GOS^{4}M – Global Observation System for Mercury

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GOS^{4}M – Knowledge Hub

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GEO | GOS4M
GLOBAL OBSERVATION SYSTEM FOR MERCURY

www.gos4m.org

The context: GEO

GOS^{4}M is a GEO Flagship

The Group on Earth Observations (GEO) is a partnership of more than 100 national governments and in excess of 100 Participating Organizations that envisions a future where decisions and actions for the benefit of humankind are informed by **coordinated**, **comprehensive** and **sustained** Earth observations

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GLOBAL OBSERVATION SYSTEM FOR MERCURY

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GOS^{4}M Knowledge Hub

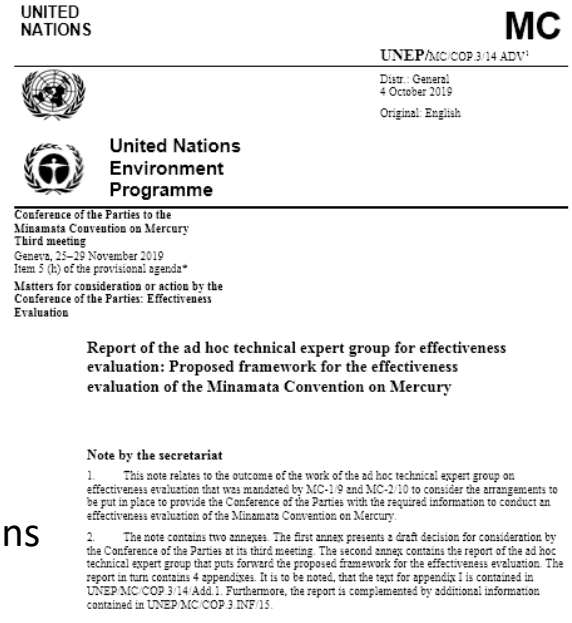
Objective: to provide user-oriented integrated tools to support the Effectiveness Evaluation undertaken in the Minamata Convention on Mercury

Platforms: GEOSS; Copernicus; GOS^{4}M Data Infrastructure

Policy Questions

"Based on the information collated, and through proposed indicators on process, outcome and monitoring, an assessment will be made on mercury levels attributable to the Convention in relations to the four policy questions."

1. Have the Parties taken actions to implement the Minamata Convention?
2. Have these actions resulted in changes in supply, use, emissions and releases of mercury to the environment?
3. Have these changes in resulted in changes in levels of mercury in the environment, biotic media and vulnerable populations attributable to the Convention?
4. To what extent are existing measures under the Minamata Convention meeting its objective of protecting human health and the environment from mercury?



UNITED NATIONS

MC

UNEP/MC/COP.3/14 ADV[1]

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United Nations Environment Programme

Conference of the Parties to the Minamata Convention on Mercury
Third meeting
Geneva, 25–29 November 2019
Item 5 (h) of the provisional agenda*
Matters for consideration or action by the Conference of the Parties: Effectiveness Evaluation

Report of the ad hoc technical expert group for effectiveness evaluation: Proposed framework for the effectiveness evaluation of the Minamata Convention on Mercury

Note by the secretariat

1. This note relates to the outcome of the work of the ad hoc technical expert group on effectiveness evaluation that was mandated by MC-1/9 and MC-2/10 to consider the arrangements to be put in place to provide the Conference of the Parties with the required information to conduct an effectiveness evaluation of the Minamata Convention on Mercury.

2. The note contains two annexes. The first annex presents a draft decision for consideration by the Conference of the Parties at its third meeting. The second annex contains the report of the ad hoc technical expert group that puts forward the proposed framework for the effectiveness evaluation. The report in turn contains 4 appendixes. It is to be noted, that the text for appendix I is contained in UNEP/MC/COP.3/14/Add.1. Furthermore, the report is complemented by additional information contained in UNEP/MC/COP.3/INF/15.

[1] As submitted to UNON Conference Services for editing/translation and made available for advance reading.
* UNEP/MC/COP.3/1.

Report of the ad hoc technical expert group

From data to knowledge

Effectiveness Evaluation requires:

- Reliable data and wide recognized chemo-physical models
- Scenarios based on most advanced scientific results
- Findable, Accessible, Interoperable, and Reusable data (FAIR results)
- User-friendly and co-designed applications

GOS^{4}M can provide knowledge to support answer to relevant policy questions.

