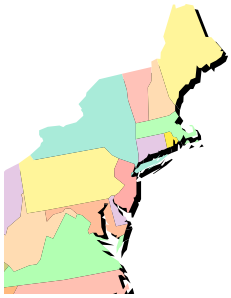
Earth Gauge
A National Environmental Education Foundation Program

Regional Winter Weather

What's winter like in your region? Winter weather varies widely in the U.S. Below you will find a comparison of regional winter weather patterns and summaries of historic winter storms that you can share with your viewers.

Northeast and Mid-Atlantic[1,2,3,4]

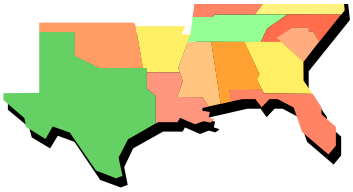


This region receives variable and sometimes severe winter weather. The typical winter storm for this region is known as a *nor'easter* (northeast storm), named for the cold, strong northeasterly winds that accompany it. A nor'easter usually occurs from October to April and can bring strong winds, ice, heavy snowfall, and large coastal waves. The storm begins as a low pressure system off the North Carolina coast. As it moves northward, following the coast, its strong northeasterly winds transfer cold, moist air from the Atlantic Ocean to coastal regions from Virginia to Maine. Strong waves can flood coastal areas and erode beaches. Heavy snowfall can combine with wind and result in blizzard conditions. Ice can coat power lines, break tree limbs, and paralyze transportation.

***"Storm of the Century," March 12-14, 1993*:** This storm affected the entire east coast, from Florida to Maine. It resulted in over 200 fatalities (most due to tornadoes and coastal flooding in Florida), thousands of people stranded by record snowfalls, the closing of every major airport on the east coast, and over three million homes without electricity. Snowfall totals included 43 inches in Syracuse, NY; 25 inches in Pittsburgh, PA; 13 inches in Washington, D.C.; and 19 inches in Asheville, NC. Strong wind gusts were 90 miles per hour in Myrtle Beach, SC, and 81 miles per hour in Boston, MA.

***Ice Storm of January, 1998*:** This historic storm caused ice and flood damage in New England and New York, when a warm, maritime air mass with heavy rainfall from the south overran a layer of colder air, resulting in over three inches of ice accumulation in some areas and record rainfall and flooding in others. Electrical power lines, trees, and houses were damaged or destroyed by ice. Over 80 percent of Maine's customers lost electricity. Agricultural land was also damaged, and dairy farms were unable to operate without power.

Gulf Coast and Southeast[5,6,7,8]



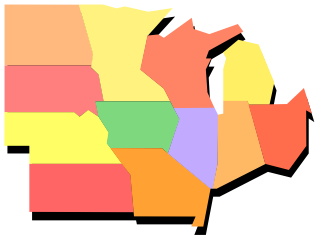
This region does not typically receive winter weather like snow, ice, and below-freezing temperatures. However, a cold air mass from Canada can occasionally descend into the region. This cold air can combine with warm, moist air from the Gulf of Mexico, causing winter precipitation. Freezing temperatures can damage fragile crops and ice can break branches on citrus trees. Because drivers are not used to driving in winter weather and city and town officials are often lacking snow and ice-removal resources for roads, there is a corresponding increase in motor vehicle accidents when these storms occur.

Heavy Snowfall, December 31, 1963: The Gulf Coast received an atypical snow storm when a depression in the Gulf of Mexico met polar air that had descended far into the South. The New Orleans area received anywhere from four to nine inches. This region is not equipped to remove snow from roads, so transportation was greatly affected.

Arctic Outbreak, December 22-26, 1989: A cold spell brought record low temperatures to many southern cities. The temperatures were below freezing for over two and a half days in New Orleans, which recorded a low of 11 degrees Fahrenheit. Austin, TX, recorded a low of four degrees Fahrenheit. Moisture was present as well – parts of Southern Louisiana received two to four inches of snow, and other areas received ice. There was significant damage to homes and businesses, farms, and the commercial fishing industry.

***Southeast Severe Ice Storm, December 4-5, 2002*:** A low pressure moving north from the Gulf of Mexico oroduced freezing rain, snow, and sleet in Georgia, the Carolinas, and areas inland. Travel was affected, and damage to houses and buildings was inflicted.

Midwest and Plains[9,10,11,12]

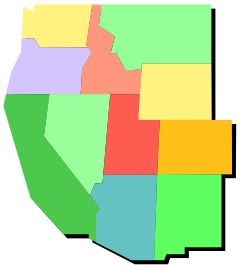


Some storms that reach this region form on the east side of the Rockies. When they move east into the Midwest and Plains, they can gain strength from warm, moist air moving north from the Gulf of Mexico and cold air pushing down from Canada. This setup can result in cold temperatures, heavy snowfall, strong winds, and occasional blizzard conditions. Other storms can enter this area from the northwest, pulling polar air into the region and leading to frigid temperatures and dangerous wind chills. When winds pass over the Great Lakes, they often pick up moisture and "lake effect" snow (locally heavy bands of snowfall or snow squalls) can develop. Winds push the storm over land, where increased friction slows the winds, leading to more snowfall accumulation.

