Information systems about POPs - country experience (CZ)

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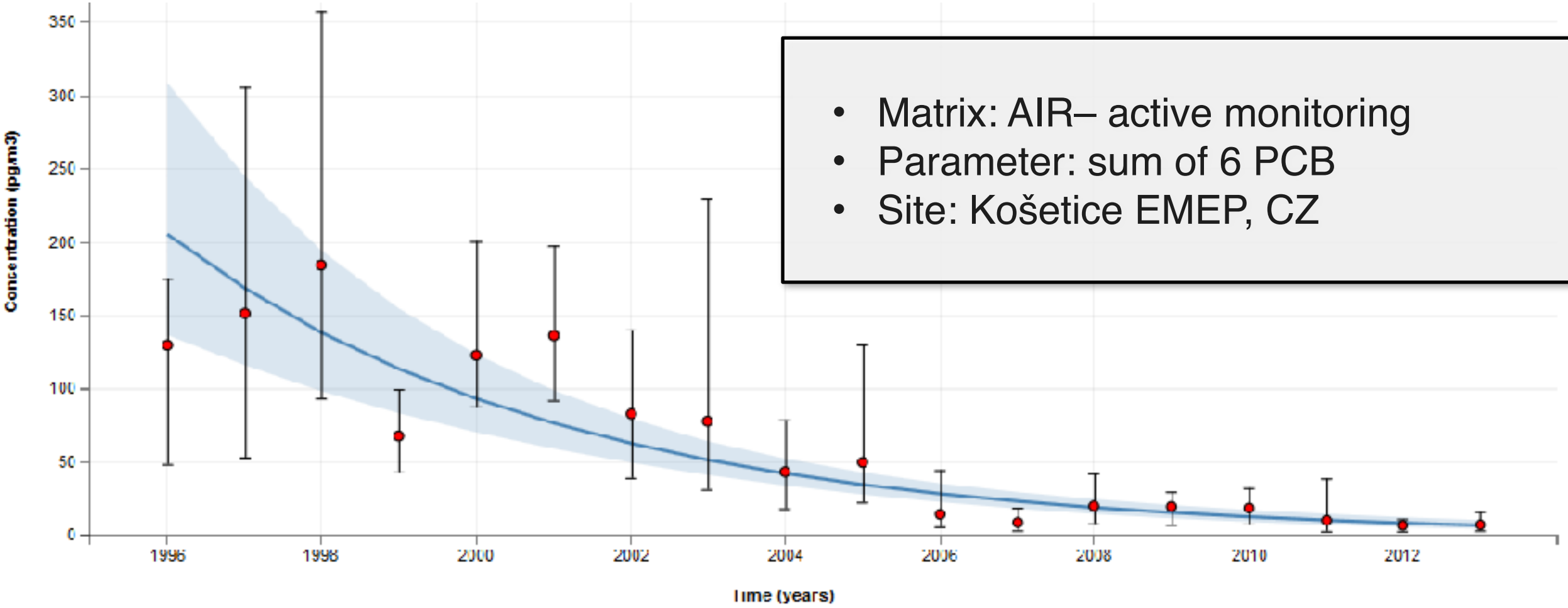
GGKP round table "Embedding POPs Data Management: Information Systems at National and Regional Levels", online 28 October, 15:00–16:30 CET

Introduction to the GMP Data Warehouse for POPs Monitoring
PRTR Register(s)
Demonstration of databases (GMPDWH, IRZ, GENASIS)
possibilities for national/regional use through the GENASIS system

Global Monitoring Plan of the Stockholm Convention

The global monitoring plan for persistent organic pollutants (POPs) is an important component of ***the effectiveness evaluation*** *of the Stockholm Convention and provides a harmonized organizational framework for the* ***collection of comparable monitoring data*** *on the presence of POPs from all regions, in order* ***to identify changes in their concentrations over time****, as well as on regional and global environmental transport.*

Goal: identification of trends of concentrations



- Matrix: AIR– active monitoring
- Parameter: sum of 6 PCB
- Site: Košetice EMEP, CZ

Source: GMP2 CEE Monitoring Report

http://www.pops.int/Implementation/GlobalMonitoringPlan/MonitoringReports/tabid/525/Default.aspx

