



Global Monitoring Plan data reporting and visualization tool

www.pops-gmp.org

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The Global Monitoring Plan: data management and visualization tool

The goal is to

- enhance **visibility of the GMP** and relevant data,
- facilitate **improved interpretation, spatial visualization, and modeling** of available monitoring data,
- improve **the flow of relevant data** to the environmental and health communities,
- enhance our **understanding of environmental factors affecting human health** and well-being,
- promote **a focus on prevention** of environmental and human impacts.

First monitoring report

Chemicals in the Stockholm Convention

Chemicals identified in GMP reports (isomers, sums, transformation products)

Aldrin
Chlordane
DDT
Dieldrin
Endrin
Heptachlor
Hexachlorbenzene (HCB)
Mirex
Polychlorinated biphenyls (PCB)
Polychlorinated dibenzo-p-dioxins and dibenzofurans (PCDDs/PCDFs)
Toxaphene
Pentachlorbenzene (PeCB)
Tetrabromodiphenyl ether (tetraBDE)
Pentabromodiphenyl ether (pentaBDE)
Heptabromodiphenyl ether (hepta BDE)
Hexabromodiphenyl ether (hexa BDE)
Chlordecone
Hexabrombiphenyl
Perfluorooctane sulfonic acid (PFOA), its salts and perfluorooctane sulfonyl fluoride
Alpha hexachlorocyclohexane (a-HCH)*
Beta hexachlorocyclohexane (b-HCH)*
Lindane (g-HCH)*
Endosulfan

Aldrin

Cis- (alpha-) chlordane, Trans- (gamma-) chlordane, Oxychlordane, Cis- and Trans-nonachlor, Chlordane (as a group), Chlordane + Nonachlor, Chlordane + trans-nonachlor

DDT, DDE, DDD, **o,p'-DDT, o,p'-DDE, o,p'-DDD, p,p'-DDT, p,p'-DDE, p,p'-DDD**, Sum of DDTs, Sum p,p-DDX (p,p-isomers together), Sums of various number of DDT isomers, DDT + p,p-DDE

Dieldrin, Endrin (also **ketone** and Endrin group = sum of)

Heptachlor, Heptachlorepoide, Heptachlorepoide cis-, Heptachlorepoide trans-, Heptachlor group (sum of)

Hexachlorbenzene (HCB)

Mirex

36 various PCBs: indicator PCBs (**PCB 28, PCB 52, PCB 101, PCB 118, PCB 138, PCB 153, PCB 180**) and 29 others. Various PCBs WHO-TEQ and PCBs I-TEQ, Sum of 3, 10, 14, 21, 25, 48 PCBs, di-PCBs (also with WHO-TEQ), Mono-ortho and Non-ortho PCBs in TEQs

PCDDs and PCDFs (**15 congeners**) in sum or separately - PCDDs, PCDFs, PCDDs/Fs – often as various TEQs: WHO-TEQ, Nordic-TEQ and I-TEQ, **OCDD, OCDF**

Parlar (Toxaphene) **26 isomers**, Parlar (Toxaphene) 50, Parlar (Toxaphene) 62, Toxaphene (as a group), Parlar 40, Parlar 41, Parlar 44

Pentachlorbenzene (PeCB)

Reported only as a sum of 3 PBDEs

a-HCH, b-HCH, g-HCH, d-HCH, HCHs (sum of)

Endosulfan I, Endosulfan II, Endosulfan SO₄, Endosulfans (sum of)

+ **other chemicals** not listed in the Stockholm Convention Dacthal, Isodine, Methoxychlor, trifluralin and delta-HCH



Identified data challenges

- heterogenous **nomenclature** (i.e. trans-chlordane vs. gamma-chlordane)
- unclear reporting or **missing units**
- parameters **without specification which isomers or degradation products summed up** (“chlordanes”, “PCBs”, “DDTs”, “heptachlor”)
- Difference in labeling of PCBs summations
- **Limit of Quantification (LOQ)** not reported
- **Ambient air** data reported as **spatially aggregated values**, often without specific information on number and type of sampling site
- **Missing or wrong specification of the TEF values** used for calculation of the TEQ (year).
- Various WHO-TEQ values used (WHO-TEQ 1995, 1997, 1998, 2001, 2005)

Consequence

- reliability of collected GMP1 data significantly influenced
- narrowed data pool for future comparisons BUT could be improved if we can find the way how to amend/complement problematic records in GMP1 and effectively link them to GMP2



Click on this logo to return to this page again

WORLD MAP - MONITORING OVERVIEW

WORLD MAP – MONITORING OVERVIEW

An interactive world map displaying monitoring activities within all worlds' countries in individual years.

» Open the visualisation

SAMPLING FREQUENCY - PARAMETERS

SAMPLING FREQUENCY – PARAMETERS

The chart shows sampling frequency of individual compounds in countries.

» Open the visualisation

SAMPLING FREQUENCY - YEARS

SAMPLING FREQUENCY – YEARS

The chart shows sampling frequency of individual compounds on 1-year divided timeline.

» Open the visualisation

REPORTED VALUES

REPORTED VALUES

This chart is designed for direct presentation of reported values and concentrations.

» Open the visualisation

Main menu

Description and links to all available reports

Drag to zoom in and out. You can use scroll button on your mouse to zoom as well.

Use this dropdown list to switch among matrices

You can move in the map by dragging it

Use these buttons to move, play or pause slideshow in the selected time scale

Use this dropdown menu to select time interval, in which the data are displayed

Select the type of map to be displayed

Current YEAR: 1996



Time slider mode:

Single time point

Basemap:

Topo



**WORLD MAP -
MONITORING
OVERVIEW**

**SAMPLING
FREQUENCY -
PARAMETERS**

**SAMPLING
FREQUENCY -
YEARS**

**REPORTED
VALUES**

WORLD MAP – MONITORING OVERVIEW

Matrix:



