# PROGRESS IN EMEP ACTIVITIES IN 2020-2021 AND FUTURE WORK:

# MEASUREMENTS AND MODELLING

A. Colette & O. Tarasova, TFMM co-chairs

Joint EMEP SB & WGE, remote, Sept 13-17, 2021

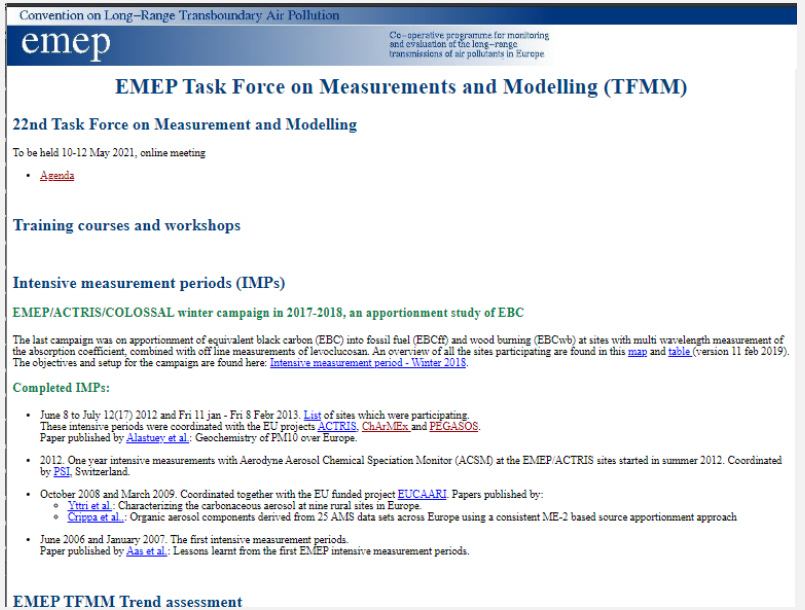
Convention on Long-range Transboundary Air Pollution
emep
Co - operative programme for monitoring and evaluation of the long-range transmissions of air pollutants in Europe

LRTAP
Long-range Transboundary Air Pollution

# 2021 ANNUAL MEETING

- 22th annual meeting online, 11-13 May 2021
  - 103 experts from 24 State Parties + MSC-East, MSC-West and CCC
  - Presentations available on the website https://projects.nilu.no/ccc/tfmm/

- Main items of the 2020-2021 workplan
  - Condensables
  - Review of Gothenburg Protocol
    - Trends (O3)
    - Fitness for purpose of tools (Covid)



Convention on Long-Range Transboundary Air Pollution

emep

Co-operative programme for monitoring and evaluation of the long-range transmissions of air pollutants in Europe

**EMEP Task Force on Measurements and Modelling (TFMM)**

**22nd Task Force on Measurement and Modelling**

To be held 10-12 May 2021, online meeting

- Agenda

**Training courses and workshops**

**Intensive measurement periods (IMPs)**

**EMEP/ACTRIS/COLOSSAL winter campaign in 2017-2018, an apportionment study of EBC**

The last campaign was on apportionment of equivalent black carbon (EBC) into fossil fuel (EBCff) and wood burning (EBCwb) at sites with multi wavelength measurement of the absorption coefficient, combined with off line measurements of levoglucosan. An overview of all the sites participating are found in this map and table (version 11 feb 2019). The objectives and setup for the campaign are found here: Intensive measurement period - Winter 2018.

**Completed IMPs:**

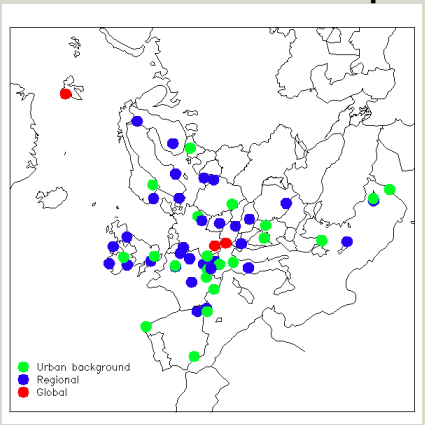
- June 8 to July 12(17) 2012 and Fri 11 jan - Fri 8 Febr 2013. List of sites which were participating.
  These intensive periods were coordinated with the EU projects ACTRIS, ChArMEx and PEGASOS.
  Paper published by Aliastuey et al.: Geochemistry of PM10 over Europe.
- 2012. One year intensive measurements with Aerodyne Aerosol Chemical Speciation Monitor (ACSM) at the EMEP/ACTRIS sites started in summer 2012. Coordinated by PSI, Switzerland.
- October 2008 and March 2009. Coordinated together with the EU funded project EUCAARI. Papers published by:
  - Yttri et al.: Characterizing the carbonaceous aerosol at nine rural sites in Europe.
  - Crippa et al.: Organic aerosol components derived from 25 AMS data sets across Europe using a consistent ME-2 based source apportionment approach
- June 2006 and January 2007. The first intensive measurement periods.
  Paper published by Aas et al.: Lessons learnt from the first EMEP intensive measurement periods.

