

Progress of work CCC

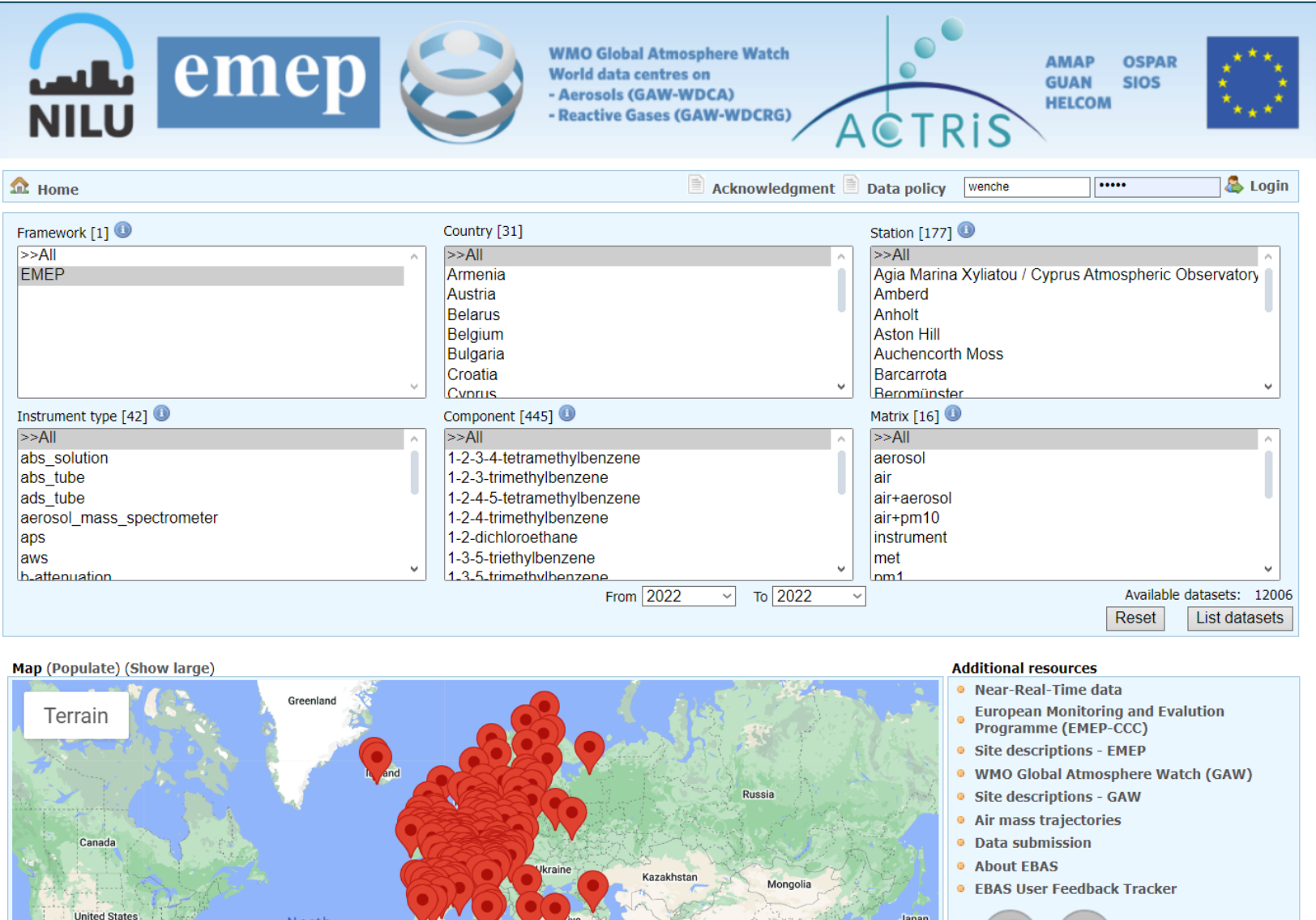
Wenche Aas and Kjetil Tørseth

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Workplan items 2024-2025

- 1.1.1.1 Assess contribution of VOCs on high O3 pollution episodes using observations from **intensive measurement period (summer 2022)**
- 1.1.1.2 Investigate monitoring of **chemicals of emerging concern**. Follow up conclusions and guidelines from workshop in autumn 2023
- 1.3.2 Cooperate with CAMS Implementation on **near real time facilities** CCC
- 1.3.3 Support Stockholm Convention in relation to atmospheric observations and data management
- 1.3.4 Support Minamata Convention in relation to atmospheric observations and data management

