The National Air Quality Monitoring Network in the Czech Republic

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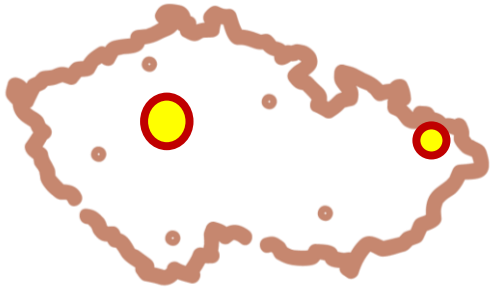
Ostrava office, Czech Republic

Fighting Air Pollution in the Industrial Cities of Europe, Ostrava 19–21 November 2018

Czech Hydrometeorological Institute

- A semi-autonomous organization in resort of Ministry of Environment
- Serves as the Czech Republic's central government institution for the fields of:
  - **air quality**,
  - hydrology,
  - water quality,
  - climatology
  - meteorology

CHMI



The Institute's core activities are as follows:

- **Efficient public service**;
- To establish and **operate national monitoring and observation networks** for monitoring the condition of the atmosphere and hydrosphere;
- To **process the results of observations**, measurements and monitoring;
- To **create and manage databases** of data on the atmosphere and hydrosphere;
- Provide **information about the characteristics and regimes** of the atmosphere and hydrosphere;
- Provide **operational information** about the condition of the atmosphere and hydrosphere, and **forecasts and warnings** alerting to dangerous hydrometeorological phenomena;
- **Research, publication, development** of monitoring equipment and ICT.

MISSION AND VISION

CHMI Mission

CHMI mission is to provide objective and professional services at air quality, hydrology, water quality, climatology and meteorology as a National Service for these fields

Our Vision

CHMI‘s data, information and services helps **increase the quality of life** in the Czech Republic

BASIC FACTS

- 722 core employees including professional observers, regional offices etc.
- 2 500 voluntary observers – decreasing
- Approved budget 890 mil CZK (175 mil commercial activities)
- 151 711 meteorological and hydrological forecast
- 6 654 review
- 162 issued alerts
- 327 040 map of the Aladin model for the public

SHORT HISTORY

1775 – First regular meteorological observations started in Prague – Klementinum

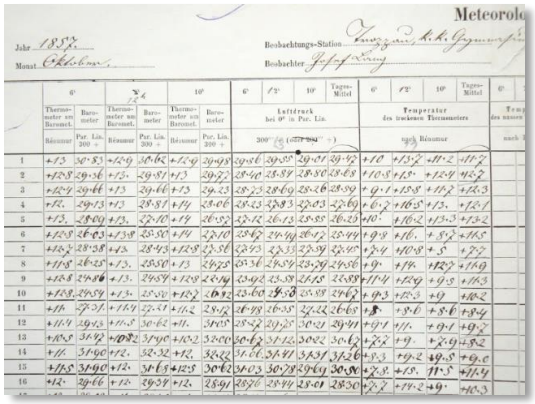
1825 – First regular water level observation started at Prague

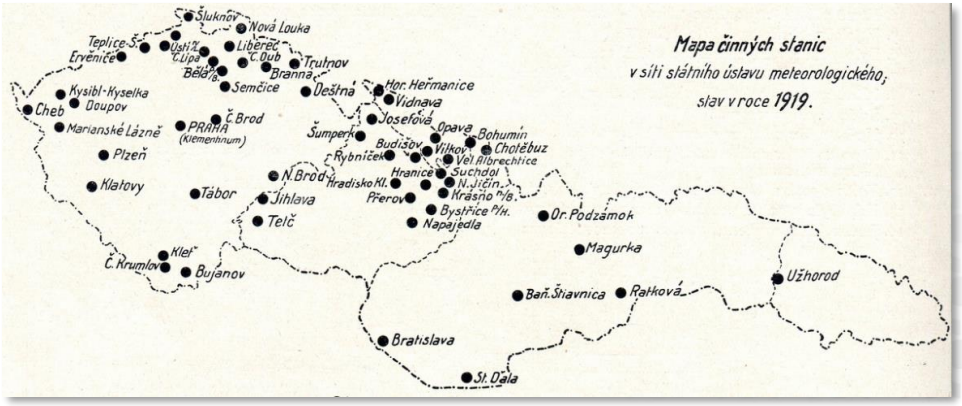
1875 – Hydrographic Commission established as a third service of this kind in the world (monitoring precipitation and flows)

1919 – Independents institutes for Meteorology and hydrology after establishing of Czechoslovakia

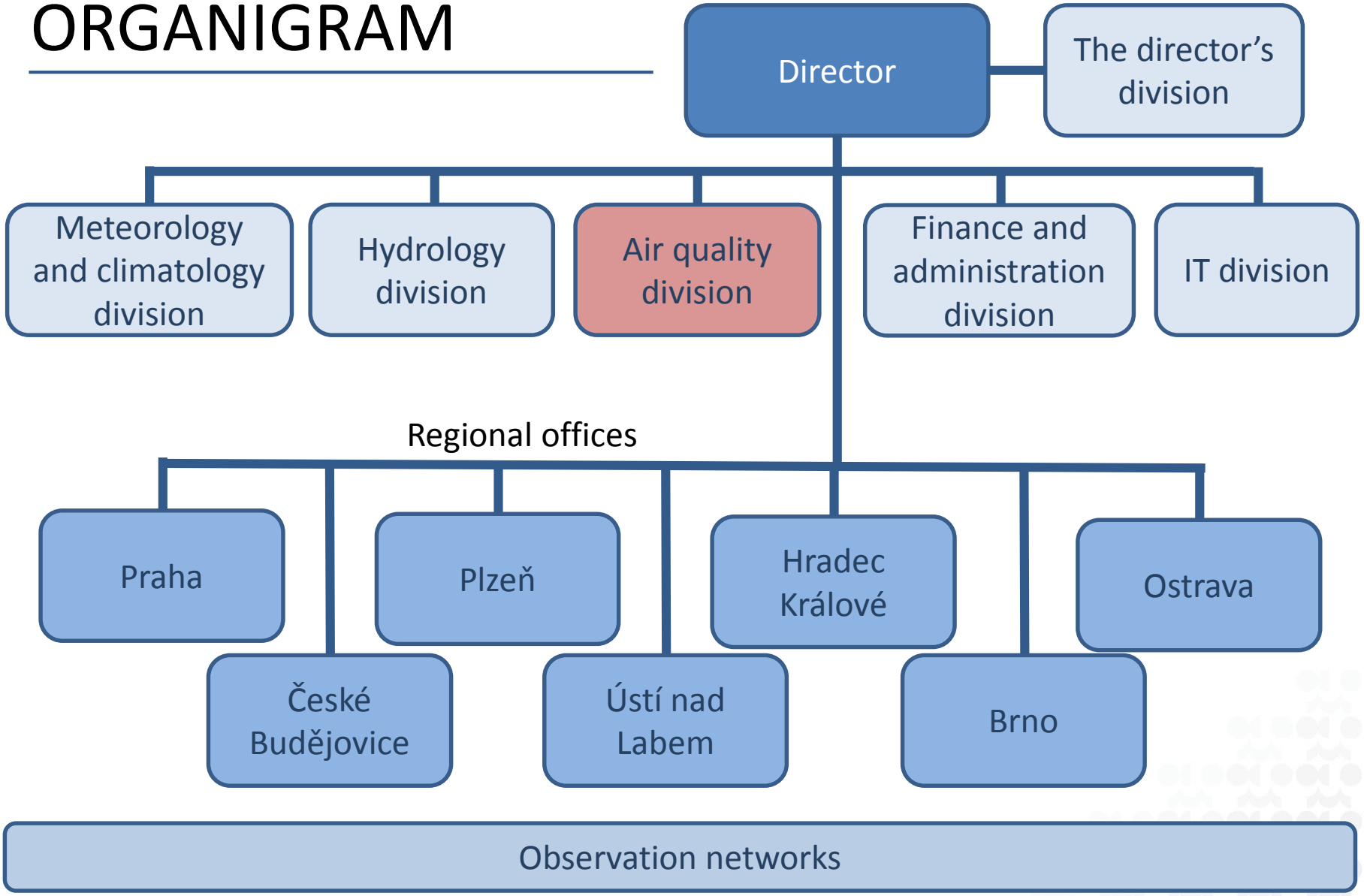
1954 – Joint Hydrometeorological institute established

1968 – Air quality monitoring and assessment become an apart of the institute





ORGANIGRAM


Director
The director's division
Meteorology and climatology division
Hydrology division
Air quality division
Finance and administration division
IT division
Regional offices
Praha
České Budějovice
Plzeň
Ústí nad Labem
Hradec Králové
Brno
Ostrava
Observation networks

OBSERVATIONS

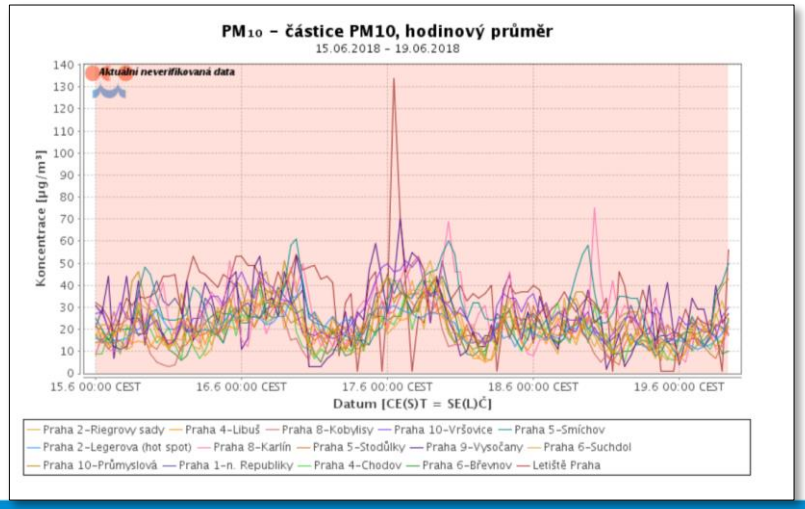
- 29 professional weather stations
- 203 automatic weather stations
- 163 automatic rain-gauges
- 335 manual rain-gauges
- 2 weather radars
- **4 windprofilers + 2 sodars**
- 1 + 1 sounding spots
- Satellite data
- 512 surface water gauges
- 1 464 groundwater boreholes
- 321 springs
- 691 groundwater quality monitoring spots
- 16 automatic snow pillows
- 47 surface water quality monitoring spots (sediments, biota, suspended load)
- **98 automatic air quality stations**
- **24 manual air quality stations**
- **14 rainwater quality stations**
- 28 phenology observation spots

DATA PROCESSING

- Data transmission
- Data quality control
- Discharge measurements
- **Laboratory analysis**
- Information systems
  - meteorology & climatology
  - **air quality**
  - hydrology and water quality
  - GHG inventory

PRODUCTS AND SERVICES

- **Information systems – web pages**
- Design values and trends
- **Calibration laboratory**
- Expert studies
- **Yearbooks** (Hydrology, **Air Quality**)
- Expert assessment and reports etc.



CHMI key tasks in the field of air pollution

According to the Ministry of Environment mandate CHMI operates:

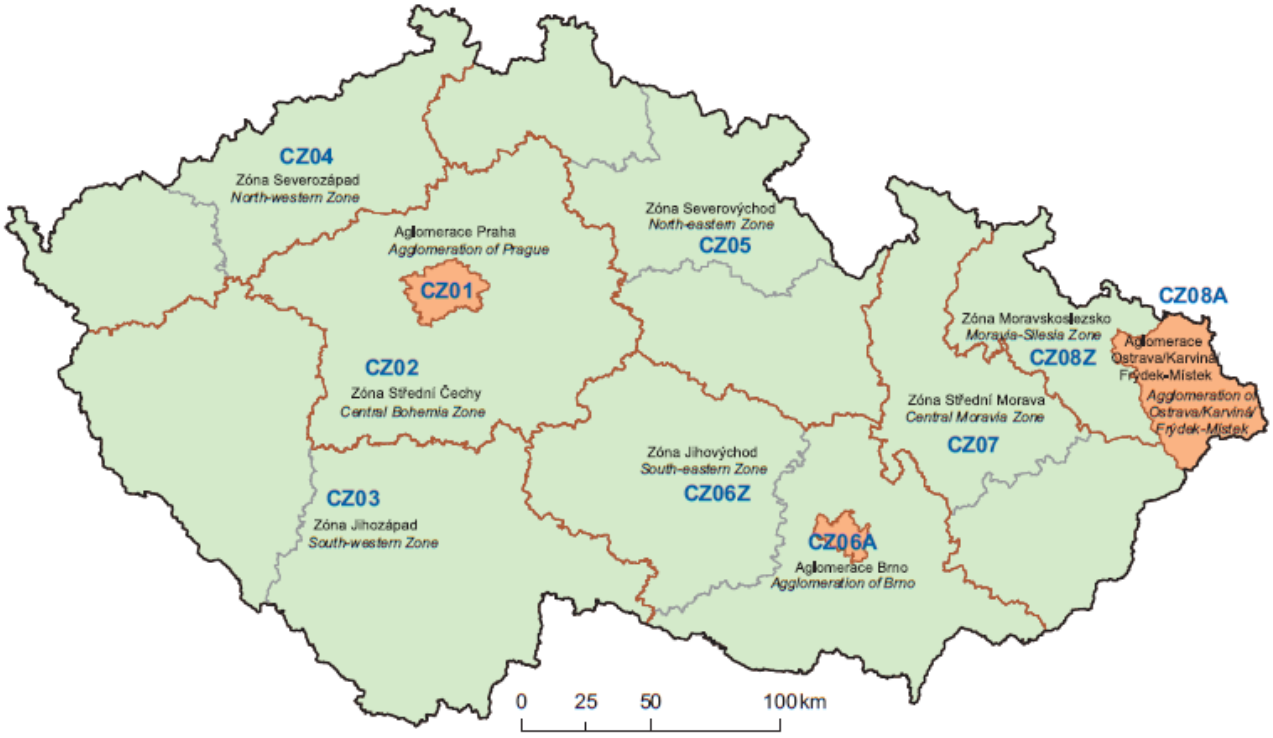
- National Air Quality Monitoring Network
- Air Quality Information System
- National Emission database
- National Inventory System for greenhouse gases

Political and legislative framework of ambient air quality protection

- Pollution limit levels have been established for pollutants, which are monitored and valuated in relation to their demonstrated harmful effects on human health and ecosystems.
- The national legislation on air quality evaluation in the Czech Republic (Limit values (LV) for the protection of health according to the Act No. 201/2012 Coll., as amended and Decree No. 330/2012 Coll., on the method of assessment and evaluation of ambient air pollution level, on the extent of informing the public about the level of ambient air pollution and during smog situations) is based on the European legislation.
- Within the framework of the EU, the main tools for ambient air quality protection and improvement are Directive 2008/50/EC on ambient air quality and cleaner air for Europe, Directive 2004/107/EC relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air, Directive 2001/81/EC on national emission ceilings for certain atmospheric pollutants and European Parliament and Council Directive No. 2010/75/EU on industrial emissions.
- CHMI actively involved in standards development at all levels. We apply a proactive approach. We participate in the European and national working groups in preparing the legislative framework and air quality standards that will be applied later.

