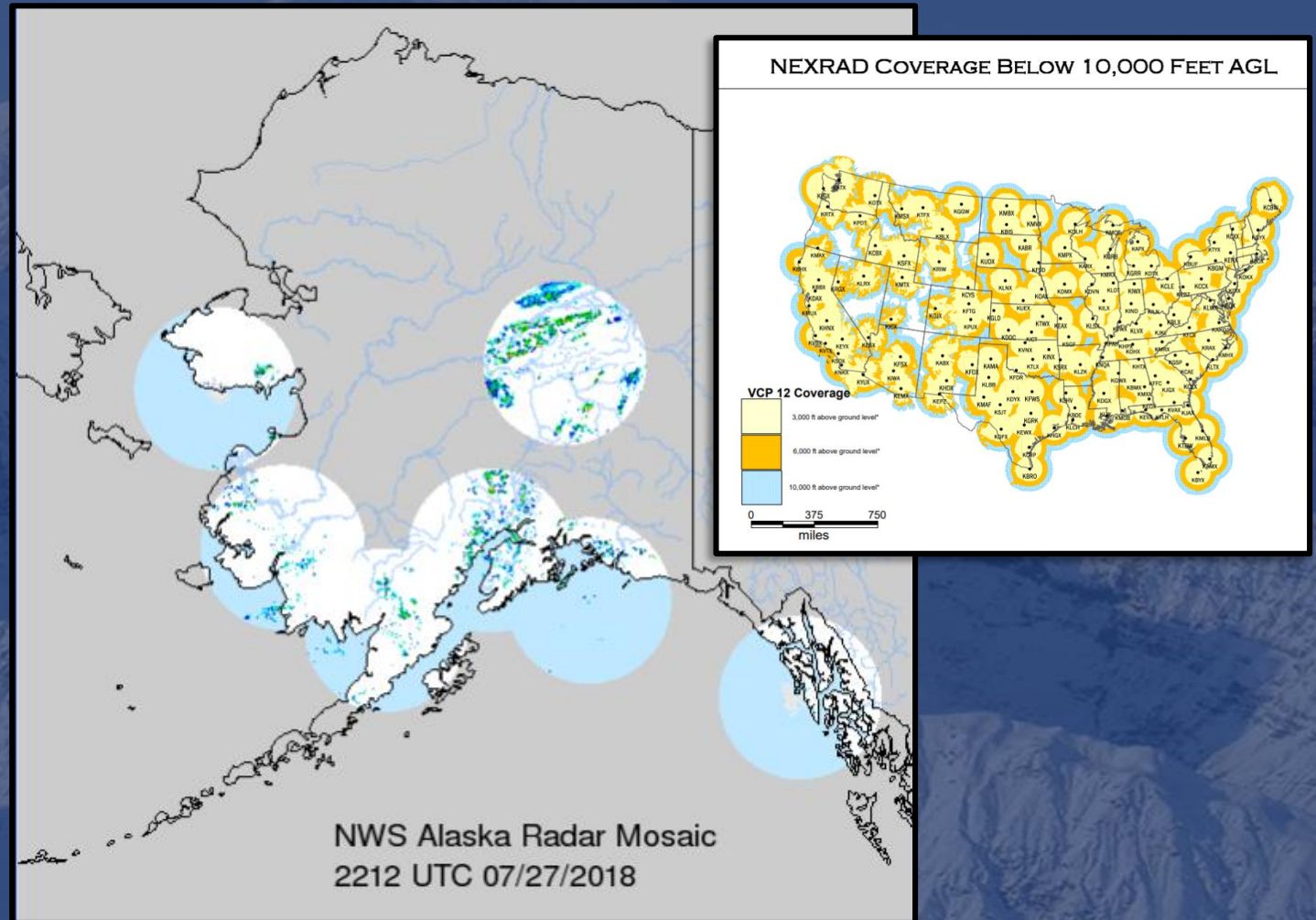
Nome (FBX) – PAEC

Bethel (ANC) – PABC

King Salmon (ANC) – PAKC

Kenai (ANC) – PAHG

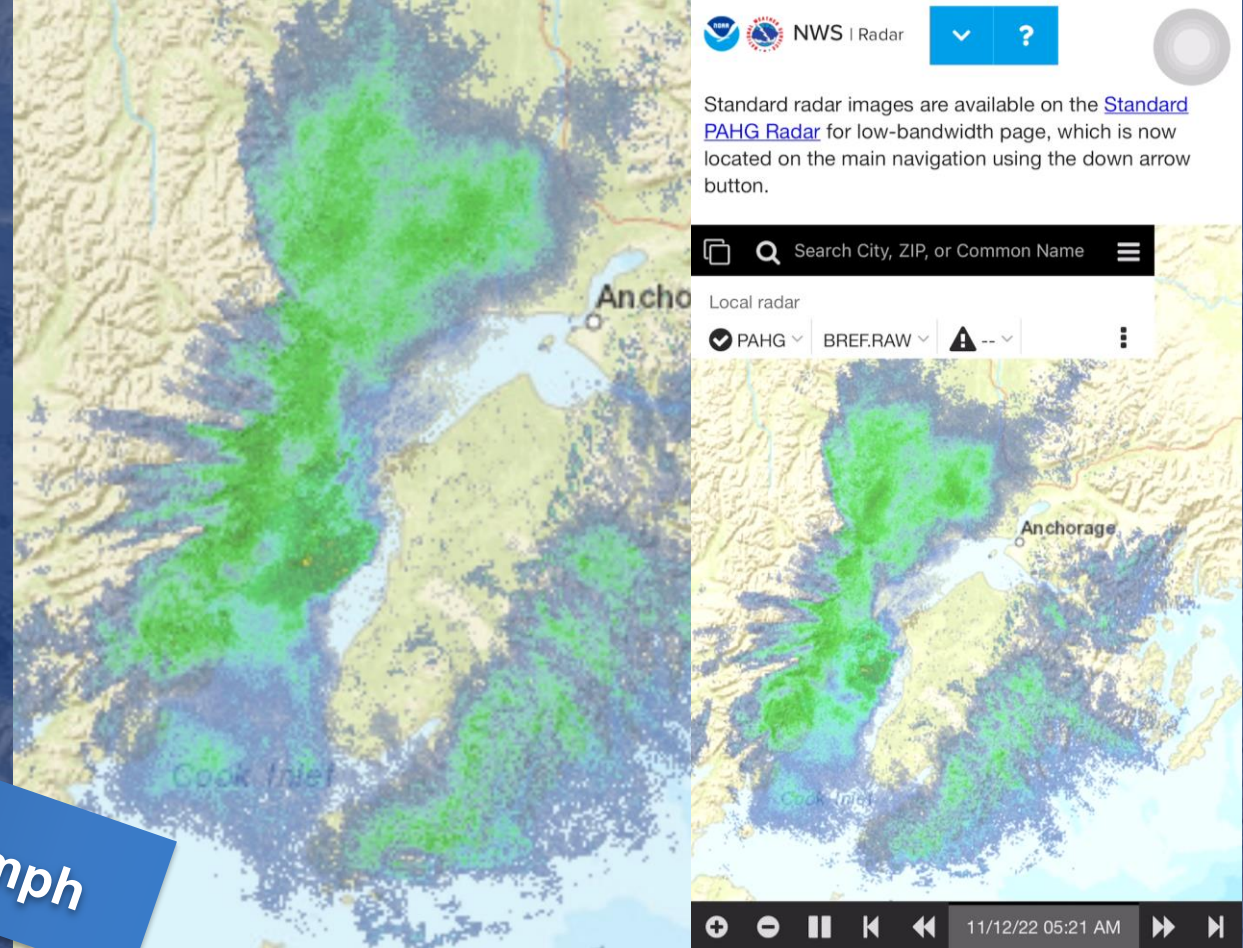
Middleton Island (ANC) – PAIH





Why are spotters needed?

Our terrain creates unique forecast challenges





Weather Spotter Safety



- The spotter's personal safety is the primary objective of every spotter.
- Always obey federal, state, and local laws and directives from public safety officials.



A spotter should NEVER put themselves in harm's way.

- Never attempt to walk or drive over obstructions (e.g., flooded roadways, downed power lines)
- Be aware of objects that have the potential to fall or be blown over due to severe weather.



Types of Weather to Report



Snow



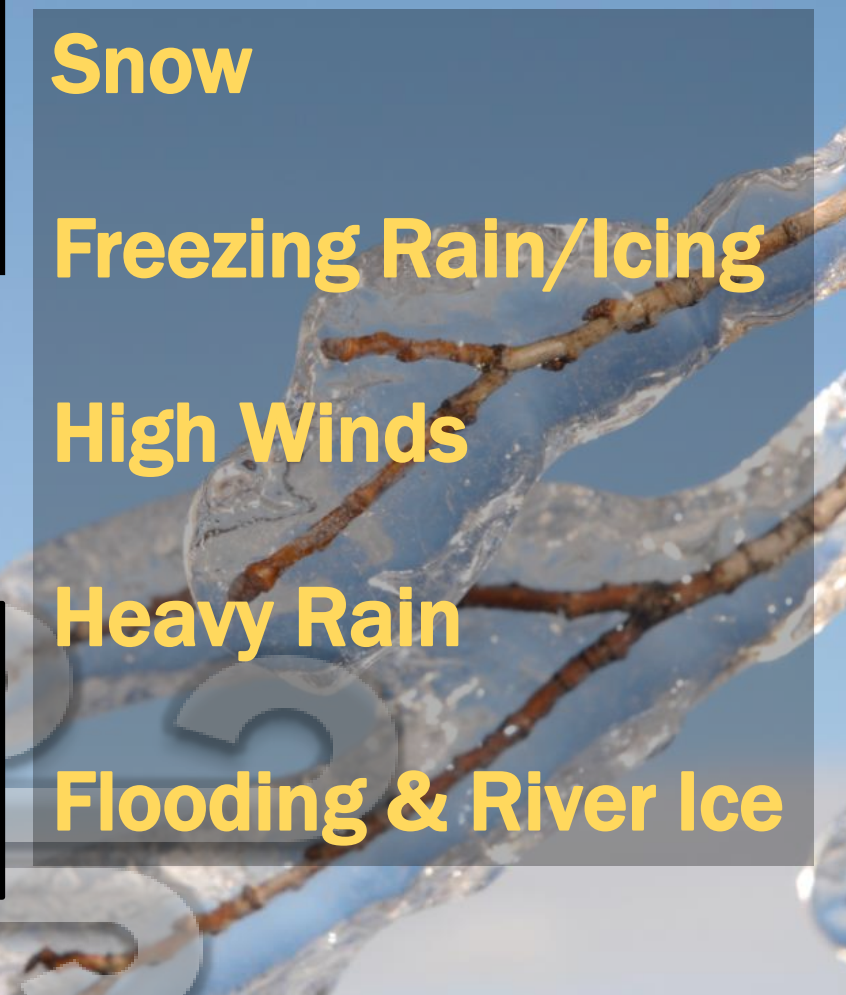
Freezing Rain/Icing



High Winds

Heavy Rain

Flooding & River Ice

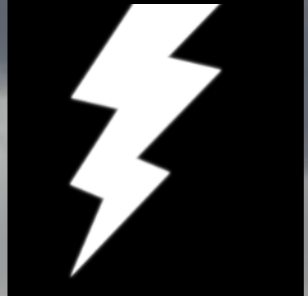
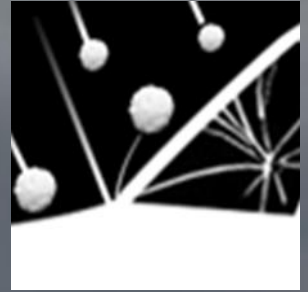


Thunderstorms

Lightning

Funnel Clouds

Hail



Funnel cloud on the Kenai Peninsula in July, 2005
Photo courtesy of Julia Ruthford, NWS Anchorage



Types of Weather to Report: **Snow**



Impacts:

- ❖ Poor driving conditions
- ❖ Avalanches
- ❖ Roof collapse



How to Measure Snow

Be sure it is located away from trees, buildings, fences, etc.



Meteorologist measuring snowfall on our snow-board at the NWS Anchorage



Six Basic Steps for Properly

MEASURING SNOW



Accurate and timely snowfall measurements are extremely important to your National Weather Service office, your community, local media, and many others. Here are the six steps you need to know for measuring snow:

3

Set-up



Set up before snow begins



Put your board out and mark it with the flag

4

Measuring Snow



Record your total to the nearest tenth of an inch

Wipe the board off after measuring

Measure once daily at the same time, after measuring place the board on top of snow

1

Supplies



Ruler or yard stick
24" X 24" white board, flag

2

Planning



Find an open area away from tall objects, but sheltered from wind

5

When Snow Stops



Measure as soon as the snow stops to avoid lower totals due to melting, settling and drifting

6

Reporting



SEND us your report!



How to Measure Snow



NWS meteorologist clearing snow table after a measurement



- ❖ Measure and record to the **nearest tenth of an inch.** (e.g., 1.2")
- ❖ Measurements should be taken:
 - Every 12 hours
 - Anytime it stops
 - End of the storm is *very* helpful!
- ❖ Remember to clear off the snowboard after each measurement
- ❖ Reporting an estimate is okay!



How to Measure Snow



➤ No snow board?

Sample several locations in your yard and take an average.

