Air quality data

Improvements in air quality data collection and dissemination over time in the Western Balkans

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SMHI

Content of SwEPA/SMHI program

Main outcome: improved fulfilment of EU requirements on air quality in Chapter 27

4 components:

1. Increased processing capacity of emission data
2. Increased capacity for guidance towards LSGs
3. **Increased public accessibility to AQ-measurements**
4. Regional dialogue on availability, acquisition and usage of AQ-data established

Purpose

An overview of the AQ data collection and data dissemination in the Western Balkans but from the outside.

1. Through the EEA's AQ data portal, for AQ informed visitors, huge database on reported data, under last 10 years
   → tighter monitoring network along the years,
   (and yes, still in progress).
   → different monitoring strategies.
   → accumulated data shows some AQ improvements.

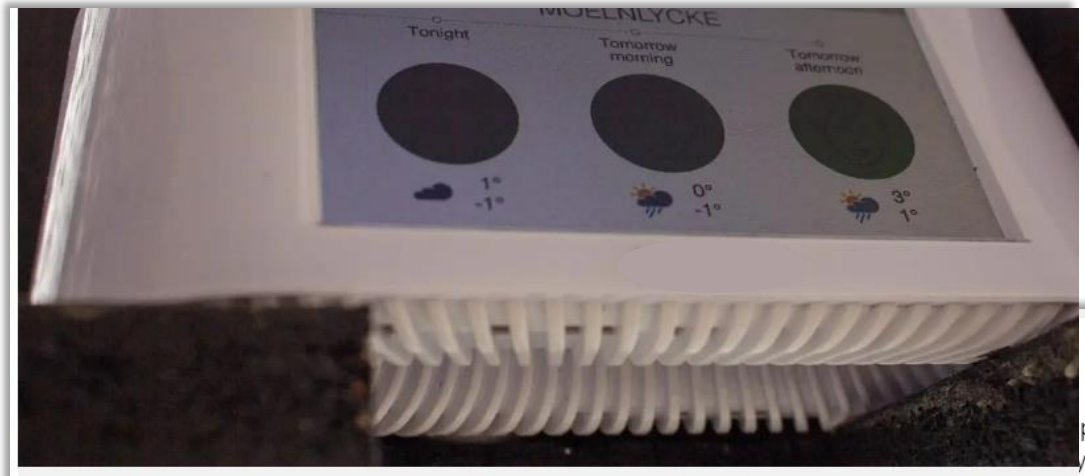
2. Through the national websites, for AQ interested visitors, with mains focus on near real time data, and periodic reports.

Anecdote from Sweden – March 2023

TV4 profile Marcus Oscarsson reported that Mölnlycke has Sweden's second worst air pollution - expert dismisses the data

News • On TV 4 profile Marcus Oscarsson's blog, it is claimed that Mölnlycke has the second most air pollution in Sweden. Härryda-Posten has reviewed the information - and can today tell you how it really is.

- I would say that you can actually just dismiss these results, says Karin Söderlund, air quality



The particle mass for particles with a diameter of up to 2.5 micrometers is called PM2.5. These particles are mainly formed durin and when gases from the combustion condense, according to the Swedish Environmental Protection Agency. Picture: Malte Jus

Mölnlycke was singled out as the worst air polluter – Janne thinks she knows why

News • Janne Mehtola, 54, raised her eyebrows in surprise when TV4 profiler Marcus Oscarssons claimed on his blog that Mölnlycke had the second most air pollution in Sweden. He was able to quickly reject the journalist's information as it was his measuring station that was given as the source.

på ögonbrynen när TV4-profilen Marcus
ycke hade näst mest luftföroreningar i
isa journalistens uppgifter – då det var
om källa.

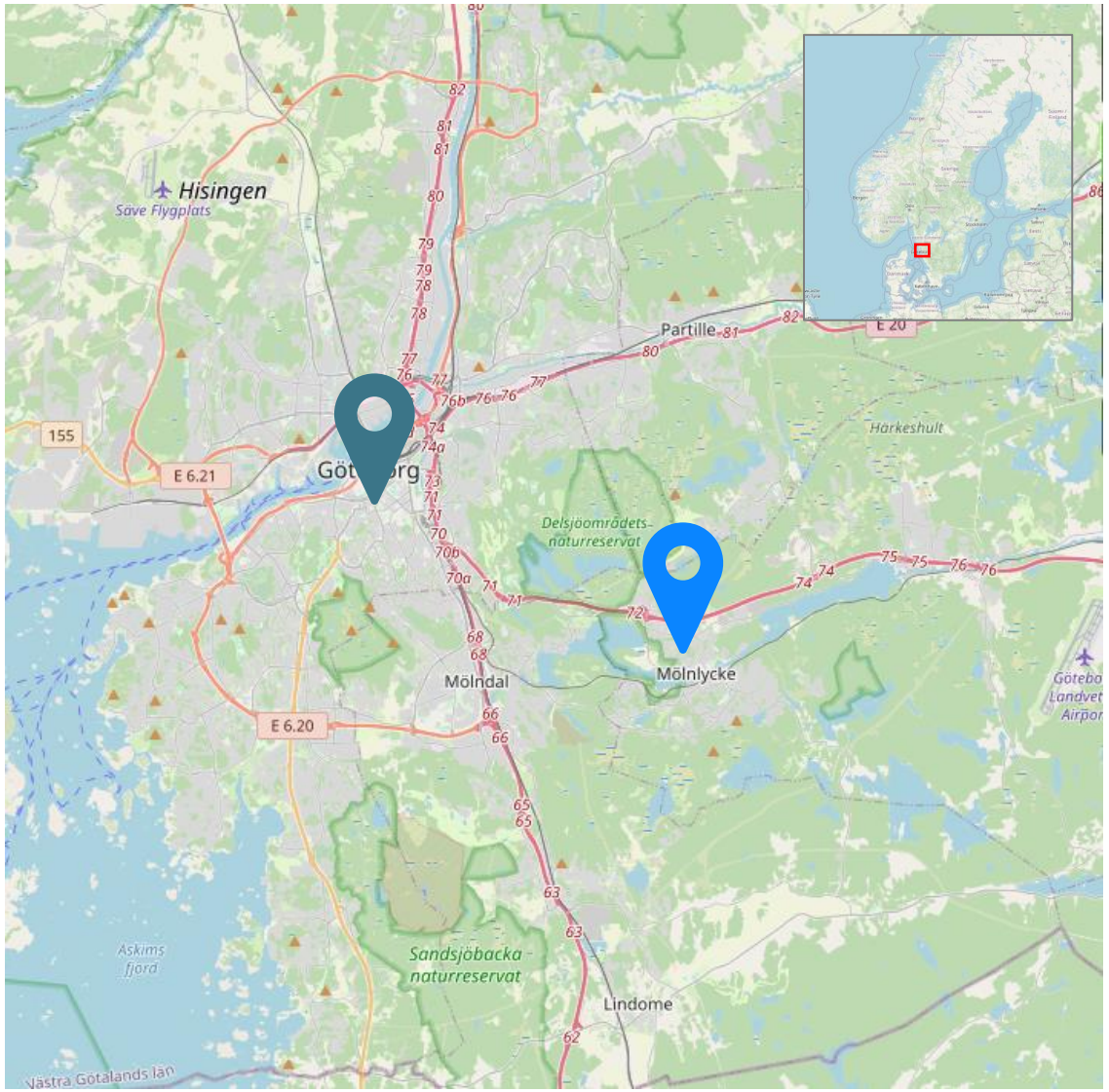
s faktatabbe
I centrum för dramat: en ciggande granne

Lesson learn1

World-wide classification of polluted places based on :

- One pollutant the PM2,5
- Some time only 1 low-cost station
- Without any maintenance nor calibration
- Unverified location

Huge communication scheme to support a business model.