Zones and agglomerations

Zones and agglomerations are primarily understood to be the basic units for air quality management.
The Air Protection Act defines three agglomerations: the Capital City of Prague, the city of Brno and the agglomeration of Ostrava/Karviná/Frýdek-Místek – and seven zones.



The zones and agglomerations for ambient air quality assessment and evaluation of ambient air pollution level according to the Act No. 201/2012 Coll. on Clean Air Protection, as amended

... defines, among other things, the zones and agglomerations for ambient air quality evaluation

CHMI AQ monitoring

Air pollution monitoring stations

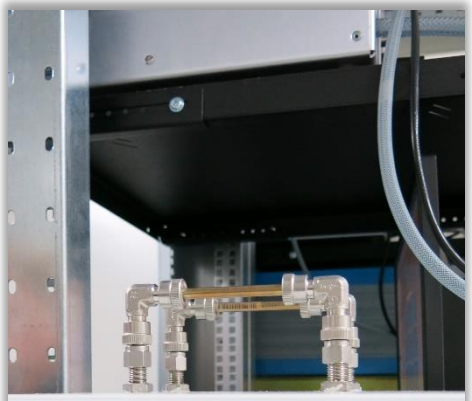
Manual (MIM)

- From 1968–1971; 2003–2004 new network, 2010 optimalization, 2015 new technical equipment
- **At least 24h AVG concentrations**
- CHMI laboratories

Automatic (AIM)

- From 1987–1988, new 1992–1994, optimalizations 2003-2004, 2010, 2015 new technical equipment
- **10 minute** + **1h data**
- Near real time

Manual monitoring stations



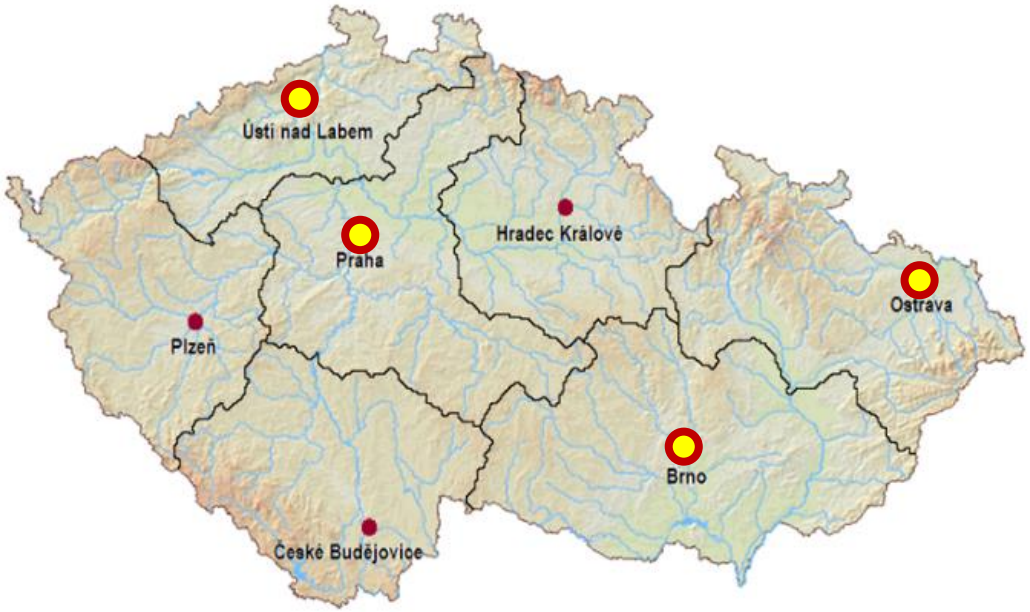
Aktivní odběr benzenu na sorbent

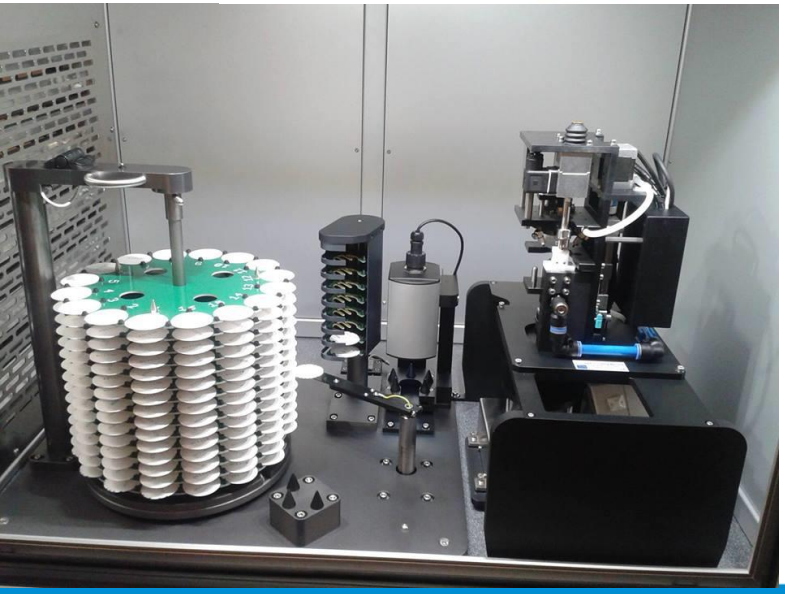
Sekvenční vzorkovač PM

Ostrava-Poruba/ČHMÚ

Vzorkovač PM

CHMI laboratories





Automatic monitoring stations

Olomouc-Hejčín


Věřňovice


Studénka


Ostrava-Českobratrská hot spot


Prostějov

Special meteorological measurements

- Detailed information on current dispersion conditions of the agglomeration
- The assessment of the conditions of cross-border pollution transmission in this specific border area = key importance for the interpretation of outputs related to the ambient air pollutants and suspended particle concentrations in the ambient air of the region

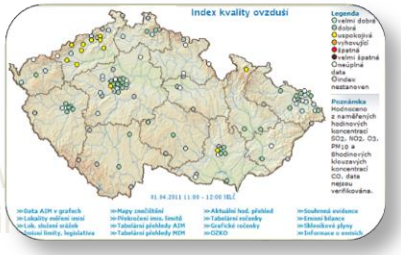
Up-to-date measurement AQ information

AUTOMATIC MONITORING ST.