5000 km

Current YEAR: 2009



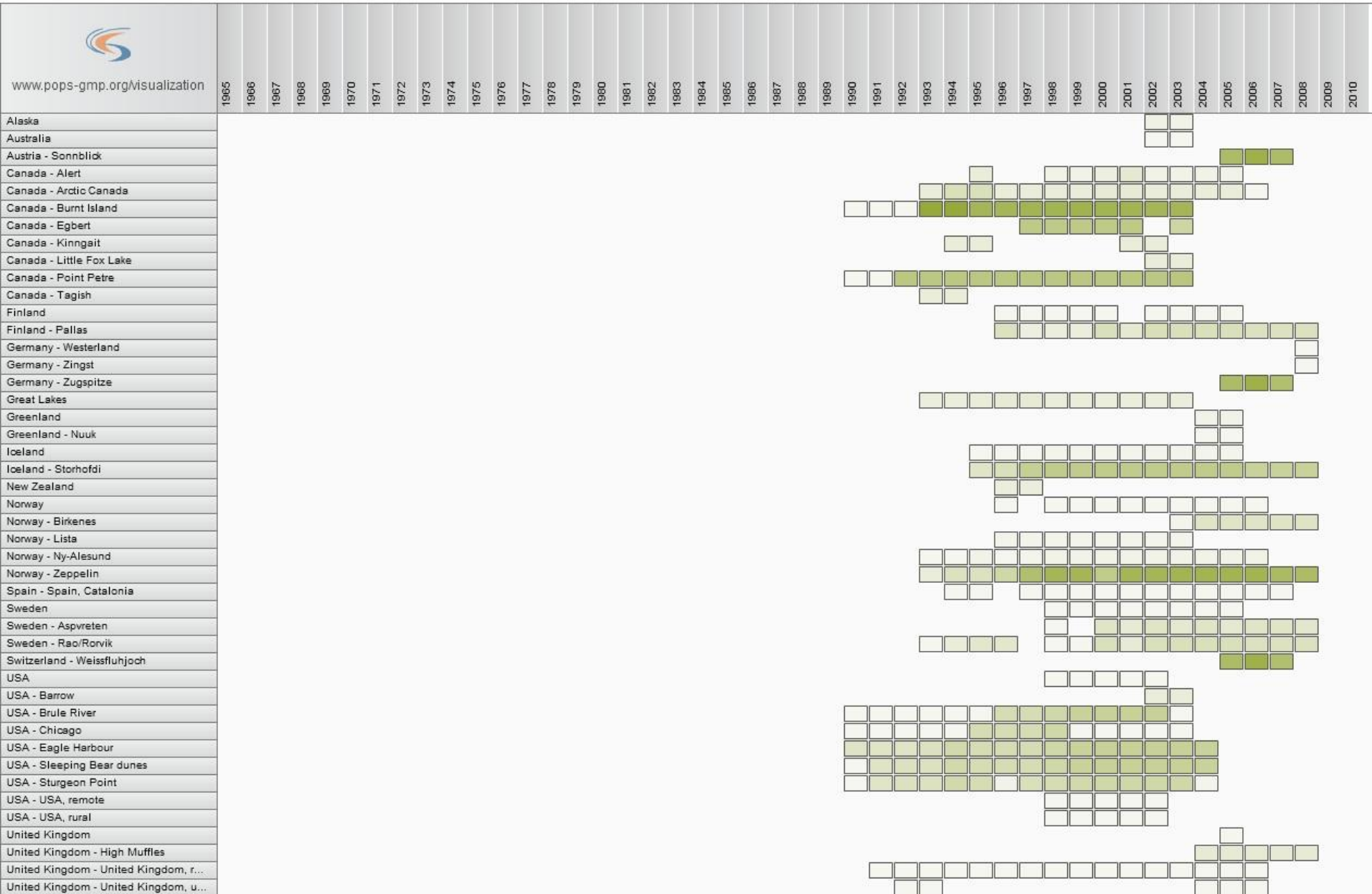
5000 km

Time slider mode:

Basemap:

AVAILABLE DATA – YEARS

Matrix: Air | Sampling method: active | UN region: WEOG | Parameter: null | Year range: 1965.2010



Matrix:

Air

UN region:

all UN regions

Compound:

all compounds

Year (2001):

« 1960 2010 »

Use dropdown lists to select from available values to filter the output. Filters marked with the grey cross can be deactivated

List of compounds

	PCDDs/Fs (17)	Aldrin	DDT group	PCB 118	dl-PCB TEQ	p,p'-DDE	p,p'-DDTs	alpha-HCH	PCB 153	Dieldrin	Chlordane	Endrin	5 DDTs	p,p'-DDD	cis-Chlordane (=	total dioxins TEQ	PCB 101	trans-Chlordane +	PCB 52	beta-HCH	o,p'-DDD	gamma-HCH	Chlordane + Non	HCB	PCDDs/Fs I-TEQ	PeCB	PCDDs/Fs TEQ	sum 10 PCBs	Heptachlor	PCB 138	o,p'-DDT	PCDFs (10)	PCDDs (7)	p,p'-DDT	PCB 28	PCBs	Heptachlorepoxi	dl-PCB I-TEQ	trans-Chlordane (e	PCB 180	indicator 7 PCBs	
"Spain, Catalonia"																																										
"United Kingdom, rural"																																										
"USA, remote"																																										
"USA, rural"																																										
Arctic Canada																																										
Canada																																										
Czech Republic																																										
Finland																																										
Great Lake																																										
Hong Kong																																										
Iceland																																										
Japan																																										
Norway																																										
Russian Federation																																										
Southern Cone subregion																																										
Sweden																																										
USA																																										

List of countries

Country: Czech Republic
Parameter: beta-HCH
Year: 2001
N: 1

Hover the mouse cursor over a

List of countries

Country: Czech Republic
Parameter: beta-HCH
Year: 2001
N: 1

Hover the mouse cursor over a cell to get additional information about aggregated value. Click on the cell to show corresponding values

AVAILABLE DATA – PARAMETERS

Matrix: Air | Sampling method: passive | UN region: null | Compound: null | Year: 2008

[illegible]

AVAILABLE DATA – PARAMETERS

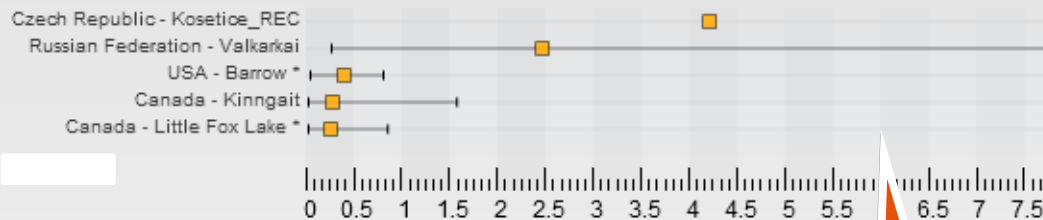
Matrix: Breast milk | Sampling method: null | UN region: null | Compound: null | Year: 2008

[illegible]

REPORTED VALUES

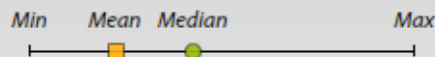


Matrix: Compound: Parameter: Unit: Year:



Use dropdown lists to select from available values to filter the output.

Legend



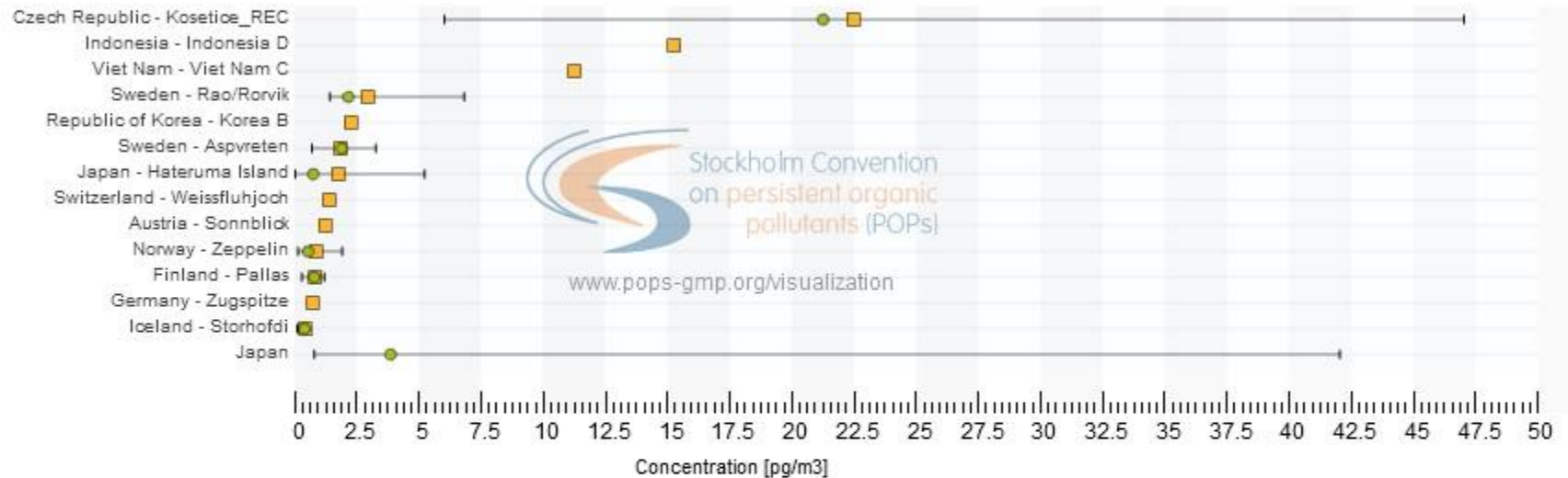
* - Records marked with the asterisk are taken from multiple-year aggregation.
(LoQ/N) - Values in paranthesis indicate proportion of records under limit of quantification (LoQ) and number (N) of records.

