



16/12 2021

NORDIC REFLAB MEETING ON AIR QUALITY MODELLING

Agenda

9:00-9:15 Introduction (Wing Leung, SMHI)

9:15-10:45 Current AQ modelling activities and challenges (15 minutes each)

- Sweden (Matthew Ross-Jones, SEPA and Helene Alpfjord Wylde, SMHI)
- Finland (Ari Karppinen, FMI)
- Norway (Scott Randall, NEA and Bruce Rolstad Denby, MET Norway)
- Break 15 min
- Iceland (Throstur Thorsteinsson, University of Iceland and Þorsteinn Jóhannsson, Environment Agency of Iceland)
- Denmark (Camilla Geels et al., Aarhus University)

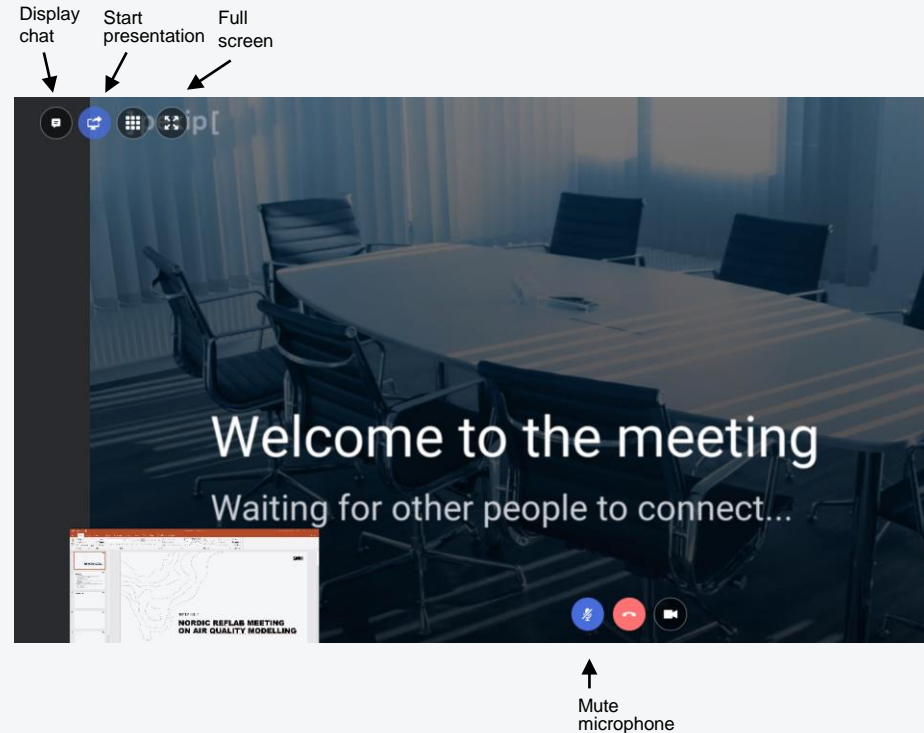
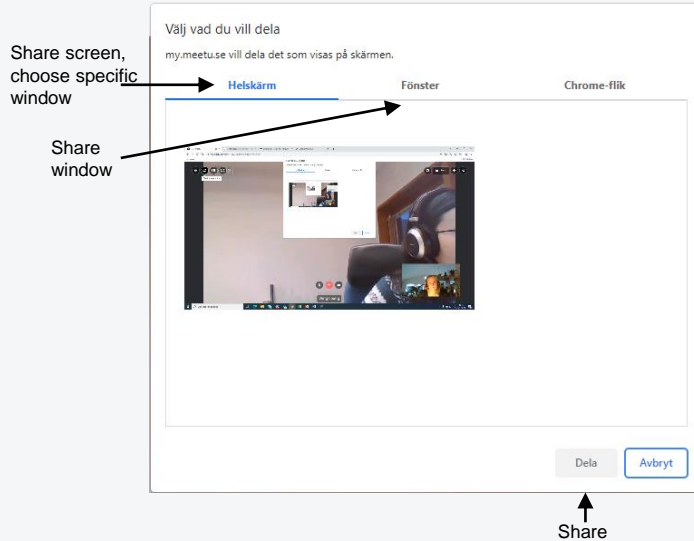
10:45-11:15 Strengthening of air quality monitoring, modelling and plans under the Ambient Air Quality Directive – Main conclusions arising from 2021 expert survey with focus on air quality modelling (Leonor Tarrason, NILU)

