RI-URBANS
Research Infrastructures Services Reinforcing Air Quality Monitoring Capacities in European Urban & Industrial AreaS

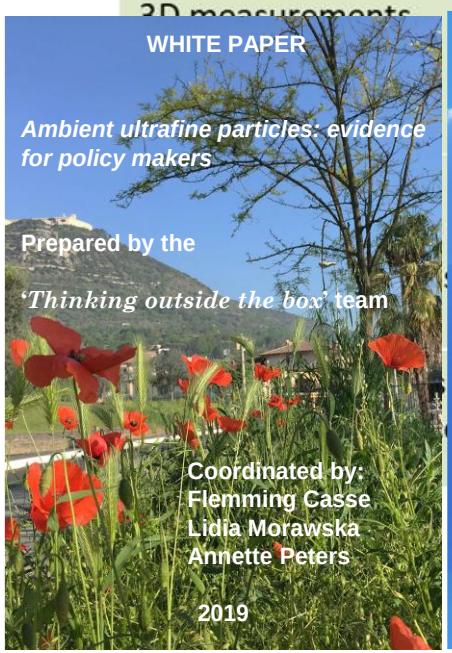
Xavier Querol & Tuukka Petäjä

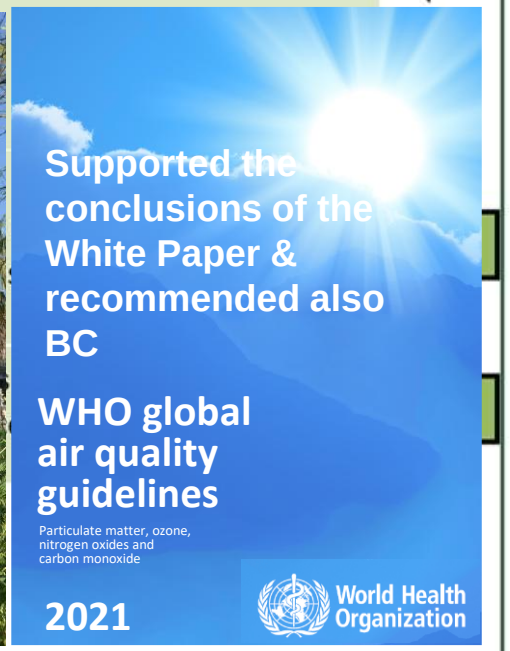
UNECE Air Convention (LRTAP)
6th Expert Panel on Clean Air in Cities (EPCAC)
18-19 November 2025

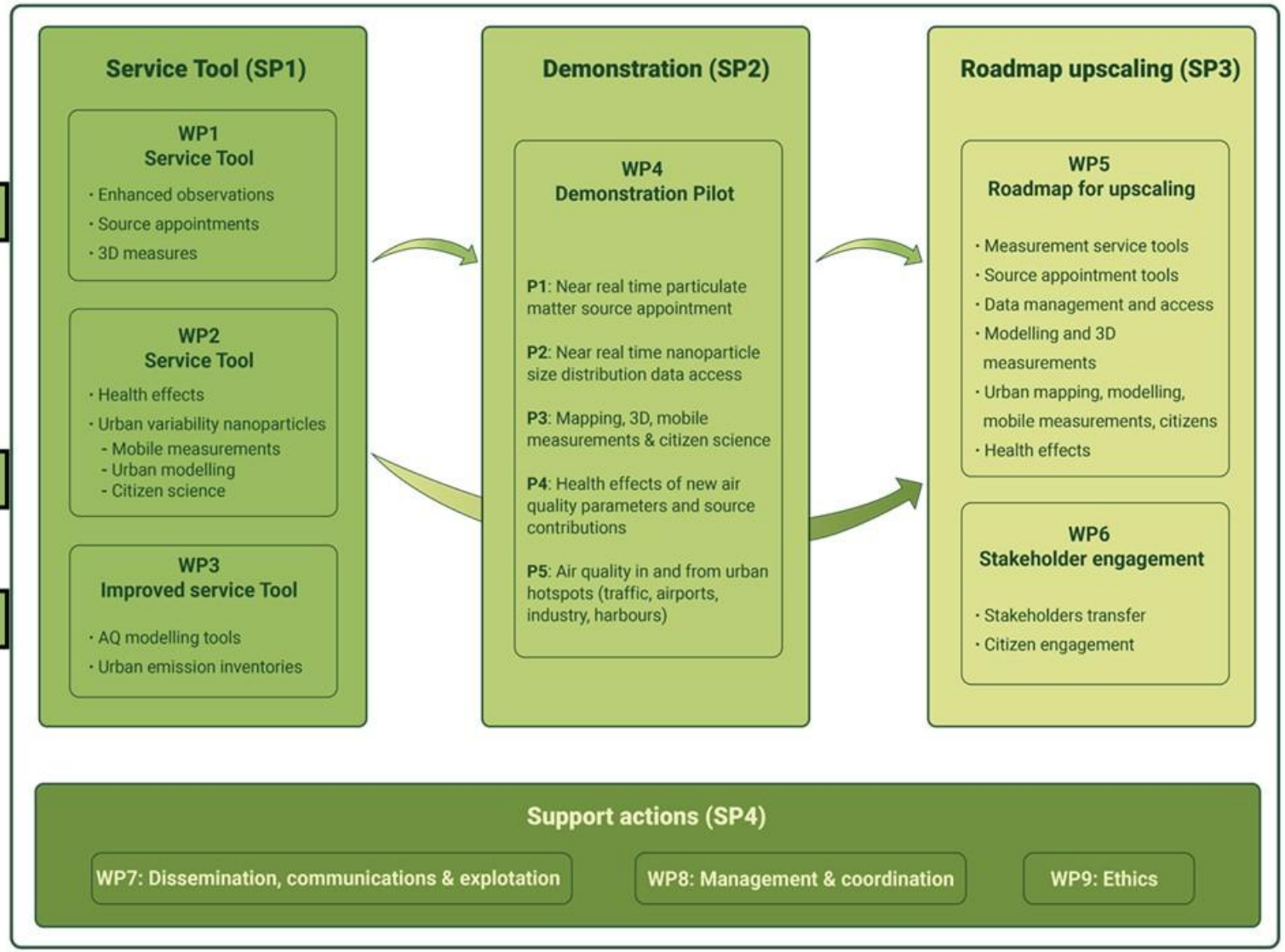
14 countries, 26 beneficiaries, 1 associated beneficiary, starting with 11 cities, 19 associated collaborators
October 2021 – September 2025

RI-URBANS' concept and service tools

UFP-PNSD
BC
Offline PM speciation
Online PM speciation
Source apportionment
NH_3
VOCs
3D measurements







RI-URBANS' service tools

https://riurbans.eu/project/#service-tools

Summary booklet

Summary booklet

Protocols for the measurement of novel air quality variables

ST1: Ultrafine (=nano)-Particle Number Size Distributions (UFP-PNSD)

ST2: Black Carbon (BC)

ST3: Offline and Online particulate matter (PM) speciation

ST4: Oxidative potential of particulate matter (PM)

ST5: Volatile Organic Compounds (VOCs)

ST6: Ammonia (NH3)