REGIONAL DATA CENTER

CENTRAL DATABASE

INTERNATIONAL DATABASE



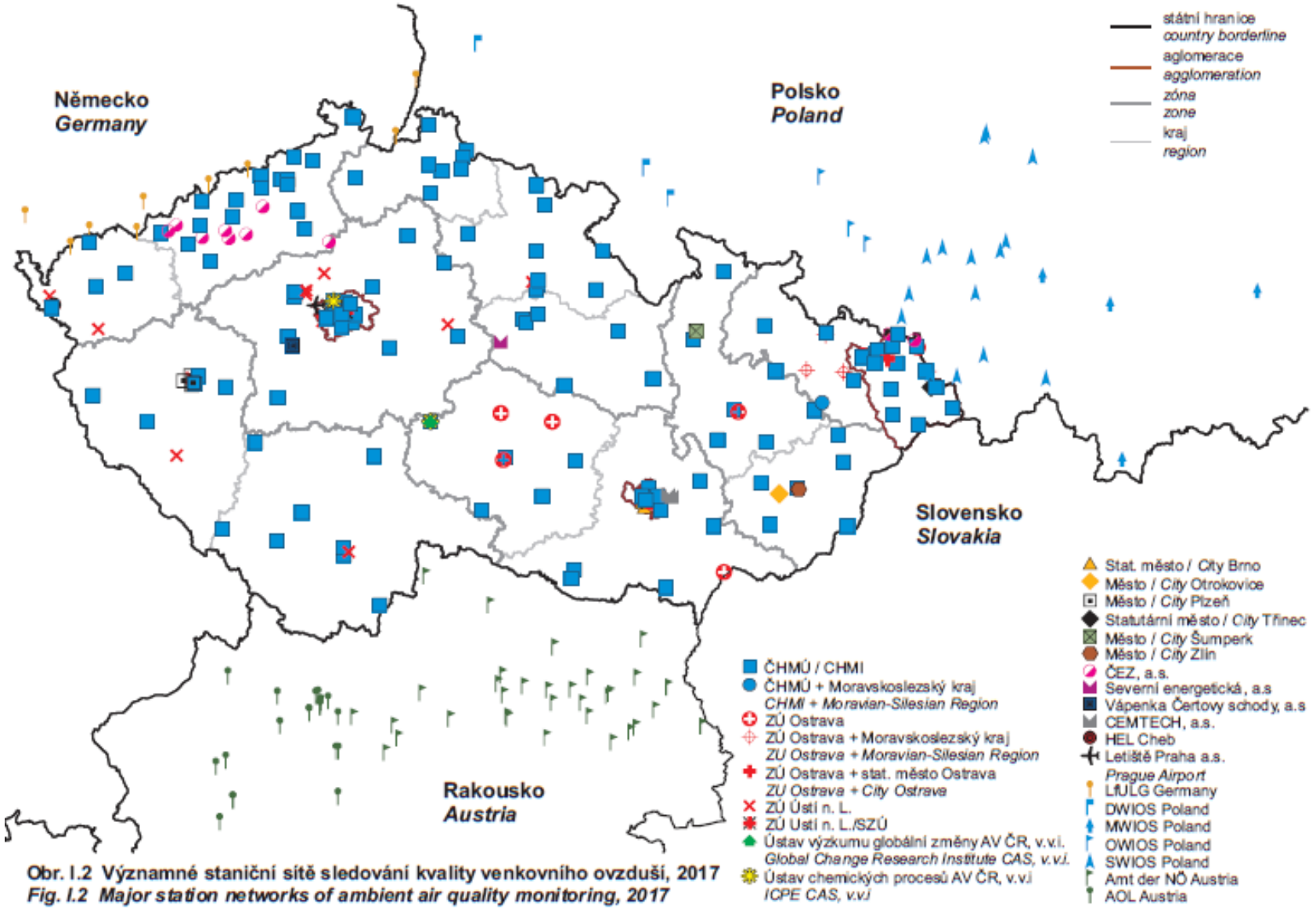
http://www.chmi.cz

Teletext

DIRECT INFO CHANNELS

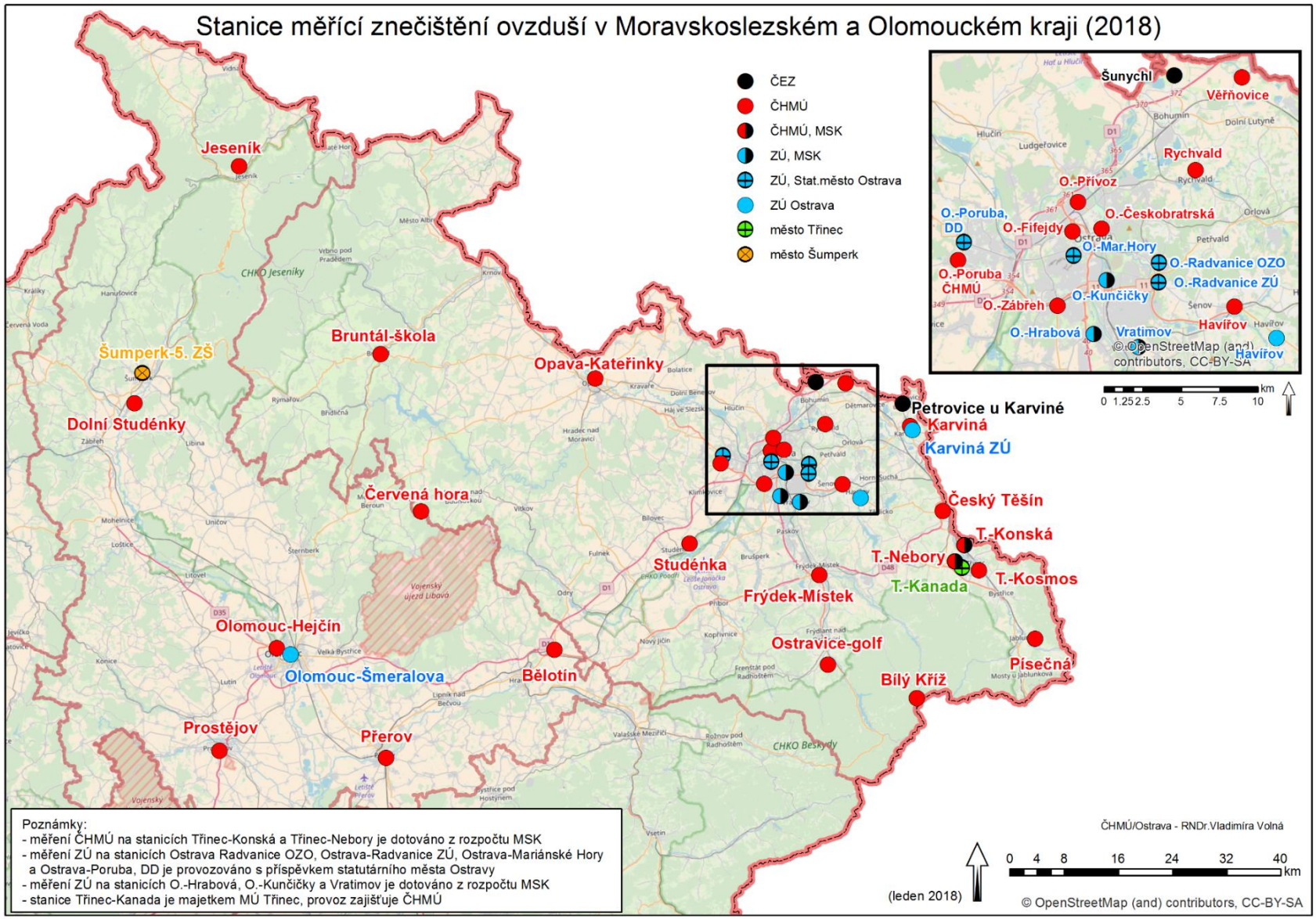
DIRECT information to the authorities

Major station networks of ambient air quality monitoring, 2017



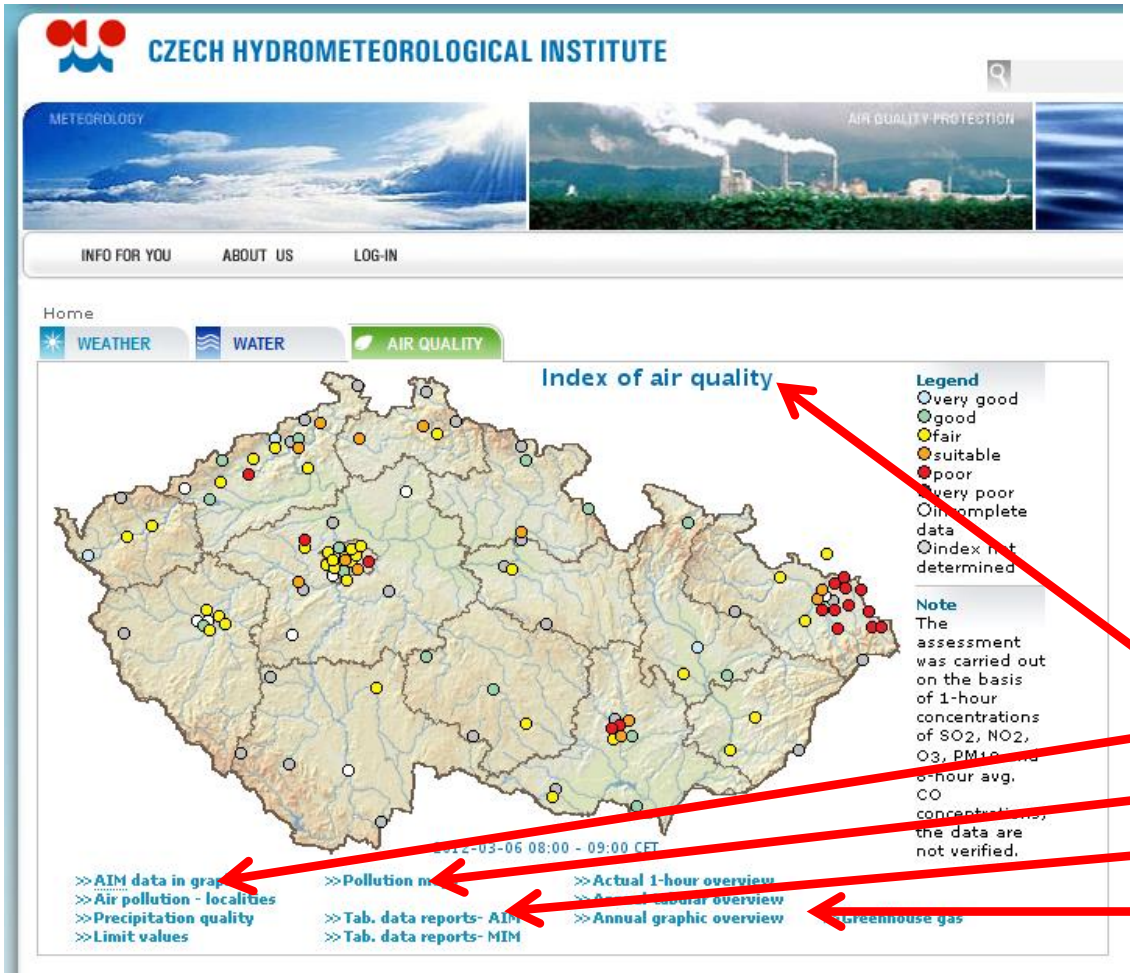
Obr. I.2 Významné staniční sítě sledování kvality venkovního ovzduší, 2017
Fig. I.2 Major station networks of ambient air quality monitoring, 2017

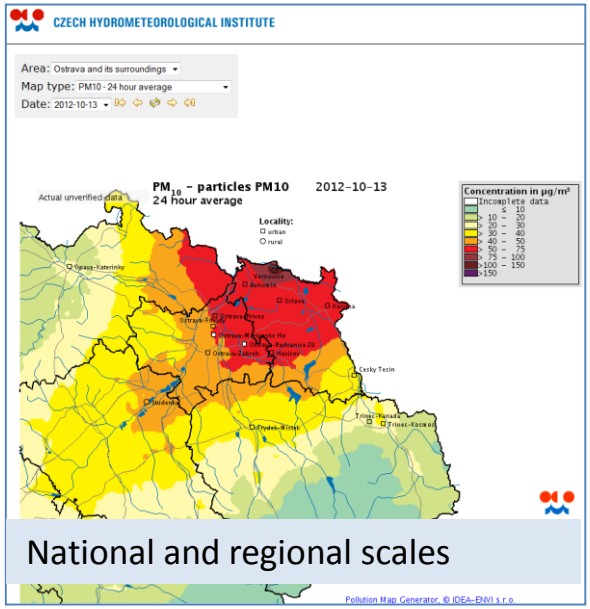
AQ monitoring stations, Ostrava region



AQ information system in CZ

CHMI website www.chmi.cz





National and regional scales

AQI

AIM data in charts

Air pollution actual maps

Tabs – data reports

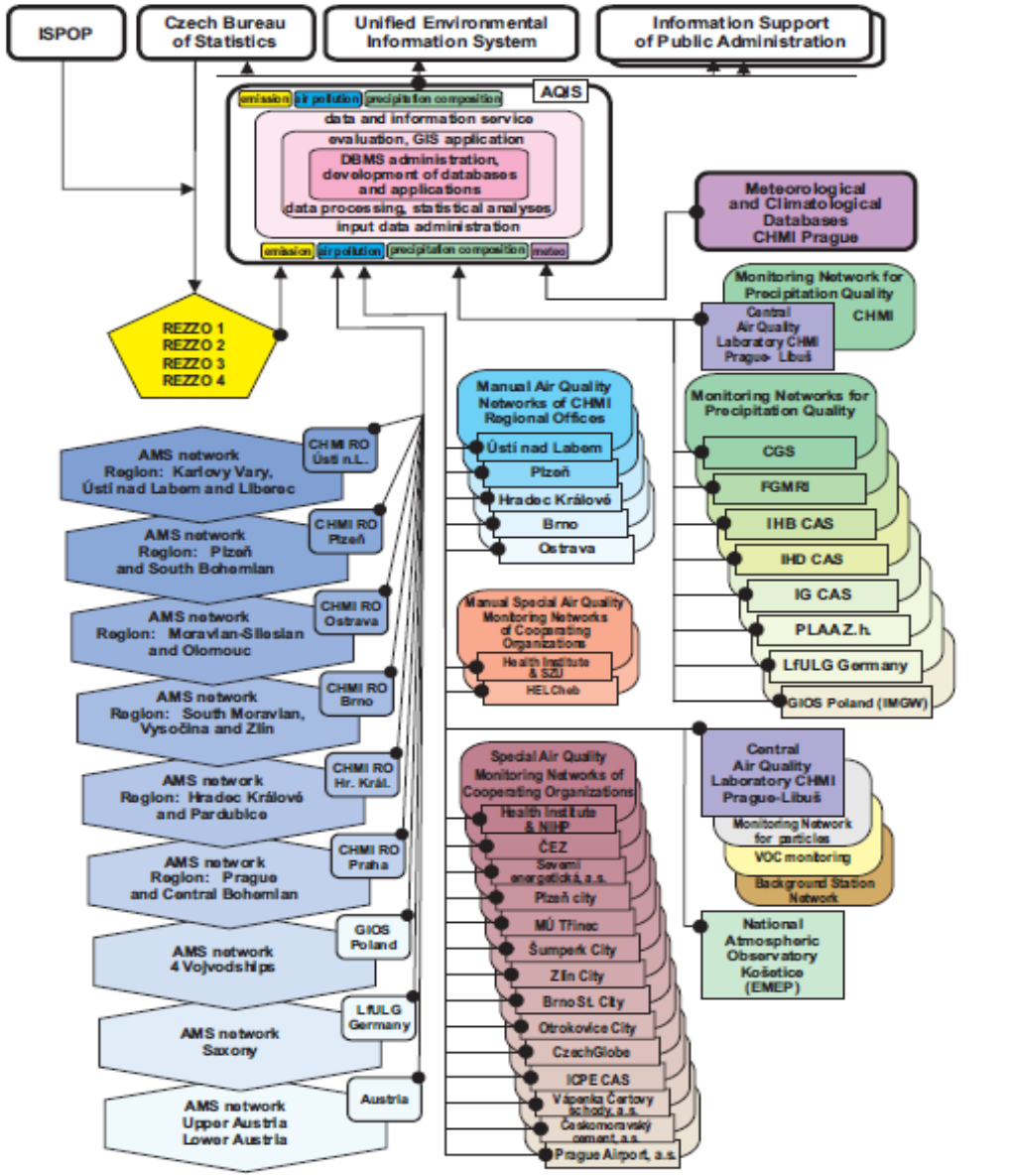
Actual / annual overview

Air Quality Information System (AQIS)

Air Pollution Data are stored in the AQIS main parts:

- ambient air pollution data
- emission data
- data on the quality of atmospheric precipitation

- Collection of air quality data in near real-time, their storage, verification, export and further processing (incl. metadata)
- Meets the growing demands of data presentation in various forms incl. internet publication
- Provides strong, constantly developing software support



Explanations:

AQIS	Air Quality Information System	REZZO	Register of emissions and stationary sources
DBMS	Database Management System	CGS	Czech Geological Survey
GIS	Geographic Information System	IHB CAS	Institute of Hydrobiology of the Czech Academy of Sciences
CHMI RO	CHMI Regional Office	IHD CAS	Institute of Hydrodynamics of the Czech Academy of Sciences
NIPH	National Institute of Public Health	IG CAS	Institute of Geology of the Czech Academy of Sciences
FGMRI	Forestry and Game Management Research Institute	ICPE CAS	Institute of Chemical Process Fundamentals of the Cz. Acad. of Sc.
PLAA Z.h.	PLA Administration Železné hory	CzechGlobe	Global Change Research Institute, Academy of Sciences
Hel Cheb	Hygienic and ecological laboratories Cheb	LfULG	Landesamt für Umwelt, Landwirtschaft und Geologie Dresden, FRG
AMS	Automated Monitoring Station	GIOS	Główny Inspektorat Ochrony Środowiska, Poland
ISPOP	Integrated System of Compliance with Reporting Duty in Environmental Areas	IMGW	Instytut Meteorologii i Gospodarki Wodnej - Państwowy Instytut Badawczy

Ties of the AQIS to data sources and co-operating systems, 2017

http://portal.chmi.cz/files/portal/docs/uoco/isko/grafroc/grafroc_CZ.html

The QA-QC of CHMI air pollution monitoring


OSVĚDČENÍ O AKREDITACI

- The accreditation covers ambient air pollution and atmospheric precipitation monitoring, incl. sampling. The quality assurance handbook and further air pollution monitoring documentation were compiled in compliance with the standard CSN/EN/ISO 17025 according to which the CHMI air pollution monitoring has been accredited.
- The quality of the measured data is thus controlled at all levels.
- The QA-QC of chemical laboratories is carried out according to the requirements for trace and ultra-trace chemical determination.
- Air Pollution Laboratories participate regularly in international interlaboratory tests (WMO/GAW) and the European monitoring network EMEP. The central CHMI air pollution laboratories also perform regular interlaboratory tests.
- The accuracy of laboratory determinations is controlled regularly by the analysis of the certified reference materials. The precision of laboratory determinations is evaluated by repeated analyses of the same sample. The relative uncertainty of determination covers the accuracy and precision of laboratory determination.

QC schema - data flow & feedback

1. Monitoring station

2. Measurements data centre

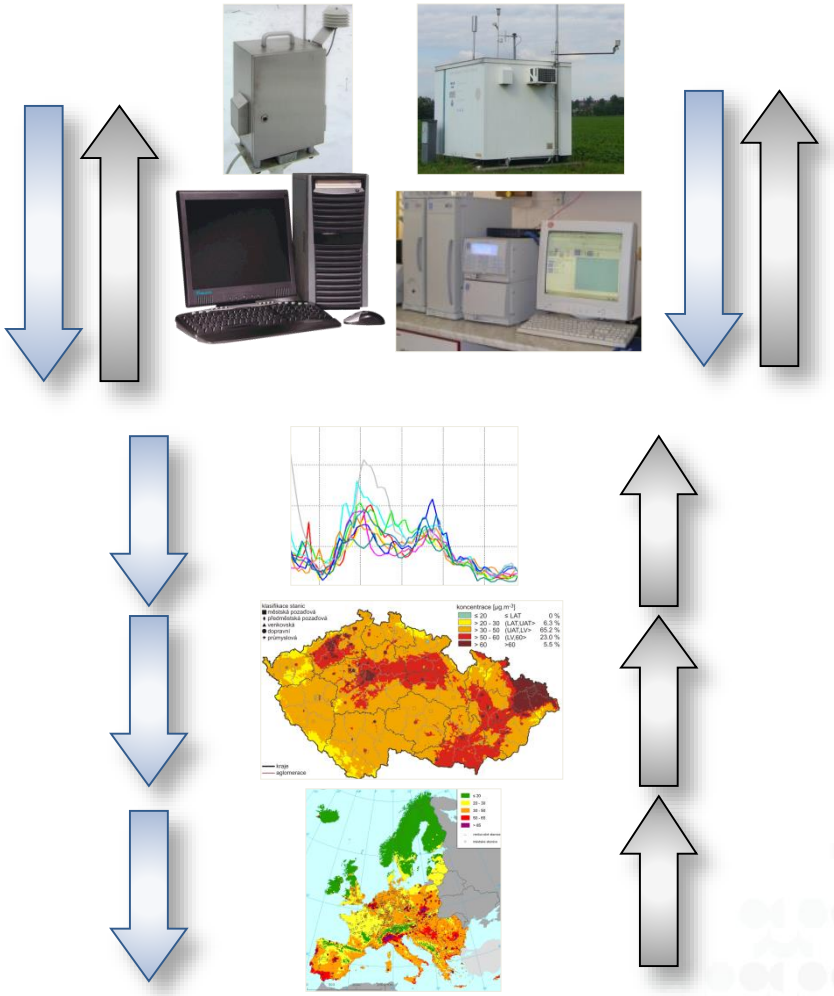
a) Laboratory (manual meas.)

b) Automatic measurements

3. Monitoring data centre

4. National data centre

5. European data centre



The roles and responsibilities must be unambiguous as well as the feedback between persons/institutions.