Status of the EMEP data reporting



Framework [1]
 >>All
 EMEP

Country [31]
 >>All
 Armenia
 Austria
 Belarus
 Belgium
 Bulgaria
 Croatia
 Cyprus

Station [177]
 >>All
 Agia Marina Xyliatou / Cyprus Atmospheric Observatory
 Amberd
 Anholt
 Aston Hill
 Auchencorth Moss
 Barcarrota
 Beromünster

Instrument type [42]
 >>All
 abs_solution
 abs_tube
 ads_tube
 aerosol_mass_spectrometer
 aps
 aws
 h_attenuation

Component [445]
 >>All
 1-2-3-4-tetramethylbenzene
 1-2-3-trimethylbenzene
 1-2-4-5-tetramethylbenzene
 1-2-4-trimethylbenzene
 1-2-dichloroethane
 1-3-5-triethylbenzene
 1-3-5-trimethylbenzene

Matrix [16]
 >>All
 aerosol
 air
 air+aerosol
 air+pm10
 instrument
 met
 pm1

From 2022 To 2022 Available datasets: 12006
 Reset List datasets

Map (Populate) (Show large)
 Terrain
 Greenland
 Iceland
 Canada
 United States
 Russia
 Ukraine
 Kazakhstan
 Mongolia
 Japan

Additional resources

- Near-Real-Time data
- European Monitoring and Evaluation Programme (EMEP-CCC)
- Site descriptions - EMEP
- WMO Global Atmosphere Watch (GAW)
- Site descriptions - GAW
- Air mass trajectories
- Data submission
- About EBAS
- EBAS User Feedback Tracker

Most of the 2022 data have been reported and has been included in EBAS

Some delays in FR and SE, but in progress

<https://ebas.nilu.no>

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Trends in Air Pollution in Europe, 2000–2019

