



# System for the collection and visualization of data of the Stockholm Convention's Global Monitoring Plan for persistent organic pollutants – a Czech contribution to GEOSS

Jakub Gregor<sup>1,2</sup>, Richard Hůlek<sup>1,2</sup>, Jana Borůvková<sup>1</sup>, Jiří Kalina<sup>1,2</sup>, Kateřina Šebková<sup>1</sup>, Ladislav Dušek<sup>2</sup>, Jana Klánová<sup>1</sup>

<sup>1</sup> *Research Centre for Toxic Compounds in the Environment,  
Masaryk University, Brno, Czech Republic*

<sup>2</sup> *Institute of Biostatistics and Analyses, Masaryk University, Brno, Czech Republic*



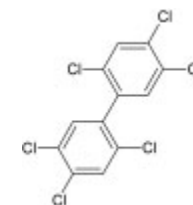
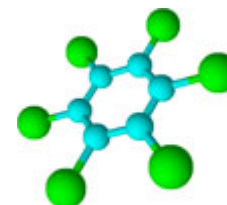
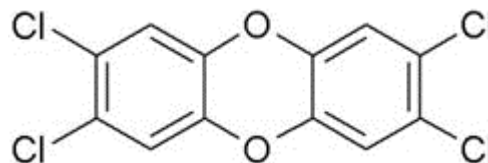
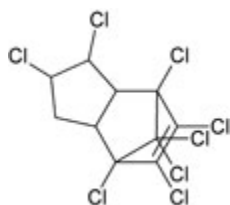
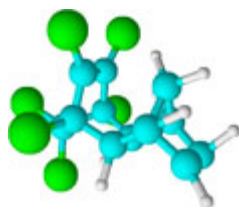
- Incorporated in the GEO Work Plan 2012–2015, area HEALTH;
  - task HE-02 „Tracking Pollutants“,
  - component C2 „Global Monitoring of Persistent Organic Pollutants, Emerging Contaminants and Global Change Indicators“
- Led by:
  - UNEP, Secretariat of the Stockholm Convention (Geneva, Switzerland)
  - Research Centre for Toxic Compounds in the Environment, Masaryk University (Czech Republic)

# Stockholm Convention



- Signed in 2001, entered into force in 2004
- **Twenty-three chemical compounds** for which the countries must take measures to **eliminate** or **restrict** the production and use or reduce the **unintentional releases**

1. Aldrin
2. Chlordane
3. Chlordecone
4. Dieldrin
5. Endrin
6. Heptachlor
7. Hexabromobiphenyl
8. Hexabromodiphenyl ether and heptabromodiphenyl ether
9. Hexachlorobenzene (HCB)
10. Alpha hexachlorocyclohexane
11. Beta hexachlorocyclohexane
12. Lindane
13. Mirex
14. Pentachlorobenzene
15. Polychlorinated biphenyls (PCBs)
16. Endosulfan
17. Tetrabromodiphenyl ether and pentabromodiphenyl ether
18. Toxaphen
19. DDT
20. PFOS
21. Polychlorinated dibenzo-p-dioxins
22. Polychlorinated dibenzofurans
23. HBCD





- Mandate: Article 16 of the Stockholm Convention and decisions SC-3/19, SC 4/31 and SC-5/18 adopted by the COP to the SC
- Objectives
  - Tracking of POPs concentrations in the environment (ambient air, water) and human beings (breast milk and blood)
  - Effectiveness evaluation of international efforts to reduce releases of POPs listed in the Stockholm Convention into the environment



- Main data sources – existing international and national monitoring programmes
- Primary aim of GMP is not establishing new monitoring programmes or networks, but utilizing existing data and supporting capacity building in regions with a lack of data sources.

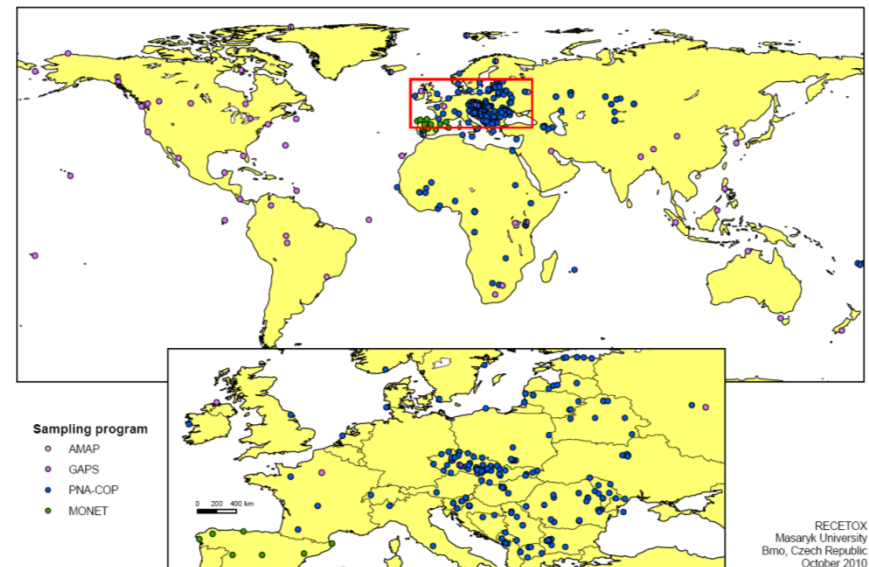
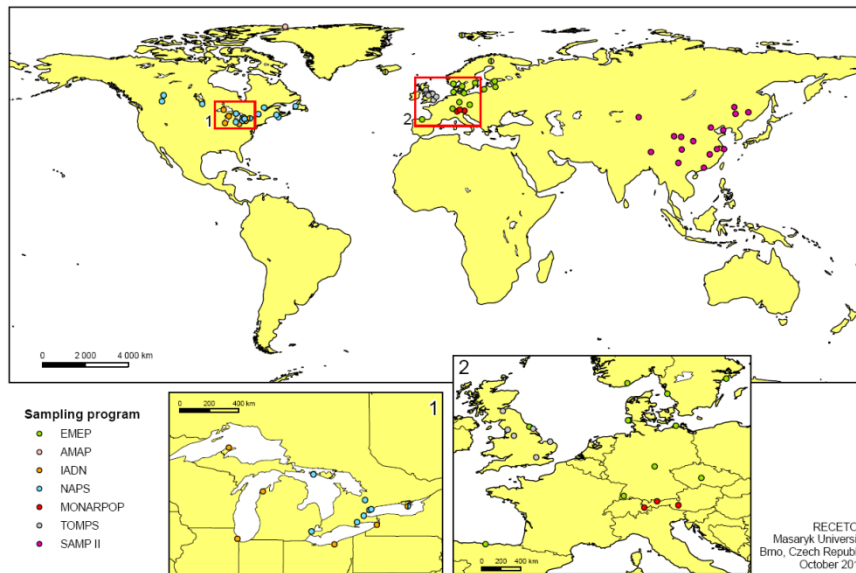
# Global monitoring plan – the past