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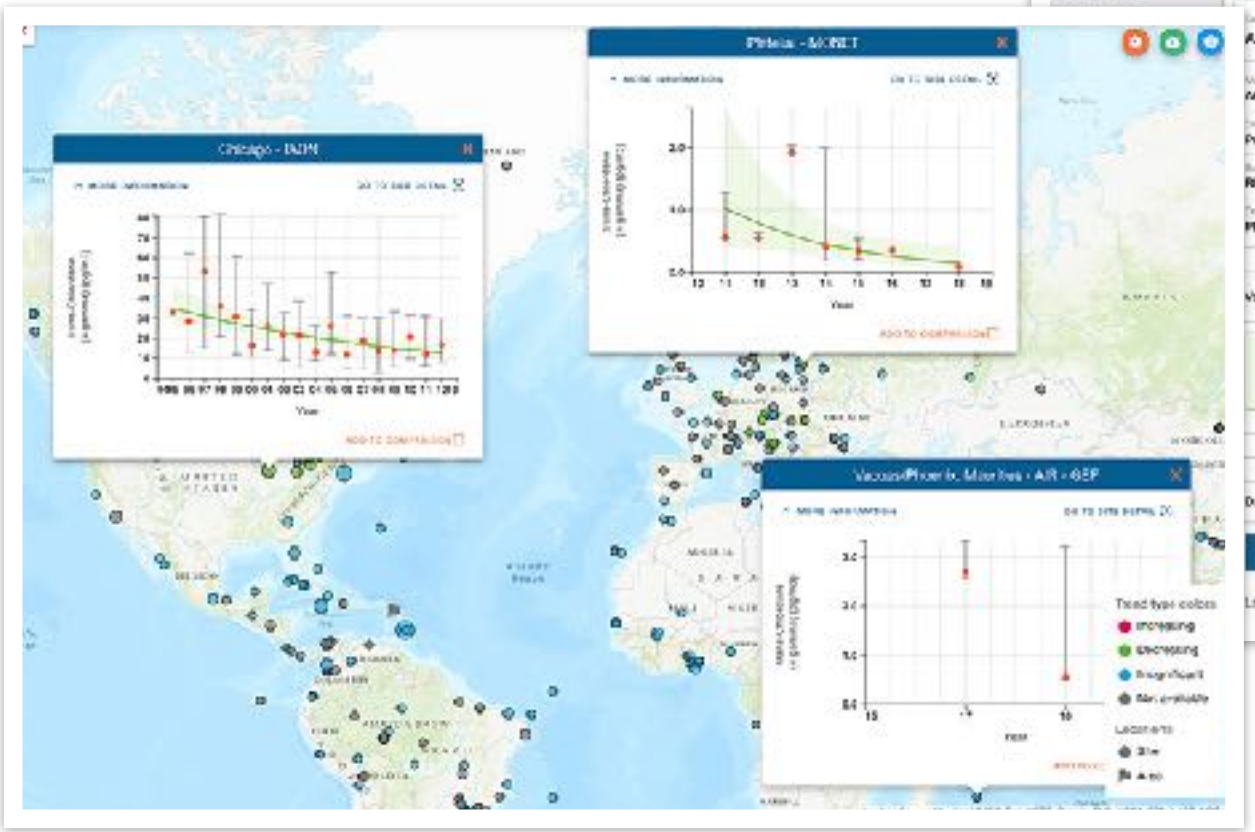
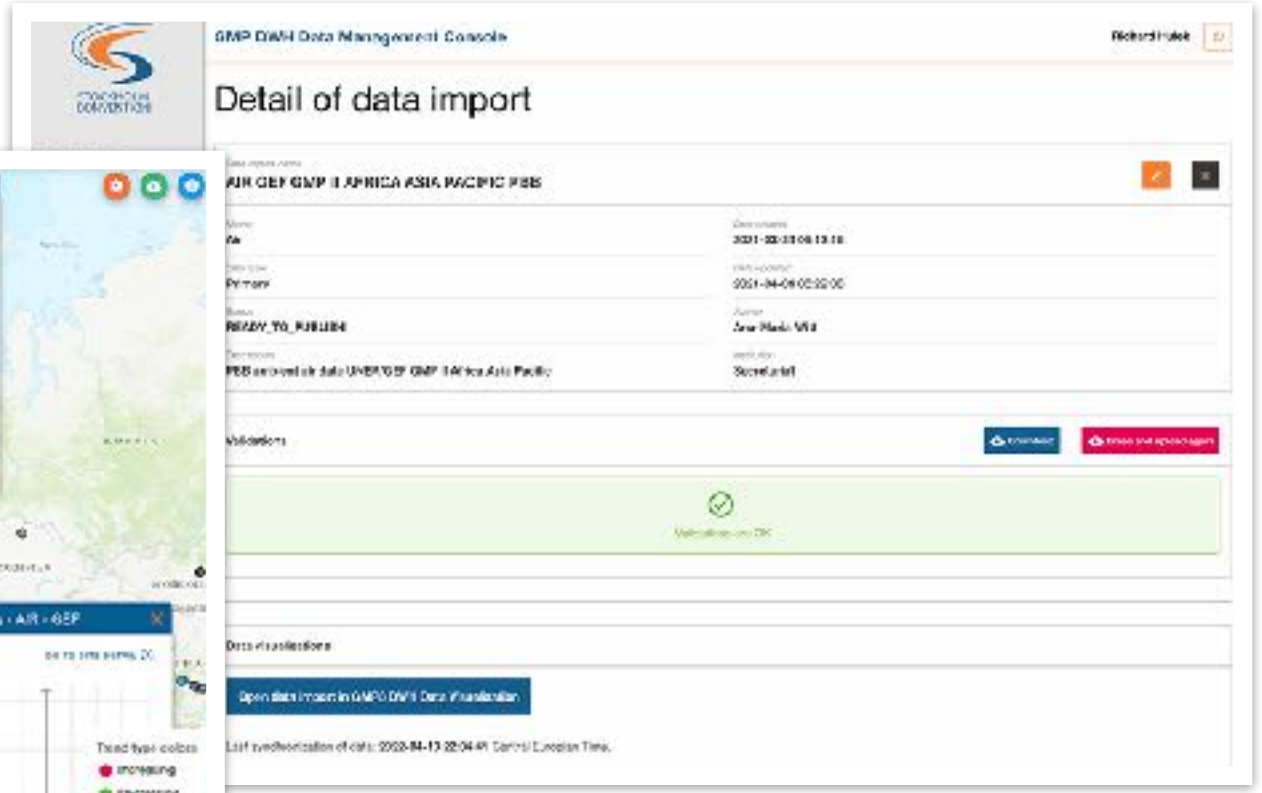
GMP Data Warehouse: main modules

