Model Calculations to Estimate Urban Levels of Particulate Matter (PM) in Oslo

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This presentation gives the methods, challenges, and results of PM$_{10}$ modeling for Oslo

AirQUIS

The modeling tool - AirQUIS

Challenges in calculating PM$_{10}$ with respect to traffic induced re-suspension

Comparison with measurements
An AQMS system has been used for calculating PM$_{10}$ and PM$_{2.5}$ concentrations.
An AQMS system has been used for calculating PM\textsubscript{10} and PM\textsubscript{2.5} concentrations

Emission estimates of traffic induced re-suspension is the main challenge in modeling PM\textsubscript{10}

Initially poor agreement between measured and estimated PM\textsubscript{10}

Difficulties in modelling the coarse fraction (PM\textsubscript{10} - PM\textsubscript{2.5}) of PM\textsubscript{10}

Coarse fraction dependent on reservoir of dust particles and road surface conditions
Improving the emission estimates of coarse fraction, the PM$_{10}$ is in good agreement with measurements.

High concentrations of coarse fraction were difficult to model.

Coarse fraction estimates were improved.

The improved result was in good agreement with measured PM$_{10}$.

The highest PM$_{10}$ concentrations are very well modeled.

Estimated and measured daily PM$_{10}$ values are in good agreement.
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The tool is applicable for estimating when guidelines are exceeded.

In summary, PM$_{10}$ is very well estimated using the tool, but further improvements are needed.

Good agreement occurred with measured PM$_{10}$ concentrations after improvements of coarse fraction.

Further development of the emission model from traffic induced re-suspension is needed.

Questions?