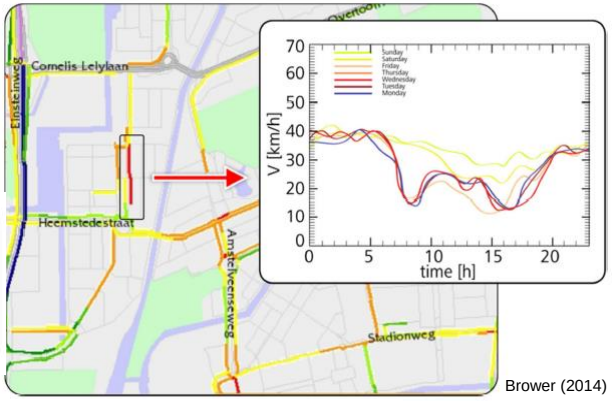
FAIRMODE WG2
Urban Emissions Working Group

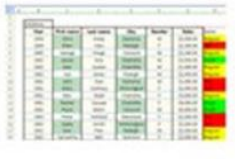
Leonor Tarrasón (NILU) and Marc Guevara (BSC)

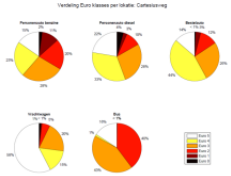
WG2:
Best practices for urban traffic emissions



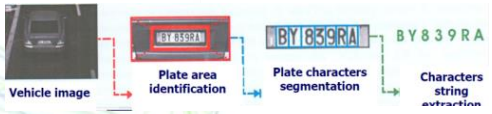
Brower (2014)

Floating Car Data





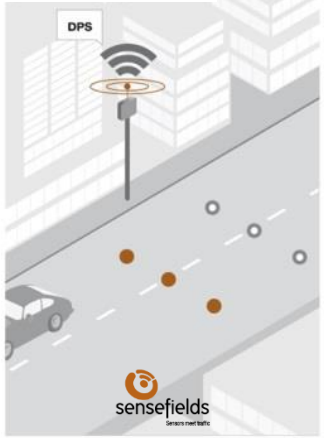
License plate → Data base → Results



Adapted from Ejik (2012) and Bedogni (2014)

Automatic Number Plate Recognition systems

Traffic models and wireless traffic sensors



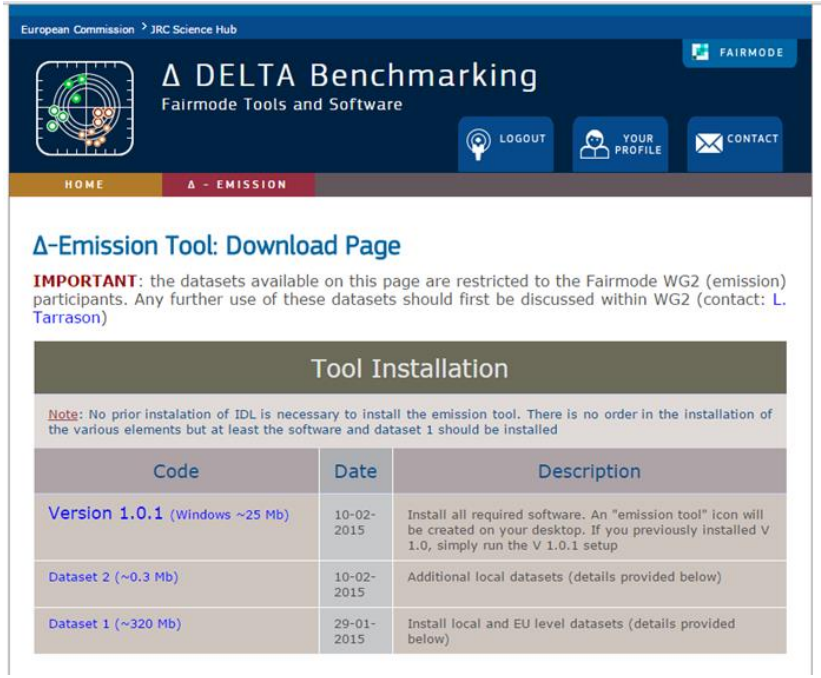
https://envirocar.org/

Extended Floating Car Data

FAIRMODE Emission Benchmarking

Emission Delta Tool: contributes to close the gap between urban bottom-up emission estimates and top-down estimates