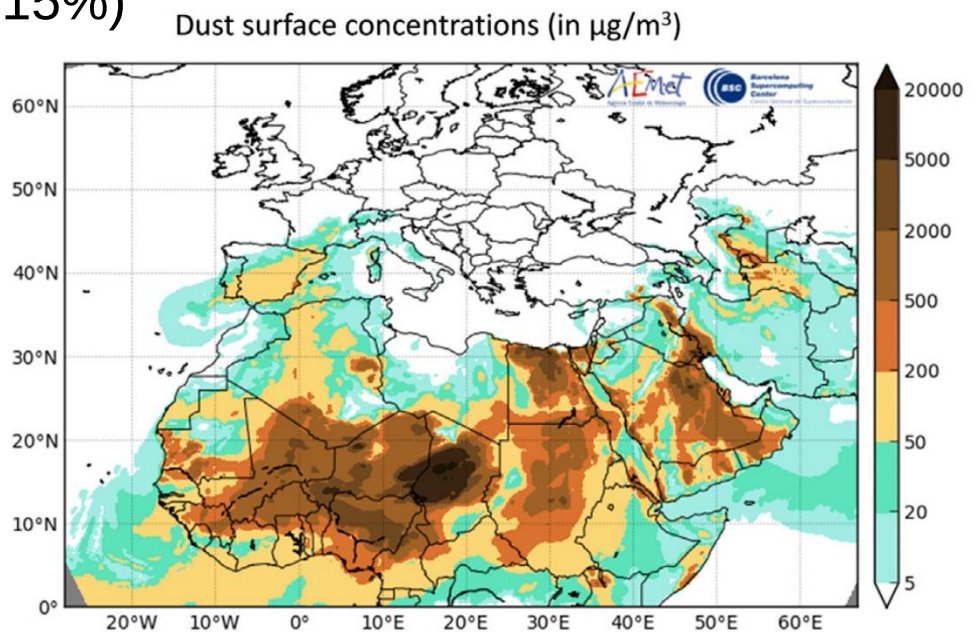


Lesson learn 2

X. Querol et al. 2019

Monitoring the impact of desert dust outbreaks for air quality for health studies,

illustration : peak 22/02/2016 up to 20 000 µg/m³ (pm 2.5 ~ 15%)



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Environment

2 minute read · March 14, 2023 5:49 PM GMT+1 · Last Updated 21 days ago

Lahore is most polluted city, Chad worst among countries - survey

Reuters

NEW DELHI, March 14 - Lahore in Pakistan jumped more than 10 places to become the city with the worst air in the world in 2022, according to an annual global survey by a Swiss maker of air purifiers.

1 - Data dissemination - EEA's Database

A copy of all the validated and verified data reported now through the Raven system.

Questions was:

- How much longstanding data?
- Would it be worthy to disseminate?

Yearly statistical data in:

https://www.eea.europa.eu/data-and-maps/data/aqereporting-9

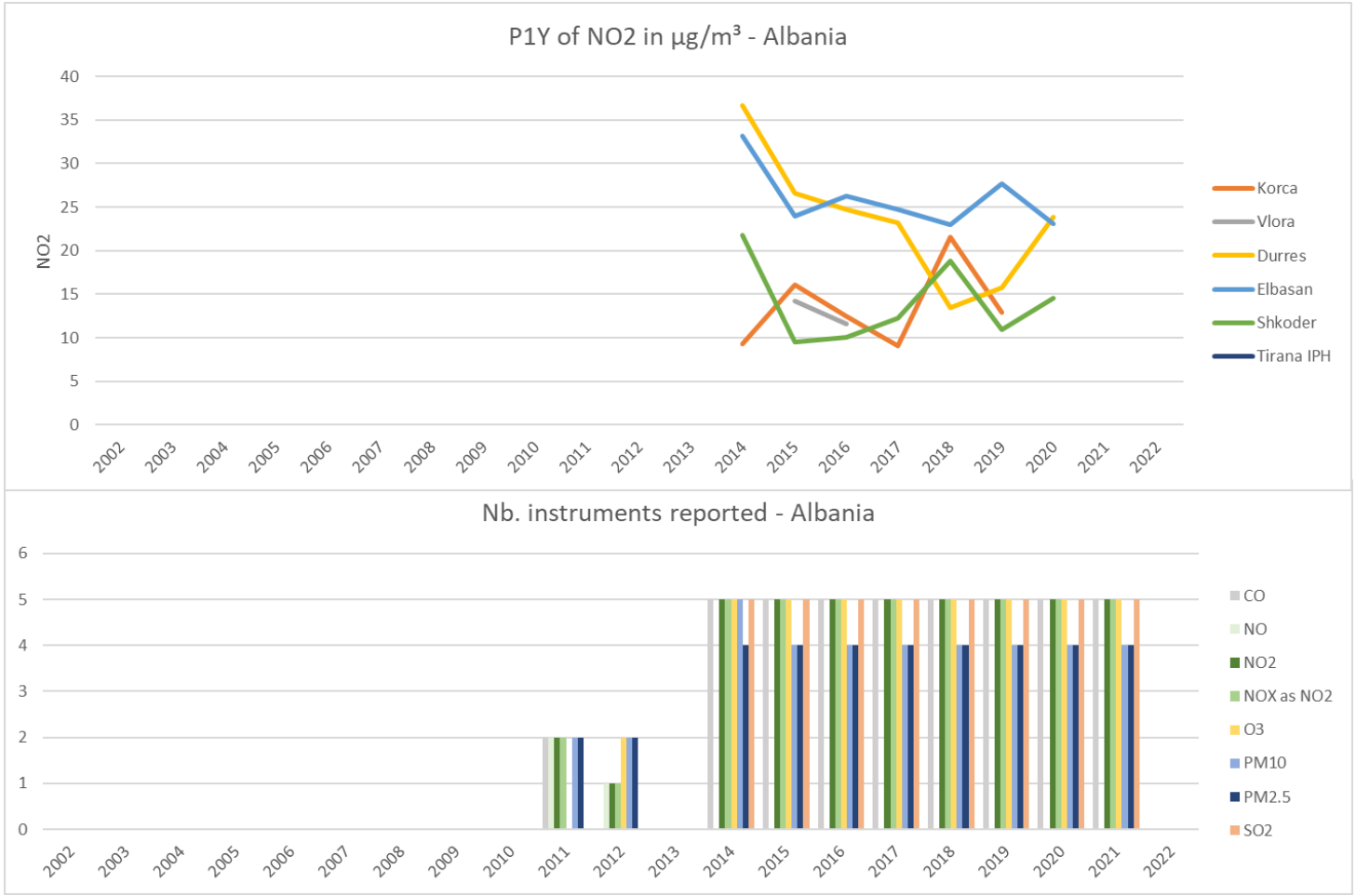
Albania

Yearly means (P1Y) showing interesting trends on NO2

Modest monitoring network in the way to be expended

Monitoring strategy :