Policy Questions

The GOS⁴M Knowledge Hub

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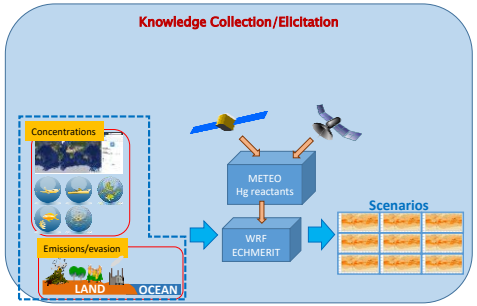

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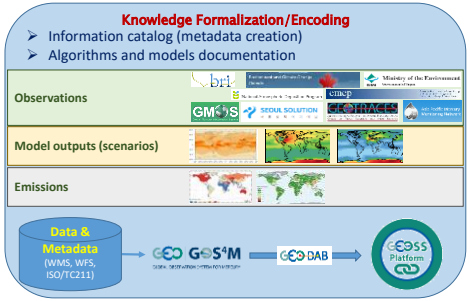

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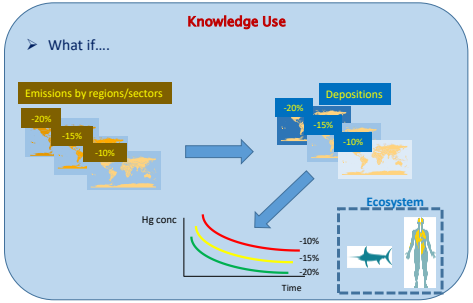

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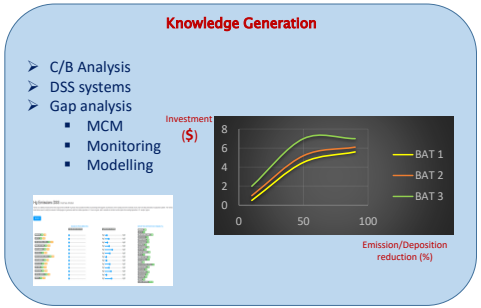

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Emissions
dB # 1
dB # 2
dB …

Atmospheric model
1
#2
….

Scenario 1
Scenario 2
Scenario 3
Scenario …

HDSS

Biogeochemical model
1
2
…

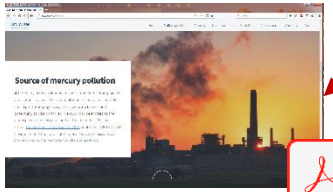
Trophic model
1
2
…

Hg
fish

Home page

Can be visited at **www.gos4m.org/kh**

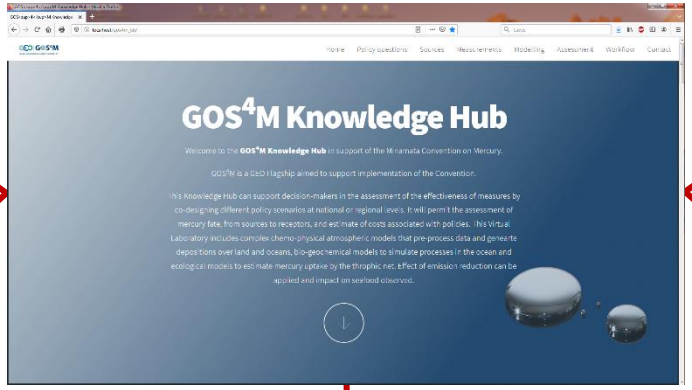
Policy questions

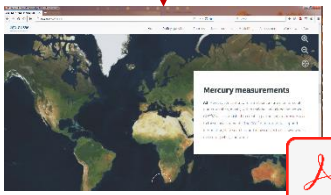


PDF

Emissions

Visual report





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Monitoring

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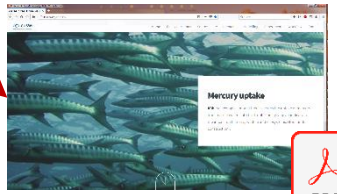
Scenario assessment