Air pollution data control and validation

Both procedures are based on the control of formal and logic parameters aimed at the detection and elimination of gross errors which could affect and lower the statistical characteristics of the data file.

For the 2nd control in AQIS the statistical method aimed at revealing the striking daily averages of the measured air pollution levels has been used for several years. The method proceeds from the fact that the differences of the subsequent daily averages should generally remain within the limits of double exponential distribution and that the course of daily concentrations of air pollutants from the neighbouring stations should be similar.

The air pollution data are authorized exclusively by the regional network administrator to whom the shortcomings encountered during the 2nd control and potential proposals for their remedy are reported. It is the regional network administrator who makes the decision on data authorization, keeps the archives of the data file and in case the file is changed, supplemented or amended he/she sends the updated version to AQIS without delay.

National AQ INDEX

Information about air quality in the Czech Republic

Information on the level ambient air pollution pursuant the Clean Air Act

Current overview of data from automated stations (non-verified data)

Updated: 2017-06-27 23:47 CEST

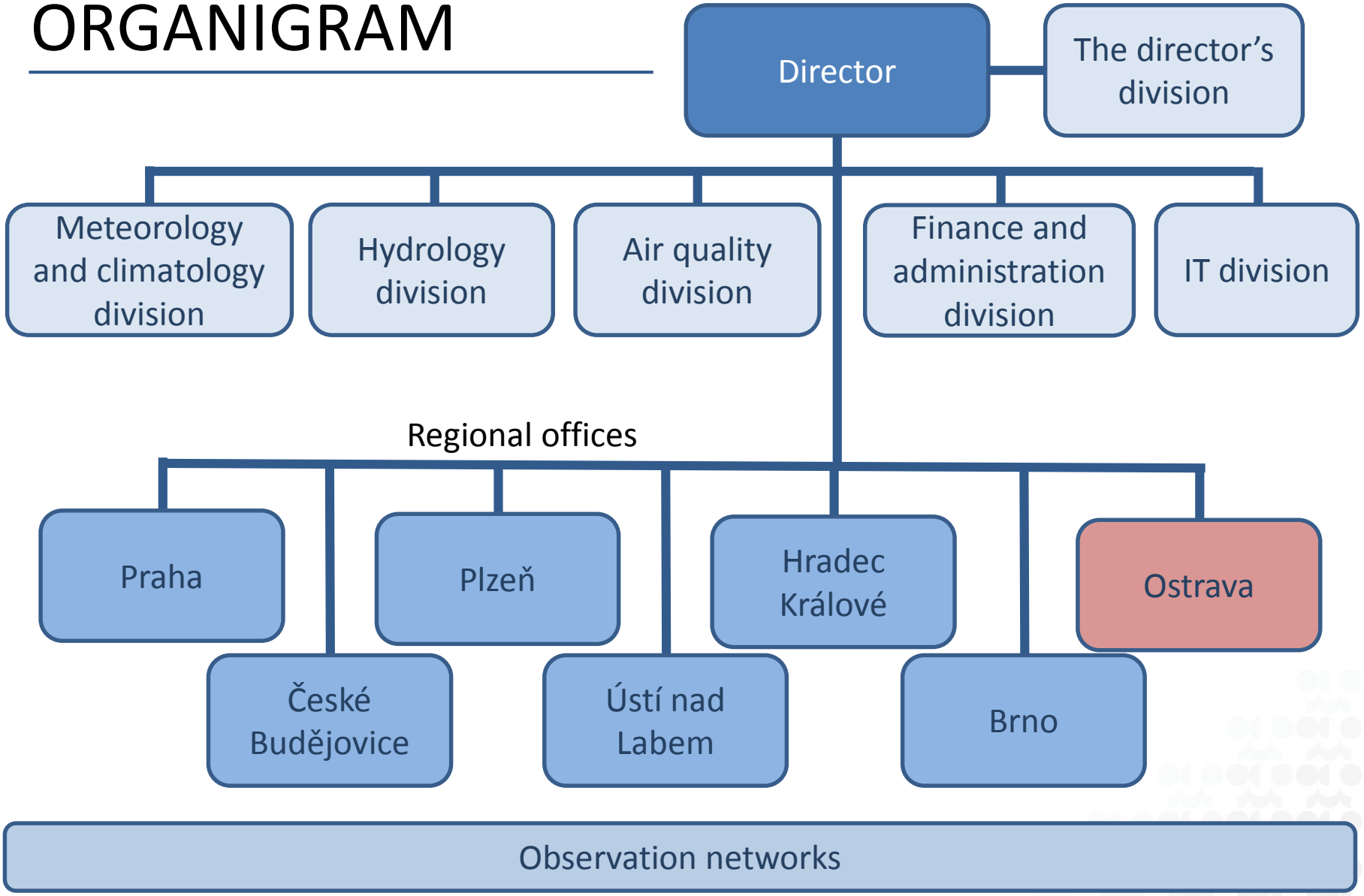
Region: Prague				2017-06-27 22:00 - 23:00 CEST	SO_2 1h µg/m³	NO_2 1h µg/m³	CO 8h µg/m³	PM_{10} 1h µg/m³	O_3 1h µg/m³	PM_{10} 24h µg/m³	$PM_{2,5}$ 1h µg/m³
Code	Name	Classification	Owner	Air quality							
Centre of Prague				2 - good							
AKALA	Praha 8-Karlin	traffic	CHMI	2 - good		17.8		23.0		21.7	
ALEGA	Praha 2-Legerova	traffic	CHMI	3 - fair		53.0	266	30.0		25.9	21.0
AREPA	Praha 1-n. Republiky	urban	CHMI	2 - good		26.6		16.0		25.9	
ARIEA	Praha 2-Riegrovy sady	urban	CHMI	2 - good	9.3	22.8		15.0	43.1	17.4	11.0
ASMIA	Praha 5-Smichov	traffic	CHMI	1 - very good		16.3		16.0		14.6	14.0
AVRSA	Praha 10-Vrsovice	traffic	CHMI	3 - fair				53.0		20.0	
AVYNA	Praha 9-Vysocany	traffic	CHMI	2 - good		44.0		22.0	25.9	18.2	
Periphery of Prague				2 - good							
AKOBA	Praha 8-Kobylisy	suburban	CHMI	2 - good		12.6		17.0	42.5	12.6	
ALIBA	Praha 4-Libus	suburban	CHMI	2 - good	9.1	34.6	197	19.7	33.1	13.4	12.2

Legend

Index	Air quality	SO_2 1h µg/m³	NO_2 1h µg/m³	CO 8h µg/m³	O_3 1h µg/m³	PM_{10} 1h µg/m³
1	very good	0 - 25	0 - 25	0 - 1000	0 - 33	0 - 20
2	good	> 25 - 50	> 25 - 50	> 1000 - 2000	> 33 - 65	> 20 - 40
3	fair	> 50 - 120	> 50 - 100	> 2000 - 4000	> 65 - 120	> 40 - 70
4	suitable	> 120 - 350	> 100 - 200	> 4000 - 10000	> 120 - 180	> 70 - 90
5	poor	> 350 - 500	> 200 - 400	> 10000 - 30000	> 180 - 240	> 90 - 180
6	very poor	> 500	> 400	> 30000	> 240	> 180
	Component is not measured on this station					
	Incomplete data					

From 06/2019: new AQI calculation, developed in collaboration of the CHMI with the National Institute of Public Health

ORGANIGRAM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Observation networks

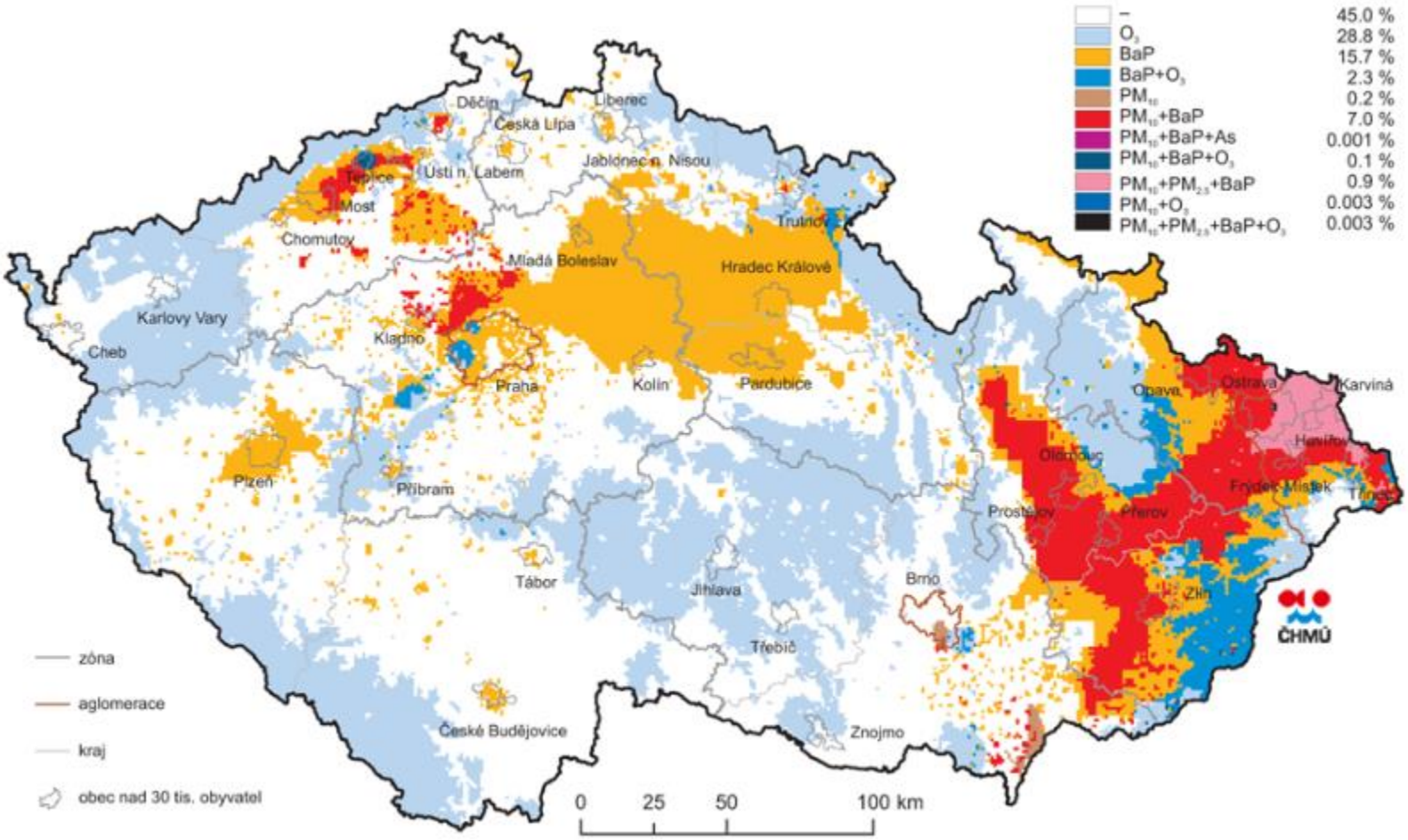
Ostrava region

Air pollution sources:

- industry
- transport
- local heating
- cross-border transfer

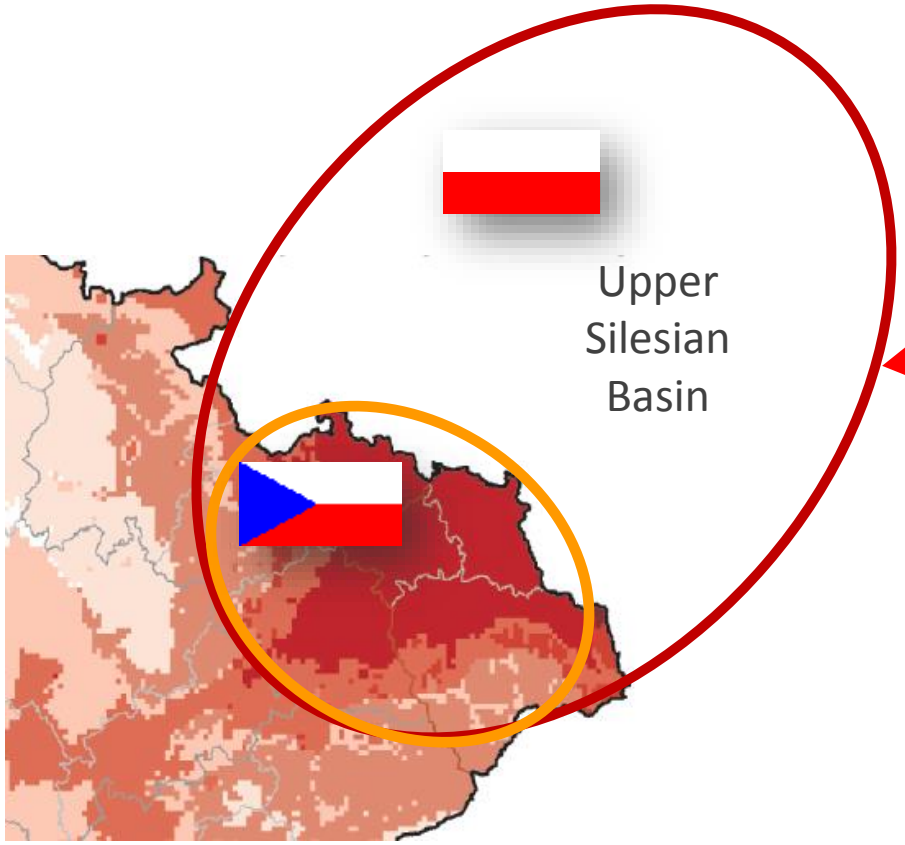
The air quality in the East Czech-Poland borderland region is in the conflict with national law and the international obligations to the EU. Exceptionally high values are often caused by situations with prolonged temperature inversions over the whole region in the winter period (December–February).