Methodologies for vertical profiles of pollutants and meteorology

ST7: Measurements of boundary level height

ST8: Measurements of vertical profiles of aerosols

ST9: Measurements of vertical profiles by commercial aircrafts

Methodologies for source apportionment receptor modelling

ST10: Source apportionment of PM based on offline and online PM speciation

ST11: Source apportionment of UFP, BC, OP and VOCs using receptor modelling

Methodologies for urban mapping of novel air quality variables

ST12: Deterministic urban modelling of fine PM and PNC

ST13: Mapping ultrafine particles and citizen science

Methodologies for evaluating the health effects of novel air quality variables

ST14: Evaluation of health effects of novel air quality parameters

Obtaining emission inventories for novel air quality variables

ST15: Emission inventories for regional and urban scale modelling applications

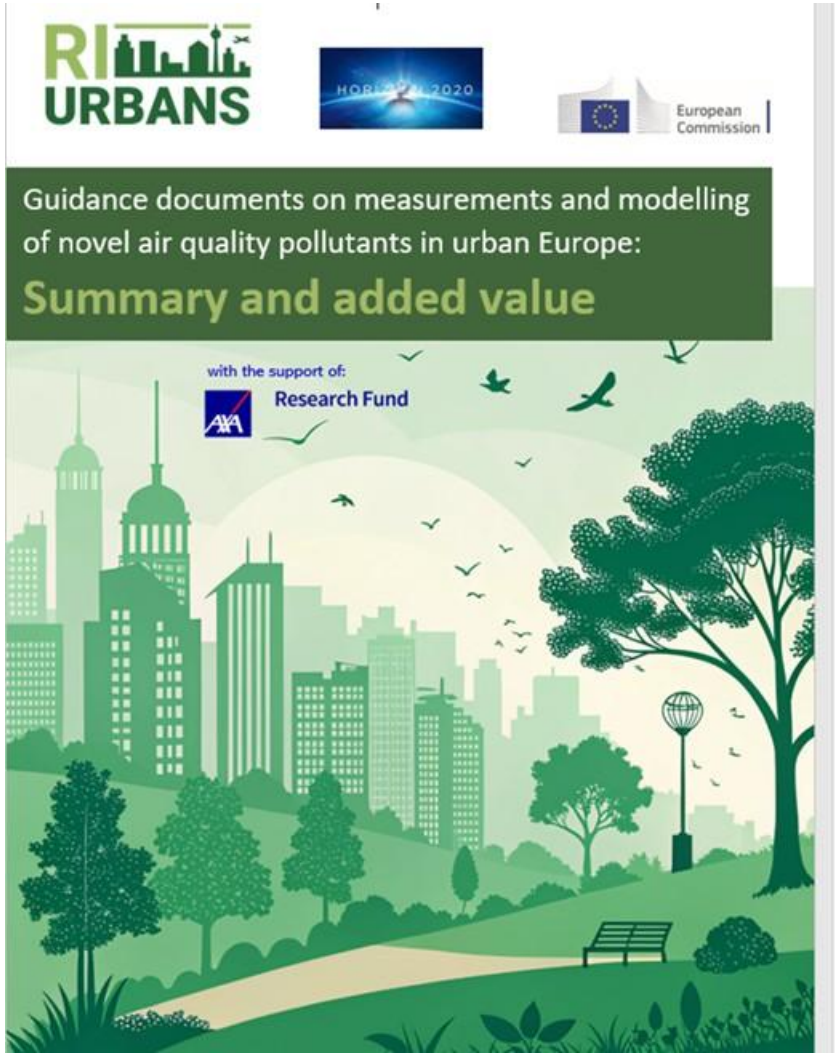
Modelling methodologies for novel air quality variables

ST16: UFP-PNSD multiscale modelling

The 16 RI-URBANS' ST & the booklet

https://riurbans.eu/project/#service-tools

The RI-URBANS' booklet



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Authors & Reviewers: See Table 2.2.

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Research Infrastructures Services Reinforcing Air Quality Monitoring Capacities in European Urban & Industrial AreaS (RI-URBANS)

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The RI-URBANS' booklet

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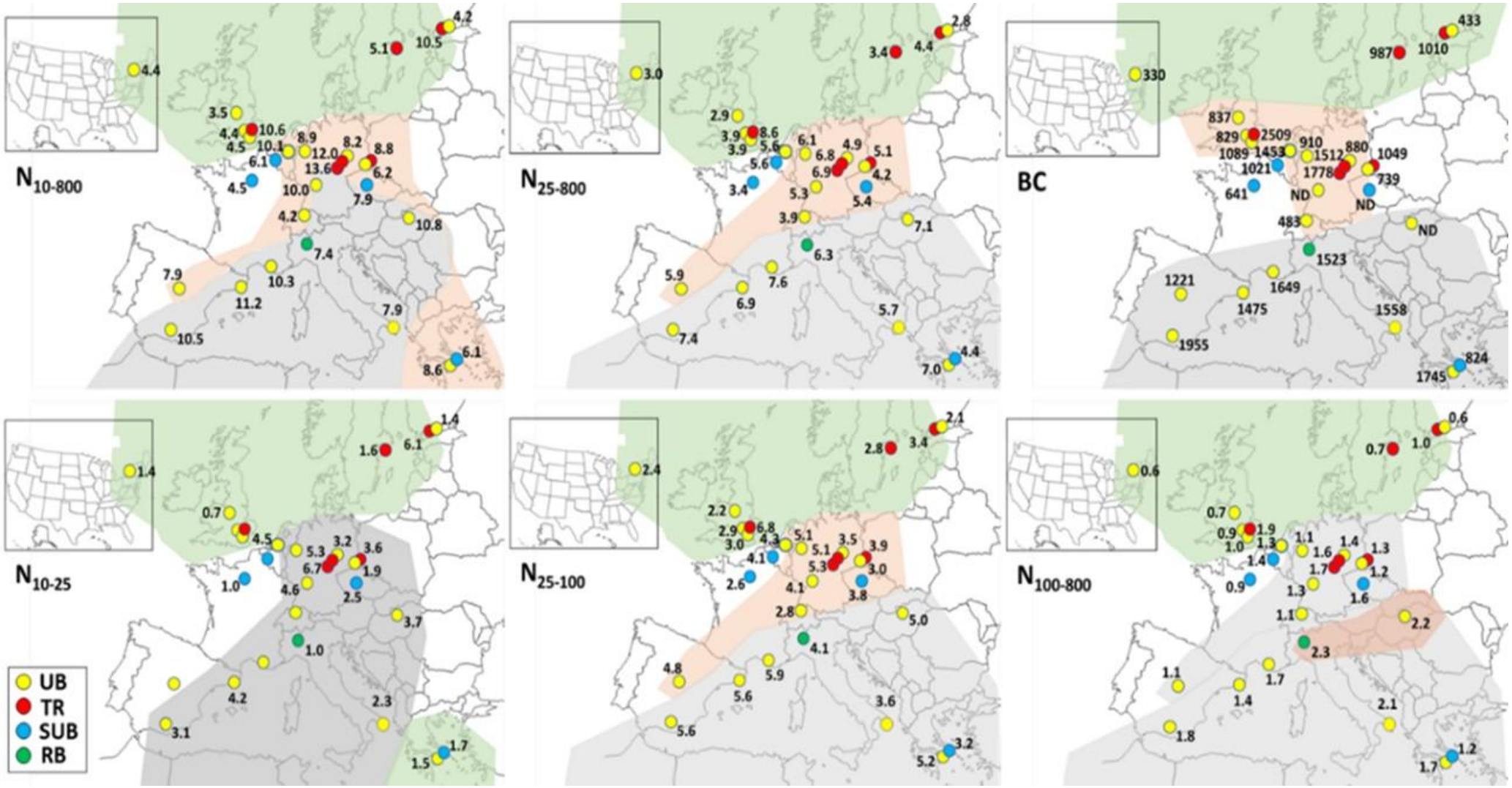
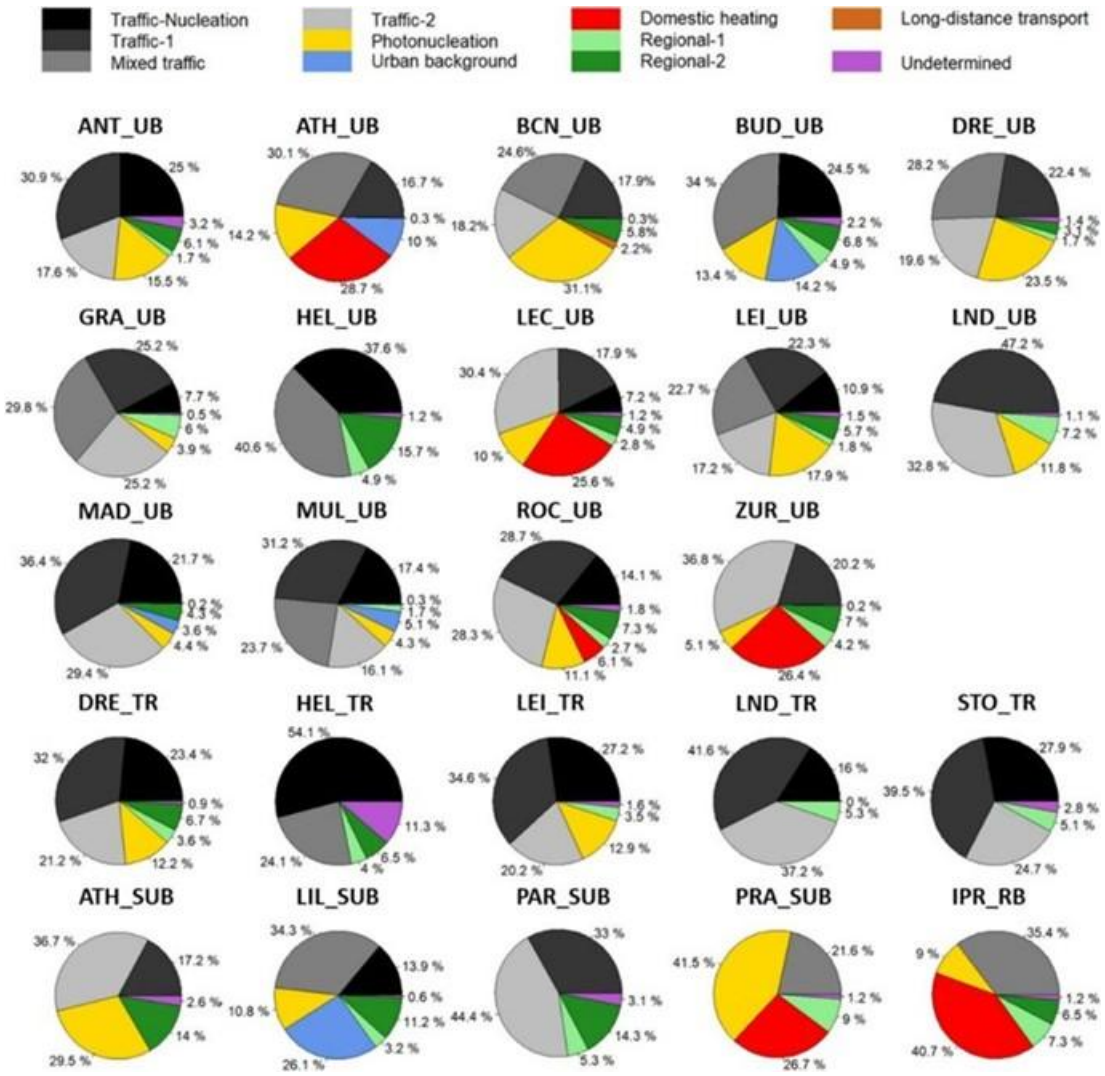