Data visualizations





Data management console

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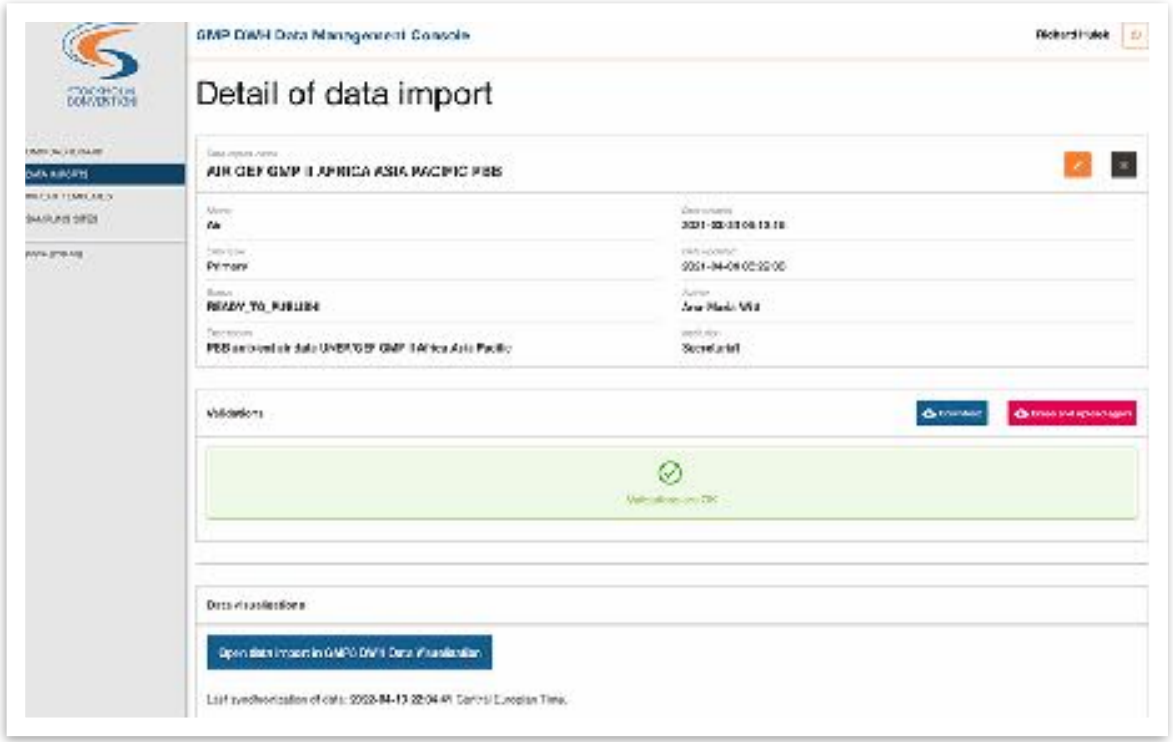
Data Management Console



- Data collection from various sources
- Data harmonisation across data providers
- QA/QC, data format validations
- Data management
- Approval management

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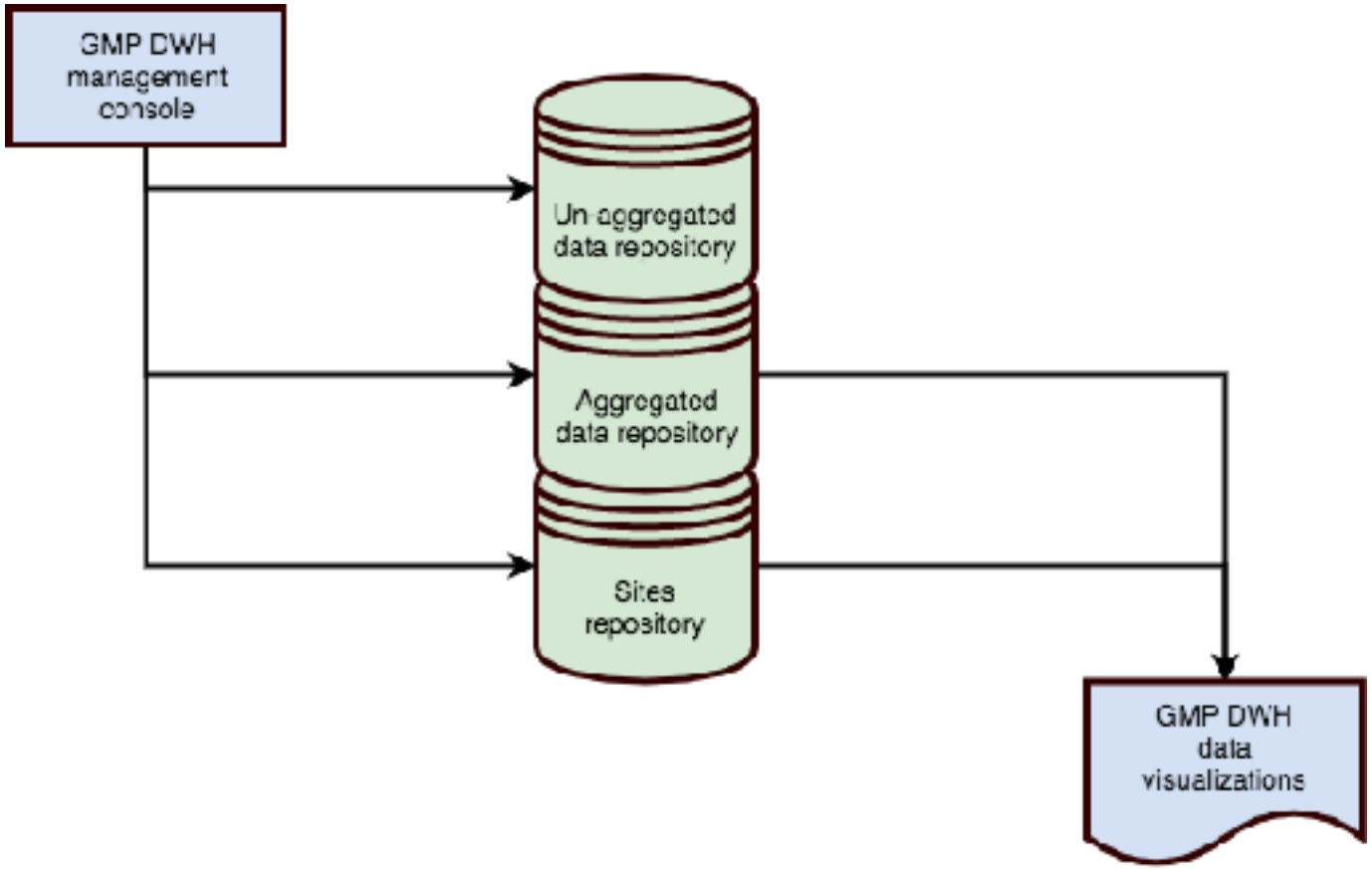
GMP DWH Data Flow



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Data formats

- Air
- Water
- Human milk
- Human blood

- Primary data
- Aggregated data

Data formats - templates

SITE									
Required field	*Required field*	*Required field*	*Required field*	*Required field if Region <> International waters*	*Required field*				
Text	*Numeric*	*Numeric*	*Codelist*	*Codelist*	*Codelist*	*Codelist*	*Codelist*	*Codelist*	*Codelist*
Site name	**Latitude**	**Longitude**	**Region**	**Country**	**Watertype**	**Sea**	**Sitetype**	**Potential source**	**Monitoring network**
XYZ 01	12,2833	54,6167	International waters		Surface seawater - ocean	Arabian Sea			CRU - XYZ
XYZ 02	12,7917	54,7333	International waters		Surface seawater - ocean	Arabian Sea			CRU - XYZ
Qinghaihu Lake	36,89239	100,0594	Asia and Pacific	China, Peoples Republic of	Surface water - lake				China National POPs Monitoring
Taihu Lake	31,1347	120,1587	Asia and Pacific	China, Peoples Republic of	Surface water - lake				China National POPs Monitoring

