German Environment Agency

Umwelt Bundesamt

FAIRMODE – Technical Meeting
30 September – 2 October 2020

CT 5 – AQ management practices
Comment on Key Challenges from UBA

Andreas Eisold, Stephan Nordmann & colleagues

Section II 4.1 / General Aspects of Air Quality Management

Current Situation in Germany

PM10 / PM2.5

No exceedances in 2019.

NO_2

End of 2017 – Federal Government launches an immediate programme for clean air in cities (€ 1.5 billion) focusing on measures in the road transport sector

2018 – **109 stations** out of 536 exceeding the NO_2 limit for the annual average concentration of 40 µg/m³

May 2018 – The Commission decided to refer Germany to the Court of Justice of the EU for failure to respect limit values for nitrogen dioxide (NO_2), and for failing to take appropriate measures to keep exceedance periods as short as possible.

2019 – **51 stations** out of 531 remain exceeding the NO_2 annual limit value

Commission Implementing Decision (EU) 2011/850

laying down rules for Directives 2004/107/EC and 2008/50/EC of the European Parliament and of the Council as regards the reciprocal exchange of information and reporting on ambient air quality

ANNEX II

Wherever a certain data type is to be made available pursuant to Parts B to K of this Annex, all information listed under the relevant data type specified below is to be included.

(A) **Common Data types**

(2) *Data type 'Exceedance Situation'*

7. Estimate of the length of road where the level was above the environmental objective

mandatory

≈ ≠

Article 12

Attainment of environmental objectives

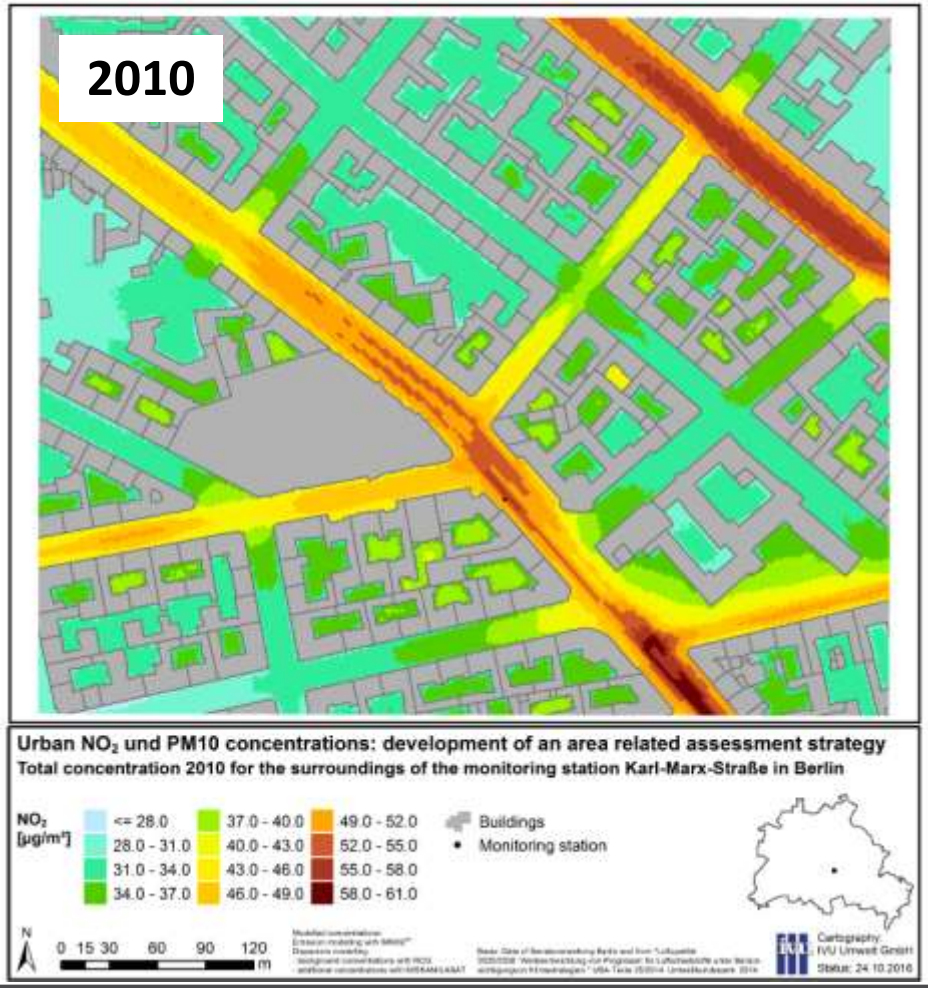
3. Where an exceedance has occurred, the information made available shall also include information on the area of exceedance and the number of people exposed.

