

Snow Measurement Guidelines  
for  
National Weather Service  
Snow Spotters



National Weather Service Forecast Office Northern Indiana

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# Snow Measurement Guidelines

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## Introduction

The following snow measurement guidelines were developed from previously existing National Weather Service (NWS) procedures. The NWS Forecast Office in Northern Indiana is responsible for forecasts and warnings for 24 counties in northern Indiana, 8 counties in northwest Ohio, and 5 counties in southwest Michigan. Volunteer weather spotters are a key source of information to fill in the gaps between official NWS observing sites.

## Definitions

**Winter Storm Watch** – Issued when the potential exists for 6 inches or more of snow in 12 hours, or 8 inches or more of snow in 24 hours. Also issued for potential of a quarter inch or more of freezing rain, or significant mixed precipitation.

**Heavy Snow Warning** – Issued when 6 inches or more of snow is likely in 12 hours, or 8 inches or more of snow in 24 hours.

**Ice Storm Warning** – Issued when a quarter inch or more of ice accumulation is likely.

**Heavy Sleet Warning** – Issued when a half inch or more of sleet accumulation is likely.

**Winter Storm Warning** – Issued when a combination of snow, blowing snow, sleet, and/or freezing rain is likely to exceed warning criteria.

**Blizzard Warning** – Sustained winds or frequent gusts of 35 mph or greater causing visibility to be reduced to a one quarter mile or less in blowing snow for a period of 3 or more hours. Blizzards may or may not be accompanied by falling snow.

**Snow Advisory** – Issued when 4 to 5 inches of snow are likely in a 12 hour period, or 6 to 7 inches over a 24 hour period.

**Snow and Blowing Snow Advisory** – Issued when 4 to 5 inches of snow are likely in 12 hours, or 6 to 7 inches over a 24 hour period and significant blowing snow.

**Freezing Rain Advisory** – Issued when freezing rain is likely and expected to accumulate to less than a quarter inch.

**Sleet Advisory** – Issued when sleet is likely and expected to accumulate to less than a half inch.

**Winter Weather Advisory** – Issued when a combination of snow, sleet, and/or freezing rain is likely to have an impact, but is not expected to reach warning criteria.

**Wind Chill Warning** – Issued for the potential of wind chills of -30F or colder in the presence of a 10mph or greater wind speed.

**Wind Chill Advisory** – Issued for the potential of wind chills of -20F to -29F in the presence of a 10mph or greater wind speed.

**Freezing Rain** – Falls as **liquid rain** and **freezes upon contact** with surfaces such as sidewalks, roads, and trees.

**Sleet** – Falls as a frozen droplet of rain (ice pellets).

## **Relaying Real Time Information**

Real time reports are just as important to the NWS as snowfall measurements. Here are a few examples of information that would be beneficial to forecast and warning operations.

- Change in precipitation type (rain to snow, snow to freezing rain, etc)
- Snow Accumulation of 1 inch or more
- Heavy Snowfall Rate (example: snowing at 1 inch per hour)
- Significant Blowing or Drifting snow
- Is the snow, ice, or blowing snow having a major impact on travel
- What is occurring is not what is in the forecast
- Anything significant that you think we should know about

## **Before the First Snow**

Place your snowboard outside. A snowboard can be any lightly colored board that is about 2 feet by 2 feet. A piece of plywood painted white works very well. Choose a location that is away from trees, buildings, and shadows. Try to avoid areas that are known to be prone to drifting. Mark the location of the snowboard with a stake so you can find it after a fresh snowfall.

## Measuring Snowfall

**Snowfall is measured to the nearest tenth of an inch.** Measure the greatest amount of snowfall that has accumulated on your snowboard since the last observation. You can measure on a wooden deck or ground if a snowboard is not available. **Snowfall should not be measured more than 4 times in 24 hours.** You can measure the hourly snowfall rate, but do not clean off your board each hour. Only clean off the board when you take one of the four daily measurements. Once the snow ends, add up the measurements from each time the snowboard was cleaned to reach a storm total.

Special cases:

- Snow falls and accumulates on the snowboard, but then melts. In this case, the snowfall is the greatest depth of snow observed on the board before it begins to melt. If this occurs several times, measure the snowfall after each snow shower and add each measurement for the total snowfall.
- Snow falls and melts continuously on the board. In this case, if the snow never reaches a depth of a tenth of an inch, then a trace of snowfall is recorded.
- Snow has blown or drifted onto the snowboard. In this case, take several measurements from around the yard where the snow has not drifted, being careful only to measure new snow. Take an average of the various measurements to arrive at a total.
- Sleet counts towards total snowfall, freezing rain accumulation does not.

## Measuring Snow Depth

The depth of snow on the ground includes both new snow and old snow which was in place. Measure the total snow depth at several locations in your yard which have not drifted or blown. Take an average of these measurements to arrive at the snow depth. Sometimes old snow can be very hard and crusty underneath the new snow. Be sure that the ruler gets all the way down to the underlying ground. **Snow depth is measured to the nearest inch.**

## Measuring Snow Water Equivalent (SWE)

Snow water equivalent is the amount of liquid water contained in the snow. This information is very useful to the NWS, especially just before a thaw in order to assess river flood potential. In order to measure the SWE, all you need is a round container, such as a coffee can, and a ruler. Take the coffee can and push it into the snow pack, taking a core of the snow. Bring your sample inside to melt and then measure the amount of liquid water in the can.

