

Road weather observations and services as a part of smart traffic

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VAISALA

In Brief

- The role of Weather in urban transport management
- Accurate road weather and air pollution observations as a source of data to assist smart traffic management



Weather Business

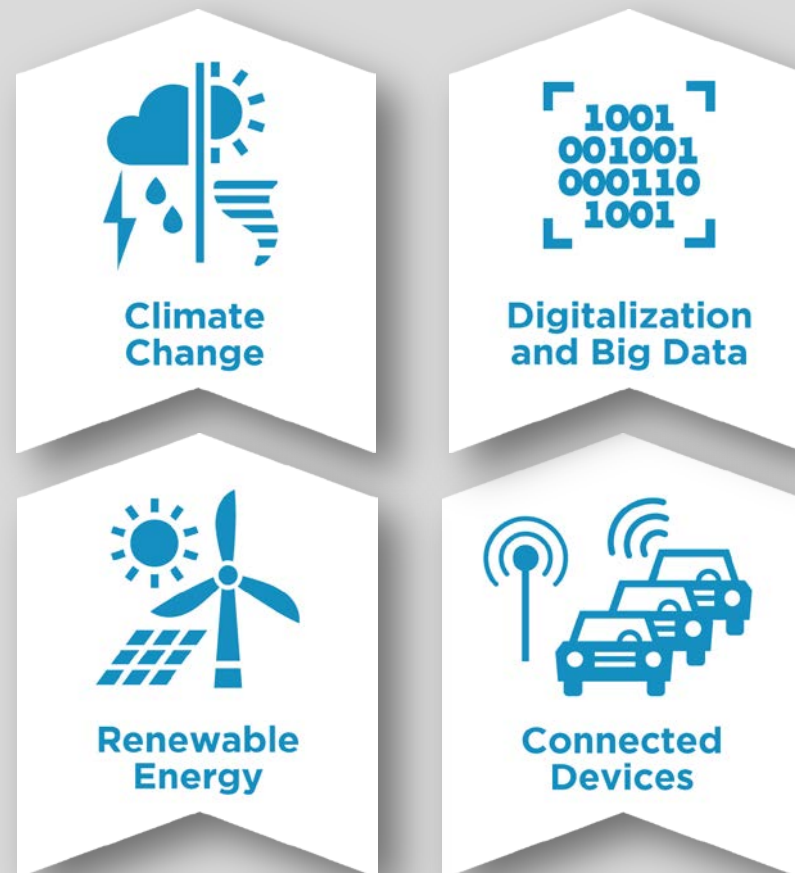
Our Markets



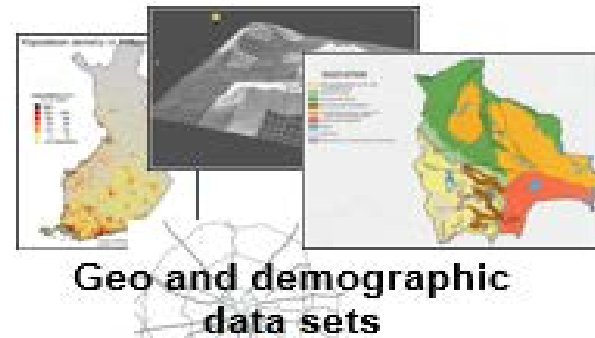
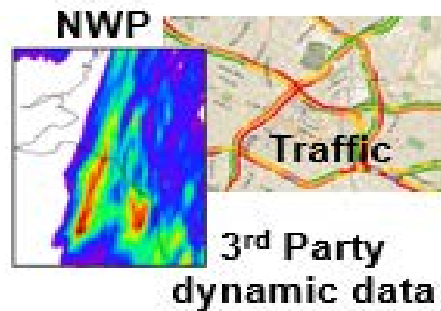
Our Observation Solutions



Mega Trends



Vaisala Observations



Social media and connected vehicle



Observation Driven Situational Awareness

Observations for a Better World

An aerial photograph of a white snowplow with a red blade clearing a snow-covered road. The truck has a blue and red dump body. The road is flanked by snow-covered fields and bare trees. A white text box with a blue border is overlaid on the right side of the image.