<https://doi.org/10.4209/aaqr.230237>

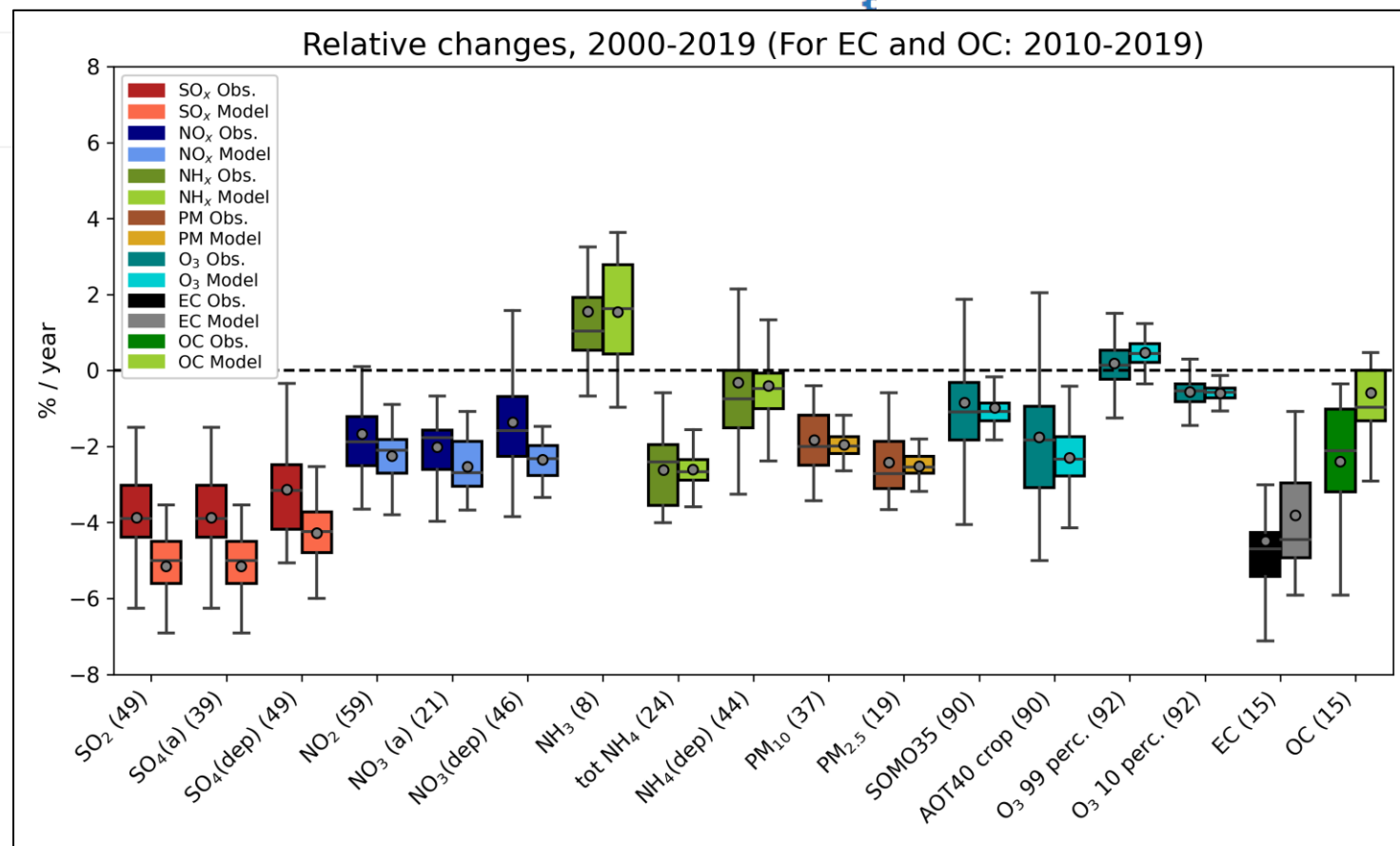
Special Issue on Carbonaceous Aerosols in the Atmosphere

List of Issues Articles In Press 08 February 2024 Reach: 306

Aerosol and Atmospheric Chemistry

Europe

Wenche Aas  ¹, Hilde Fagerli²,
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 Gliß², Daniel Heinesen², Christoph
 Hueglin⁷, Adéla Holubová⁸, Jean-
 Luc Jaffrezo⁹, Augustin Mortier²,
 Marijana Murovec¹⁰, Jean-Philippe
 Putaud⁴, Julian Rüdige⁶, David
 Simpson^{2,11}, Sverre Solberg¹,
 Svetlana Tsyro², Kjetil Tørseth¹,
 Karl Espen Yttri¹



EMEP IMP 2022: ozone episodes during summer heat waves

The overall question:

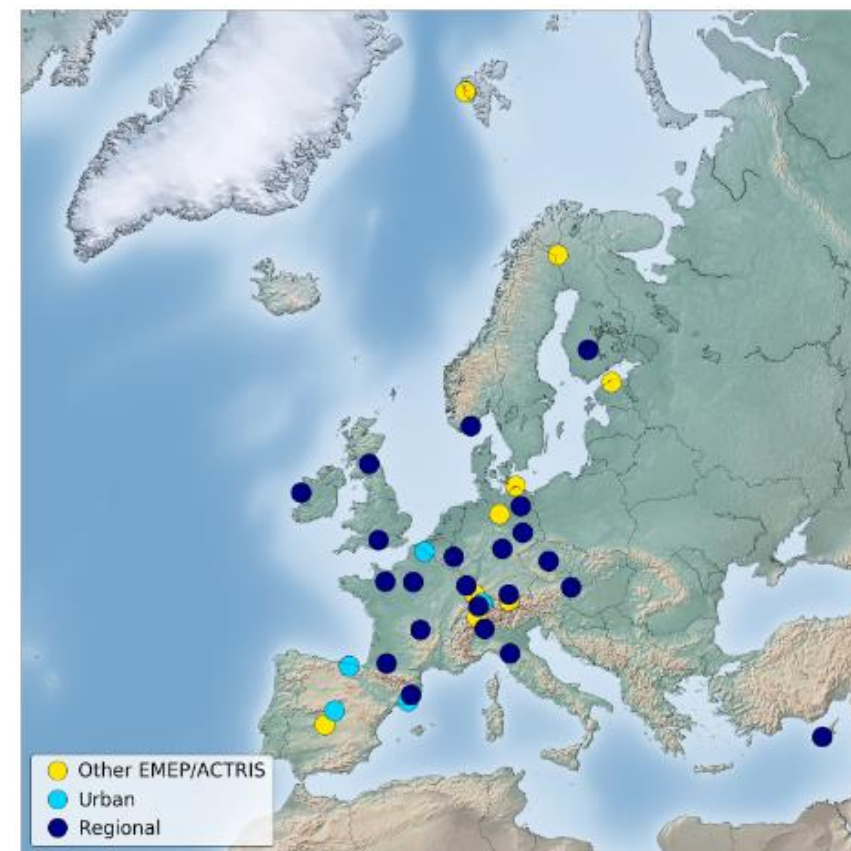
- Why are ozone episode levels typically underpredicted by atmospheric transport models?
- Which VOCs contribute to high ozone concentrations ?