Full panel of instruments in each stations since 2014

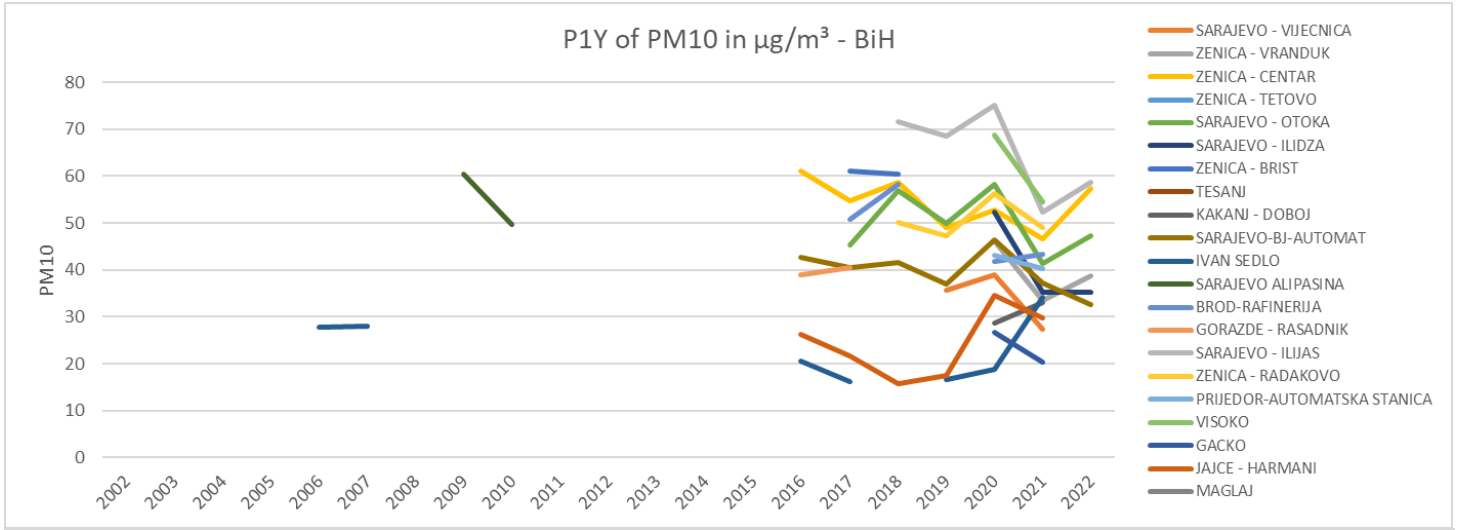


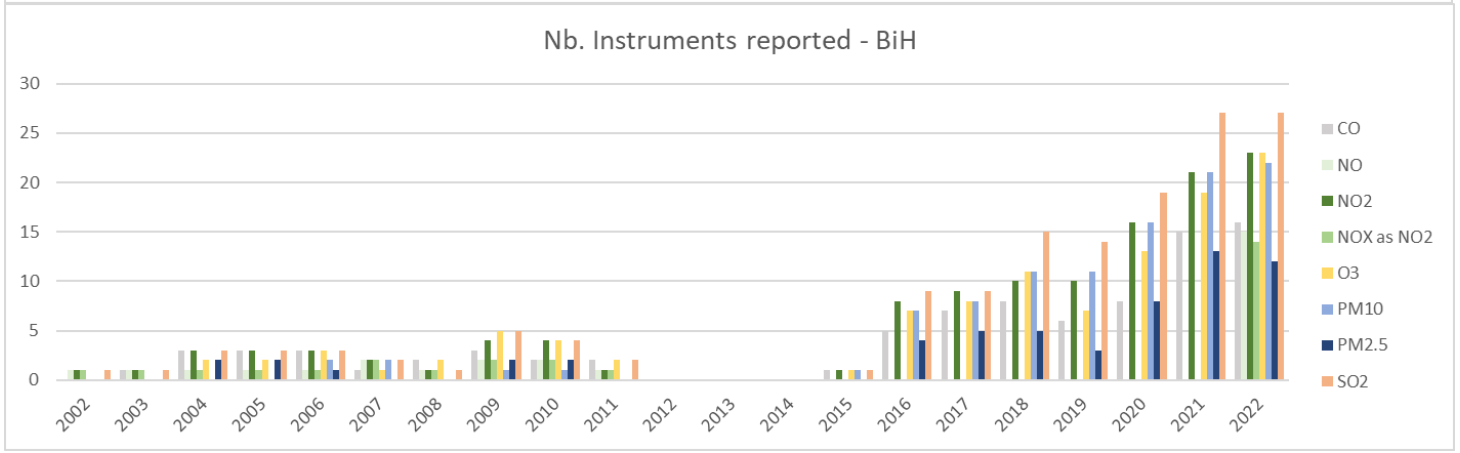
Bosnia and Hercegovina

Yearly means (P1Y) showing interesting trends on PM10

Undergoing expansion of Monitoring network.

Increase of PM2.5 instruments





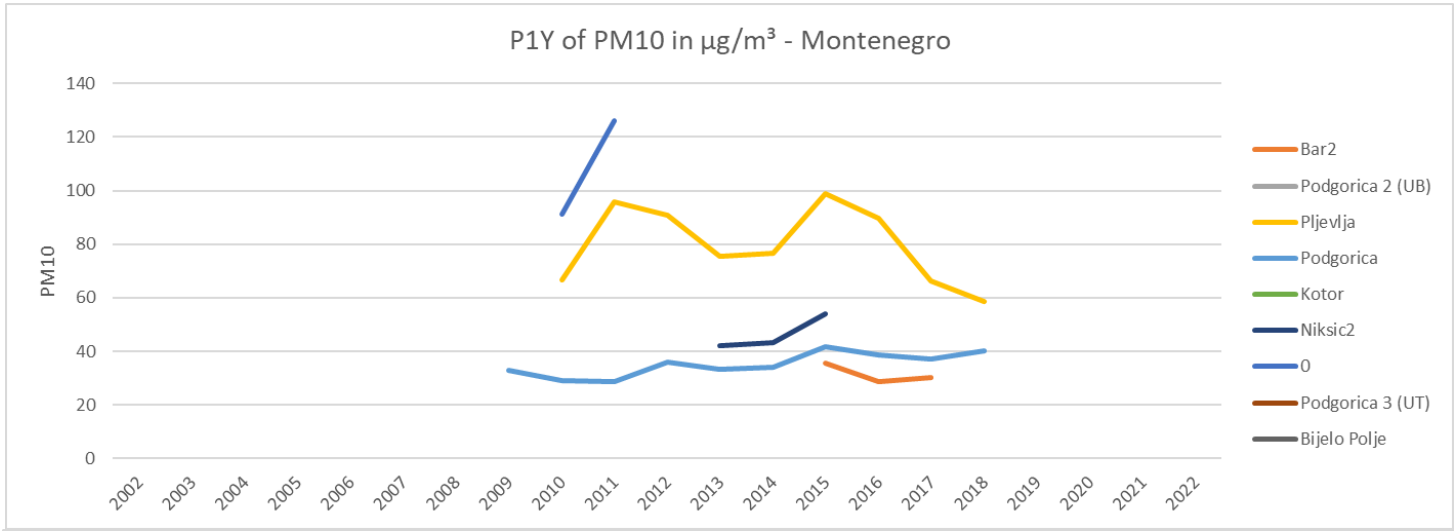
Montenegro

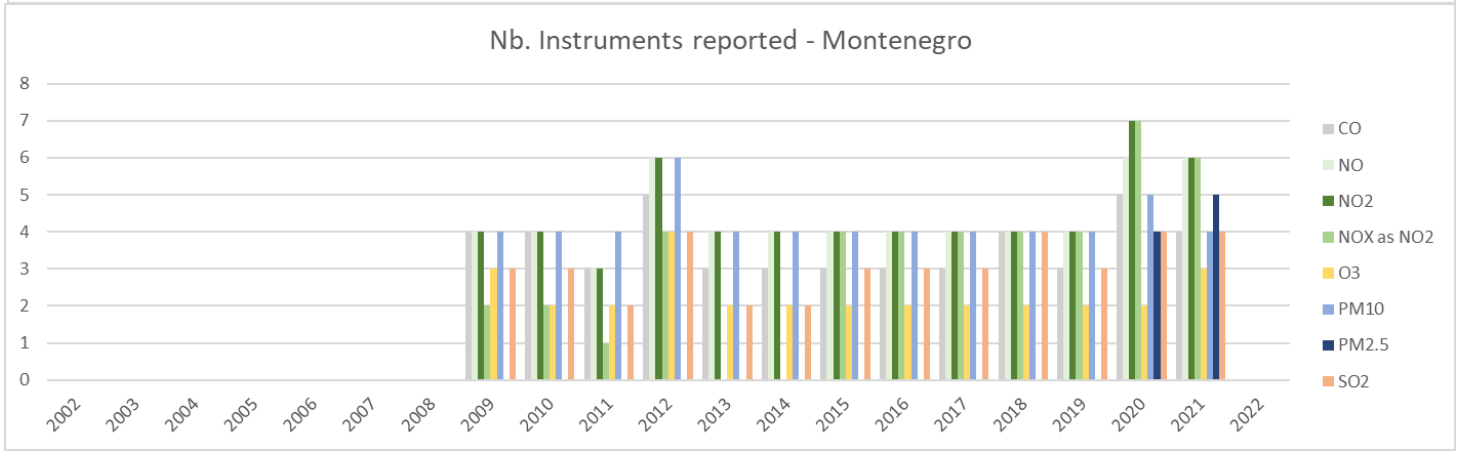
Yearly means (P1Y) showing interesting trends on PM10

Long and continuous time-series

(gap related to a data coverage under 70%)