- 2008

- First data collection campaign

- Determination of „baseline“ concentrations of POPs in the ambient air and human tissues in the period 1998–2008



# Global monitoring plan – the past



- 2009

- Five regional monitoring reports adopted by the COP4



Available at: <http://chm.pops.int/Implementation/GlobalMonitoringPlan/MonitoringReports/tabid/525/Default.aspx>

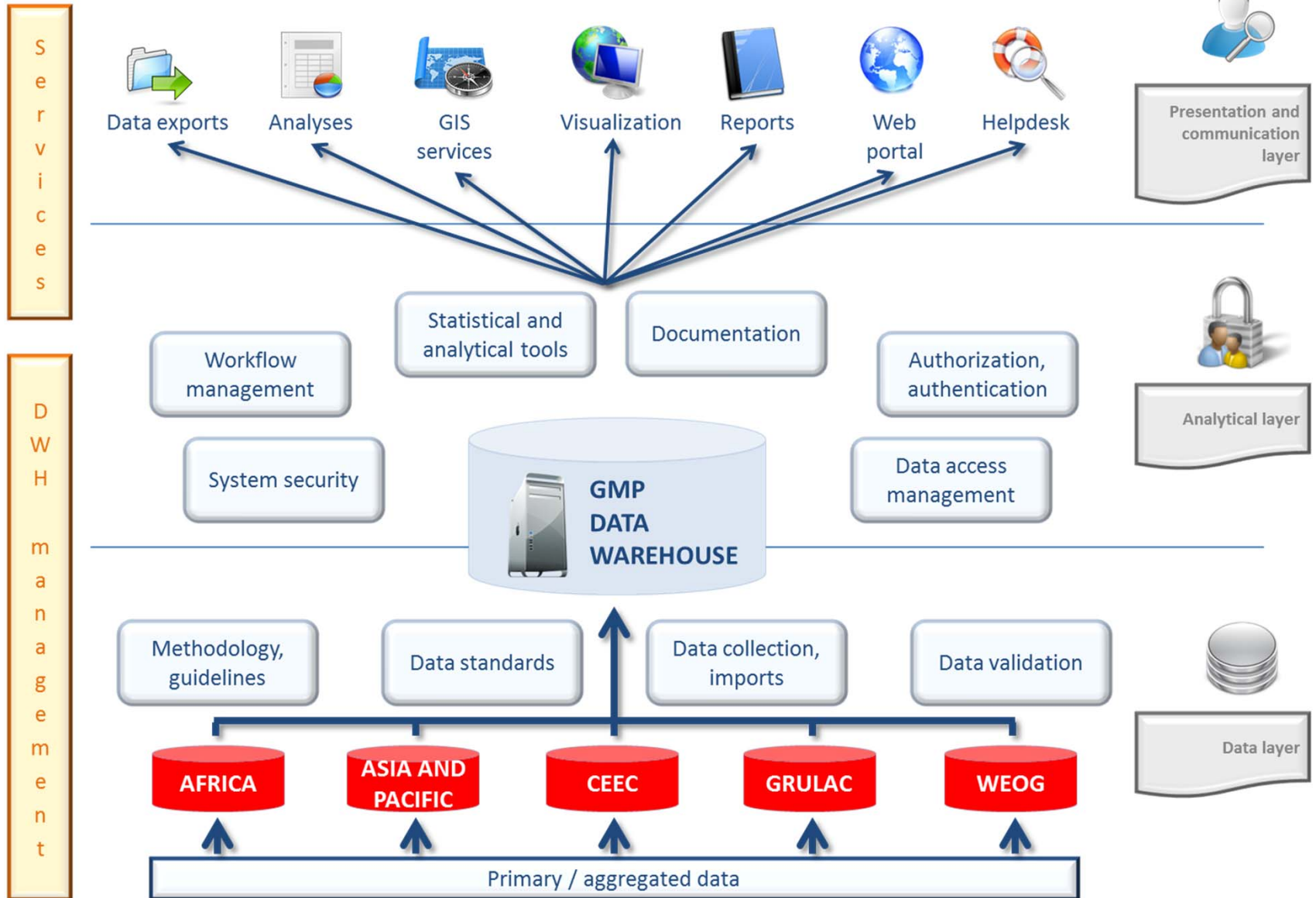


Experience with GMP1 reflected in proposals for future GMP campaigns and design of the GMP Data Warehouse:

- Electronic data collection
- Standardized parametric data structure
- Standardized predefined code lists
- Visualization tools



# GMP Data Warehouse



# Data collection – online forms



### Site form - Air

Site ID: GMP-A-0001182

\* Site name: Kosetice, EMEP station

\* Region: CEE

\* Country: Czech Republic

\* Longitude: 15,080410E

\* Latitude: 49,573450N

Site type: Rural

Source type:

- Industrial
- Residential
- Waste sector

\* Training site: -- Choose --

Cancel

### Sampling attributes

\* Year: 2013

\* Start of sampling: 09.01.2013      \* End of sampling: 01.01.2014

\* Sampling frequency: 2 weeks

\* Largest gap (months): 14

\* Type of sampling: Active

\* Type of passive sampling: -- Select type --

Recalculation: -- Select recalculation --

Calibration description:

Monitoring programme/network: Kosetice - active

### Measurement

Group	Parameter
Aldrin	Aldrin (pg/m3)
Chlordane	cis-Chlordane (= al)
Endosulfan	Endosulfan I (alpha)
Alpha-hexachlorocyclohexane (α-HCH)	Alpha-HCH (pg/m3)

### Measurement details

\* Chemical – group: Polychlorinated biphenyls (PCB) - indicator

\* Parameter: PCB 153 (pg/m3)

\* Method: GC-MS/MS

LOQ:

\* No. of values: 26

\* No. under LoQ: 0

\* Value (mean): 1.63331

\* Value (median): 1.457

\* Minimum: 0.506

\* Maximum: 4.382

5th percentile: 0.534

95th percentile: 3.90575

SD: 1.02295

Laboratory: NOT\_CLASSIFIED

Cancel      Save



## GMP Data Warehouse – Data Visualization

### *Global Monitoring Plan (GMP) for Persistent Organic Pollutants (POPs) under the Stockholm Convention*

The GMP Data Warehouse (GMP DWH) is an online tool developed for handling persistent organic pollutants (POPs) monitoring data generated in the frame of the Global Monitoring Plan (GMP) under the Stockholm Convention on POPs.

