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Case Study

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Accurate road condition data for unpredictable weather

How the City of Charlotte improved their winter road maintenance by integrating Wx Horizon and Mobile Sensor MD30s.

The U.S. City of Charlotte, North Carolina, is one of the state's fastest growing cities. With a humid subtropical climate, the roads don't get icy very often — but when they do, the city needs to respond fast.

CITY of CHARLOTTE

The City of Charlotte maintains more than 5400 lane miles spread across 308 square miles (799 km). Despite the area's warm climate, winter weather patterns are inconsistent. Conditions can range from light freezes to heavy snow from one year to the next.

Limited forecasts without ground truth

During and after a weather event, road conditions vary from the north to the south areas of Charlotte, with freezing roads being the biggest challenge. Weather forecasts had been somewhat useful, but they do not provide any information on road conditions.

The city had installed fixed weather stations at strategic locations to gain better insight of road conditions, but the distance between the stations still left gaps in visibility. Limited pavement forecasting information was available 90 miles away from the city — not close enough to provide local, accurate data.

The organization sought the most complete, accurate road condition data possible so they would know when and where to deploy their fleet and proactively maintain the roads.

Filling the gaps with complete data

The City of Charlotte got accurate, reliable and complete road weather data with Vaisala Wx Horizon and Vaisala Mobile Sensor MD30s.

The client:

City of Charlotte

Vaisala provided:

Wx Horizon
Mobile Detector MD30

Utilizing advanced AI algorithms, Wx Horizon combines forecast information with current road conditions to show exactly how current conditions are affecting every part of the road. The city can also see exactly when a storm has passed, for example, and which roads are still icy and which are just wet.

The MD30 is mounted on each fleet vehicle to track surface status, temperature and friction as

well as air conditions — all while recording front-facing video. With the device installed on several fleet vehicles, decision makers as well as operators gain real-time insight on road conditions so they can efficiently target their fleet and materials.

Real-time data for faster and more accurate response

Charlotte is now keeping their roads safer, faster and more accurately, in less time. The combination of Wx Horizon and MD30s provides the accurate road weather information they need to efficiently direct their fleet, quickly restoring safer conditions or even preventing icy roads.

Where once the city had just one forecast, now they have a map based on segments that includes road condition data, temperatures and more. Data from the MD30s are transferred back to Wx Horizon, where forecasts are refined for even greater accuracy — providing the ground truth the organization needs. The city also appreciates Wx Horizon as a cloud-based solution, as it requires no software updates or maintenance.

The City of Charlotte is now prepared for any weather conditions, which will benefit everyone as the population continues to grow.

"We are much more confident in the accuracy of information we get from the Wx Horizon and MD30s. Vaisala was also great to work with during the evaluation and integration process, very collaborative. And the result is a solution that really fits our needs."

Charles Jones
Deputy Street Superintendent, City of Charlotte

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