Consistent network with recent effort on PM 2.5



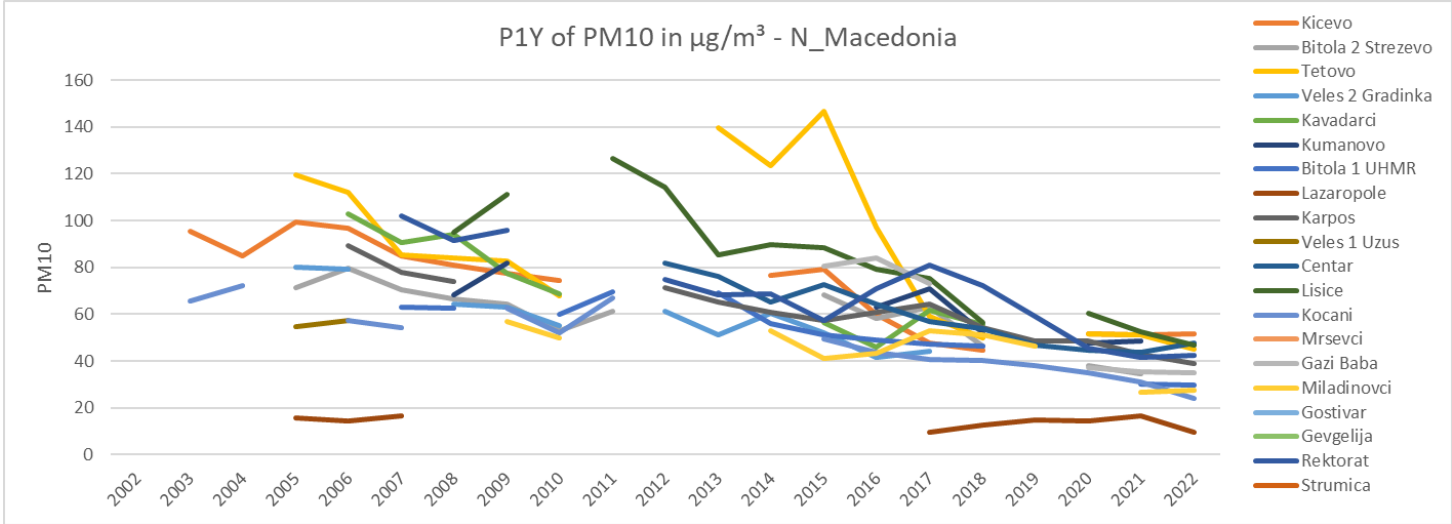


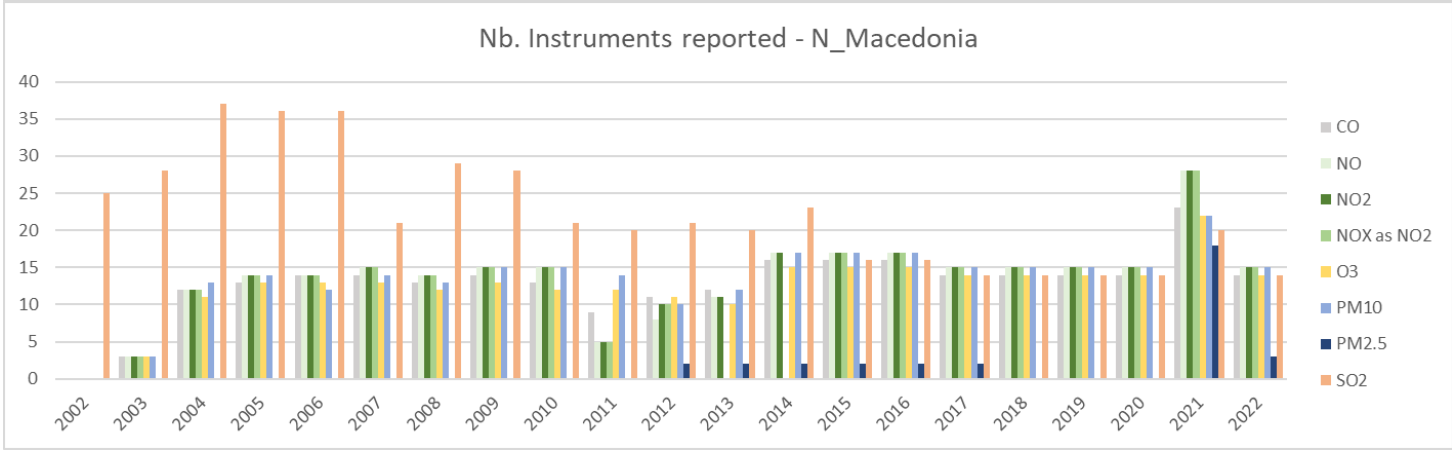
Nort Macedonia

Long standing reporting and continuous time-series

Yearly means (P1Y) showing long term decrease of PM10

Monitoring strategy change over the time from SO2 to other relevant substances and recent effort on PM 2.5

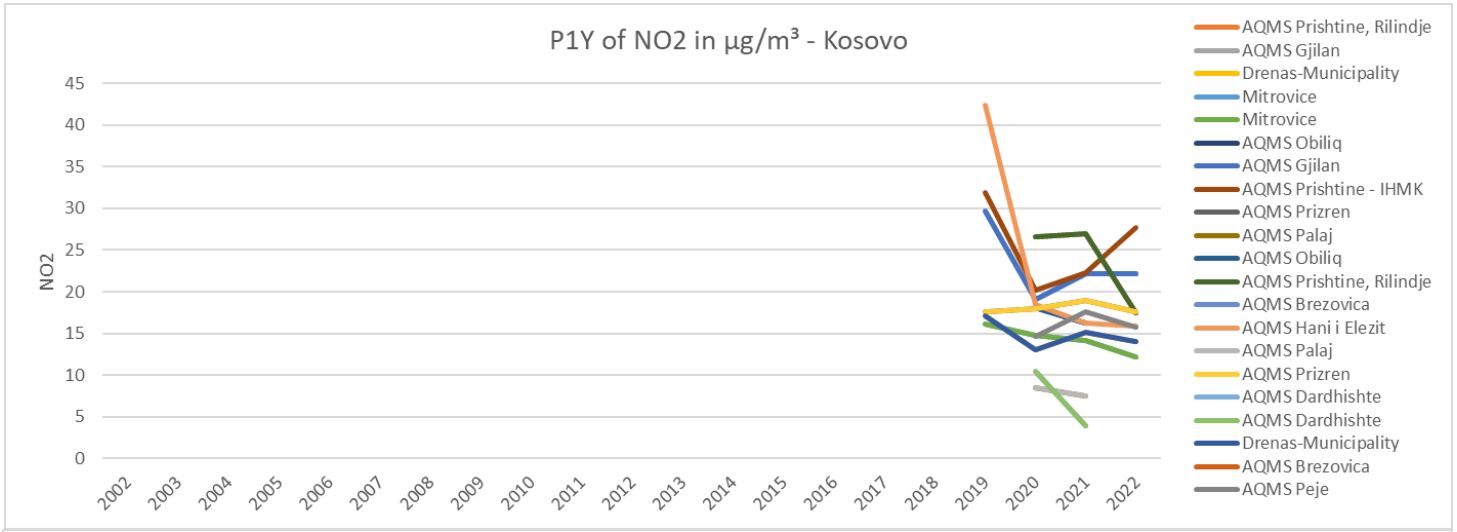


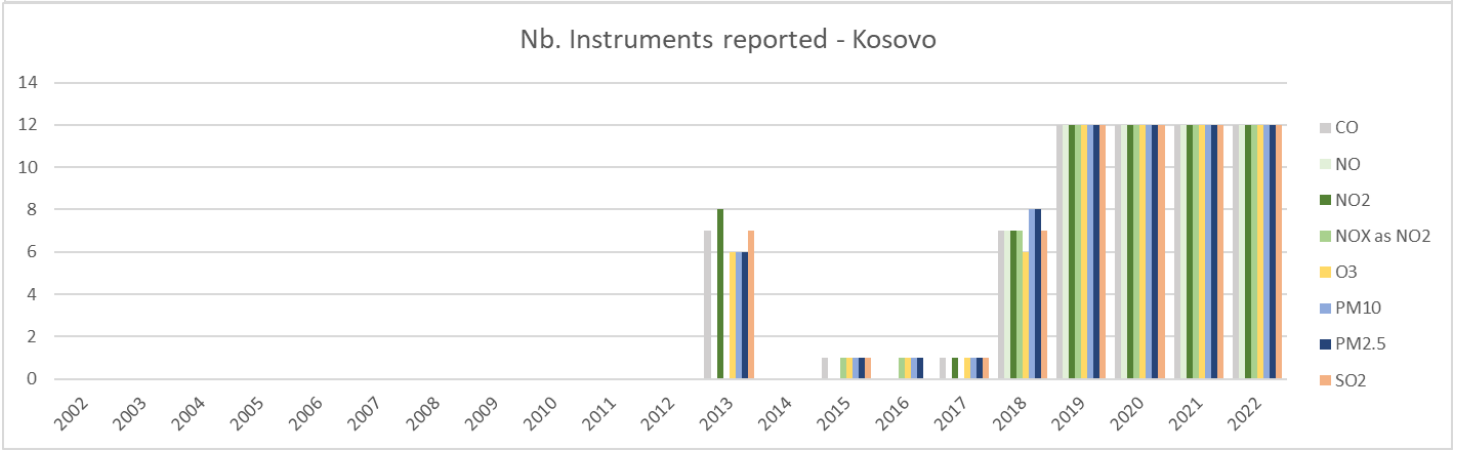


Kosovo

Yearly means (P1Y) showing interesting decrease on NO2 even considering the short period