	SAMPLING ATTRIBUTES							MEASUREMENT				
	Required field	*Required field*	*Required field*	*Required field*				*Required field*	*Required field*	*Required field if Minimum = 0*	*Required field*	
	Integer	*text YYYY-MM-DD*	*text YYYY-MM-DD*	*Codelist*	*Numeric*	*Numeric*	*Numeric*	*Codelist*	*Codelist*	*Numeric*	*Numeric*	*Text*
rk	**Year**	**Start of sampling**	**End of sampling**	**Sampling type water**	**Depth (m)**	**Temperature (deg. of C)**	**Salinity (PSU)**	**Parameter**	**Analytical method**	**LOQ**	**Value**	**Laboratory**
	2014	2014-01-01	2014-01-01	Bulk				PFOS (pg/l)	GC-HRMS	100	0	0
	2014	2014-01-01	2014-01-01	Bulk				PFOSA (pg/l)	GC-HRMS		1300	0
oring	2014	2014-01-01	2014-03-31	Passive				PFOS (pg/l)	GC-HRMS		1000	0
oring	2014	2014-01-01	2014-03-31	Passive				PFOSA (pg/l)	GC-HRMS		900	0

Data formats – code lists

Water type	Region	Country	Sea	Site type	Potential source	Monitoring network	Sampling type water	Parameter	Analytical method
Surface water - lake	Africa	Afghanistan	Atlantic ocean	Urban	Industrial	MOVE Africa	Bulk	Aldrin (pg/l)	GC-MS/MS-ITMS
Surface water - river	Asia and Pacific	Albania	Arctic ocean	Sub-urban	Traffic	UNEP CHEMS	Passive	cis-Chlordane (=alpha) (pg/l)	GC-MS/MS-MS
Surface water - estuary	CEE	Algeria	Indian ocean	Rural	Residential	China National POPs Monitoring		trans-Chlordane (=gamma) (pg/l)	GC-ECD
Surface seawater - coastal	GRULAC	Andorra	Pacific ocean	Remote	Agricultural	EMEP		Oxychlordane (pg/l)	GC-EI-MS
Surface seawater - ocean	WEOG	Angola	Southern ocean	High altitude	Wastewater	GEF-STAP		cis-Nonachlor (pg/l)	GC-ITMS
	International waters	Antarctica	Adriatic Sea	Polar	Natural	GEF-ANBUMD		trans-Nonachlor (pg/l)	GC-MS
		Antigua and Barbuda	Aegean Sea			GEF-APFM		o,p'-DDD (pg/l)	GC-NCI-MS
		Argentina	Alboran Sea			GEF-ANTO		o,p'-DDE (pg/l)	HRGC-ECD
		Armenia	Amundsen Gulf			GEF-ATK		o,p'-DDT (pg/l)	HRGC-ITMS
		Australia	Amundsen Sea			GEF-BENGUELA		p,p'-DDD (pg/l)	HRGC-MS
		Austria	Andaman Sea			GEF-BMEA		p,p'-DDE (pg/l)	HRGC-MS-MS
		Azerbaijan	Arabian Sea			GEF-BMEA		p,p'-DDT (pg/l)	
		Bahamas	Aral Sea			GEF-MALAMPAYA		Sum 3 (p,p'-DDTs (pg/l)	
		Bahrain	Arctic Sea			GEF-MAY		Sum 5 DDTs (pg/l)	
		Bangladesh	Archipelago Sea			GEF-MAYUB		Dieldrin (pg/l)	
		Barbados	Argentine Sea			GEF-NORTH		Endrin (pg/l)	
		Belarus	Baffin Bay			GEF-OCTAVIA		HCB (pg/l)	
		Belgium	Balearic Sea			GEF-OCEANO		Heptachlor (pg/l)	
		Belize	Baltic Sea			GEF-PUERTO RICO		cis-Heptachlorepoxide (=exo, B) (pg/l)	
		Benin	Banda Sea			GEF-REGIONAL		trans-Heptachlorepoxide (=exo, A) (pg/l)	
		Bhutan	Barents Sea			GEF-SNOWCRACCV		Sum 2 heptachlorepoxides (cis+trans) (pg/l)	
		Bolivia	Bass Strait					Mirex (pg/l)	
		Bosnia and Herzegovina	Bay of Bengal					PCB 28 (pg/l)	
		Botswana	Bay of Biscay					PCB 52 (pg/l)	
		Brazil	Bay of Campeche					PCB 101 (pg/l)	
		Brunei	Bay of Fundy					PCB 118 (pg/l)	
		Bulgaria	Beaufort Sea					PCB 153 (pg/l)	
		Burkina Faso	Bellingshausen Sea					PCB 180 (pg/l)	
		Burundi	Bering Sea					Sum 6 PCBs (pg/l)	
		Cambodia	Bismarck Sea					Sum 7 PCBs (pg/l)	
		Cameroon	black sea					PCB 77 (fg/l)	
		Canada	Bohai Sea					PCB 81 (fg/l)	
		Cape Verde	Bohai / Yellow Sea					PCB 105 (fg/l)	
		Central African Republic	Bothnian Sea					PCB 114 (fg/l)	
		Chad	Camotes Sea					PCB 118 (fg/l)	
		Chile	Caribbean Sea					PCB 123 (fg/l)	
		China, People's Republic of	Caspian Sea					PCB 126 (fg/l)	
		Colombia	Ceram Sea					PCB 156 (fg/l)	
		Comoros	Celebes Sea					PCB 157 (fg/l)	
		Congo	Celtic Sea					PCB 167 (fg/l)	
		Congo, Democratic Republic of	Central Arctic Sea					PCB 169 (fg/l)	
		Cook Islands	Ceram Sea					PCB 189 (fg/l)	
		Costa Rica	Chesapeake Bay					Sum 12 PCBs (fg/l)	
		Croatia	Chilean Sea					PCB-WHO1998-TEQ LB (fg/l)	
		Cuba	Chukchi Sea					PCB-WHO1998-TEQ UB (fg/l)	
		Cyprus	Cilician Sea					PCB-WHO2005-TEQ LB (fg/l)	
		Czech Republic	Cooperation Sea					PCB-WHO2005-TEQ UB (fg/l)	

About GMP DWH = Global Monitoring Plan Data warehouse

Work mandated by decision SC-6/23, carried in accordance with

Chapter 6 of the Guidance on the Global Monitoring Plan for Persistent Organic Pollutants relevant to data handling (UNEP/POPS/COP.6/INF/31) in the period 2012-2014.