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Hg uptake

The road ahead .1 computation

Now	Forthcoming
1 database on emission (AMAP 2010)	Many databases, many years (AMAP, EDGAR, STREET, etc.; 2010, 2015, etc.)
1 atmospheric model to run scenarios (ECHMERIT)	Many models: - global GLEMOS, GEOS-Chem, GEM-MACH-Hg, ECHMERIT), - hemispheric (CMAQ-Hem) - regional (WRF-Chem, CCLM-CMAQ)
1 Global Circulation Model (Selin)	Many models
Trophic model N/A	Available models and data-driven techniques
Regional assessment	Country assessment
4 industrial macro-sectors	24 Sectors (GMA 2018)
Assessment of emission N/A	Emission by-country & by-sector
Assessment of BATs N/A	Assessment of BATs

The road ahead .2 Graphical User Interface

Now	Forthcoming
Maps as picture	Browsing maps
Map charts and histograms N/A	Map charts and histograms with reports
Selection of emission database, model N/A	Selection of emission database, model
Reporting on emission, monitoring, scenarios N/A	Reporting on emission, monitoring, scenarios
Reporting on concentration in seafood N/A	Reporting on concentration in seafood

Thank you!

Credits:

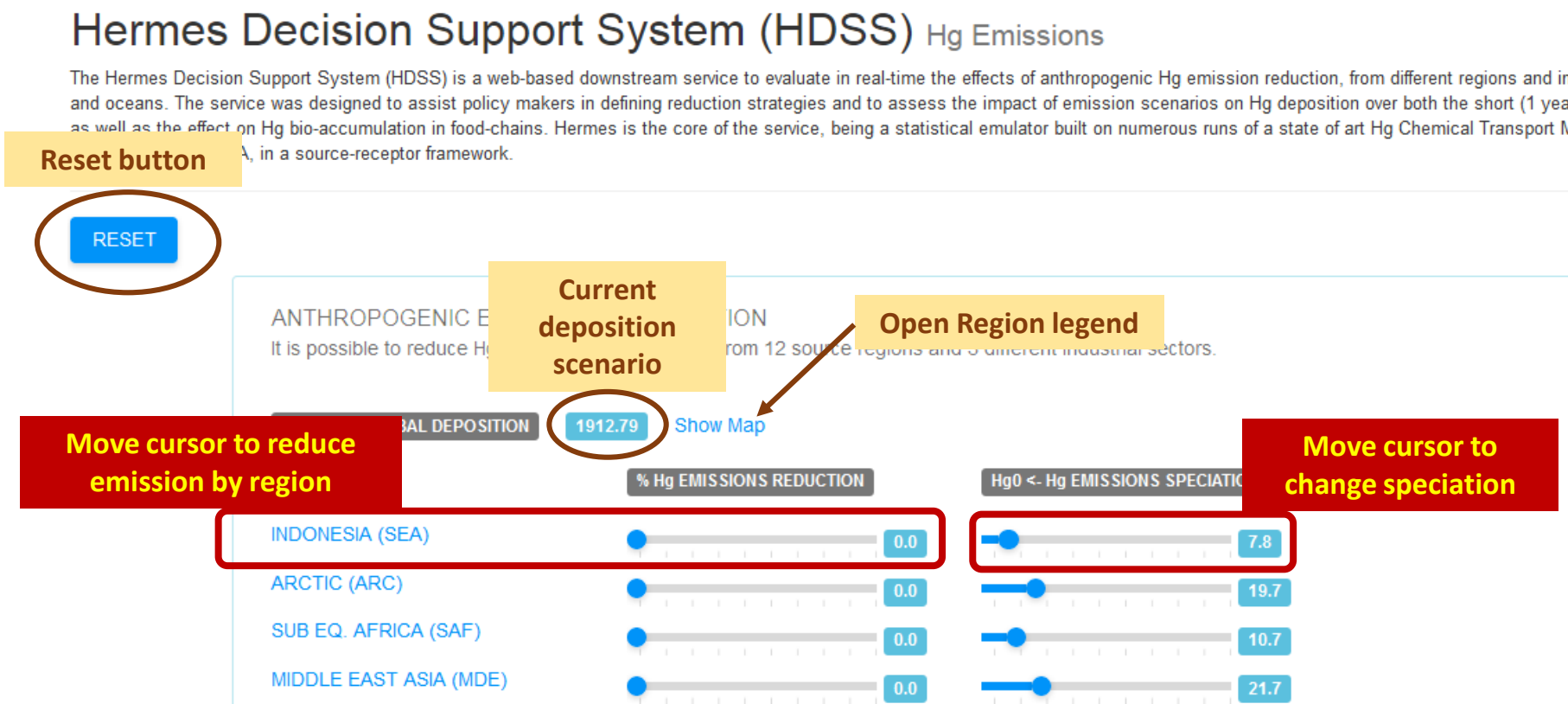
Integrated Global Observing Systems for Persistent Pollutants (**IGOSP**), project funded by the European Commission in the framework of "The European network for observing our changing planet (ERA-PLANET)" program (Grant Agreement: 689443).