Trechera et al., 2023, ENV INT, https://doi.org/10.1016/j.envint.2023.107744

Source apportionment of ultrafine particles and PNSD

ST11

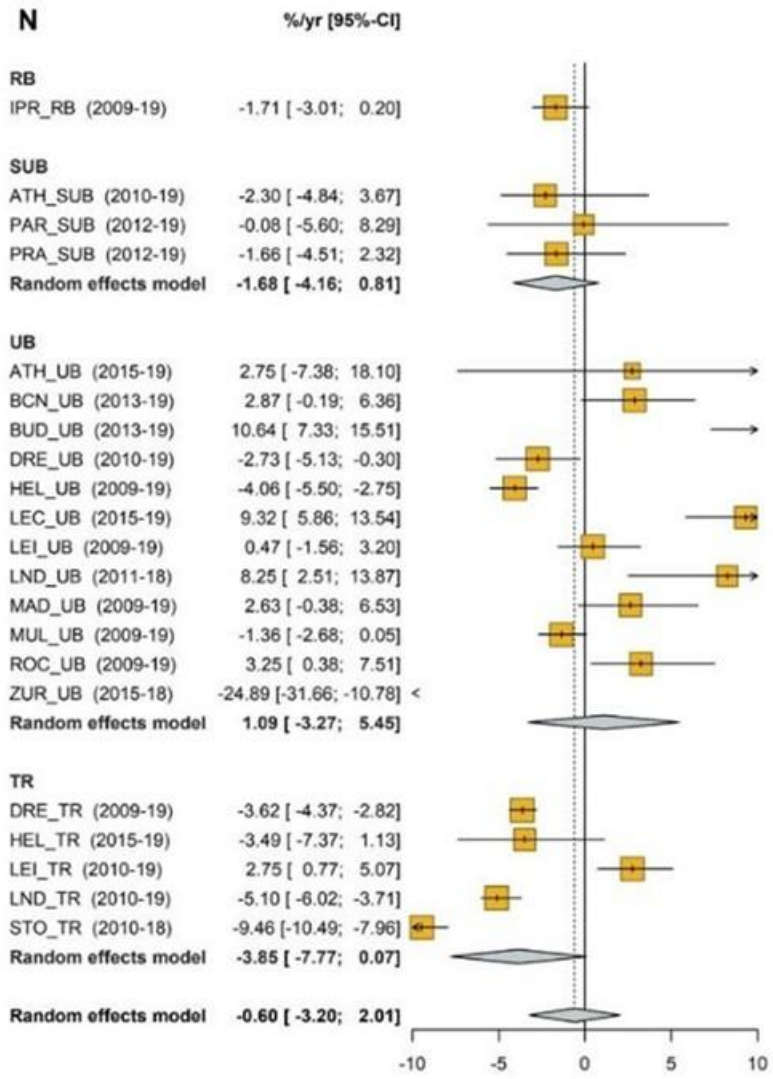


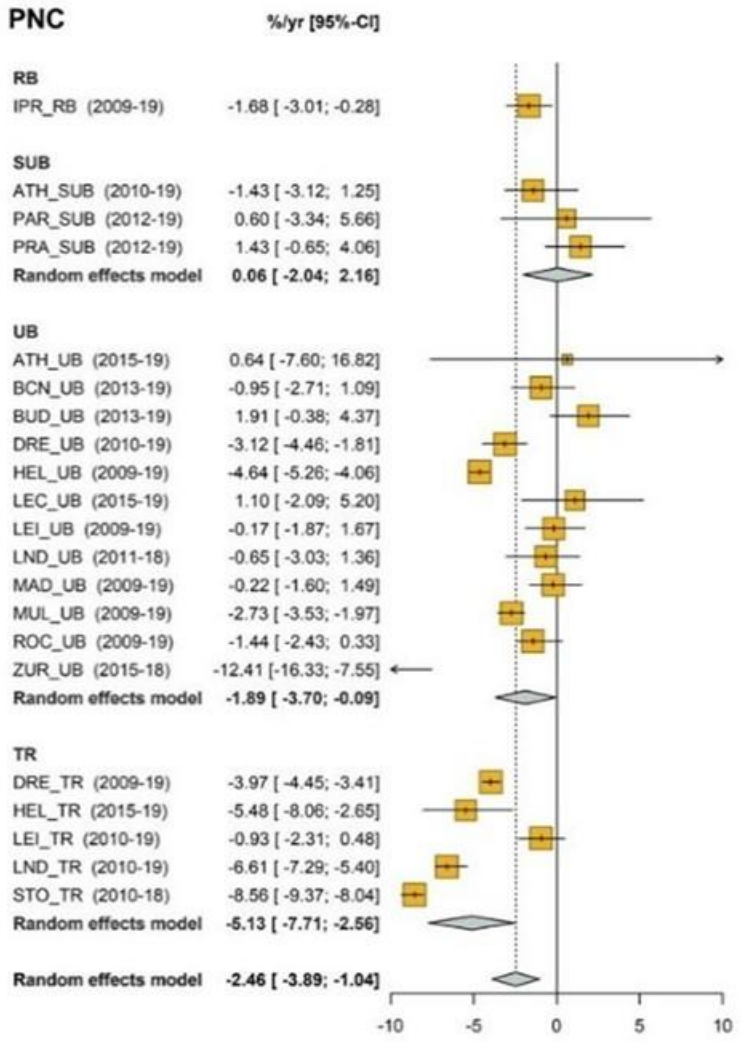
Garcia-Marlès et al., 2024a, ENV INT
https://doi.org/10.1016/j.envint.2024.109149

The trends of ultrafine particles and PNSD in urban Europe

Garcia-Marlès et al., 2024b, ENVINT, https://doi.org/10.1016/j.envint.2024.108510

