

Southern Colorado Guide to Frequently Used NWS Weather Terms



**Prepared by:
Tom Magnuson
Warning Coordination Meteorologist
National Weather Service Office
Pueblo, Colorado**

PREFACE

This guide to frequently used National Weather Service (NWS) terminology is divided into five basic areas for easier understanding:

- * **Precipitation Probabilities: What do they mean?**
- * **Spring / Summer Weather Terms**
- * **Fall / Winter Weather Terms**
- * **Non-Precipitation Weather Terms**
- * **General Weather Terms**

The media will find this guide very helpful when explaining weather forecast "on-the-air", or in print. It can also serve as an educational tool for the general public. If you have any suggestions for improving the guide, please contact Tom Magnuson, Warning Coordination Meteorologist, at WFO Pueblo:

Tom Magnuson
Warning Coordination Meteorologist
NWS Office - NOAA
3 Eaton Way
Pueblo, Colorado 81001-4856
1-719-948-9429 x726
E-mail: thomas.magnuson@noaa.gov

CHECK OUT OUR WEBSITE AT: weather.gov/pueblo

Precipitation Probability:

What Does It Mean?

The following are precipitation probabilities used in National Weather Service forecasts and a brief explanation of each.

PoP, Probability of Precipitation (PoP) is defined as the:

Likelihood of occurrence (expressed as a percent) of a **MEASURABLE** amount of precipitation during a specified period of time (12 hours) at **ANY GIVEN POINT** in the forecast area. Measurable precipitation is defined as .01 (one-one hundredth) inch or 0.2 mm (millimeters) of liquid, or 0.1 (one-tenth) inch or 2.5mm (millimeters) of snow.

When precipitation has **NOT yet developed**, PoP refers to the chance of measurable precipitation occurring at a point. For example, a 60% chance of snow for tonight means that, at a point, there is a 6 in 10 chance that measurable snow will occur, or, there is a 40% chance of no occurrence of measurable snow at that point.

After precipitation **HAS developed**, PoP refers to the coverage of measurable precipitation over an area. For example, scattered thunderstorms tonight (implied PoP of 30% to 50%) means that 30 to 50 percent of an area is expected to get measurable rain (> 0.01"), or 50 to 70 percent of that area will **NOT** get measurable rain.

PoP percent	Expressions of Uncertainty	Areal Qualifiers (showers/thunderstorms only)
10 - 20	slight chance	isolated
30 - 50	chance	scattered
60 - 70	likely	numerous
80 - 100	(none used)	occasional, periods of, intermittent, or (none used, i.e., rain)

Spring / Summer Weather Terms

It is very important that the difference between a Severe Thunderstorm or Tornado **WATCH** or **WARNING** is understood.

When a **WATCH** is issued by the National Weather Service, people should be alert for the possibility of severe weather and have a plan of action in their mind in case a storm threatens.

When a **WARNING** is issued by the National Weather Service, a severe thunderstorm, tornado, or flooding has been detected by radar or seen by trained weather spotters. People in the path of the storm or flood need to take action to protect themselves or their property.

The following is a list of watches, warnings, and advisories that the National Weather Service issues and the criteria used for issuing them:

TORNADO WATCH - Weather conditions are favorable for the development of tornadoes and severe thunderstorms **IN and CLOSE** to the watch area. Watches are issued by the Storm Prediction Center in Norman, Oklahoma, and are in effect for several hours, with 4 to 6 hours being the most common time frame.

TORNADO WARNING - A tornado or developing tornado is indicated by radar or seen by weather spotters. The tornado warning is issued by the local National Weather Service Office (in south central and southeast Colorado by WFO Pueblo). The warning is typically in effect for 30 minutes to one hour. The tornado warning includes communities or areas in the path of the severe thunderstorm producing the tornado or developing tornado, where the tornado or developing tornado was at the time the warning was issued, and past storm history, if available.

SEVERE THUNDERSTORM WATCH - Weather conditions are favorable for the development of severe thunderstorms **IN and CLOSE** to the watch area. Watches are issued by the Storm Prediction Center in Norman, Oklahoma, and are in effect for several hours, with 4 to 6 hours being the most common time frame.

SEVERE THUNDERSTORM WARNING - A severe thunderstorm or thunderstorm expected to develop to or above severe limits is indicated by radar or seen by weather spotters.

A severe thunderstorm produces hail 3/4 of an inch or larger in diameter and/or winds of 58 miles an hour or higher and/or a tornado.

