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The UNECE Convention on Long-Range Transboundary Air Pollution – update

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FAIRMODE Plenary meeting, Warsaw 12-13 February 2019

Key facts

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- Signed in 1979, entry into force in 1983
- First international treaty to deal with air pollution on a broad regional basis
- 51 Parties in the UNECE region
- Framework Convention with 8 protocols
- Emission reduction targets for several pollutants
- Results: Emission reductions by 40 to 80 per cent since 1990 in Europe (S: 70%, NOx: 40%)

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Areas of work

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- International agreement setting emission reduction targets
- Science underpinning policy:
  - The Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe (EMEP) and the Working Group on Effects
- Compliance monitoring
- Capacity-building and awareness raising

Science: Monitoring, modelling, air pollution effects

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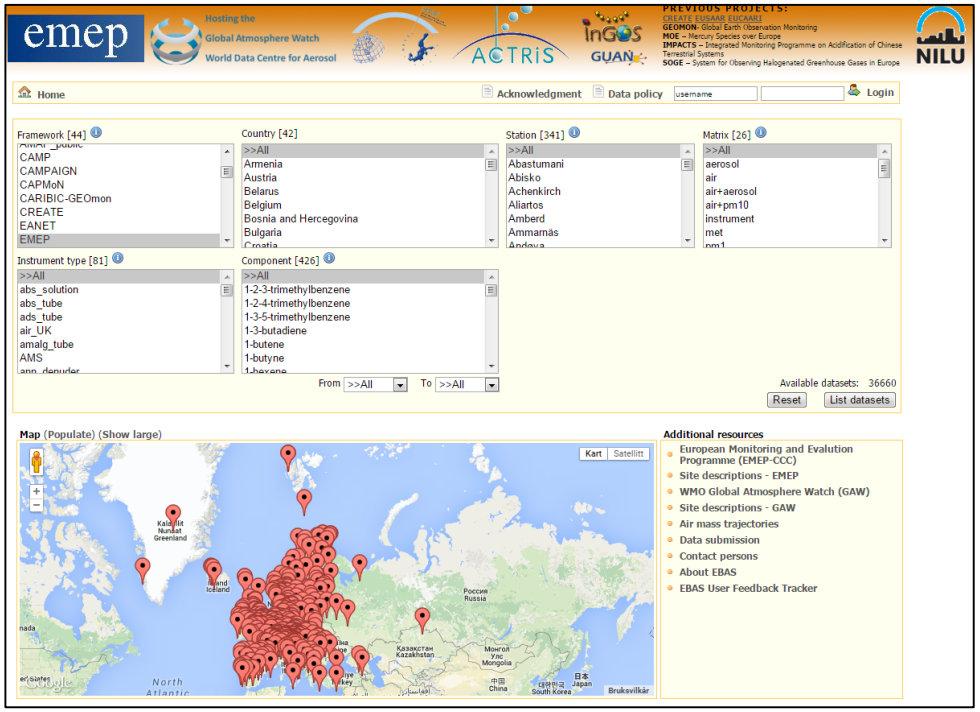
- EMEP: atmospheric monitoring and modeling; emission inventories and emission projections; and **integrated assessment**
- Working Group on Effects: impacts of major air on human health, crops, materials and the environment

Free Access to EMEP data

→ http://ebas.nilu.no/



Scientific Assessment Report 2016

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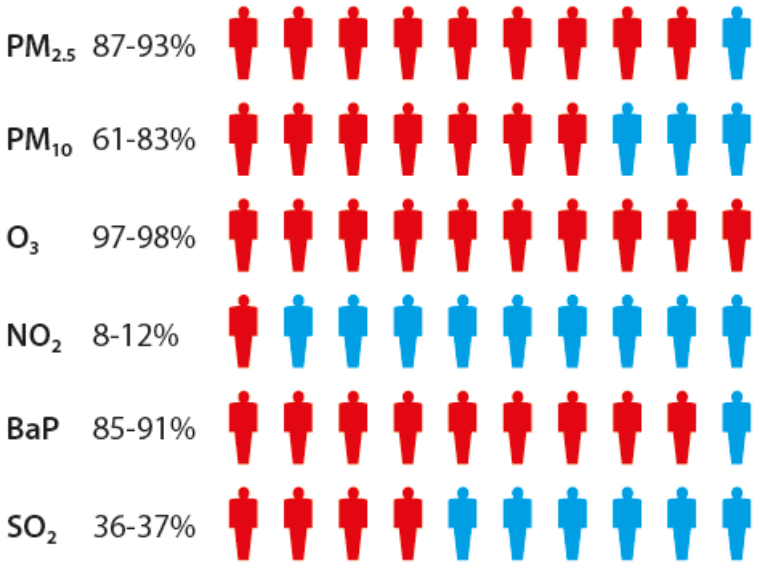
▶ *The proportion of the population living in areas exceeding WHO air quality guideline values varies by pollutant, with over 87% of the EU population exposed to high levels of fine particles ($PM_{2.5}$) and 98% to high levels of ozone (O_3).*[viii]