Monitoring strategy of full panel of instruments in each stations since 2014





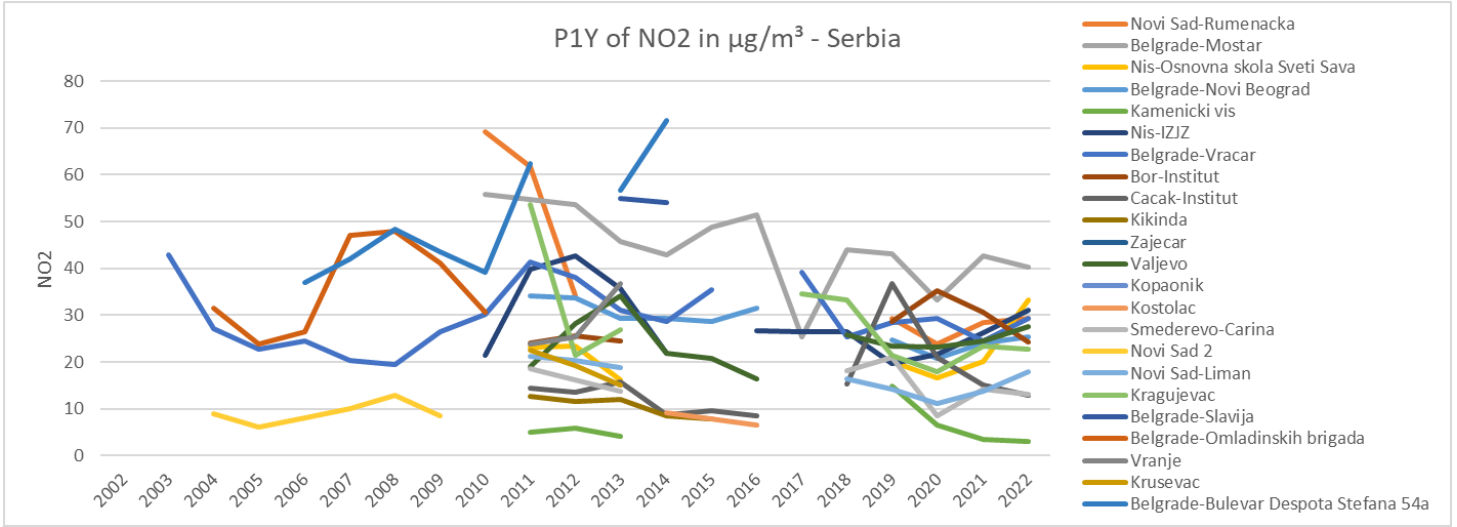
Serbia

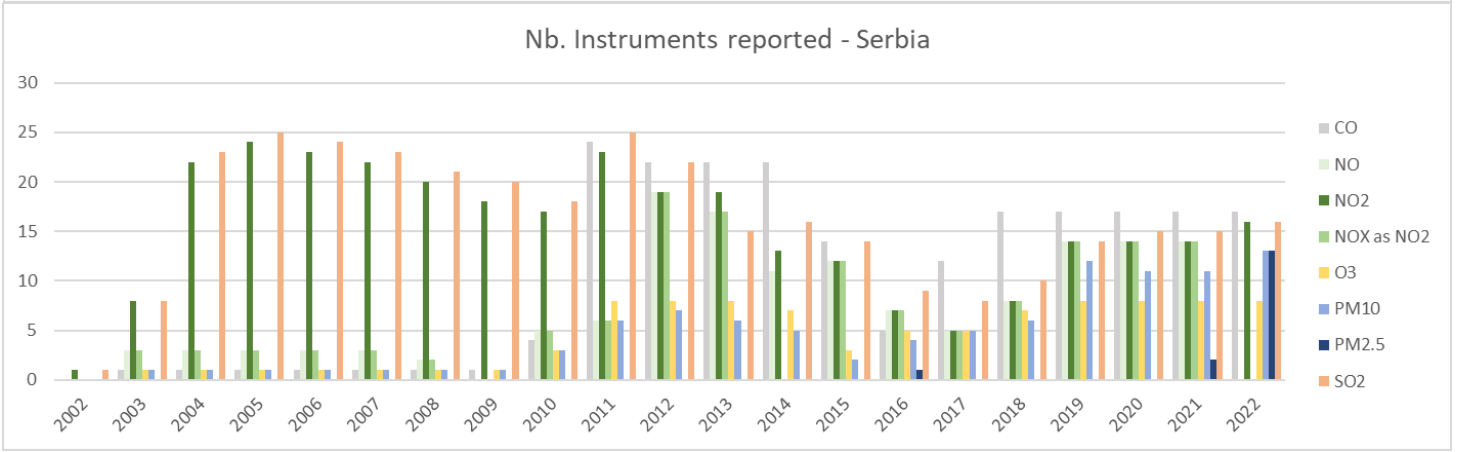
Long standing reporting and continuous time-series

(reshuffling of some stations?)

Yearly means (P1Y) showing long term decrease of NO2

Monitoring strategy change over the time from SO2 to other relevant substances, among others PM 2.5





All the Western Balkans

- More instruments are being to be installed,
- Nearly all the countries expressed a need for more stations to be compliant with assessment strategy,
- The historic data shows some progress as well as some anomalies that worth to be highlight and understood,
- This long term effort of data collection deserves dissemination for the interest of the public, the civil society, the research community, the duty bearers,
- Such reliable, sustainable, high quality, monitoring infrastructure and expertise driven by governmental agencies deserve to be valued by the communities.