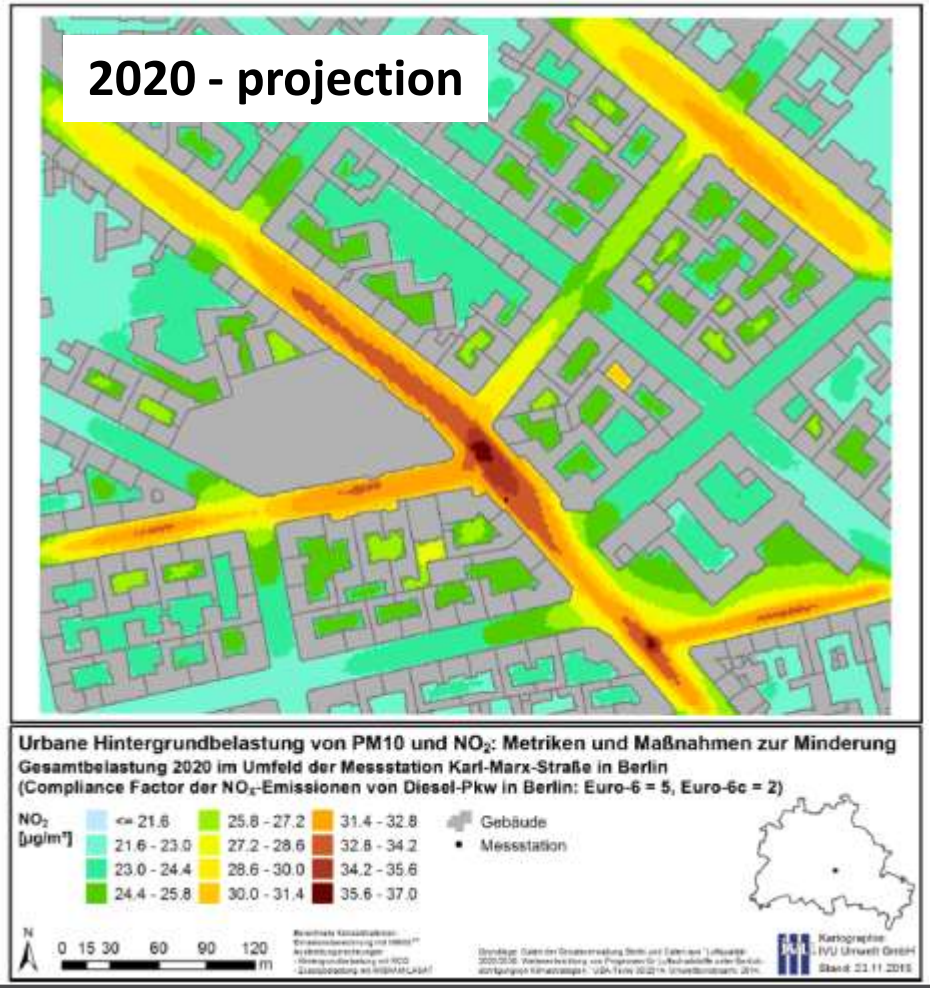
recommended

Exceedance vs. Exposure

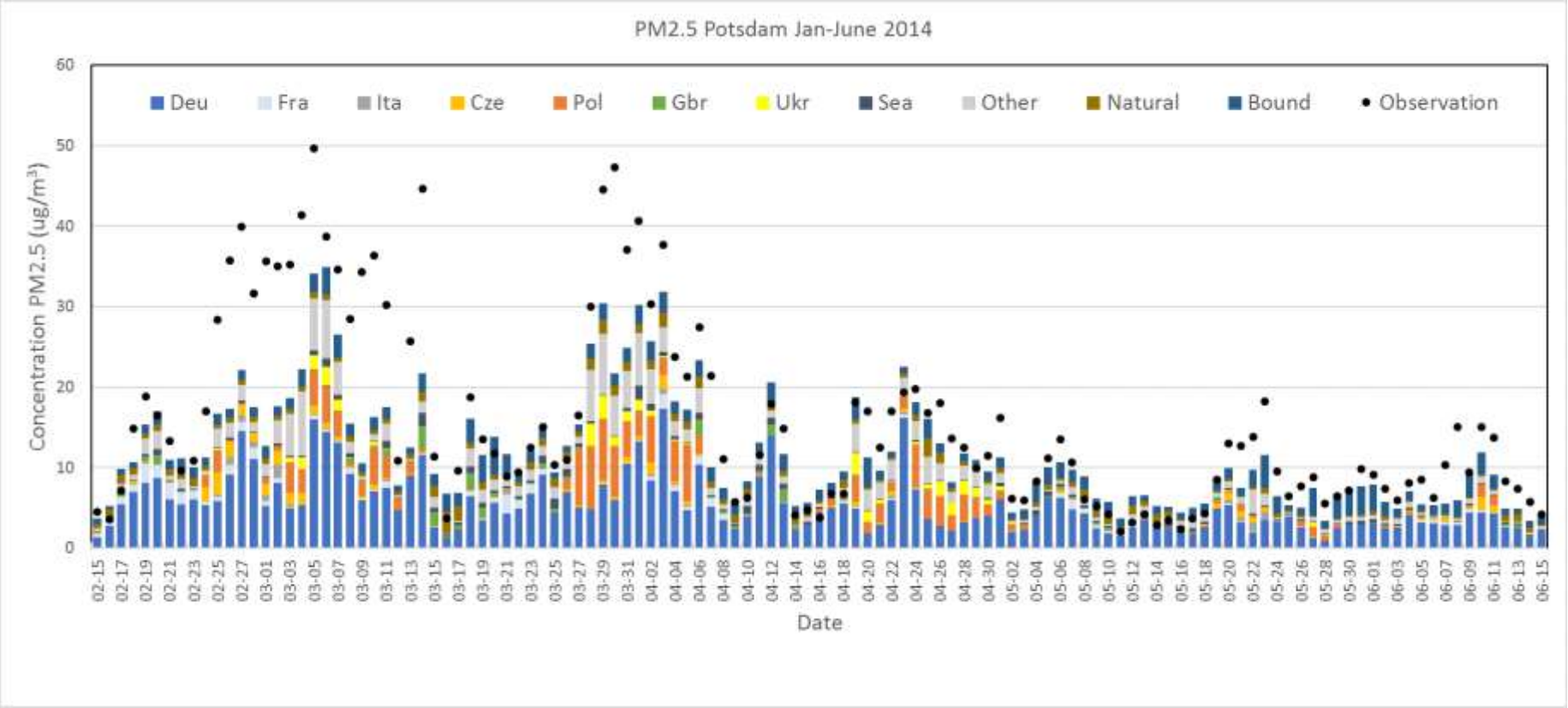
Reference:
https://www.umweltbundesamt.de/sites/default/files/medien/1410/publikationen/2019-07-03_texte_68-2019_urbane-hintergrundbelastung-no2-pm10.pdf

NO_2 concentrations in the surroundings of the monitoring station Karl-Marx-Straße in Berlin





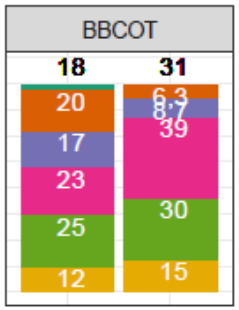
Source apportionment for PM is much more difficult

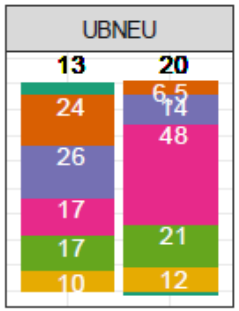


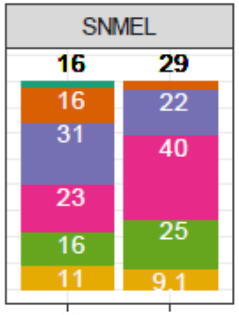
Model run with LOTOS-EUROS by TNO (labels for selected countries and other sources) indicates relevant source regions during episodes with elevated concentrations, but still the location of the sources that are underestimated remain unknown.

Source apportionment for PM is much more difficult

Chemical analyses of filter samples in combination with trajectory calculations can reveal where mitigation measures are most effective.