Reported values are shown as a box-and-whisker plot. A plot consist of minimum, maximum, mean and median. If a value is unavailable, appropriate sign is not displayed

GMP Reports On-line Data Visualization

REPORTED VALUES - background sites only

Matrix: Air | Sampling method: active | Compound: DDT | Parameter: p,p-DDE | Unit: pg/m3 | Year: 2005



Legend



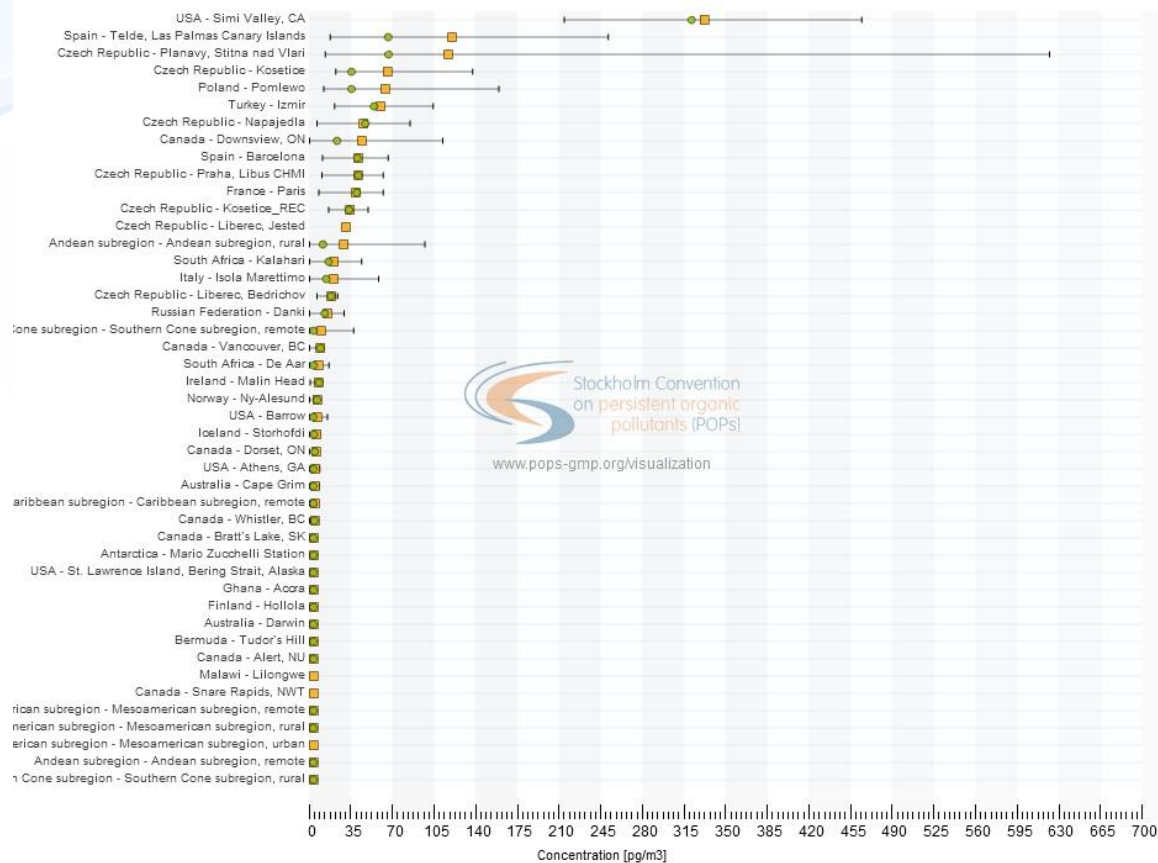
* - Records marked with the asterisk are taken from multiple-year aggregation.

(LoQ/N) - Values in paranthesis indicate proportion of records under limit of quantification (LoQ) and total number (N) of records.

GMP Reports On-line Data Visualization

REPORTED VALUES - background sites only

Matrix: Air | Sampling method: passive | Compound: DDT | Parameter: p,p-DDE | Unit: pg/m3 | Year: 2005



Legend

Min Mean Median Max

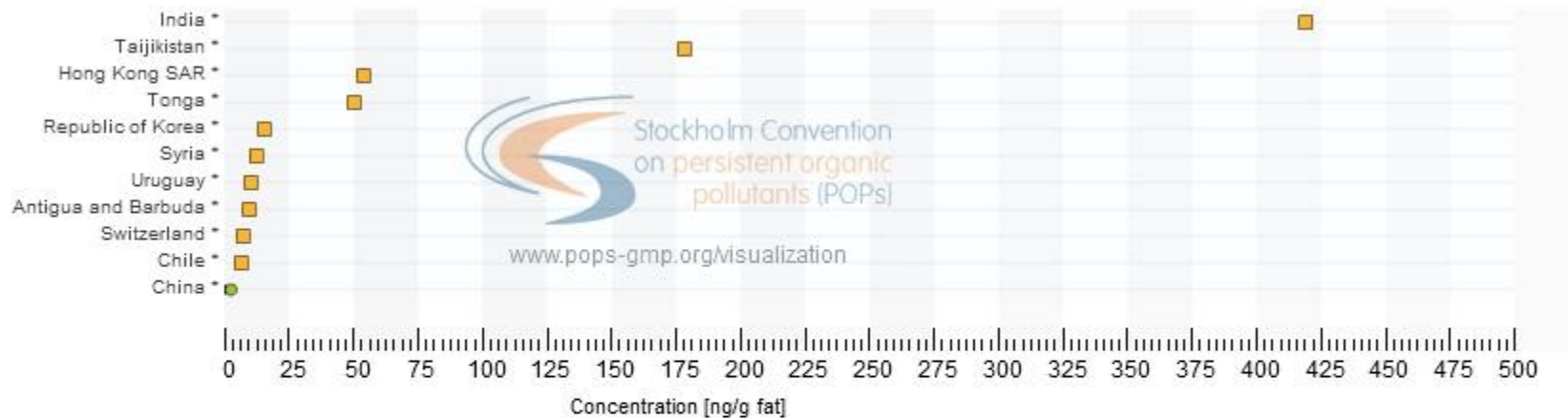
* - Records marked with the asterisk are taken from multiple-year aggregation.

(LoQ/N) - Values in paranthesis indicate proportion of records under limit of quantification (LoQ) and total number (N) of records.

GMP Reports On-line Data Visualization

REPORTED VALUES - background sites only

Matrix: **Breast milk** | Sampling method: **null** | Compound: **DDT** | Parameter: **p,p-DDT** | Unit: **ng/g fat** | Year: **2008**



Legend



* - Records marked with the asterisk are taken from multiple-year aggregation.

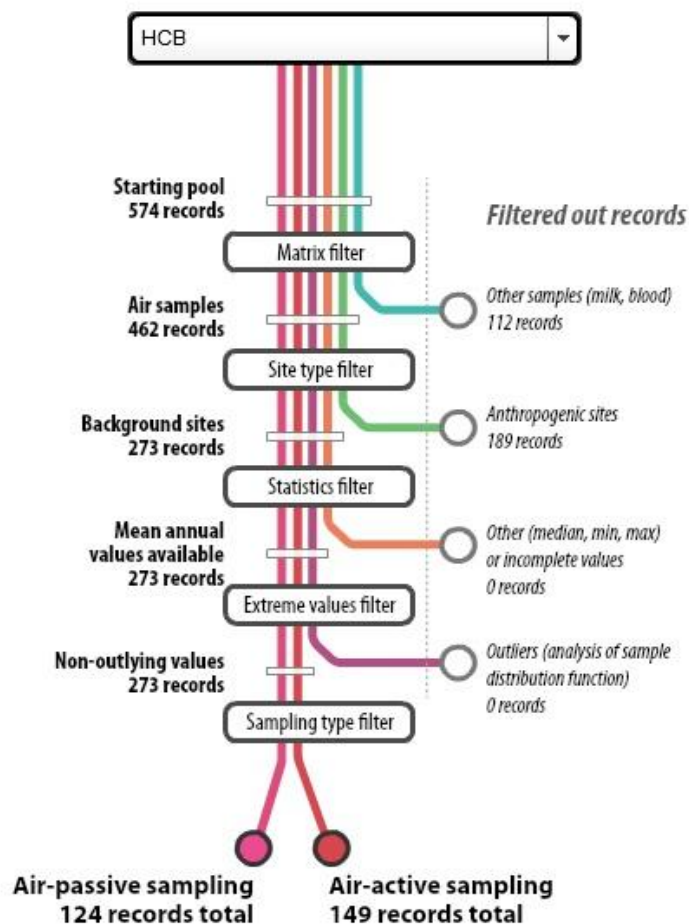
(LoQ/N) - Values in paranthesis indicate proportion of records under limit of quantification (LoQ) and total number (N) of records.