#### Available Tools

GMP Data Visualization 2014 is a tool for consideration of GMP data per region, it allows the following visualizations of available data:

- Map overview
- Data Availability
  - Available data – Parameters
  - Available data – Time
- Summary statistics
- Time Series
  - Trend Map
  - Time Series Analysis
  - Time Series Bar Charts Map
- Data Exports
  - Sites Summary
  - Data Sources Summary
  - Analytical Methods Summary
  - Export of All Data Selected

[Open data selection](#)

The purpose of the GMP DWH is to:

- Serve as regional node for electronic data collection, storage, processing and presentation in regions with limited capacity;
- Support the development of regional monitoring reports and the global report in the frame of the GMP;
- Support the effectiveness evaluation of the Stockholm Convention by compiling and visualizing results of global POPs monitoring activities;
- Providing user-friendly access to the POPs monitoring data to all stakeholders and the broad public.


It contains information on **POPs** concentrations in ambient air, human tissues (breast milk and maternal blood) and surface water for water-soluble POPs (perfluorooctane sulfonic acid, its salts and perfluorooctane sulfonyl fluoride) collected in the frame of the GMP and validated by the regional organization groups of the five UN regions. These data are presented also in the [regional monitoring reports](#).



# Data visualization




GMP Data Visualization 2014 Docs GMP1 About Contact Logout

 **Stockholm Convention on persistent organic pollutants (POPs)**

**SPATIAL DISTRIBUTION** DATA AVAILABILITY SUMMARY STATISTICS TIME SERIES DATA EXPORTS

### Data Selection

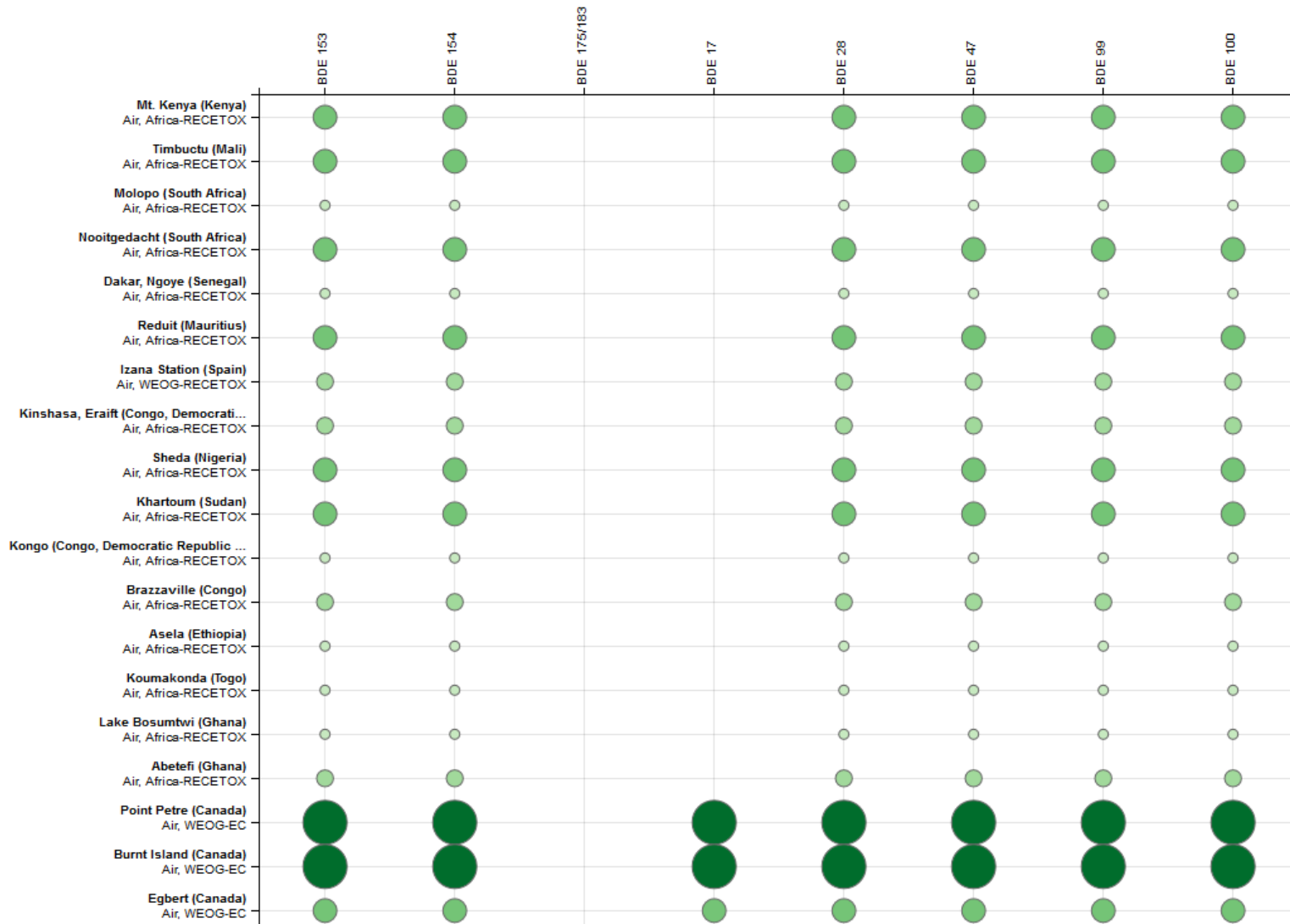
- Matrix**  Air
- Matrix specification**  All items
- Compound**  Polychlorinated biphenyls (PCBs)
- UN Regional Group**
  - Africa (208)
  - Asia and Pacific (35)
  - CEE (30)
  - GRULAC (178)
  - WEOG (201)
- all  none  inverse Back Next
- Country**
- Sea**
- Site Type**
- Time Range**
- Status**
- Data Provider**