ST1 &11





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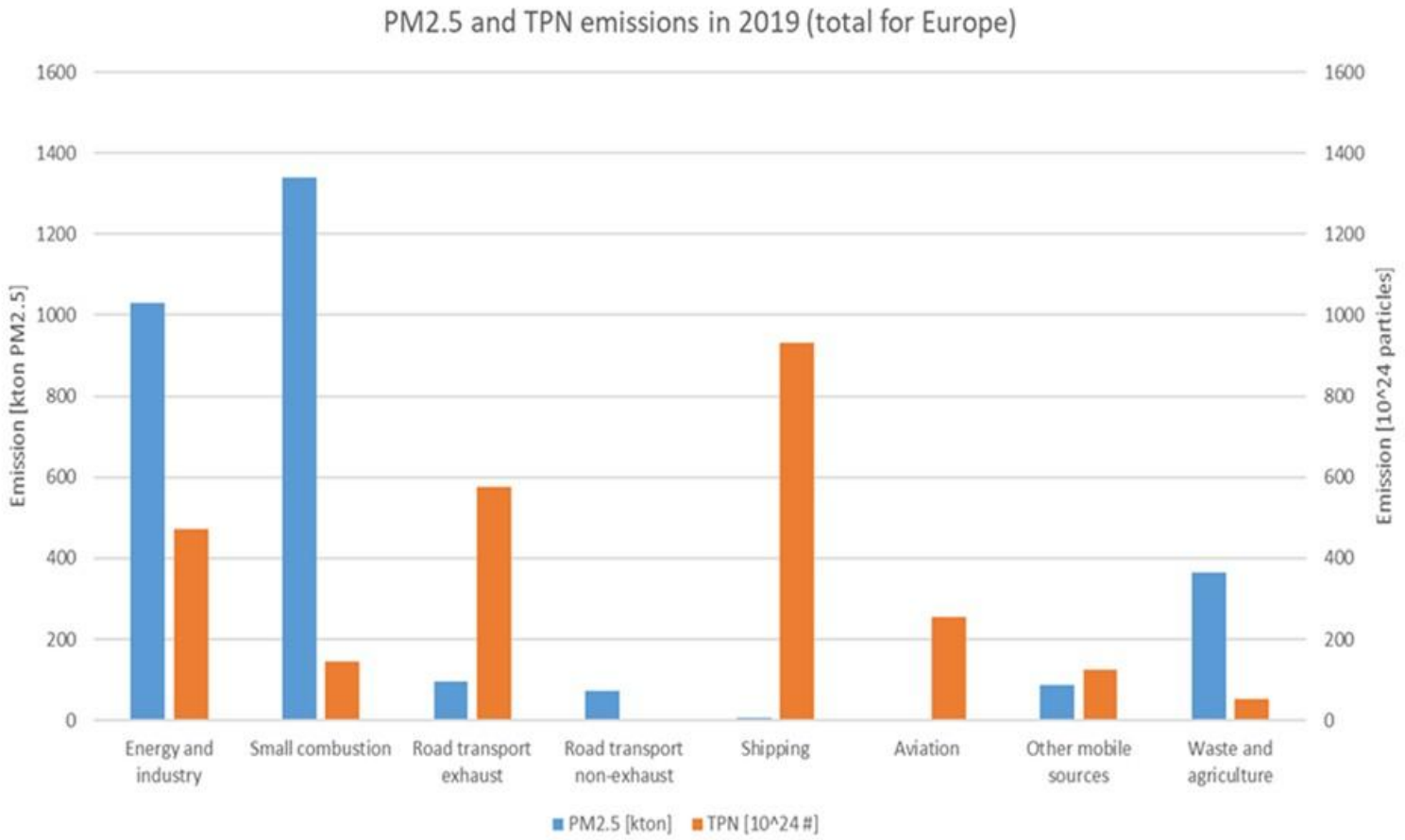