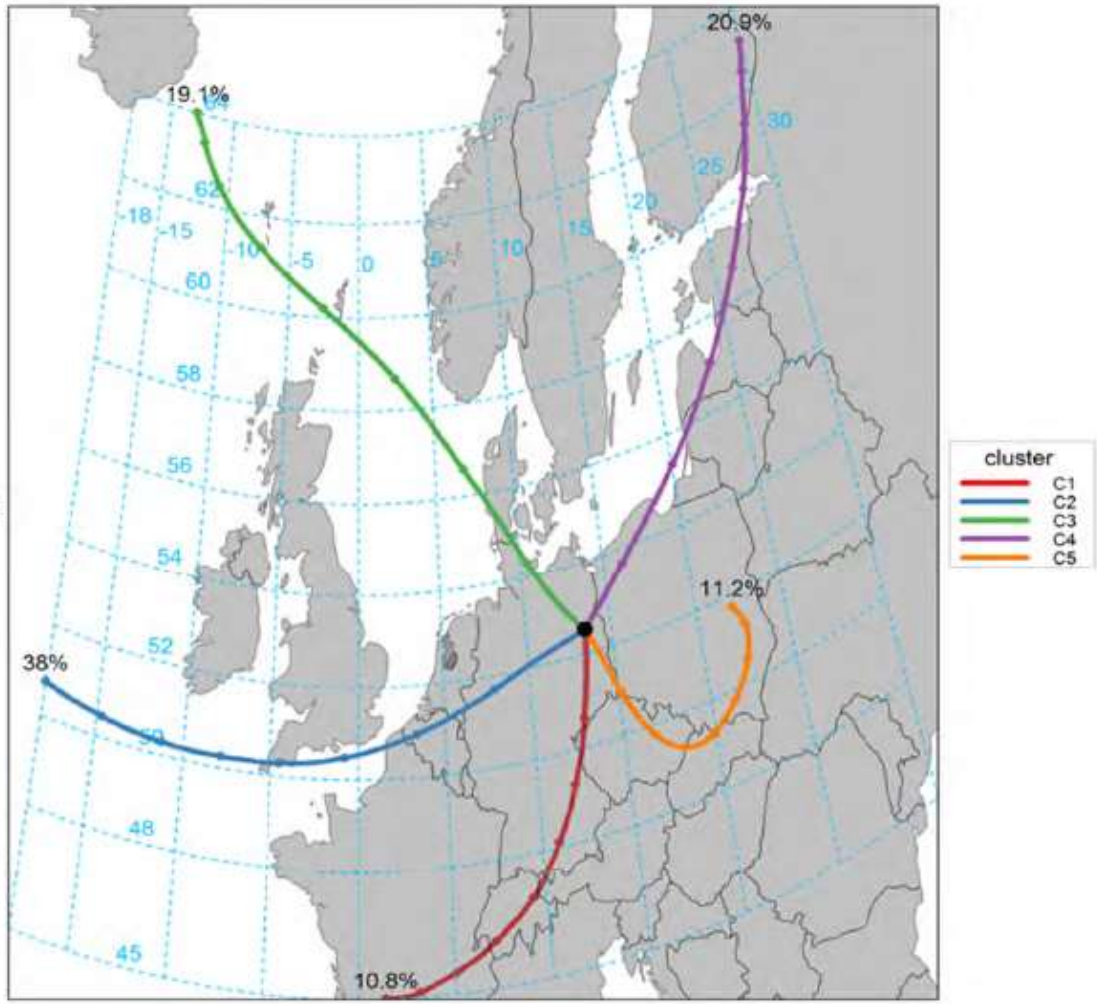


air mass inflow from West / Ost

Quellkategorie
- Salz (frisch)
- Salz (gealt.)
- Sek. I (AN)
- Sek. II (AS+OC)
- Verbr.
- Verkehr

shares of total mass concentration in white,

absolute mass concentration in black above the columns



Reference:

Pinxteren et al. (2017): https://mwfk.brandenburg.de/sixcms/media.php/9/PM-OST_Abschlussbericht.pdf

General remark on the key challenges

Analysis of the initial situation is essential for AQ management and, at least for PM, should rely on a combination of simulations and measurement analyses

- Current concentrations
- Current share of emission sources responsible for local concentrations, which sources (sector and location) are relevant for avoiding exceedances (and the robustness in the methodology of their detection)
- Current exposure situation

The necessary scale of this analyses will be quite different between NO_2 and PM, because of their behavior in the atmosphere.

- NO_2: local sources are most relevant for exceedances (especially road transport), exposure to concentrations above the limit values is closely linked to the location of the relevant sources
- PM10/PM2.5: location and share of various relevant sources differ between episodes with high concentrations, relevant sources are often far away from the station exceeding the limit value, exposure to concentrations above the limit value over larger areas

Thank you very much.

Andreas Eisold
andreas.eisold@uba.de
0340 – 2103 2683

https://www.umweltbundesamt.de/en/topics/air