DTn°

2021-2022 U.S. Winter Outlook

Understand the weather's impact on your business

# Contents

Winter forecast summary

While last winter was warmer-than-normal on a national average, this one is expected to be colder overall. It's anticipated that a colder pattern will develop across the central and western United States early in the season. The exception will be the East Coast, where November will likely average warmer.

This winter will not likely see an arctic outbreak as historic as the one that occurred in February across the central United States. However, there will likely be more frequent but less intense arctic outbreaks this winter. These events are highly dependent on what happens in December and will go in one of two directions. If a cold pattern develops in December — which is possible — then this winter will likely stay colder than last.

Temperature outlook (Dec. 2021-Feb. 2022)
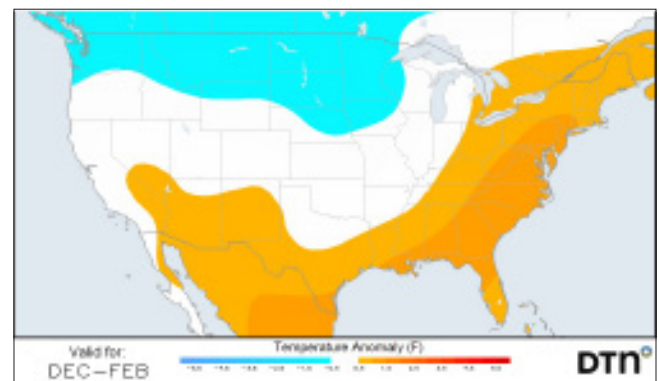

Temperature forecast
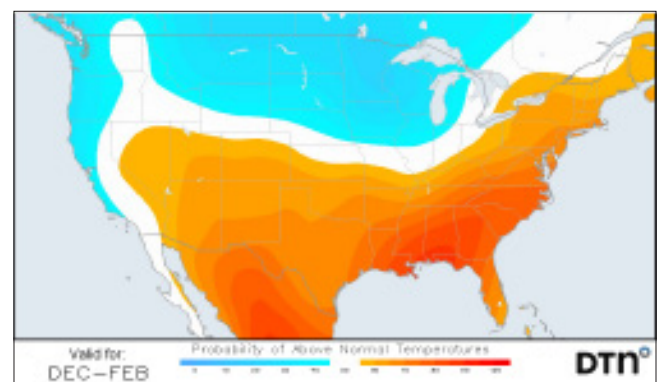
Probability forecast

But, if the bulk of the cold holds off until the second half of the season, it should average warmer overall. The north-central region has a greater chance of forecasts trending colder, while the South and the East Coast will likely average warmer.

Regarding precipitation, the Pacific Northwest and Great Lakes can expect the greatest chance for above-average conditions. The Central Plains should anticipate a wetter, stormier pattern late in the season with mixed precipitation events. Fewer nor'easters are expected along the coast in the Northeast, with more inland storms occurring during the season.
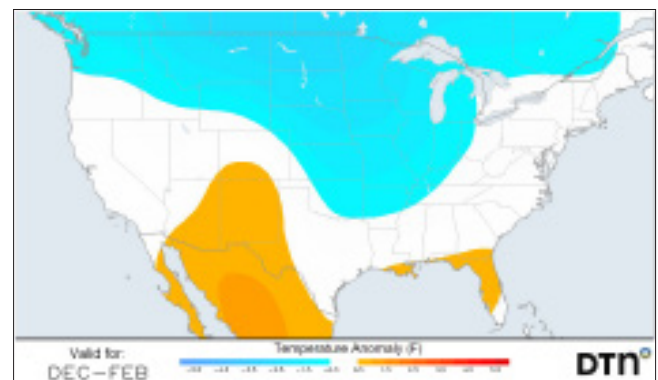
Seasonal outlook risks
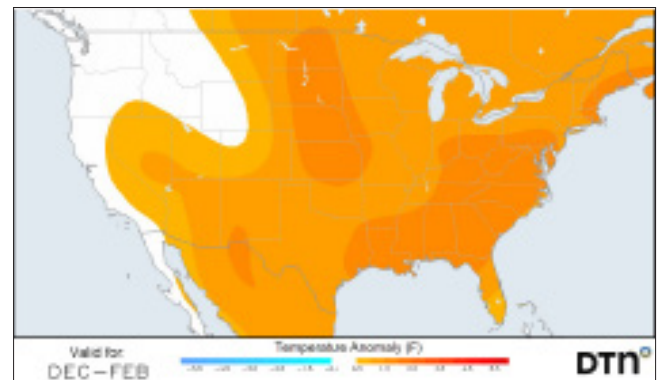
Warm scenario: 20%
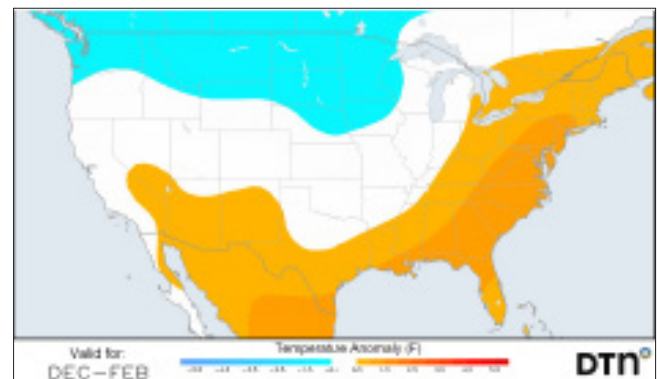
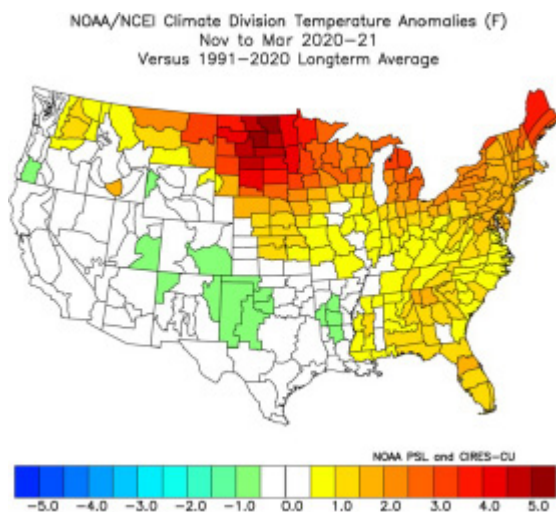Current forecast: 50%