**EMEP TFMM Trend assessment**

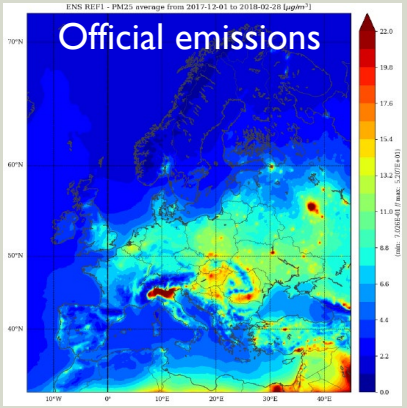
# CONDENSABLES

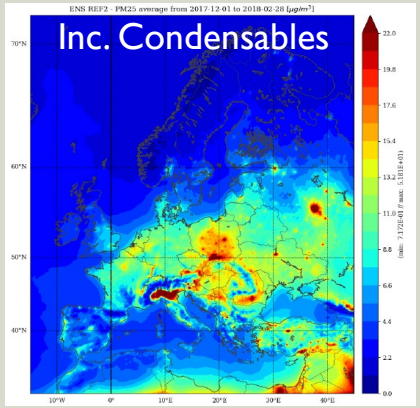
- See Monday 13.09 pm session
- Main outcomes
  - The « case is made » that from a modelling point of view consistent representation of condensable emission is an crucial point
  - About 20% reduction of systematic low bias in PM => better health exposure modelling
- TFMM contribution
  - Involvement of State Parties for Intensive Measurement Campaign at 50+ sites and 13 models inter comparison
  - Collaboration with other European networks and programmes : CAMS, ACTRIS, Colossal
- Way forward
  - Improvement in emission reporting, gap-filling
  - Source contribution modelling ( impact on policy )
  - European-wide BaP multi-model exercise ongoing