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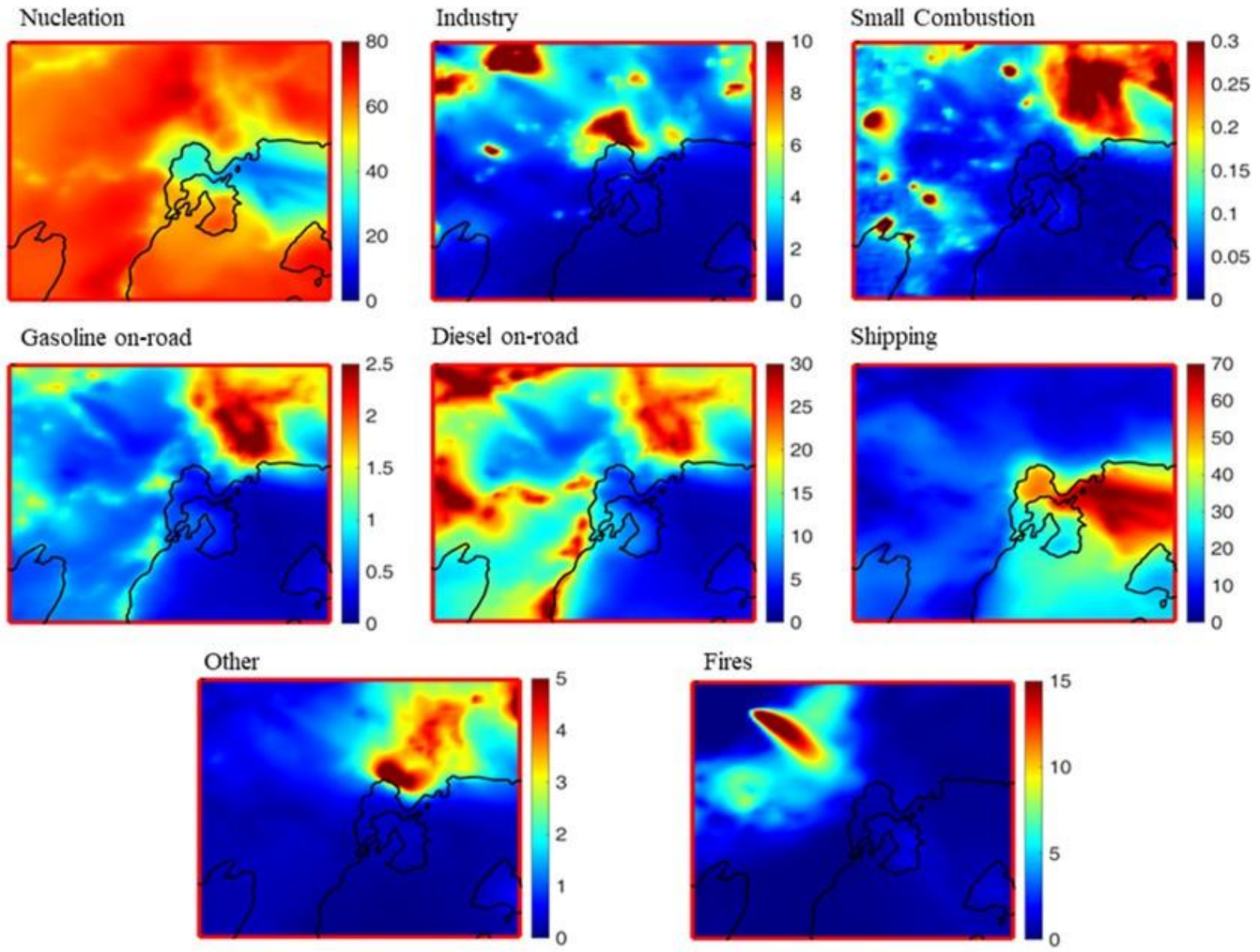
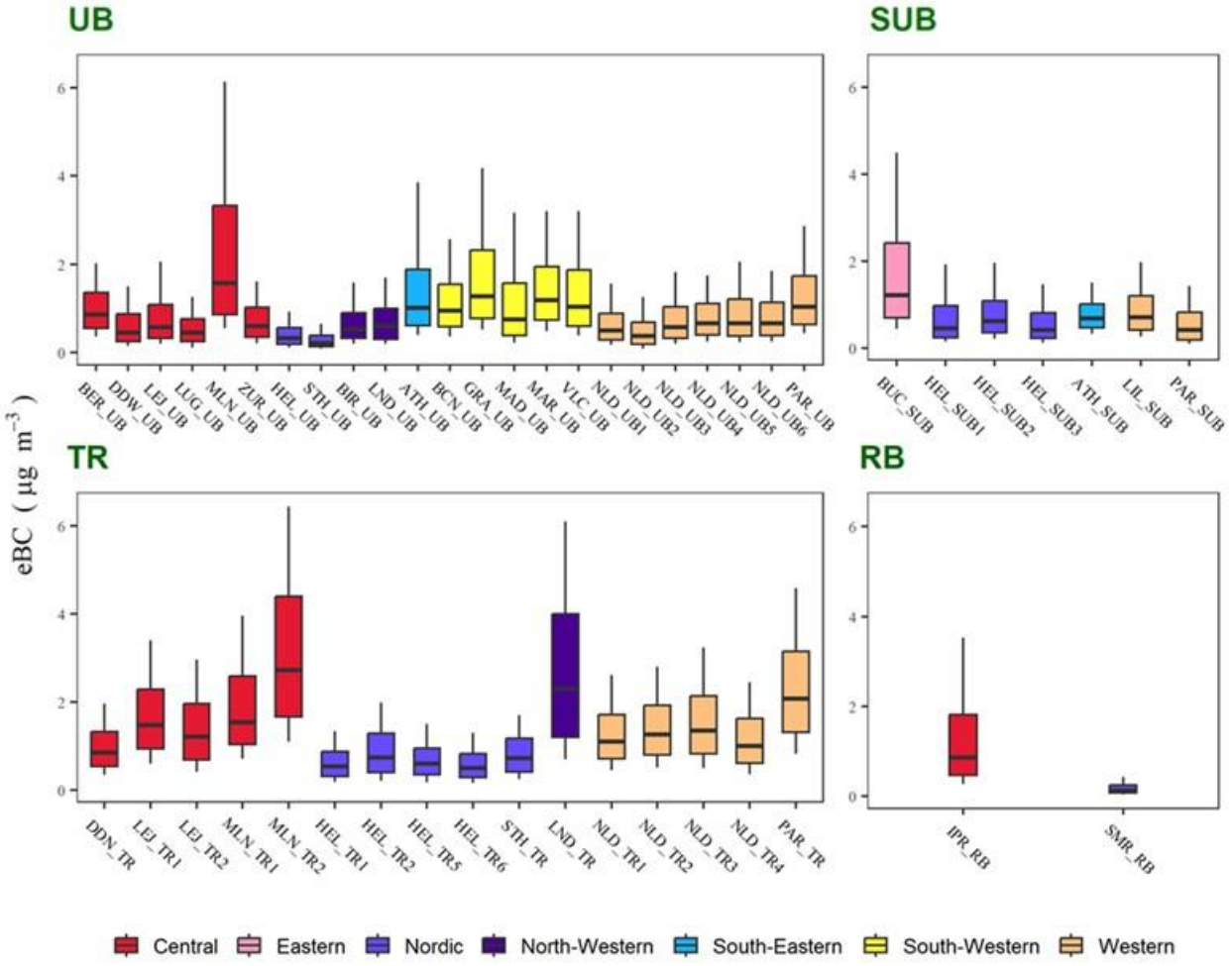
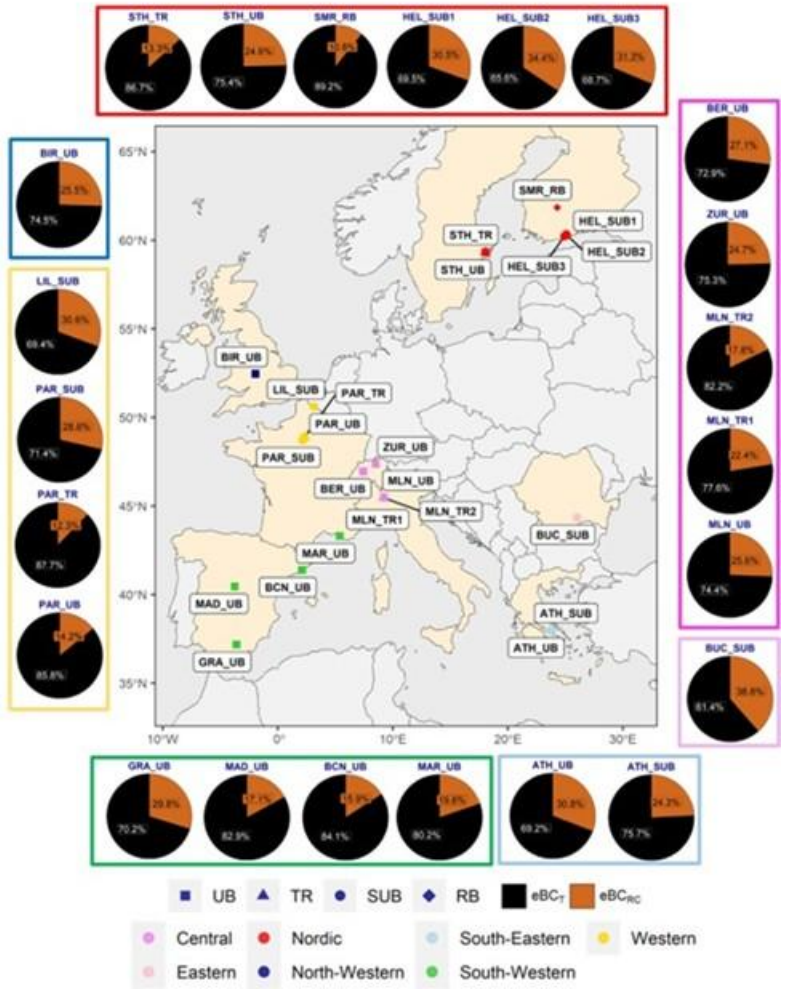