- Oslo, Bergen, Stavanger - Norway
- Stockholm - Sweden
- Havana- Cuba
- The country UK – UK
- Madrid – Spain
- Porto and Lisbon - Portugal



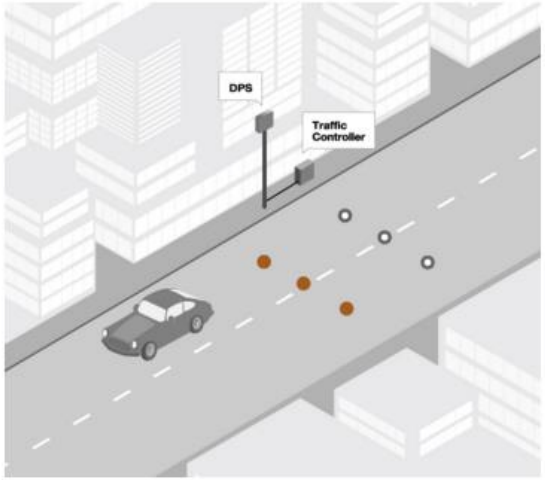
Sensor capabilities for «bottom-up» urban emission development

(+34) 93 250 45 98 sales@sensefields.com EN | ES | FR

sensefields
Sensors meet traffic

Company | Our Solutions » | Success Stories | Technology | Blog | Contact

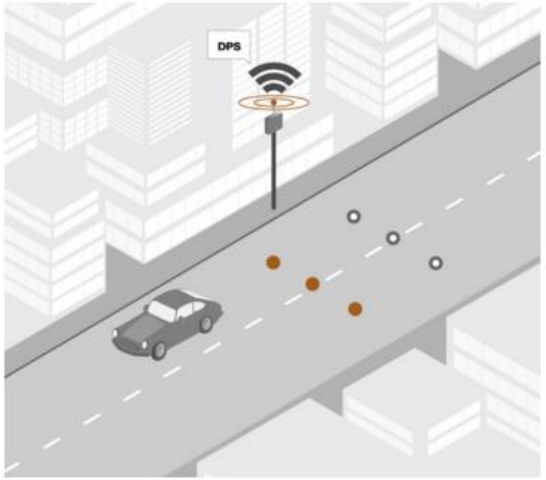
Data Collection



Traffic Gauging

Data collection station that provides accurate detection of vehicles for measuring traffic flow.

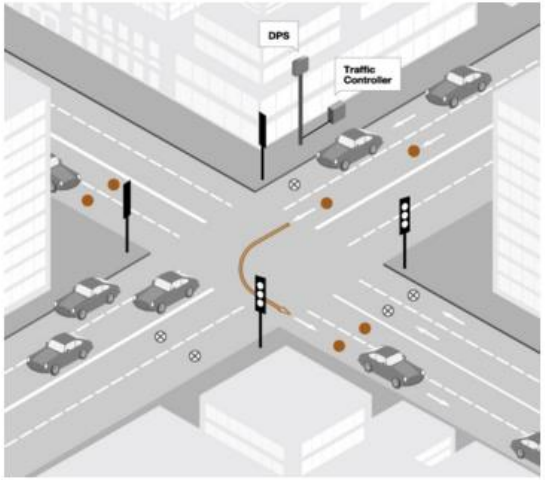
More info



Autonomous Traffic Gauging

Autonomous stations for collecting and integrating traffic information.

More info



Congestion Monitoring

Data collection station that provides accurate and timely information on lane occupation to optimize traffic lights, signal traffic congestion conditions and analyze and plan traffic.