## 2017-2018 Field Campaing




## Multi-model exercise

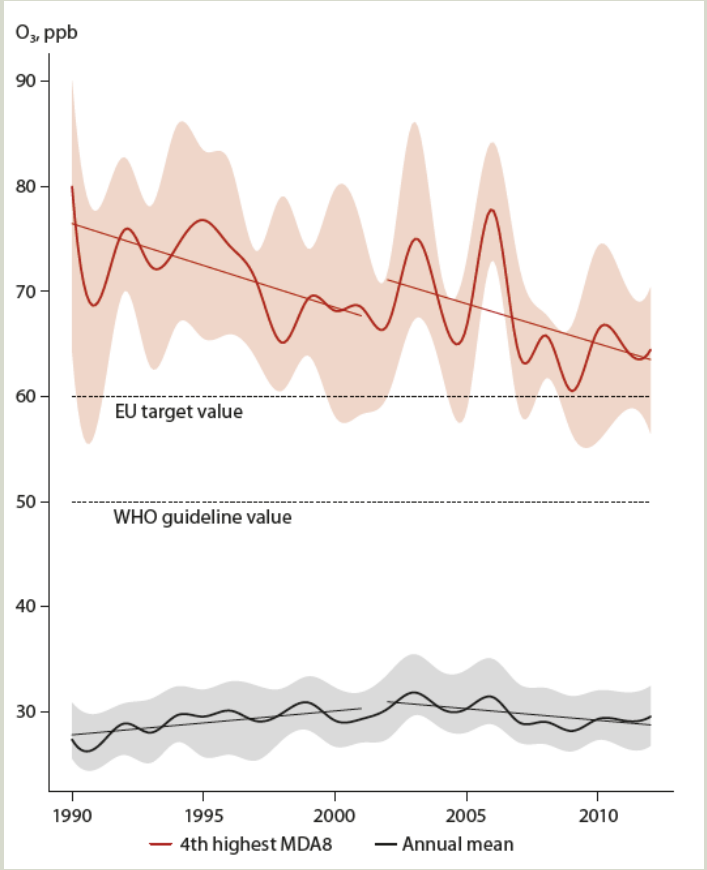


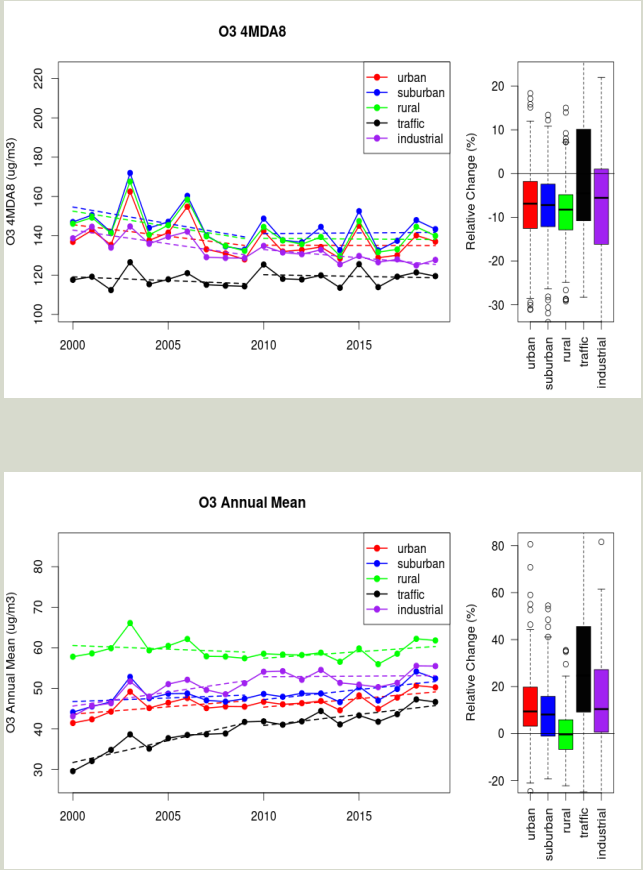
# OZONE

- Ozone trends
  - Sensitivity to the metric, station typology, geographic area
  - Flat trend of annual mean at background sites
    - See HTAP presentation, complexity of factors
  - Increase of annual mean at urban/traffic sites
    - => Should we worry for health exposure (NO2 decreases)?
  - Summer peaks
    - Slight decrease when considering the period since 1990 or since 2000, of the order of 10%, very small compared to about 50% reduction in NMVOC and NOx emissions (since 2000)
    - Flat trends since 2010, while future climate change will carry a penalty, leading to increases in ozone peaks
- Way forward
  - Intensive Measurement Period Spring/Summer 2022, strong focus on VOC
  - Model exercise bridging scales: local/urban/regional/hemispheric

