

PROGRESS IN EMEP ACTIVITIES IN 2020-2021 AND FUTURE WORK: MEASUREMENTS AND MODELLING

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Joint EMEP SB & WGE, remote, Sept 14-17, 2020

2020 ANNUAL MEETING

- 21th annual meeting online, 11-13 May 2020
 - 80 experts
- Main items of the workplan
 - Review of Gothenburg Protocol
 - Condensables
 - Policy effectiveness: temporal and spatial changes of air pollution



REVIEW OF GOTHENBURG PROTOCOL

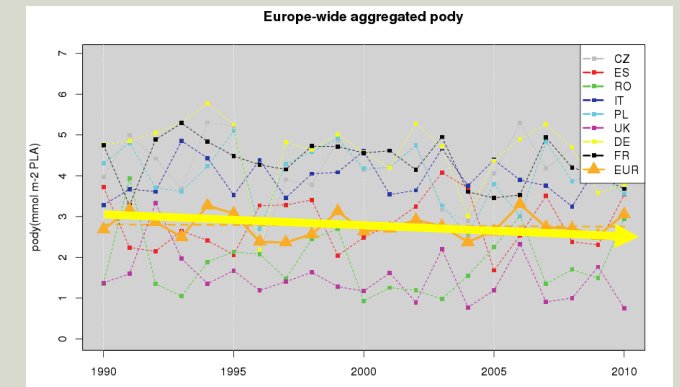
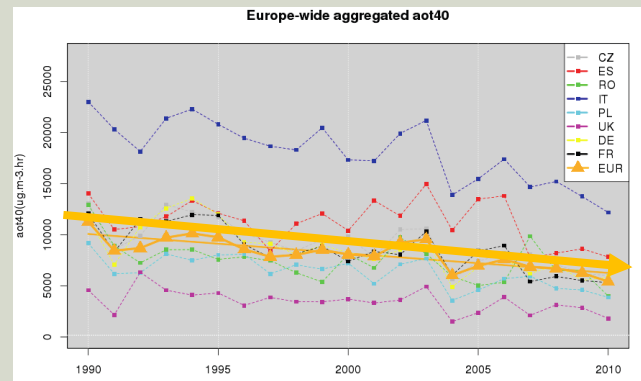
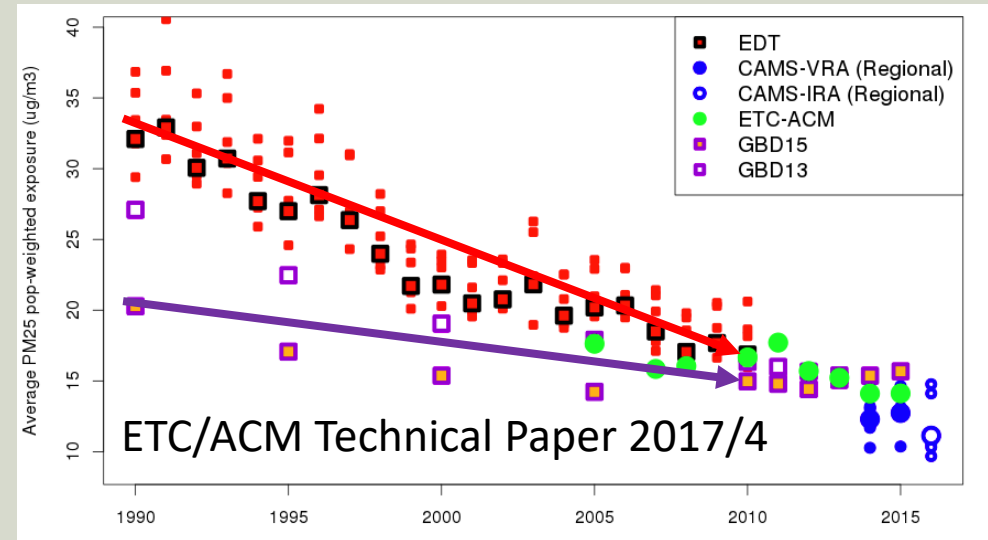
- Long term evolution, spatial variability of air pollution
 - => Efficiency of mitigation measures
 - => Support scope for further action at
local/national/regional/hemispheric scales

LONG TERM TRENDS

Exposure trends: 1990 to 2010

- Population : PM2.5
 - Clear improvement, but remaining uncertainties
 - **-52% in Eurodelta-Trends (EMEP/TFMM)**
 - **-30% in Global Burden of Disease 2015**