More info

FAIRMODE
Forum for air quality modelling in Europe

FAIRMODE
Forum for air quality modelling in Europe

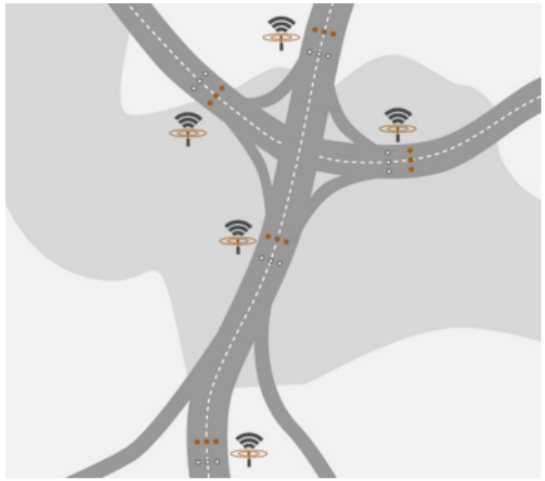
Sensor capabilities for «bottom-up» urban emission development

(+34) 93 250 45 98 sales@sensefields.com EN | ES | FR

sensefields
Sensors meet traffic

Company | Our Solutions » | Success Stories | Technology | Blog | Contact

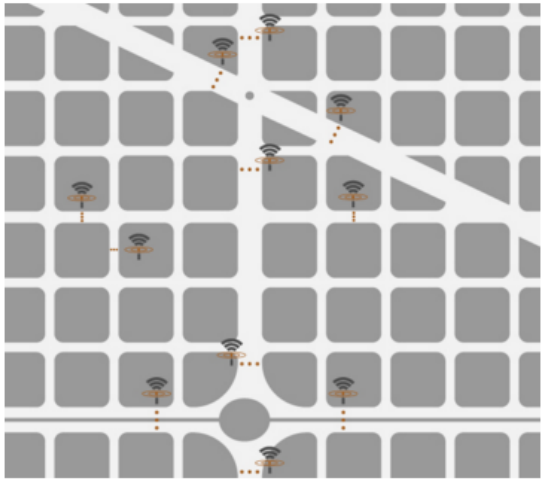
Data Analytics



Smart Infrastructure Management

Integrated solution for collecting, reporting and analyzing metrics for smart traffic management.

More info



Smart City Mobility

Integrated solution for collecting, reporting and analyzing metrics for smart traffic management for smart cities.