Settings & Legend + -

Esri, DeLorme, FAO, NOAA

# Data visualization



# Data visualization



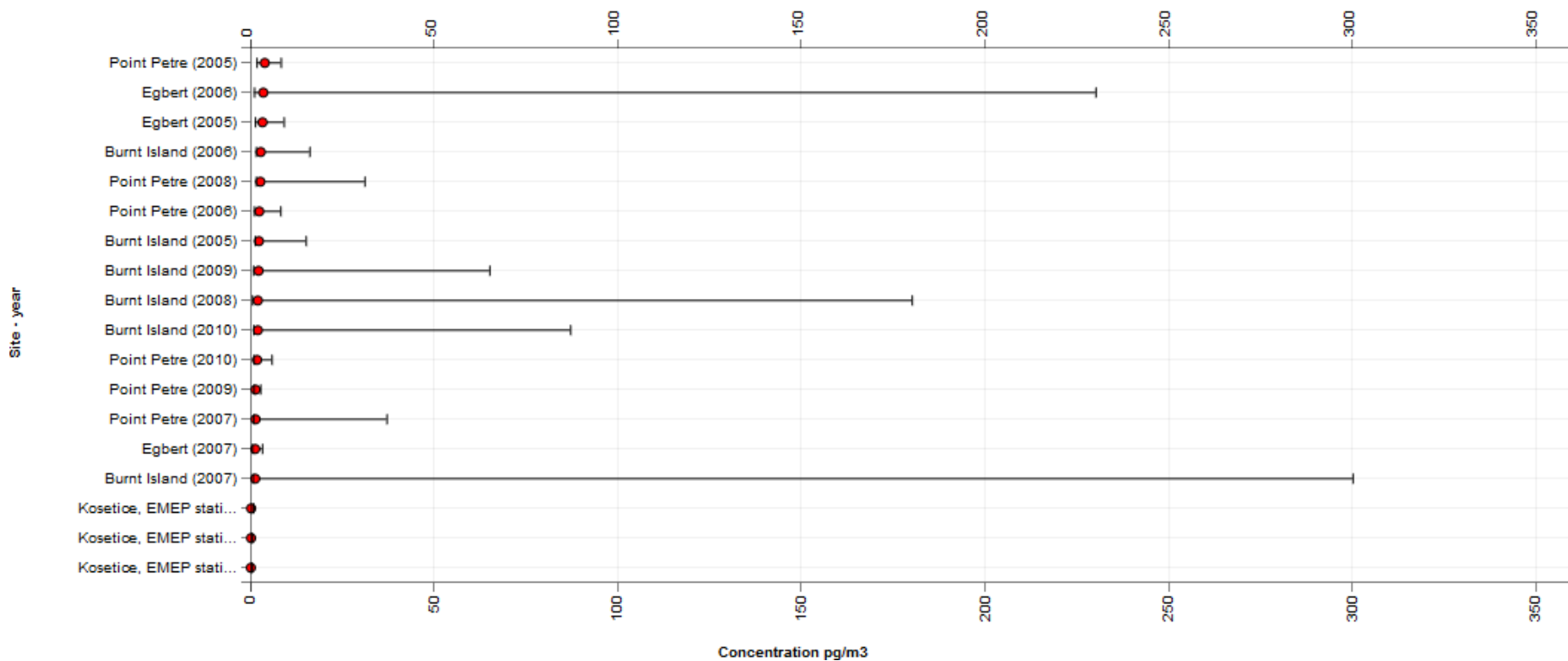
Matrix:

Matrix specification:

Compound:

Parameter:

Unit:

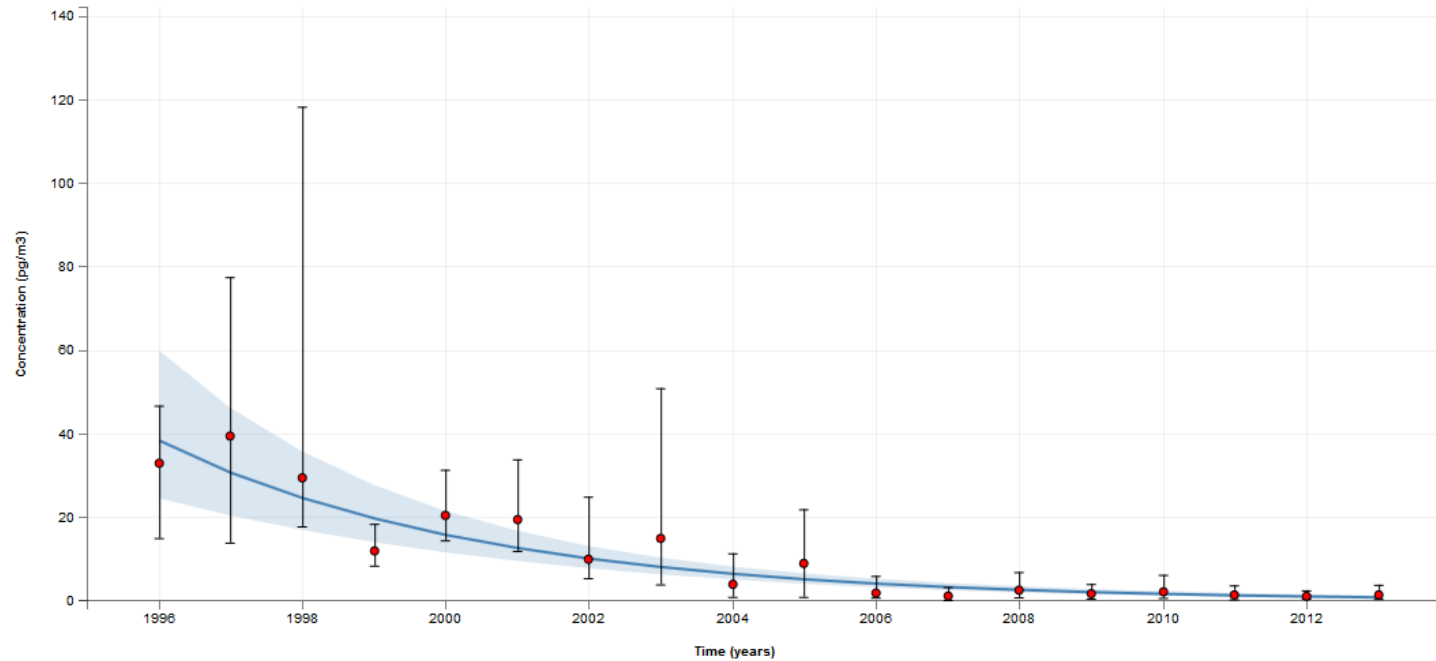


# Data visualization



Matrix:  Matrix specification:  Compound:  Parameter:

Unit:  Site:



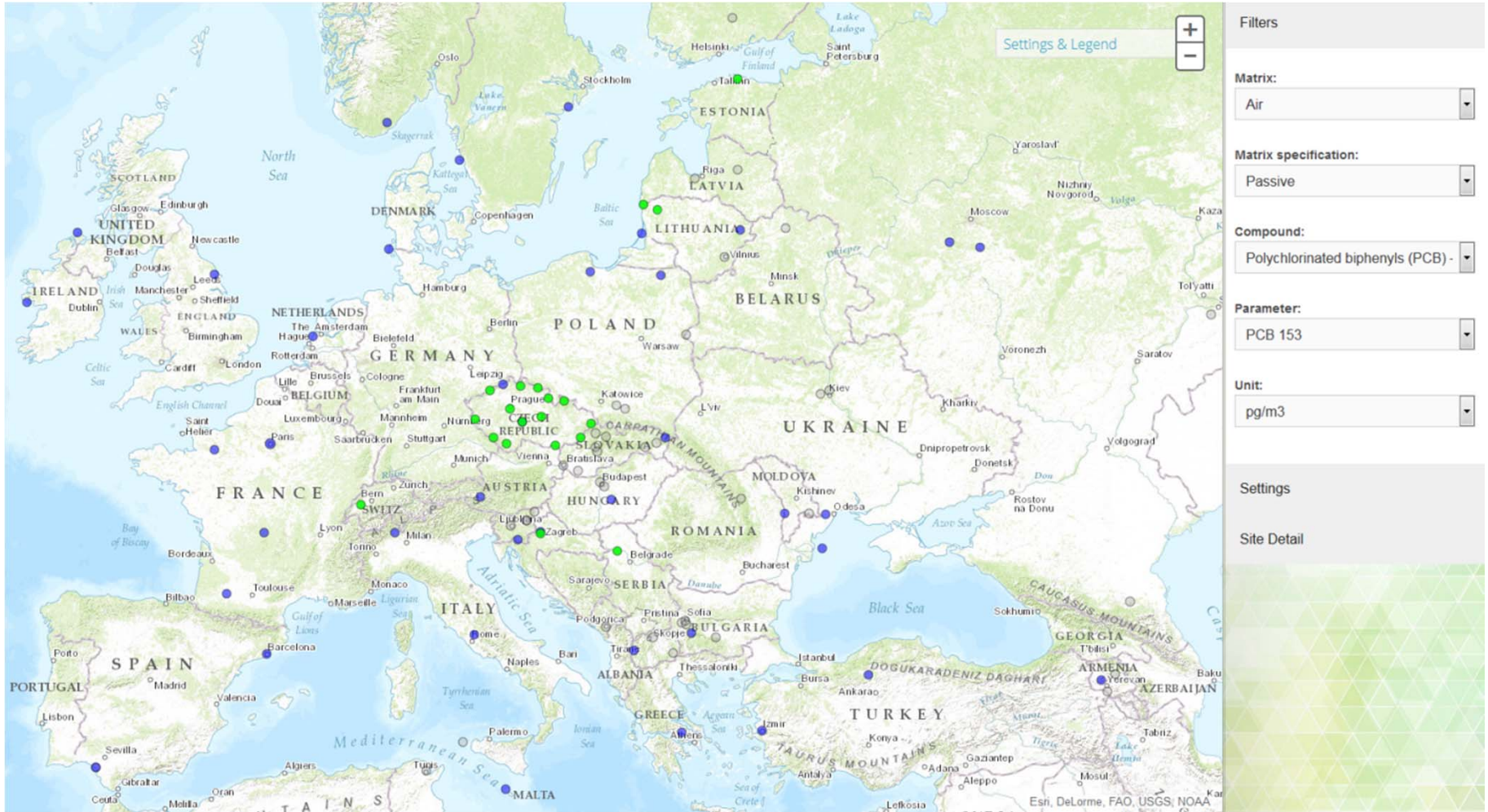
## Summary

Mean	11.428 pg/m3
Median	6.5 pg/m3
Minimum / maximum	1.15 – 39.5 pg/m3
5th percentile / 95 percentile	1.1925 – 33.975 pg/m3