Cold scenario: 30%
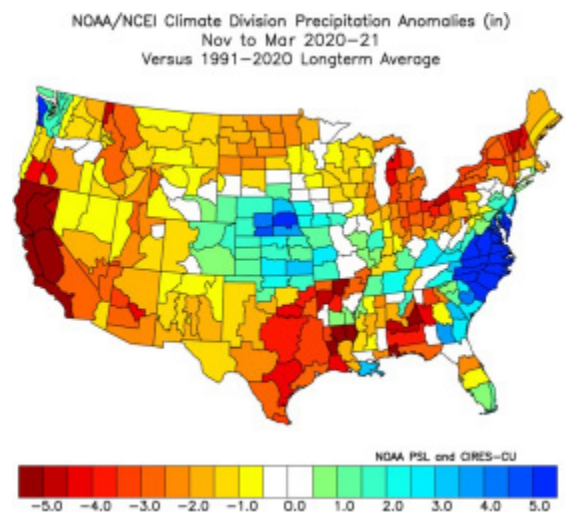
Detailed winter forecast

Last winter will likely be best remembered for having the coldest February in the United States in more than 30 years — even if the cold spell wasn't long enough to impact the country's overall seasonal average. The average national temperature last winter was nearly 1.5 degrees warmer than normal, putting it in the warmest 30% of winters on record.

We expect this winter season will be colder than the last, particularly as there are La Niña conditions in place with the equatorial Pacific water temperatures starting to shift colder. All model guidance expects rapid strengthening through November, bringing moderate La Niña conditions for the upcoming winter season.

Winter 2020-21 temperature departures

NOAA/NCEI Climate Division Temperature Anomalies (F)
Nov to Mar 2020—21
Versus 1991—2020 Longterm Average

Winter 2020-21 precipitation departures

NOAA/NCEI Climate Division Precipitation Anomalies (in)
Nov to Mar 2020—21
Versus 1991—2020 Longterm Average

2021-2022 U.S. winter outlook at-a-glance

- Below normal temperatures
- Abundant rain/snow
- Drought relief is expected

- Brief intense cold shots
- Highly variable temperature
- Somewhat less snow than average

- Enhanced snowfall
- Early season cold outbreaks
- Extended January thaw is possible

- Early season chill
- Warmer back half of winter
- Reduced coastal storms

- Not as warm as recent winters
- Generally drier than normal
- Worsening drought conditions

- Wetter/stormy later winter
- Brief cold shots
- Mixed precipitation events

- Milder winter temperatures
- Generally drier than normal
- Worsening drought conditions

In addition, models are favoring the Madden-Julian Oscillation (MJO), building into a region that indicates the development of colder weather across the central and western United States during November. One final sign — and maybe the most notable one — the Quasi-Biennial Oscillation (QBO) will also be in a negative phase. The QBO's zonal winds in the stratosphere typically oscillate between westerly (positive) and easterly (negative) phases, every 12-24 months, and a negative-trending QBO, like we have this year, favors a colder winter across the nation.

The bottom line is that the potential is there for this winter to feature some significant cold at times. However, some winters with similar patterns ended up averaging warmer than normal, with little significant cold during the heart of the season. So, as mentioned, December will be key, since if cold fails to develop during the month, we may have to wait until February for increased chances of widespread cold — which won't be enough to produce a colder-than-normal winter average.

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Winter temperatures

Looking more closely at expected U.S. temperatures this winter, December will determine the season's overall trend. If a cold pattern develops in December — which is quite possible — the entire winter will likely be colder than average. However, if the bulk of the cold again holds off until the season's second half, its average will likely be warmer.

The best chance of above-normal temperatures will be across the southern and eastern areas. Nationwide, warm risks will modestly outweigh cold risks, but below-normal temperatures are most favorable in the north-central and northwest regions.

The behavior of the polar vortex is a key driver of temperature, resulting in the threat of colder temperatures early and late in the season. The odds are higher than average that the polar vortex will be weaker this winter and prone to significant disruptions, breaking into several smaller features, each with a pocket of very cold air. Blocking ridge patterns will determine where these cold pools will locate with the related extreme cold that follows the vortex movement.

The central portion of the country could see some significant temperature swings, with well below-normal temperatures during any arctic outbreaks resulting from the polar vortex. However, the region will experience persistently-mild temperatures the remainder of the time. These outbreaks are difficult to predict much more than two weeks out, so this is something to watch for as the season progresses — and regardless of the timing — this winter will likely be colder than last year.
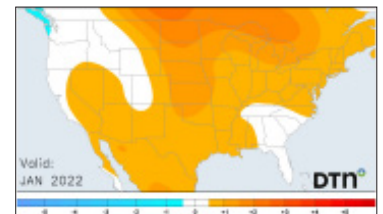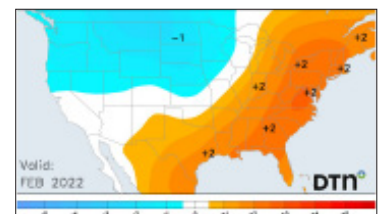
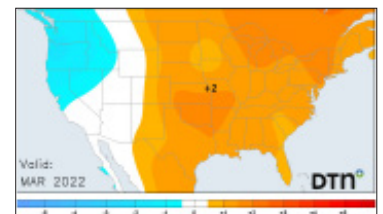**Temperature outlook**
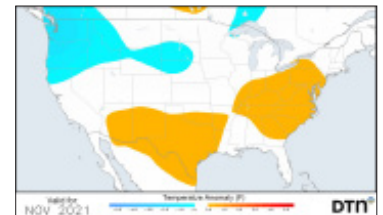
November 2021
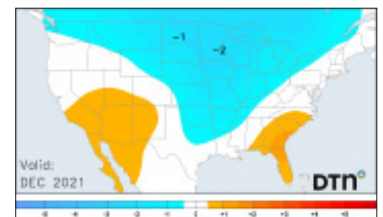
December 2021

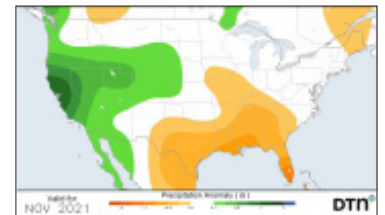January 2022

February 2022

March 2022

Winter precipitation

The best potential for above-average precipitation will be across the Midwest, Great Lakes, and the Pacific Northwest. With potentially colder conditions across the northern section of the nation, this could translate into above-average snowfall amounts. Conversely, in the South, we are predicting below-average precipitation for the winter. Snowfall in the Northeast looks to be on track for an average year, but, notably, that snow will not be coming from the traditional coastal nor'easters.

