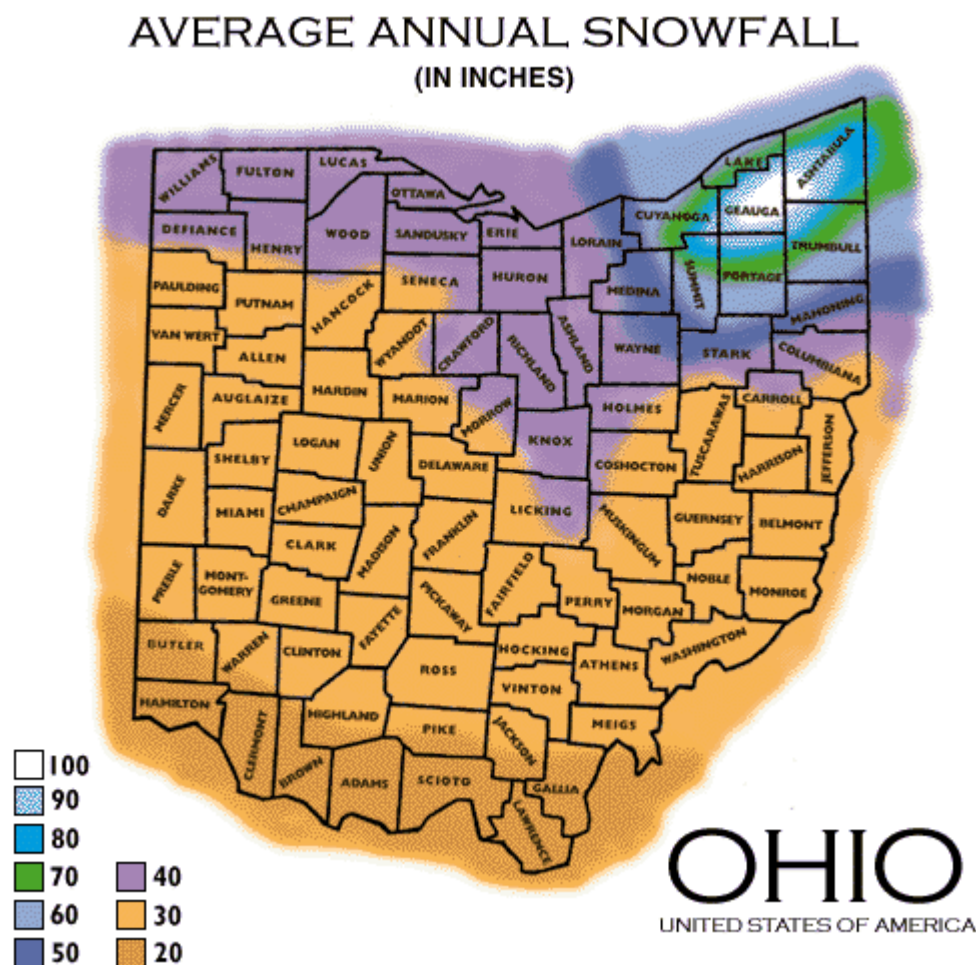


Composite of Brown County

Severe winter storms pose a risk to life and property in Brown County by creating conditions that disrupt utilities, telecommunications and transportation systems. Rain, freezing rain, ice, snow, extremely cold temperatures and wind are all associated with severe winter storms. Ice storms can impact trees, power lines and utilities systems. Significant snowfall and periods of extreme cold are difficult to predict, and have impacted Brown County on multiple occasions in recent history.

Chapter 9 discusses information regarding severe winter weather and its impacts on Brown County.



source: <http://www.dot.state.oh.us/snomap.htm>

History

The blizzard of January 1978 was the last Presidential disaster declaration to occur as a result of severe winter weather. Below zero temperatures and winds up to 120 MPH caused Governor James A. Rhodes to call this the greatest disaster in Ohio's history. January 1978 holds the monthly snowfall record in Brown County when more than 31.5 inches of snow fell across the region. Wind gusts up to 69 MPH contributed to blowing and drifting and virtually every county in Ohio was affected that year. The 1977-1978 winter season gave Brown County its greatest seasonal snowfall of 53.9 inches. The greatest snowfall from a single storm totaled 18.5 inches in February 1998.¹¹

The blizzard of 1978 severely impacted Brown County and the Ohio River. Costs associated with labor, equipment and salt totaled more than \$45,000 for the County Engineer's office alone. National Guard troops and state department of transportation personnel also contributed to the efforts. By February 2, 1978, many students had only made five days of classes since the end of their Christmas holiday break. Extremely cold temperatures made it difficult for salt applications to help roadways, but approximately one week after the snow hit all 345 miles of county roads had at least one lane open.

The Ohio River crested on January 29, 1978 at 51 feet. Official flood stage is 52 feet. The Village of Ripley managed to avoid major flooding, but ice jams along the Ohio River wreaked havoc for boat traffic for several weeks. Ice jams at Markland Dam below Cincinnati put a halt to deliveries of many winter items such as coal, oil and salt. It took several weeks before normal river operations resumed.¹³

Information provided by the National Weather Service indicates there have been 22 heavy snow and ice events in Brown County for the period between January 1950 and April 2004. These incidents cumulatively resulted in 5 deaths, 72 injuries, more than \$27 million in property damage and \$500 thousand in crop damages.¹¹

Weather Forecasting

Severe winter storms affecting Brown County generally originate in the west and midwest. Winter weather and snow advisories are issued when a combination of snow and ice, or snow of at least four but less than six inches accumulation in 24 hours are expected to make walking and driving hazardous. Generally, if caution is exercised these situations should not become life threatening.