GMP Reports On-line Data Visualization

REGIONAL BACKGROUNDS - data validation

Parameter: HCB |

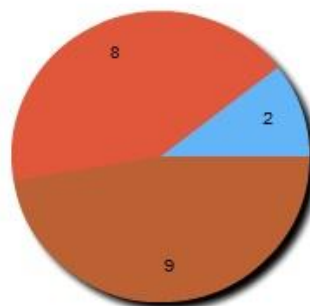
Process of Data Validation



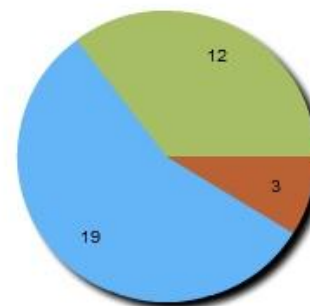
Results of Data Validation

Sampling method	Africa	CEEC	GRULAC	WEOG	Asia and P...	TOTAL
<p>HCB</p> <p>Air-passive sampling</p>	<p>12 countries</p> <p>16 sites</p> <p>16 records</p> <p>2008 - 2008</p>	<p>19 countries</p> <p>66 sites</p> <p>97 records</p> <p>2003 - 2008</p>	<p>0 countries</p> <p>0 sites</p> <p>0 records</p>	<p>0 countries</p> <p>0 sites</p> <p>0 records</p>	<p>3 countries</p> <p>8 sites</p> <p>11 records</p> <p>2006 - 2008</p>	<p>34 countries</p> <p>90 sites</p> <p>124 records</p> <p>2003 - 2008</p>
<p>HCB</p> <p>Air-active sampling</p>	<p>0 countries</p> <p>0 sites</p> <p>0 records</p>	<p>2 countries</p> <p>3 sites</p> <p>16 records</p> <p>1998 - 2008</p>	<p>0 countries</p> <p>0 sites</p> <p>0 records</p>	<p>8 countries</p> <p>19 sites</p> <p>95 records</p> <p>1998 - 2008</p>	<p>9 countries</p> <p>32 sites</p> <p>38 records</p> <p>2004 - 2007</p>	<p>19 countries</p> <p>54 sites</p> <p>149 records</p> <p>1998 - 2008</p>

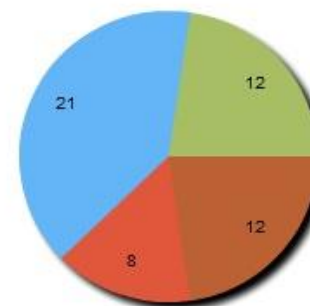
Air-active sampling



Air-passive sampling



Grand total



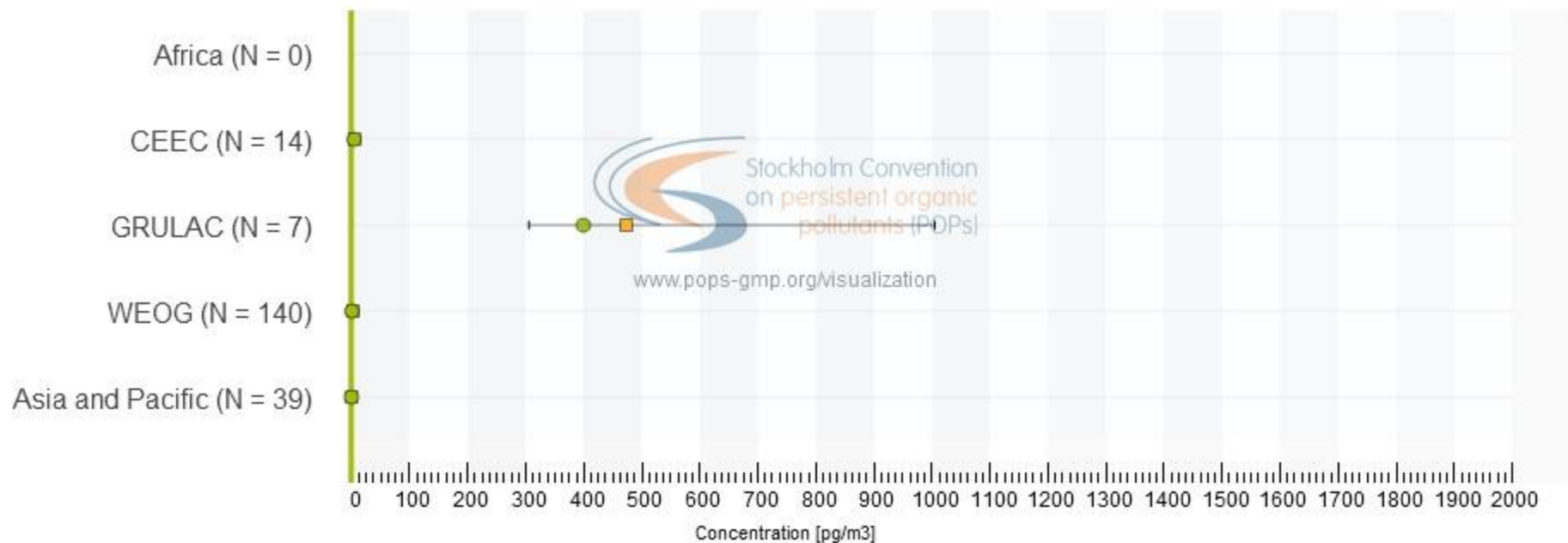
■ Africa
 ■ CEEC
 ■ GRULAC
 ■ WEOG
 ■ Asia and Pacific

Contribution of individual regions to the total number of

GMP Reports On-line Data Visualization

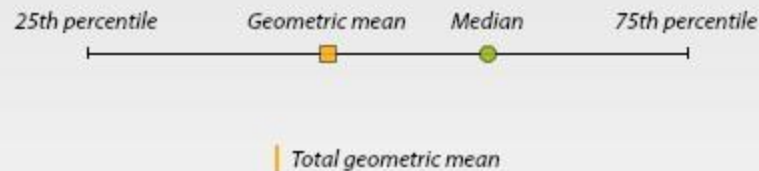
REGIONAL BACKGROUNDS - Inter-regional Variability

Parameter: p,p-DDT | Sampling method: active



Total median: 0.796 pg/m3
Total geometric mean: 1.76 pg/m3
Total 25th percentile: 0.25 pg/m3
Total 75th percentile: 2.596 pg/m3