EuroGEO Showcases: Applications Powered by Europe (**E-SHAPE**) project (Grant Agreement: 820852).

Inside HDSS

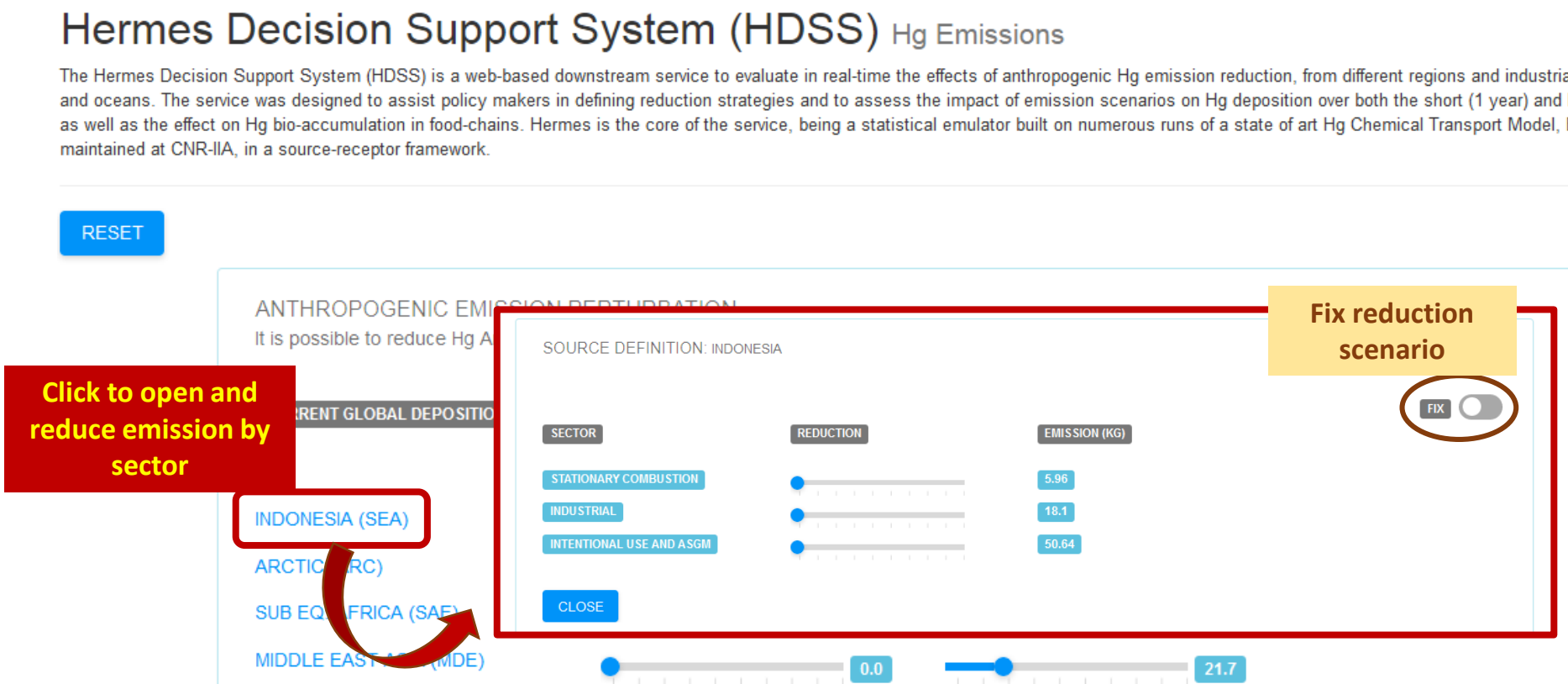
Implementation

Emission reduction



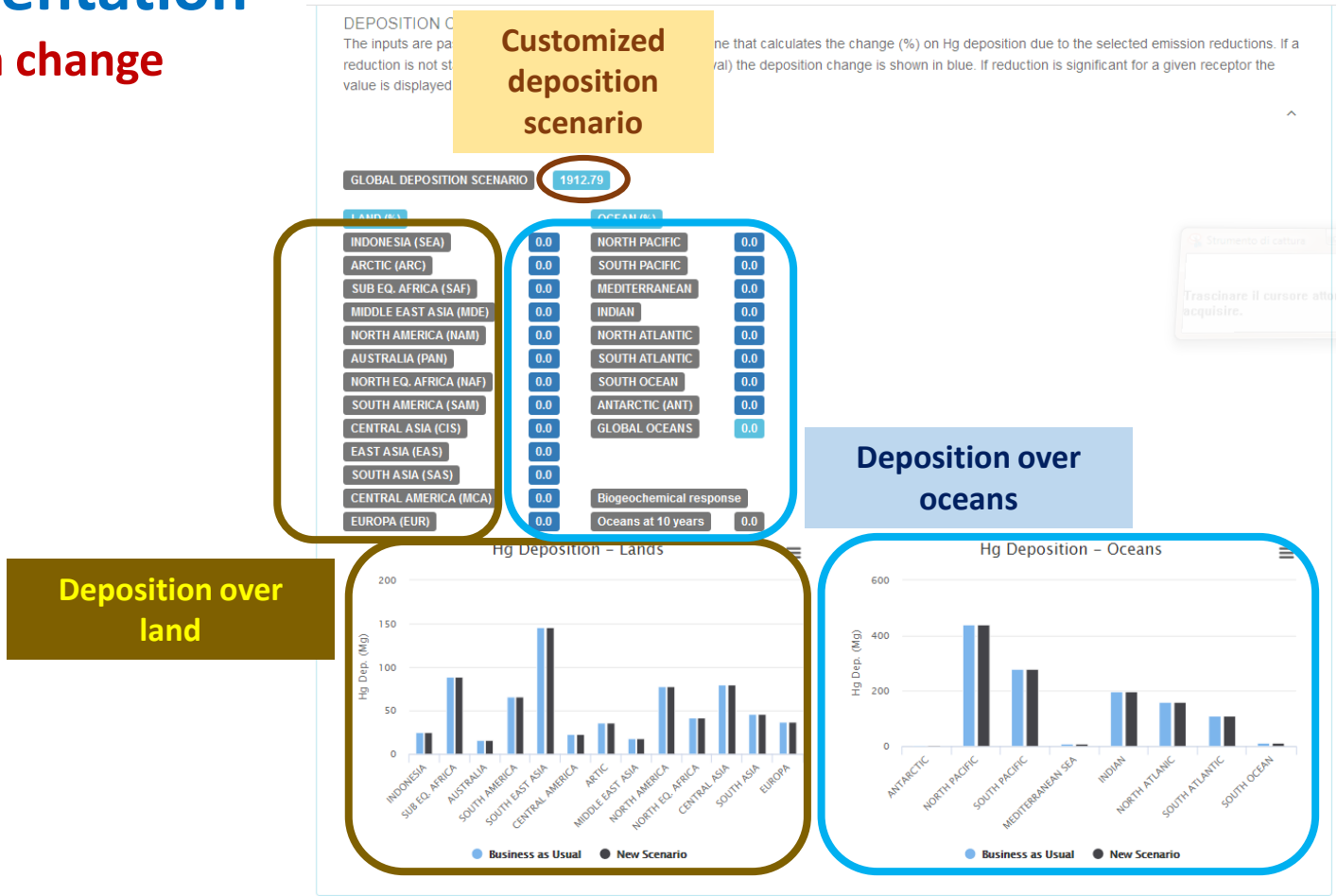
Implementation

Emission reduction