Unfortunately, there doesn't appear to be much relief for the regions facing drought and drier-than-normal soil conditions. Those conditions still exist across much of the central and western United States, and since winter doesn't appear to provide any relief, the conditions will continue.

Another winter precipitation factor may also come from the end of the 2021 hurricane season. At the time of this report, the season has produced 20 named storms, seven hurricanes, and four major hurricanes. A warmer than average Atlantic basin, combined with potentially more favorable than usual environmental conditions continuing during late October and November, will likely result in at least a couple more storms developing before the season quiets down. However, the location and type of tropical storms will change from this point forward. The main threat for the United States will likely not be from storms developing well out in the Atlantic, but rather from those developing closer in — either just off the East Coast, across the Gulf of Mexico, or the northwestern Caribbean. Any late-season storms that impact the country will help to boost precipitation totals to above-average levels across the affected areas.
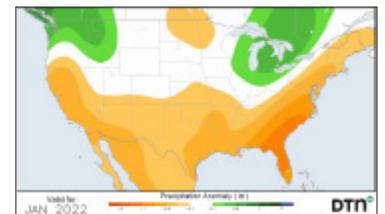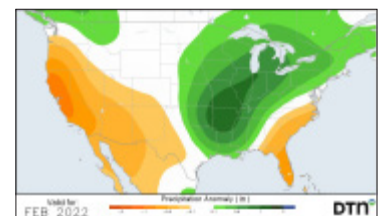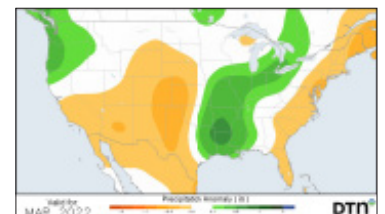
Precipitation outlook

November 2021
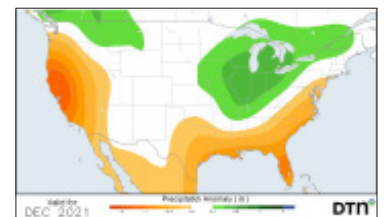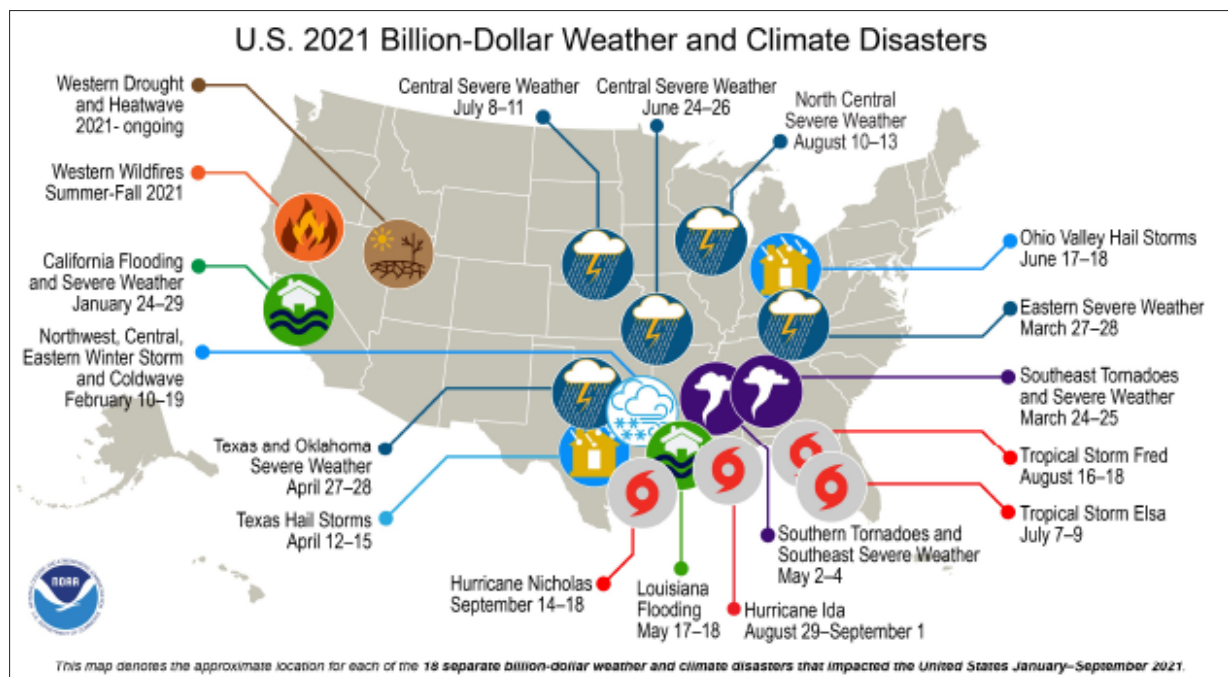

December 2021

January 2022

February 2022

March 2022

Costliest winter hazards

This year, the United States has already seen a $1 billion winter weather event, and since 1980, one or two of these events have occurred annually, except for during the much warmer period between 2000-2010 when there were fewer winter storms. Many of the billion-dollar events occurred in the eastern half of the country, which has a greater population density — and the necessary infrastructure to support it.

2021 billion-dollar weather events (so far)

U.S. 2021 Billion-Dollar Weather and Climate Disasters

Western Drought and Heatwave 2021- ongoing

Western Wildfires Summer-Fall 2021

California Flooding and Severe Weather January 24–29

Northwest, Central, Eastern Winter Storm and Coldwave February 10–19

Texas and Oklahoma Severe Weather April 27–28

Texas Hail Storms April 12–15

Central Severe Weather July 8–11

Central Severe Weather June 24–26

North Central Severe Weather August 10–13

Ohio Valley Hail Storms June 17–18

Eastern Severe Weather March 27–28

Southeast Tornadoes and Severe Weather March 24–25

Tropical Storm Fred August 16–18

Tropical Storm Elsa July 7–9

Southern Tornadoes and Southeast Severe Weather May 2–4

Hurricane Nicholas September 14–18

Louisiana Flooding May 17–18

Hurricane Ida August 29–September 1

This map denotes the approximate location for each of the 18 separate billion-dollar weather and climate disasters that impacted the United States January–September 2021.

In terms of federal disaster declarations, over the last 40 years, snow event-related declarations occur with the most frequency in the northeast region, except for some in the Chicago and Detroit areas. Ice storm disaster declarations have the greatest frequency in Oklahoma, Missouri, and Arkansas.