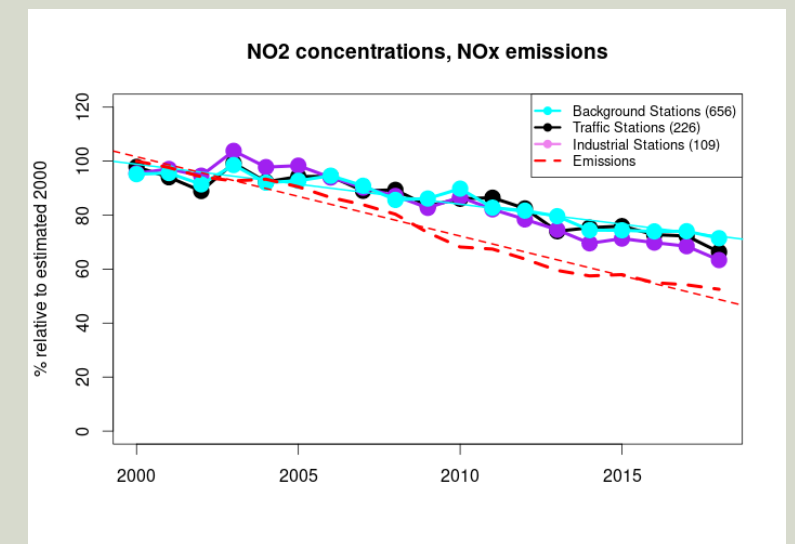
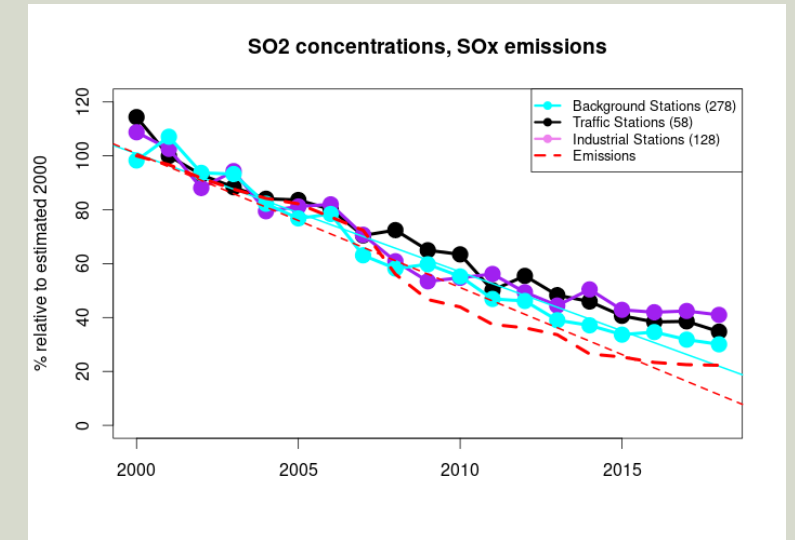
- Vegetation : ozone
 - Sensitivity to the metric, POD (LRTAP-recommended) indicates slower improvement
 - **-45% using AOT40**
 - **-14% for PODy**