The severe thunderstorm warning is issued by the local National Weather Service Office (in south central and southeast Colorado by WFO Pueblo). The warning is typically in effect for 30 minutes to one hour. Sometimes WFO Pueblo will issue a warning for longer than one hour if the severe thunderstorm is expected to persist for over an hour and is moving very slowly through the warned area. The severe thunderstorm warning includes communities or areas in the path of the severe thunderstorm, where the severe thunderstorm was at the time the warning was issued, and past storm history, if available. Eighty to 90% of the time severe thunderstorm warnings are issued in our area for large hail. Small hail (1/4 to one half inch in diameter) which accumulates to a depth of a couple inches or several inches, at this time, is **NOT** considered to be a SEVERE event by the National Weather Service, even though, much damage could occur. Therefore, if small hail is expected to accumulate up to several inches, the event will probably be covered in a Short Term Forecast (NOW), **NOT** a warning.

FLOOD WATCH - Indicates that flooding or flash flooding is a possibility **IN or CLOSE** to the watch area. Those in the affected area are urged to be ready to take quick action if a flash flood warning is issued, or if flooding is seen. Flood Watches are issued by the local National Weather Service office (in south central and southeast Colorado by WFO Pueblo).

FLASH FLOOD WARNING - Signifies a dangerous situation when rapid flooding of rivers, small streams, or urban areas occurs. Very heavy rain that falls in a short period of time can lead to flash flooding which depends on local terrain, ground cover, degree of urbanization, degree of man-made changes to river or stream banks, and initial ground moisture or river conditions. Flash Flood Warnings are issued by the local National Weather Service (in south central and southeast Colorado by the WFO Pueblo).

FLOOD STATEMENT - An alert of flooding which is generally only an inconvenience (not life-threatening if proper precautions are taken) to those living in the affected area. It is issued by the local National Weather Service Office when heavy rain will cause high water in streets and low-lying areas. It is also used if small creeks are expected to have high water below bankfull levels. Some damage to roads or other property could occur.

Fall / Winter Weather Terms

The following advisories will be used to alert the public of situations that may cause difficult, but not impossible traveling and walking conditions. Advisories are issued by the local National Weather Service office (in south central and southeast Colorado by WFO Pueblo).

SNOW ADVISORY – Issued when falling snow hampers travel. Sustained winds lower than 17 mph.
Snow criteria are:

Up to 12 hours	mountain zones will AVERAGE	5, 6, or 7 inches
	plains zones will AVERAGE	4 or 5 inches

OR

Longer than 12 hours	mountain zones will AVERAGE	6, 7, 8, or 9 inches
	plains zones will AVERAGE	5, 6, or 7 inches

In WFO Pueblo's county warning area, Zones 58>61, 63>68, 72>76, and 79>82 are mountain zones, which includes the eastern San Juan and La Garita mountains, eastern Sawatch mountains, Sangre de Cristo and Wet mountains and Teller county, Pikes Peak, and western El Paso county.

SNOW AND BLOWING SNOW ADVISORY - Issued when falling snow (meeting the above criteria) and wind-driven snow reduces visibility enough to hamper travel. Visibility is occasionally 1/4 mile or less with sustained winds or frequent gusts higher than 17 mph.

BLOWING SNOW ADVISORY - Issued when wind-driven snow reduces visibility enough to hamper travel. Visibility is frequently 1/4 mile or less with sustained winds or frequent gusts higher than 17 mph.

WINTER WEATHER ADVISORY (for freezing drizzle) - Issued when light ice accumulation due to freezing drizzle (less than 1/4 inch) causes driving or walking problems, but little damage to trees. Ice may not form on all exposed surfaces.

WINTER WEATHER ADVISORY (for multiple hazards) -

Issued when a combination of snow, sleet, or ice causes driving or walking problems.

WIND CHILL ADVISORY - Issued when wind chill values are expected to drop to -18 to -24 degrees for a period of time. Winds have to be at least 10 mph. Wind Chill Advisories are not issued for mountain zones.

FREEZING RAIN ADVISORY - Issued when light ice accumulation due to freezing rain (less than 1/4 inch) causes driving or walking problems, but little damage to trees. Ice may not form on all exposed surfaces.

SLEET ADVISORY - Issued when sleet accumulates up to 1/2 inch, causing driving or walking problems.