11:15-11:50 Group discussion

11:50-12:00 Wrap-up and next meeting

Introduction

- Use the chat for questions – just type your name!
- Short questions after each country's presentation, save the rest for the group discussion



Introduction

- Many urgent questions regarding AQ – new WHO guidelines, more focus on PM_{2.5}, revision of EU AAQD...
- Sweden is aiming for higher ambition in AQ modelling
- Swedish Reflab for modelling see the need for closer contact with our Nordic colleagues

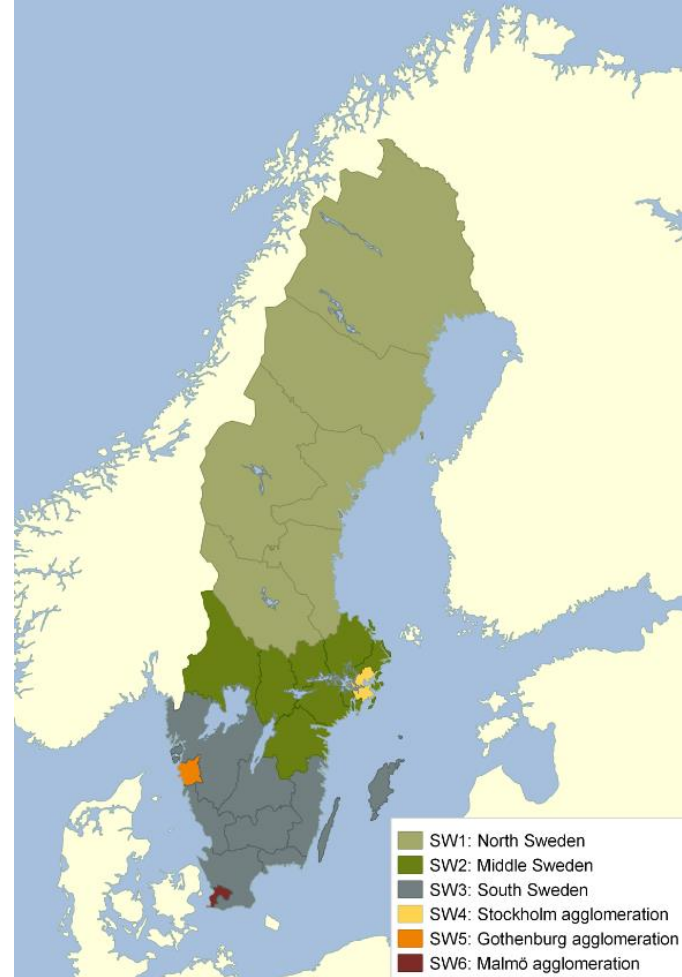




Current AQ modelling activities and challenges in Sweden

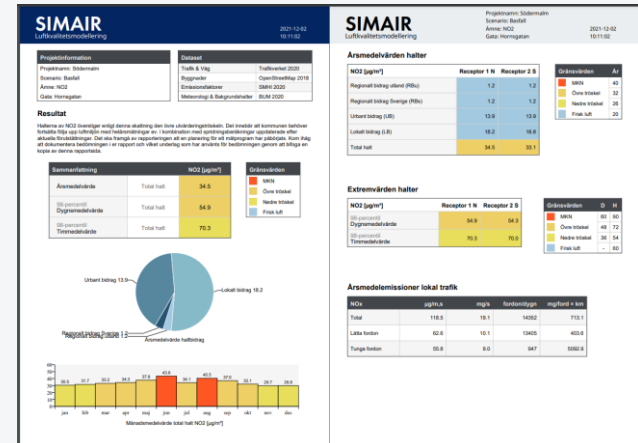
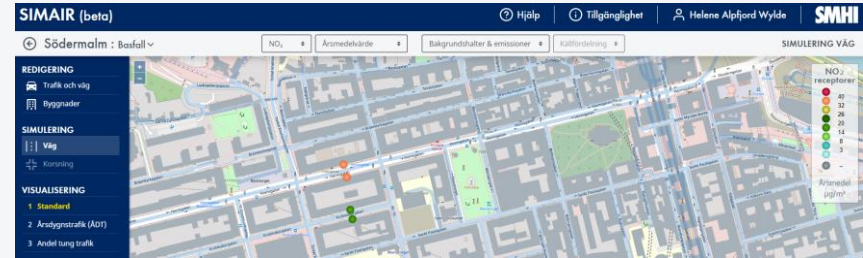
Decentralised system for AQA

- Local and regional authorities have primary responsibility
- Modelling activities vary between different cities/regions
 - Agglomerations maintain their own modelling systems
 - National modelling tool (SIMAIR) used by Swedish Transport Administration and some medium-sized cities
 - Consultants providing modelling services with various models
 - Modelling results rarely updated & reported annually
- National AQ Reference Laboratory for modelling (SMHI). Separate to NAQRL for monitoring (Stockholm University)
- Proposal for annual national modelling assessment and development of SIMAIR to a freely available system with necessary tools to aid action planning.