Transportation

We help to improve mobility and safety by measuring, forecasting and integrating environmental observations to support operational efficiency, and optimized decision-making

- Keeping traffic moving safely and efficiently:
 - Quality controlled road weather observations
 - Optimised routing
 - Decision-Support
 - Full audit



Example - Remote Road Surface Sensors

Reliable, accurate environmental sensing

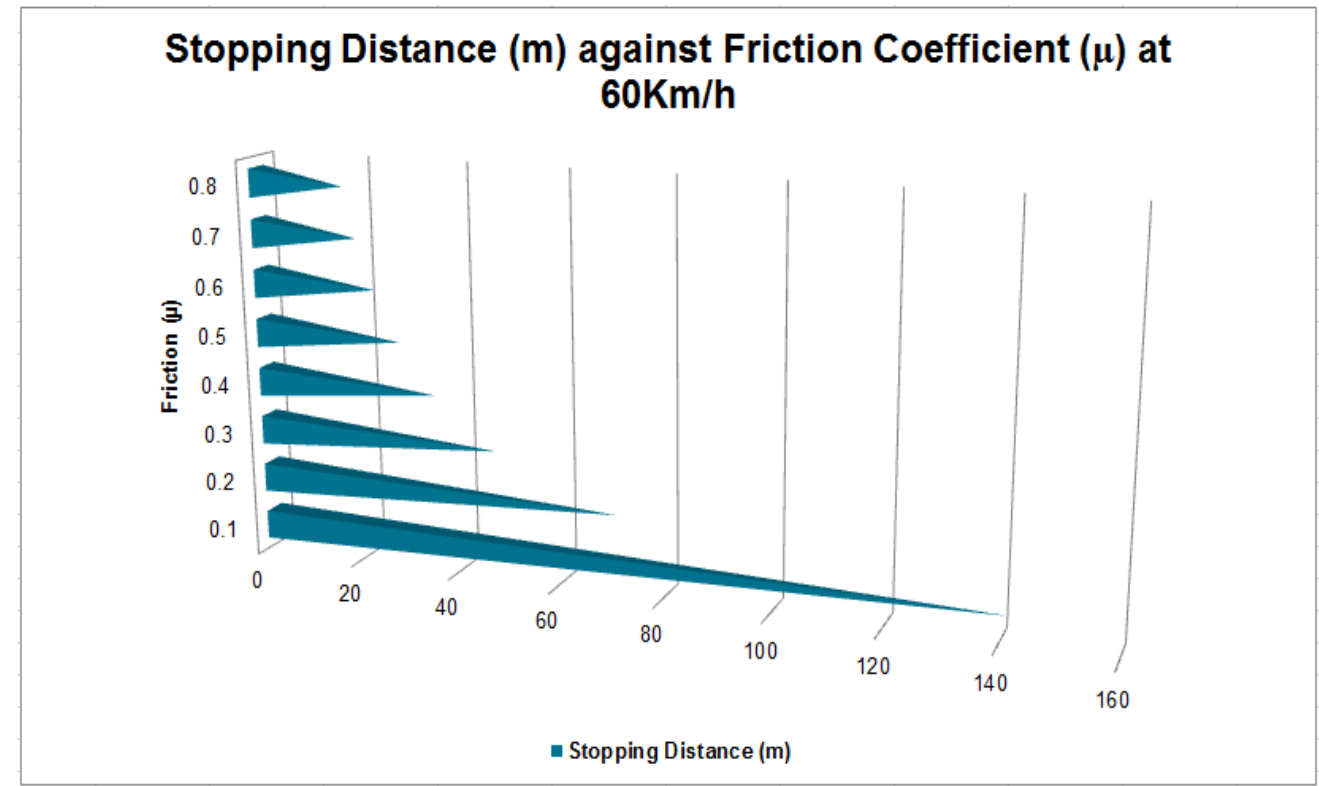
Road surface temperature and state
Early warning and detection of ice
Road surface grip
Effectiveness of treatment action