- If economic growth and air pollution trends had not been decoupled we would have had **3 times more health impacts than today and the premature death of 600,000 more people.**
- Average life expectancy is today 12 months more than in the hypothetical unabated world.
- **Remaining issues: reduction of background levels in UNECE region requires cooperation beyond the region**

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Policy

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- Exchange of experiences on strategies, policies and measures
- Emission Limit Values and guidance documents
- June 2016: Batumi Action for Cleaner Air initiative
- Dec 2019: 40th anniversary, high-level segment, launch of the global platform?

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Capacity building

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Activities: Roundtable discussions on national legislation analyses and workshops on the development of national emission inventories

Results: Progress in emissions reporting and improved quality and completeness of reporting

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Highlights of the 38th session of the Executive Body Dec 2018

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- Updated Long-term Strategy for the Convention – policy response to the 2016 Assessment Report: … lots of successes but there are remaining challenges:

- ozone and PM and their precursors, nitrogen and sulfur, POPs and HMs
- **from long-range transboundary to urban scale**
- links between air pollution, ecosystems and climate change; ….

- Global event on clean air – global outreach (science, policy, …)

Scientific activities 2018-2019 relevant for FAIRMODE

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- uEMEP: MSC-West project
- „Twin-sites" project – Task Force on Measurements and Modelling
- city level cost-benefit estimates – Task Force on Integrated Assessment Modelling recent initiative

Scientific activities 2018-2019 relevant for FAIRMODE

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The uEMEP Concept

- Downscaling of EMEP/MSC-W model results to resolutions in the order of 100m (while keeping consistent with the EMEP model results)
- **Why?**
  - Consistent picture from European to local scale
  - To know how important the long range transport component is, we also need to know the local component (?)
  - Policy focused on health effects
- **Not only urban**
  - NH_3
  - Depositions
  - Verification of emissions
  - Show how the regional model should compare to (urban) observations

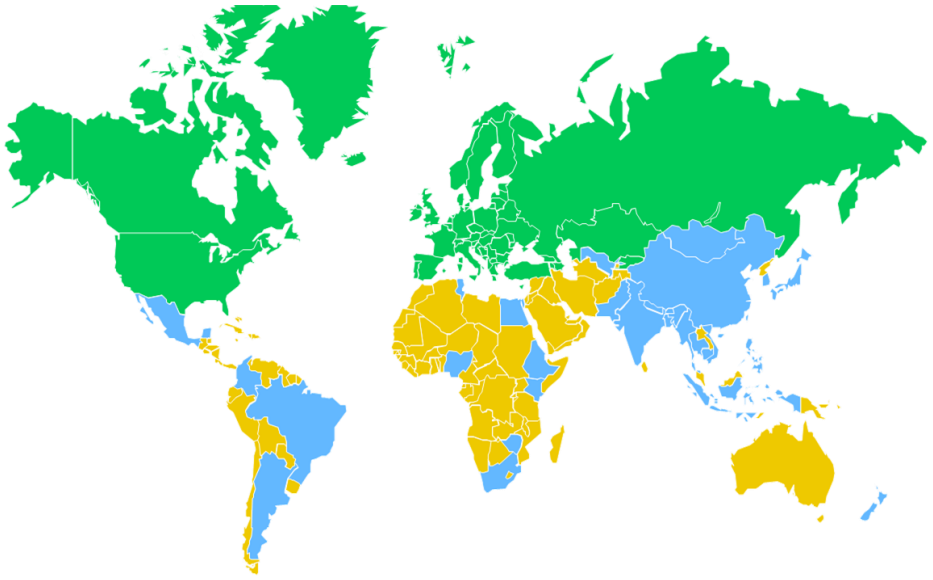
Can uEMEP be expanded to a large number of European cities?

- **Alternative 1:**
  - Collaborate with European cities/partners that have detailed information (proxy data or emissions, measurements) and develop step by step (candidates UK, NL,..FAIRMODE)
- **Alternative 2:** European approach
  - Proxy data for NOx:
    - Traffic: open street map (capacity), transport modeller, (google, TomTom,…)
    - Ship traffic: AIS (Harbours difficult)
    - Industry, point sources (Less important)
  - Proxy data for PPM:
    - Traffic
    - Ship traffic
    - Industry
    - Wood burning/Coal burning (population?)
- Consistency between top-down and bottom-up emissions inventories for cities is an issue

Task Force on Hemispheric Transport of Air Pollution

The Task Force on Hemispheric Transport of Air Pollution, an expert group, was established by the LRTAP Convention in 2005 under the leadership of the European Union and the United States to examine the transport of air pollution across the northern hemisphere and its impacts on air quality, human health, ecosystems, and near-term climate change.