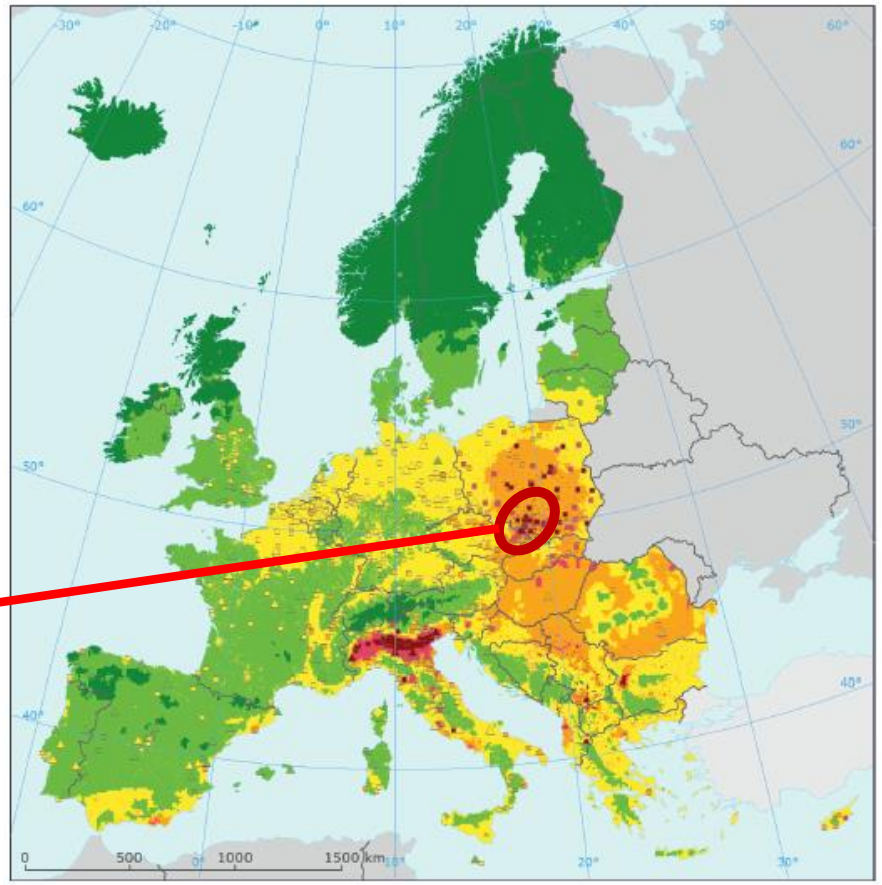
Areas with exceeding of the health protection limit values for selected groups of pollutants, 2017



North-East Czech-Polish borderland area

Upper Silesian metropolitan area:
population of about 5.3 million inhabitants,
conurbations, heavy industry

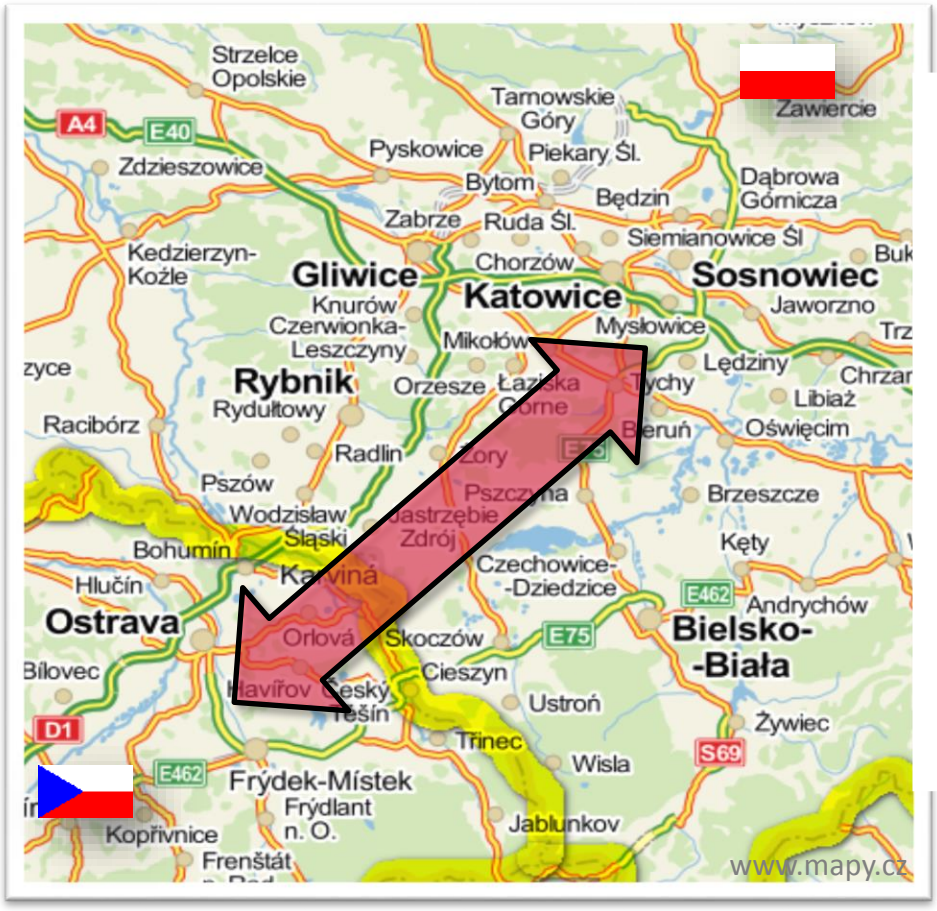


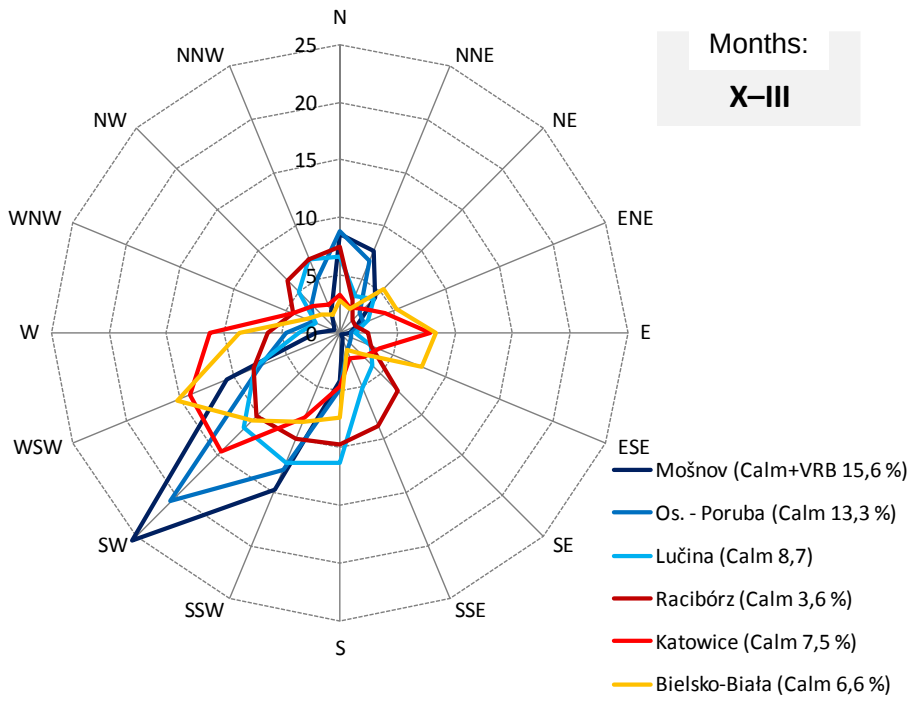


Annual average concentration of $PM_{2.5}$ in Europe, 2015

Source: Air Pollution and Atmospheric Deposition, the Czech Republic 2017, AQIS. www.chmi.cz; ETC/ACM 2018

Cross-border transport of pollutants





A predominant air flow from southwestern directions is typical of northeastern Moravia and is related to the orographic influence of the Moravian Gate. This influence is even evident in adjacent border areas of the Silesian Voivodeship.

Historical roots

- Carboniferous sediments. The territory was inhabited already 23 000 years ago.
- 1763: 1st coal mining concession;
  1830–1880 industrialization, steelworks, railways construction.
- In the 2nd half of the 20th century region`s nickname: „Steel Heart of the Republic“.
- 1st half of the 90 years of the last century: the downturn of metallurgical and chemical industries, in combination with closing excavated mines.

Transformation of agricultural land to the industrial mining landscape


40
1945 1985
AŤ ŽIJE SOVĚTSKÁ ARMÁDA NAŠE OSVOBODITELKA
1
MÁJ
9
KVĚTEN


fajnaOstrava.cz

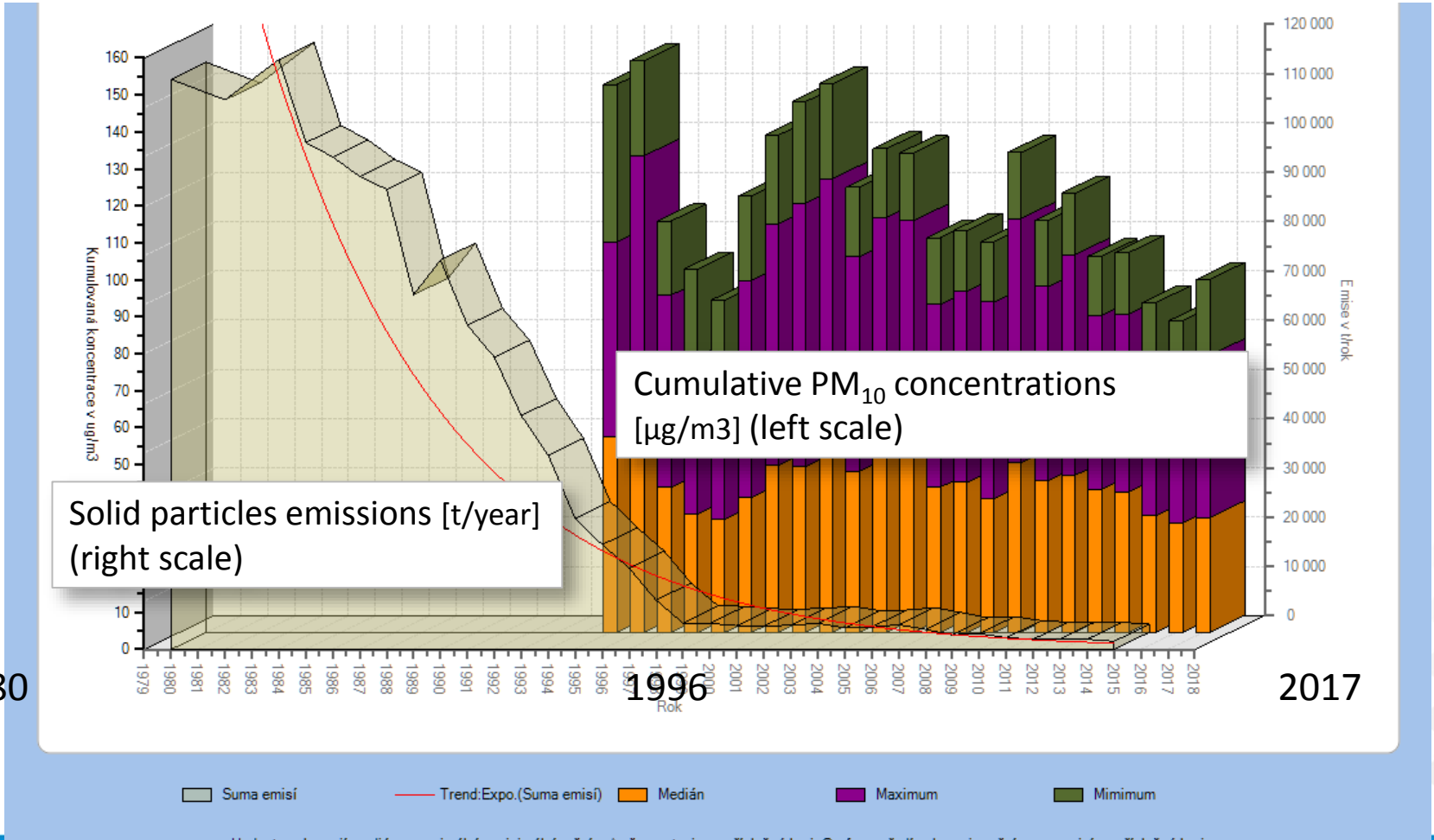
Particles trends

Northern Moravia-Silesia CZ region

In the early 90th proceeded:

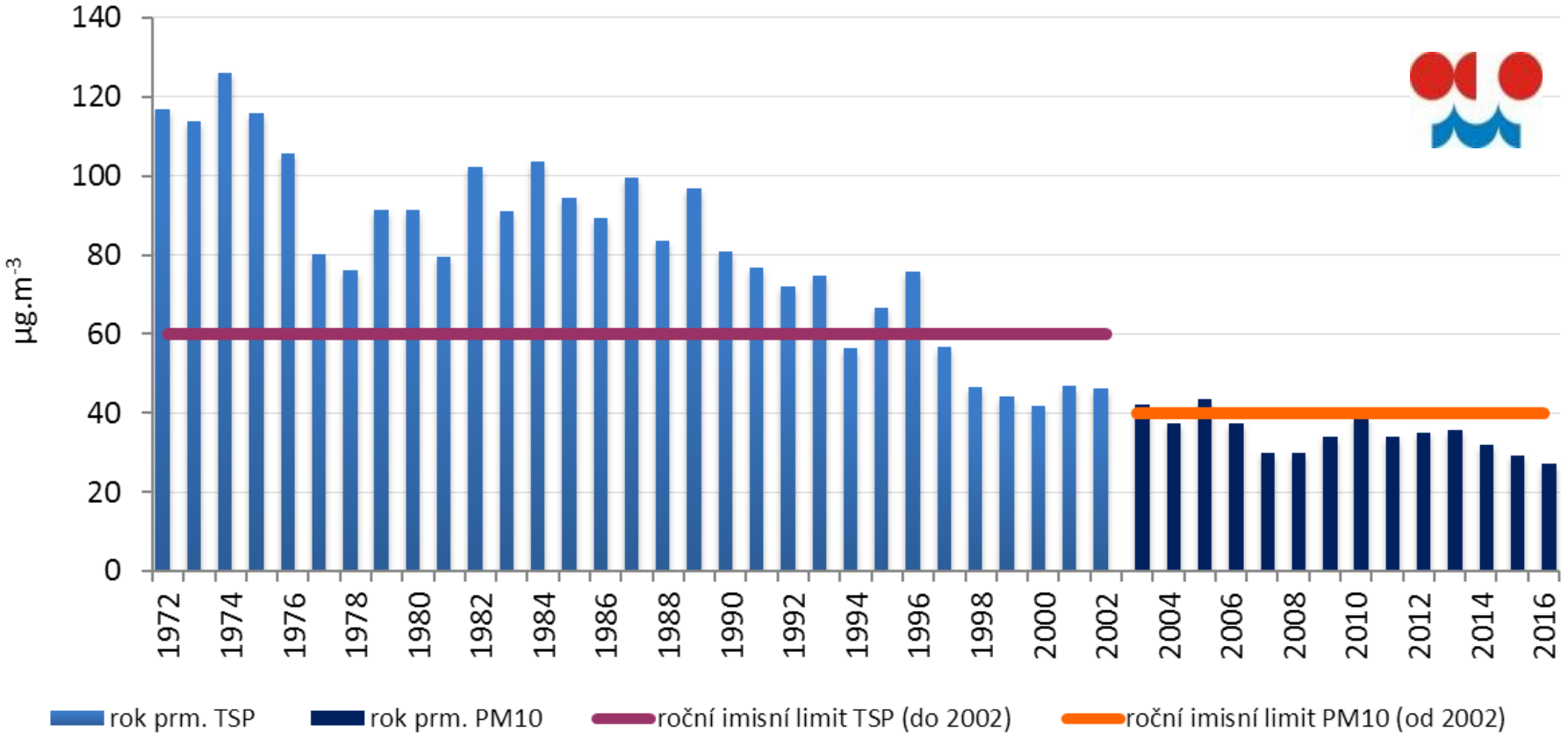
- strong restructuring of the industrial production
- mining industry reduction,
- desulphurization of thermal power plants,
- introduction of more efficient dedusting filters

... A significant reduction of pollutants in the air.



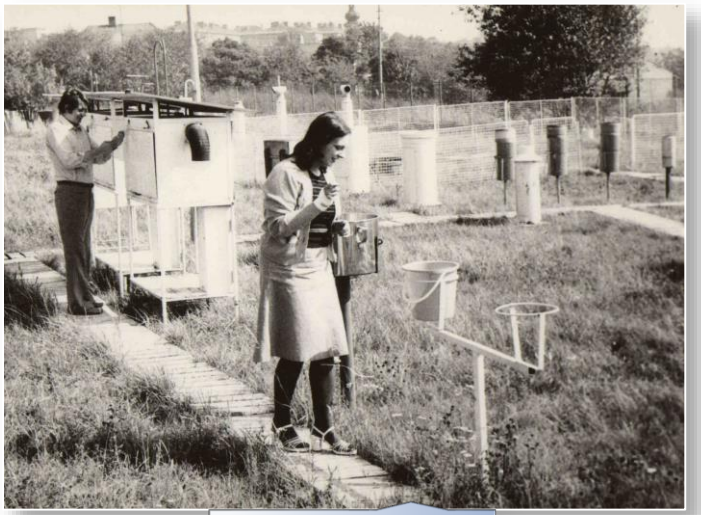
Source: AQIS

Air pollution long term trend of solid particles in the Ostrava region



Fortunately, they have been the past of times when the dusty fall was in tens of tons per square kilometer.
When air quality was measured as falling into jars.
But it is also the past concentrations of pollutants measured in the Ostrava region in the early 1990s.

AQ measurements, Ostrava Regional Office



1978

1998

2018

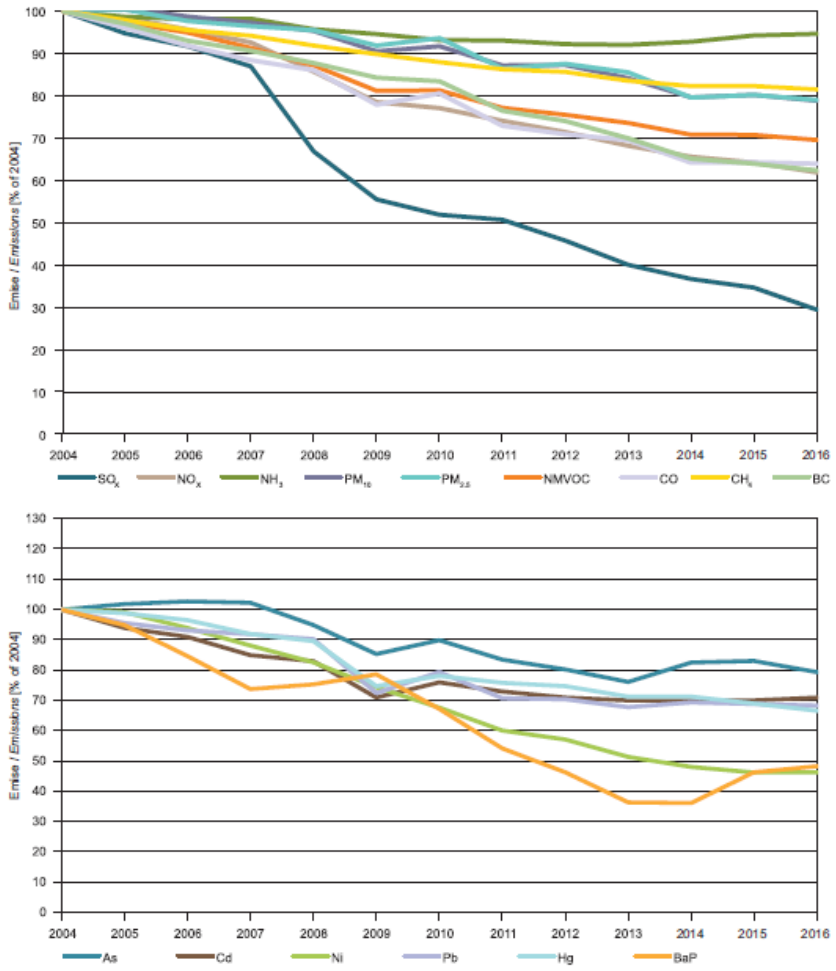
Air quality trends from 2000

Air quality from 2000

Despite of the implementation of legislation and the limit values to EU standards it was found that these steps and the decrease of pollutant concentrations in the air are not enough.

Positive trends of the proportion of the EU urban population exposed to pollutant concentration levels above the limit and target values unfortunately are not fully reflected in Ostrava polluted area yet.

Development of emissions in 28 member states of the European Union, 2004–2016

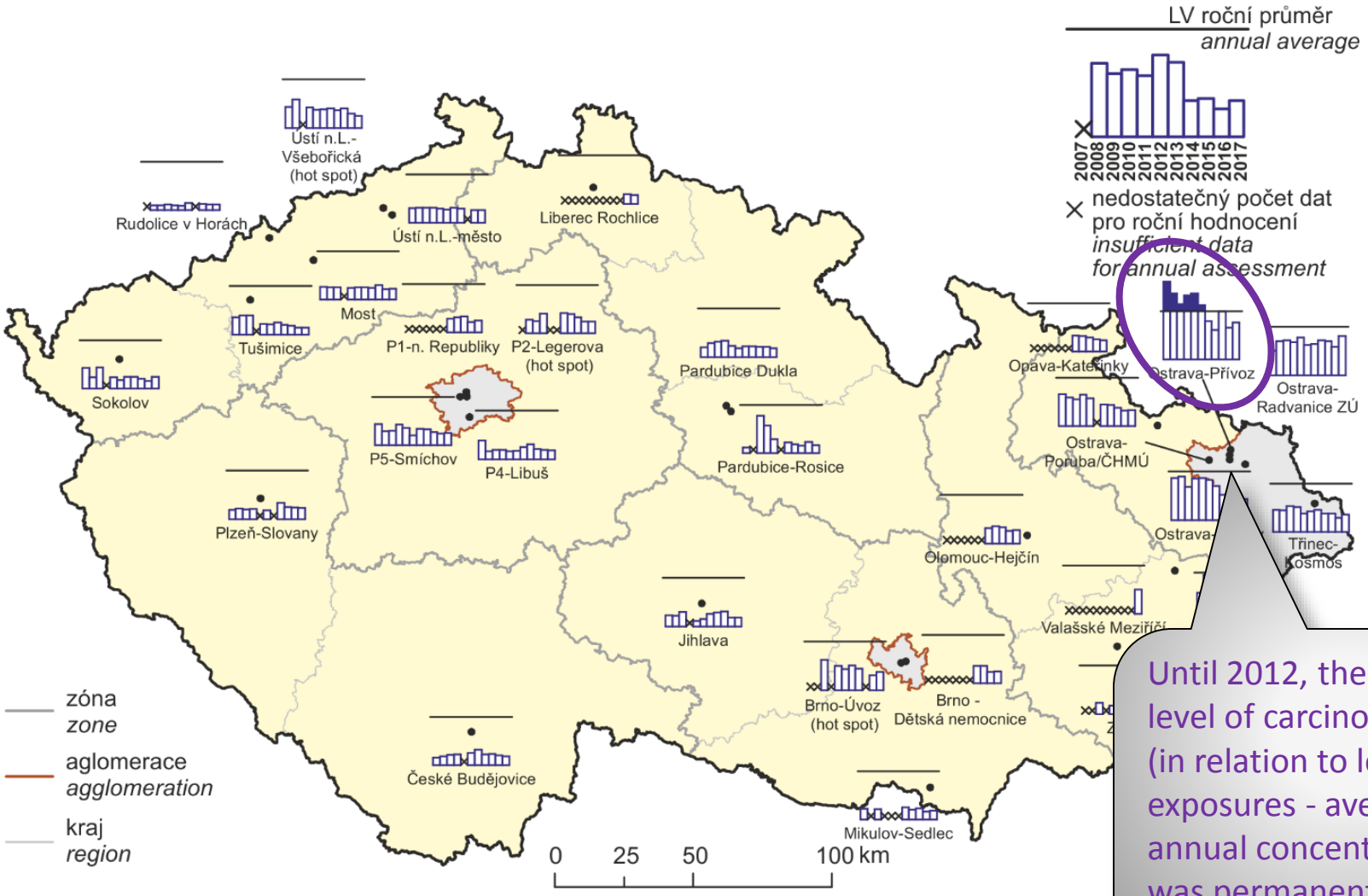


Source: EEA 2017; https://www.eea.europa.eu/data-and-maps/dashboards/air-pollutant-emissions-data-viewer-1

Positive stories:

sulphur dioxide,
benzene,
toxic metals

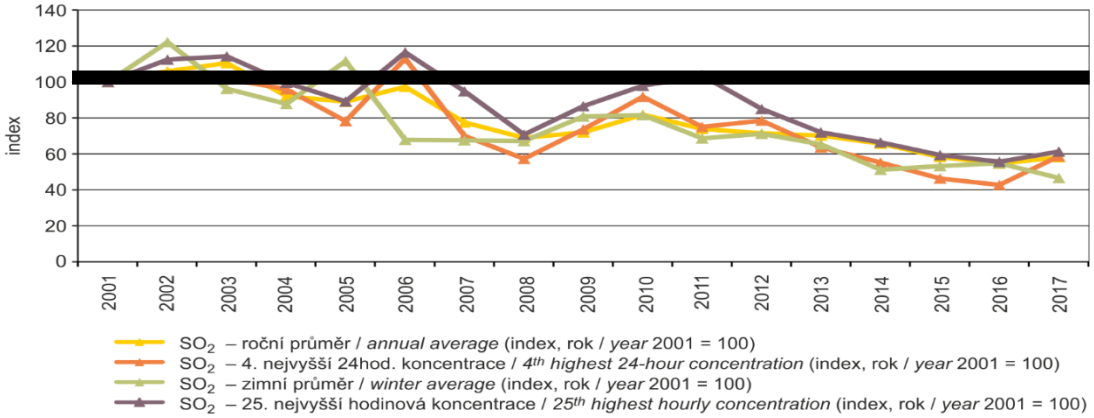
Trend in AQ characteristics of benzene



Obr. IV.5.4 Roční průměrné koncentrace benzenu na vybraných stanicích, 2007–2017
Fig. IV.5.4 Annual average concentrations of benzene at selected stations, 2007–2017

Until 2012, the acceptable level of carcinogenic risk (in relation to long-term exposures - average annual concentrations) was permanently exceeded in Ostrava-Přívoz

Sulphur dioxide



Obr. IV.7.7 Trendy vybraných imisních charakteristik SO_2 (index, rok 2001 = 100), 2001–2017
Fig. IV.7.7 Trends of selected characteristics of SO_2 (index, year 2001 = 100), 2001–2017

! Manifestations and consequences of old industrial environmental burdens:
short term high concentrations of SO_2 as a side effect of a remediation work on the „Ostramo“ factory lagoons

CZECH HYDROMETEOROLOGICAL INSTITUTE

ISKO

Information about air quality in the Czech Republic
Year: 2018, CHMI

**The number of ambient limit value exceedances,
red marked exceeded the ambient limit value
calculated of both operational data (yet unverified) and verified data**

Updated: 2018-11-18 02:46 CET

The values are from all active stations regardless of whether the number of valid measurement meets the criteria for calculating the aggregated data (annual average).