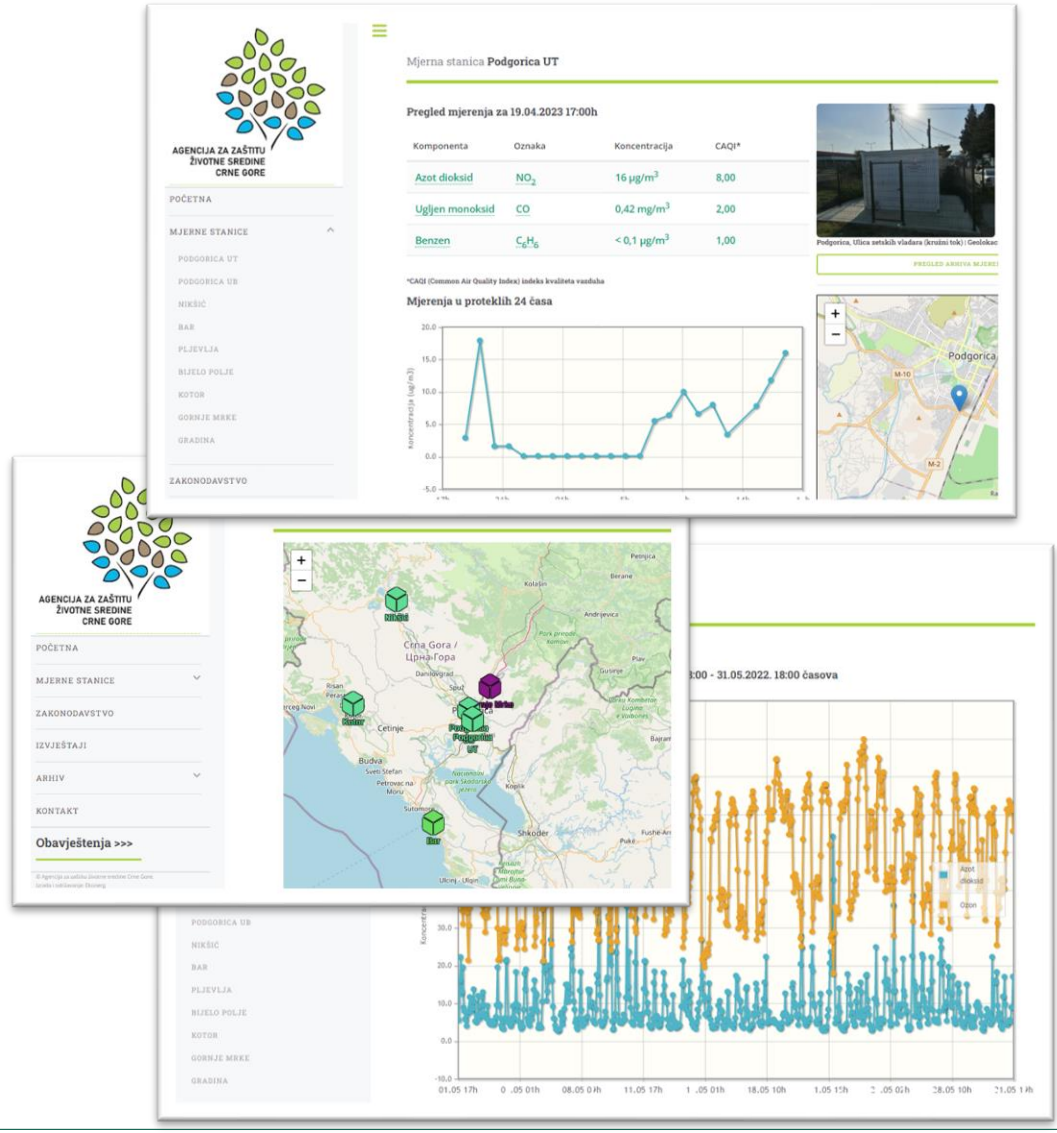
2 - Data dissemination - National websites

Few examples as an attempt of screening of:

- Near Real Time measurements,
- Recent NRT measurements,
- Historical and validated measurements,
- Statistic on exceedances.

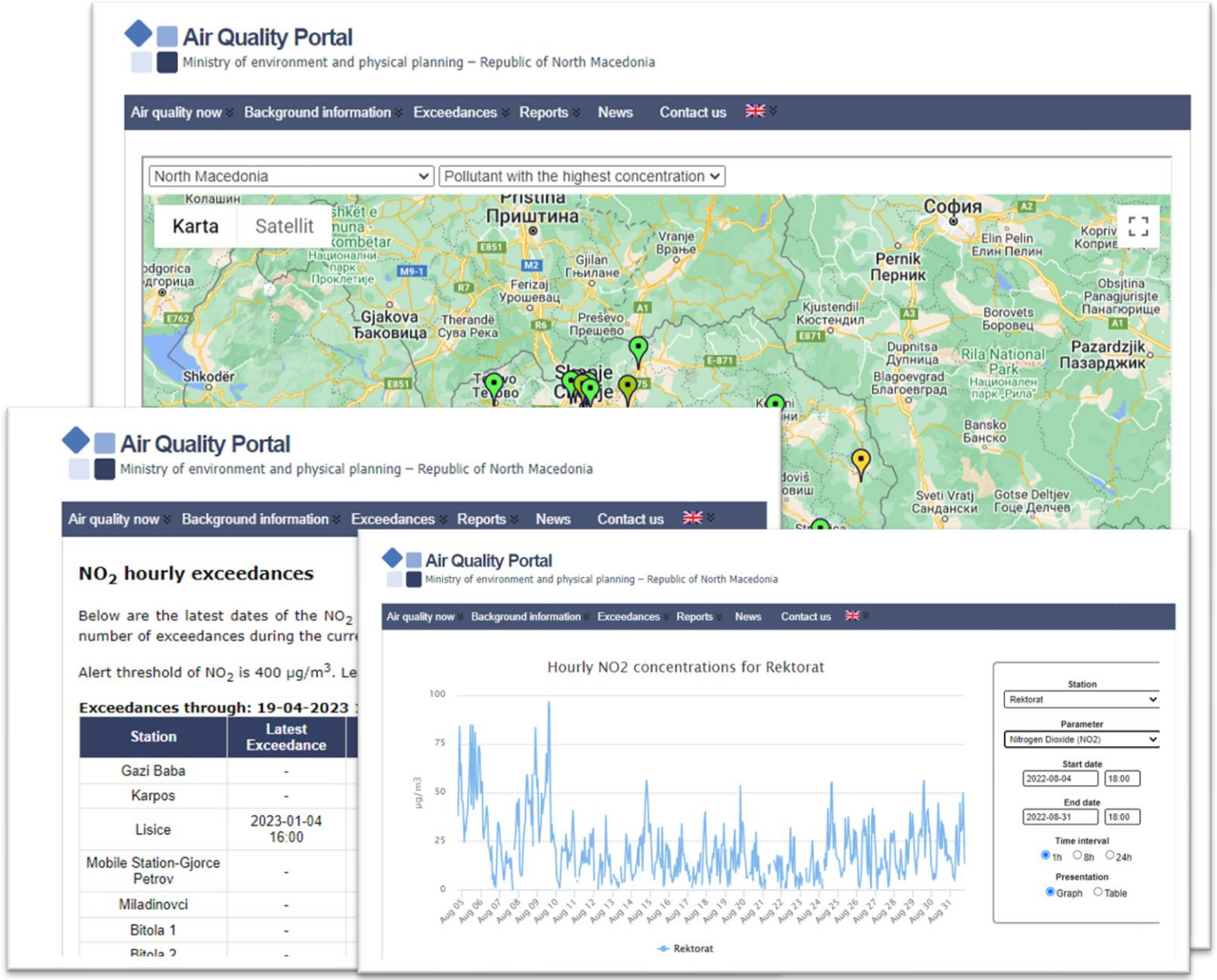
Montenegro

- Near real time visualisation,
- Graph 7 days back,
- Graph preliminary data with several pollutant in a graph,
- Statistics about exceedances in reports.