Implementation

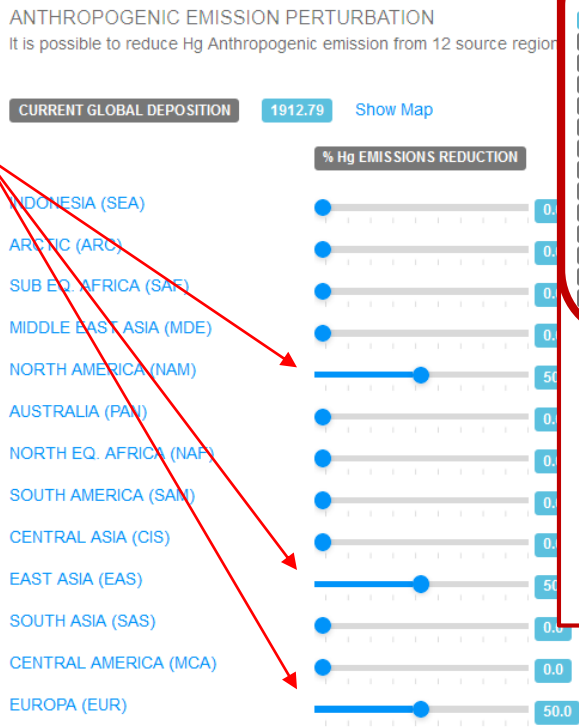
Deposition change

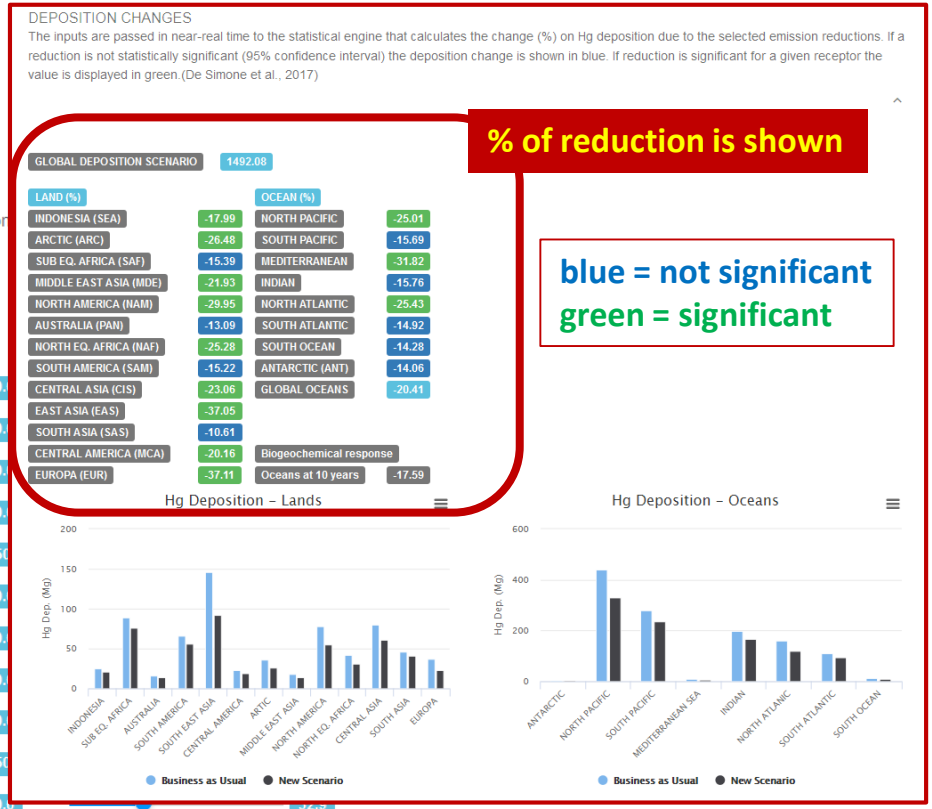


Workflow

Example

-50%
Europe
North America
East Asia





Details on HDSS

A long path to rise

Step 1: ECHMERIT-Hg Development & Validation vs. observations

Step 2: ECHMERIT-Hg Tagging Hg (regions & sources)

Step 3: Uncertainty evaluation in Source-Receptor Matrices

Step 4: Design & runs of Anthropogenic Emissions Perturbation

Step 5: CTM-Hg Emulator built and Web implementation

2009-2018