Supervision by

Stockholm Convention Secretariat under the guidance of the GMP Global Coordination Group and Regional Organization Groups

Performed by

Stockholm Convention Regional Centre in the Czech Republic hosted at RECETOX through the RECETOX research infrastructure, Masaryk University, Brno, Czech Republic with support of the EU iGOSP project of ERA Planet

Past summary

Global Monitoring Plan Data warehouse (**GMP DWH**) launched first version in 2011, upgraded in 2014 (via SC 6/23) for second reporting round, available on **www.pops-gmp.org** until 1 June 2022

Present….

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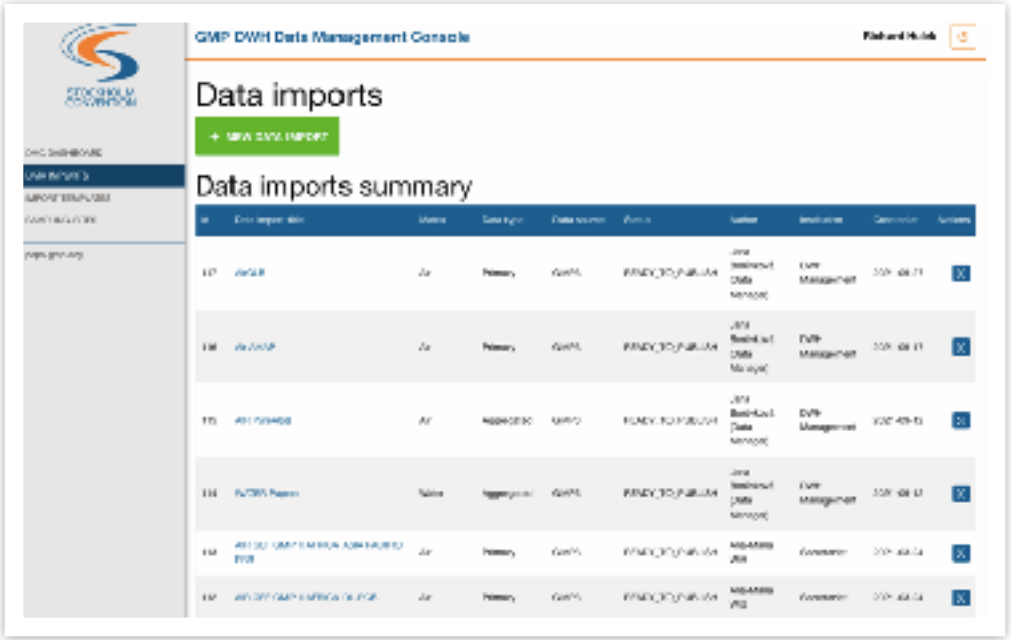
GMP DWH consists of:



GMP DWH Data Management Console
https://dmc.pops-gmp.org
authorized access for experts only at the moment of data imports (next in 2025-6)

Everyone can browse

GMP DWH Data Visualizations
https://www.pops-gmp.org
once approved by ROG experts and officially released, then available 24/7

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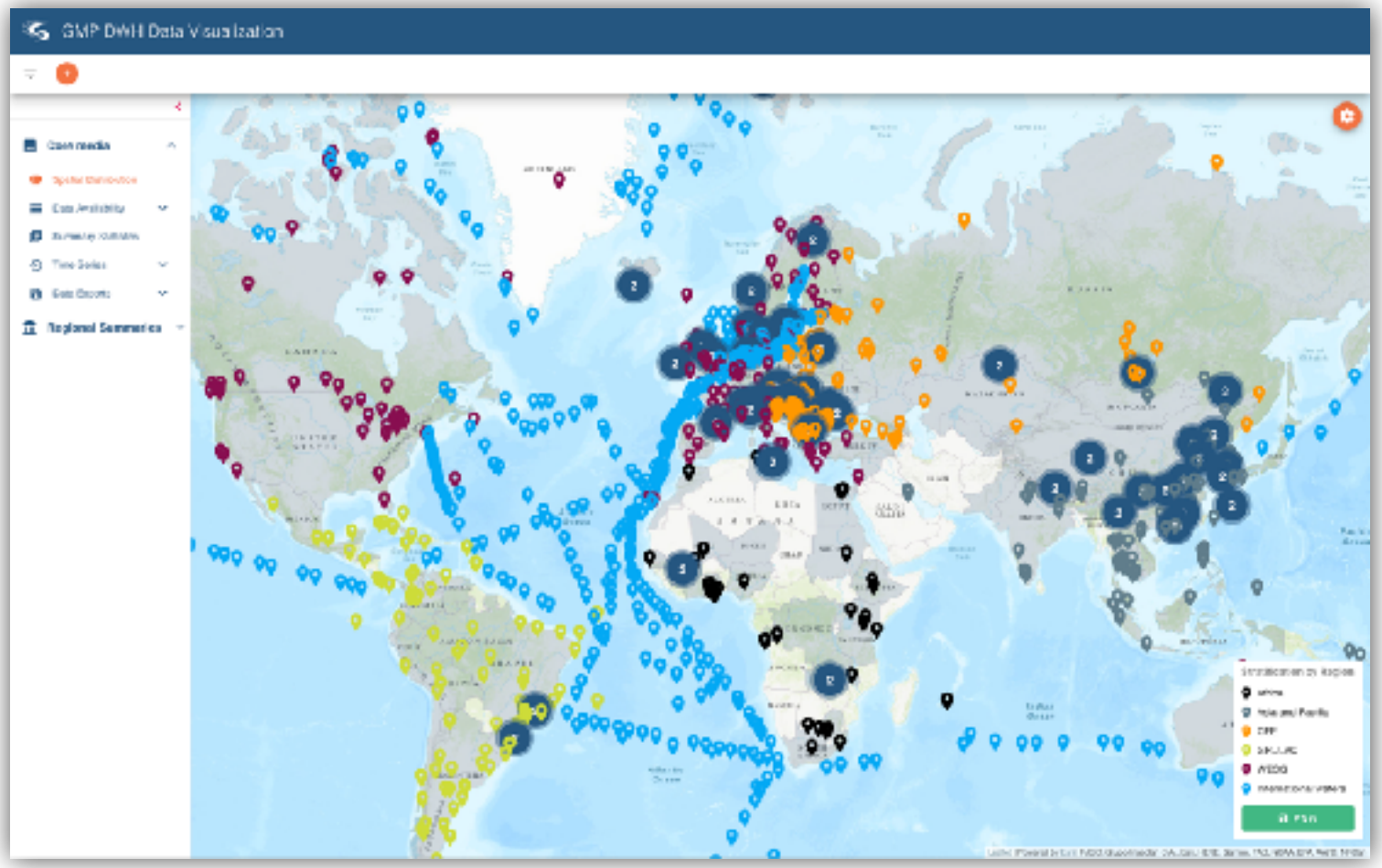
GMP DWH Data Visualizations