More info

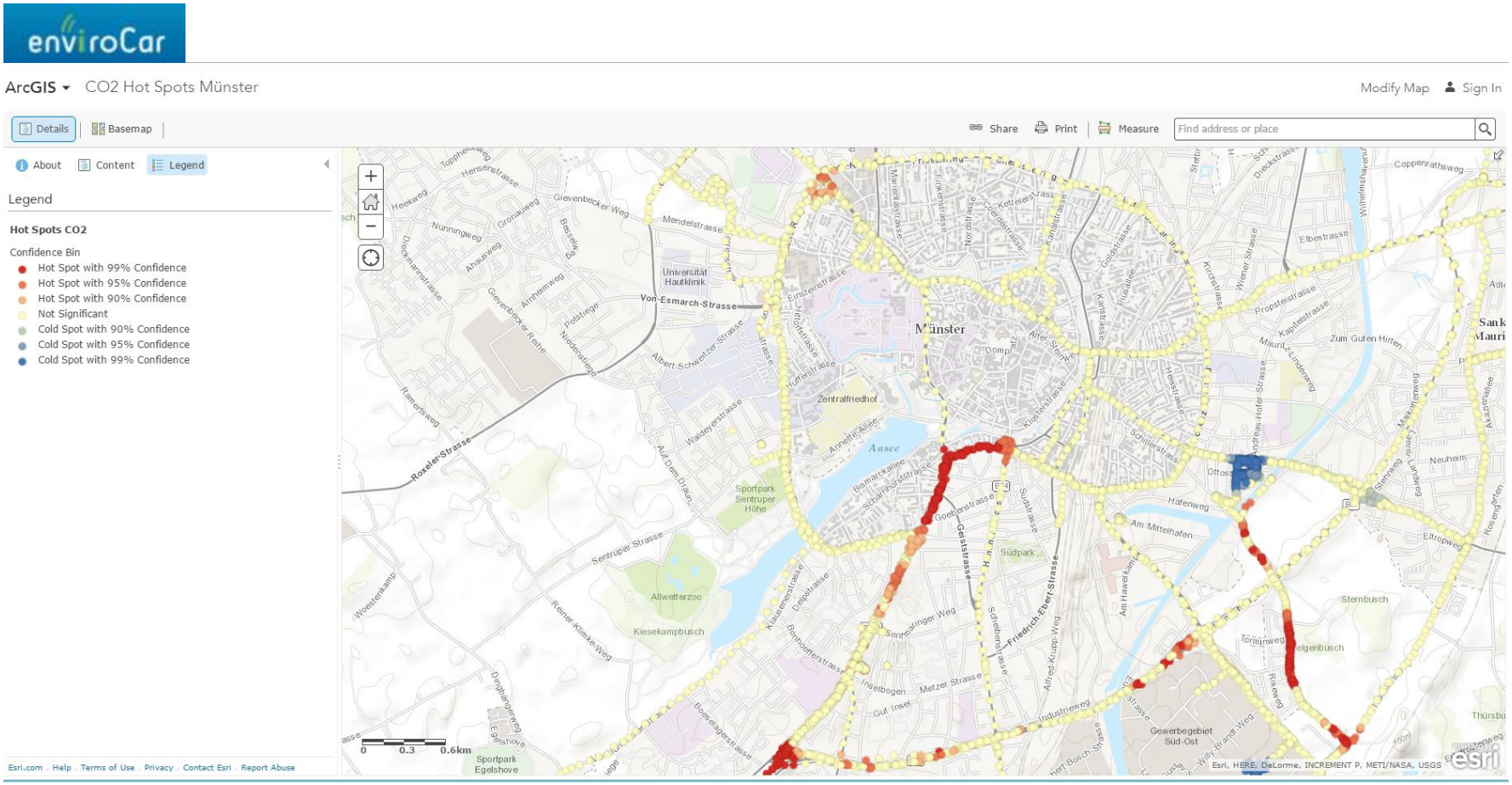
WG2 proposal
Smart City
Emissions

More info

FAIRMODE
Forum for air quality modelling in Europe

FAIRMODE
Forum for air quality modelling in Europe

Sensor capabilities for «bottom-up» urban emission development



Sensor capabilities for «bottom-up» urban emission development

GPS information on

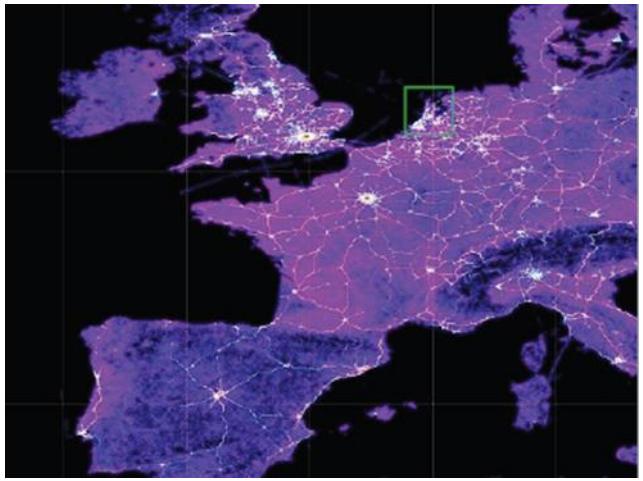
- Road segment
- Average time travel
- Average speed (+ standard deviation, percentiles)
- Time variation (year, month, week, day, hours)

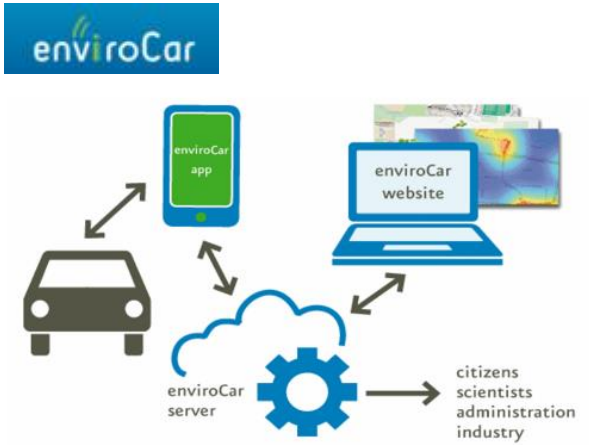
Aggregated information from speed derives