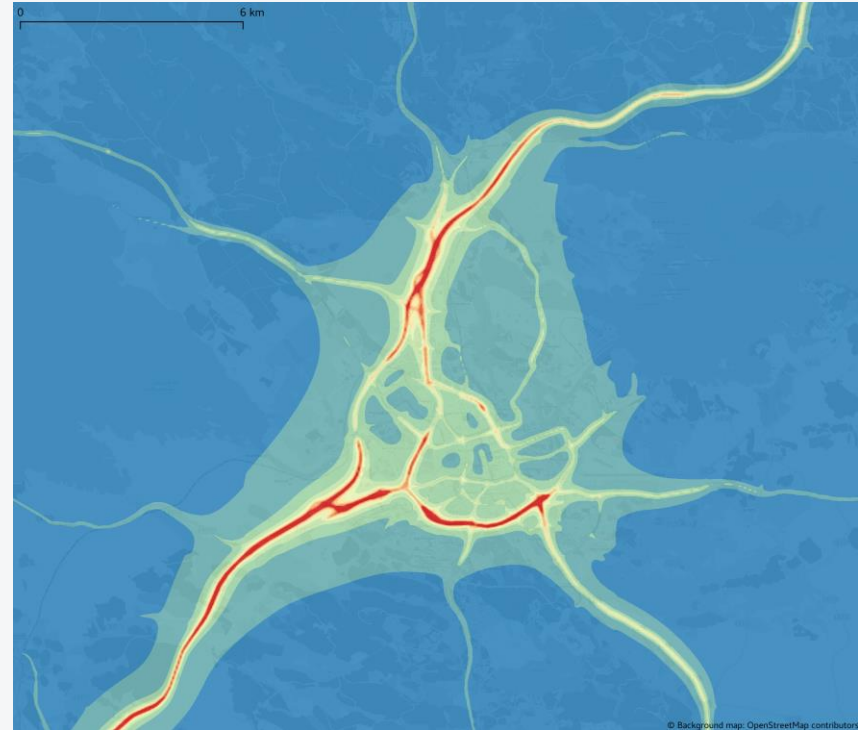
Current AQ modelling activities in Sweden

- New IT platform and framework – CLAIR
- Web based modelling system SIMAIR3 – to be launched Jan 2022
- NORTRIP implemented in CLAIR and SIMAIR
- National modelling on urban scale (250 m) and local scale 2022 – for exposure and assessment purposes



Current AQ modelling activities in Sweden

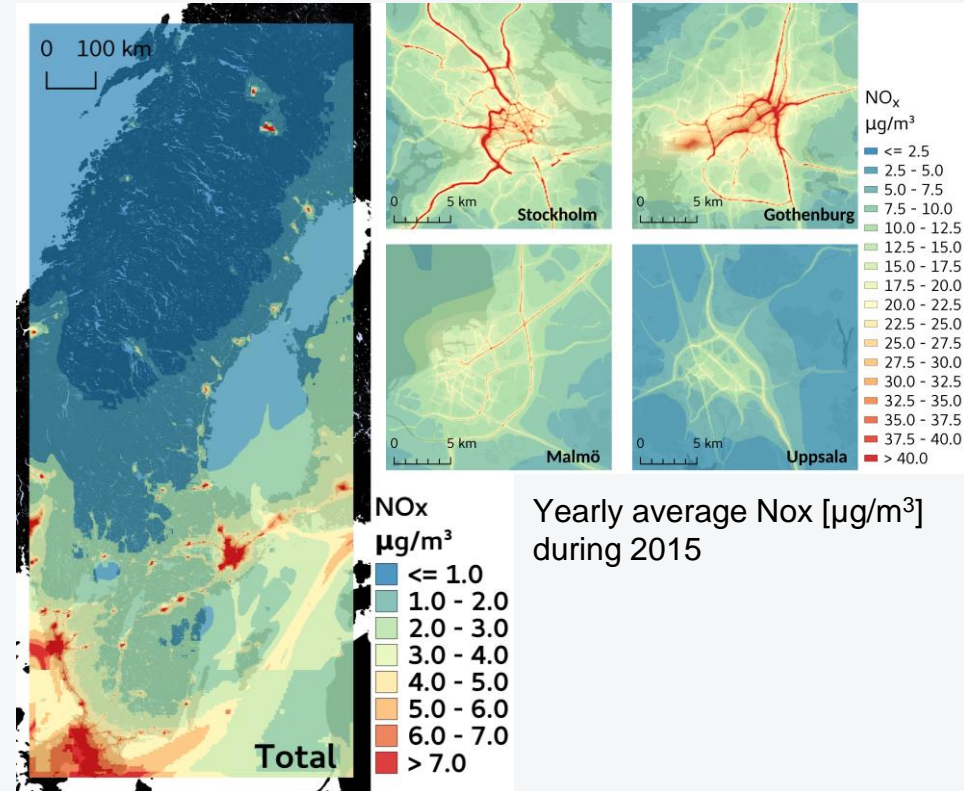
- The emission model NORTRIP-NO_x-exhaust Road TRAffic Induced Particles is implemented in SIMAIR3 and CLAIR
- NORTRIP in SIMAIR3 – final verification of functionalities that the user can choose, e.g. sanding, salting and dust binding before launch Jan 2022
- NORTRIP in CLAIR - improved mapping of national traffic emissions of non-exhaust particles by simulating emissions from all roads in Sweden. Better detail on the different contributions to PM mass of particles from tyre, brake and road wear.