Spatial Distribution Module

https://data.pops-gmp.org/2020/all/#/gmp3/spatial-distribution

FORMAT: 5 modules

- Spatial distribution
- Data availability
- Summary statistics
- Trend analysis
- Data exports

CONTENT

4 core media
30 listed chemicals (POPs)
314 chemical parameters
111 monitoring networks/projects
126 countries
779 sites + a total of 1159 water sites and ocean cruises
time range: 1967-2021/2

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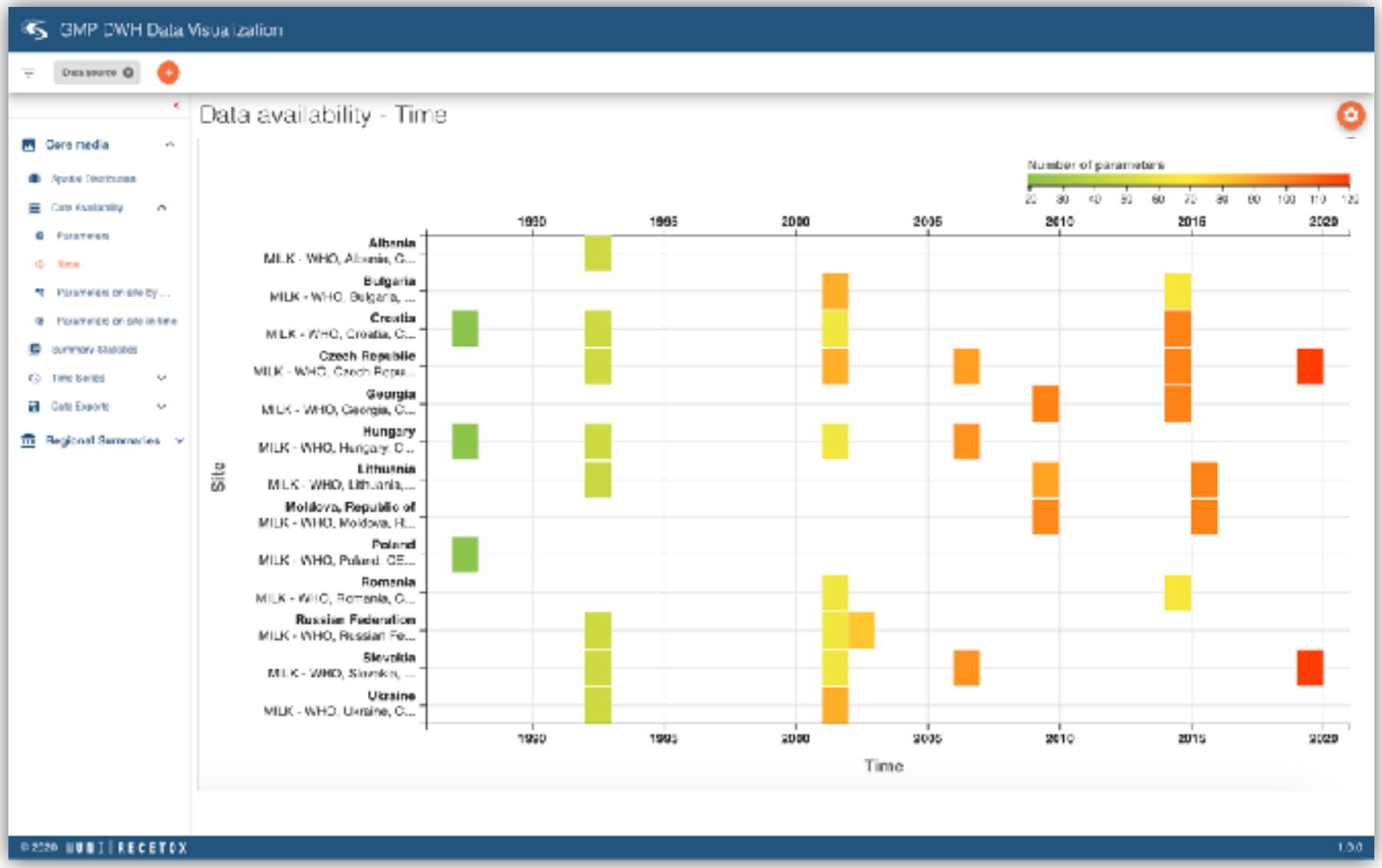
Data Availability Module



Data Availability Module

- time series
- chemical parameter
- matrices on site
- parameters on site in time

chart shown = availability of milk data in Central and Eastern European region over time. Countries that are not shown did not provide any data into WHO/UNEP survey