Looking at the frequency of blizzards, they most often occur in the Northern and Central Plains. These are the areas where snow is more frequent and stronger winds are most likely to develop. Nor'easters also bring a high frequency of blizzards to Maine and Massachusetts.

Freezing rain events are also prevalent but vary by region. For example, the Northeast has the highest number of annual freezing rain hours and some of the most frequent occurrences of freezing rain. New England experiences a high percentage of long-duration events — those lasting six or more hours. Interestingly, the southeast region has the highest percent of long-duration events, even though it experiences freezing rain less often. Oklahoma has the most 18+ hour freezing rain events, which ties back to the federal disaster declarations related to ice events.

Billion-dollar weather events annually
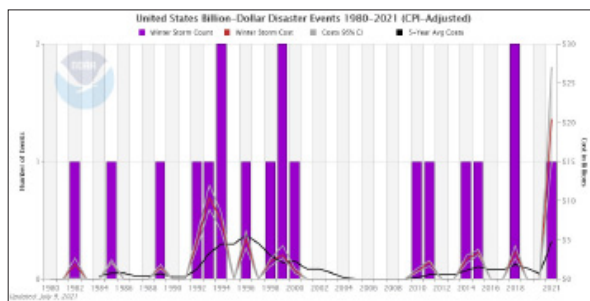
Frequency of billion-dollar winter events
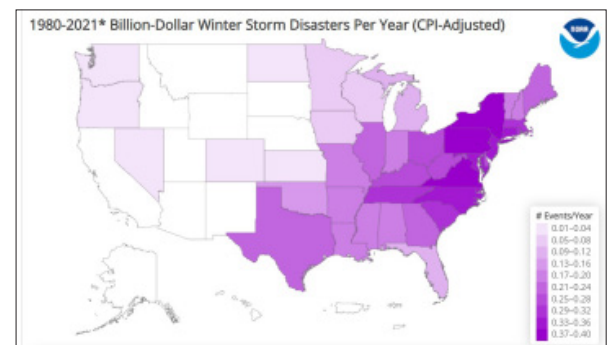
Preliminary spring forecast

For spring 2022, the preliminary forecast currently indicates a warmer-than-normal average for most of the United States with some month-to-month variation. March will likely average warmer across the central and eastern regions and colder along the West Coast. However, a colder-than-normal pattern could return to the north-central United States in April, with much of the eastern part of the country averaging colder.

Widespread warmer-than-normal conditions should expand across nearly the entire United States during May, with that warm regime continuing into early summer. Depending on the extent and depth of snow cover, March may be colder than forecast across parts of the nation.

While temperatures will average above normal for the nation, the precipitation outlook splits the country in half. Conditions in the South favor a drier-than-normal spring, while the Upper Midwest will be wetter than average. However, over the last decade, springs have trended wetter than normal across the south-central region, so there is the risk of spring being wetter than currently forecast for the region.

The outlook for El Niño-Southern Oscillation (ENSO) heading into next spring and summer is also a major wild card. This winter is a second-year La Niña season, so odds strongly favor the La Niña dissipating during spring and summer. But whether we see a return to neutral ENSO conditions or see the pattern flip into El Niño mode is uncertain at this time. Historical trends suggest that more neutral ENSO conditions are likely by next summer, but we cannot rule out a return to El Niño.

Industry thoughts on winter weather trends

During our winter seasonal outlook webinar, we asked our attendees if they felt winter weather has become more extreme, stayed the same, or is less extreme. Across all industries, more than 80 respondents participated in our survey.

Question 1: How has winter weather developed in the past years?

Nearly half of those responding (46%) feel that winter weather has become more extreme, while 35% feel it has become less so, and 20% feel it has stayed the same. While last winter was, on average, warmer than normal, conditions are more favorable for a cold winter overall this coming season.

Winter weather trend

|	
More extreme	46%
Less extreme	35%
Stayed the same	20%
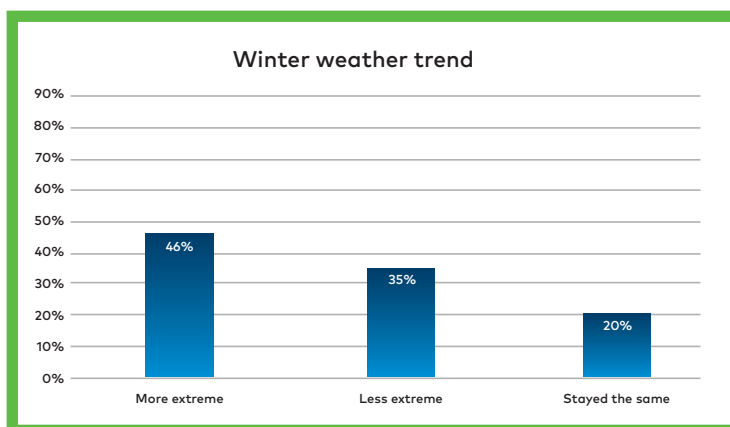
Question 2: In which areas has weather impacted your business over the past years?

Here, respondents could select all that applied from multiple answers. Across all sectors, the single largest impact was on customer satisfaction, chosen by 24% of respondents. Regulatory requirements (18%), profitability (17%), and employee health and safety (16%) followed closely behind as the second, third, and fourth choices.

Winter weather business impacts

Category	Percentage
Customer satisfaction	24%
Regulatory requirements	18%
Profitability	17%
Employee health & safety	16%
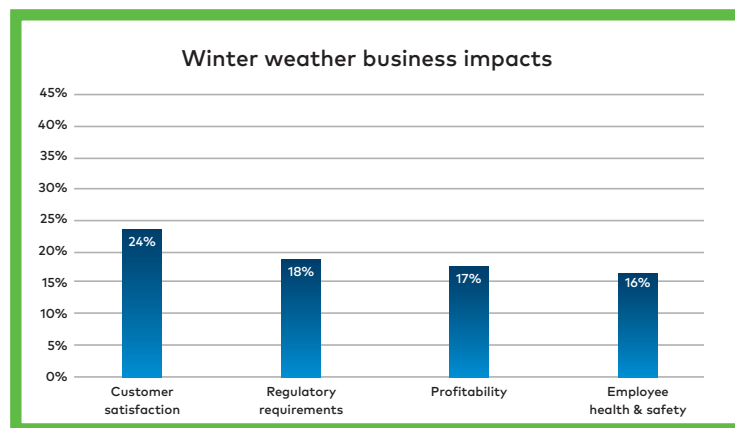
Question 3: What capabilities does your business have in place to address the impact of winter weather?