## Trend description

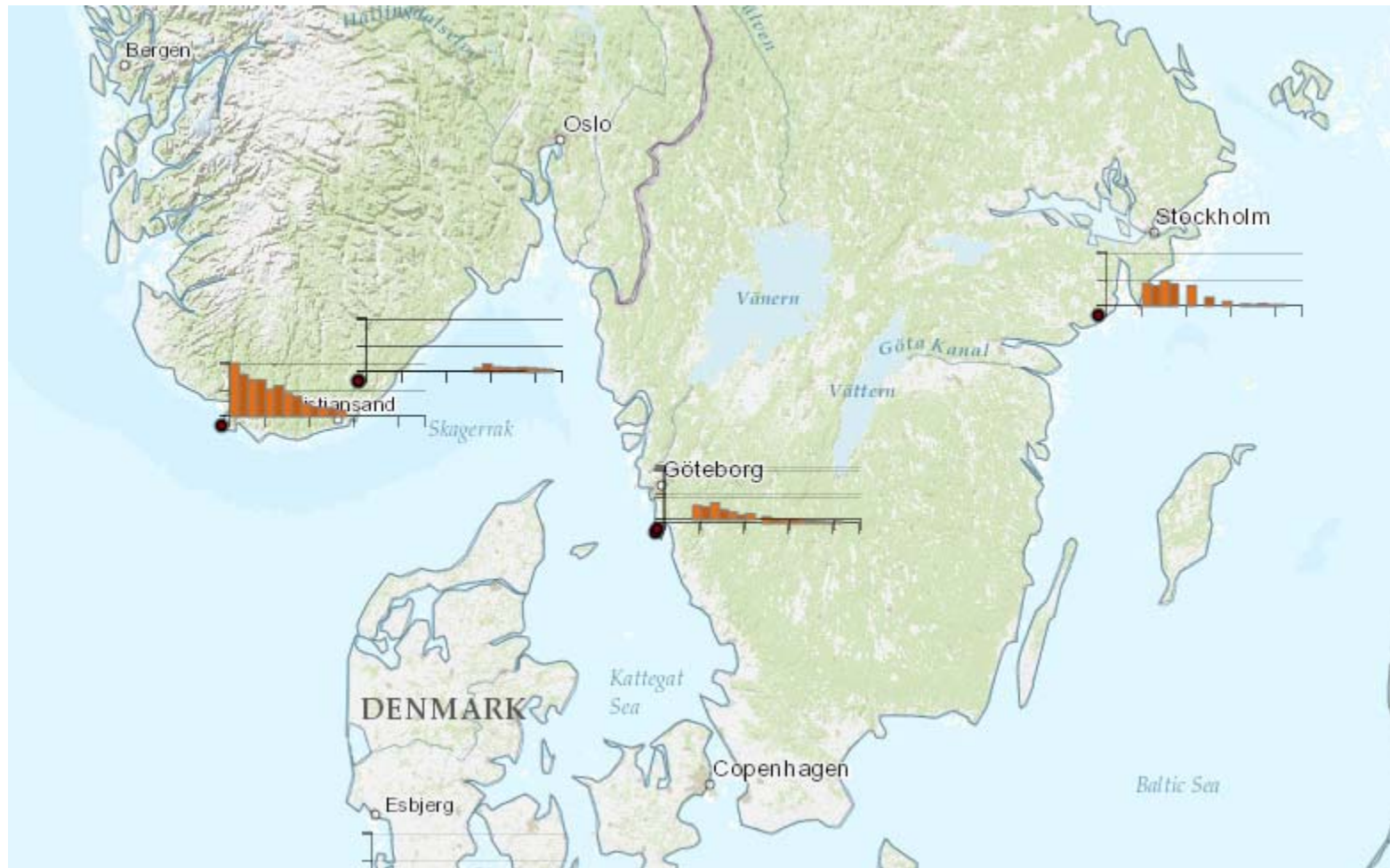
Delta	-31.543 pg/m3
Mann-Kendal test	-0.79085 (p = 2.2949E-7)
Daniels test	-0.9257 (p = 0)

# Data visualization





# Data visualization





- GMP DWH is implemented fully on-line and accessible via Internet
- Standard web browsers (Internet Explorer, Mozilla Firefox, Google Chrome)
  - recent versions highly recommended!





# Global Environmental Assessment and Information System

Richard Hůlek, Jakub Gregor

*Centrum pro výzkum toxických látek v prostředí  
Institut biostatistiky a analýz  
Masarykova Univerzita, Brno*





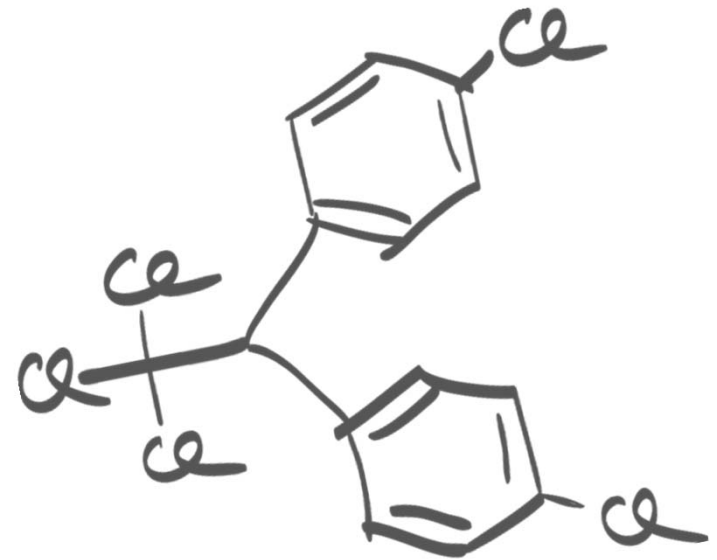
*Global Environmental Assessment and Information System*