Resuspension modelling for PM10 using NORTRIP emissions

National modelling and quantification of population exposure

- Combination of regional and urban scale dispersion modelling using MATCH and CLAIR
- Source-specific urban/local contributions
- Non-local contribution estimated using BUDD, a semi-lagrangian post-processing scheme
- NORTRIP used to estimate non-exhaust traffic emissions
- On-going assessment for years 2019 and scenarios for 2030 including NO_2 , $\text{PM}_{2.5}$, PM_{10} , O_3
- National modelling results by also including street canyon modelling for 2019 – hopefully a yearly activity from 2023



Current AQ modelling challenges in Sweden

- National detailed data on residential wood burning does not exist - local/regional burden to create emission inventories
- We see the need for Nordic cooperation including measurements, model development and benchmarking!

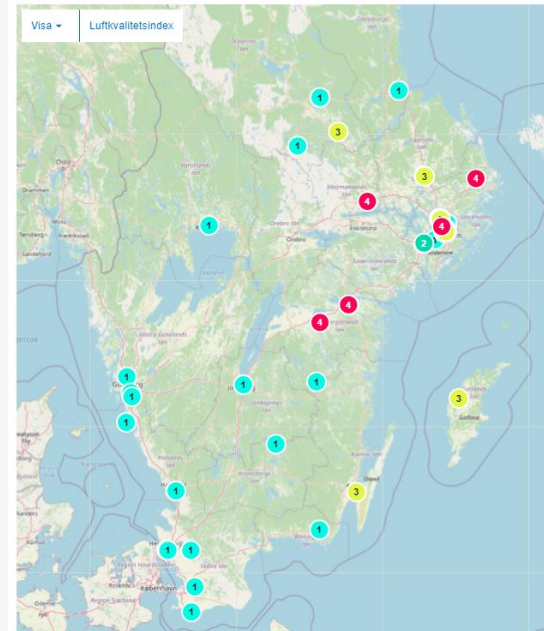


Current AQ modelling challenges in Sweden

- Data fusion – AQ measurement and modelling on urban/local scale to be developed
 - Few monitoring stations – how to bias correct/ deal with spatial representativeness?
 - Dust binding actions influence local PM sites – hard to know where actions take place and how to generalize measurement/model bias
- Municipality traffic measurements not fully integrated in the official road network – best practise for traffic measurements?

Luftwebb

På SMHI:s Luftwebb samlas på uppdrag av Naturvårdsverket tjänster inom luftmiljö. Här hittar du tjänster för visualisering och nedladdning av svenska luftmiljödata, som mätdata, regionala spridningsberäkningar och geografiskt fördelade emissioner. Tjänsterna är öppna för alla.



Group discussion

- Reflections regarding the revision?
- Main subjects to focus on in this constellation?
- How would we like to keep in touch?

Next meeting

- Conclusions from today's meeting
- Meeting notes will be published at www.smhi.se/reflab
- Where and when will next meeting take place?
- Together with Reflab for AQ measurements or not?

Thank you all for your participation!