- fuel consumption
- Driving patterns –congestion
- CO2 emissions
- Noise

Vehicle technology is not available –Taxi fleet in Oslo

Tom Tom, OBS





On-going NILU projects contributing to this emission work

ECLECTIC – *for healthier air*

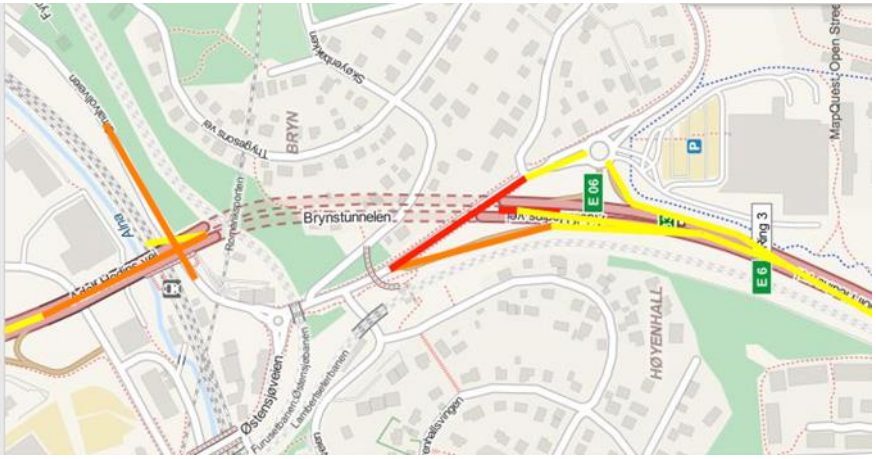
Big Data Services

FAIRMODE
Forum for air quality modelling in Europe

On-going NILU projects innovating emission compilation work

ECLECTIC – *for healthier air*

”SMART AIR INLET”



ECLECTIC combines model and sensor data to provide a smart control of the air intake in the car coupe

- reduce air intake when airo utside is of poor quality
- increases the air ventilation when the quality of the air outside is good

On-going NILU projects innovating emission compilation work

ECLECTIC – *for healthier air*

”GREEN ZONES”

- Automatic recognition of green zones
- Green zones can be defined close to hospitals, schools ...
- As hybrid cars turn on electric drive
- As fossil fuel cars activate their eco-drive mode (ref VW dieselgate)

Urban Labs – the air quality where you are

CITI-SENSE

Raise awareness and increase public participation on air pollution issues using new sensor technologies

Citi-Sense-MOB

Combine new sensor technology, information and communication platforms and participatory methods to create personalized services

CrowdAir

Collaboration project with Norwegian University to create a mobile app to report perception on air pollution and health.