The following terms inform the public of more serious winter weather conditions that may cause difficult or impossible traveling conditions. They are usually issued for the first forecast period, but may extend into the 2nd and 3rd forecast periods for slow moving weather systems. Outlooks, Watches, and Warnings are issued by the local National Weather Service office (in south central and southeast Colorado by WFO Pueblo).

HAZARDOUS WEATHER OUTLOOK – Issued daily for all hazards, including significant winter weather events which may occur beyond the third or fourth forecast periods (i.e., 36 to 48 hours).

WINTER STORM WATCH - Issued when conditions are favorable (50% chance or greater) for the development of hazardous weather elements such as heavy snow or significant accumulations of freezing rain or sleet, which are quite rare in Colorado. These conditions may occur singly, or in combination with others. Watches are typically issued 12 to 36 hours in advance of the event(s).

BLIZZARD WATCH - Issued when conditions are favorable (50% chance or greater) for the development of sustained winds or frequent gusts to 35 mph or higher and considerable falling and/or blowing snow reduces visibility to less than 1/4 mile. These conditions are POSSIBLE for at least 3 hours.

NOTE: Blizzard Watches are NOT issued for mountain zones (58>61, 63>68, 72>76, and 79>82).

WINTER STORM WARNING - Issued when heavy snow accumulations and sustained winds or frequent gusts higher than 17 mph are imminent or likely, perhaps in combination with sleet and/or freezing rain/freezing drizzle. Winter Storm Warnings are usually issued for a 12 hour period, but can be extended out to 24 hours or longer.

Heavy snow amounts:

in mountain zones - AVERAGING 8 inches or more up to 12 hours,
or 12 inches or more longer than 12 hours
in plains zones - AVERAGING 6 inches or more up to 12 hours,
or 8 inches or more longer than 12 hours

In WFO Pueblo's county warning area, Zones 58>61, 63>68, 72>76, and 79>82 are mountain zones, which includes the eastern San Juan and La Garita mountains, eastern Sawatch mountains, Sangre de Cristo and Wet mountains and Teller county, Pikes Peak, and western El Paso county.

HEAVY SNOW WARNING - Issued when heavy snow accumulations (meeting the above criteria) with sustained winds or frequent gusts below 17 mph are imminent or likely. Heavy Snow Warnings are usually issued for a 12 hour period, but can be extended out to 24 hours or longer.

BLIZZARD WARNING - Issued when a winter storm has sustained winds or frequent gusts to 35 mph or higher and considerable falling and/or blowing snow reduces visibility to less than 1/4 mile. These conditions are expected to last for at least 3 hours. NOTE: Blizzard Warnings are NOT issued for mountain zones (58>61, 63>68, 72>76, and 79>82).

ICE STORM WARNING - Issued when damaging accumulations of ice are expected during freezing rain situations, with walking and driving becoming extremely dangerous. Significant accumulations are usually 1/4 inch or greater. This is a very rare event in Colorado.

SLEET WARNING - Issued when sleet accumulations make walking and driving becoming extremely dangerous. Significant accumulations are usually 1/2 inch or greater. This is a very rare event in Colorado.

WIND CHILL WARNING - Issued when wind chill values are expected to drop to or below -25 degrees in the plains or drop to or below -35 degrees in the mountains for a period of time. Winds have to be at least 10 mph.

Non-Precipitation Weather Terms

The following advisories and warnings will be used to make the public aware of weather situations that are not necessarily associated with precipitation, but need to be highlighted. Advisories and warnings for south central and southeast Colorado are issued by WFO Pueblo.

DENSE FOG ADVISORY - Issued when visibility over a widespread area drops to 1/4 mile or lower.

FREEZING FOG ADVISORY - Issued when very light rime ice or ice accumulation due to freezing fog or light drizzle from freezing fog. The fog can range from light fog to dense fog (visibility below 1/4 mile).

FROST ADVISORY - Issued for the San Luis Valley and plains zones during the early Fall or late Spring during the growing season when the surface air temperature is expected to drop to around 32 degrees F and frost development is expected over a widespread area for a significant period of time.

HIGH WIND WATCH / WARNING - Issued with the possibility or occurrence of the following criteria:

in zones 58>61, 63>68, 72>76, 79>82, 87, and 88 sustained winds of 50 mph or higher are expected to last for one hour or longer, and gusts to 70 mph or higher are to last for one hour or longer.

in zones 62, 69>71, 77, 78, 83>86, 89, and 93>99, sustained winds of 40 mph or higher are expected to last for one hour or longer, and gusts to 58 mph or higher are expected to last for one hour or longer.

