

The Value of Adding a Meteorologist to the Investigative Team

By Patricia Robertson



Doppler radar tower over the Fort Lawton Air Defense Command Operations Building seen from Discovery Park, Seattle, WA. (Photo by Joe Mabel, Wikimedia Commons.)

Many of the losses roof consultants, engineers, and building consultants are asked to investigate involve weather. When handling a weather-related loss, there are two main areas that can lead to erroneous or inaccurate conclusions: selection of weather data and do-it-yourself analysis.

A tremendous amount of time is spent trying to find accurate sources of weather information and data. The amount of “junk” weather data that exists has grown exponentially with the arrival of the Internet. For the layperson, it is not an easy task to determine which data are accurate and which are not appropriate for use in an investigation, particularly one that is currently in litigation

or is headed that way.

Clients often seek the assistance of a forensic meteorologist after having based their professional opinion on data that appeared to be scientifically sound but, in fact, turn out to be from a source that is not certifiable. When an insurance claim turns into a litigated matter, all the data that are used to form opinions must be able to be traced to a certifiable source. When you rely on a professional weather service to select and procure your data, you are assured that the weather information you receive is accurate and current, comes from approved sources, and can be certified for use in legal proceedings and trials.

One of the advantages of using a professional weather service is access to a very large body of data that provides many

pieces of information from which a weather reconstruction is born. Approved information sources that are used in a meteorological evaluation are the National Weather Service’s (NWS) hourly reporting stations, special weather statements, local storm reports, cooperative reporting stations, and climate summaries, as well as data from the National Oceanic & Atmospheric Administration (NOAA).

Hourly weather data are provided by the Automated Surface Observing System (ASOS) and the Automated Weather Observing System (AWOS). This program serves as the nation’s primary surface weather observing network, containing over 800 sites nationwide (mostly at airports), and is designed to support weather forecasting and the aviation, meteorological,

hydrological, and climatological research communities.

Cooperative weather sites are usually operated by volunteers trained by the NWS who observe a limited number of weather variables. Typically, these are daily maximum and minimum temperatures, precipitation amounts, snowfall, and snow depth. The cooperative observer network currently has over 10,000 active sites nationwide.

The National Climatic Data Center database of worldwide weather stations records daily and/or hourly weather conditions such as temperature, precipitation, wind, and snowfall. Data are reviewed by the National Climatic Data Center for a reasonable level of quality assurance.

The question of when to get a professional opinion about past weather conditions is a complex decision, often influenced by budgetary restrictions, customary procedures, and company policy. However, it can be the choice that will determine the validity of your opinion as to the cause of a structural failure. The best way to illustrate this point is by sharing an example from our case files.

CASE STUDY

A business owner in Missouri filed a claim with his insurance company stating that the roof of his building had been heavily damaged by a severe hailstorm. As a result of that barrage of hail, rain was able to pour into the building, causing extensive damage to walls and equipment. The insurance policy stipulated that damage to the interior of the building due to rain would be covered only if rain entered the building due to natural causes, such as damage to the roof or exterior walls by virtue of strong winds or hail.

The hailstorm that occurred in that section of Missouri on that day was well documented. It caused extensive damage to homes, vehi-

cles, and businesses. The insurance investigator found a hail report on the Internet that showed the size of hail in the area of this building to be approximately one-half inch in diameter. In addition, the weather data he looked at from the nearest airport showed maximum winds that day of 15 mph, certainly not high enough to be considered damaging winds.

Based on his findings, the company denied the claim. The building owner was

not satisfied and hired a consultant to investigate further. We were asked to provide an analysis of all weather conditions that occurred at the site of the loss.

The process employed by the forensic meteorologist involved analysis of surface weather observations, storm reports, and other special weather statements, as well as Doppler radar images. The analysis showed that during the hail-producing thunderstorm, wind speeds were in the range of



An ASOS all-weather precipitation accumulation gauge (AWPAG) at Eureka Airport, Nevada. (Photo from Wikimedia Commons.)

60-70 mph, causing the hail to hit the building with increased force. Based on these findings, the business owner was able to prove to his carrier that wind-driven hail was responsible for the damage to his building.


Meteorologists often use Doppler radar in their analysis to fill in the gaps found in other more traditional data. In the hands of a trained, experienced expert, Doppler radar analysis may offer additional insight and facts that would not be considered in a traditional analysis. Doppler radar may be used to determine wind speeds up to 74 mph at the exact location of loss. It can also be used to see if the “hook echo” or tornado vortex signature (TVS) was present, and this is an important clue for determining whether a tornado may have formed in a particular area.

The Next-Generation Weather Radar system (NEXRAD) is composed of 159 land-based Weather Surveillance Radar-1988 Doppler (WSR-88D) sites throughout the United States and select overseas locations.

This system is a joint effort by the United States Departments of Commerce (DOC), Defense (DOD), and Transportation (DOT). The controlling agencies are the NWS, Air Force Weather Agency (AFWA), and Federal Aviation Administration (FAA), respectively.

Radar scans at radial distances typically greater than 100 miles, covering an area larger than 30,000 square miles around each radar site. It helps provide estimates of several weather elements that aid in weather forecasting and meteorological research—some of which include location and intensity of precipitation, storm attributes, storm track and speed, and precipitation amounts.

National Weather Service forecasts and advisories are often overlooked by nonprofessionals, but they—along with warnings and watches that may have been issued for a specific area—are important in the reconstruction process. Analyzing what type of weather was expected in an area can provide validity as to whether atmospheric conditions were favorable to support certain weather conditions.

In summary, the analysis of weather conditions at a specific location on a specific day is a complex process, one best left to a professional who can add value to your investigation and subsequent report. 

Patricia Robertson

Patricia Robertson is an account executive with CompuWeather, the FleetWeather Group. CompuWeather is the largest worldwide provider of forensic weather data. Established in 1976 in Hopewell Junction, NY, the company has managed over 67,000 insurance claims and legal cases.



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Abstracts of no more than 200 words in length should be received at RCI by April 28, 2014, with papers due July 14. All submitted abstracts and papers must be original to the author and not previously published or presented nor scheduled for publication or presentation in any other publication or venue.

Topics sought include: innovative technologies and practices, façade systems and technologies, the building envelope as a design statement, energy conservation design, designing façades that will improve indoor air quality, economics and life cycle analysis, panelized stone or masonry systems, sealants, hygrothermal analysis in façade designs, facades designed to achieve sustainability, curtain walls, double-wall facades, roofing, brick masonry, stone masonry, waterproofing, stucco, EIFS, metal wall panels, air barrier systems, testing wall systems, and construction processes.

For further information regarding the process for abstract and paper submittal, contact RCI Director of Conventions and Meetings Karen McElroy, 1500 Sunday Dr., Ste. 204, Raleigh, NC 27607. Phone: 800-828-1902; fax: 919-859-1328; e-mail: kmcelroy@rci-online.org.