Black carbon in Urban Europe

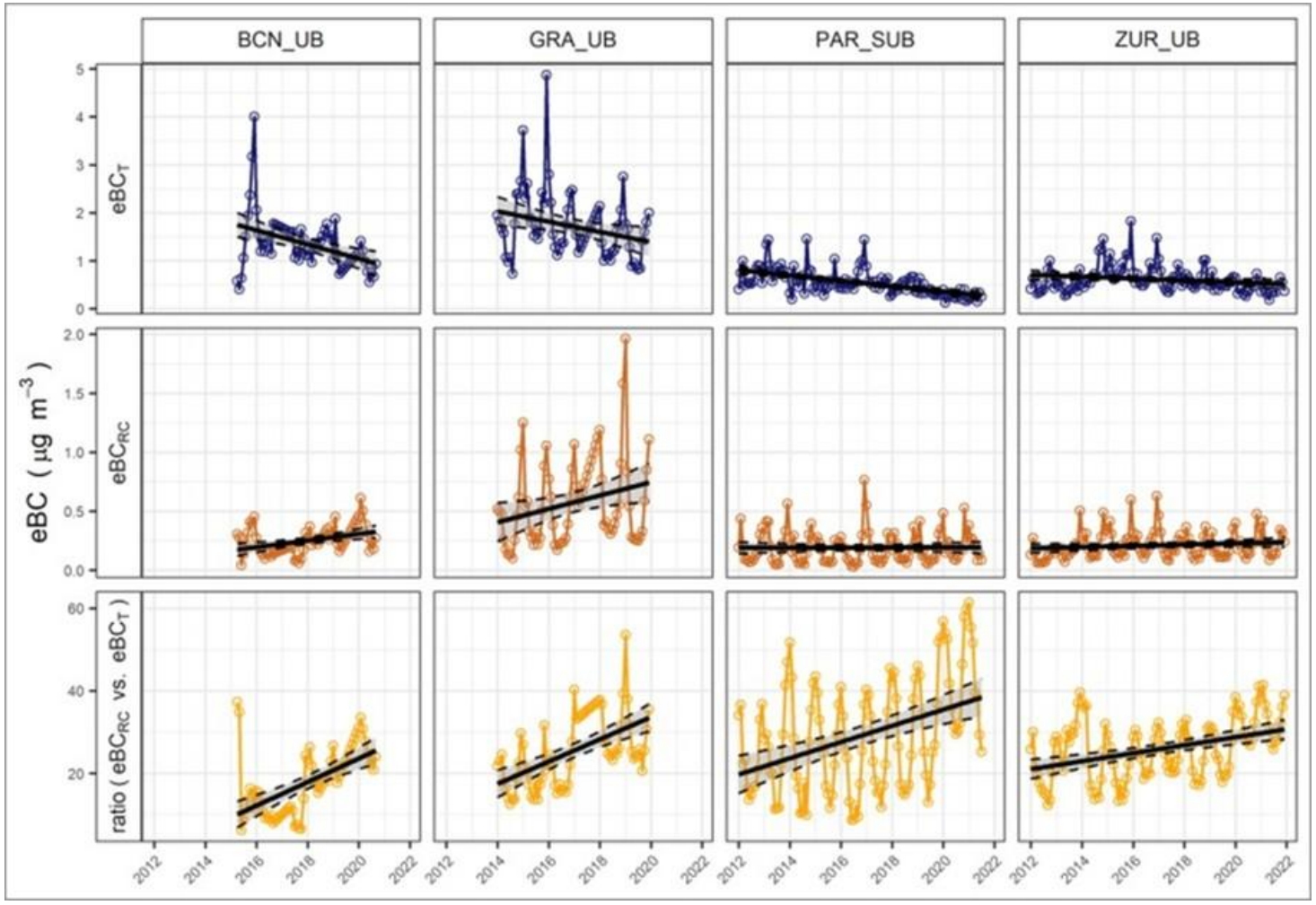
ST2 & 11





Savadkoohi M., 2023. Environment International https://doi.org/10.1016/j.envint.2023.108081

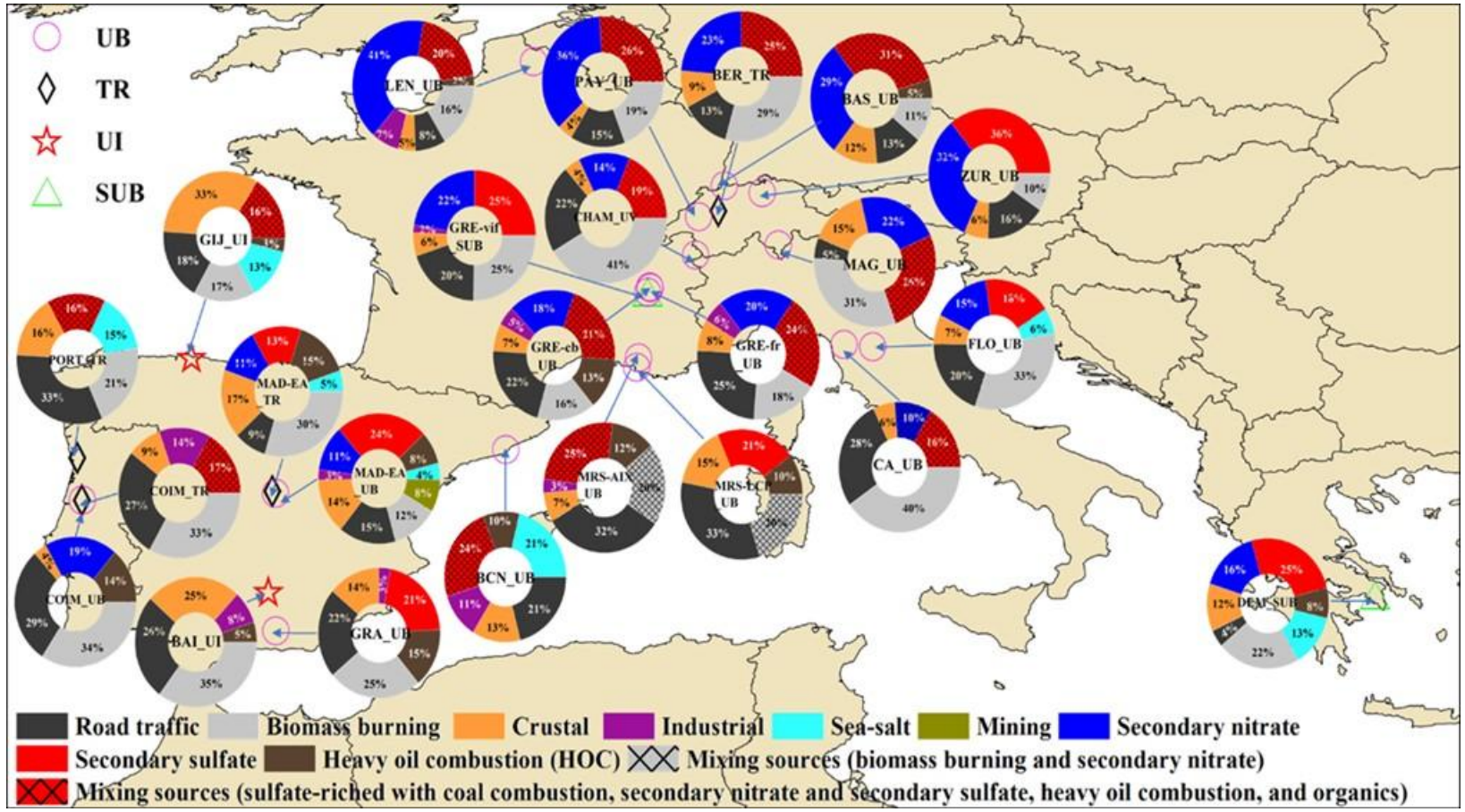
Trends and source contributions of black carbon in Europe



ST2 & 11

Savadkoohi M., 2023. Environment International https://doi.org/10.1016/j.envint.2023.108081

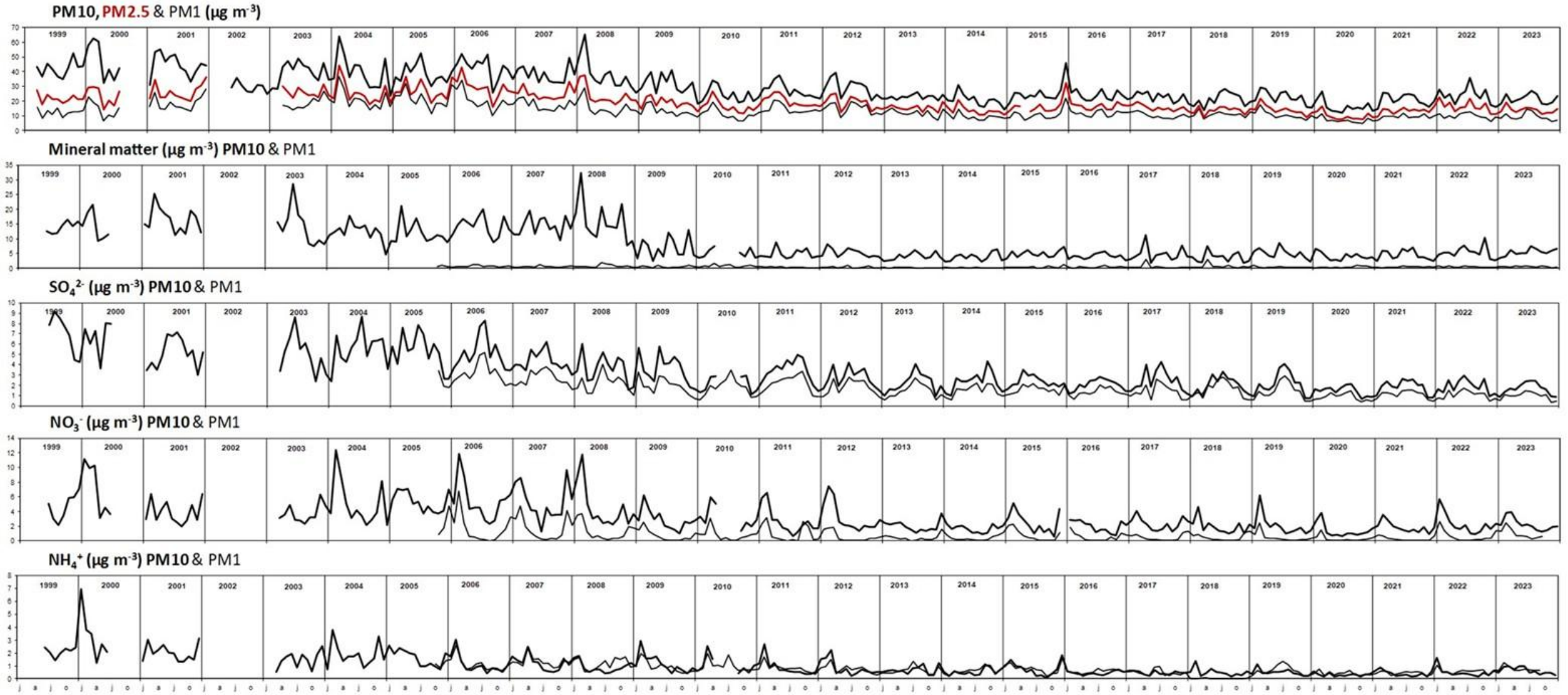
PM speciation and source contributions in urban Europe ST3 & 10