Respondents choose all that applied from multiple options. More than one-quarter (28%) of the respondents retain an outside weather consultancy to help address winter weather impacts; 20% reported using weather software, platforms, data feeds, or APIs. Another 13% have in-house weather stations to help manage impacts.

Decision making capabilities

Category	Percentage
Weather consultancy	28%
Weather software/platforms/data feeds/APIs	20%
In-house weather stations	13%

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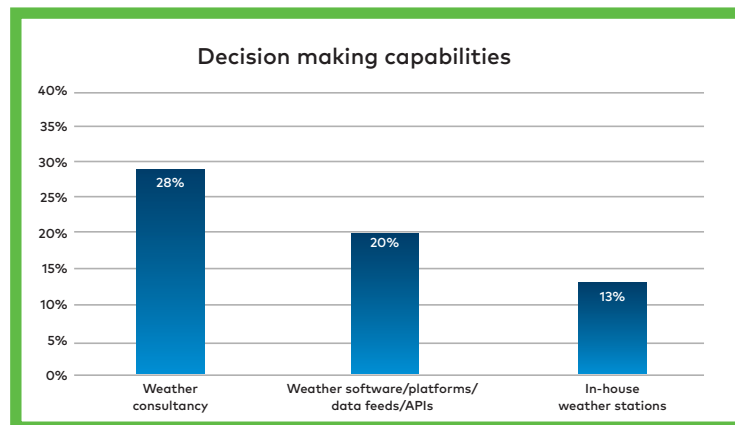
Utilities forecast discussion

This winter will offer its fair share of challenges. We expect an active season in upper New England, with upstate New York and New Hampshire prone to more frequent snowstorms. More inland snow tracks are also expected vs. the typical nor'easters of many winters.

Precipitation won't be the only challenge. Arctic outbreaks are more likely than during the last two years given the La Niña and negative Quasi-biennial Oscillation (QBO) phase. A weaker polar vortex will bring pulses of arctic temperatures, which will create added natural gas demand, adding to potential storm-related outages.

In terms of renewables, the greatest wind power potential will be in the Texas panhandle and Colorado, where winds will be stronger than usual. Conversely, there will be below-average winds in the Pacific Northwest, especially the Oregon gorge region.
The solar outlook is above average across the West and Southwest. Florida should also have above-average radiation.

> Since 2000, major U.S. power outages have jumped by 67%. This increase forces utilities nationwide to rethink their response plans and adapt to climate changes and the resulting volatile weather events.

Active winter season and outages

With increasing demand around regulatory expectations, customer satisfaction is a growing priority for utilities. Understanding when, where, and how significant a winter storm-related outage will be is critical for preparation and response. Access to insights from prediction software can help utilities accurately forecast a storm's track, intensity, snow ratios, and even if its weight will cause issues for trees, powerlines, and other infrastructure or assets. This can also support preparations for mobilizing crews at the right time and in the right place.

Several tools within our WeatherSentry® solution can provide event-specific risk information to help you improve your preparation. For example, the Energy Event Index offers a risk-based forecast for impactful weather hazards, including snow and ice accretion. It also provides twice-daily forecasts for three or five days out. The Storm Impact Analytics tool uses machine learning to provide a set of quantitative predictions that support a better-prepared response to potential outages. The model uses a combination of weather forecasting data and non-weather data — such as vegetation, utility asset records, and more — to better identify locations under threat. The program then uses statistical modeling and predictive analytics to determine the weather's impact on your assets in specific locations. It shows all decision points, reports, and scenarios for incoming weather events.

Energy Event Index

- Daily weather risk forecasts for your service regions
- Justify your incident command response levels based on the advised forecast
- Objectively create SIA events

Storm Impact Analytics (SIA)
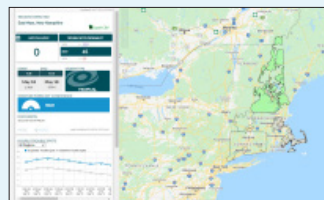
- Machine learning outage predictions for your operating geographies, using weather, OMS, and infrastructure data
- Incident, customers out, and coastal flooding forecasts are available

SIA similar events

- Identify analog events with similar meteorological characteristics to reference in logs to support emergency preparedness planning.

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Arctic outbreaks, load forecasting, and energy costs

Weather is a key driver of energy demand and fluctuating temperatures and arctic outbreaks this winter have the potential to stress that demand. The central United States could see some significant temperature swings, with well-below-normal temperatures during any arctic outbreaks resulting from the polar vortex. These swings could cause major natural gas and power price fluctuations. While this can increase risks, it also allows for enhanced trading opportunities.

Our Frontier Weather forecasts can help you accurately capture these opportunities with twice-daily weather reports featuring analysis and discussion from a team of expert meteorologists. Weather model data, including thousands of city-level graphics, generated daily and updated in real-time cover hundreds of cities around the country. Comprehensive historical and forecast data sets are also included and weighted by gas, electric, and fuel usage, along with population density. These insights provide highly-accurate information that can improve several areas within your operations, including generation load forecasting, trading, demand management, demand response, and more.
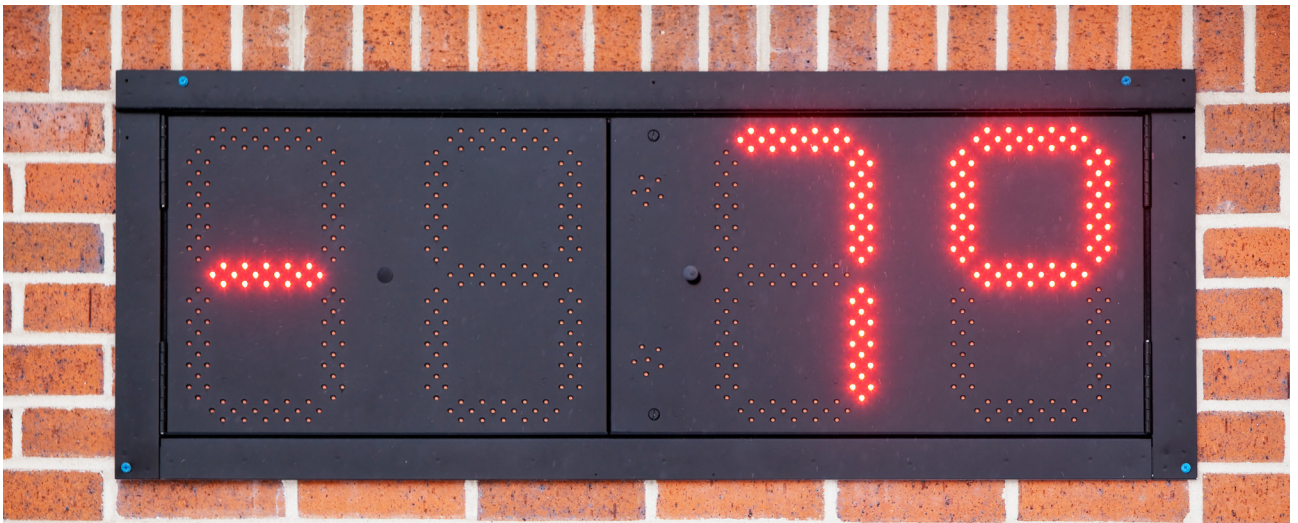
Renewable wind energy forecasting