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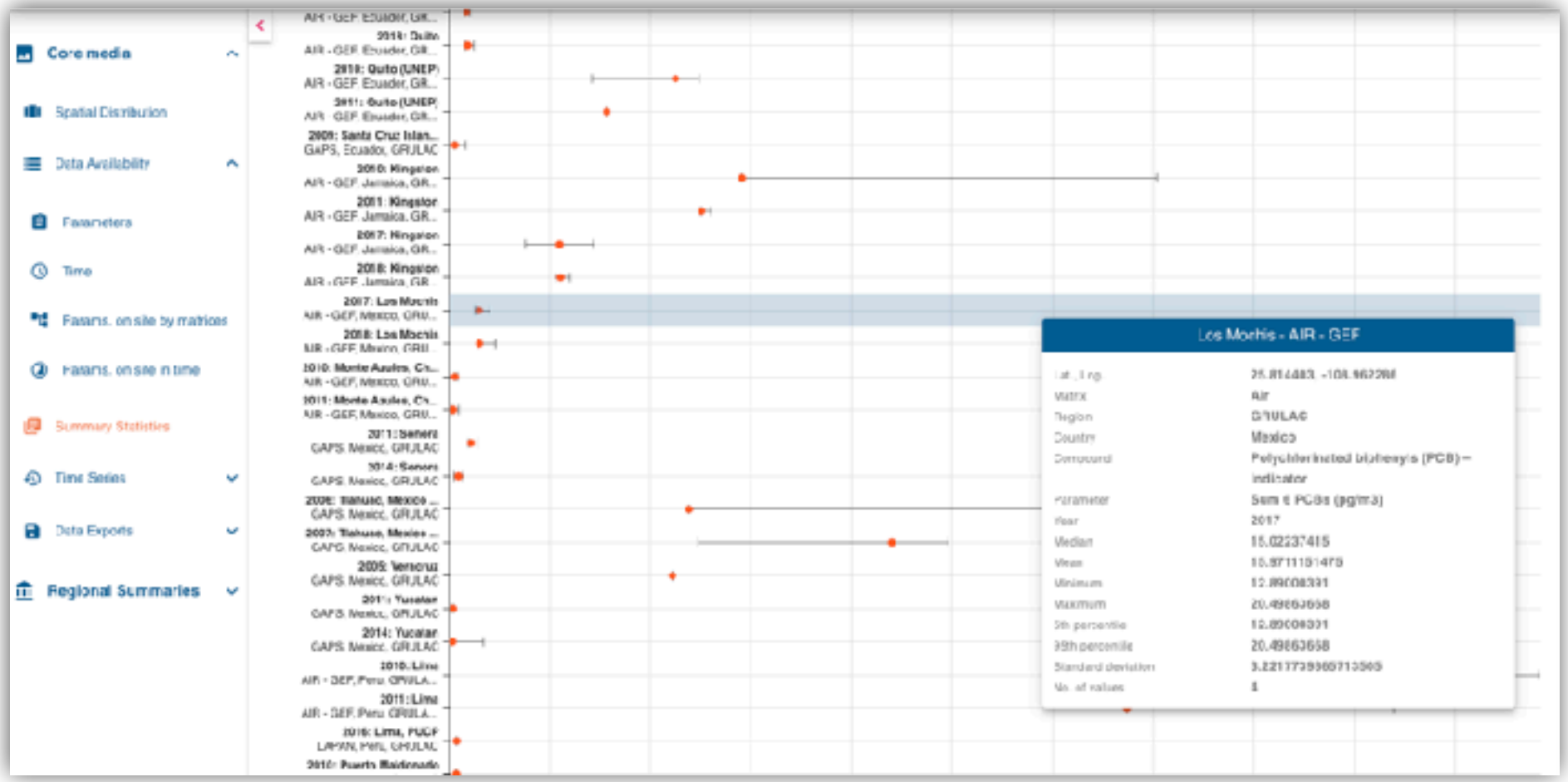
Summary Statistics Module



Summary Statistics Module
multiple sites or single site (per parameter)

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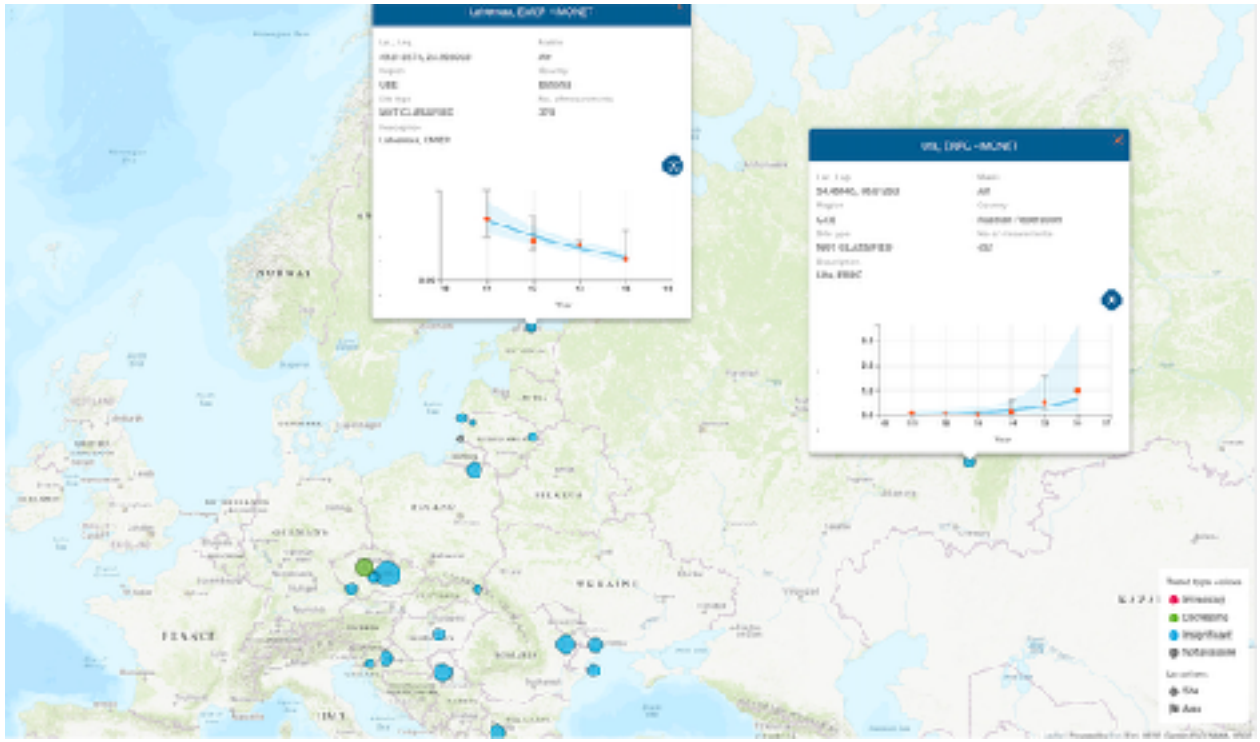
Trend analysis