Completeness of data – completeness of measured data supplied to AQIS database to the day of table update (in percentage).

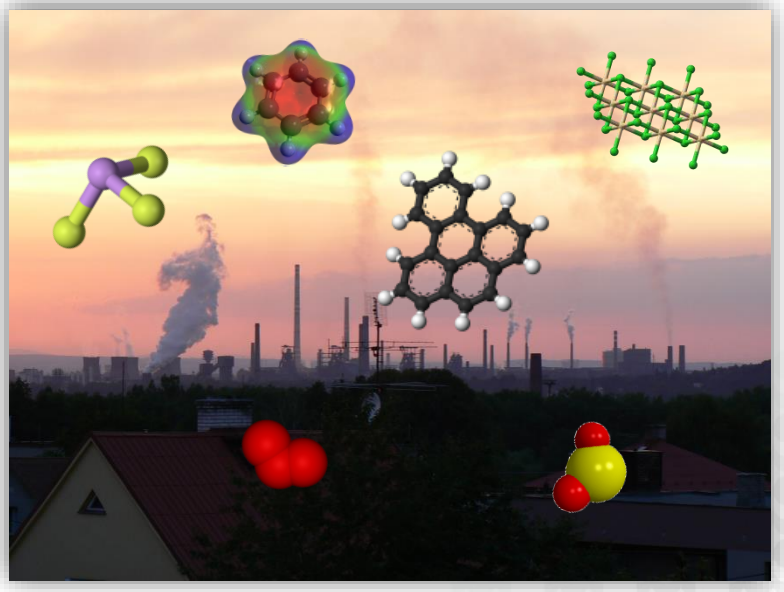
Purpose: Health protection								
Pollutant	Averaging interval	Ambient limit	Max. permissible number of exceedances				Unit	
SO_2	1 hour	350	24				µg/m^3	
Sequence	Code	Name		Owner	Data supplier	Number of exceedances	Maximum concentrations	Completeness of data
1	TOFFA	Ostrava-Fifejdy		ČHMÚ	CHMI-brand Ostrava AIM	22	1564.8	100.0
2	TOPRA	Ostrava-Přívoz		ČHMÚ	CHMI-brand Ostrava AIM	17	908.1	100.0

Source: Air Pollution and Atmospheric Deposition, the Czech Republic 2017, AQIS. www.chmi.cz; http://portal.chmi.cz/files/portal/docs/uoco/web_generator/exceed/index_GB.html

Continuing problems and challenges

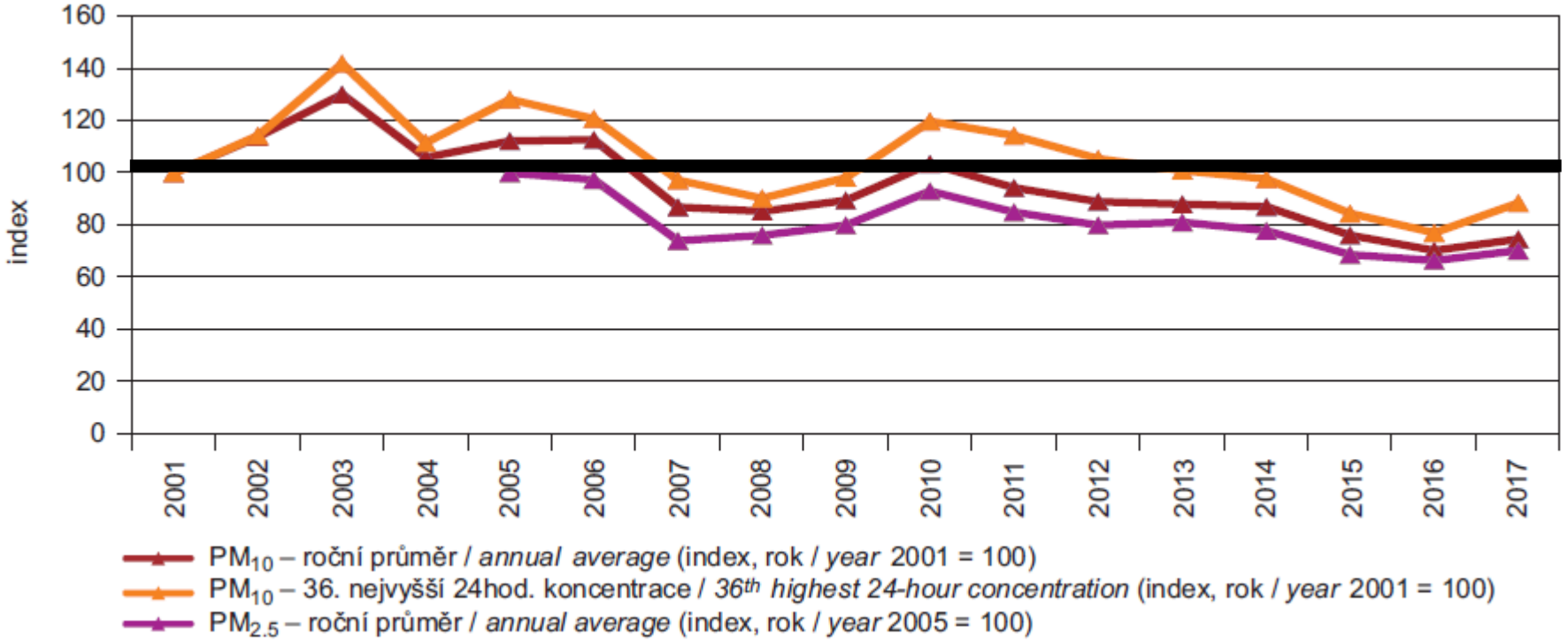
Pollutants with exceedances of limit values:

- Suspended particles $PM_{2.5}$ and PM_{10}
- Benzo[*a*]pyrene
- Ozone



Particulate matter

PM trends, Czech Republic



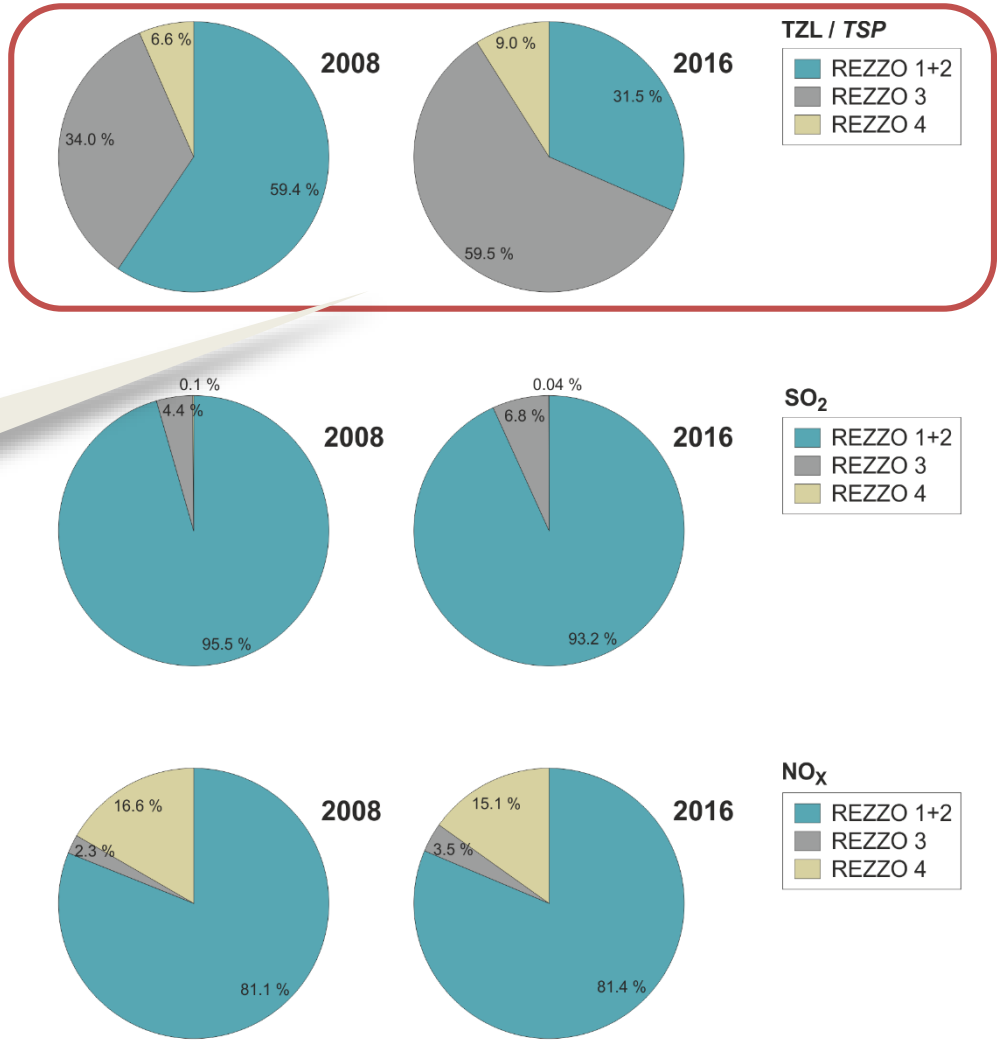
Trends of selected characteristics of PM_{10} (index, year 2001 = 100), 2001–2017 and $PM_{2.5}$ (index, year 2005 = 100), 2005–2017

Emission development

of the O/K/F-M agglomeration

Change in the dominating percentage of emission shares of primary TSP from industry to local heaters

- Emissions from domestic heating in recent years have a slightly increasing trend
- The situation is specific to the high incineration rate of hard coal in boilers and higher share of wet wood combustion



Poznámka / *Note*:
REZZO 2 – od r. 2013 zahrnuty pouze vypočtené emise provozoven se zjednodušeným hlášením SPE.
Since 2013 only calculated emissions from plants using simplified SPE reporting are included.

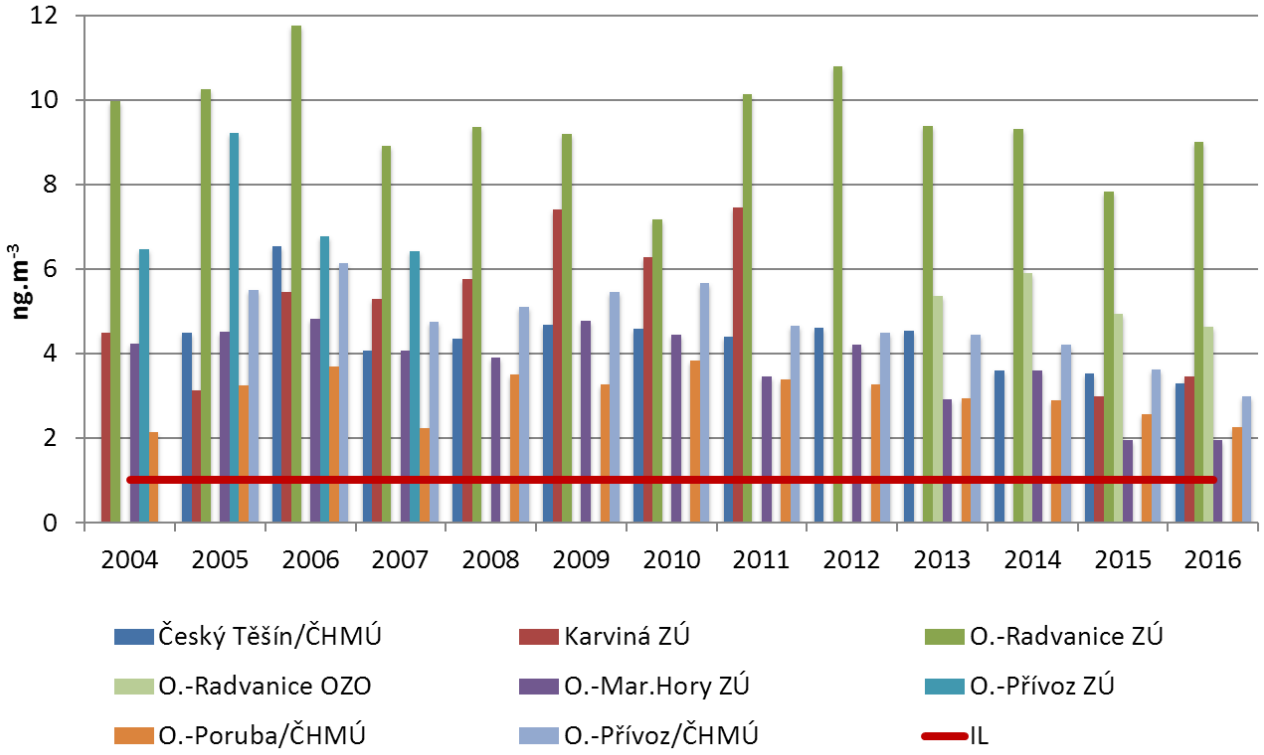
Obr. V.3.10 Emise vybraných znečišťujících látek v členění dle REZZO, aglomerace Ostrava/Karviná/Frýdek-Místek, 2008 a 2016
Fig. V.3.10 Emissions of selected pollutants listed according to REZZO, agglomeration of Ostrava/Karviná/Frýdek-Místek, 2008 and 2016

Source: http://portal.chmi.cz/files/portal/docs/uoco/isko/grafroc/17groc/gr17cz/Obsah_CZ.html