Five states produce more than half of the 338 billion kilowatt-hours generated in the United States. This makes detailed access to regional wind power forecasts essential to understanding the weather's impact on energy prices and hub-height winds.

Our Frontier Weather solution delivers wind generation forecasts and planning information on energy prices, like insights on natural gas and electric power demand. The program offers hourly forecasts using data from DTN and all of the wind farms in North America. These forecasts are based on various weather model spreads, providing you an advantage over your competitors, especially in the trading and energy balancing markets.

We also offer a content services API that can help forecast site-specific energy consumption using a few observations and forecast parameters that integrate into internal models. Having the most accurate forecasts not only helps with load forecasting but also maintenance and repair decisions.

Frontier Weather
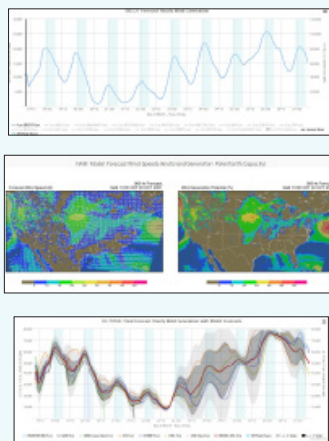
- Regional wind power forecasts
- U.S. & Canada hourly operational forecasts & uncertainties based on weather model spreads

DTN Content Services API

- Observations & forecasts to build your own models
- Global horizontal irradiance, including direct normal & diffuse horizontal irradiance available via the Weather REST API
- Cloud cover percent & minutes of sunshine are also available

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Record snowfall in upstate New York: December 2020

When we think about powerful winter storms in the Northeast, we often think of the stereotypical nor'easter, slamming coastal communities with strong winds and

precipitation. In December 2020, Binghamton, New York, received 40 inches of snow in just 24 hours, wreaking havoc on the city with waist-deep snow. Binghamton's previous record December snowstorm left 14 inches.

According to local officials from the National Weather Service (NWS), the astonishing snowfall rate was due to a rapid temperature change with horizontal distance at the mid-levels of the atmosphere, boosting upward motion and snowfall production. This allowed an otherwise unremarkable storm to produce a narrow zone of excessive snowfall. Many people were surprised that much snow did not contribute to widespread power outages. Since temperatures were in the teens, the snow was light and powdery.

Get actionable weather insights

Explore our new industry report and gain valuable insights into weather challenges nationwide, the industry's weather maturity curve, how utilities are managing outages, emerging prediction technologies, and more. Download it at www.dtn.com/nov_utility_wp.

Learn more about our innovative Storm Impacts Analytics solution in our e-book dedicated to helping you meet operational challenges. Get it at www.dtn.com/nov_sia_ebook.

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Aviation forecast discussion

With domestic air travel increasing to pre-pandemic levels and the demand for air cargo surging, this winter's weather will create added challenges for the aviation industry.

The preliminary winter forecast calls for stronger than average jet stream winds in much of the country, increased thunderstorm activity in select regions, and episodes of low visibility in the far northern section. Even with hard-to-predict and potentially extreme conditions, weather insights can help support more efficient, safe operations.

A stronger than average jet stream

This winter, there will be stronger than average jet stream winds, particularly in the northern tier of the United States, while southern areas will see weaker-than-average conditions. These strong westerly winds, blowing in a narrow band in the Earth's upper atmosphere, can save travel time, and more importantly, fuel on a good day. But when traveling into the winds, it can work conversely — creating turbulent conditions, challenging fuel efficiency, and delaying arrival times.

Our AviationSentry® solution can help address these issues. Accessible as a web-based SaaS solution, it offers a full suite of aviation solutions. From a jet stream perspective, AviationSentry shows a wide variety of altitudes — low, mid, and higher ranges — and their related wind speeds and direction. Easy to read and use, the solution features color-contoured highlights for simple jet stream identification. The forecast goes 24 hours out and updates every six hours.

Jet stream outlook
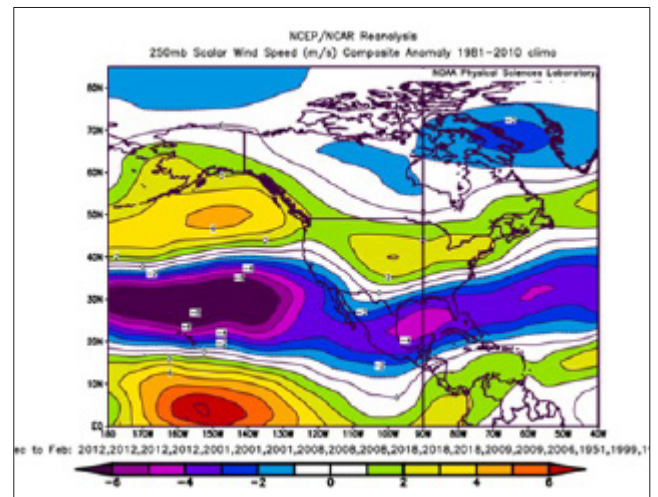
Expect stronger-than-average jet stream winds in the northern tier and weaker ones in the southern tier.

Flight-level specific winds aloft
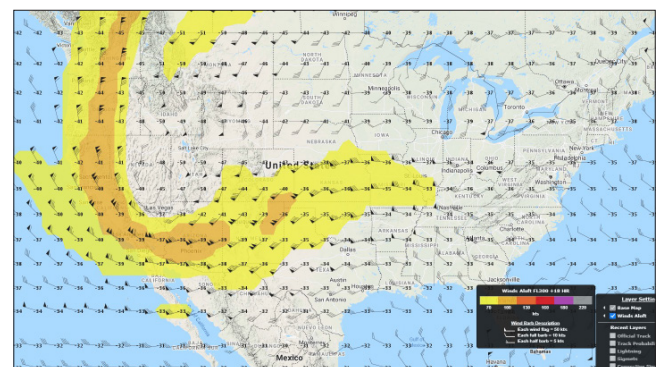
Better understand how the jet stream will impact your fleet with this unique data layer from DTN.