Trend analysis
multiple sites in map, detail on a site

Trend analysis module
single site, trend characteristics and description

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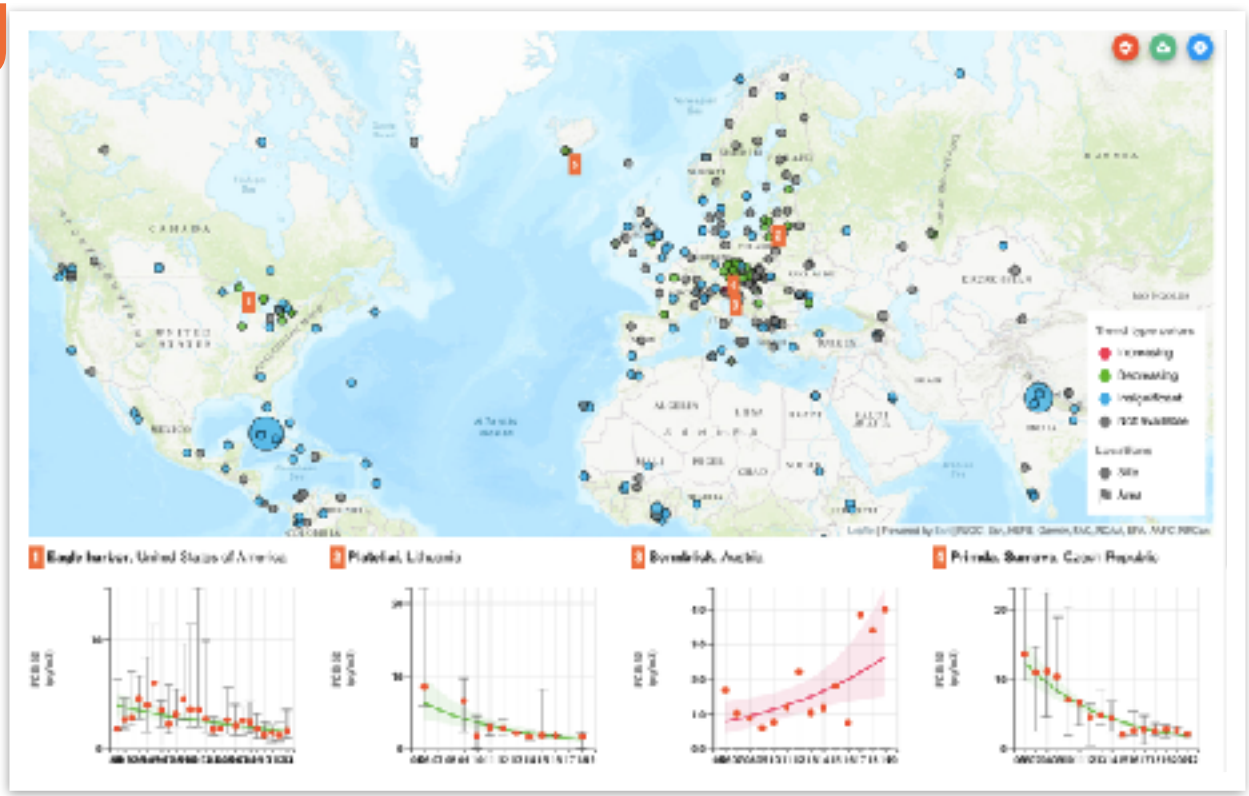
GMP DWH for decision makers - new maps and charts

https://www.pops-gmp.org

- visualization available 24/7 online free of charge to all stakeholders and the broad public
- core matrices of the Stockholm Convention on POPs (air, human tissues, water)
- fully harmonized data and information structure
- POPs data format: annually aggregated concentrations
- largest pool of global POPs data available on one place
- user-friendly access

- GMP DWH updates - 6 year interval as per GMP cycle
- current content up to third regional reports (GMP3) - the latest information is 2022, the "oldest" data are 1960s or 1980s, depending on a matrix and a chemical.



GMP DWH Data Visualizations
trend in maps and trend exports

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trend maps and charts are shown in several regional POPs monitoring reports and in the global one, too

GENASIS : https://www.genasis.cz/

GENASIS reflects national needs for establishment of complex information systems to support decision making

- A practical tool – new generation of multidimensional software – for data repository, expert analysis, simultaneous visualization of outputs from environmental and other data from multiple data sources
- Design and test a system for on-line complex assessment of anthropogenic activities and their effects on environment including related ecological and health risks
- Ensure more effective data mining of existing and new data including their integration and on-line connection to other data sources
- Provide access to all representative data on presence and distribution of chemicals in environment for multiple users and interested stakeholders
- Increase the knowledge on environment contamination

PRTR nationally - CZ : https://www.irz.cz/vyhledavani-v-irz

- Integrovaný registr znečištění (Integrated pollution register)
- based on legislation - in the making since 2002,
- database online since 2004,
- since then gradual improvements and harmonization with other (European/Global requirements) - e-PRTR
- any installation/facility producing pollutants and releasing them into air, water, soil and in wastes have to report by 15 February on levels.
- managed by the Ministry of Environment, CENIA and Czech Environmental Inspection (ČIŽP)

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Thank you for your kind attention!

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