➤ Drifts?

If winds are causing drifting snow, **do not** average within the drifts. Take measurements in as uniform of snow depth as possible.



Snow drifts in Saint Paul, Alaska.
Do not average in drifts like this.

Photo courtesy of Kelly Harris



How to Report: **Snow**



- * Time it started
- * Duration event
- * Still falling?



- * Amount of snow since the beginning of the storm
- * Measured or estimated
- * Light, moderate, heavy rates
- * Visibility



- * Report location



- * We always love to see photos!



When to report: **Snow**



* **We like any reports!** If it's impacting your community or roads, we'd like to know about it.

* **Heavy snow falling:**
Giving us reports during the storm could help us determine if an advisory or warning is needed.

* **At the end of the storm** helps us see who had the heaviest/lightest amounts, cut off locations, and future forecasts.



Actions to Take: **Snow**



Going Outdoors

- Dress in layers for cold temperatures
- Don't overexert yourself when shoveling snow

Traveling

- Slow down and take caution while driving
- Leave extra space between vehicles
- Pack a vehicle preparedness kit
- Keep windows and head/taillights clear of snow



Types of Weather to Report: **Freezing Rain**



Impacts:

- ❖ Slick roads cause accidents
- ❖ School closures
- ❖ Downed trees & powerlines

The diagram shows a winter scene with rain falling. A blue car is driving on a road with a patch of ice. A tree is heavily laden with ice, and a house has icicles hanging from its roof. Powerlines are also heavily laden with ice. Three numbered callouts explain the impacts:

- 1** Ice accumulation increases the weight of a span of powerlines by up to 500 pounds!
- 2** Patches of ice on roads and highways make traveling extremely dangerous.
- 3** Ice accumulation increases the weight of a tree branch by 30 times!



What is Freezing Rain?

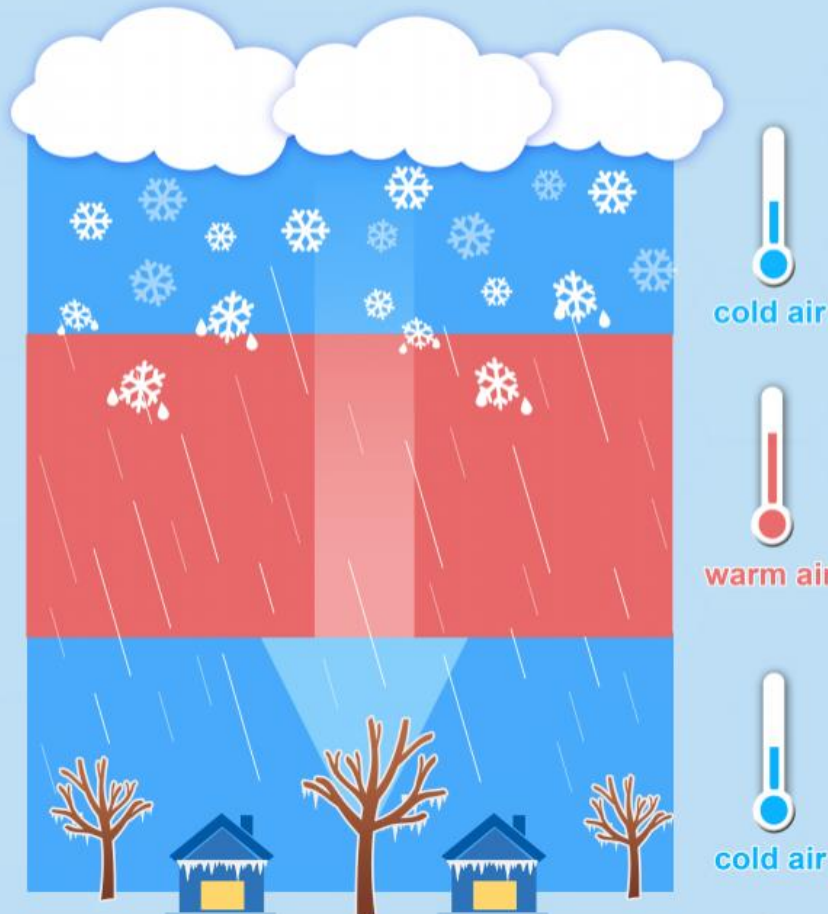


Freezing rain is liquid precipitation that freezes on contact with cold surfaces as it enters a shallow layer of temperatures at or below 32°F near the surface. This creates a dangerous coating of ice on roads, walkways, trees and power lines.

Precipitation in the atmosphere starts off frozen as snow.

Snowflakes melt as they fall through warm air.

Droplets freeze as they enter a shallow layer of air at or below 32°F near the surface.