Other Objectives

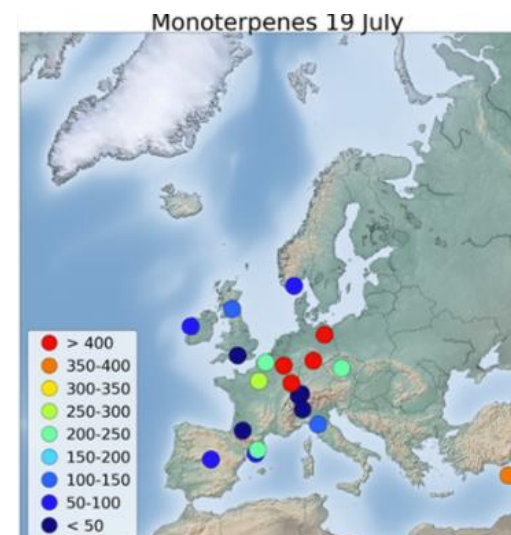
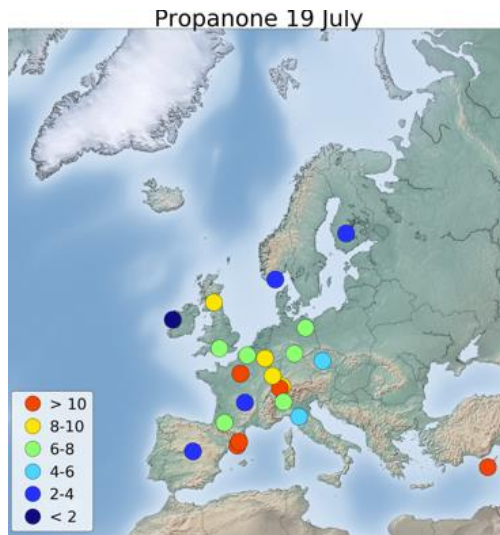
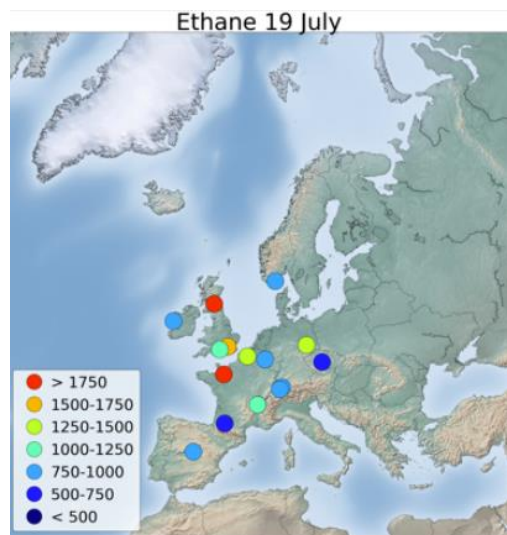
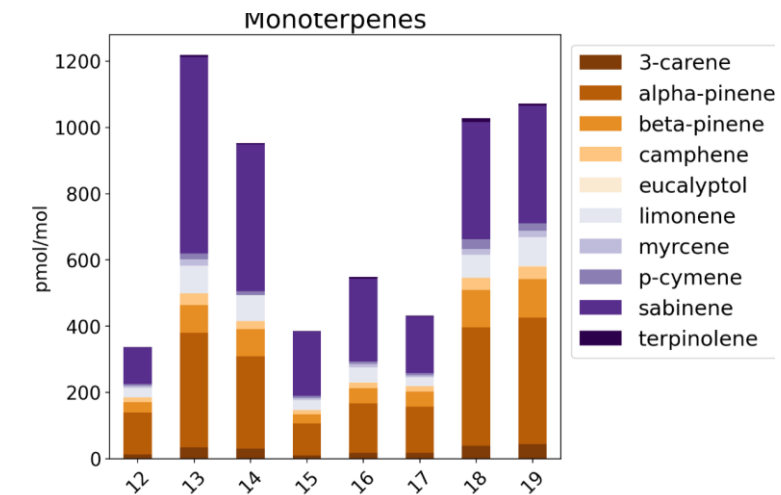
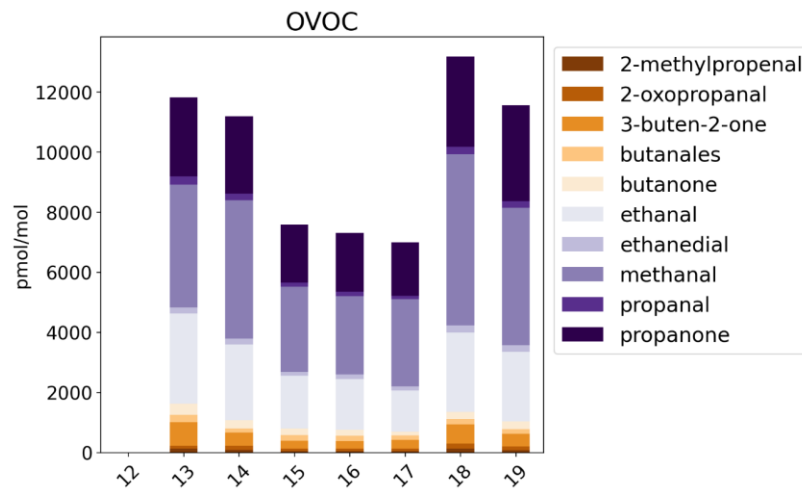
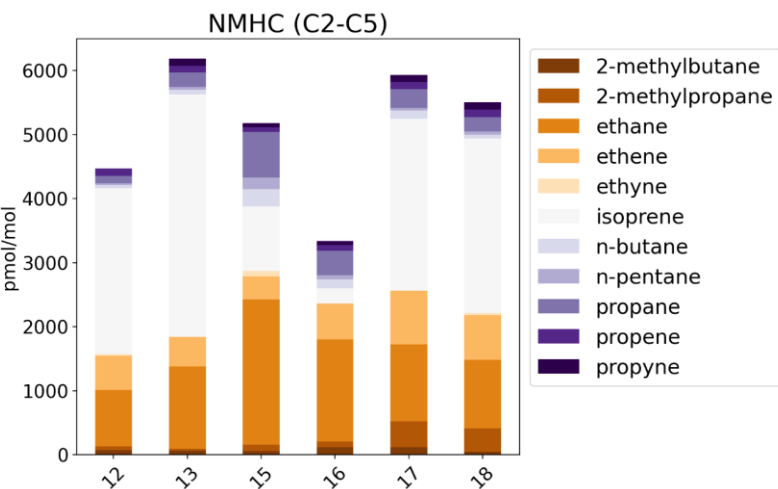
- How the reductions in NMVOC and NO_x emissions impact on the summer episodes.
- What is the effect of a warmer climate?
- What is the level of secondary organic aerosol (SOA), especially from biogenic VOCs, during high O₃ events?