Example - Road surface grip



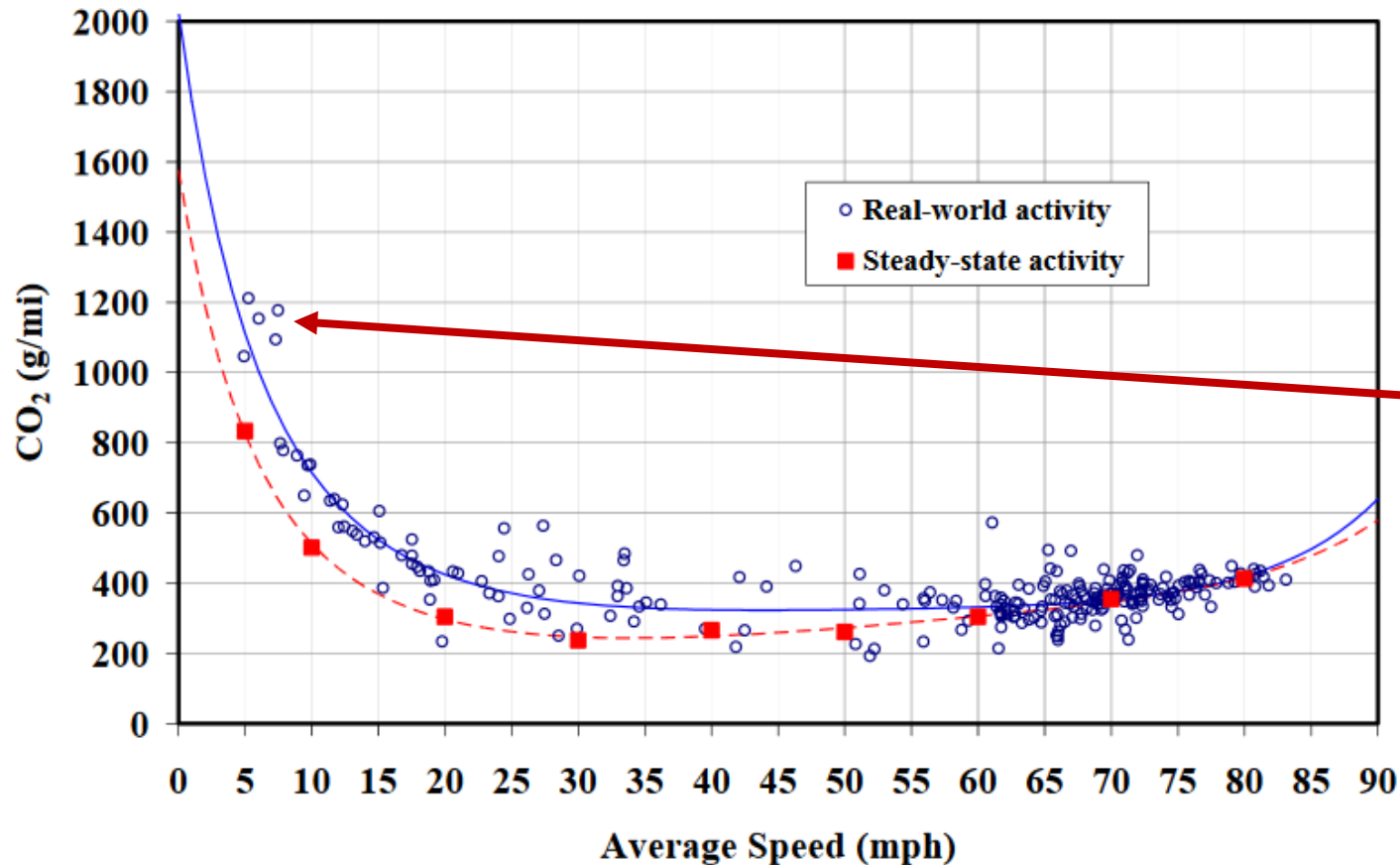
- Grip experienced by vehicle in contact with the road
- Correlates with Friction
- Clear link between Friction and accident risk
- Monitoring grip in urban areas as part of traffic management and routing



Sources of Urban Air Pollution are Local and Vary During the Day

- Urban topology impacts pollution in a dynamic way
- Interdependency with weather is significant

Cost of accident – Environmental Impact



- Accident related congestion leads to start-stop driving
- At an average speed of around 8Km/h (5mph) CO₂ increases by nearly 3 times over normal driving conditions

Figure 3. CO₂ emissions (grams/mile) as a function of average trip speed (mph)