- Assess potential emission mitigation options available inside and outside the UNECE region.
- Collaborate with other groups both inside and outside the LRTAP Convention, including international organizations such as UNEP, WMO, WHO, CCAC, and AMAP.
- Reach out beyond the Convention and build a common knowledge base.

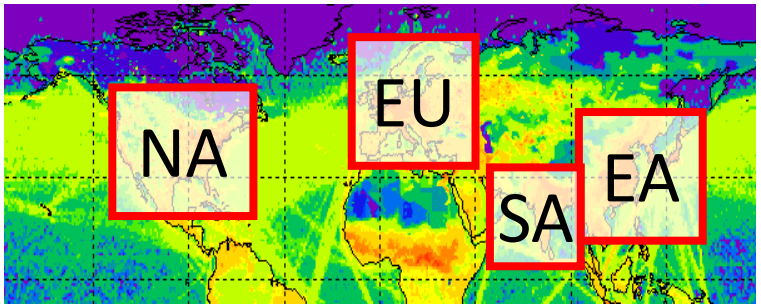


UNECE & **Other TFHTAP Participants**

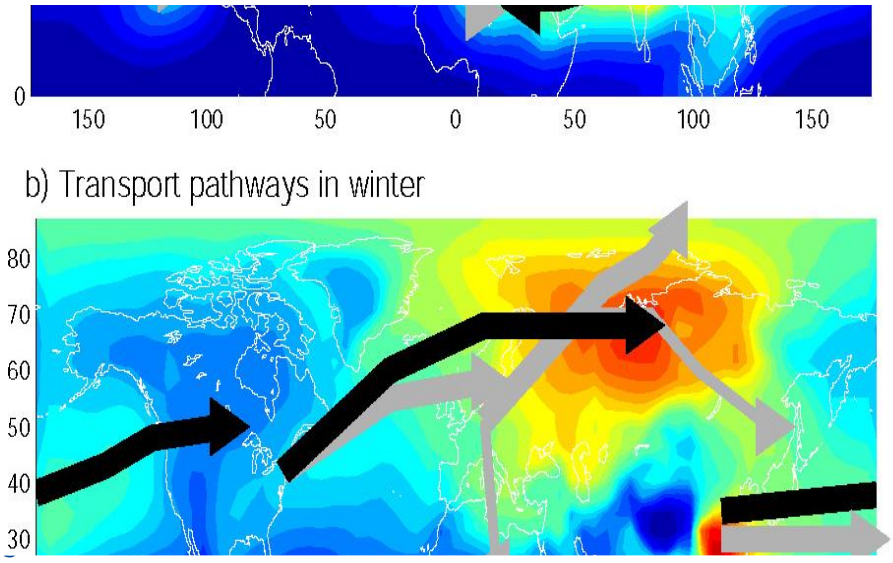
- Experts participate from European, North American, South and East Asian countries and use the developed information in their own policy contexts.

TF on Hemispheric Transport of Air Pollution

- North America, Europe, South Asia and East Asia cover ca. 60-70 % of human-related emissions. These create air pollution problems locally and thousands of kilometers downwind.
- Pollutants produced in Asia are transported to North America, North American emissions are transported to Europe, etc.
- Within one month the atmosphere in the Northern Hemisphere is mixed.



- Pollutants of concern include ozone and its precursors, particulate matter and its components, mercury, and persistent organic pollutants.
- Methane is a special case. It stays in the atmosphere for about 10 years and is both a greenhouse gas and precursor to ground-level ozone.



Lower troposphere

Mid-upper troposphere

Stohl et al., 2004

Some Take Home Messages:

- The primary contributors to local air pollution problems are local and regional sources. However, the hemispheric to global scale transport of air pollution has significant impacts on human health, agriculture, natural ecosystems, and near-term climate change
- Global increases in methane emissions can offset local emissions reductions (or amplify local emissions increases) to increase ground level ozone pollution
- Greenhouse gas mitigation policies will help decrease air pollutant emissions, but more can be done
- Technology to mitigate air pollution emissions exists and government action (and cooperation) is needed to implement effective strategies

- **EU/JRC withdrew from TF HTAP in 2018; US+Poland+Canada(tbc) to co-chair the Task Force in 2019 and beyond; new/revised mandate(?); elements for the 2020/2021 workplan for the Implementation of the Convention**

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Thank you!

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http://www.unece.org/env/lrtap/welcome.html

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