*URL: [www.genasis.cz](http://www.genasis.cz)*

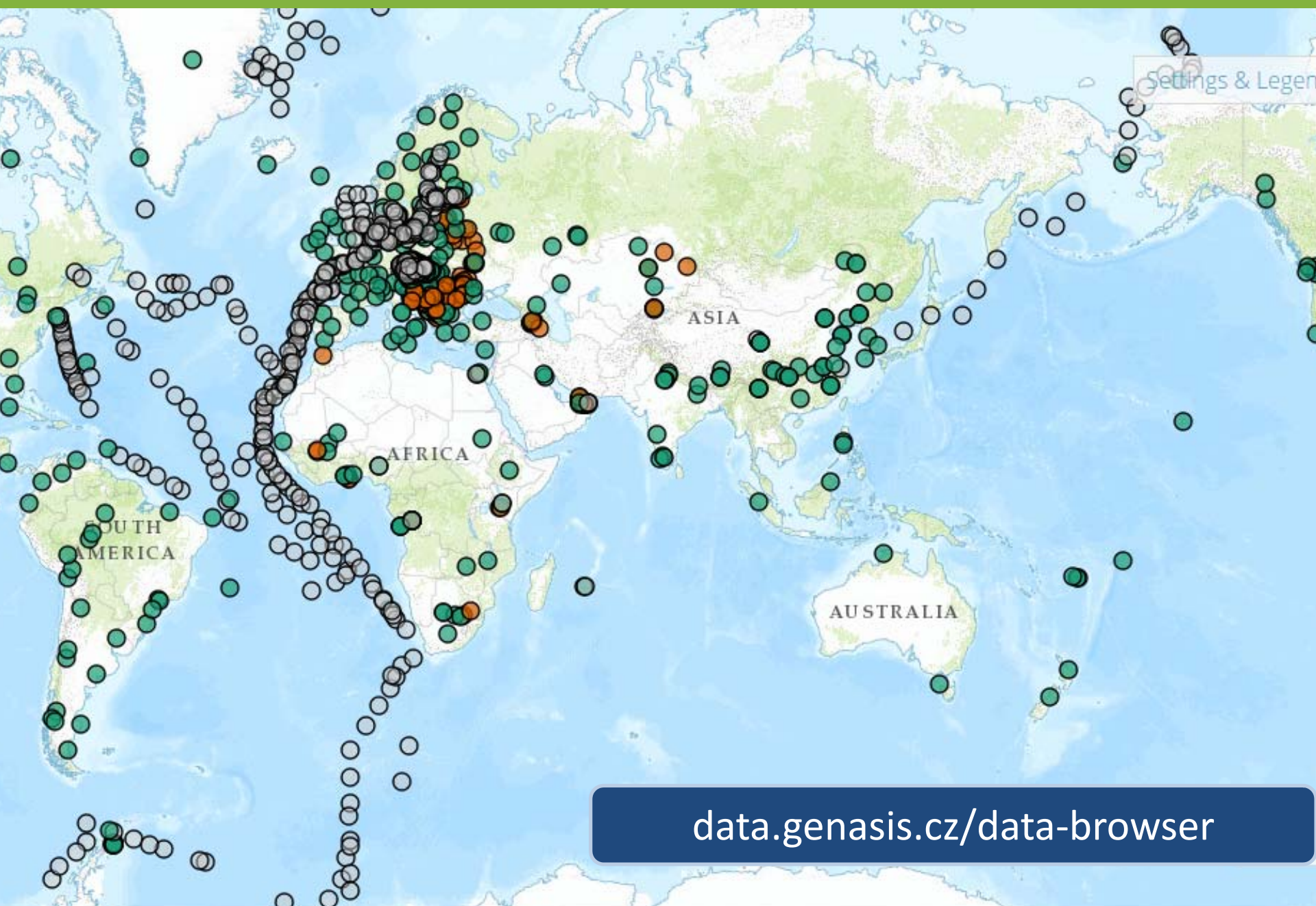
- Poskytuje komplexní **informace o kontaminaci vybraných složek životního prostředí chemickými látkami.**
- Zaměřeno na **persistentní organické polutanty (POPs).**
- Poskytuje aktuální **informace o prostorových a časových trendech koncentrací POPs** v životním prostředí.



- Kombinuje validovaná data z:
  - Dlouhodobých monitorovacích programů
  - Krátkodobých studií
  - Data z partnerských institucí
- Poskytované služby
  - Datový repositář
  - Analytické nástroje
  - Data management
  - Export dat

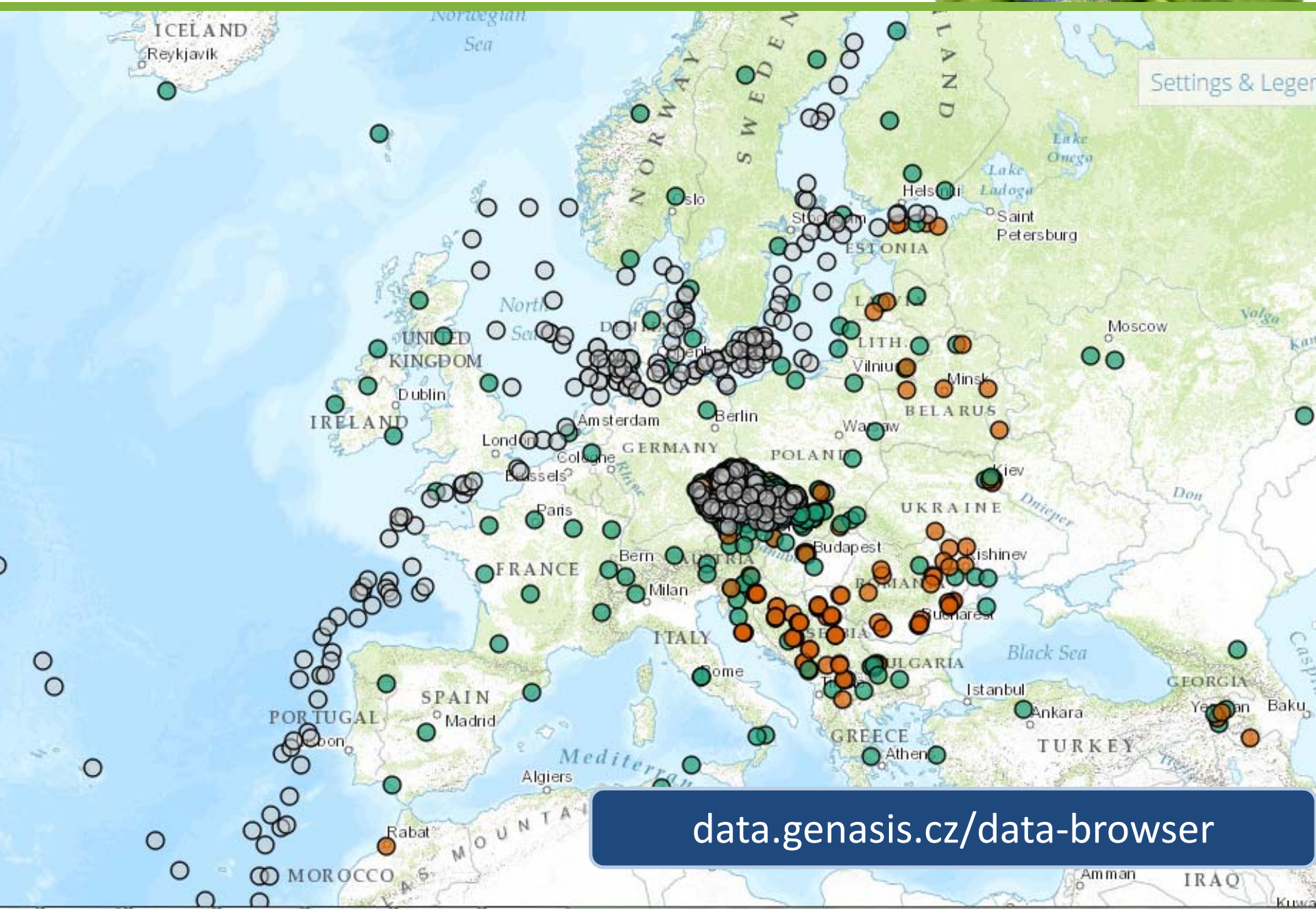


# Vzorkovací lokality



[data.genasis.cz/data-browser](http://data.genasis.cz/data-browser)