Vaisala - Air Quality transmitters

AQT410



NO₂, SO₂, CO and O₃

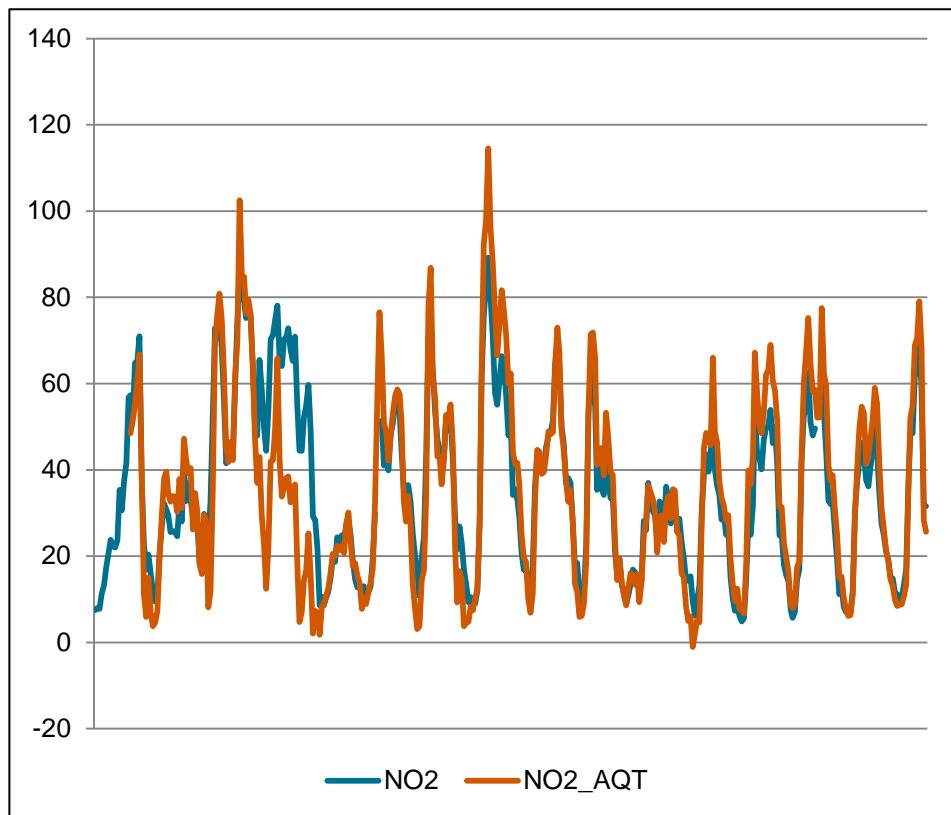
AQT420



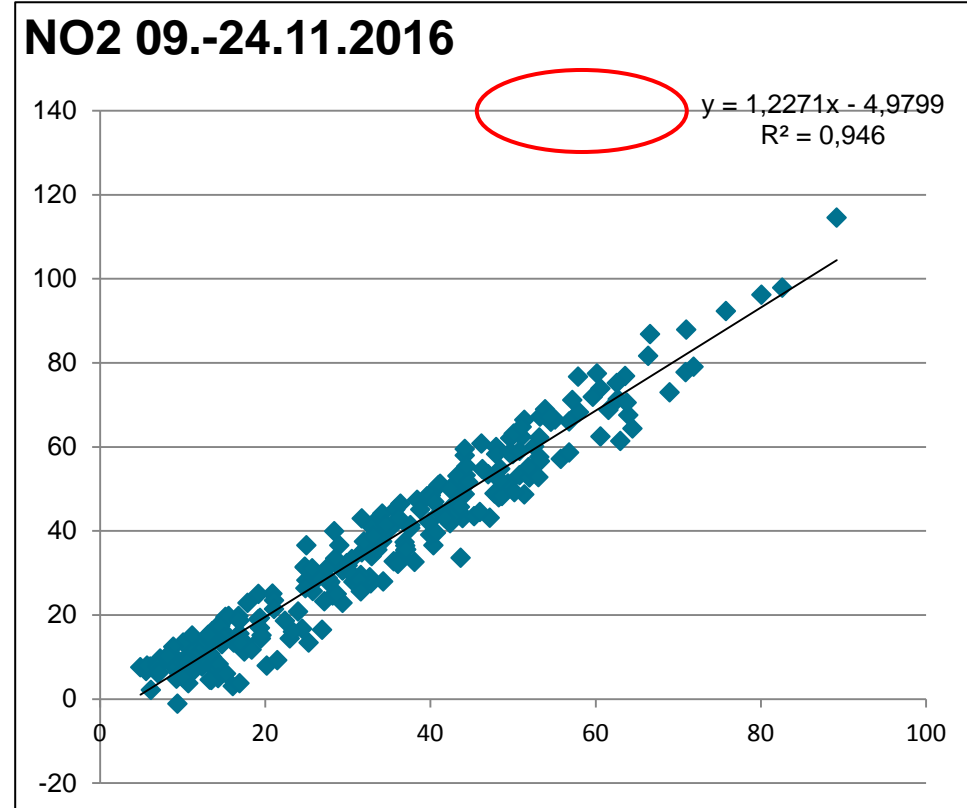
NO₂, SO₂, CO, O₃ and PM2.5, PM10

AQT410 NO2 vs. Horiba APNA-370

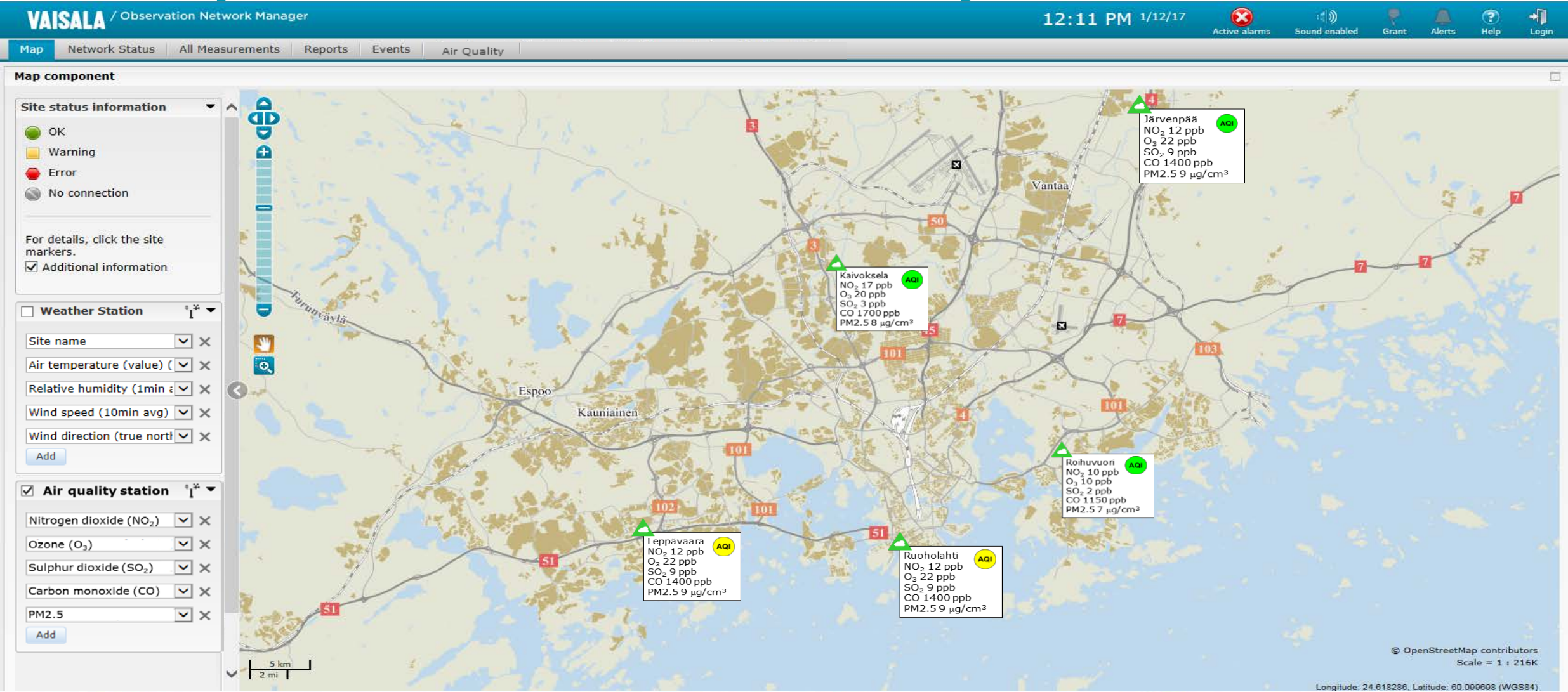
Helsinki City, Mäkelänkatu



Source: HSY



Example – Weather & Air Quality



Exeter Smart City Project

Engaged Smart Transport (EST)

- Objectives:
- Prove observation data, citizen engagement, big data analytics and domain specific expertise can create actionable interventions
- Reduce congestion and emissions to increase the effectiveness of local transport in cities and for the local community
- Create an end-to-end congestion management service



Summary

- Road weather influences both modal choice and urban carbon emissions
- Accurate road weather observations form a valuable input to active traffic management
- Smart traffic management with weather data optimisation could help in creating a less congested transport system with lower emissions



Thank You – Questions?