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Increased turbulence

From 2017-2020, more than 65% of severe injuries logged on airliners by U.S. accident investigators were turbulence-related. Such conditions could be worsening due to climate change.

Many of these injuries happen in winter, and this season will be especially difficult as the industry sees a return to pre-pandemic air travel levels when the possibility of encountering clear air turbulence (CAT) is high. By nature, CAT is virtually impossible to detect with onboard instruments or the naked eye, making it difficult, if not impossible, for a pilot to avoid.

All turbulence, but particularly CAT, can be dangerous and expensive. This winter's forecast calls for enhanced turbulence threats in a few specific regions, including the Rockies, the Plains, the Ohio Valley, and the Great Lakes. Turbulence is most prevalent during the winter months as there is a strong relationship between it and the jet stream. Rapidly changing wind speeds around the edges of the jet stream are a significant factor and common in the colder months.

When turbulence impacts operations, safety and maintenance issues often soon follow. Finding a resource that delivers accurate and comprehensive turbulence forecasts is imperative. Our rapid-update turbulence forecast supplies real-time, calculated intelligence.

Integrated turbulence forecast

Better see how turbulence is expected to impact your operations with our integrated turbulence forecast.

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It leverages high-density, remote-sensing networks in its prediction algorithm, ensuring fast access to critical insights. It also replaces current categorical and non-aircraft-specific products with new, industry-first, aircraft-specific forecasts. Integration with our Flight Route Alerting infrastructure and third-party applications allows it to fit easily into your setup. The information not only enhances safety but also efficiency. The more accurate the turbulence information, the more direct and comfortable the chosen route can be, ultimately making the best use of time and fuel.

Thunderstorm activity

Snow and ice are stereotypical of winter, but so is increased thunderstorm activity. This season, we expect increased thunderstorm activity along the Gulf Coast up into the Tennessee and lower Ohio Valleys, most likely later in the season. This will allow time to prepare contingency plans for ramp closures and other actions to protect people, equipment, facilities, and aircraft.

Access to accurate, real-time weather insights can help drive informed decisions —

Thunderstorm outlooks forecast
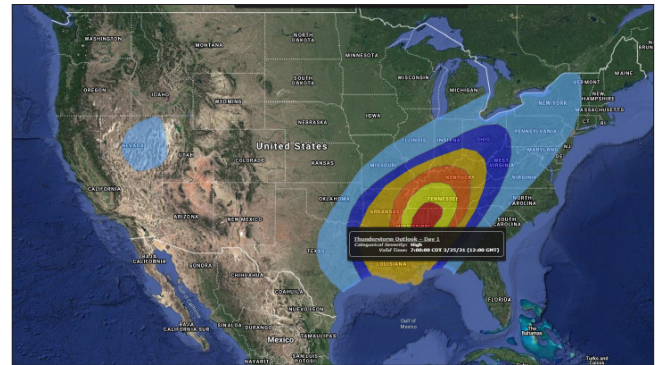
Our thunderstorm outlooks can help you understand your overall thunderstorm and severe weather risks from one to three days out.

specifically, tools to track a storm's momentum and strength. Tracking allows operations teams to monitor the distance from a thunderstorm cell to any identified location, so it's clear what time critical assets will be impacted, informing proactive action. Real-time lightning strike data and watches and warnings for conditions like hail and high winds are also important. Implementing protocol to respond to these weather events contributes to operational efficiencies — as does the flexibility for staff to adapt in real-time. For example, if there is a hail warning, a customized message can tell staff to move aircraft indoors immediately.

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Low visibility

Heightened low visibility risks are expected in the northern tier of the country, particularly in the Rockies along the Canadian border. This will create flight planning and routing issues as visibility restrictions can limit aircraft movement, contribute to capacity restrictions, and delay departures and arrivals.

AviationSentry offers ceiling and visibility forecasts, updated hourly, depicting expected flight category restrictions over the next 18 hours. Our aviation meteorological operations team can also create a RAMTAF, a value-added terminal forecast, for any airport in the world. RAMTAFs will include ceiling, visibility, wind, and precipitation type forecast information on a scheduled or ad hoc basis.

Ceiling and visibility forecasts
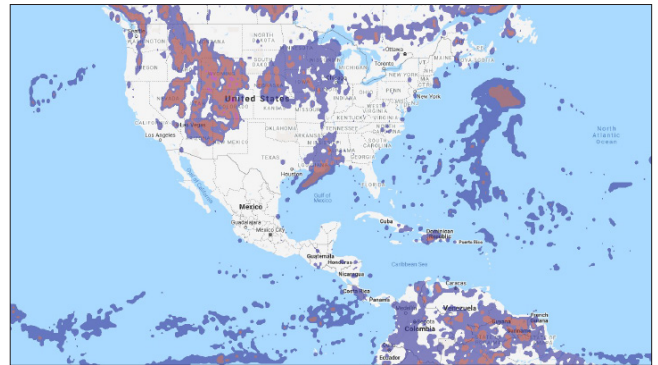
Our ceiling and visibility forecasts show expected flight category restrictions for the next 18 hours, updated every hour.

Winter turbulence

Turbulence-related, in-flight injuries are the leading cause of compensation claims by airline staff and safety and financial risks for airlines. In February 2019, the pilots on a Delta Air Lines flight from Orange County, California, to Seattle kept the seat belt sign on because of an earlier report of occasional light chop. The flight crew still began cabin service during this time, and the Embraer SA ERJ 175 hit a band of severe turbulence that lasted eight seconds. Two flight attendants were injured — one breaking her arm — and a passenger, who was using the lavatory, suffered a head wound.

Get actionable weather insights

Learn more about convectively-induced turbulence in our white paper on reducing risks and improving the bottom line. Download it at www.dtn.com/nov_turbulence_wp.

Transportation forecast discussion

Weather intelligence plays a significant role in the safety and mobility of road travel. Whether you are responsible for keeping roads clear or are traveling them to deliver goods, safety is always top of mind. Accurate weather forecasts and real-time insights are critical to keeping people safe and roads moving.

Temperatures will vary widely this winter, and we expect increased precipitation in the central United States and the Ohio River Valley. Knowing how that will impact winter road maintenance decisions is key.