CLRTAP AR 2016
Ozone, EMEP sites, 1990-2012



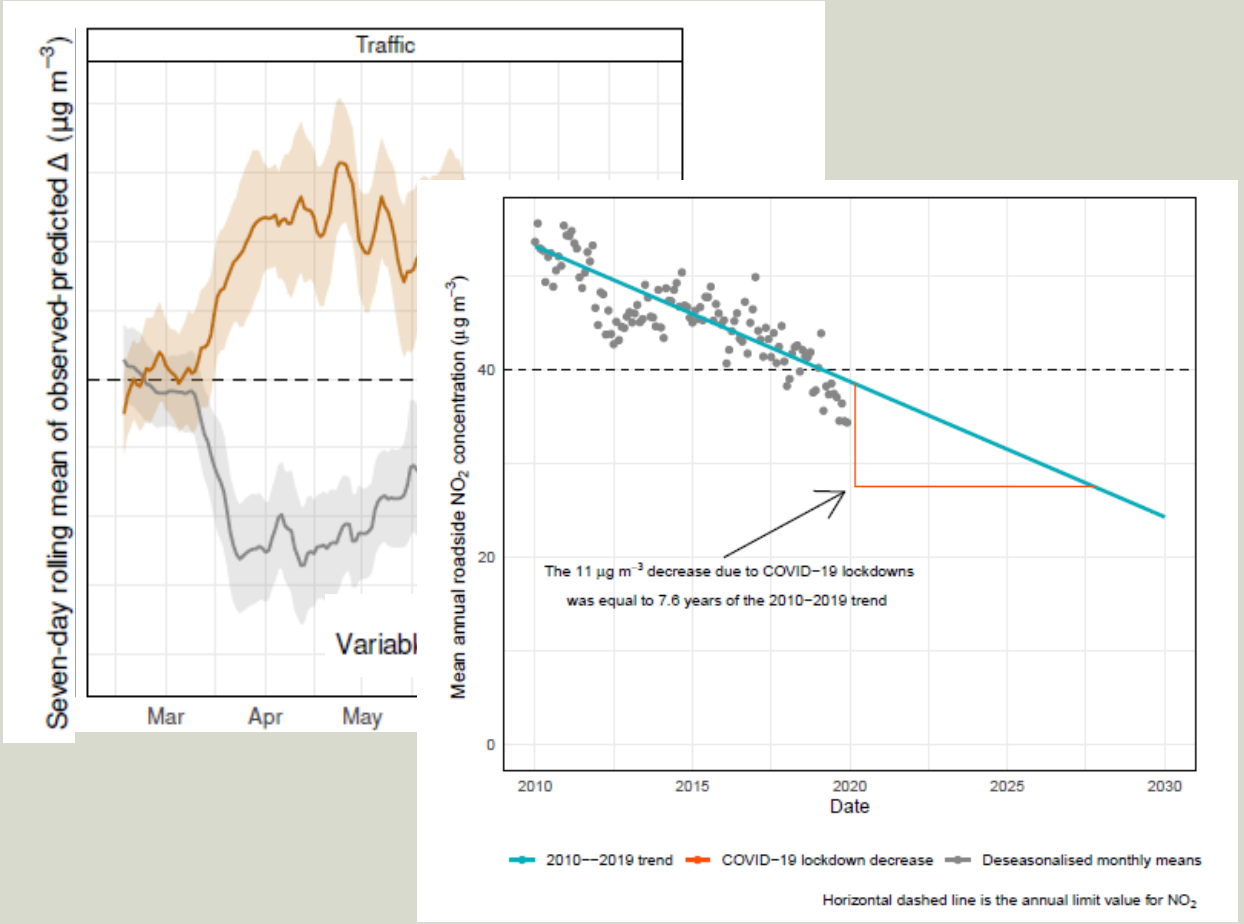

Update
Ozone, EEA e-report., 2000-2019



# COVID-19 LOCKDOWN AND AQ IMPACTS

- A wealth of published work in 2020 on lockdown impacts on AQ
  - Statistical (figs) or CTM analyses
  - Real time in situ observations
  - Strong bias towards NO2/traffic

- Way forward in EMEP context
  - Added value of EMEP monitoring, multi-pollutant approach: focus on O3 and PM speciation
  - Put in perspective short term lockdown impact and long term mitigation
  - => ”fitness for purpose of the monitoring and measurement tools to support policy”




S. Grange, TFMM 2021

# 2022-2023 WORKPLAN

- Contribute to the Gothenburg Protocol Review
  - (i) taking stock of long term trend analysis and key messages for policy effectiveness,
  - (ii) assessing the fitness for purpose of the monitoring and measurement tools to support policy (including recent developments on Condensables for instance)

- Eurodelta multi-model intercomparison exercise focusing on BaP
- Ozone field campaign, Summer 2022
  - IMP at EMEP sites, coordinated with field campaign in Paris (ACROSS)
  - Focus on VOC precursors, with a review on the use of in-situ VOC measurement (including high quality and potential complementary sensors or passive methods) for the revision and improvement of chemistry-transport models
  - Follow-up modelling exercise accross a range of scale (local/urban/regional/hemispheric), also liaising with HTAP with regards to potential methane mitigation measures on regional ozone
- Assessment of COVID lock-down measures on air quality in Europe in 2020 based on EMEP data

- Organise a workshop on measurement and modelling of new contaminants such as chemical of emerging concerns and microplastic. (TFMM, CCC, MSC-E, HTAP, Workshop 2023)
- Country-scale assessment of heavy metal and POP pollution: A case study of Hg pollution in Norway involving national measurement data and modelling (MSC-E, TFMM, national experts)

# 23ST ANNUAL TFMM MEETING

# (TENTATIVELY) HOSTED BY THE UNITED KINGDOM
# 3-5 MAY 2022