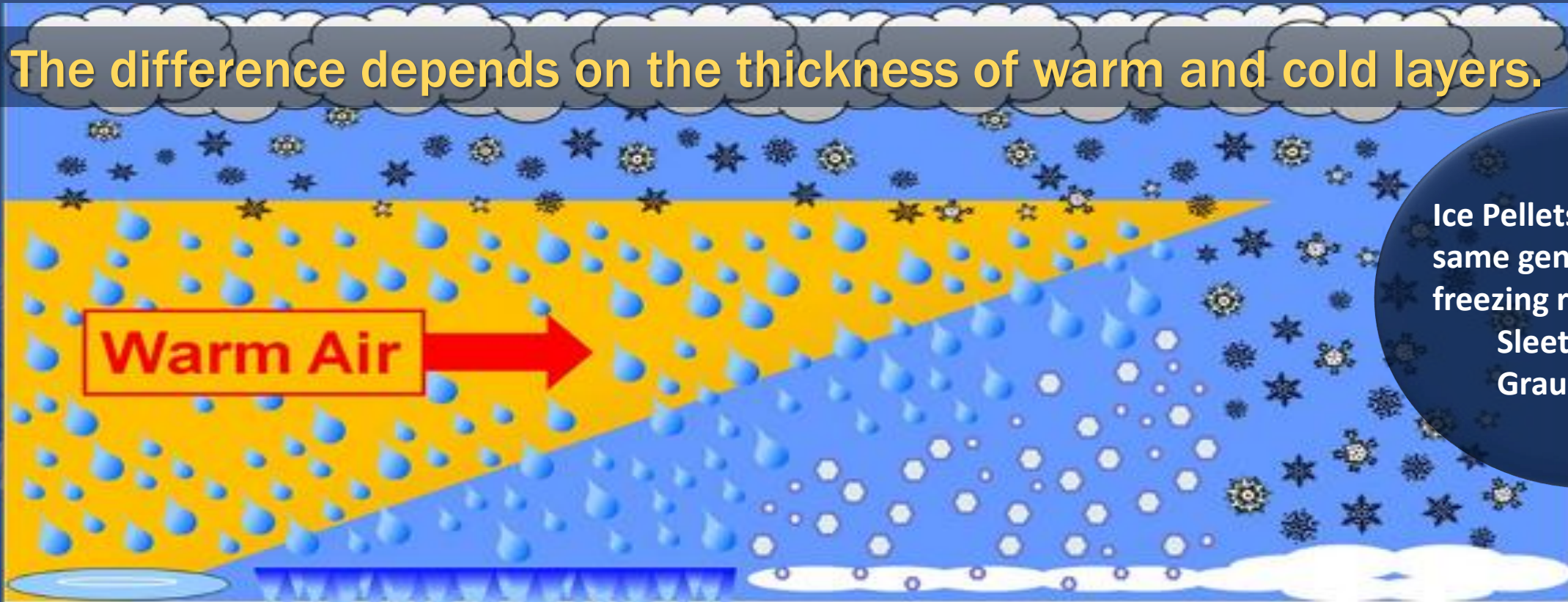




Precipitation Type



The difference depends on the thickness of warm and cold layers.



Ice Pellets occur by the same general process as freezing rain
Sleet – clear
Graupel – white

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



How to Report: Freezing Rain



- * Time it started
- * Duration event
- * Still falling?



- * An estimate of the ice thickness.
- * Use a ruler and average the ice thickness from the surface of a branch



- * Report location



- * We always welcome photos!

Photos courtesy of Neil Stuart
– NWS Albany, NY



- * Report road conditions resulting from frozen precipitation
- * Damage caused by icing, including downed tree branches or power lines





Actions to Take: Freezing Rain



- Check local weather conditions.



- Drive with extreme caution.

Even 4-wheel drive vehicles will have difficulty on icy roads.

Try to avoid overpasses and bridges *if possible*.

- If the pavement is slick, start slowly and brake early & gently.



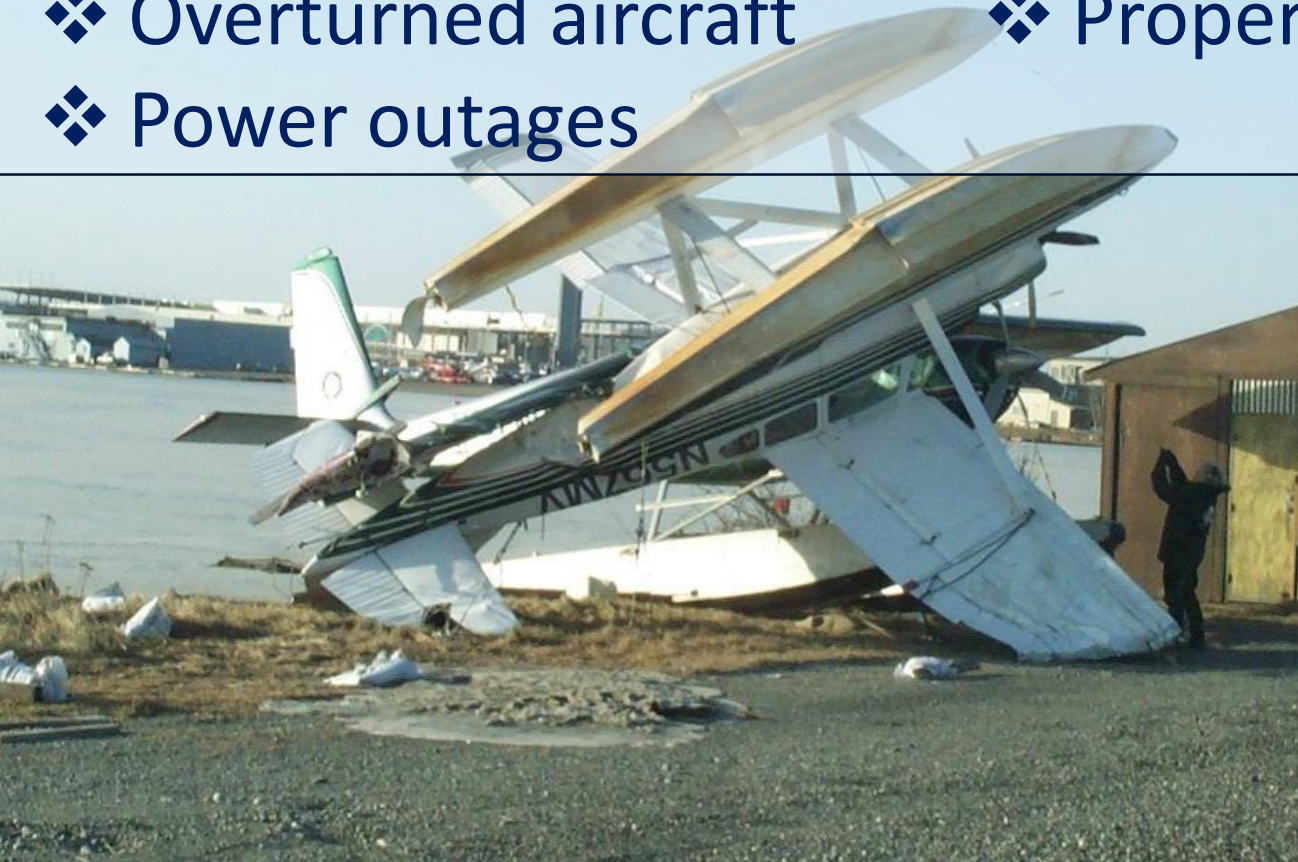


Types of Weather to Report: **High Winds**



Impacts

- ❖ Airport closures
- ❖ Overtaken aircraft
- ❖ Power outages
- ❖ Flying debris
- ❖ Uprooted trees
- ❖ Property damage



Uprooted Tree at Bowman Elementary



How to Report: High Winds



➤ Report high winds, especially if they are damaging trees or property

➤ Report the location and type of wind damage.

This still helps us to estimate the wind speeds



Tree downed in Ketchikan
Courtesy: KRBD FM Rainbird Community Radio

Winds can be measured by both wind speed and by damage



How to Report: **High Winds**



Estimating Wind Speeds

32-38 mph	= Whole trees in motion; inconvenience felt walking against wind.
25-31 mph	= Large branches in motion; whistling heard in overhead wires; umbrellas used with difficulty.
19-24 mph	= Small trees with leaves begin to sway.
13-18 mph	= Raises dust and loose paper, small branches moved.
8-12 mph	= Leaves and small twigs in constant motion; wind extends light flag.
4-7 mph	= Wind felt on face; leaves rustle, vanes moved by wind.
1-3 mph	= Direction of wind shown by smoke drift not by wind vanes.
<1 mph	= Calm, smoke rises vertically.