***The Great Blizzard of January, 26-27, 1978*:** The blizzard of 1978, one of the most severe winter storms to ever hit the Great Lakes, occurred during an exceptionally cold and snowy winter season in the region. Two strong low pressure systems – one moving into the Northern Plains from Canada and one moving north from the western Gulf of Mexico – collided and merged just west of the Great Lakes. The Arctic low ushered in bitterly cold temperatures and strong winds; the temperature in Cleveland, OH, dropped from 44 to seven degrees Fahrenheit within six hours, and measured a wind gust of 82 miles per hour! Snowfall totals broke records across the northern part of the region, including a 24-hour accumulation of 30 inches in Muskegon, Michigan.

***New Years Blizzard, January 1-3, 1999*:** This winter storm brought heavy snowfall and record low temperatures to Chicago and the Midwest. Chicago received over 20 inches of snow, while other areas in Illinois, Wisconsin, Indiana, and Ohio received 15 inches or more. Arctic air swept in the day after the storm, leading to two days of temperatures at or below negative 20 degrees Fahrenheit for much of the region. Illinois and parts of Indiana were declared disaster areas. Transportation was affected, and nearly 39 people lost their lives in automobile and train accidents.

The Rockies and the West Coast:[13,14,15,16]



Storms approaching the West Coast from the Pacific carry a lot of moisture. This warm, moist air rises as it hits the mountains, causing heavy snow to accumulate at higher elevations, sometimes causing avalanches. If temperatures drop low enough, lower elevations of Washington, Oregon, and California can receive snow as well. Spring snowmelt provides much-needed water to aquifers and reservoirs. Basins and valleys can become very cold and windy as Arctic air makes its way south. Storms in the Pacific Northwest often result in freezing rain due to ample moisture and cold air trapped between mountain ranges. Desert regions can get cold overnight, with dramatic differences between daytime and nighttime temperatures. Low-lying regions and dry riverbeds are also subject to winter flooding.

Snowstorms, January 1950: The Northwest received three snow storms in a row during this month. From January 13-18, Oregon received record snowfall, followed by an accumulation of sleet and freezing rain, which disrupted transportation and electricity. Seattle's 24-hour snowfall total was 21.4 inches on January 13th. Parts of eastern Washington and northern Idaho received up to 50 inches of snow and below-zero temperatures.

Heavy Snowfall and Rain, December 2004 – January 2005: Mountains in California, Nevada, Utah, and Arizona received heavy snowfall during the last week of 2004 and first two weeks of 2005. Twelve to 14 feet of snow fell in the Sierra Nevada Mountains in one week. This heavy, wet snow caused damage to trees, electrical lines, and roofs. Parts of California, Arizona, Nevada, and Utah had record rainfalls, leading to fatal mudslides and flooding.

Alaska[17,18]

Because of its high latitude and maritime influence, Alaska receives dangerously low temperatures and wind chills, strong winds, and coastal flooding. Inland areas and the southern coast get heavy snowfall, which accumulates throughout the winter season because of low sunlight. Glaciers are found at high elevations and along the coast. Flooding can occur during periods of rapid snowmelt or ice jams on rivers.

***Lowest U.S. Temperature*:** Alaska holds the record for the lowest temperature ever recorded in the U.S. A reading of -79.8 degrees Fahrenheit was observed in the Endicott Mountains in the northern part of the state on January 23, 1971.

Hawaii

Being in a tropical climate, Hawaii does not go through a significant seasonal change in weather. However, temperatures can still reach below freezing – the lowest temperature ever recorded was 12 degrees Fahrenheit on May 17, 1979!

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[4] National Weather Service. "The Ice Storm and Flood of January 1998" Service Assessment. http://www.weather.gov/os/assessments/pdfs/iceflood.pdf.
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[7] National Weather Service, Austin/San Antonio Office. Summary of Holiday Weather Extremes: http://www.srh.noaa.gov/ewx/html/wxevent/Climate_Narratives/holwinter2005.htm.
[8] National Weather Service, Eastern Regional Headquarters. "An Overview of the Winter Storm of December 4-5, 2002." http://www.nc-climate.ncsu.edu/climate/winter/dec2002ice.html.
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[16] National Climatic Data Center. Hazards/Climate Extremes: Severe Winter Weather; January, 2007. http://www.ncdc.noaa.gov/oa/climate/research/2007/jan/hazards.html#Winter
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[18] USA Today, Weather. Each State's Low Temperature Record. http://www.usatoday.com/weather/wcstates.htm