On-going NILU projects innovating emission compilation work

iResponse Social Responsible Crowdsourcing on Water, Air and Urban Planning

Source www.caps2020.eu

ICT – enable participatory urban water design and management

Wood consumption/emissions from house heating

Urban Planning through public participation

DE in Europe

FAIRMODE Forum for air quality modelling in Europe

NILU

Aalto University

NIVA

Netlife Research

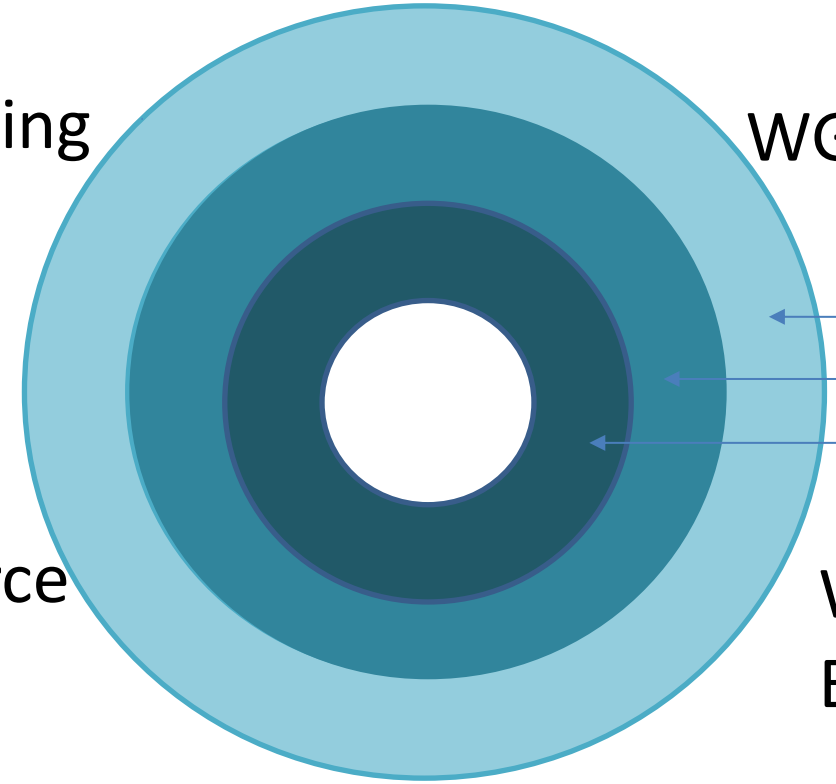
SIFO

Mapita

Contribution to FAIRMODE

”THE FAIRMODE KNOWLEDGE WHEEL”

WG Data Fusion ?

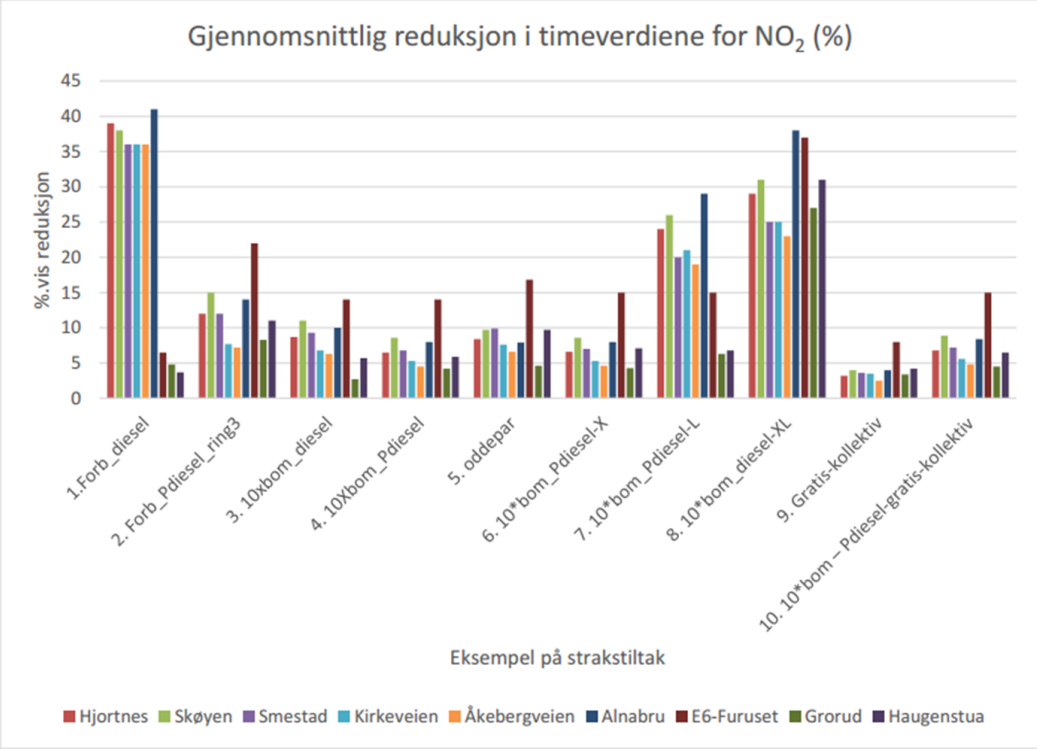


Relevance of emission improvements

- WG1: Understand emission driven differences in Composite maps
- WG3: Facilitate evaluation of source contributions
- WG4: Evaluation of urban scale measures – contribution to smart city planning

- CC1: Improve forecasting of AQ
- CC2: Support to evaluation of station representaiveness
- CC3: Ancilliary information for data fusion activities

Evaluation of effect of short term measures in Oslo



Discussion

- ✓ Questionnaire on best practices on-going
- ✓ Evaluation of top down vs bottom up inventories – on going at regional scale
- ✓ Evaluation of top down vs bottom up inventories – on going at urban scale

The Δ-emission tool does not include have spatial information

- Would it be useful with a new inter-comparison study – A Composite Map for Emissions?
- Do we need to introduce a new WG on data fusion?

FAIRMODE
Forum for air quality modelling in Europe