>72 mph	= Hurricane Force: Trees snapped, extensive destruction.
64-72 mph	= Large trees uprooted; widespread damage to structures.
55-63 mph	= Small trees uprooted, structural damage can occur.
47-54 mph	= Branches snap; loose shingles removed; minor damage to sheds/barns.
39-46 mph	= Twigs break; wind impedes walking; light objects (lawn furniture) tossed.

- Are branches snapped? How thick were the branches?
- Are any trees uprooted?
- Any structural damage? What kind?



Actions to Take: High Winds



➤ Before

Secure, tie down, or put away loose items that could blow away

➤ During

Take shelter: avoid an area likely to be hit by fallen trees or power lines

Use caution when driving: Keep distance from high profile vehicles such as tall trucks and buses

➤ After

Stay clear of downed power lines - report to the police





Types of Weather to Report: **Heavy Rain**

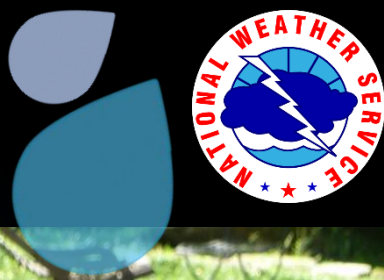


Impacts:

- ❖ Flooding
- ❖ Reduced visibility
- ❖ Hydroplaning



How to Measure Heavy Rain



- A rain gauge is ideal!
- Measure to the nearest hundredth of an inch (e.g., 0.75")
- Indicate the duration of time the rain was falling: 15 min? an hour?





Actions to Take: Heavy Rain

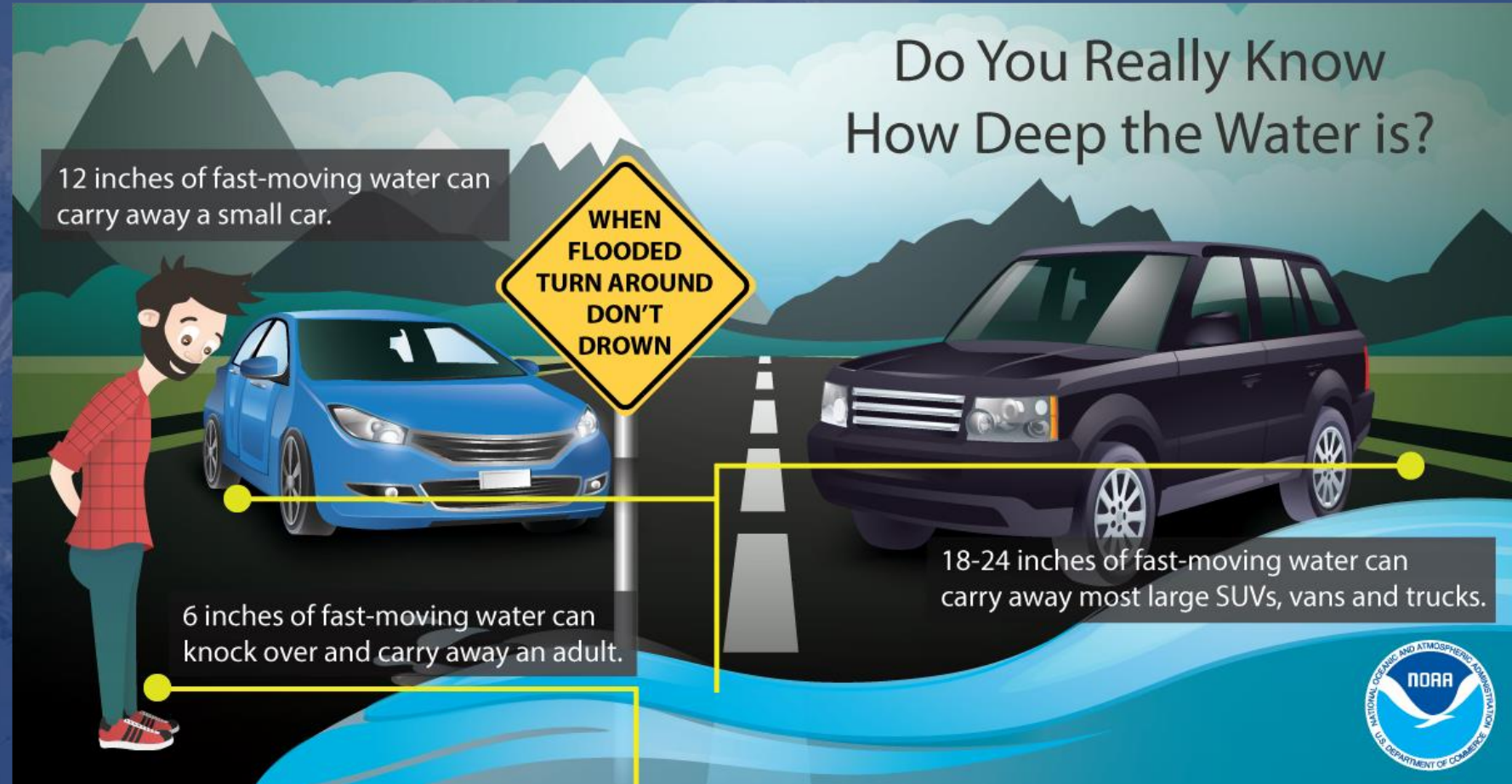


Turn Around Don't Drown

- Stay out of areas subject to flooding.

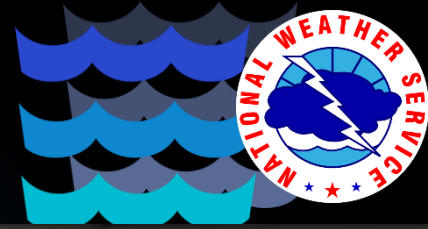
Dips, low spots, small creeks, canyons, washes, etc., can become filled with water. Culverts and drainage ditches can sweep you away.