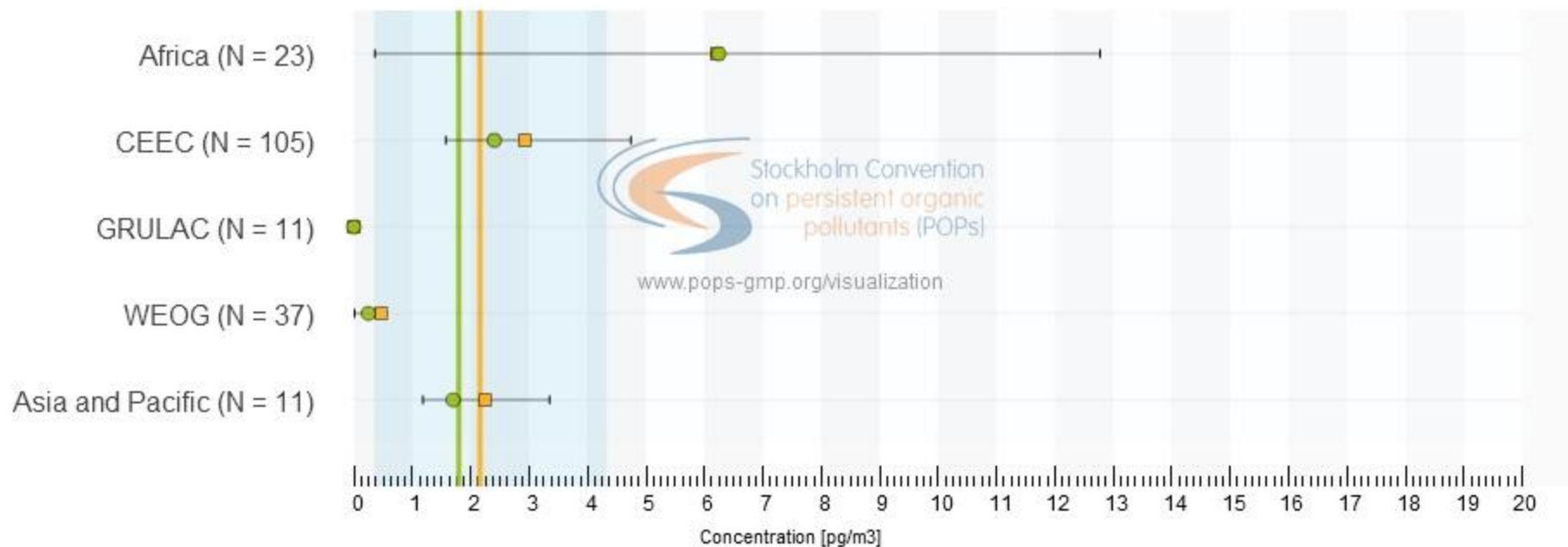
Legend



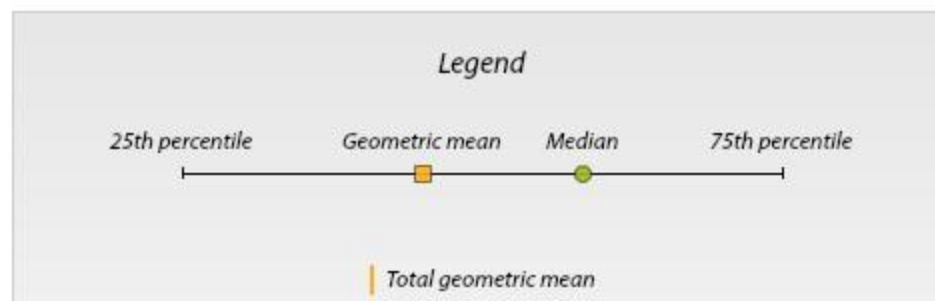
GMP Reports On-line Data Visualization

REGIONAL BACKGROUNDS - Inter-regional Variability

Parameter: **p,p-DDT** | Sampling method: **passive**



Total median: 1.813 pg/m³
Total geometric mean: 2.173 pg/m³
Total 25th percentile: 0.35 pg/m³
Total 75th percentile: 4.33 pg/m³



GMP I



Compatibility

[illegible]

Ukáska upraveného datového souboru										
id	datum	stav	stav1	stav2	stav3	stav4	stav5	stav6	stav7	stav8
1	1	20	1966	2234	1483	17	20	672	40	4
2	1	20	1966	734	1966	17	20	672	40	4
3	1	20	1966	1966	1966	17	20	672	40	4
4	1	20	1966	1966	1966	17	20	672	40	4
5	1	20	1966	1966	1966	17	20	672	40	4
6	1	20	1966	1966	1966	17	20	672	40	4
7	1	20	1966	1966	1966	17	20	672	40	4
8	1	20	1966	1966	1966	17	20	672	40	4
9	1	20	1966	1966	1966	17	20	672	40	4
10	1	20	1966	1966	1966	17	20	672	40	4
11	1	20	1966	1966	1966	17	20	672	40	4
12	1	20	1966	1966	1966	17	20	672	40	4
13	1	20	1966	1966	1966	17	20	672	40	4
14	1	20	1966	1966	1966	17	20	672	40	4
15	1	20	1966	1966	1966	17	20	672	40	4
16	1	20	1966	1966	1966	17	20	672	40	4
17	1	20	1966	1966	1966	17	20	672	40	4
18	1	20	1966	1966	1966	17	20	672	40	4
19	1	20	1966	1966	1966	17	20	672	40	4
20	1	20	1966	1966	1966	17	20	672	40	4
21	1	20	1966	1966	1966	17	20	672	40	4
22	1	20	1966	1966	1966	17	20	672	40	4
23	1	20	1966	1966	1966	17	20	672	40	4
24	1	20	1966	1966	1966	17	20	672	40	4
25	1	20	1966	1966	1966	17	20	672	40	4
26	1	20	1966	1966	1966	17	20	672	40	4
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36	1	20	1966	1966	1966	17	20	672	40	4
37	1	20	1966	1966	1966	17	20	672	40	4
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53	1	20	1966	1966	1966	17	20	672	40	4
54	1	20	1966	1966	1966	17	20	672	40	4
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62	1	20	1966	1966	1966	17	20	672	40	4
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83	1	20	1966	1966	1966	17	20	672	40	4
84	1	20	1966	1966	1966	17	20	672	40	4
85	1	20	1966	1966	1966	17	20	672	40	4
86	1	20	1966	1966	1966	17	20	672	40	4
87	1	20	1966	1966	1966	17	20	672	40	4
88	1	20	1966	1966	1966	17	20	672	40	4
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91	1	20	1966	1966	1966	17	20	672	40	4
92	1	20	1966	1966	1966	17	20	672	40	4
93	1	20	1966	1966	1966	17	20	672	40	4
94	1	20	1966	1966	1966	17	20	672	40	4
95	1	20	1966	1966	1966	17	20	672	40	4
96	1	20	1966	1966	1966	17	20	672	40	4
97	1	20	1966	1966	1966	17	20	672	40	4
98	1	20	1966	1966	1966	17	20	672	40	4
99	1	20	1966	1966	1966	17	20	672	40	4
100	1	20	1966	1966	1966	17	20	672	40	4