# Vzorkovací lokality



[data.genasis.cz/data-browser](http://data.genasis.cz/data-browser)



## Varianty registrace do GEOSS

- Manuální registrace
  - <http://geossregistries.info/>
- Automatizovaná registrace

[www.geossregistries.info](http://www.geossregistries.info)





## Kategorie zdroje dat

- Datový soubor(y)
- Monitorovací a pozorovací systémy
- Výpočetní model
- Iniciativy
- Portály, webové stránky a dokumenty
- Analýzy a vizualizace
- Upozornění, RSS a informační kanály
- Katalogy, inventáře a kolekce metadat
- Software a aplikace



[Back](#)

[Main Page](#)

## GEOSS Resource Registration

Required fields are accompanied by \* or text in red.

### Basic Properties Standards

#### Resource Category\*

- Dataset
- Initiatives
- Alert,RSS, and Info Feeds
- Monitoring and Observation Systems
- Portals, Websites, and Documents
- Catalogues,Inventories, and Metadata Collections
- Computational Model
- Analysis and Visualization
- Software and Applications

#### Resource Basic Information\*

Resource Name\*:

Abbreviation:

Description\*:

#### Resource Accessibility

Responsible Organization:

Resource Information URL\*:

Resource Interface URL:



- Základní informace
  - Název
  - Popis
  - Klíčová slova
- Zájmová oblast (Zdraví, energie, počasí...)
- *Dostupnost zdroje dat*
- *Politika sdílení dat (omezené vs. GEO-CORE)*
- *Geografická příslušnost*
- *Časové určení*



## Basic Properties Standards

### Resource Contact Information

Contact Name\*:  ?

Contact Email\*:  ?

### Societal Benefit Areas\*

(Select all Societal Benefit Areas that apply) ?

- |  |                                       |                                  |
|--|---------------------------------------|----------------------------------|
| <input type="checkbox"/> Agriculture       | <input type="checkbox"/> Biodiversity | <input type="checkbox"/> Climate |
| <input type="checkbox"/> Disasters         | <input type="checkbox"/> Ecosystems   | <input type="checkbox"/> Energy  |
| <input checked="" type="checkbox"/> Health | <input type="checkbox"/> Water        | <input type="checkbox"/> Weather |

### Resource Availability\*

(Select one Resource Availability Status) ?

- Continuously Operational
- Intermittently Operational
- Not Operational

### Resource Sharing Properties ?

- |   |   |
|---|---|
| <input type="checkbox"/> GEOSS User Registration  | <input type="checkbox"/> GEOSS Attribution          |
| <input type="checkbox"/> GEOSS No Monetary Charge | <input checked="" type="checkbox"/> GEOSS Data-CORE |

### Resource Geographic Extent (Click in the box to enter value in decimal format, e.g. 37.234)

- Service Geographic Extent is specified in EPSG:4326 (Lat/Long) CRS.
- The valid latitude values are from -90.0 to 90.0.
- The valid longitude values are from -180.0 to 180.0.

<input type="text" value="90.0"/>
<input type="text" value="-180.0"/> <input type="text" value="180.0"/>
<input type="text" value="-90.0"/>

### Resource Time Period of Information Content (Click in the box to enter value or use a calendar)

- e.g. YYYY
- e.g. YYYY-MM-DD

Start Date:  ?

End Date:  ?

Back

Clear

Cancel

Next



- Meta datový popis
- Požité standardy
  - *Datový formát*
  - *Struktura meta dat*



## GEOSS Resource Modification

Required fields are accompanied by \* or text in red.

Basic Properties **Standards**

### Earth Observation Vocabulary\*

#### GEOSS - Earth Observation Vocabulary, version 1.0

- └ GEOSS - Earth Observation Vocabulary, version 1.0
  - └ ATMOSPHERE
  - └ AGRICULTURE
  - └ LAND SURFACE
  - └ OCEANS
  - └ HUMAN DIMENSIONS
  - └ BIOSPHERE
  - └ TERRESTRIAL HYDROSPHERE
  - └ CRYOSPHERE
  - └ PALEOCLIMATE
  - └ SOLID EARTH

Select this Earth Observation (EO) vocabulary term

#### Referenced Earth Observation (EO) vocabulary term(s)

Name	
GEOSS - Earth Observation Vocabulary, version 1.0 : HUMAN DIMENSIONS : ENVIRONMENTAL IMPACTS	<a href="#">Delete</a>

### Standards/Special Arrangements (Select all the Standards as necessary)

- [-] Earth Observation Root
  - [-] Modeling, Simulation, or Analytic Processing Service
  - [-] Schema
    - GeoSciML
    - OASIS Common Alerting Protocol (CAP) 1.1
  - [-] Engineering Process

# GEOSS – registrace zdroje dat





**GROUP ON EARTH OBSERVATIONS**

## GEOSS Portal

Discover, Access, Contribute  
Earth Observations, Information and Services



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**SEARCH**

global monitoring plan x [?]

Related Topics [?]

+ Themes [?]

+ Country/Geography [?]

+ Data Access Conditions [?]

+ Earth Observation Catalogs [?]

Start Date [?] End Date [?]

[CLEAR](#) [SEARCH](#)



**Legend\*** Total Results: 2

Search Granule

-   **Global Monitoring Plan of the Stockholm Convention on Persistent Organic Pollutants: data from the monitoring reports. Data export for: Air,Aldrin**  
Matrix: Air Compound: Aldrin Parameters: Aldrin Sites: Asela,Brule River,Burnt Island,Cairo\_REC,Dakar,Eagle Harbour,Egbert,H  
[Click to read more...](#)
-   **Global Monitoring Plan of the Stockholm Convention on Persistent Organic Pollutants: visualization and on-line analysis of data from the monitoring report**  
Main purpose of the on-line descriptive browser is to facilitate search over and work with the reported GMP  
[Click to read more...](#)

[www.geoportal.org](http://www.geoportal.org)

Děkuji za pozornost



Richard Hůlek  
hulek@iba.muni.cz

[www.genasis.cz](http://www.genasis.cz)