- Drive with extra distance between you and the vehicle in front of you





To Report: Flooding & River Ice



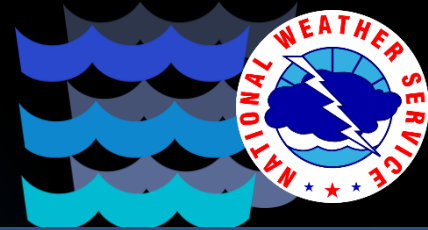
Impacts

- ❖ Property damage
- ❖ Flooding of nearby buildings
- ❖ Washed out roads
- ❖ Evacuations
- ❖ Mudslides & landslides

Break up along Kuskokwim at Birch Crossing, May 3, 2018



Types of Flooding



River Floods

Heavy Rainfall

Ice Jam Flooding

Snowmelt Flooding

Glacier Dammed Lakes

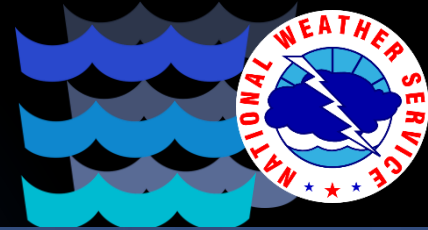
Flash Flooding



Flooding in Galena, Alaska



Ice Jam Flooding



Ice Jam Flooding

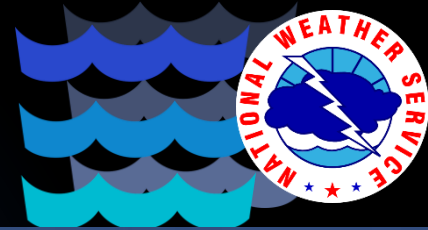
- Often occurs in spring during breakup season
- Can also occur in the fall freeze up season



Eagle, Alaska. May 17, 2013. Courtesy Ed Christensen



Snowmelt Flooding



- Frozen ground reduces the amount of water from melting snow or rainfall that can seep into the ground

Snowmelt Flooding

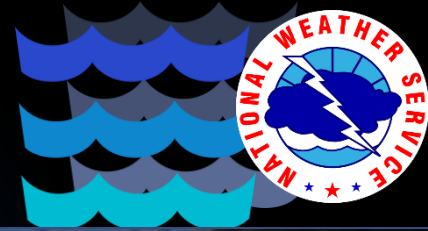
- Can happen anywhere more common in Northern Alaska (even with less snow) due to rapid warming



Snowmelt flood in Fairbanks in April, 2009



Flash Flooding



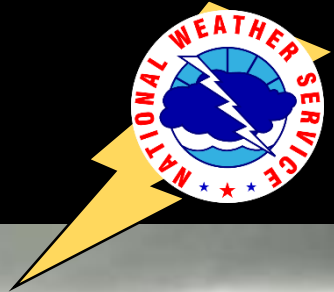
- Caused by heavy or excessive rainfall in a short period, *generally less than 6 hours*.
- Raging, swift water flow from heavy rain that rip through riverbeds, urban streets, or canyons.
- Can occur within minutes or a few hours of rainfall
- Can occur without rain
for instance, after a dam has failed, or after a sudden release of water by a debris or ice jam.

Flash Flooding

Flash flooding in Anchorage as a result of heavy rainfall in 2015.
Courtesy ADN



What to Report: **Severe Weather**



Thunderstorms

Lightning

Tornadoes

Hail

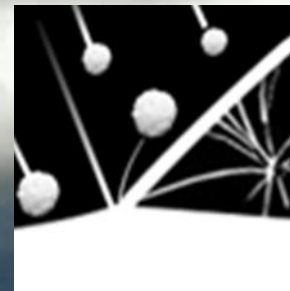
Gusty Winds

Touches the ground

Greater than 1"

Greater than 58 mph

**Severe
Thunderstorm**



Thunderstorm near Kwethluk, Alaska. Photo by Tyler Konig



What to Report: **Severe Weather**



When Thunder Roars Go Indoors

HAIL

Report the largest size stone you see
Compare to common objects



© 2003 Scott Blair

Dime/Penny	0.75 inches
Nickel	0.88 inches
Quarter	1.00 inches
Half Dollar	1.25 inches
Ping Pong Ball	1.50 inches
Golf Ball	1.75 inches
Hen Egg	2.00 inches
Tennis Ball	2.50 inches
Baseball	2.75 inches
Tea Cup	3.00 inches
Grapefruit	4.00 inches
Softball	4.50 inches

Funnel cloud over upper Cook Inlet, Alaska



courtesy: John D. Bunnell

To learn more about thunderstorms and convective severe weather, check out the weather spotter field guides



What to Report: **Other Weather**



Blowing Snow

Fog with visibility to ½ mile or less

Smoke or Blowing Dust

Any flooding & flash flooding

Funnel clouds, gustnadoes, waterspouts

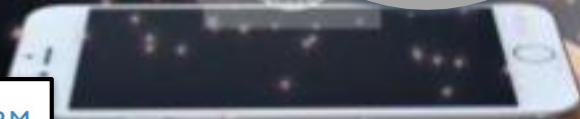
Ashfall



Blizzard Conditions in Rural Iowa.
Photo Courtesy of the Mahaska County EMA



Where do you get your forecast?



WEATHER THE STORM
 DOWNLOAD THE FEMA APP

⚡ ALERTS ✓ SAFETY TIPS

+ SHELTERS 📷 PHOTOS

Download on the **App Store** GET IT ON **Google Play**

- ## Getting NWS Information
- ✓ NWS Website
 - ✓ NOAA Weather Radio
 - ✓ Facebook
 - ✓ Twitter
 - @NWSAnchorage #AKwx
 - ✓ YouTube
 - ✓ Your local radio stations
 - ✓ mobile.weather.gov
 - Not all apps use NWS forecasts
 - All watches, warnings and advisories come from NWS





Watch, Warning, Advisories



Warning

Act now: Take shelter! Cancel or change your plans!

Advisory

Act now: be cautious. Be prepared in case things change.

Watch

Get ready now: Think about what you need to do to prepare. Will you change your plans? Do you need extra clothes, batteries, groceries? Where will you take shelter?



Watch, Warning, Advisories



WATCH



WARNING



WATCH

VS

WARNING

Alaskan Relatable Version*



Mosquito WATCH

PREPARE!

Conditions are favorable for the hazardous threat



Mosquito WARNING

TAKE ACTION!

The hazardous threat is imminent or occurring

*Mosquito Watches and Mosquito Warnings are NOT real NWS products. This was created to be relatable



National Weather Service Fairbanks, AK



@NWSFairbanks



Are you prepared?



- Shopping List:
- ✓ 20 batteries
 - ✓ 15 gallons of water
 - ✓ Extra tank of gasoline
 - ✓ Crank radio
 - ✓ 50 cans of tuna



DON'T WAIT FOR THE NEXT DISASTER

MAKE YOUR EMERGENCY PLAN TODAY!



Build A Kit

Have enough food, water and other supplies to support your needs for several days.



Ready.

KEEP CALM AND BE PREPARED

Are you Prepared?

Nearly half of U.S. adults do **NOT** have the resources and plans in place in the event of an emergency.

- Store a 3-day supply of water: one gallon per person, per day.
- Store at least a 3-day supply of non perishable, easy to prepare food.
- 48% of Americans do **NOT** have emergency supplies.
- 44% of Americans do **NOT** have first aid kits.
- 20% of Americans use social media for alerts and warnings. Make sure to keep a charger handy in an emergency.
- 20% of Americans get emergency info from mobile apps. Keep a charger handy in an emergency.
- 52% of Americans do **NOT** have copies of crucial personal documents.
- Don't forget your pets! You need a 3-day supply of food and water per pet.