A Winter Storm Watch is issued when the potential exists for one or more of the following elements to occur:

- Six inches or more of snow
-

- Blizzard conditions
- A dangerous ice storm with enough ice accumulation to down trees and power lines
- A dangerous combination of snow, sleet and freezing rain.

These watches are generally issued 12 to 24 hours before the start of the weather events. Watches are intended to give residents, and emergency responders, sufficient time to prepare for hazardous conditions.

A Winter Storm Warning is issued when a dangerous combination of significant freezing rain, sleet and snow are forecast to occur. An Ice Storm Warning is issued when a significant amount of ice from freezing rain is anticipated to accumulate on power lines and branches, likely causing them to fall. Finally, a Blizzard Warning is issued when winds are expected to be greater than 35 MPH, combined with drifting and blowing snow, which greatly reduces visibility. Blizzards are the most dangerous winter storms and are especially severe when combined with very cold temperatures. A Blizzard Warning means that travel conditions are dangerous and that you should not travel.

Sleet & Freezing Rain

Overrunning occurs when warm, moist air is forced to rise near a frontal system. A weather front actually slopes upward and is not the wall as sometimes depicted on weather maps. Because fronts slope, air is actually forced upward, usually by winds that intersect the front. Cold air at the surface is usually the last to leave an area as a warm front advances. The air above the ground warms faster than the air at the surface. During winter, the temperature a few thousand feet up in the atmosphere can be above freezing temperatures, while the temperature near the ground is below freezing. As snow falls into the warm layer, it melts into rain, only to re-freeze when it falls back into the colder air. The result is an icy mix of sleet and freezing rain.

Brown County is susceptible to temperature variations throughout all four seasons, including the winter season. Sleet and freezing rain occur each winter, contributing to slick roads and “black ice”, which can result in car accidents and the loss of life on major roadways in Brown County.

Ice Jams & Flooding

During the late winter and spring, flooding can become a hazard due to rising temperatures. A prolonged cold spell can cause rivers and streams to freeze. After a sudden warm spell, the river ice can break up and begin moving downstream. These blocks of ice accumulate along river beds and bridges forming an ice jam.

An ice jam acts as a dam. Water can back up behind the jam causing flooding upstream. Also, sudden breaks of an ice jam can cause the onrush of water and ice downstream, resulting in flash flooding.

Wind Chill

The wind chill factor was developed by two Antarctic explorers in the late 1940's to relate both wind and cold to heat loss by the body. These explorers experimented with how fast water freezes in certain wind speeds and temperatures, and then compared that to the rate that skin loses heat. However, wind chill is not a scientific measurement and does not apply to anything other than humans. All wind chill does is compare heat loss from the human body with no wind, to heat loss from the body with a certain wind speed and temperature.

Example: If the actual air temperature is 15 degrees, but the wind is blowing at 20 miles per hour, your body, if completely exposed to the elements, would cool off at a rate identical to a temperature of 17 degrees below zero with no wind.

Wind chill is important because it gives meteorologists a basis to describe how much a cold temperature and wind speed will affect the public. Wind chill is used in Brown County as a basis for closing schools during periods of extreme cold.

Emergency Snow Levels

Established by the Buckeye State Sheriff's Association in 1997, pursuant to Ohio Revised Code Sections 311.07 and 311.98, the county sheriff may institute emergency snow levels for road and highway travel during snow emergencies. The snow levels are defined as follows:

Level 1: All or certain roads in the county are hazardous with icy spots, blowing and drifting snow. All unnecessary travel is discouraged and if driving is deemed necessary, extreme caution is urged.

Level 2: All or certain roads in the county are hazardous with icy spots, blowing and drifting snow and or low visibility. Only those who deem it necessary to drive should be on the roadways. All employees should contact their place of employment to see if they should report for work.

Level 3: Due to extremely hazardous conditions caused by ice, blowing and drifting snow, low visibility and /or extremely low temperatures, all or certain roads in the county are closed to all but emergency and essential personnel. No one should be on the roadways during these conditions unless it is absolutely necessary. All employees should contact their place of employment to see if they should report for work. All non-emergency and/or non-essential personnel traveling the roadways during the snow emergency may be subject to prosecution under section 2917.13 of the Ohio Revised Code for Misconduct During an Emergency.

Vulnerability and Risk

Vulnerability to the effects of winter storms is somewhat related to how prepared and accustomed an area is for this type of severe weather. Brown County normally receives about 28 inches of snow a season, and varies from season to season.

The impact of winter storms varies by different weather conditions such as blinding wind storms and dangerous wind chills. Strong winds can knock down trees, utility poles and power lines. Extreme cold can cause frostbite or hypothermia and become life threatening for infants and the elderly. Freezing temperatures can cause pipes to freeze and ice jams may form in freezing and thawing rivers, resulting in flash flooding.

Winter storms can also bring heavy accumulations of ice which can down trees, electrical wires, telephone poles and lines, and communication towers. Utilities and communications can be impacted for several days. Heavy snowfall can immobilize a community and create economic impacts related to the cost of snow removal and loss of business. Most deaths related to severe winter weather result from traffic accidents on icy roads, heart attacks while shoveling snow and hypothermia from prolonged exposure to the cold.

Based on historical information the chances of a winter storm with the potential to disrupt the county are high.