Benzo[*a*]pyrene

as an indicator for polycyclic aromatic hydrocarbons

Regional inter-annual variability in concentrations of benzo[*a*]pyrene



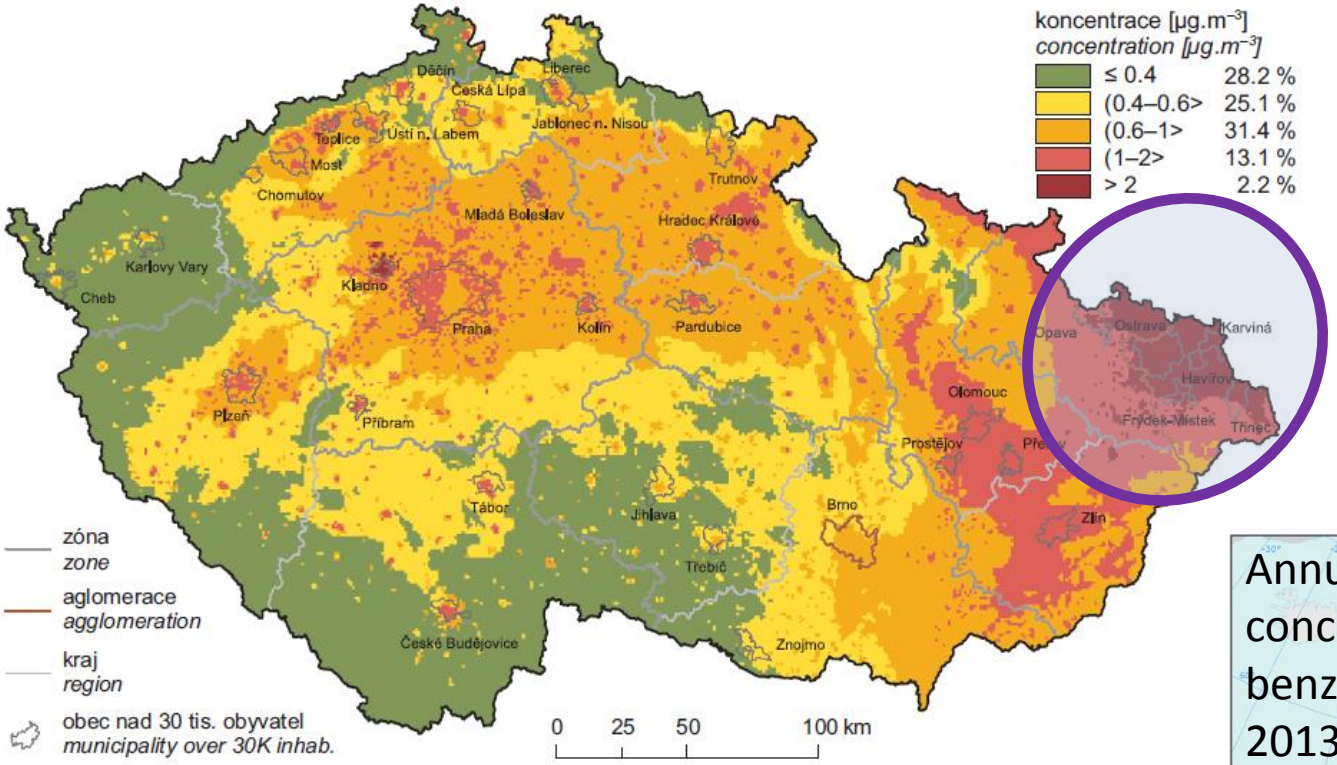
The acceptable level of carcinogenic risk of benzo[*a*]pyrene is permanently **exceeded at all stations in all years**

Sources:

- AQIS, CHMI
- Zanieczyszczenie powietrza wielopierścieniowymi węglowodorami aromatycznymi na stacjach tła miejskiego w 2016 roku, available from http://powietrze.gios.gov.pl/pjp/maps/air/quality/type/R
- Persistent organic pollutant emissions, European Environment Agency, 2017. Dostupné z https://www.eea.europa.eu/data-and-maps/indicators/eea32-persistent-organic-pollutant-pop-emissions-1/assessment-8. Permalink to latest version DEADWIVXWH

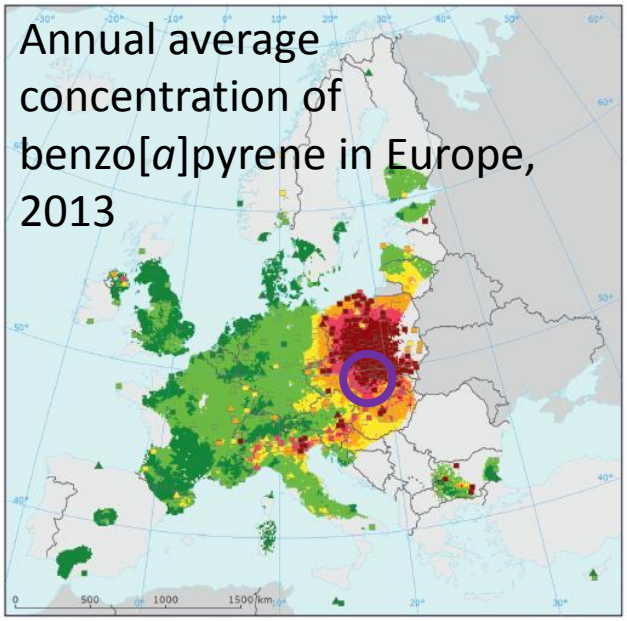
Benzo[*a*]pyrene in PM_{10}

Five-year average of annual average concentrations of benzo[*a*]pyrene, 2013–2017



Europe:

Annual average concentration of benzo[*a*]pyrene in Europe, 2013



Multiple concentrations of the BaP in the southern Poland are above the limit in the area of the Upper Silesian Basin and are also causing an alarming ambient AQ burden on the downstream parts of the Czech territory. The basic assumption for future compliance with the BaP limit value is the limitation of its emissions in the territory of the Silesian Voivodeship in Poland.

Source: Air Pollution and Atmospheric Deposition, the Czech Republic 2017, AQIS. www.chmi.cz; ETC/ACM 2018

CHMI cooperation

INTERNATIONAL CHMI COOPERATION

Experience:

- Expertise in meteorology, hydrology, climatology, **air quality**
- Experience in Quality management Framework implementation
- Transfer of specific tools and methods

World Meteorological Organization
Weather • Climate • Water

ICAO • OACI • ИКАО

ZAMG

TWINNING

INTERNATIONAL **Air quality division** COOPERATION

Experience:

- CHMI participates in AQUILA (Air Quality National References Laboratories), FAIRMODE (Forum for AIR quality MODelling in Europe), GAW/WMO (Global Atmosphere Watch), ACTRIS (Aerosols, Clouds, and Trace gases Research InfraStructure Network), and EMEP/ECE (Co-operative Programme for Monitoring and Evaluation of Long-range Transmission of Air Pollutants in Europe) networks.
- Twinning project – Strengthening Administrative Capacities for Implementation of Air Quality Management System (2009–2011), SR 07 IB EN 01.
- In 2018, CHMI hosts 23rd EIONET Workshop on Air Quality Assessment and Management in Prague.

CHMI is involved in the drafting of national legislation concerning ambient air quality and participated in the preparation and revision of the programmes for air quality management and reduction of emissions. The CHMI is accredited under the Quality Management System complying with the requirements of standard ISO 9001:2008.

CHMI membership of European Topic Centres

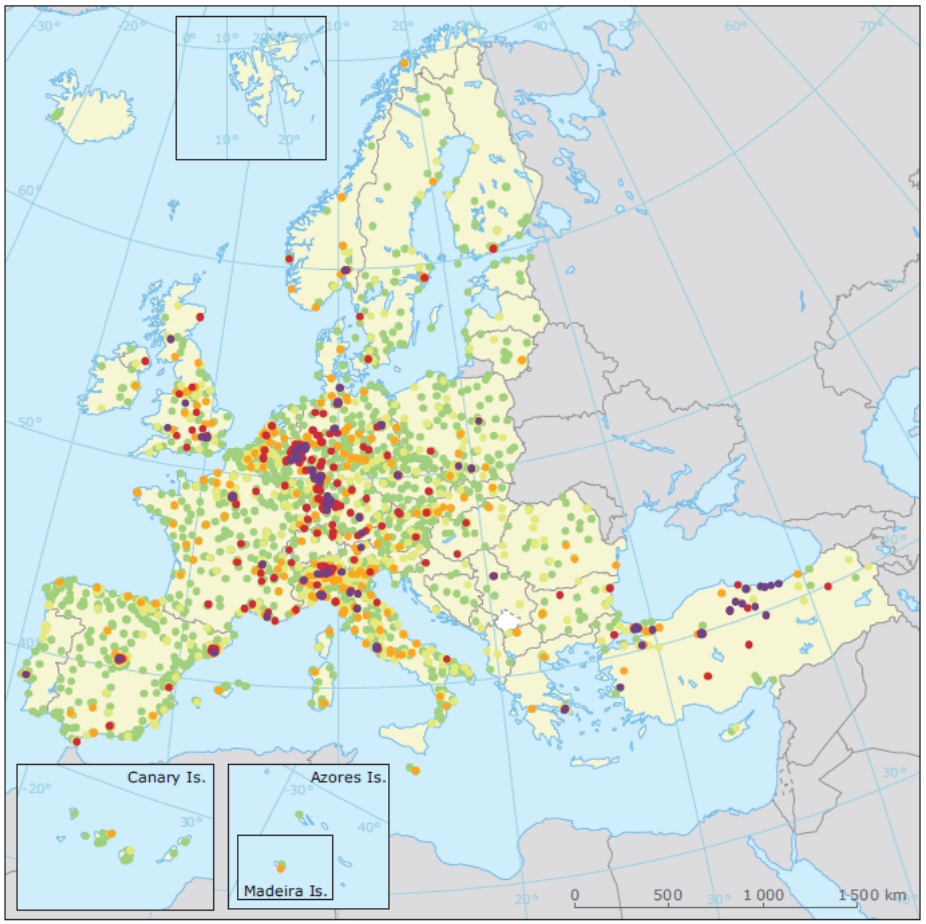
- European Topic Centre on Pollution and Climate Change Mitigation (2011–2013, 2014–2018, http://acm.eionet.europa.eu/),
- European Topic Centre on Air and Climate Change (2006–2010)
- The new consortium: **European Topic Centre on Air pollution, Transport, Noise and Industrial pollution (2019-2021)** (60 key experts and experts from Norway, Austria, Czech Republic, France, Greece, Spain and the United Kingdom)

European Topic Centres (ETCs) are centres of thematic expertise contracted by the European Environment Agency (EEA) to carry out specific tasks identified in the EEA strategy. The centres are part of Eionet (European Environment Information and Observation Network).

European air quality maps

- The spatial mapping method using GIS has been developed for a long time in CHMI, than was used as a basis for the method development within the ETC/ACC and ETC/ACM projects
- Part of the Air quality in Europe — 2018 report

Map 6.1 **Concentrations of NO_2, 2016**



Notes: Observed concentrations of NO_2 in 2016. Dots in the last two colour categories correspond to values above the EU annual limit value and the WHO AQG (40 µg/m³). Only stations with more than 75 % of valid data have been included in the map. The French overseas territories' stations are not shown in the map but can be found at https://www.eea.europa.eu/data-and-maps/dashboards/air-quality-statistics

Source: EEA, 2018a.

https://www.eea.europa.eu//publications/air-quality-in-europe-2018

Research infrastructure
National Atmospherical observatory Košetice

INFRASTRUCTURE KOŠETICE–KŘEŠÍN U PACOVA, CZECH REPUBLIC

offers Trans-National Access within ACTRIS-2 project

the background level of air quality in the Czech Republic and Central Europe

Co-ordinates: N 49°35', E 15°05'
Elevation above mean sea-level: 534 m
Local topography: Agricultural countryside outside of settlement

Infrastructure is operated by:

CHMI - Czech Hydrometeorological Institute - meteorological and air quality measurements

CVGZ - Global Change Research Centre of the Czech Academy of Sciences operates the Atmospheric and Ecosystem Stations - GHGs at tall tower (250 m) measurements, selected aerosol measurements

ICPF - Institute of Chemical Process Fundamentals - special aerosol measurements

RECETOX - Research Centre for Toxic Compounds in the Environment - focused on persistent organic pollutants (POPs)




Open access to the Atmospheric Station, access to Central Laboratories of CHMI

Administrative support: free wi-fi, copy and scanning machines, administrative issues, administration of open access, English communication skills

Accommodation: available at the Observatory Košetice and in the close vicinity of Prague airport

Offered access to measurements:

- in-situ chemical, and physical properties of aerosols (particle number size distribution, aerosol light absorption, aerosol light scattering , OC/EC, size-resolved chemical composition, size-resolved aerosol hygroscopicity)
- vertical gradient of GHGs (CO_2, CH_4, CO, N_2O), air quality (O_3, Hg) and meteorological parameters at 10, 50, 125, 230 and 250 m, flask sampling of ^{13}C and ^{18}O in CO_2, H_2, N_2O, SF_6, O_2/N_2, CO_2, CH_4, CO, ^{14}C in CO_2 – at 250 m
- Ecosystem Station (eeddy covariance system measuring energy and matter fluxes; net radiation, PAR radiation and meteo. parameters)
- air quality automatic measurements (NO-NO_2-NOx, ozone, SO_2, CO, PM_{10}, $PM_{2.5}$), air quality manual measurements (VOCs, PAHs, PM_{10}, $PM_{2.5}$, Basic cations)
- precipitation and meteorology measurements

Technical support for: installation of new devices, data flow and operation and maintenance of instruments

Scientific staff will help with the validation, evaluation and multidisciplinary interpretation of measured data

Contact:
milan.vana@chmi.cz

http://www.chmi.cz/files/kosetice_en.html
http://www.czechglobe.cz/media/AS%20Kresin%20u%20Pacova%20flyer%202014.pdf

EUropean Supersites for Atmospheric Aerosol Research

International cooperation

Projects

Regional AQ monitoring

- Cooperation with Regional Authority - Moravian-Silesian Region
- Determining the air pollution levels at locations where routinely operated measuring stations are not located
- Since 2009, the annual PM_{10} and $PM_{2.5}$ particles measurements with further analysis (metals, PAHs)

Moravskoslezský kraj

Air quality information system in the Czech-Polish border area in Silesia and Moravia-Silesia region

www.air-silesia.eu

Financed by the Operational Programme for Czech-Polish Cross-border Cooperation 2007–2013 (CZ.3.22/1.2.00/09.01610).

The main aim was to create the first common regional information system on air quality in the Czech-Polish border region of Silesia and Moravia.

PUBLIC EVENTS

- Open Days
- Exhibitions
- Earth Days

CZECH
HYDROMETEOROLOGICAL
INSTITUTE