Data collected and made available in EBAS from 28 sites (17 with central VOC analysis)

- O₃ and NO₂
- O-VOC (29 compounds), NMHC (77) and monoterpenes (20)
- Organic Tracers (44 compounds) and EC/OC



Detailed information on VOC speciation with good spatial coverage



Finalising results for publications and presentations

Presentations at:

- EGU 2024: 14-19 April 2024 in Vienna: *Understudied BVOC emissions in Europe and their potential atmospheric impacts* by Heidi Hellén et al.
- EMEP TFMM 6-7 May in Warsaw
- ACTRIS Science conference 13-16 May 2024: *Intensive measurement of VOCs and organic tracers during the summer heat wave 2022* by Aas et al.
- Gordon Research Conference, Biosphere-Atmosphere Interactions and Impacts in the Anthropocene, June 9 - 14, 2024, Barcelona. *BVOC emissions in Europe* by Heidi Hellén et al.

Publications:

- Ge, Y., Solberg, S., Heal, M., Reimann, S., van Caspel, W., Hellack, B., Salameh, T., and Simpson, D.: Evaluation of modelled versus observed NMVOC compounds at EMEP sites in Europe, EGU sphere [preprint], <https://doi.org/10.5194/egusphere-2023-3102>, 2024.
- Aas et al. : In preparation *VOCs and organic tracers during the summer heat wave 2022*
- Others spin of publications

A new VOC intensive measurement campaign planned for 2024

- Discussed at TFMM web call meeting in October
- The scope should still be on ozone formation.
- **The most important knowledge gap is on speciated VOC emissions**

Setup:

- Measurements closer to emission sources, thus more focus on industrial and urban sites, combined with regional sites in the vicinity. **Close cooperation with activities in RI-URBANS and ACTRIS**
- Try to have more **high-resolution instrumentation**, though complement with manual measurements to get the full range of species.
- Not so many sites as we did in 2022 and maybe have **one month measurement**
- Should serve the needs for the model intercomparison (in the TFMM framework).
- The time for the campaign is not settled.

- ESIG kindly offered to sponsor the campaign

Towards a harmonized approach for atmospheric monitoring of Chemicals of Emerging Concern (CECs)

Workshop 8-10 November 2023 at NILU, Kjeller, Norway.

Thematic sessions:

- Siloxane and Chloro-paraffins
- PFAS
- Flame retardant
- Microplastic and plastic additives

Presentations available at

https://projects.nilu.no/ccc/tfmm/kjeller_2023/index.html

Report or possible a peer reviewed paper with recommendations are being written .

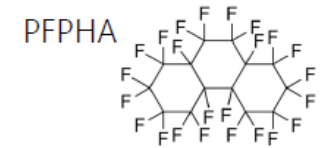
To be presented at the TFMM in May



Example discussions points, PFAS

Who is doing what/ harmonisation of methods

Station	Latitude	Neutral PFAS		Ionic PFAS	
		Time period	Sampling method	Time period	Sampling method
Alert (Canada - ECCO)	82.5 °N	2006 – ongoing	GFF + PUF/XAD-2	2006 – ongoing	GFF + PUF/XAD-2
Villum, Station Nord (Greenland - Aarhus)	81.6 °N	2014 – ongoing	GFF + PUF/XAD-2	2021 – ongoing	GFF
Zeppelin (Svalbard - NILU)	78.9 °N	2017 – ongoing	PUF/XAD-2	2006 – ongoing	GFF
Andøya (Norway - NILU)	69.3 °N	2017 – 2021	PUF/XAD-2	2010 – 2021	GFF
Pallas (Finland - IVL)	68.0 °N	-	-	2017 - ongoing	GFF
Sofienbergparken (Oslo - NILU)	59.9 °N	2022 – ongoing	PUF/XAD-2	2022 - ongoing	GFF
Birkenes (Norway - NILU)	58.4 °N	2017 – ongoing	PUF/XAD-2	2006 – ongoing	GFF
Råö (Sweden - IVL)	57.3 °N	-	-	2009 - ongoing	GFF
Kosetice (Czechia - Masaryk)	49.6 °N	ongoing	QFF + PUF/XAD-2	ongoing	QFF + PUF/XAD-2



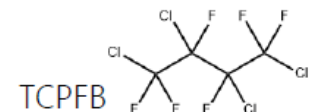
What should be measured?

