

## Challenge

Tunnels have their own microclimate. They tend to be warmer in winter and cooler in summer, while maintaining higher humidity levels inside. This can lead to ice formation, fog, crosswinds, and other potentially hazardous conditions for drivers at tunnel entries and exists.

## Solution

To address this, it's essential to monitor road and atmospheric conditions both before and after the tunnel. Since weather conditions can differ on either side of the tunnel, a message to the driver can prepare them for what is ahead and to slow down.

## Benefits

With this information, proactive measures such as gritting the road and timely traffic alerts can mitigate ice formation and other critical situations, ultimately enhancing traffic safety, keeping tunnels and roads open, and informing drivers about potential hazards.

## Tunnels in Turkey

Over the past decade, Turkey has undertaken numerous motorway projects, including the construction of several tunnels to navigate challenging terrain. These motorways are equipped with road weather monitoring stations. However, it quickly became evident that the microclimate around tunnels require special attention.

Depending on prevailing weather conditions, drivers exiting tunnels may encounter ice, fog, crosswinds, and various types of precipitation. To mitigate these hazardous situations, drivers must be promptly warned, and gritting actions should be initiated where feasible.

The Lufft VS2k (visibility), WS600 (combined precipitation, humidity, air temperature, dew point, wind, pressure) and road sensors IRS31Pro or NIRS31 (surface state, surface temperature) offer a complete package of atmospheric and road related weather parameters to monitor and keep the roads safe with easy installation and maintenance.



Tunnel station with VS2k, WS600 and IRS31Pro.  
Photo: WIND İTH.İHR.Ltd.Şti.

## Schematic Set Up with product suggestions



**Road Weather Sensors**  
Lufft IRS31 Pro or  
NIRS31



**Weather Sensor**  
Lufft WS600



**Visibility Sensor**  
Lufft VS2k

**Lufft**

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