Eionet Report - ETC/ACM 2018/15

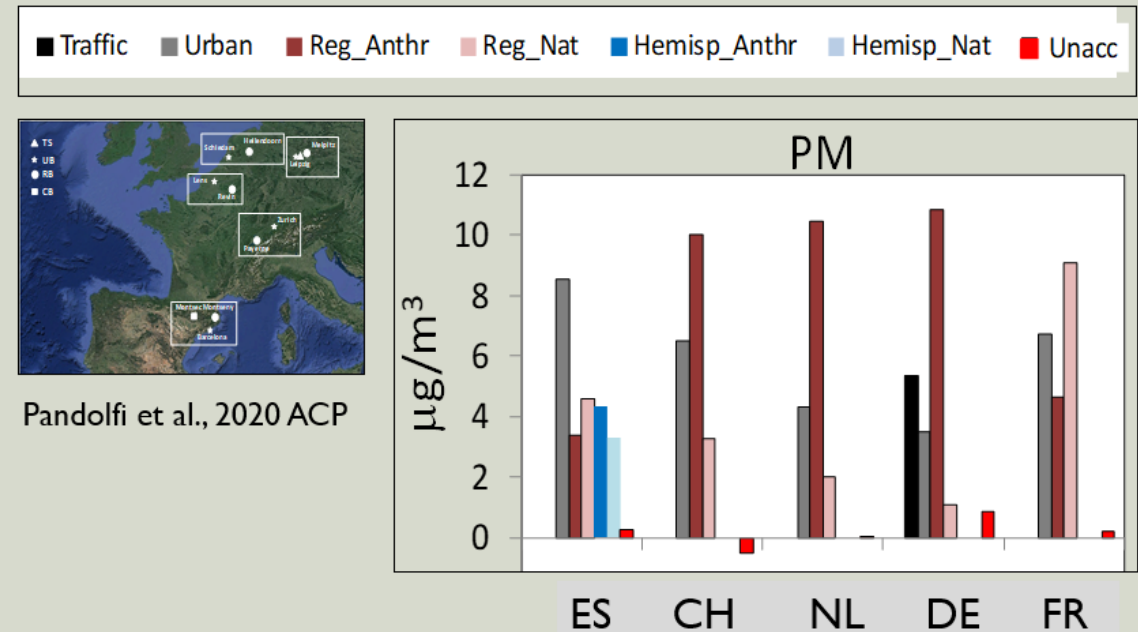
TEMPORAL SCALES

- Concentration vs. Emission trends
- Good match between emission changes and background concentrations in the early 2000s
- Mismatch starting around 2008 economic downturn
 - SO₂/SO_x: -91% emissions, -82% concentrations
 - NO₂/NO_x: -55% emissions, -29% concentrations
- 2020 lockdown will also provide insightful perspective ..



SPATIAL SCALES

- Support scope for further action at local/national/regional/hemispheric scales
- Twin urban/rural sites
 - Majority of regional/hemispheric contribution at PM supersites
- Monitoring evidence needs to be put in perspective with modelling results:
 - Regional/high resolution CTM, GAINS, uEMEP, HTAP, Eurodelta etc..
- Need to develop the collaboration between EMEP and urban supersites