Current active air sampling measures:

- Ionic PFAS: i.e. C4 – C11 PFCAs
- Neutral PFAS: FTOHs, FASAs, FASEs

Future?

- Ultrashort chain PFAAs (e.g. TFA, TFMS)
- Emerging PFAS (e.g. GenX, PFECBS, F-53B, PFECAs)
- FTUCAs (FTOH degradation product)
- C4 replacement compounds (e.g. FBSA, MeFBSA, MeFBSE, MeFBSAA)
- PFTBA, PFPeTA, PFPHA, TCPFB, (HCBD)
- Other compounds?



Cooperation with CAMS (NRT: CAMS-21a (phase 2),

WP-3 • Task 3.1 (ACTRIS CiGas & NILU):

Report comparing data processing in EMEP, ACTRIS and EEA (existing datasets)

- Working on improved QA/QC NRT-data (ozon, NO₂, PM).
- Mapping which data available in EBAS which is not available for CAMS via EEA.
- NRT also connected to work under RI-URBANS

Task 3.3 (NILU): Demonstrate capability of QA for EMEP NO₂ and O₃ Statistical tests on a RRT schedule for 1-2 stations. Assess the improvements vs less stringent QA.

Other WPs dealing with ASCM and other data, which also the EMEP community will benefit from

All EMEP data associated with a DOI. DOI landing pages launched today (29 Febr. 2024)

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Sulphate_corrected at Birkenes II Download

1 January 2014 - 1 January 2023

Summary | **Data coverage**

<u>Product Information</u>		<u>Citation & Acknowledgements</u>	
Variable(s)	Sulphate Corrected	Licence	CC BY 4.0
Product type	Observation	Citation string	Aas, W., EMEP, CAMP, NILU, 2014-2023. Sulphate_corrected at Birkenes II, hosted by EBAS at NILU, DOI: https://doi.org/10.48597/NILU
Instrument type(s)	Filter 3pack		
Timeliness	Scheduled		
Start time	1 January 2014		
Stop time	1 January 2023		
Framework	EMEP, CAMP, NILU		
Instrument model(s)	NILU/Three stage open face	Acknowledgements	Data used in this <study/re

Please include the following information in your publication. Please edit the text to suit publication standards.

DOIs enables the possibility to keep track of which publications are using which datasets (datacite)

<u>Facility Information</u>		<u>Originator(S)</u>	
Facility name	Birkenes II (NO0002R)	Wenche Aas	Norwegian Institute for Air Research
Facility type	Observation platform, fixed		
Coordinates	58.38853°N, 8.252°E		
Altitude	219 m		
<u>File Information</u>		<u>Principal Investigator(S)</u>	
PID	https://doi.org/10.48597/NDEN-TTXX	Wenche Aas	Norwegian Institute for Air Research
Filename	NDEN-TTXX.nc		
Format(s)	HDF5 (NetCDF4)		
Filesize	281.50 KB		
Version	v1		
Last modified	11 May 2023 10:02:13		
Data Access	OPENDAP DAP4 HTTPServer		
Metadata access	NCML		

were accessed from EBAS (https://ebas.nilu.no) hosted by NILU. Specifically, the use included data affiliated with the framework: EMEP, CAMP, NILU

Version control. Includes access to older versions of the data

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Concept Summary | **Versions**

Latest Version

DOI	https://doi.org/10.48597/NDEN-TTXX
Valid from	1 January 2014
Valid to	1 January 2023

Previous Versions

DOI	https://doi.org/10.48597/TTMV-WT4G
Valid from	1 January 2014
Valid to	1 January 2022

DOI	https://doi.org/10.48597/QC3N-9AN6
Valid from	1 January
Valid to	1 January

A **newer** version of this dataset is available.

Sulphate_corrected at Birkenes II

1 January 2014 - 1 January 2022

[Download](#)

Thank you for the
attention