FREEZE WATCH / WARNING - Issued with the possibility or occurrence for the San Luis Valley and plains zones during the early Fall or late Spring during the growing season when the surface air temperature is expected to drop below 32 degrees F over a widespread area for a significant period of time.

General Weather Terms

The following are weather terms frequently used by the National Weather Service in Colorado, apart from specific outlooks, watches, warnings, and advisories mentioned before. All temperatures are in degrees Fahrenheit.

ADVISORY - Highlights special weather conditions that are less serious than a warning. It is for events that may cause significant inconvenience and, if caution is not used, could lead to situations that may threaten life and/or property.

ALBUQUERQUE LOW - When a low pressure system is over or near Albuquerque, New Mexico. During the winter season, a low in this position can bring heavy snow to parts of southeast Colorado. However, an Albuquerque Low need **NOT** be present for localized or widespread heavy snow in the area.

BACKDOOR FRONT - A cold front that enters Colorado from the northeast or east and moves west. The front can bank up against the mountains and precipitation can develop.

CHINOOK WIND - A warm, dry wind that descends the eastern slopes of the Rocky Mountains. As the air descends, it warms and dries as the air compresses under higher pressure in the lower elevation of the plains.

COLD FRONT - The transition zone where a cold air mass replaces a warm air mass at a point.

DEGREE-DAY - Gauges the amount of heating or cooling needed for a building using 65 degrees as a baseline. To compute heating/cooling degree-days, the average temperature for a day is taken and referenced to 65 degrees. An average temperature of 50 degrees yields 15 heating degree-days, while an average of 75 degrees would yield 10 cooling degree-days. Electric and natural gas companies and heating and air conditioning industries use heating and cooling degree information to calculate their needs.

DOPPLER RADAR - A weather radar system used by the National Weather Service. About 120 of these radars are installed at National Weather Service Offices nationwide. This sensitive radar system generates many useful products for meteorologists, which helps them issue accurate and timely weather products and warnings. Basic products include reflectivity echoes, which show intensity of precipitation, wind velocity, which shows air motion toward and away from the radar (which can show circulations (tornadoes)), and areal quantitative precipitation estimates, used in potential flood/flash flood situations.

DEW POINT - The temperature to which air must be cooled in order to be saturated (for dew to form). This value is a more useful measure of the atmospheric water vapor content than relative humidity, because it is a fairly conservative property of an air mass.

DOWNBURST - A strong downrush of air, initiated by a thunderstorm, which produces a blast of damaging winds at ground level. Downbursts may last from a few minutes in small scale microbursts to tens of minutes in macrobursts. Wind speeds can reach 150 mph, comparable to a strong tornado!

DOWNSLOPE - Descending air from an elevated valley or mountain range, which consequently warms and dries.

DRIFTING SNOW - An uneven covering of snow on the ground caused by strong winds.

DRIZZLE - Precipitation in the form of liquid drops less than 0.02 inch (0.5 mm) in diameter. Drizzle is sometimes called mist by non-meteorologists.

DRY LINE - A boundary that often lies across southeast Colorado which separates warm, dry air from warm, moist air. With an unstable atmosphere, thunderstorms often develop along this boundary.

DUST DEVIL - A small but rapidly rotating column of air, usually of short duration, that is made visible by dirt, sand, and other debris picked up off the ground. Diameters usually range from a few feet to 100 yards. They develop most often on clear, dry days when the ground is strongly heated.

FLOOD CREST - Maximum height of a flood wave as it passes a location.

FLOOD STAGE - The level at which a river or creek begins to leave its banks.

FOG - A cloud with its base on the ground, which reduces visibility.

FREEZING DRIZZLE/RAIN - Drizzle/rain that falls and then freezes upon impact with the ground or an object with a temperature below 32 degrees.

FROST - A covering of ice crystals on surfaces exposed to the air.

FROZEN DEW - Dew that freezes into small beads of ice when the air temperature falls below 32 degrees.

FUNNEL CLOUD - An accessory cloud accompanying a rapidly rotating column of air reaching toward the ground from the base of a shower or thunderstorm.

GROUND FOG - A layer of fog less than 20 feet thick that reduces visibility more in the horizontal than in the vertical.

HAIL - Precipitation in the form of balls or lumps of ice, which have diameters of 0.2 inch (5 mm) or more.

ICE CRYSTALS - Crystalline form of ice that has the shapes of needles, columns, or plates. Ice crystals are very small and slowly fall from clouds or through the clear air and occur only at very low temperatures in a stable atmosphere.

