



DID YOU KNOW THAT...

NWS meteorologists need reports from weather spotters during a severe weather episode?

Doppler Radar cannot detect what is occurring on the ground. It's designed to look into the heart of the storm and its surroundings to detect wind currents and other storm-structure clues that suggest a storm is or will become severe. "Ground truth" spotter reports let meteorologists correlate what they see on radar with what is truly occurring. In some cases, the storm may "look" severe on Doppler radar, but it really isn't. The reverse is true, as well. Therefore, the meteorologist is learning in real-time. A severe weather event is hail at least 1 inch in diameter, and/or damaging winds at least 58 mph, or a tornado. Flash floods are another hazardous weather event. NWS meteorologists need to know if these severe weather events occurred within a warning and during the time of a warning. If they do, then the warning verifies and is a "good" warning.

NWS meteorologists need severe weather reports from weather spotters hours or even days after a severe weather episode?

NWS meteorologists want to know two basic things...

- 1) did they "cry wolf" too many times, that is, did they issue warnings that were not needed
False Alarm Ratio - FAR and
- 2) did they issue the warnings **prior** to the actual occurrence of severe weather events
Probability of Detection - POD

The greater the lead time of warnings, the greater the chance that people can find shelter. Ideally, meteorologists want to minimize the **FAR** and maximize the **POD**. The presence or absence of severe weather events lets meteorologists assess the effectiveness of their warning service, and make necessary changes in future severe weather episodes.

the NWS needs to know the exact time and location of severe weather reports such as hail, toppled trees and power lines, damaged buildings, flooded or washed out roads, etc.

The Warning Coordination Meteorologist (WCM) is required to file monthly, detailed storm reports, **Storm Data**, for their area of responsibility, that contain the exact time(s) and location(s) of all severe weather events and associated damage or impact. Besides the large hail, wind damage, and tornado events, they also need information on funnel clouds, rainfall amounts and flooding, road washouts, dam failures, lightning strikes/fires, non-thunderstorm high winds, blizzards, snow accumulations, freezing rain/drizzle, dense fog, **and** injuries/deaths due to extreme cold and excessive heat. These reports will help meteorologists determine the effectiveness of their watch-warning service.

the NWS needs to know the time, place and number of people injured or killed, and the monetary value of damages caused by severe weather events?

The NWS includes, in its monthly **Storm Data**, information on the number of injuries and deaths, and damage amounts that were directly-related to various weather hazards/events. These numbers are put into NWS messages that are disseminated on computer wire services to the media, businesses, government agencies, and the general public. **Storm Data** reports from all states are then compiled into a national publication which is available to anyone. Emergency Managers can use the **Storm Data** reports to produce a weather hazard analysis for their county or local area, and to plan for future mitigation. Insurance companies, construction and industrial companies, and university researchers use **Storm Data** publications in a variety of ways. Last, but not least, **Storm Data** information is used by computer programmers to improve the software programs that run the WSR-88D Doppler Radar system!

National Weather Service (NWS) Warning Coordination Meteorologists (WCM's) conduct spotter training classes for Emergency Managers, amateur radio operators, county sheriff departments, local police departments, firefighters, 911 dispatchers, emergency and medical services personnel, county highway departments, public works departments, and other volunteer spotter organizations?

Since the NWS's Doppler radar cannot specifically detect what kind of weather hazard(s) is/are occurring at the ground, it needs "ground truth" reports from weather spotters. All of these people and organizations make up the weather spotter networks that are "activated" just prior to severe weather episodes. In order for weather spotters to pass on accurate and timely severe weather reports to the NWS, they need information on what to look for, and how to tell the difference between real severe weather and look-alikes. If you want to be an effective spotter, you should attend several spotter classes. The last thing anyone wants is a false severe weather report that triggers a needless warning. Conversely, if a NWS meteorologist receives reliable spotter information that indicates a storm is not severe, then they will avoid issuing a needless warning.



Did you know that the basic answer to all of the above is that the NWS is mandated by law to issue timely and accurate watches and warnings to minimize the loss of life and property? Simply said, the NWS cannot do it alone. It needs the help of many to accomplish its mission. The NWS is deeply indebted to all individuals and organizations who contribute to the watch/warning program.