GMP II



BASELINE ESTIMATES

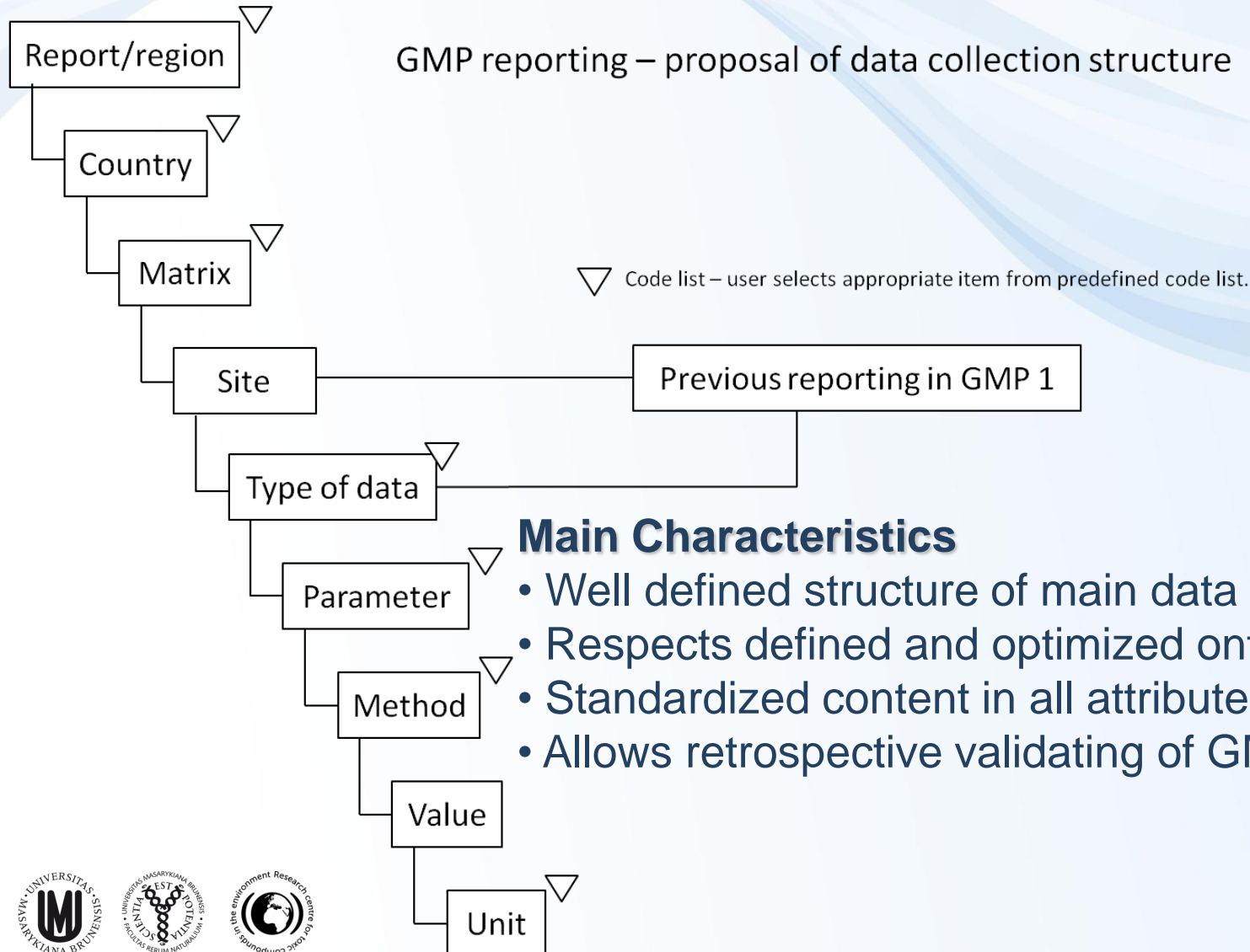
EFFECT SIZE ESTIMATES

Time-related changes & statistical significance

Proposal for e-data capture system

4. Proposal for electronic format template for the next GMP

Hierarchical structure of data entities and umbrella of ontology



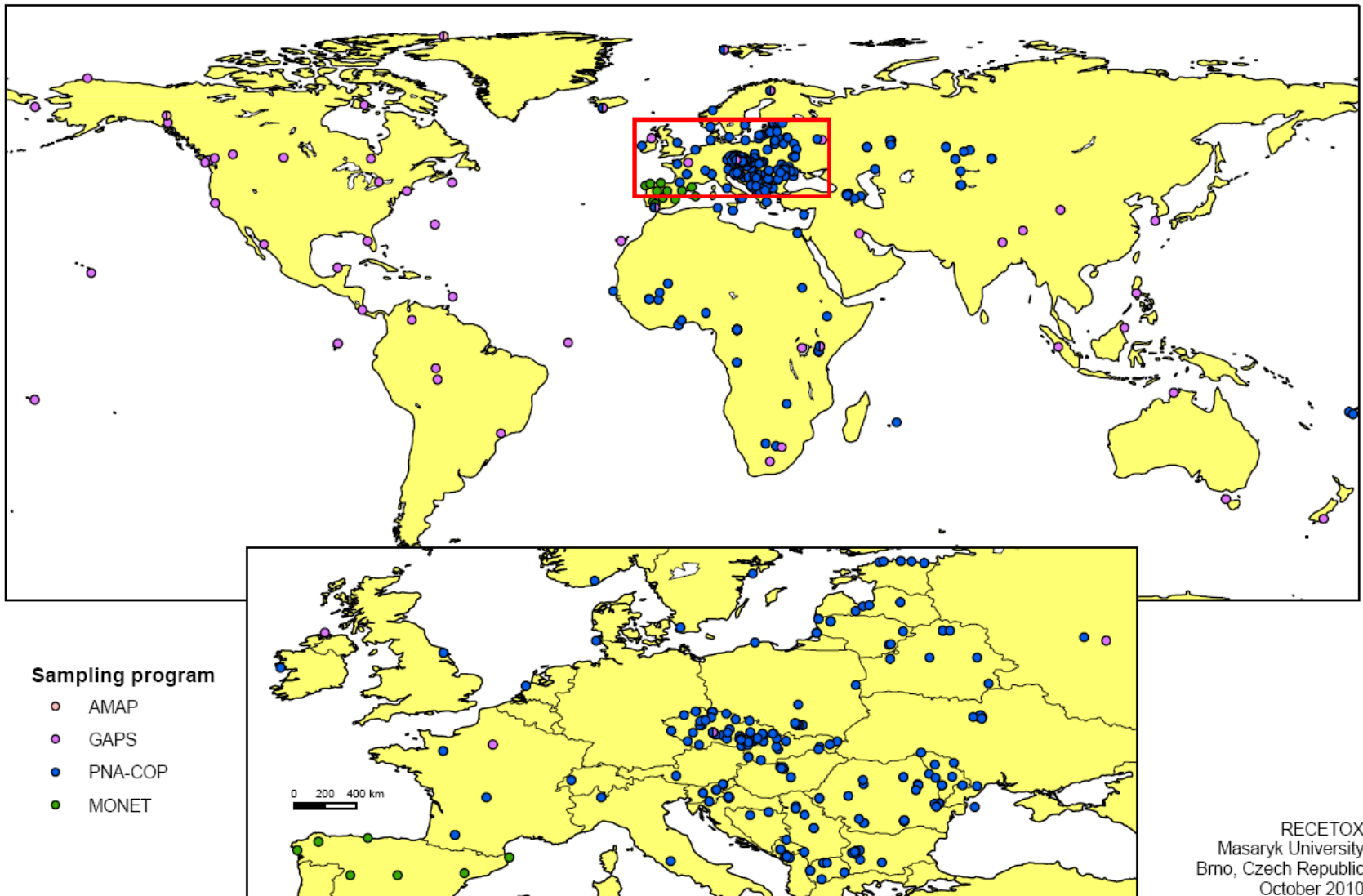
Long-term active air sampling networks



www.ebas.nilu.no operated by NILU

<https://www.ec.gc.ca/rs-mn/default.asp?lang=En&n=BFE9D3A3-1> [Archiv](#)

Passive air sampling networks



GENASIS portal

GENESIS
Global Environmental Assessment and Information System

RECETOX IBA MASARYK UNIVERSITY

Tools POPspedia Scientific section Tutorial E-learning Partners

Data sources

GENESIS and POPs

Why do we use it? It is a long established fact that a reader will be distracted by the readable content of a page when looking at its layout. The point of using Lorem Ipsum is that it has a more-or-less normal distribution of letters, as opposed to using 'Content here, content here', making it look like readable English. Many desktop publishing packages and web page editors now use Lorem Ipsum as their default model text, and a search for 'lorem ipsum' will uncover many web sites still in their infancy. Various versions have evolved over the years, sometimes by accident, sometimes on purpose (injected humour and the like).

Survey of data

Site description	Sum	Time series	Seasonality	Trend comparison	Compound comparison	Regional comparison	Bpx models
Site description	Sum	Time series	Seasonality	Trend comparison	Compound comparison	Regional comparison	Bpx models

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- User-friendly access to main system functions
- Main functions are directly accessible from the title page:

○ Analytical tools

- ✦ With selection of the tool, the user runs software window and selects data for the appropriate analysis.
- ✦ There are exceptions: 1) tool of Box models, where the Czech Republic box model window is opened directly and 2) module comparing substances.

○ Survey of data sources – opens table and map survey of all data sources.

○ Menu – access to all system functions.

○ Project aims – access to the detailed description of the project

• Other options

- CZ/ENG language switch
- RSS channel with news

Menu options

Description of project aims and importance

Survey of data sources

Selection of the analytical tool

www.genasis.cz



Analyses of selected data set



GENASIS - analyse

New data selection

Additional selection criteria

Analysis stratification

Analysis settings



Data overview

Site selection

Location of sites

Sampling frequency



Basic analyses

Distribution characteristics

Concentrations summary on sites



Time series summary



Seasonal pattern



Temporal trends

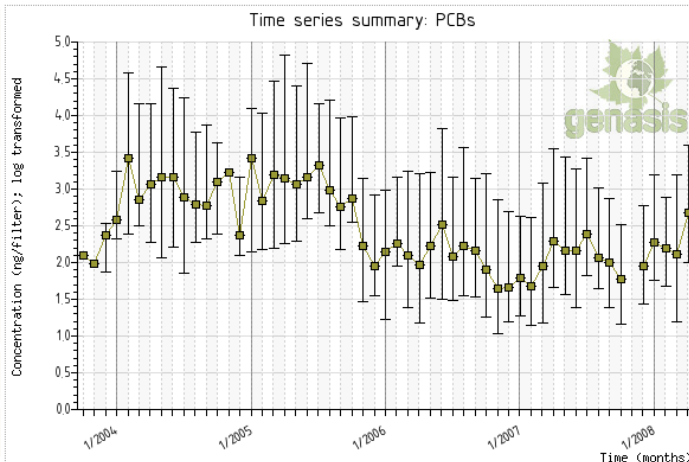


RECETOX



IBA

celocoen



Base for analysis
N = 1872 (from 135 sites)
Matrix: Air passive
Time period: 2000 - 2009
Project: Monet CZ
Monitoring type: Long-term monitoring
Short-term studies, Finished monitoring
Region: Europe -> Czech Republic
Compound: PCBs -> PCBs