Prepare supplies for home, work, and vehicles. Emergencies can happen anywhere.



Weather Service Safety Tips



Air Quality



Beach Hazards



Cold



Drought Safety



Floods



Heat



Hurricanes



Lightning



Rip Currents



Safe Boating



Ultraviolet Radiation



Thunderstorms



Tornado



Tsunamis



Wildfire



Winter Weather

NWS National Seasonal Safety Campaign



December 1



March 1



May 9-15



June 1



September 1

Are you prepared?



CAUGHT OUTDOORS IN A WINTER STORM?

STORE OR SECURE LOOSE ITEMS BEFORE STRONG WINDS



DRESSING FOR COLD WEATHER

Adding layers will help keep you warm as the temperature drops

SAFETY ON ICE

Ice is never 100% safe. If you don't know, don't go!

Minimum ice thickness guidelines for new clear ice only

<2"	4"	5"	6"	9"	12"
STAY OFF!!!	Supports ice fishing and walking	Supports small groups ice skating	Supports snow mobile ATV	Supports cars	Supports medium size trucks

Stay away from any cracks and melting ice.

EXTREME COLD

www.weather.gov/safety
www.weather.gov/wrn



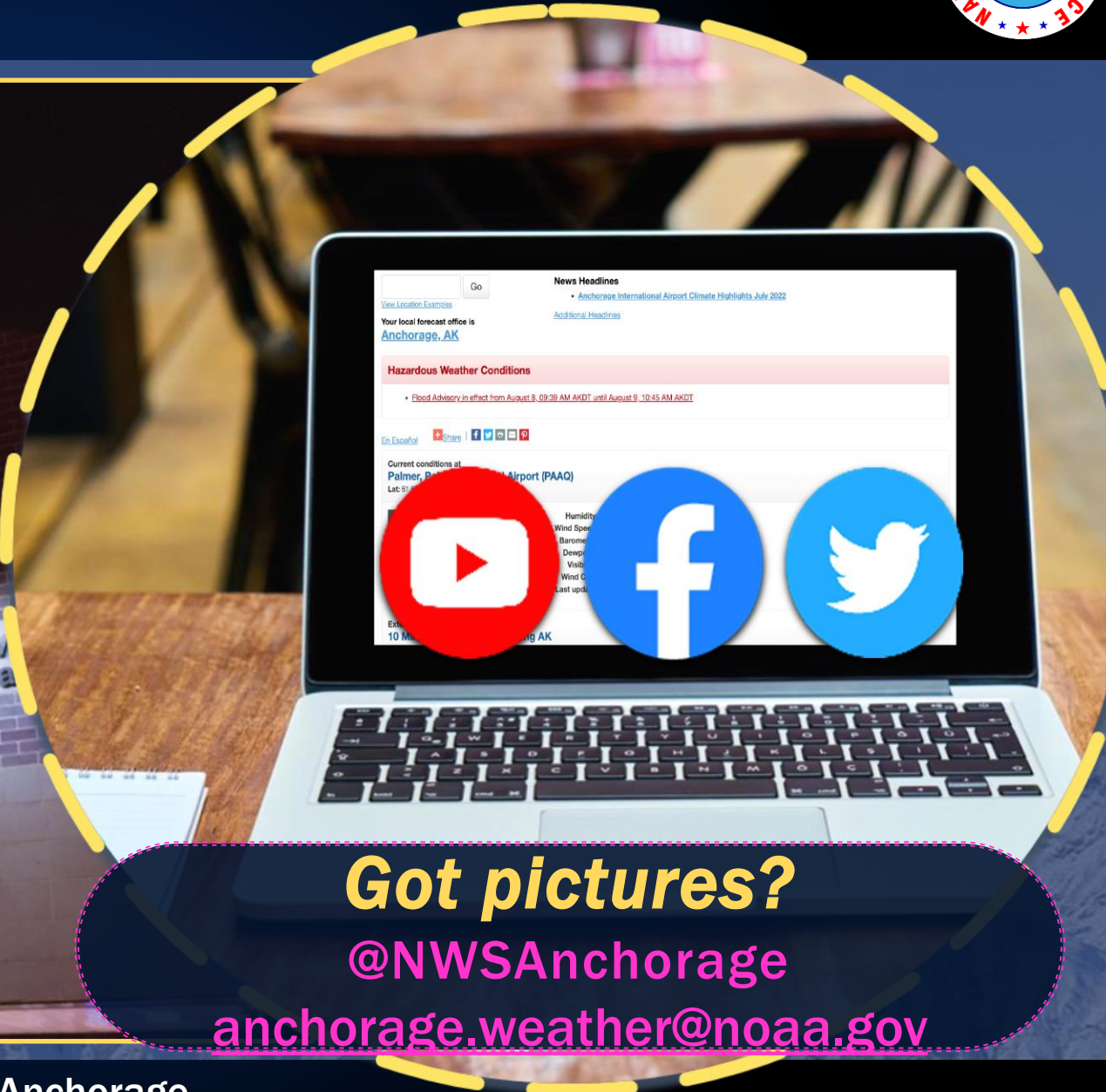


Ways to Report to Us!



907-266-5105

www.weather.gov/anchorage



National Weather Service
Water and Weather Forecasting



Got pictures?
[@NWSAnchorage](https://twitter.com/NWSAnchorage)
anchorage.weather@noaa.gov



Report to Us Online



Start here:
www.weather.gov/anchorage

NATIONAL WEATHER SERVICE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

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

News Headlines
 • [Anchorage International Airport Climate Highlights July 2022](#)

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

Anchorage, AK
Weather Forecast Office

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

[Northcentral](#) | [Southwest](#) | [Bering](#) | [Juneau/Southeast](#) | [Central/Northern](#) | Disable Mouse Scroll

Land Hazards
 - Warning
 - Watch
 - Advisory
 - Special Wx

Marine Hazards
 - Hvy Frzg Spray
 - Hurr Frze Wind
 - Storm Warning
 - Gale Warning
 - Small Crft Adv

Hover over a zone

Leaflet | Esri, HERE, Garmin, FAO, NOAA, USGS

Cities: | [on](#) | [off](#) - Legend: | [on](#) | [off](#) |
 public updated Mon Aug 08 14:20
 marine updated Mon Aug 08 14:00



Submit a Report Online



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

News Headlines
 • [Alaska Weather TV show reinstated in Fairbanks; time changes for other viewers](#)

NWS Forecast Office : Anchorage, AK Anchorage, AK
Weather Forecast Office

[Weather.gov](#) > Anchorage, AK

Current Hazards **Current Conditions** Radar Forecasts Rivers and Lakes Climate and Past Weather Local Programs

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

AKZ155 Bethel
High Surf Advisory: MAJOR STORM TO BRING HIGH SURF TO THE KUSKOKWIM DELTA TODAY

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

Current Conditions

State Roundup

Observations (Map)

Marine Obs (Map)

Upper Air Soundings

Precipitation

Satellite

Observations (Mesonet)

Surface Map/Analysis

Soaring Index

Vent Factor

Local Storm Reports

Submit a weather report

Alaska Snow Depth

FAA Weather Station List



Submit a Report Online



1

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



2

Storm Reports
Alerting the NWS to local weather

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

Time at which you observed this weather
803 PM AKST

Date on which you observed this weather
11/10/2022

Snowfall (inches):

I'm estimating the snowfall
 I measured the snowfall
 I don't have a reading, just some details below

Please provide any details such as if the snow is blowing or drifting

Back Next

Privacy policy for weather reports



3

Storm Reports
Alerting the NWS to local weather

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

We need the location of your report, but we don't store it permanently, only as a latitude and longitude for the report.