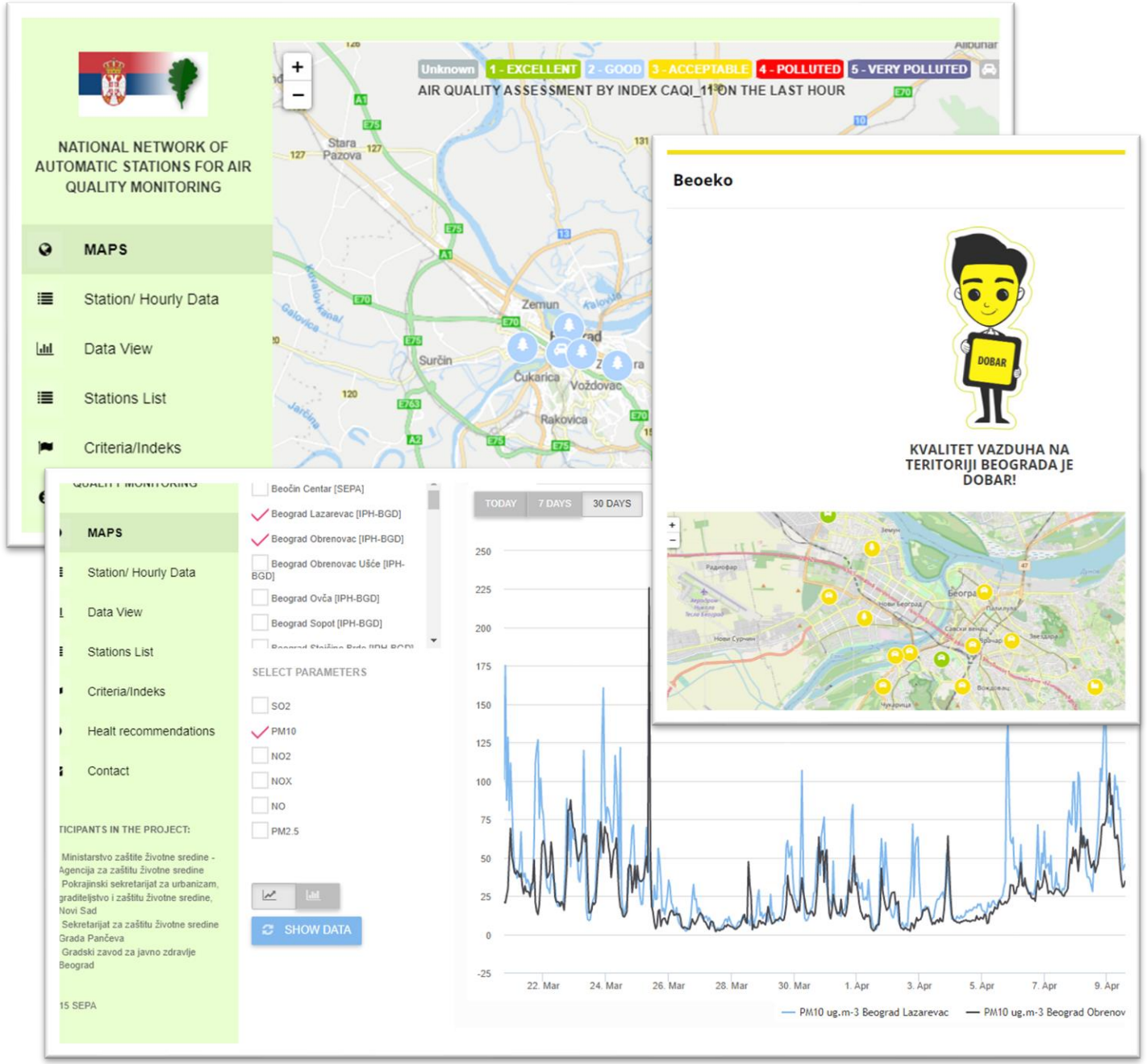
North Macedonia

- Near real time visualisation,
- Graph historical data up to one year with one pollutant in a graph (or all),
- Statistics about exceedances on line.



Serbia

- Near real time visualisation,
- Graph near real time data with several pollutants in a graph,
- Graph up to one month back,
- Statistics about exceedances in reports.



Part of the project : Data portal free to install

What are we looking for with such data portal:

- Make more straight forward the navigation in AQ data, directly from the map,
- Highlights the quality of such equipment and maintenance team,
- Make possible to share the costs for maintenance of such data portal in a community of Raven users,
- Gather a critical mass of users to ensure technical and financial support,
- Lead to furthermore users.

Data dissemination in Sweden

Air quality portal since 2021

Important work with user friendliness

The three stars:

- National Emission database,
- Environmental monitoring database,
- Air quality data collection,

About 14 000 visitors before launching the last:

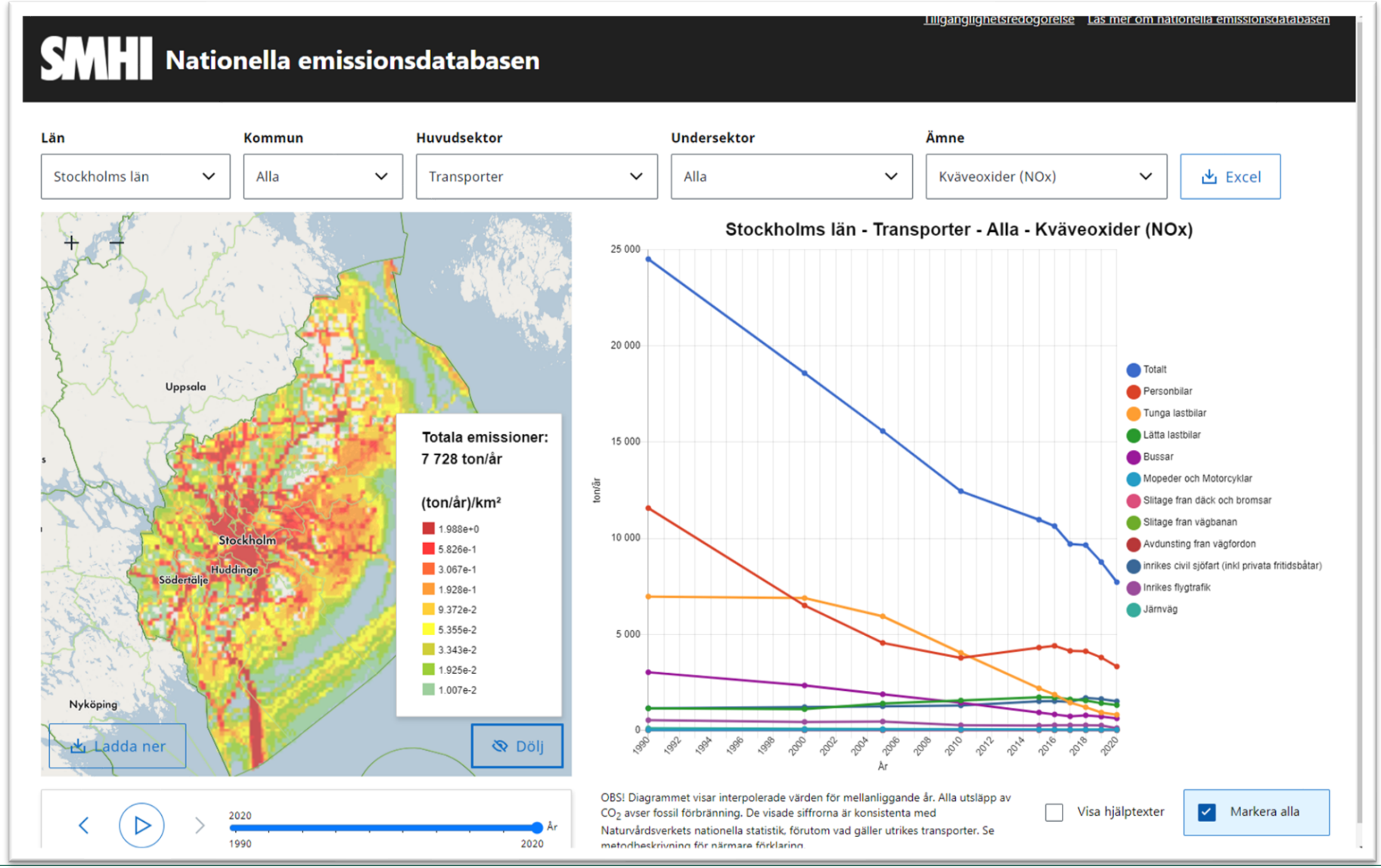
- near real time dissemination web site.

More visitors expected in 2023 on luftwebb.se (link)

National Emission database

Example:

- Region Stockholm
- Transport sector
- NOx
- 1990 – 2020
- Animated map

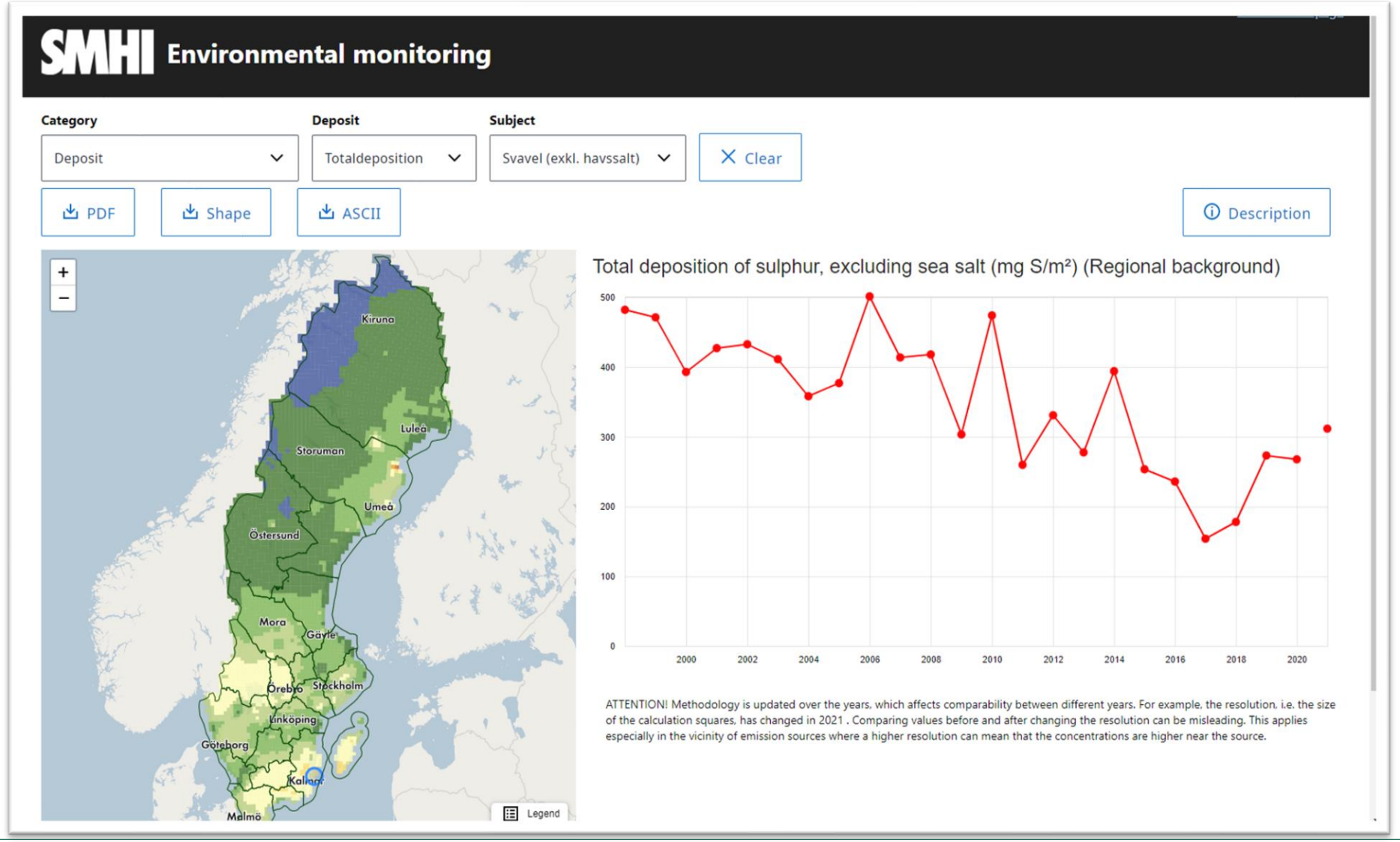


Environmental Monitoring

Example:

- Deposition
- Total
- Sulfure (without seasalt)

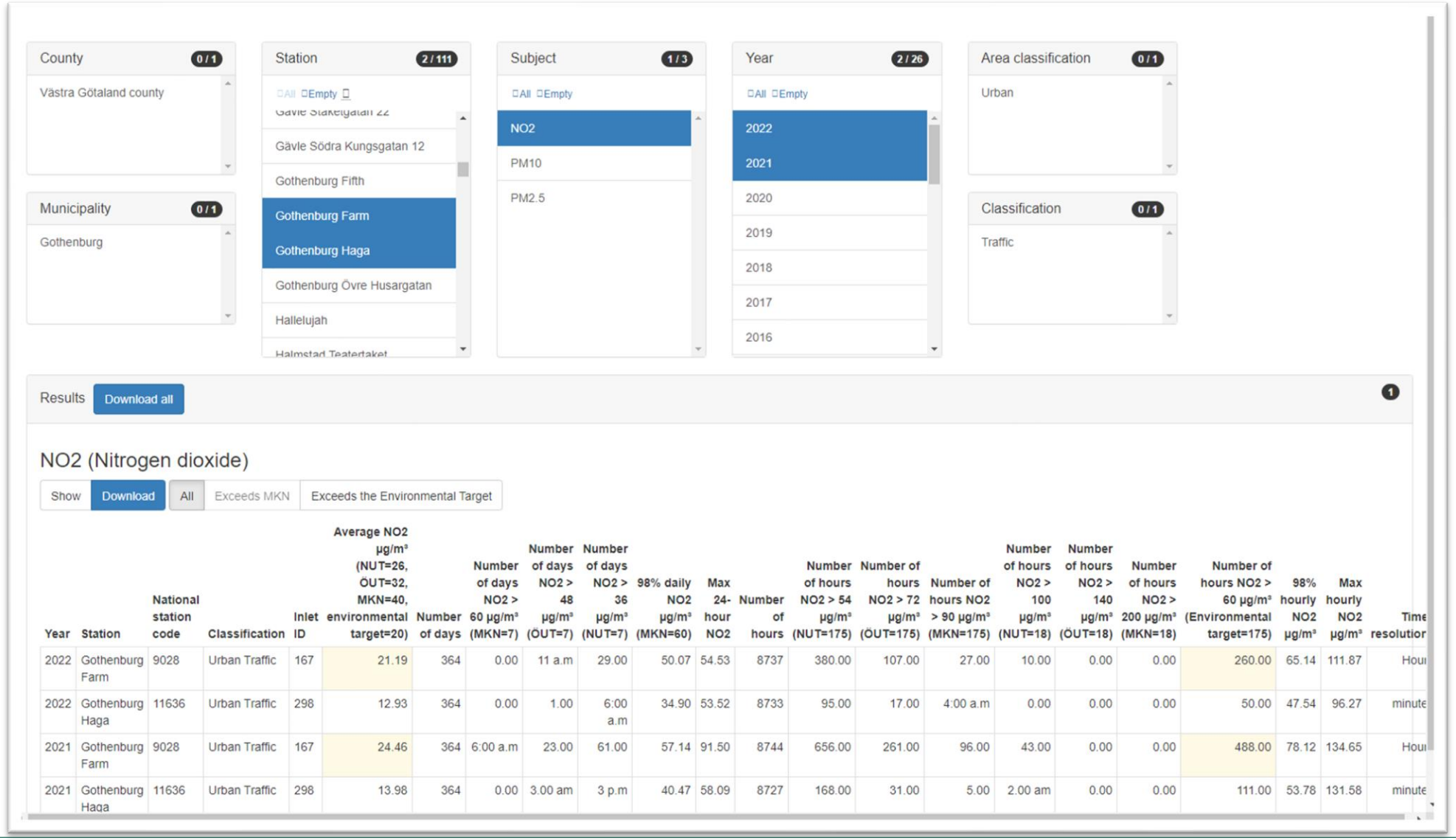
- Specific graph 1998 - 2021 in Kalmar region



Air quality data collection

Example:

- 2 stations
- NO2
- 2021 & 2022
- Lower assessment threshold overwritten (yellow)
- Higher AT
- Limit Value



Year	Station	National station code	Classification	Inlet ID	Average NO2 µg/m³ (NUT=26, ÖUT=32, MKN=40, environmental target=20)	Number of days	Number of days NO2 > 60 µg/m³ (MKN=7)	Number of days NO2 > 48 µg/m³ (ÖUT=7)	Number of days NO2 > 36 µg/m³ (NUT=7)	98% daily NO2 µg/m³ (MKN=60)	Max 24-hour NO2	Number of hours	Number of hours NO2 > 54 µg/m³ (NUT=175)	Number of hours NO2 > 72 µg/m³ (ÖUT=175)	Number of hours NO2 > 90 µg/m³ (MKN=175)	Number of hours NO2 > 100 µg/m³ (NUT=18)	Number of hours NO2 > 140 µg/m³ (ÖUT=18)	Number of hours NO2 > 200 µg/m³ (MKN=18)	Number of hours NO2 > 60 µg/m³ (Environmental target=175)	98% hourly NO2 µg/m³	Max hourly NO2 µg/m³	Time resolution
2022	Gothenburg Farm	9028	Urban Traffic	167	21.19	364	0.00	11 a.m	29.00	50.07	54.53	8737	380.00	107.00	27.00	10.00	0.00	0.00	260.00	65.14	111.87	Hour
2022	Gothenburg Haga	11636	Urban Traffic	298	12.93	364	0.00	1.00	6:00 a.m	34.90	53.52	8733	95.00	17.00	4:00 a.m	0.00	0.00	0.00	50.00	47.54	96.27	minute
2021	Gothenburg Farm	9028	Urban Traffic	167	24.46	364	6:00 a.m	23.00	61.00	57.14	91.50	8744	656.00	261.00	96.00	43.00	0.00	0.00	488.00	78.12	134.65	Hour
2021	Gothenburg Haga	11636	Urban Traffic	298	13.98	364	0.00	3.00 am	3 p.m	40.47	58.09	8727	168.00	31.00	5.00	2.00 am	0.00	0.00	111.00	53.78	131.58	minute

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