Additional selections

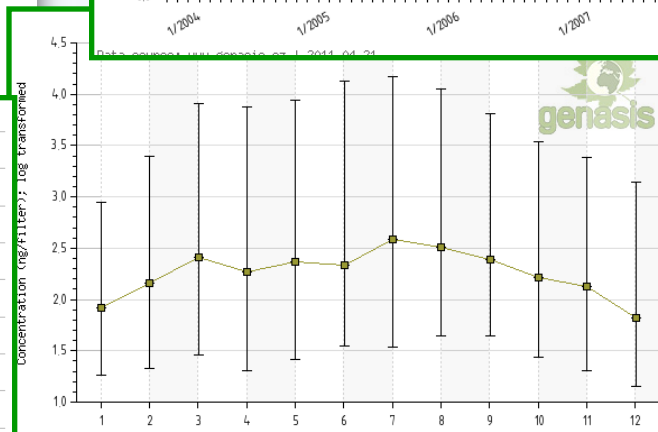
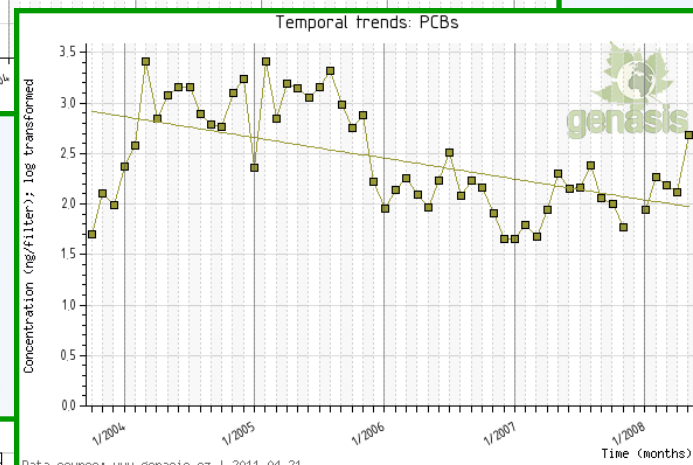
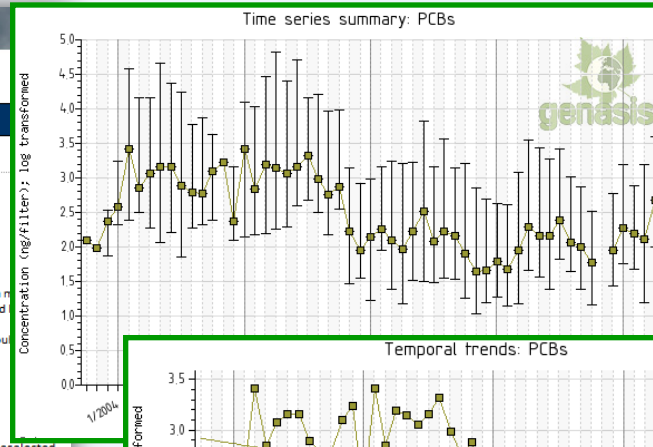
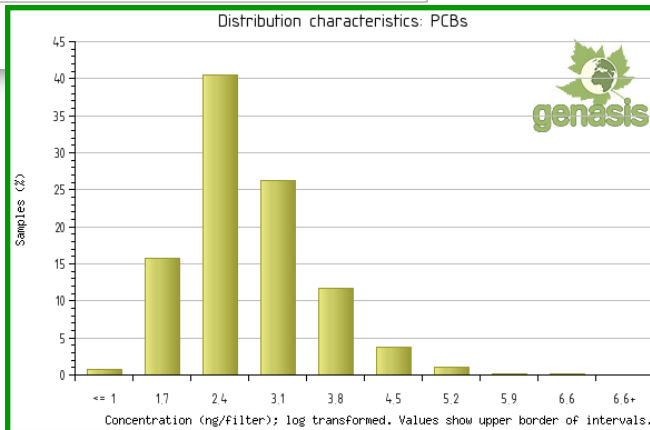
Site deselection
5 sites from 140 has been deselected

Analysis settings
Transformation: Logarithm
Show: Median (5-95th percentile)
Base for analysis: Samples

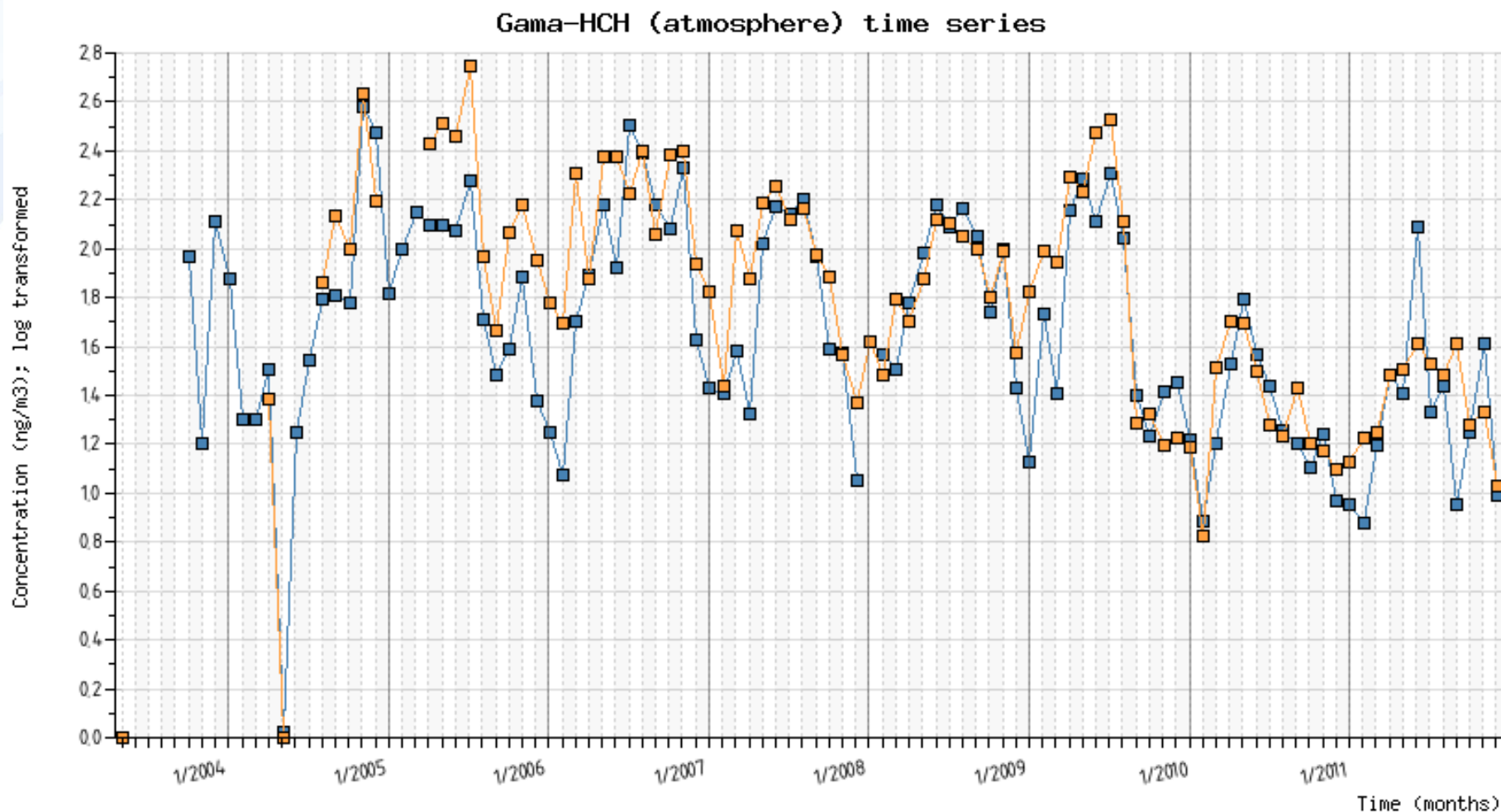
Analysis stratification

Data source: www.genasis.cz

Number of samples (sites)	1872 (135)
Median (5th - 95th percentile)	8.69 (2.99 - 43.68) ng/filter
Minimum - maximum	0.48 - 498.10 ng/filter
Geometric mean (95% CI)	10.96 (10.49 - 11.43) ng/filter
Arithmetic mean (95% CI)	14.84 (14.37 - 15.31) ng/filter



MONET EUROPE (APOPSBAL, CZ, CEE, EU)