Liu X., npjc, 2025, https://www.nature.com/articles/s41612-025-01097-7

PM speciation and source contributions in urban Europe

BARCELONA PM & PM COMPONENTS 1999-2023



PM speciation and source contributions in urban Europe

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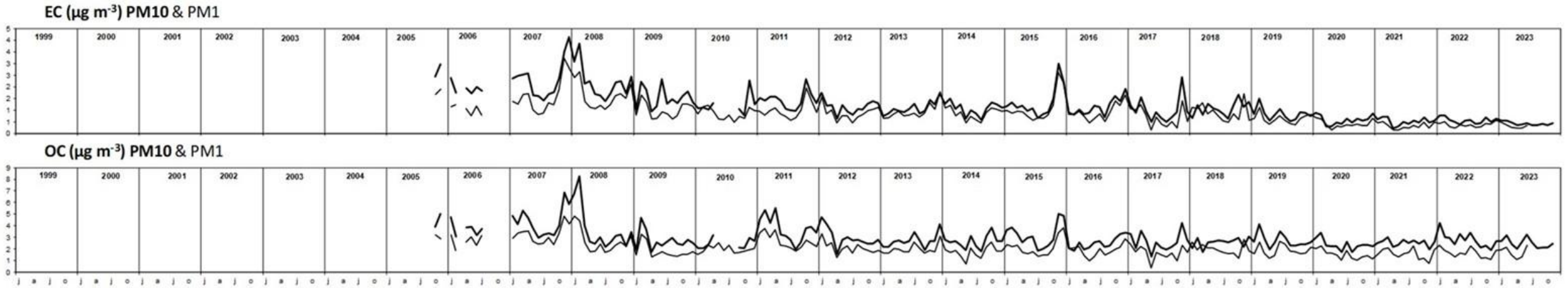
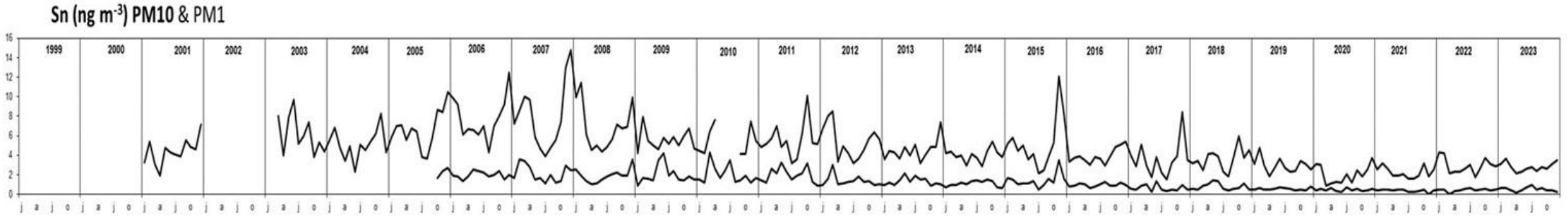
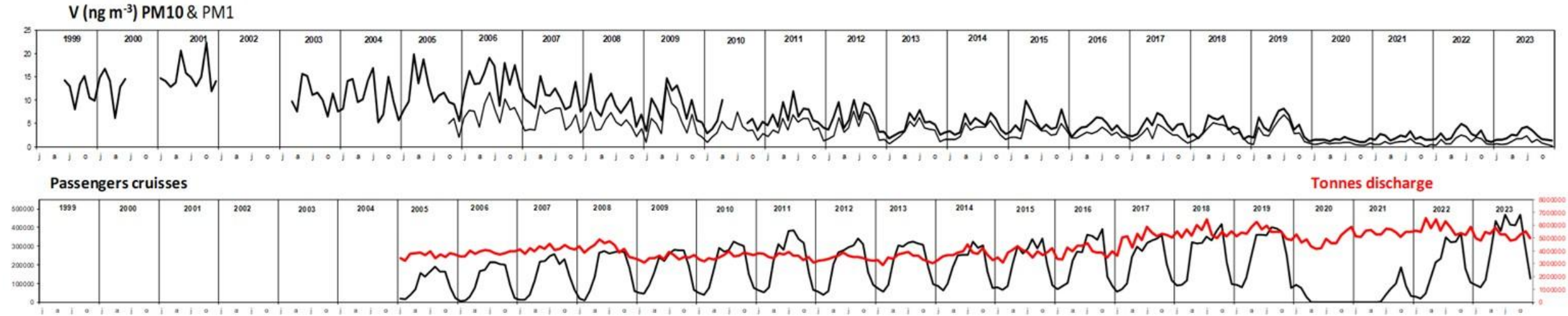