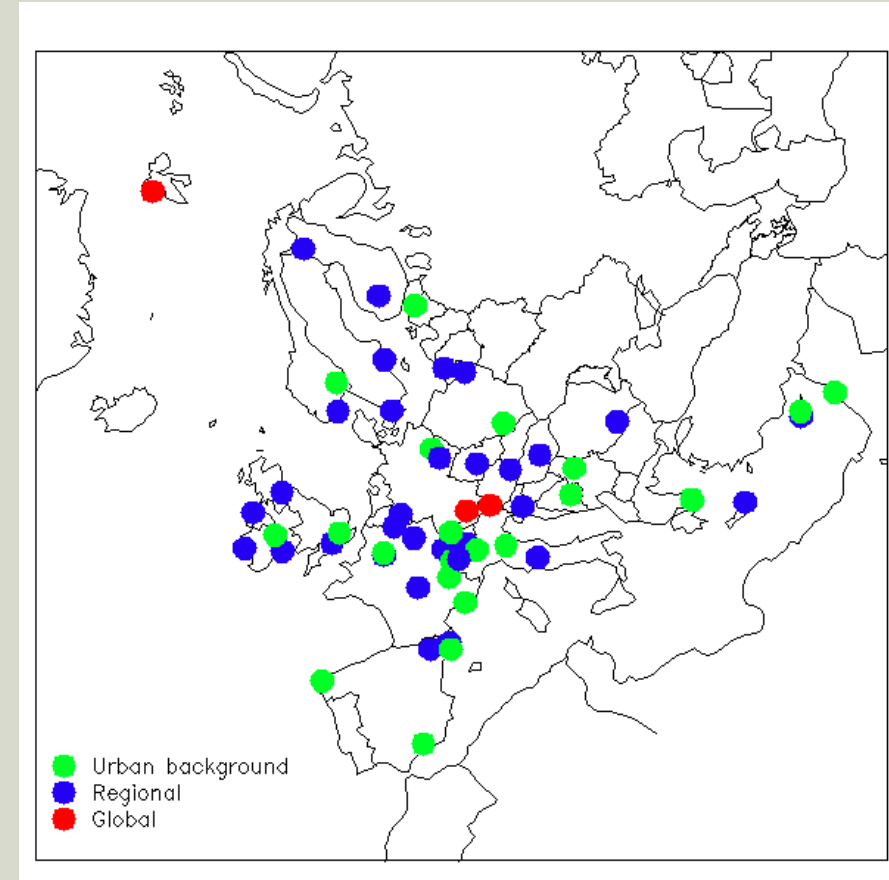


Pandolfi et al., 2020 ACP

<https://www.atmos-chem-phys.net/20/409/2020/>

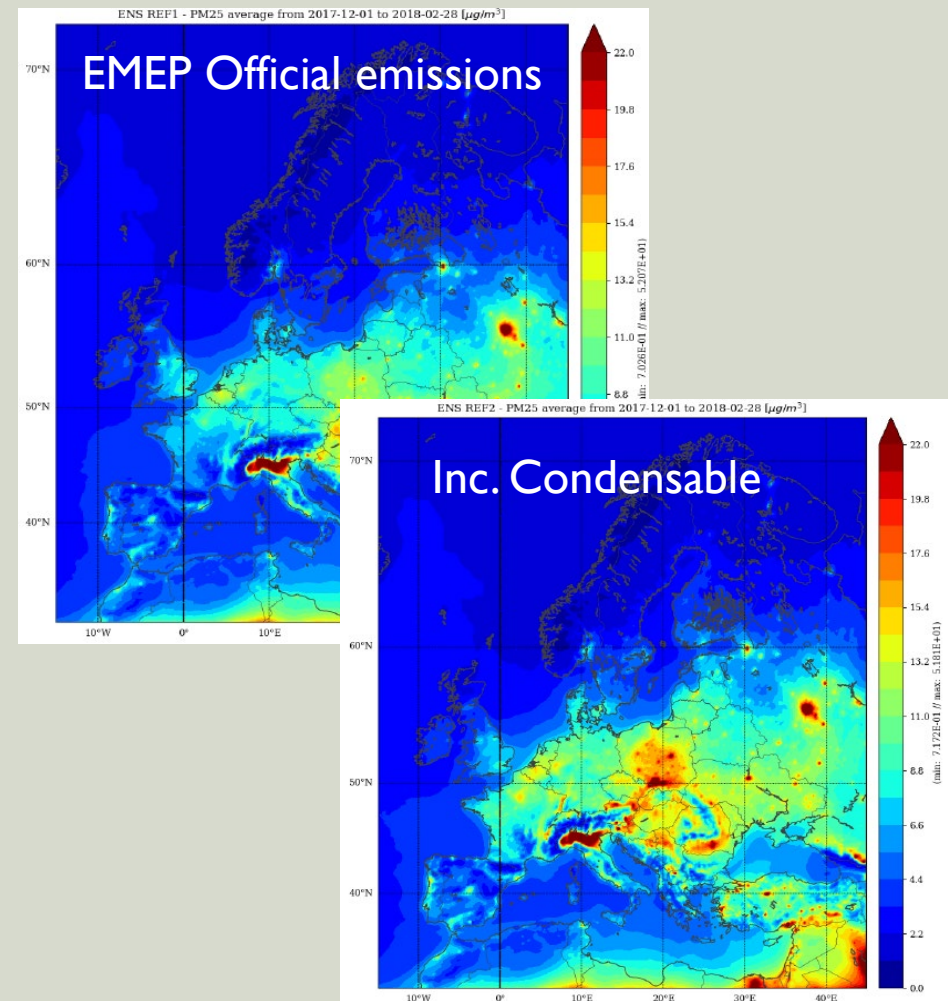
CONDENSABLES

- Modelling in support to the Convention could be based on gap-filled emission inventories using a “science based” approach that includes condensable particulate matter in the residential sector provided that such an approach is documented and assessed for and by the State Parties
- TFMM developed a dedicated framework
 - Building upon involvement of State Parties
 - Synergies with on-going European initiatives:
 - Winter 2017-2018 Field Campaign: EMEP + ACTRIS + COLOSSAL Cost Action
 - Multi-Model exercise: EMEP + CAMS
 - Connect other TFMM topics such as
 - BaP modelling
 - LRTAP BC inventory



EURODELTA-CARB

- Setup
 - Defined by TFMM, Centralised input/output data at INERIS
 - Anthropogenic emissions
 - Provided by TNO/CAMS_81: **with/without RWB condensables**
 - EMEP: official emissions, including BC, BaP
- 14 Participating Models
 - EMEP/MSC-W, EMEP/MSC-E, Lotos-Euros, Eurad, IFS, MINNI, DEHM, MOCAGE, GEM-AQ, MATCH, CHIMERE, SILAM, CAMx 6.50, WRF-CHEM
- Results:
 - -18% PM10 bias over Europe, up to -50% for some countries
 - Forthcoming/Ongoing
 - Compare with field camping data
 - Extend to BC (LRTAP) and BaP



NEW TOPICS

- Chemical of Emerging Concern
 - Target/non-Target screening
 - Strengthen links EMEP/NORMAN
 - POP, Microplastics, nano particles
- Ozone mitigation
 - Trends & scales (see ozone session)
 - Precursor emissions (VOC monitoring)
- Covid-19/Lockdown
 - What can we learn from EMEP monitoring network ?
 - The lockdown period as a benchmark to test model sensitivity

22ST ANNUAL TFMM MEETING

(TENTATIVELY) HOSTED BY THE UNITED KINGDOM
10-12 MAY 2021