□ median

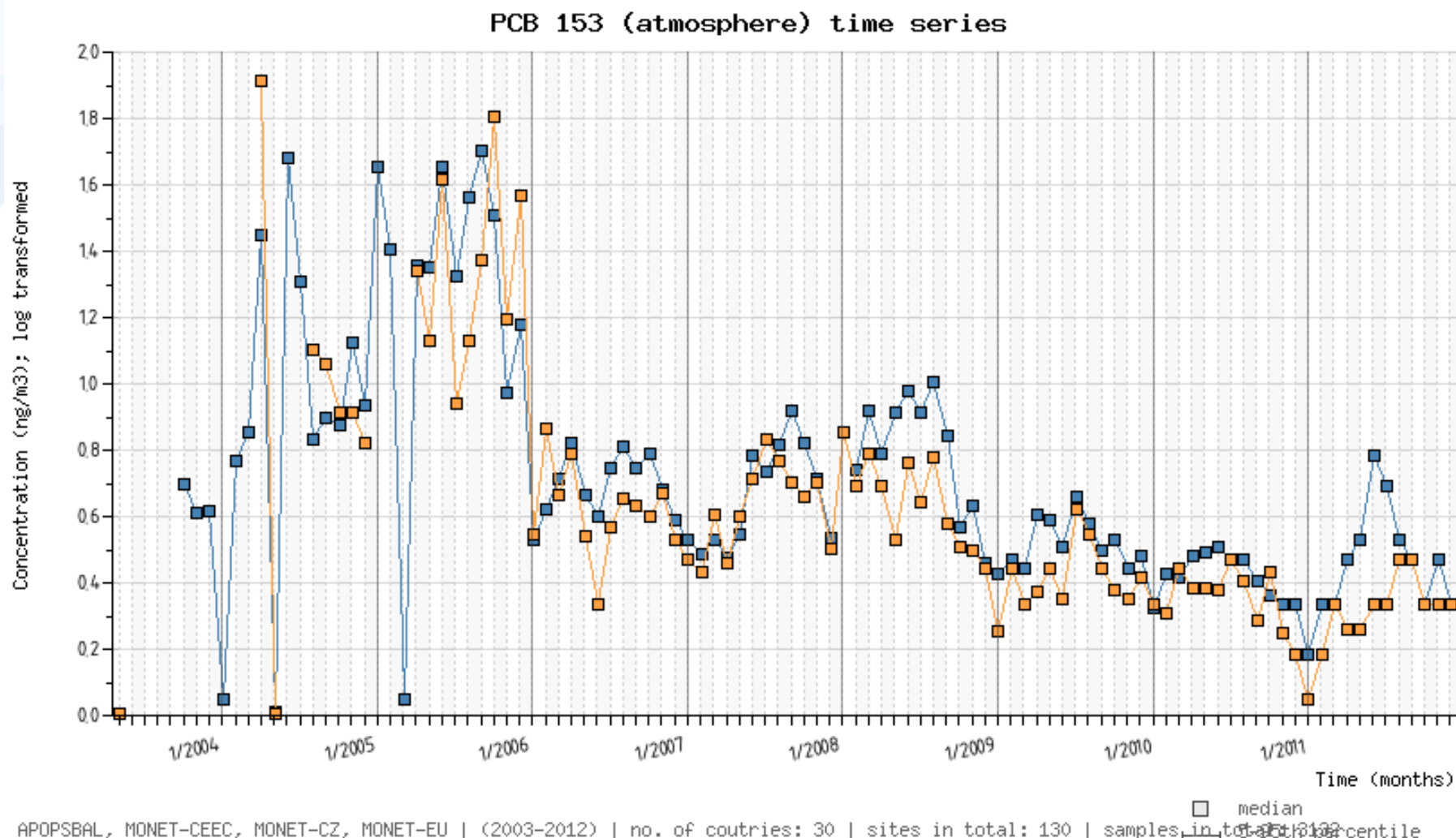
APOPSBAL, MONET-CEEC, MONET-CZ, MONET-EU | (2003-2012) | no. of countries: 30 | sites in total: 130 | samples in total: 3129

Base: samples | Stratified by: SettlementType

www.genasis.cz



MONET EUROPE (APOPSBAL, CZ, CEE, EU)

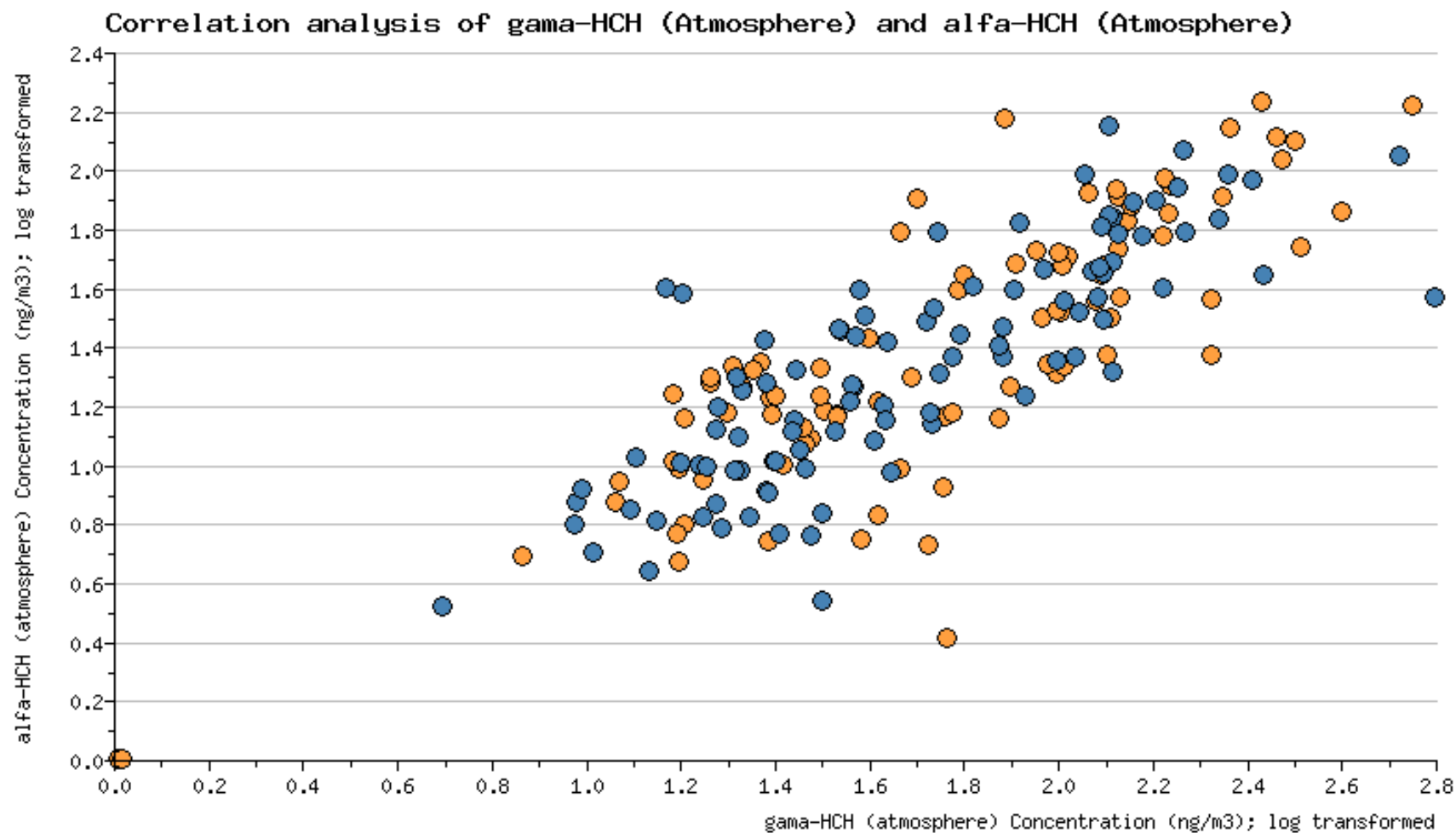


Base: samples | Stratified by: SettlementType

www.genasis.cz



MONET EUROPE (APOPSBAL, CZ, CEE, EU)



APOPSBAL, MONET-CEEC, MONET-CZ, MONET-EU | (2003-2012) | no. of countries: 30 | sites in total: 130 | samples in total: 3132

Base: samples | Stratified by: SettlementType

www.genasis.cz



Global Earth observation system of systems (GEOSS)

To improve the flow of relevant data to the environmental and health communities, the GMP has to be linked to available synergic instruments, especially to the GEOSS.

www.earthobservations.org



It has been incorporated in the area of health (HE-02), as one of 9 'Societal Benefit Areas' (disasters, health, energy, climate, water, weather, ecosystems, agriculture and biodiversity) identified in the revised (2012-2015) work plan in support to the 10-Year Implementation Plan of GEOSS.

Global Earth observation system of systems (GEOSS)

Among the priority actions to be undertaken in the next 3 years in frames of HE-2, is to

- (a) develop and implement a **global monitoring plan** for tracking changing levels of POPs in the natural environment and human beings,
- (b) **evaluate the effectiveness** of international efforts to reduce POP releases, and
- (c) **interlink relevant existing information systems** for monitoring air, water, ice caps and human health.

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Thank you for your kind attention