PM speciation and source contributions in urban Europe

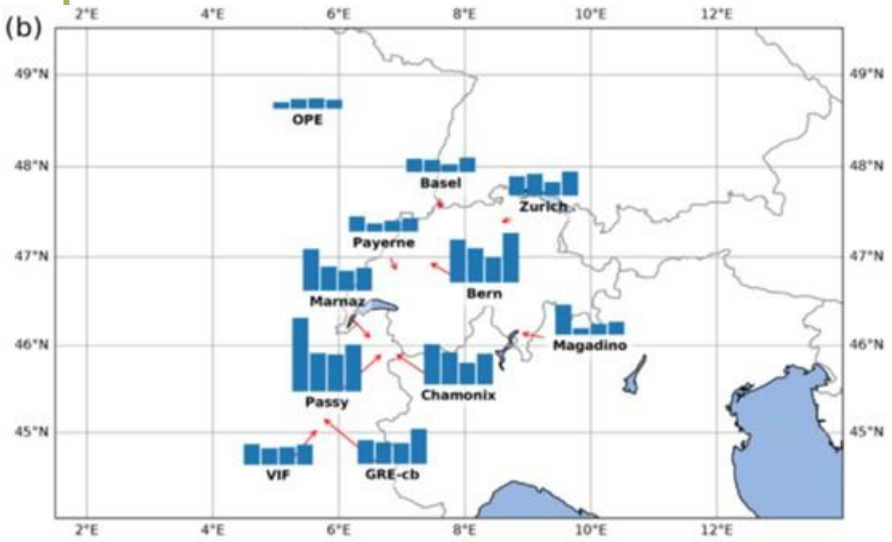
Brake wear & road dust

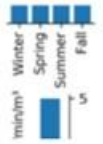


Shipping



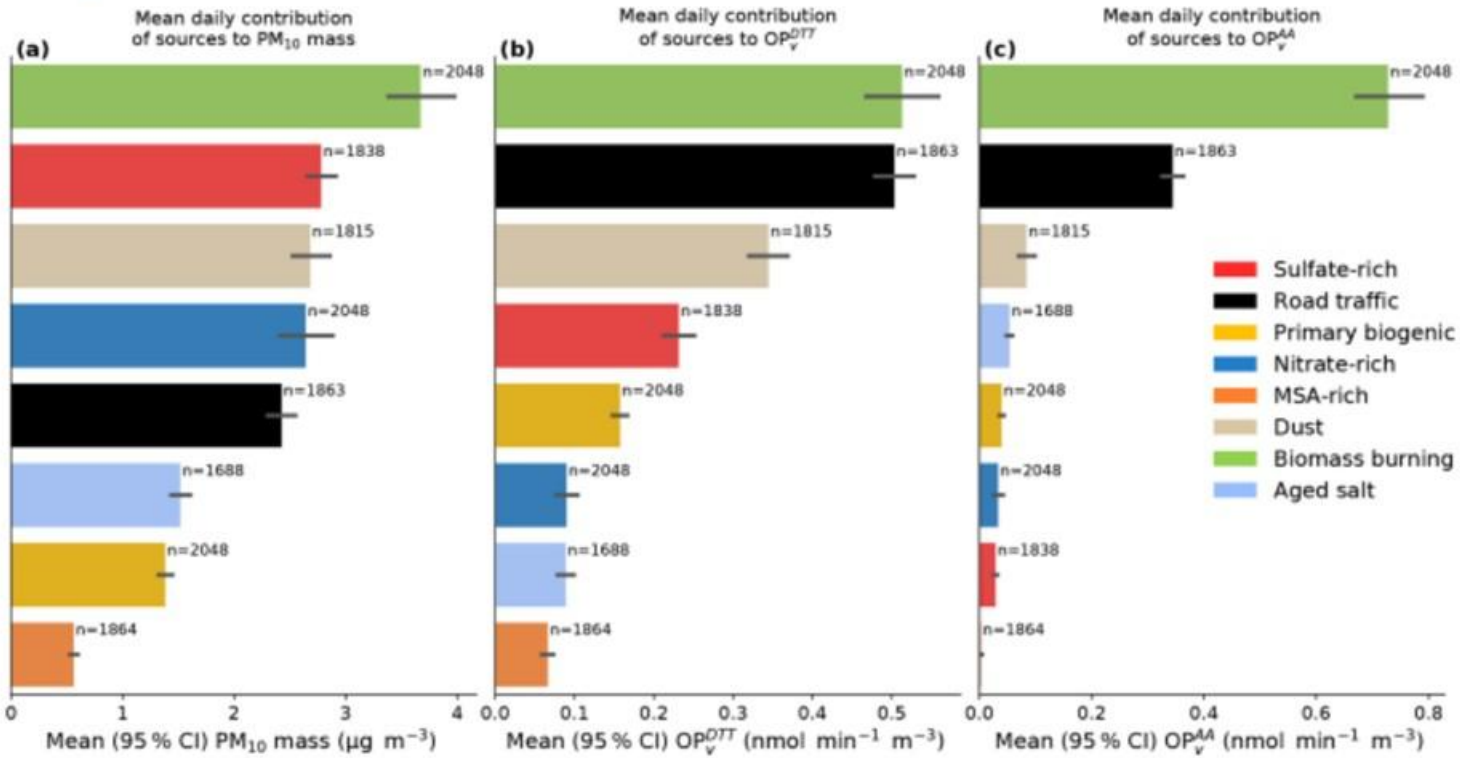
Oxidative potential



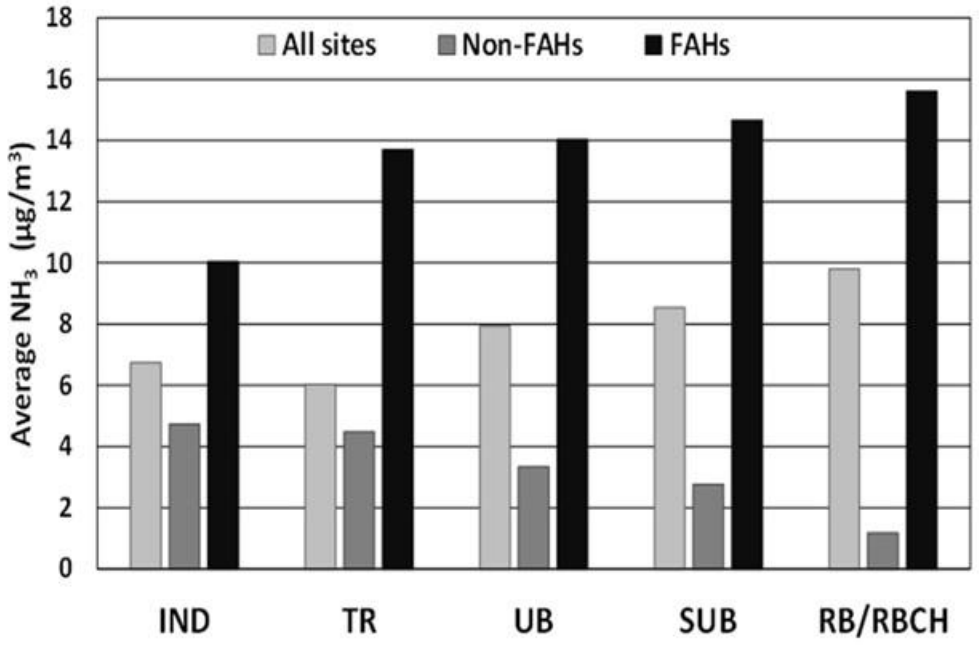


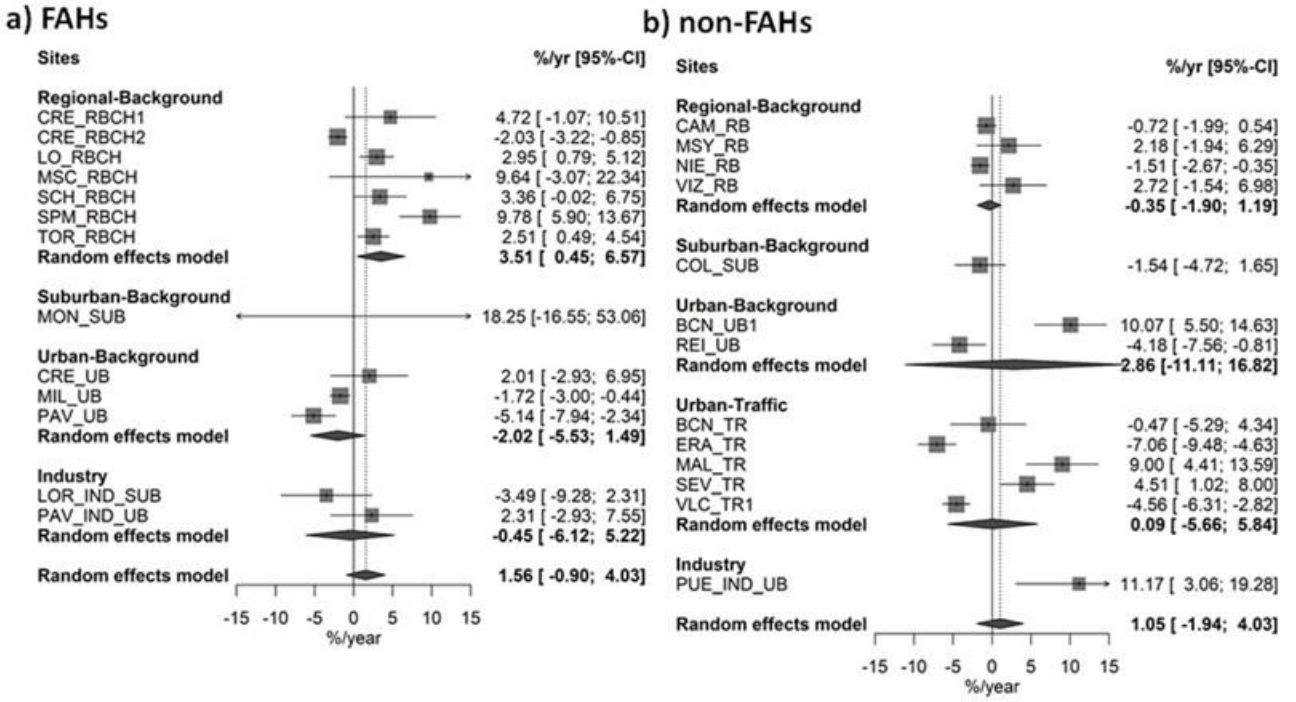
Weber et al., 2021, http://getopstandop.u-ga.fr/

Grange et al., 2022. Atmospheric Chem. Phys. 22, 7029–7050.



Concentrations and trends of NH_3 in Europe





Liu X., 2024. Environment International
https://doi.org/10.1016/j.envint.2024.108519

Acesss to RI-URBANS Progress, open data, STs

https://riurbans.eu/#progress
https://riurbans.eu/results/#open-data
https://riurbans.eu/project/#service-tools
https://riurbans.eu/results/#publications

Will be present in the Clean Air Forum 1-2 Dec 2025

Thank you very much for your attention!!

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