Automatically use your device's location:
Use my device's current location

Search for your address:
Such as: 123 Main St. Somewhere, NJ 10234
Find Address

Or, you can click your location on the map:



4

Storm Reports
Alerting the NWS to local weather

Report time: 0803 PM 11/10/2022
Latitude: 61.1581
Longitude: -149.9823

You are reporting: 60.0 inches of snow (measured).

If you wish to provide a name, spotter ID, or contact info, you can do so here.

If your NWS office has set up custom reporting groups, you can select one here

Pursuant to 18 U.S.C. § 1001, knowingly and willfully make any materially false, fictitious, or fraudulent statement or entry on this form is a crime punishable by fine and imprisonment.

Back **Send Report!**

Privacy policy for weather reports



Submit a Report Online



weather.gov/source/crh/lrmap.html?sid=afc

NATIONAL WEATHER SERVICE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

Storm Reports from the Last 24 Hours

Select the time range for the storm reports:
24 Hours

Search for a location on map:

Show **20** entries Search:

Hide Legend Create a permalink

Date/Time	Location	Description	Magnitude
No data available in table			
Date/Time	Location	Description	Magnitude

Showing 0 to 0 of 0 entries Previous Next

Toggle buttons below to turn off/on categories

Severe Winter Flooding Tropical Other

Legend
Report Type

- Tornado
- Hail
- Wind
- Winter
- Flooding
- Tropical
- Other

NWS Forecast Office : Anchorage, AK

Current Hazards **Current Conditions** Radar Forecasts Rivers and Lakes Climate and Past Weather Local Programs

AKZ155 Bethel
High Surf Advisory: MAJOR STORM TO BRING HIGH SURF TO THE KUSKOKWIM DELTA TODAY

Cities: | on | off - Legend: | on | off |

Current Conditions

- State Roundup
- Observations (Map)
- Marine Obs (Map)
- Upper Air Soundings
- Precipitation
- Satellite
- Observations (Mesonet)
- Surface Map/Analysis
- Soaring Index
- Vent Factor
- Local Storm Reports**
- Submit a weather report
- Alaska Snow Depth
- FAA Weather Station List



Weather Spotter Program



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

News Headlines
 • [Alaska Weather TV show reinstated in Fairbanks; time changes for other viewers](#)

NWS Forecast Office : Anchorage, AK Anchorage, AK
Weather Forecast Office

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

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

AKZ155 Bethel
High Surf Advisory: MAJOR STORM TO BRING HIGH SURF TO THE KUSKOKWIM DELTA TODAY

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

Local Programs

VAAs/VAGs

Alaska 511

Avalanche
Weather

CoCoRaHS

Cooperative
Observer Program

Spotter Program

Alaska Weather
Information Line

All Hazards NOAA
Weather Radio

Contact Us

Observation
Newsletters

Archived News
Articles

Barry Arm
Landslide Tsunami
Risk



Sign up to be a Weather Spotter

www.weather.gov/anchorage/spotter



1. Submit form with contact information

2. Review training materials

3. Complete short quiz



Local forecast by ZIP code or ZIP code

News Headlines

NWS Forecast Office : Anchorage, AK

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AKZ155 Bethel
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Alaska Weather Spotter Training

Weather Forecast Office
Anchorage





Questions?

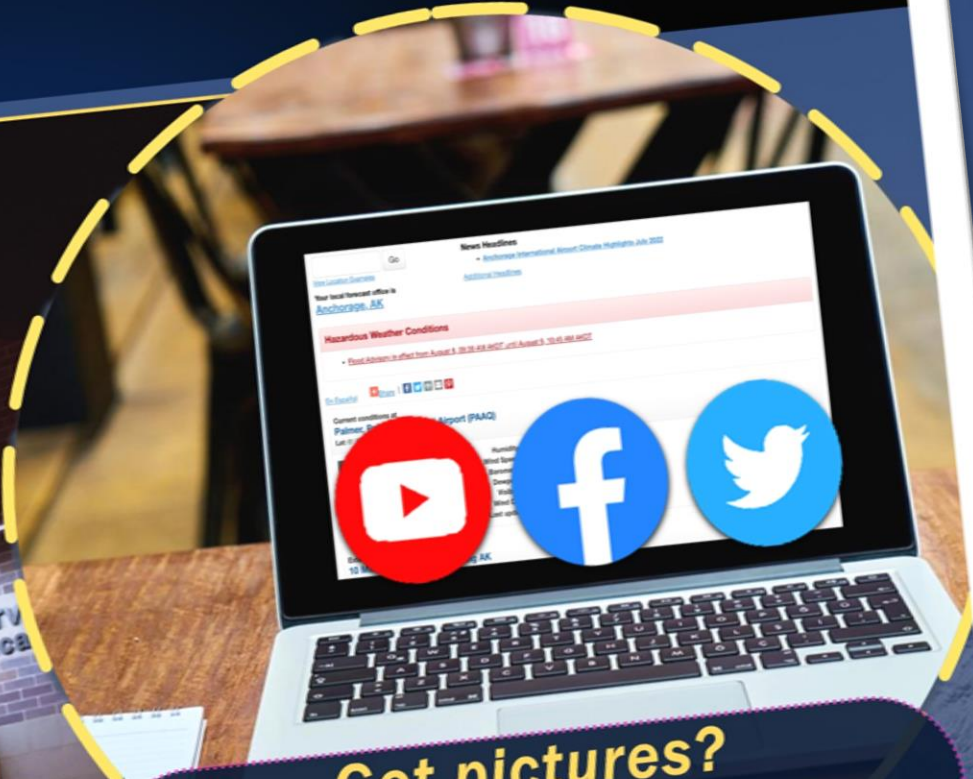


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National Weather Service
Water and Weather Forecasting



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Alaska Weather Spotter Training: Weather Forecasting Office Anchorage