**- Tom Magnuson -
Warning Coordination Meteorologist
National Weather Service, Pueblo, CO**



Mobile Spotting - Safety Tips



Before You Head Out: Check the Vehicle !!

- Check fuel supply
- Think about availability of fuel during spotting
- Check condition of tires
- Check spare tire and jack
- Check windshield wipers and washer fluid supply
- Check ALL fluid levels
- Check battery
- Check belts and hoses
- Check brakes

You do NOT want to be stranded with SEVERE weather approaching !

On the Road

- Avoid spotting alone! If you are inexperienced at mobile spotting, bring someone who has experience along with you.
- Drive with 100 percent of your attention
- Observe posted speed limits
- Use your turn signals
- Avoid sudden stops and starts
- Use caution when pulling on or off of roadways, etc.
- Park completely off the right-of-way
- Watch out for school zones, crosswalks, etc.
- Avoid unpaved roadways, if possible

Road Hazards

- Rain soaked roadways
- Hail covered roadways
- Flooded roadways, standing or rushing water
- Mud covered roadways
- Limited visibility due to rain, blowing dust, road spray, fog
- Obstacles: construction, animals, pedestrians, stopped vehicles, etc.
- Other traffic

Thunderstorm Hazards - Lightning

- Stay inside the vehicle as much as possible
- If lightning is less than a few miles away, go to shelter in the vehicle or a building
- Early lightning strikes often come near developing rain shafts
- Lightning strikes occur anywhere in and AROUND the thunderstorm, even where it's NOT raining
- Avoid being the tallest object around
- Do NOT stand on wet ground, or close to fences, power/phone lines, or anything metal

Thunderstorm Hazards - General

- Plan escape routes when driving near severe thunderstorms
- When moving, be alert for strong winds that change speed and direction rapidly
- NEVER "core punch" thunderstorms. Bad things can happen in the core:
 - you can drive into large hail
 - you can unknowingly drive into a rain-wrapped tornado
 - you will have problems with rain, slippery roadways, zero visibility, etc.
- If you encounter 2 inch diameter hail or larger, stop, back up, and get out of there !
You may be driving toward damaging winds or a tornado.
- Avoid driving under or close to rotating wall clouds !
- Keep the engine running when you park the vehicle
- Whenever stopped, look ALL around, severe weather may be approaching from the rear !
- Rotating rain curtains can precede tornado development. If you're in rotating rain curtains, get out !
- Know when you're in a dangerous situation, and have the wisdom to back off !
- If you get trapped, abandon your vehicle, get as low as you can, and try to find something to hang onto. A culvert or underpass may be a good shelter, but watch for rising water.

Spotter Courtesy

- If you encounter a law enforcement roadblock, and you CANNOT convince them to let you through, back off and let it go.
- Do not trespass in order to get a closer look at the thunderstorm, or to look at damage in its wake.

SPECIFIC INFORMATION YOU SHOULD REPORT...Summer.

HAIL.....of any size

ROTATING WALL CLOUD

DAMAGE TO TREES, SIGNS, FENCES, OR BUILDINGS OR PROPERTY

FLOODING OR RAPID RISES OF WATER IN DRAINAGE AREAS OR CREEKS;
WASHOUTS OF ROADWAYS (estimate depth of water)

FUNNEL CLOUD (a rotating column of air NOT in contact with the ground; the condensation funnel is in the air)

TORNADO - (a rotating column of air in contact with the ground - the condensation funnel need NOT be on the ground !! Look for dust swirl on the ground)

- WHO you are
- WHERE you are
- WHAT you saw
- WHEN you saw it



SPECIFIC INFORMATION YOU SHOULD REPORT...Winter

FIRST 1" OF NEW SNOW...and updates for each additional 2" of snowfall

FINAL SNOW TOTAL after the snow has ended

Measured constant wind speeds greater than 40 MPH, and gusts above 60 MPH

High winds (greater than 35 mph) and visibility reduced below 1/4 mile in FALLING OR BLOWING SNOW (These are blizzard conditions)

FREEZING RAIN/DRIZZLE. Tell us what objects the liquid is freezing on (vegetation, trees, vehicles, power lines, road) and how much has

DENSE FOG which reduces visibility below 1/4 mile

- WHO you are
- WHERE you are
- WHAT you saw
- WHEN you saw it