ICE FOG - Fog made up of ice crystals, instead of liquid water droplets, that forms when clear and calm conditions prevail in extremely cold arctic air.

INVERSION - A layer of the atmosphere where the temperature increases with increasing height. Ground based inversions occur during nights with clear, dry and calm conditions.

JET STREAM - A band of strong winds that are found in the atmosphere. It is usually several hundred miles wide and a few miles deep.

LEE SIDE TROUGH - An elongated area of low pressure that forms on the leeward side of the Rockies. It can develop when the wind blows nearly perpendicular to the mountains.

LENTICULAR CLOUDS - Clouds that have the shape of a lens. They usually form over or to the leeward (downwind) side of the mountains. Viewed from the ground, the clouds appear stationary as the air actually rushes through them. They are also referred to as standing wave clouds.

MACROBURST - A downrush of air, initiated by a thunderstorm, with an outflow diameter 2.5 miles or greater, and damaging winds that may reach tornado intensity.

MICROBURST - A small downrush of air, initiated by a shower or thunderstorm, with an outflow diameter less than 2.5 miles, with peak winds that may cause damage and affect aircraft performance.

MOUNTAIN BREEZE - A localized wind in a mountain valley environment that blows downslope at night.

OCCLUDED FRONT - Typically in Colorado when a cold front overtakes a warm front, lifting the warm air above ground.

OVERRUNNING - When an air mass moves up and over a cooler, denser air mass. This situation often causes clouds and precipitation.

RAIN - Precipitation of liquid drops with diameters of 0.02 inch (0.5 mm) or larger. A steady and fairly uniform fall of precipitation over an area for a long period of time.

RELATIVE HUMIDITY - The ratio of water vapor contained in the air compared to the maximum amount of water vapor the air could hold at that particular temperature and pressure. Dew point temperature is actually a better way to gauge the atmospheric water vapor content.

RIDGE - An elongated area of high pressure.

ROTOR/ROTOR CLOUD - A turbulent wind eddy that develops on the leeward side of large mountain ranges. The air within the rotor/rotor cloud rotates parallel to the mountain range, and can be very hazard to aircraft operations in some cases.

SEVERE THUNDERSTORM - A thunderstorm accompanied by winds of 58 mph or higher and/or hail of 3/4 inch in diameter or larger and/or a tornado.

SHOWER - Periods of rainfall or snowfall of short duration. Brief heavy precipitation with measurable amounts are possible.

SNOW - A steady fall of ice crystals for a long duration.

(SNOW) FLURRIES - Periods of light intensity snowfall with no measurable accumulation.

SLEET - Solid grains of ice formed by the freezing of raindrops or the refreezing of largely melted snowflakes. These grains usually bounce upon impact with the ground or pavement.

SQUALL LINE - A line of thunderstorms extending for tens, or in some cases, hundreds of miles.

STABLE AIR - Air that is colder than its surroundings and resists upward movement.

SUPERCELL - A severe thunderstorm that has a long lasting, strong, organized updraft and downdraft couplet. It often produces extremely large hail, very damaging winds and tornadoes.

TROUGH - An elongated area of low pressure.

TORNADO - A violently rotating column of air in contact with the ground. The visible accessory condensation cloud often does NOT extend all the way to the ground in Colorado due to low atmospheric humidity.

UNSTABLE AIR - Air that is warmer than its surroundings and when forced upward will continue to rise, leading to the development of clouds and sometimes precipitation.

UPSLOPE FLOW - Air that ascends with the rising terrain and consequently cools to the dew point. Upslope often leads to low clouds and precipitation.

VALLEY BREEZE - A localized wind in a mountain-valley environment that blows upslope during the day.

VIRGA - Rain or snow that falls from clouds but evaporates in the dry air beneath the cloud before reaching the ground. Virga looks like curtains of water extending from the cloud.

WALL CLOUD - A lowering of the cloud base, usually on the west edge of a severe thunderstorm. If a wall cloud is rotating, it may indicate future tornado development.

WARM FRONT - The transition zone where a warm air mass overtakes and replaces a cold air mass at a point.

WARNING - Issued to alert the public that a hazardous weather element is imminent or has a very high probability of occurrence. A warning is issued for conditions that pose a major threat to life or property.

WATCH - Alerts the public to the possibility of severe weather, or some other hazardous weather element. It is intended to provide enough lead time so those who need to set their plans into motion can do so.