A weak polar vortex will bring arctic pulses that will affect pavement temperatures, particularly in the South. Decision-making during these cold snaps will be challenging, and access to accurate, real-time forecasts is essential.

Colder than average temperatures

Due to the weaker polar vortex, the northern United States may see many cold snaps and colder conditions overall compared to the last few winters. When managing colder-than-average temperatures, most decisions boil down to chemical selection, understanding the right product for the conditions, and knowing when and where crews should make the application. If the forecast is showing warmer temperatures and liquid precipitation, you can reduce staffing, or conversely, call them in when necessary.

Our solutions offer best-in-class weather forecasts and expert recommendations to support effective decisions. The cloud-based platforms also integrate seamlessly with existing RWIS sensors. Our Total View solution processes data from any RWIS system and presents the most accurate, location-specific forecast available. Total View scans the data, runs it through quality control, and outputs the findings in our WeatherSentry® platform. This means the most accurate weather forecast and precise information is always available to help keep things running smoothly and efficiently.

Total View from DTN

Increased precipitation

While most parts of the country recently impacted by drought can expect a dry winter, the central region into the Ohio River Valley will likely experience increased precipitation. This creates the need for heightened awareness of pavement conditions, as well as decision support to ensure educated routing, maintenance, treatment, and removal strategies.

Understanding not only the timing, amounts, and location of precipitation but also surface and atmospheric temperatures, allows for the most efficient, accurate decisions. As such, our ClearPath solution provides hourly current and forecast site-specific road and weather details.

ClearPath from DTN

DTN
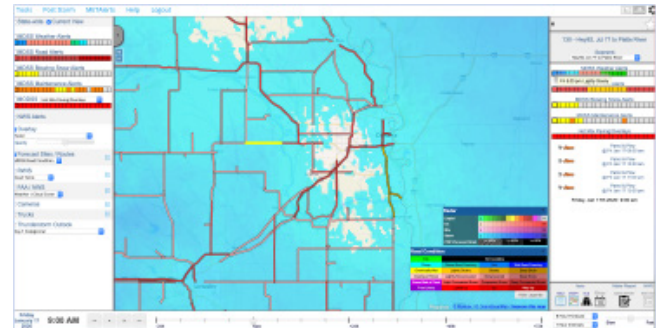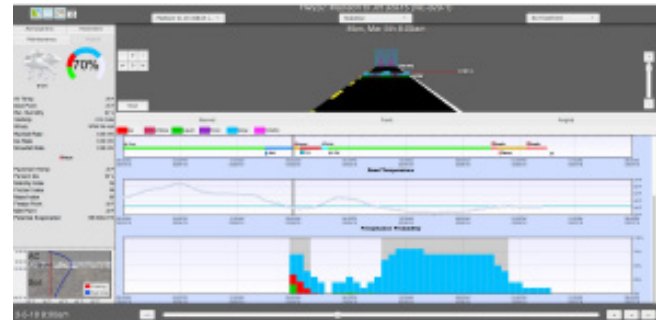
Fluctuating temperatures

Simply put, fluctuating temperatures are one of the greatest challenges facing road maintenance crews. This winter's forecast calls for a wide variety of temperatures, especially in the central part of the country. This can impact driver behavior and chemical effectiveness, creating additional challenges.

Crews must prepare for sudden temperature changes at a single location, as well as divergent conditions across the service territory. One side of town may have different temperatures and precipitation than roadways just miles away — creating problems for both crews and drivers.

Tools like our WeatherSentry solution offer advanced pavement forecasting data, including a location-specific daily planner and a forecast overview. You can integrate third-party weather station data with our Total View package. Weather insights can be layered with traffic camera views and traffic speeds on an interactive map, providing a clear view of the weather's impact on traffic flow. The system also highlights areas of concern, and our team of experienced meteorologists is available online, 24/7/365, to answer immediate weather-related questions.

WeatherSentry from DTN
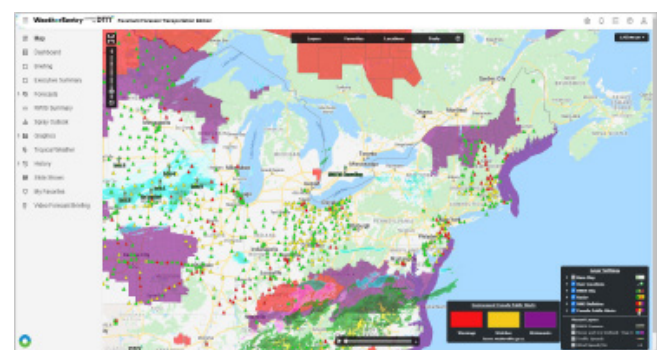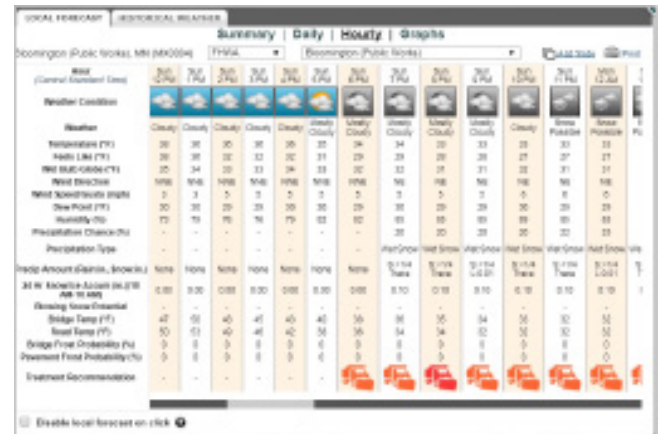
February Texas cold snap affected more than power

While coverage of the Texas cold snap last February primarily focused on the power grid, conditions also impacted the state's highways. At one point during the arctic blast, six people died, and dozens were hospitalized following a 133-vehicle pile-up on a Fort Worth interstate.

The crash spanned over a half mile and continued to expand as first responders arrived. Over several hours, more than 100 emergency vehicles were dispatched to the scene. At the time of the accident, temperatures were in the low to mid-20s, and the relative humidity was high, creating ideal conditions for freezing drizzle. The National Weather Service (NWS) forecast office in Forth Worth showed temperatures as high as the mid-50s just 4,000 feet above the ground, allowing rain to fall as liquid, freezing on contact with the road and colder air temperatures.

Get actionable weather insights

For more information or to request a demo of one of our transportation solutions, please visit www.dtn.com/nov_wx_transport.